



**California Apple Commission**  
**2019-2020 ANNUAL REPORT**

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# MESSAGE FROM THE EXECUTIVE DIRECTOR

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In 2019-2020, the world was seriously impacted by the outbreak and spread of the COVID-19 virus. Global stay at home orders were issued and the world economy went into a tailspin. Although the California apple grower and shipper had mostly concluded their season prior to the outbreak, the shutdown and economic repercussions will have lasting consequences.

We know that the work of the California apple industry is continuing and essential. Agriculture is perhaps the most critical industry on the planet right now and the food our members and growers provide is literally feeding the world during a significant time of need. The current COVID-19 pandemic is forcing our members to adapt and then with changing regulations, to adapt again. We know this global health crisis has forced the agricultural industry to be agile, to respond quickly, and sometimes agonizingly rethink business strategies. The industry's past success at overcoming challenges, that at one time seemed insurmountable, convinces me that we will get through these uncertain times.



Todd W. Sanders  
Executive Director

At the Commission, we will continue to be an advocate for the California apple grower and handler through our research, education, export, and government relations programs. More details on the Commission's programs can be found in the following pages within this report. Additionally, the Commission will continue to manage and oversee the California Blueberry Association, the California Blueberry Commission, the California Olive Committee, the Olive Growers Council of California, and the newly acquired (2020) California Wild Rice Advisory Board. This compliments the Commission's philosophy of managing other commodities to share resources and capabilities while at the same time driving costs down.

On behalf of the California Apple Commission, I am pleased to present to you the 2019-2020 annual report. As always, thank you for your continued support of the California Apple Commission, and we look forward to serving you in the next year.

Sincerely,

A handwritten signature in blue ink, appearing to read 'T. Sanders'.

Todd W. Sanders  
Executive Director



# CHAIRMAN'S CORNER

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It continues to be a pleasure to serve as your Chairman of the California Apple Commission. The past year has been full of accomplishments for the Commission but it has also had its fair share of challenges. Now more than ever, the main goal of the Commission is to provide significant assistance to the growers and handlers of the California apple industry.

Despite the obvious difficulties that have been brought on by the COVID-19 pandemic, the Commission has been working diligently to properly assist the California apple industry. For example, in conjunction with the US Apple Association and other state apple organizations, the California Apple Commission successfully encouraged the USDA to include apples in critical Coronavirus Food Assistance Program (CFAP) funding which were originally left out of the program. Additionally, apple research, education, and marketing continue to be priorities of the Commission.

As we begin the 2020-2021 season, please do not hesitate to utilize the Commission and the resources they provide. I appreciate the hard work and support of California apple growers, handlers, and board members. Thank you for your continued support of the California Apple Commission and I am looking forward to a successful upcoming season for the California apple industry.

Sincerely,

Jeff Colombini  
Chairman



# CALIFORNIA APPLE COMMISSION STAFF

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# BOARD OF DIRECTORS

DISTRICT 1	DISTRICT 2	DISTRICT 3
<b>Producer Member</b> Kelly Hansen Mt. Dennison Orchards Term: 7/2020-6/2024	<b>Producer Member</b> Chris Britton BK Partners Term: 7/2018-6/2022	<b>Producer Member</b> Jeff Colombini Lodi Farming Term: 7/2017-6/2021
<b>Producer Member</b> Zea Sonnabend Fruitilicious Farm Term: 7/2020-6/2024	<b>Producer Member</b> Virginia Hemly Chhabra Greene and Hemly Term: 7/2018-6/2022	<b>Producer Member</b> Steve Chinchio Riverbend Orchards Term: 7/2018-6/2022
<b>Handler Member</b> Bill Denevan Viva Tierra Term: 7/2017-6/2021	<b>Handler Member</b> VACANT Term: 7/2017-6/2021	<b>Handler Member</b> Tim Sambado Prima Frutta Term: 7/2017-6/2021
<b>Alternate Member</b> VACANT Term: 7/2020-6/2021	<b>Alternate Member</b> Doug Hemly Greene and Hemly Term: 7/2020-6/2021	<b>Alternate Member</b> VACANT Term: 7/2020-6/2021
	<b>Public Member</b> Dr. Steve Blizzard Term: 7/2017-6/2021	



# DISTRICT MAP



# CALIFORNIA APPLE ACREAGE TOTALS

County	Acreage
Butte	51
Calaveras	10
Colusa	10.5
Contra Costa	45
El Dorado/Alpine	852
Fresno	513
Glenn	1
Humboldt	23
Inyo/Mono	5
Kern	758
Kings	2
Lake	5
Lassen	4
Los Angeles	10
Madera	115.1
Mendocino	216
Merced	1
Monterey	66.58
Napa	3.59
Nevada	32
Placer	41
Plumas and Sierra	28
Riverside	30
Sacramento	317
San Benito	356
San Bernadino	298
San Diego	204
San Joaquin	2,000
San Luis Obispo	121
San Mateo	22.65
Santa Barbara	210
Santa Clara	423
Santa Cruz	2,027
Shasta	17
Siskiyou	27.25
Solano	377
Sonoma	2,166
Stanislaus	492.1
Sutter	8
Tehama	71
Tulare	86
Tuolomne	174.5
Ventura	376
Yolo	239.8
Yuba	8
<b>TOTAL</b>	<b>12,844.07</b>



USING 2018 DATA

# STATEMENT FOR ACTIVITIES

FISCAL YEAR ENDED JUNE 30, 2019

## ASSETS

• CASH	\$469,208
• CERTIFICATE OF DEPOSIT	\$1,200,000
• ACCOUNTS RECEIVABLE	\$22,160
• INTEREST RECEIVABLE	\$10,260
• PREPAID EXPENSES	\$7,702
• RESTRICTED CASH DUE TO PENDING LAWSUIT	\$0
• PROPERTY AND EQUIPMENT NET OF ACCUMULATED DEPRECIATION OF \$16,525 IN 2019 AND \$14,280 IN 2018	\$2,670

**TOTAL ASSETS** **\$1,712,000**

## LIABILITIES

• ACCOUNTS PAYABLE	\$19,662
• ACCRUED COMPENSATED ABSENCES	\$30,543
• UNEARNED REVENUE	\$3,333

**TOTAL CURRENT LIABILITIES** **\$53,538**

## NET POSITION

• RESTRICTED ESCROW ACCOUNT	\$0
• UNRESTRICTED	\$1,658,462

**NET POSITION** **\$1,658,462**

**TOTAL LIABILITIES AND NET POSITION** **\$1,712,000**



# STATEMENT OF REVENUES

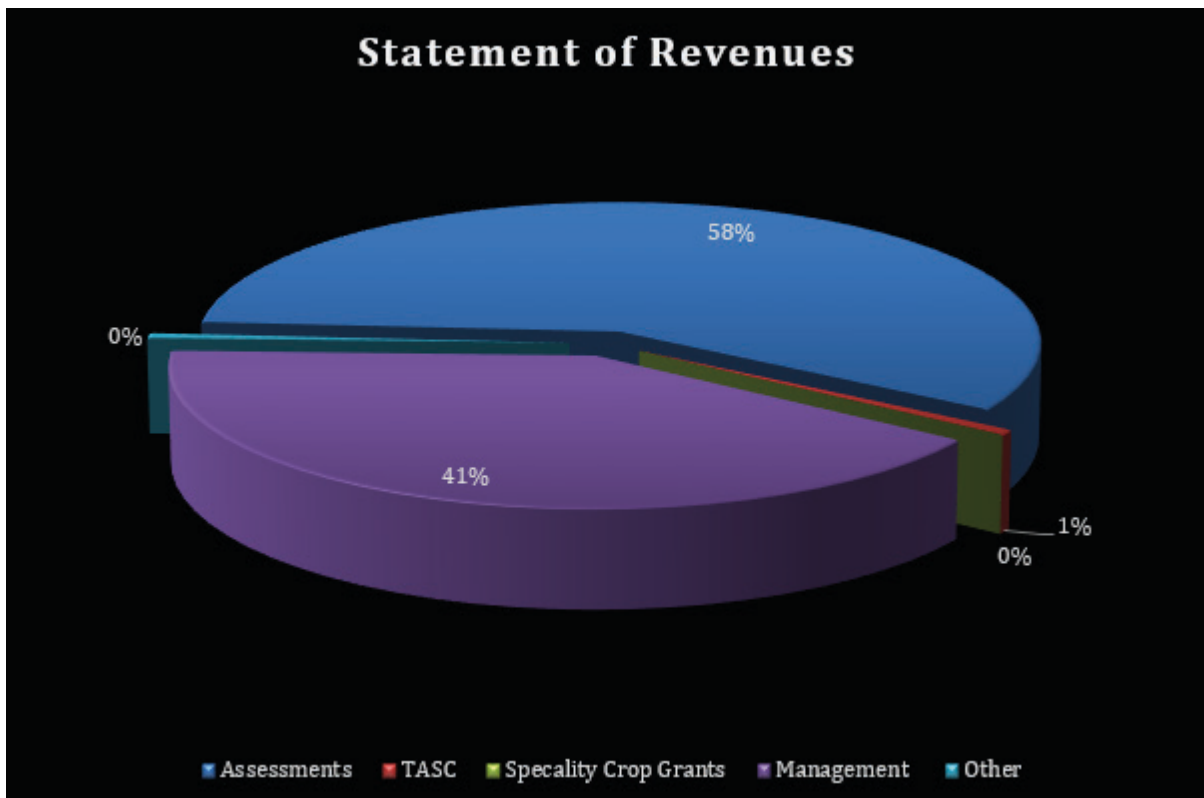
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## REVENUES

• ASSESSMENTS	\$330,282
• GRANT INCOME- TASC	\$3,355
• SPECIALTY CROP BLOCK GRANT	\$0
• MANAGEMENT FEES	\$232,667
• OTHER	\$3,192

## **TOTAL REVENUES**

**\$569,496**



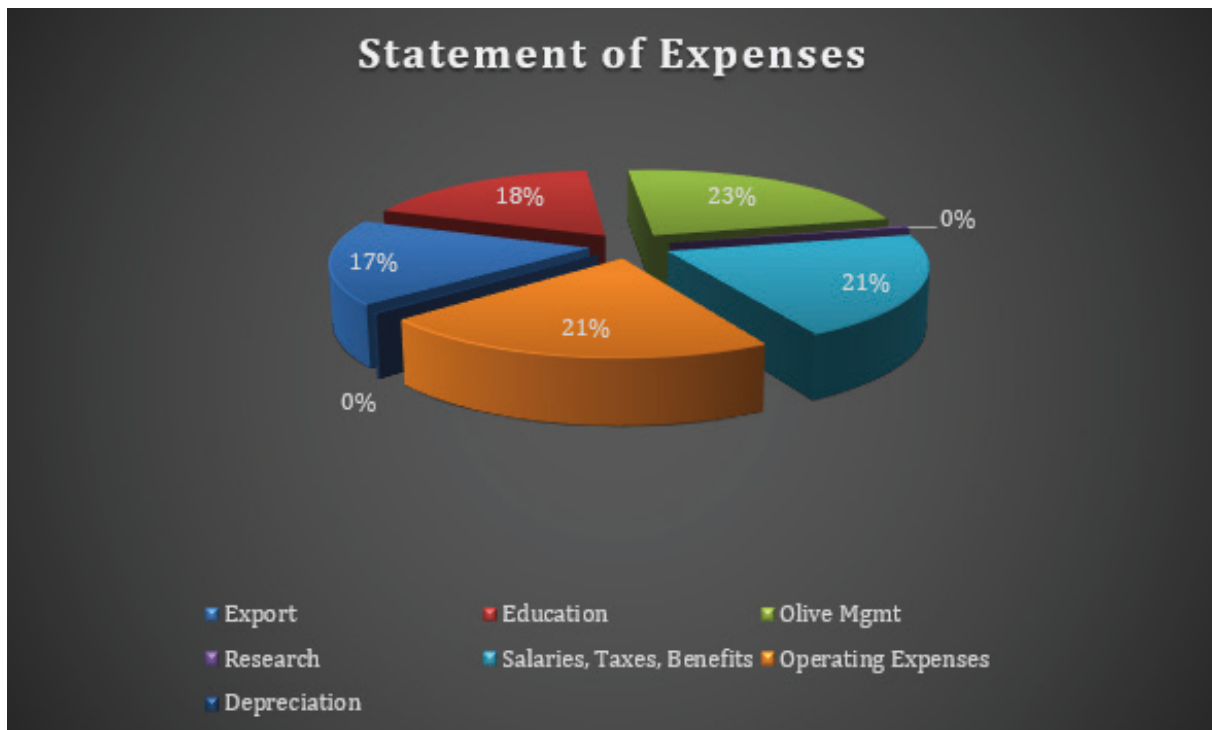
# STATEMENT OF EXPENSES

## EXPENSES

• EXPORT/MARKET DEVELOPMENT	\$120,859
• EDUCATION	\$127,064
• COMMODITY PROGRAMS	\$165,112
• RESEARCH	\$2,500
• OPERATIONAL EXPENSES	\$153,963
• SALARIES, TAXES, BENEFITS	\$147,489
• DEPRECIATION	\$2,245

## TOTAL EXPENSES

**\$719,232**



## CHANGES IN NET POSITION

**\$ (137,355)**

## NET POSITION, BEGINNING OF YEAR,

**\$1,795,817**

## NET POSITION, END OF YEAR

**\$1,658,462**



# CALIFORNIA APPLE RESEARCH PROJECTS

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# 2019-2020 RESEARCH SUMMARY

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In 2019-2020, the California Apple Commission focused on three areas of research that were all continuations of prior research. Each of these research topics will continue to be areas of focus for the future as well.

In summary, our current projects are as follows:

- 1) Evaluation of new biological controls for management of fire blight of apples caused by *Erwinia amylovora* and evaluation of new natural products as organic postharvest fungicides for pome fruits—Dr. Jim Adaskaveg
- 2) Postharvest quality and physiology of ‘Gala’, ‘Granny Smith’, and ‘Fuji’ apples subjected to phytosanitary irradiation—Dr. Anuradha Prakash
- 3) Study on mechanical mass harvesting of cling peaches (CAC partnership with Cling Peach Board/Pear Advisory Board as a cost share research project)<sup>1</sup> —Dr. Stavros Vougioukas
- 4) Apple Rootstock Breeding Program Field Trials<sup>2</sup> —Dr. Gennaro Fazio

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<sup>1</sup>The CAC has partnered with the California Cling Peach Board and the California Pear Advisory Board for this research project. The research includes apples and is applicable to our industry as well.

<sup>2</sup>The CAC has partnered with Cornell University/USDA-Agricultural Research Service Apple Rootstock Breeding Program to conduct field trials of Geneva rootstocks in California in the spring of 2020.

# Annual Report – 2019-20

Prepared for the California Apple commission

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Project Title:	Evaluation of new biological controls for management of fire blight of apples caused by <i>Erwinia amylovora</i> and evaluation of new natural products as organic postharvest fungicides for pome fruits
Project Leader:	Dr. J. E. Adaskaveg, Department of Plant Pathology and Microbiology, University of California, Riverside CA 92521.
Cooperators:	D. Thompson, D. Cary, and H. Förster

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## SUMMARY

### I. Fire blight management

#### A. Antibiotic and copper resistance surveys for populations of *Erwinia amylovora* in California pear growing areas were continued in 2019.

- 1) Kasugamycin: All 117 strains from 14 orchard locations in Sacramento and 18 locations in Lake Co. were sensitive.
- 2) Streptomycin: Plasmid-based moderate- and chromosomal-based high-resistance was detected at eight locations in Sacramento Co. The incidence of resistance including that of high-resistant strains was sometimes very common in an orchard. Strains with moderate resistance to streptomycin was also found at three locations in Lake Co. Thus, populations of *E. amylovora* re-adjust rapidly to selection pressure (i.e., bactericide applications). Streptomycin should be used strategically, and these findings stress the importance of resistance management with mixtures or rotations and the development of new alternatives.
- 3) Oxytetracycline: Strains with high resistance levels (>40 ppm) were detected at three locations in Sacramento Co. At two of the locations, resistance was already found in 2018. These resistant strains were also highly resistant to streptomycin. In the location with the highest incidence of oxytetracycline resistance, nine applications of the antibiotic were applied between 2017 and 2019. Oxytetracycline resistance in *E. amylovora* has never been reported previously at this level, and this finding is a serious concern.

#### B. Field trials on the management of fire blight

- 1) On Granny Smith and Fuji apple, all treatments significantly reduced the disease from the control, and all treatments performed statistically similar. Numerically, Kasumin-FireWall and Blossom Protect-Buffer had the lowest incidence of disease on Granny Smith. Intermediate treatments on Granny Smith apple included copper products (MasterCop, CS2005 - MagnaBon), selected mixtures containing nisin and  $\epsilon$ -poly-L-lysine, the natural product BacStop, as well as Kasumin and Mycoshield. On Fuji apple,  $\epsilon$ -poly-L-lysine + Dart was numerically the most effective, and treatments with intermediate efficacy included nisin-mixtures, BacStop, and Kasumin.
- 2) In field studies on Bartlett pears in 2020, the natural incidence of fire blight was most effectively reduced using oxytetracycline (formulated as FireWall or Mycoshield) or Kasumin. Some of the new biological compounds under evaluation, however, performed statistically similarly, and among these were nisin + zinc nitrate,  $\epsilon$ -poly-L-lysine + Dart, and TDA-NC-1.
- 3) Kasumin is currently considered a conventional treatment, however, efforts are underway to obtain an organic registration. The compound is a natural substance that is commercially produced by fermentation. In contrast to streptomycin and oxytetracycline, it has very minimal or no usage in human medicine. This is an ongoing process with UPL and the California Apple Commission.

### II. Postharvest decay control

- A. In an experimental packingline study, in-line drench applications of inoculated Granny Smith apple fruit with BioSpectra by itself or mixed with Scholar or Inspire as well as Academy provided excellent control of blue mold. The new experimental EXP-ADA was only moderately effective. When fruit were wounded and inoculated after treatment with *B. cinerea*, only Academy and BioSpectra mixed with Scholar were highly effective.
- B. The efficacy of natamycin against postharvest decays of pome fruits is variable depending on the cultivar, source, and maturity of fruit. Optimization by mixing with other fungicides such as Scholar or Academy is the main strategy that we are pursuing for resistance management. Although the efficacy of Scholar and



Academy is not improved, these mixtures provide an anti-resistance strategy because resistance to natamycin has not been reported previously to filamentous fungi including decay pathogens of pome fruit. Natamycin has been registered for food uses for over 20 years.

## INTRODUCTION

**Epidemiology and management of fire blight.** Fire blight, caused by the bacterium *Erwinia amylovora*, is one of the most destructive diseases of pome fruit trees including apples. Current control programs are based on protective schedules because available compounds are mostly contact treatments and are not systemic. Registered treatments include copper products, antibiotics, as well as natural products and biocontrol agents. Conventional copper compounds are only effective when disease severity is low to moderate. They may cause fruit russeting and therefore, labeled rates are at low amounts of metallic copper equivalent (MCE) that are at the limit of effectiveness. Newly formulated copper products are available that can be used at reduced MCE rates and cause less phytotoxicity. Some are OMRI-approved including Badge X2, CS-2005, and Cueva. Because only few treatments are permitted for organic apple production, research on OMRI-approved coppers needs to be continued. In our surveys, however, we detected low to moderate levels of copper insensitivity in pathogen populations.

Other organically approved treatments are the biocontrols Blight Ban A506 (*Pseudomonas fluorescens* strain A506) and Bloomtime Biological (*Pantoea agglomerans* strain E325), and the fermentation product of *Bacillus subtilis* Serenade (strain QST 713). These showed inconsistent efficacy over the years in our trials and were most effective under low inoculum levels and less favorable micro-environments. The biocontrol Blossom Protect (*Aureobasidium pullulans*) has been very effective under less to moderately favorable disease conditions, and it is one of the most consistent biologicals that we have evaluated. Biocontrols are most effective when they are actively growing on the plant and already have colonized susceptible host tissues before infection events, whereas natural products can also have some direct toxicity to the pathogen during infection events. New natural products evaluated in 2020 included BacStop, EF400, Gargoil, ET91, Dart, TDA-NC-1, and the biocontrol Double Nickel was used in a rotation program.

We are also evaluating other bactericide alternatives such as the natural fermentation compounds lactic acid,  $\epsilon$ -poly-L-lysine, and nisin that have known anti-bacterial activity and are used as food preservatives. They potentially could qualify for organic production. Our initial evaluations with these compounds showed high toxicity in lab studies, but only moderate activity in the field. Therefore, we continued trying to improve their efficacy by using selected additives. New bacteriophage preparations were planned for evaluation against fire blight; however, the registrant only made a preparation available for walnut blight control. Bacteriophages are very host- (bacterial pathogen-) specific even to strains of the same species. New strategies include blending multiple phages to overcome specificity and to improve performance in different regions of apple production.

The antibiotics streptomycin, oxytetracycline, and kasugamycin can only be used in conventional pome fruit production and are currently the mainstay in conventional fire blight management. The incidence of resistance to streptomycin in California orchards has been fluctuating from very high to low in our surveys between 2006 and 2018. Reduced sensitivity to oxytetracycline has only been found sporadically, and these isolates did not persist. In 2018 and again in 2019 at two locations, however, we detected for the first strains of *E. amylovora* that were highly resistant to this antibiotic. Resistance to kasugamycin in *E. amylovora* has not been found to date. Efforts are ongoing to differentiate kasugamycin from other bactericides and allow certification as an organic treatment by the National Organic Standards Board and OMRI. The goal of our field evaluations of new bactericides is to develop effective rotational programs for organic farming practices with the use of copper and biologicals, as well as conventional programs with the use of antibiotics, copper, biologicals, and other bactericidal compounds for use during bloom and early fruit development.

**Management of postharvest decays.** Apples like other pome fruits can be stored for some period of time in optimum fruit storage environments. Still, postharvest decays caused by fungal organisms can result in economic crop losses. The major postharvest pathogens of apples are *Penicillium expansum*, *Botrytis cinerea*, *Alternaria alternata*, *Mucor piriformis*, and *Neofabraea* spp. causing blue mold, gray mold, Alternaria rot (black mold), Mucor decay, and bull's eye rot, respectively. There is a deficiency in organically-approved postharvest treatments for preventing these decays in storage. BioSave 100 is one of the few materials currently available in



the United States, but its efficacy is limited. Other biological products are registered in other countries and these potentially could be evaluated for California conditions if registrants decide to market their products (e.g., Shemer - *Metschnikowia fructicola*, Candifruit - *Candida sake*, Nexy - *Candida oleophila*, Boni-Protect - *Aureobasidium pullulans*) in the U.S.

We previously showed that the bio-fungicide polyoxin-D (Ph-D, Oso, Tavano) is very effective in reducing gray mold and Alternaria rot, but it is not effective against blue mold. Polyoxin-D is labeled as a conventional fungicide on pome and other crops and is now an approved organic fungicide that is pending pre-harvest and postharvest organic labeling on multiple crops. We also demonstrated the efficacy of another bio-fungicide, natamycin (pimaricin). For many years, natamycin has been a federal-approved food additive to prevent mold growth, including *Penicillium* species, on dairy and meat products in the United States and other countries. Over this time, resistance in *Penicillium* species against natamycin has not occurred. This compound was registered in late 2016 as BioSpectra for postharvest treatment of citrus and stone fruits. Natamycin has an exempt registration status and has been submitted to the NOSB for organic registration. In our evaluations, natamycin showed very good and consistent efficacy against gray mold and Mucor rot. Efficacy against blue mold, however, has been very variable over the years ranging from excellent to unsatisfactory. Therefore, our goal is to improve its performance so it potentially can be made available to the pome fruit industry.

## OBJECTIVES FOR 2019-2020

### *Fire blight research*

1. Evaluate the efficacy of treatments for managing fire blight.
  - A. Evaluate growth enhancers (e.g., buffers) of biological control agents in lab and field trials.
  - B. Laboratory in vitro tests on copper and zinc products (registered copper products) with newly identified antibacterial, food additives (lactic acid, poly-L-lysine, and nisin), new biologicals, and experimental compounds.
  - D. Field trials with protective air-blast spray treatments:
    - i. Kasugamycin in combination with organic treatments to support organic petition to NOSB.
    - ii. New formulations of copper (e.g., Badge X2, CS-2005, Cueva), zinc, food additives (lactic acid, poly-L-lysine, and nisin), and biologicals (e.g., Serenade ASO) in combination as new antibacterial strategies.
    - iii. Biological treatments (Blossom Protect, Serenade) with and without the addition of growth enhancers and copper.
    - iii. Bacterial phage-mixture products with other biological control treatments (i.e., Blossom Protect) to provide an integrated strategy.

### *Postharvest research*

1. Comparative evaluation of new postharvest fungicides
  - A. Evaluate natamycin (BioSpectra) and other new postharvest fungicides such as Academy at selected rates against gray mold, blue mold, Alternaria decay, and bull's eye rot and compare to fludioxonil.
  - B. Evaluate mixtures of these compounds and new formulations of natamycin to improve performance of the fungicide.

## PLANS AND PROCEDURES

***Isolation and culturing of E. amylovora and sensitivity testing against antibiotics and copper.*** Fire blight samples were obtained from pome fruit trees in the spring of 2019 from commercial orchards. Infected plant material was surface-disinfested for 1 min using 400 mg/L sodium hypochlorite, rinsed with sterile water, cut into small sections, and incubated in 1 ml of sterile water for 15 to 30 min to allow bacteria to stream out of the tissue. Suspensions were streaked onto yeast extract-dextrose-CaCO<sub>3</sub> agar (YDC), and single colonies were cultured. Streptomycin, oxytetracycline, and kasugamycin were evaluated for their in vitro toxicity using the spiral gradient endpoint method. For this, a radial bactericidal concentration gradient was established in nutrient agar in Petri dishes by spirally plating a stock concentration of each antimicrobial using a spiral plater. After radially streaking out suspensions of the test bacteria (10 µl of 10<sup>8</sup> cfu/ml as determined by measurement of optical density at 600 nm) along the concentration gradient, plates were

incubated for 2 days at 25°C. Measurements were taken visually for the minimal concentration that inhibited growth by >95% (MIC). The actual antibiotic concentrations were obtained by entering the radial distances of inhibition (measured from the center of the plate) into the Spiral Gradient Endpoint computer program.

**Field studies on the management of fire blight using protective treatments.** Air-blast field studies on the relative efficacy of protective treatments were conducted in experimental cvs. Granny Smith and Fuji apple orchards at the Kearney Agricultural Research and Extension Center (KARE). Four applications were done starting at pink bud stage and followed by three phenology-based treatments until petal fall. Treatments included single treatments, mixtures, and a rotation. Incidence of blight was assessed in late May based on the number of infected flower clusters of 100-200 clusters evaluated for each of the four two-tree replications. Additionally, potential phytotoxic effects of the treatments (e.g., fruit russetting and leaf burn) were evaluated. For comparison, field studies were also conducted on Bartlett pear with some overlapping treatments to the apple studies. Four applications were done, and one branch with flowers per tree was inoculated with *E. amylovora* after the second application. Disease was evaluated in April. Data were analyzed using analysis of variance and LSD mean separation procedures of SAS 9.4.

In a study on Comic pear at UC Davis, three applications with new biological treatments were compared to a non-treated control and to FireWall. Branches with flowers were inoculated after the last application, and the incidence of infected flowers was determined after one week.

In a small-scale field study at UC Davis on Fuji apple, six new experimental biological treatments were compared to FireWall, the organically approved Alum, as well as an untreated control. Treatments were applied to open flowers using a hand sprayer. Flowers were inoculated with *E. amylovora* after 3 h and were bagged overnight. Disease was evaluated after 1 week. Data were statistically analyzed using least significant difference mean separation procedures of SAS 9.4.

**Efficacy of new postharvest fungicides for managing apple decays in storage.** In an experimental packingline study at KARE, BioSpectra by itself or in mixtures with Scholar or Inspire (i.e., difenoconazole), as well as Academy and a new experimental fungicide (i.e., EXP-ADA) were applied to Granny Smith apple by aqueous in-line drenches that were followed by a CDA application with a carnauba-based fruit coating (i.e., Decco 230). For efficacy evaluation against blue mold, fruit were wound-inoculated 15 to 16 h before treatment with *P. expansum* (i.e., post-infection activity of treatments); and for evaluation against gray mold, inoculation with *B. cinerea* was done after treatment (i.e., pre-infection activity of treatments). Fruit were evaluated for the presence of decay after incubation for 7 days at 20°C. For each of four replications, 24 fruit were used. Data were analyzed using analysis of variance, and averages were separated using least significant difference mean separation procedures of SAS 9.4.

## RESULTS AND DISCUSSION

**Survey of antibiotic sensitivity in *E. amylovora* strains from pear in California in 2019.** In 2019, 65 strains were obtained from 14 orchard locations in Sacramento Co. and 52 strains from 38 locations in Lake Co. All 117 strains were found to be sensitive to kasugamycin (Table 1).

In Sacramento Co., resistance to streptomycin was detected at eight of the locations with an incidence of 33.3% to 100%. At all eight locations, moderately resistant strains (MIC <20 ppm) with plasmid-based resistance were present, but 6 locations also had strains with high-resistance (MIC >100 ppm) that most likely was chromosomal-based. Strains with high-resistance that once used to be common had declined in recent years; but in 2018, a high incidence of high-resistance was detected in several locations. One of these locations was re-sampled in 2019, and 41.7% of the strains recovered were highly resistant to streptomycin. In another orchard with a low incidence of high resistance in 2018, one strain evaluated in 2019 also was highly resistant. In some of the orchards with low- and high-resistance, a rotation of copper – streptomycin + oxytetracycline + mancozeb – Actigard – Kasumin was applied in the 2019 spring season. Thus, resistant strains persisted under this relatively low selection pressure. In three orchards where the same rotation was done in 2019, however, no streptomycin resistance was detected. No resistance was also detected at two locations with organic programs. Over the years, there has been no clear correlation between streptomycin usage in a specific year and the incidence and level of streptomycin resistance present in the

pathogen population in the spring season of the respective years. The previous seasons' applications also may need to be considered because they will affect the composition of the overwintering pathogen population. Thus, spray schedules from multiple years will need to be examined. Our current recommendation is to use streptomycin only once a year to reduce selection pressure on the pathogen. Because this was followed in the orchards with high levels of resistance in 2019, it would also be interesting to know if fire blight was successfully managed with the copper – streptomycin + oxytetracycline + mancozeb – Actigard – Kasumin rotation.

High-resistance (>40 ppm) to oxytetracycline in *E. amylovora* was detected for the first time at two locations in 2018, and all resistant strains were also highly resistant to streptomycin. These two orchards were re-sampled in 2019, and oxytetracycline resistance was again detected. At the first location, 6 out of 7 strains were resistant in 2018, whereas in 2019, 4 out of 12 strains were resistant. At the other location, 1 of 8 or 12 strains was resistant in 2018 and 2019, respectively. The resistant strains' identity was verified as *E. amylovora* by specific PCR primers. Thus, these resistant strains persisted. Additionally, 1 of 8 strains was resistant to oxytetracycline in a third orchard in 2019. As in 2018, strains resistant to oxytetracycline were also highly resistant to streptomycin. At the location with the highest incidence of oxytetracycline resistance, nine applications of the antibiotic were applied between 2017 and 2019. High dependency on one antibiotic in a two-year period may be responsible for the selection of the resistance detected.

Oxytetracycline resistance in *E. amylovora* has never been reported previously at this high level, and this finding is of serious concern. Considering the wide fluctuations in streptomycin resistance in California pear orchards and the previously described non-persistent population of the pathogen with reduced sensitivity to oxytetracycline, it is currently not known if these new resistant strains are competitively fit and will persist in the absence of selection pressure (i.e., applications with oxytetracycline and streptomycin). In preliminary studies we characterized these strains genetically and determined that the oxytetracycline resistance genes are similar to those that were previously described from non-plant pathogenic epiphytic bacteria. Apparently, these genes have jumped between bacterial species. It will also be interesting to determine if there is a molecular association between high-streptomycin and high-oxytetracycline resistance.

In Lake Co., most of the 52 strains evaluated were sensitive to streptomycin and oxytetracycline (Table 1). Moderate resistance to streptomycin (MIC <20 ppm), however, was found at 3 locations where streptomycin-oxytetracycline mixtures were applied for fire blight management. This is of interest because except for one strain collected numerous years ago, only sensitive strains have been recovered in our surveys in this California pear growing area.

**Field studies on fire blight using protective treatments.** Fire blight incidence in our research plots in the spring of 2020 was low on apple with 16-20% infected flower clusters on untreated control trees and on Bartlett pear with an average of 33 strikes per tree. With this low disease pressure, all treatments on Granny Smith apple significantly reduced the disease from the control to an incidence of 4.6 to 7.9%, and all treatments performed statistically similar (Fig. 1). Numerically, Kasumin-FireWall and Blossom Protect-Buffer had the lowest incidence of disease, and Cueva-Serenade had the highest incidence. Intermediate treatments included copper products (MasterCop, CS2005 - MagnaBon), selected mixtures containing nisin and  $\epsilon$ -poly-L-lysine, the natural product BacStop, as well as Kasumin and Mycoshield. The addition of zinc nitrate to Mycoshield-Dart did not improve efficacy. On Fuji apple, all treatments were also statistically similarly effective and reduced the incidence of blight to between 3.3% (i.e.,  $\epsilon$ -poly-L-lysine + Dart) and 5.8% (i.e.,  $\epsilon$ -poly-L-lysine + ZnNO<sub>3</sub>) (Fig. 2). Intermediate treatments included nisin-mixtures, BacStop and Kasumin.

Disease pressure was very high in a small-scale, hand-sprayer study on Fuji apple at UC Davis where 97% of flowers became diseased after inoculation (Fig. 3). Treatments that performed well under low disease pressure in the two studies with natural infection discussed above (e.g., BacStop, nisin and  $\epsilon$ -poly-L-lysine treatments) but also Gargoil and ET91, did not significantly reduce the incidence from the untreated control. Alum (potassium aluminum sulfate) significantly reduced the disease to an incidence of 43.3%, and FireWall was the best treatment with an incidence of 26%. Therefore, under these high-disease pressure conditions with inoculations, none of the new biological treatments provided control against fire blight.

In field studies on Bartlett pears in 2020, the natural incidence of fire blight was most effectively reduced using

oxytetracycline (formulated as FireWall or Mycoshield) or Kasumin (Fig. 4). Some of the new biological compounds under evaluation, however, performed statistically similarly, and among these were nisin + zinc nitrate,  $\epsilon$ -poly-L-lysine + Dart (a mixture of 28.3% capric and 41.7% caprylic acids), and TDA-NC-1. When flowers were inoculated with *E. amylovora*, only FireWall resulted in a very low incidence of disease, whereas the other treatments showed reduced or no efficacy. Nisin + Dart and BacStop + EF400 were not effective in both evaluations. In contrast to our previous studies and to the study on apple discussed above, Blossom Protect did not significantly reduce the amount of disease on Bartlett pear from that of the control after inoculation and occurring naturally. This biocontrol product has been effective to very effective in most field trials that we conducted in previous years.

In a study at UC Davis on Comice pear where flowers were inoculated, FireWall was again the most effective treatment, BacStop + EF400 and nisin +  $\epsilon$ -poly-L-lysine + zinc nitrate were less effective, whereas ET91 and TDA-NC-1 were not effective (Fig. 5). In contrast to the inoculation study on Bartlett pear, in the studies on Comice pear and Fuji apple at UC Davis, flowers were bagged overnight, and this created extremely high favorable conditions for infection. Thus, in future experiments, flowers should not be bagged after inoculation.

**Summary on the evaluation of new potential treatments against fire blight.** The GRAS ('generally regarded as safe') compounds nisin and  $\epsilon$ -poly-L-lysine have been evaluated by us over several years. Their performance on apple and pear has been variable and was good under natural disease conditions in the field in 2020. Their variable efficacy in mixtures with different additives indicates that there likely is more room for improvement, and additives need to be continued to be evaluated. Based on our results, Dart appears to be a beneficial additive for  $\epsilon$ -poly-L-lysine, and zinc nitrate for nisin. We are pursuing development of formulations in cooperation with a potential registrant. Nisin and  $\epsilon$ -poly-L-lysine should be continued to be evaluated because they show promise, and they are eligible for biopesticide registration with the US-EPA.

Among other new treatments, TDA-NC-1 showed promise in the trial on Bartlett pear, and BacStop in the two apple studies. Alum significantly reduced the disease in the inoculation study on Fuji apple. This organically-approved compound has been used with some success in other pome fruit production areas in the United States as well as in other countries, and its performance under California conditions warrants additional field evaluation. In a study conducted in Switzerland (Int. J. Environ. Res. Public Health 2015, 12, 11422-11447), the environmental impact of this aluminum compound was rated similar as for copper, but additional studies also on human health were recommended. Developing these new modes of action is critical in providing safe, effective alternatives to current products registered and for reducing the risk of resistance development to existing registered products as rotational or mixture treatments.

Kasumin is currently considered a conventional treatment, however, efforts are underway to obtain an organic registration. The compound is a natural substance that is commercially produced by fermentation. In contrast to streptomycin and oxytetracycline, it has very minimal or no usage in human medicine. This is an ongoing process with UPL and the California Apple Commission and therefore, an organic registration seems plausible.

**Evaluation of postharvest treatments using single-fungicides, mixtures, and pre-mixtures.** A postharvest study with Granny Smith apple on an experimental packingline using in-line drench applications focused on the efficacy of the biopesticide BioSpectra and the new experimental EXP-ADA. Treatments of inoculated fruit with BioSpectra by itself or mixed with Scholar or Inspire as well as Academy provided excellent control of blue mold, whereas EXP-ADA was only moderately effective (Fig. 6). When fruit were wounded and inoculated with *B. cinerea* after treatment, only Academy and BioSpectra mixed with Scholar were highly effective. In our previous studies, BioSpectra treatments of fruit after wound inoculations with *B. cinerea* consistently provided good to very good control and the low effectiveness in this year's pre-inoculation treatments indicates that BioSpectra does not have locally systemic activity, unlike Scholar. In contrast to gray mold, the efficacy of BioSpectra against blue mold has been variable over the years especially when different types of pome fruits were used. Therefore, we will continue to try to improve its effectiveness. Still, based on the moderate performance of natamycin, natamycin may not become registered on pome fruits unless it is developed in a premixture with other fungicides. Although efficacy is not improved as compared to using the two registered fungicides by themselves, adding natamycin represents an excellent resistance management strategy. Resistance to natamycin has not been reported previously to any *Penicillium* species, although the compound has been registered for food uses for over 20 years.

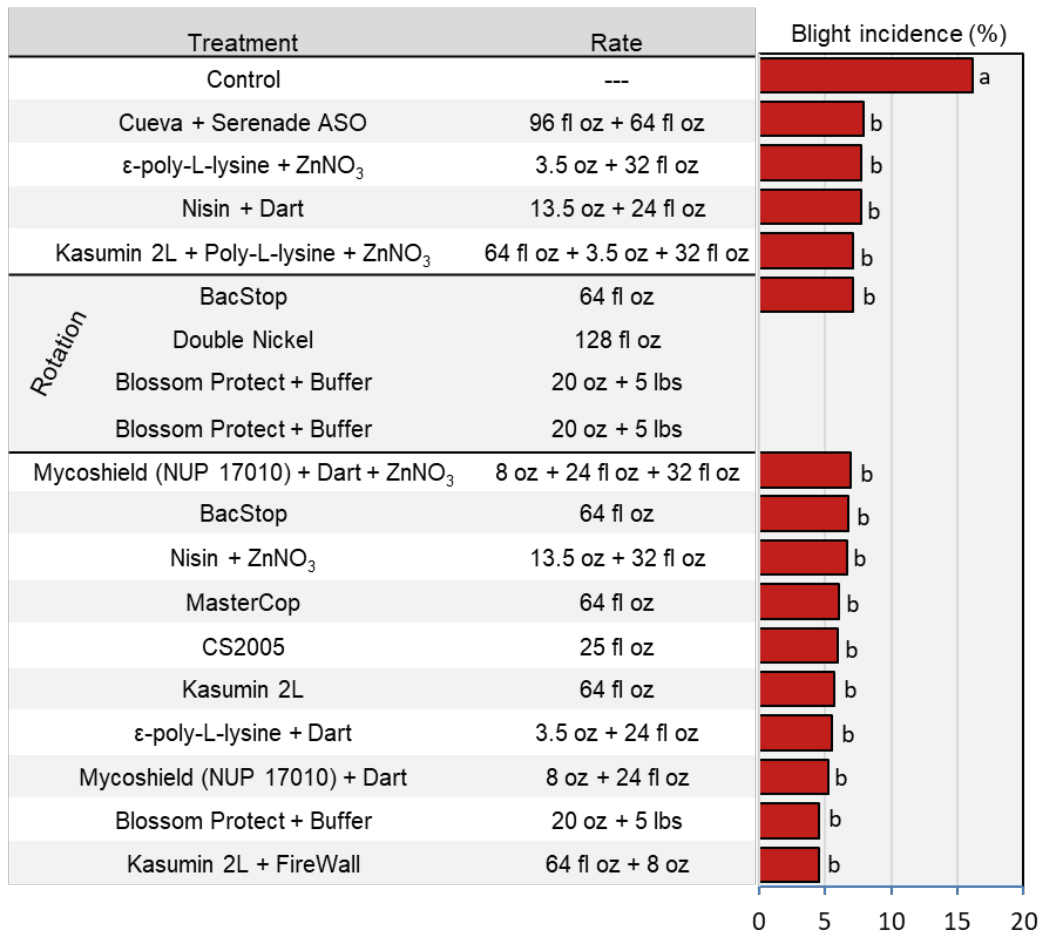
Table 1. Sensitivity of *E. amylovora* strains from pear orchards in Sacramento and Lake Co. to streptomycin, oxytetracycline, and kasugamycin in 2019

Sacramento Co.				Lake Co.			
Orchard No.	Streptomycin	Oxytetracycline	Kasugamycin	Orchard No.	Streptomycin	Oxytetracycline	Kasugamycin
1	MR	S	S	1	S	S	S
	MR	S	S		S	S	S
	MR	S	S		S	S	S
2	S	S	S	2	S	S	S
	S	S	S	3	S	S	S
3	HR	S	S	4	S	S	S
	MR	S	S	5	S	S	S
	MR	S	S	S	S	S	S
4	MR	S	S	6	S	S	S
	MR	S	S	S	S	S	S
	HR	HR	S	7	S	S	S
	HR	S	S	8	S	S	S
	MR	S	S	9	S	S	S
	MR	S	S	10	S	S	S
	HR	S	S	11	S	S	S
5	MR	S	S	12	S	S	S
	HR	S	S	S	S	S	S
	MR	S	S	13	S	S	S
6	HR	S	S	14	S	S	S
	MR	S	S	15	S	S	S
	HR	S	S	16	S	S	S
	HR	S	S	17	S	S	S
	MR	S	S	S	S	S	S
7	S	S	S	S	S	S	S
	S	S	S	18	S	S	S
	S	S	S	19	S	S	S
8	S	S	S	S	S	S	S
	S	S	S	20	S	S	S
	S	S	S	S	S	S	S
	S	S	S	21	S	S	S
9	S	S	S	22	S	S	S
	S	S	S	23	MR	S	S
	S	S	S	24	S	S	S
	S	S	S	25	S	S	S
	S	S	S	26	S	S	S
	S	S	S	27	S	S	S
	MR	S	S	28	S	S	S
	MR	S	S	29	S	S	S
	HR	HR	S	30	S	S	S
	S	S	S	31	S	S	S
10	S	S	S	32	S	S	S
	MR	HR	S	33	S	S	S
	MR	S	S	34	S	S	S
	HR	HR	S	35	S	S	S
	MR	S	S	S	S	S	S
	HR	S	S	36	MR	S	S
	MR	S	S	37	MR	S	S
	MR	S	S	MR	S	S	S
	HR	HR	S	38	S	S	S
	MR	S	S	S	S	S	S
S	S	S					
MR	S	S					
HR	HR	S					
11	MR	S	S				
12	S	S	S				
	S	S	S				
13	S	S	S				
14	S	S	S				
	S	S	S				
	S	S	S				
	S	S	S				
	S	S	S				

Sensitivity to streptomycin, oxytetracycline, and kasugamycin was determined using the spiral gradient endpoint method. S = sensitive, MR = moderately resistant (MIC = <20 ppm), HR = highly resistant (MIC = >40 ppm).



Fig. 1. Efficacy of bactericides for management of fire blight of Granny Smith apples, Fresno Co. 2020



Treatments were applied on 3-11 (pink bud), 3-15 (20% bloom), 3-21 (80-90% bloom), and 3-31-20 (petal fall) using an air-blast sprayer. There were four replications of two trees each per treatment. Disease was evaluated in late May on 100 to 200 flower clusters per tree.

Fig. 2. Efficacy of new bactericides for management of fire blight of Fuji apples, Fresno Co. 2020

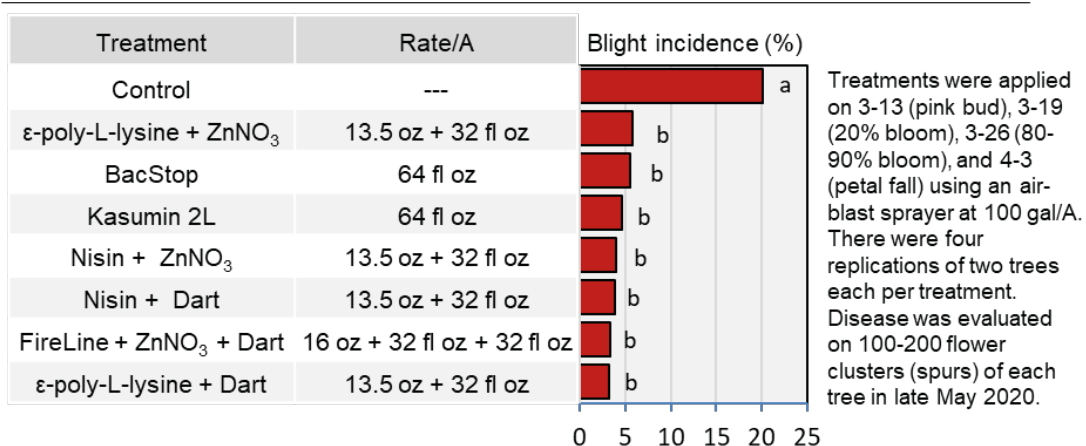


Fig. 3. Efficacy of new bactericides for management of fire blight of Fuji apple in a small-scale field study at UC Davis 2020

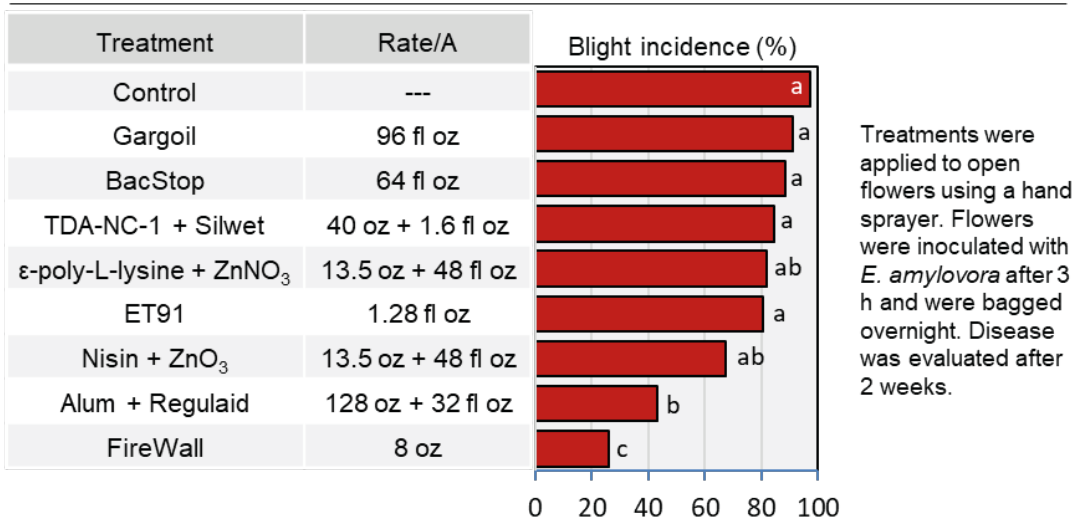
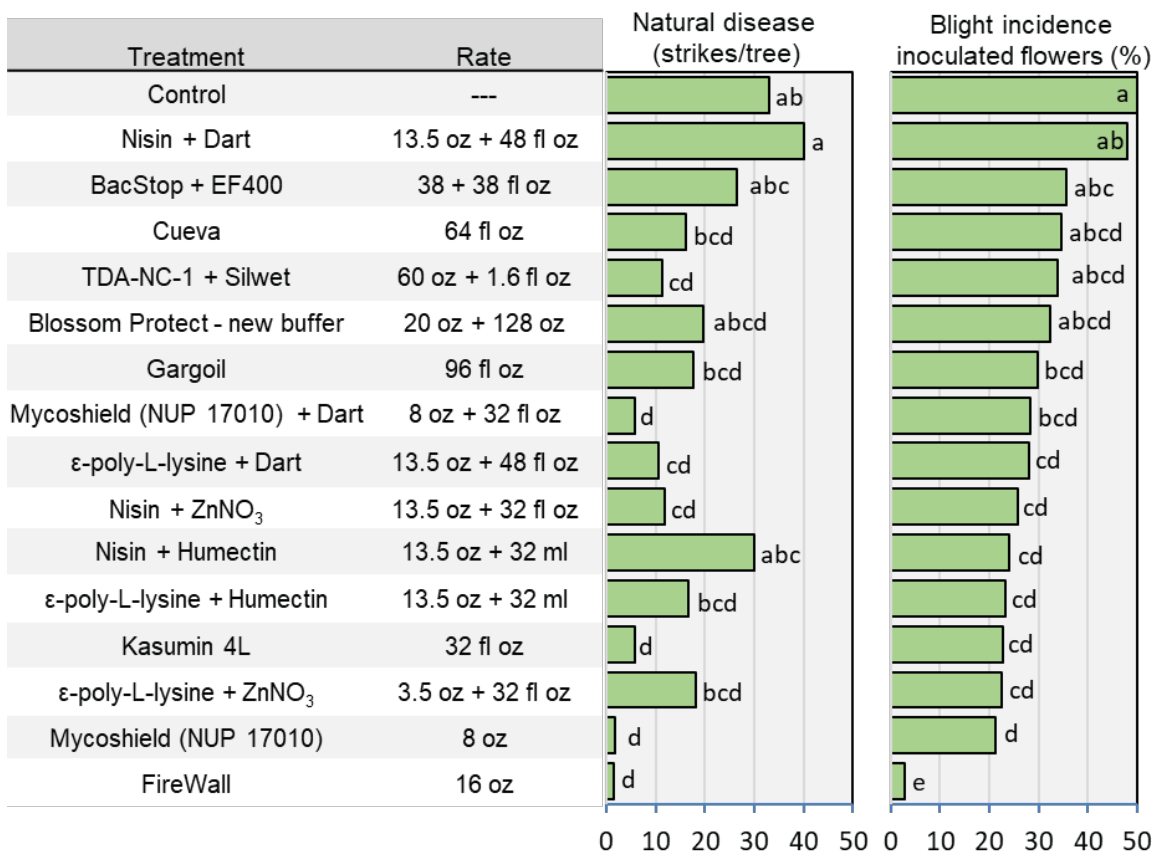
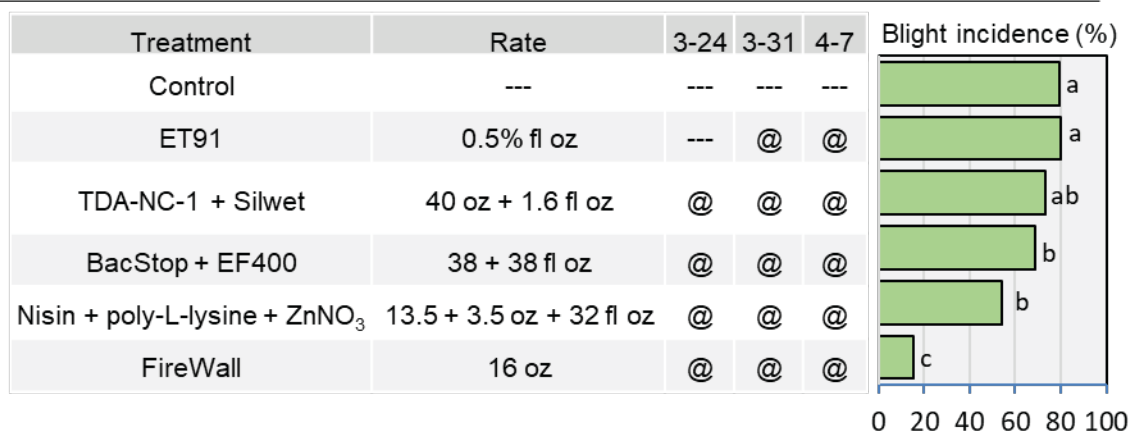


Fig. 4. Efficacy of bactericides for management of fire blight of Bartlett pears, Live Oak, 2020



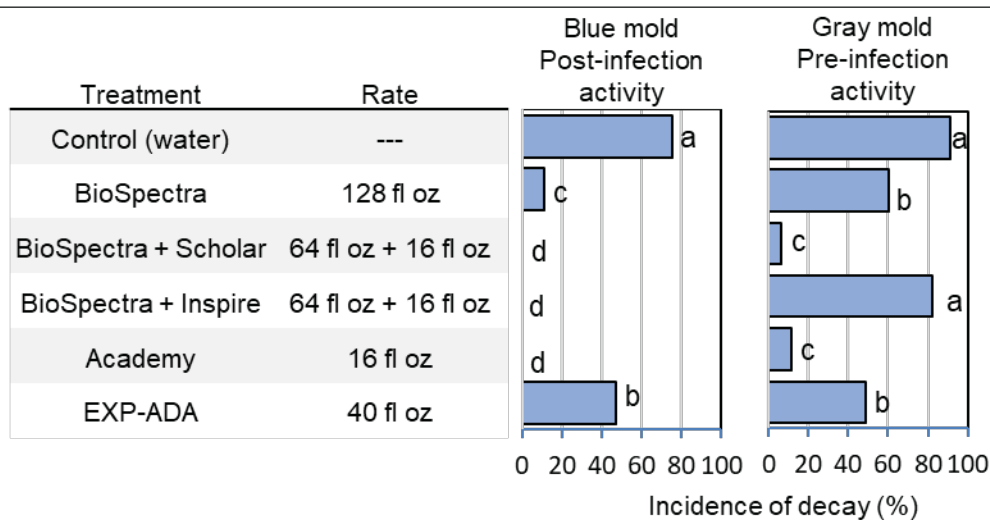
Treatments were applied on 3-18, 3-24, 4-1, and 4-7-20 using an air-blast sprayer. One branch with flowers per tree was inoculated with *E. amylovora* on 3-24-20 after the application. Inoculated flowers were evaluated on 4-7-20, and natural incidence was determined on 4-22-20.

Fig. 5. Efficacy of new bactericides for management of fire blight of Comice pear in a small-scale field study at UC Davis 2020



Treatments were applied using an air-blast sprayer. Flowers of one branch per tree were inoculated with *E. amylovora* after the third application. Disease was evaluated after one week.

Fig. 6. Evaluation of postharvest treatments for managing postharvest decays of Granny Smith apple in an experimental packingline study



Fruit were wound-inoculated with *P. expansum* 15-16 h before treatment or with *B. cinerea* after treatment. Treatments were done by aqueous in-line drenches that were followed by a CDA application with carnauba wax. Fruit were then incubated at 20C for 7 days.

Effect of gamma irradiation and other post-harvest treatments on ripening and postharvest defects in “Granny Smith” apples

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Superficial scald is a disorder that is manifested in stored apples when fruit is brought out of cold storage. This disorder has been associated with ethylene production. The objective of this study was to compare low dose irradiation treatment with other commercially used postharvest treatments on scald development in ‘Granny Smith’ apples and to explore the role of ethylene in scald development. Organic ‘Granny Smith’ apples were treated with gamma irradiation at 240 Gy, DPA at 2,200  $\mu\text{g L}^{-1}$ , 1-methylcyclopropene (MCP) at 1.0  $\mu\text{L L}^{-1}$  and methyl bromide (MB) at 8.0  $\mu\text{L L}^{-1}$ . Treated and control apples were stored at 1 °C for 1, 90 and 150 days plus 7 days at room temperature. Ethylene production, respiration rate, superficial scald index, color, firmness, TSS and TA were measured on fresh fruit. Our results showed that the irradiation and MCP treatments significantly reduced the production of ethylene, followed by DPA treated apples. Control and fumigated apples had the highest ethylene levels at every time point. The incidence of superficial scald was low after 90 days of storage and similar among all treatments. After 150 days of storage, scald intensity was low in DPA and MCP treated apples compared to control, irradiation and MB treated apples which exhibited moderate severity. In term of quality, we observed that irradiated apples were more yellow suggesting accelerated ripening while DPA and MCP treatments maintained a greener color in the apples. This observation was supported by

lower TA and higher TSS/TA ratio in irradiated apples although irradiated, along with MCP treated apples, had the highest firmness after 90 and 150 days in storage. Our results show that low ethylene production in DPA and MCP treated apples correlated with low superficial scald. However, in irradiated fruit, while ethylene production was reduced, the incidence of superficial scald was not impacted. Our results suggest that 240 Gy might be too low to affect superficial scald development, or that scald development might be influenced by factors other than ethylene. We will repeat this study to evaluate year-to-year variation in fruit and its response.

**Acknowledgements:** We would like to thank Elizabeth Carranza and the California Apple Commission, and Sterigenics for carrying out the irradiation treatment. This project was supported with funding from a Farmbill grant.



**Project Title:** Study on Mechanical Mass Harvesting of Cling Peaches

**Project Leader:** Stavros Vougioukas.

**Collaborators:** Elizabeth Mitcham.

**Location:** Biological and Agricultural Engineering Department, Un. of California, Davis.

**Duration:** 01-Jun-2018 - 31-May-2019: *No cost extension granted until July 13, 2021*

**Report Authors:** Stavros Vougioukas, Elizabeth Mitcham, Dennis Sadowski, Kelly Richmond

## 1. INTRODUCTION

Harvesting is one of the most labor-intensive operations in cling peach production. A 2011 UC ANR production cost report for processing peach (cling and freestone) estimated the hand-picking and field-sorting cost for processing peaches at \$1,200/acre, using \$10.97 per hour for general labor including payroll overhead at 33% (Norton, Hasey, Duncan, Klonsky, & De Moura, 2011). This translated to 78% of the total harvest cost, which includes hauling to the packinghouse, and 29.2% of the total operating per acre cost. Labor cost will increase significantly due to recent legislation. Perhaps the greatest problem though, is that in addition to cost, supply of skilled pickers is decreasing; hence, risk of losing crop is increasing too. Therefore, cling peach growers face a great and urgent need for mechanical harvesting solutions.

Cling peaches can be harvested mechanically using tree shaking and fruit catching systems. However, excessive fruit damage is still a problem. Although improvements in the design of the shaker and the catching system can somewhat improve fruit quality, it is well known that a major source of mechanical damage is due to limb-fruit collisions during fruit-fall through the canopy. Existing shake-and-catch systems cannot address this problem. Some tree architectures, like Y-shaped trees with few overlapping scaffolds are easier to harvest mechanically (Peterson et al., 2005). Prototype limb-shaking harvesters for such trees have been developed with encouraging results (cherries: Peterson, Wolford, 2003a; apples: Peterson, Wolford, 2003 b). However, the majority of existing cling peach orchards in California have not adopted such architectures and solutions for existing orchards are needed.

This three-year research project investigates novel approaches to intercepting fruits at multiple heights during a shake-and-catch operation, so that they are collected before they hit tree branches. Multi-level catch systems have been tried in the past for apples by Rehkugler & Markwardt, (1971) and Millier et al., (1973). Mehlschau et al., (1977) developed a similar system for plums and pears. Systems that intercepted and collected fruits at intermediate heights had better performance compared to systems where fruits just ‘trickled down’ to be collected on a single catching surface.

Using funding by the Pear Advisory Board, the Cling Peach Mechanization Fund, and USDA-NIFA, the Bio-Automation Lab at UC Davis has built detailed models of pears and cling-peach trees and the positions of their fruits (Arikapudi, Vougioukas, Saracoglu, 2015; Arikapudi, Vougioukas, Jiménez- Jiménez, Khosro Anjom, 2016). We have also developed and utilized simulation models to confirm that properly deployed multi-level cylindrical rods that penetrate into the canopy can intercept up to 90% of falling fruits before they hit any (digitized) tree branch (Munic et al., 2016). Of course, this number is an “optimistic” estimate, which however can be used to guide the design process. These results prompted the investigation of alternative designs for multi-level fruit catching surfaces.

The long-term goal is to design, build and test a prototype system that inserts multiple catching surfaces into the canopy before shaking, and effectively reduces fruit damage during shaking and falling. The envisioned system would be compatible with existing fruit tree architectures and – as much as possible – with existing shaking operations and equipment, if with minor modifications.



## 2. Prototype Catching Surface

A prototype catching surface consisting of aluminum booms with inflatable side tubes was constructed at UC Davis. Each boom was made from a three inch square thin-wall aluminum tube nine feet long. Twenty-six holes were drilled on each of two opposite sides of the boom and short lengths of 2 inch PVC pipe were epoxied to each hole in the boom. Tubes formed from 6 mil thick polyethylene film were attached to the PVC pipe nipples with hose clamps. Each tube had a diameter of 2-3/8 inches and length of 16 inches. The tubes could be folded and inserted into the boom and then extended from the boom by supplying a small amount of air pressure to the boom. Two booms were mounted on a carriage frame and spaced 34 inches apart. A third boom without inflatable tubes was placed in the center of the frame to provide support to the free ends of the inflatable fingers. Figure 1 is a drawing of the boom and frame test apparatus mounted on a scaffold.

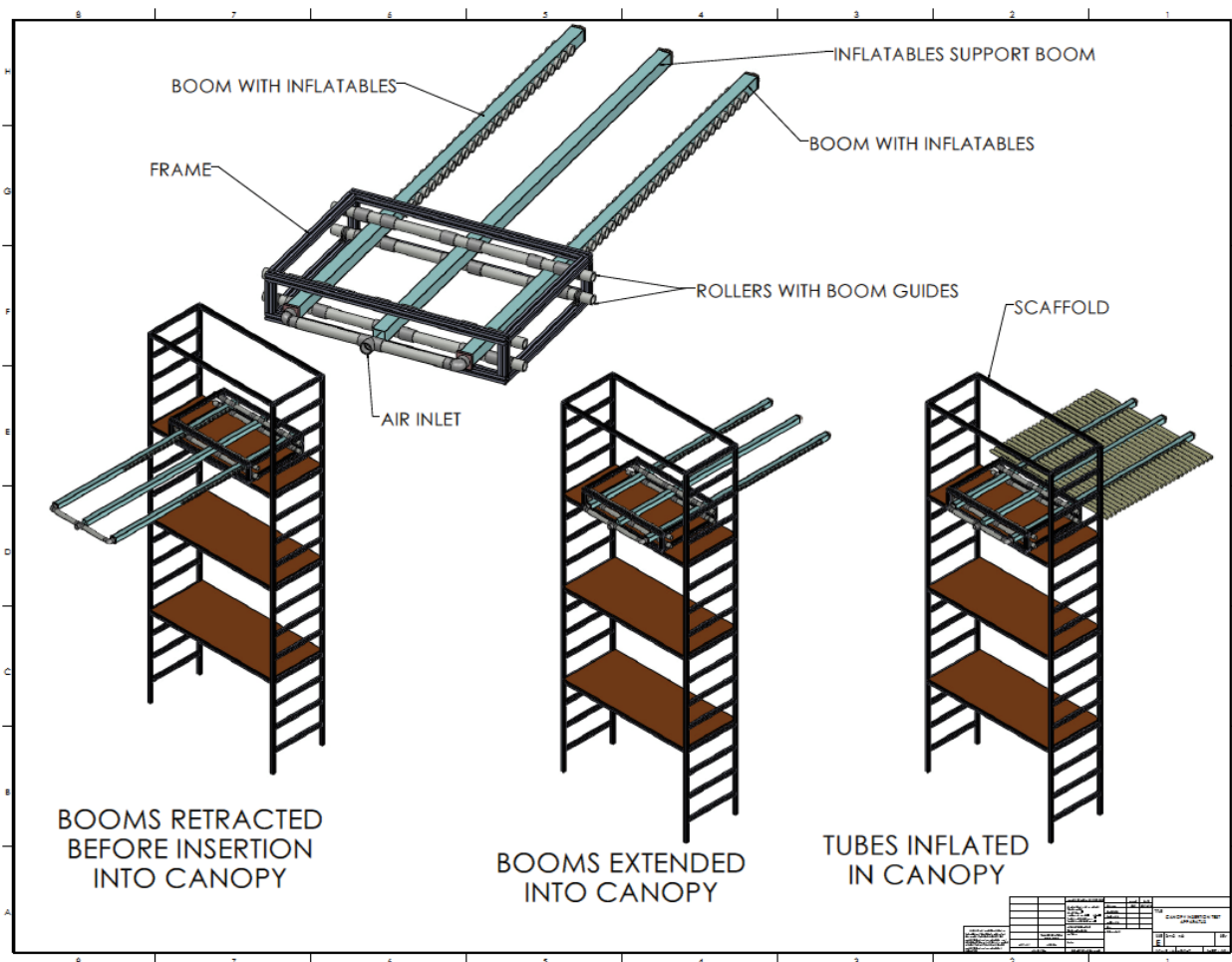


Figure 1. Boom Insertion Test Apparatus.

## 3. FRUIT CATCHING EXPERIMENTS

The boom and carriage apparatus described in the previous section was taken to a cling peach orchard at Live Oak, CA owned by Justin Micheli, to determine if fruit landing on the catching surface sustained damage. The peaches were harvested on August 31<sup>th</sup>, 2018 about one week after the peak of commercial ripeness. The orchard we harvested from was severely infested with brown rot. It was difficult to obtain peaches that were not infected with brown rot or directly adjacent to infected fruit. Fruit for the

mechanical harvest trials was collected from four different trees with roughly 60 fruits harvested from each tree. Fruit for the control harvest trials was collected from the five trees used for the mechanical harvest plus one additional tree along the same row in the orchard. About 60 fruit were collected from each of these trees. The control harvest fruit were picked by hand, sometimes using shears to separate them from the tree, then placed into boxes for transport back to UC Davis for evaluation.

To simulate fruit shaken loose by a trunk shaker and intercepted by our system, we used the following procedure. The assembly was mounted on a portable hoist with a 16 foot reach which allowed us to easily adjust the height of the catching surface and insert it into the tree canopy by rolling the hoist toward the tree. The booms were inserted into the canopy approximately 12 inches below the highest fruit-bearing branches and the tubes were inflated. To complete the boom insertion testing, the booms were inserted into a canopy and pressurized to a little more than 1 PSI, causing the tubes to pop out of the booms and reach full inflation. Flexibility of the tubes allowed them to deflect around branches and form a catching surface with only a few gaps. Figure 2 shows the boom and carriage inserted in a canopy and the catching surface. Figure 3 presents more photographs of the catching surface inside a canopy.



*Figure 2 Booms inserted into cling peach tree canopy, as viewed from the side (left) and underneath (right).*





*Figure 3 Catching surface created by inflated tubes, viewed from above (left); underneath (center); sideways (right).*

After the booms were inserted, researchers on ladders reached into the canopy and detached undamaged fruit, allowing it to freely drop onto the catching surface (Figure 4). When that level of fruit had been harvested, the fruit was carefully removed from the catching surface and placed in cardboard boxes. The tubes were then deflated but not withdrawn into the booms and the booms were retracted from the canopy. The assembly was lowered such that the catching surface would again be no more than 12 inches below the desired fruit zone. In a full-scale system layers of catching surfaces would be spaced no more than 12 inches apart to minimize drop distance and subsequent fruit damage. This procedure was repeated at various heights in different trees until approximately 240 samples had been collected. These booms did not incorporate a mechanism to automatically retract the tubes, so the booms were depressurized and the tubes manually refolded and reinserted into the booms. This procedure was repeated for different canopies.



*Figure 4 Fruits after having landed on inflated tubes.*

## 4. POSTHARVEST FRUIT QUALITY EVALUATION

The cling peaches were harvested in the morning then immediately transported back to the Postharvest Center at UC Davis. When the peaches arrived at the Postharvest Center they underwent an initial sorting before going into storage to remove any diseased fruit that might have been missed in the initial harvest. To prevent additional ripening all fruit was stored in a temperature controlled room at 0°C. The peaches were kept at 0°C for 5 days. After the 5 day period we sought to compare our two harvest treatments by performing three evaluations a pre-peel, post-peel, and canning.

### 4.1 Pre-Peel Evaluations

We selected 180 peaches from the control harvest and 180 peaches from the mechanical harvest. Fruit that was most similar in size and ripeness were picked for the evaluations. Each fruit was scored on six main quality traits. These included bruising score, number of bruises, number of punctures, number of scrapes, disease, and insect damage. Every fruit for both treatments was inspected visually for any bruises or wounds it might have occurred during the harvest process. Each bruise, puncture, and scrape was recorded. The bruising score was assigned on a scale of 0-3; 0= no bruises, 1=1-4 bruises, 2=5-9 bruises, 3= +10 bruises. Insect and disease were recorded as a binary measure for each fruit. There was not always a clear line between when one spot of disease or insect injury began and another would begin so we chose to simply mark if the fruit had the specific problem or not.

## 4.2 Post-Peel Evaluations

One day after the pre-peel evaluations were performed all peaches were transported to the UC Davis Food Processing Pilot Plant for the post-peel evaluations. Peaches were run through the Pilot Plant's lye peeling line to achieve a clean peel for the entire fruit and prepare them for canning. Once a peach was peeled it was immediately evaluated using the same quality parameters as the pre-peel evaluations. As a peach passed through the lye line it was cut completely in half to remove the pit. We evaluated each half individually and combined the scores of two half pieces to get the score for a whole fruit. After the post-peel evaluation was performed the peaches were canned according to the UC Davis Pilot Plant procedure in a 29.9 degree brix solution.

## 4.3 Canning Evaluations

The final evaluation looked at the level of browning incurred on the peaches after canning. The post canning evaluations occurred 55 days after the peaches were initially canned. We evaluated two sets of cans that corresponded to our two different harvest methods. The first set had 68 total cans from the control harvest and the second set had 62 cans from the mechanical harvest. Because the canning process requires each can to have an identical weight, peach halves that came off the lye peeling line were sometimes cut into even smaller pieces to make the necessary weight. The main piece sizes we encountered were half fruit, quarter fruit, slice, and small piece. For the purpose of this study we are focusing on the two largest sizes the half and quarter fruit. We visually evaluated each fruit piece to determine the amount of browning on the surface. The amount of browning was broken down into five categories based on the amount of surface covered by browning; All, Half, Three Quarter, One Quarter, None.

# 5. RESULTS AND DISCUSSION

## 5.1 Boom Insertion

The boom insertion test showed that rigid booms could be successfully inserted into complex tree canopies to create a substantial soft catching surface for falling fruit. In most instances the booms were able to extend to their limit. If the booms can be made with a little more flexibility to allow them to deflect around limbs, then even greater penetration will be possible. The most challenging environment for boom insertion is at the base of the canopy where the limbs are larger and closer together. Insertion becomes easier higher up in the canopy.

Inexpensive polyethylene film used to make the inflatable fingers is OK for tests like this, but may not be durable enough for long term use. Therefore we have been examining other materials such as heat sealable taffeta and rip stop nylon for use as inflatables.

In typical orchards the spacing between rows of trees is narrow and the canopies may be nearly touching. In such cases long rigid booms will not fit in between the rows of trees. For this reason we have been examining ways to make shorter booms which can then be extended in a telescoping fashion. Booms such as this would not have fingers protruding from the sides. Instead they may have a rigid telescoping tube underneath an inflatable tube. A large number of closely adjacent booms could then form the catching surface. When retracted, the boom array would be narrow enough to drive between rows of trees and when extended would penetrate to the centerline of the canopy. An advantage of telescoping booms is



that the fruit could be pulled into the base of the array when the boom is retracted. Details of this system are currently being worked out, but the approach looks promising and a prototypes will be built in Year 3.

## 5.2. Postharvest Fruit Quality

Figure 5 shows the damage occurred on Cling Peaches from “mechanical” and hand harvest methods, whereas Figure 6 and Figure 7 show browning on canned half fruit and quarter fruit pieces. The term “mechanical” is used to refer to the process of detaching peaches from the tree and letting them fall on the inflated tubes.

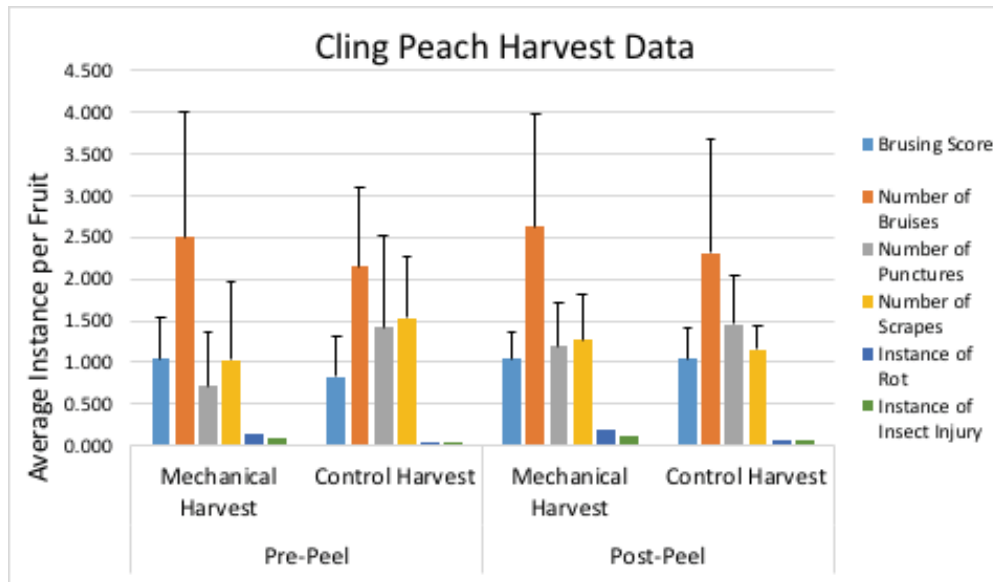


Figure 5 Damage occurred on Cling Peaches from mechanical and hand harvest methods. Fruit was evaluated using the methods described in section 2.

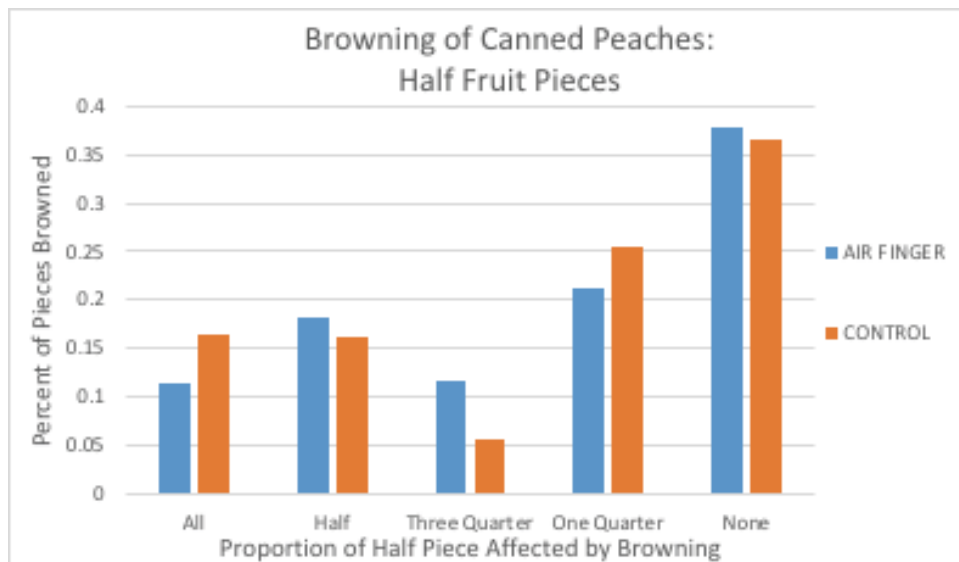


Figure 6 Amount of browning on canned Cling Peaches. Peach halves from both the control and air tube (mechanical) harvests were evaluated for the amount of browning after canning.

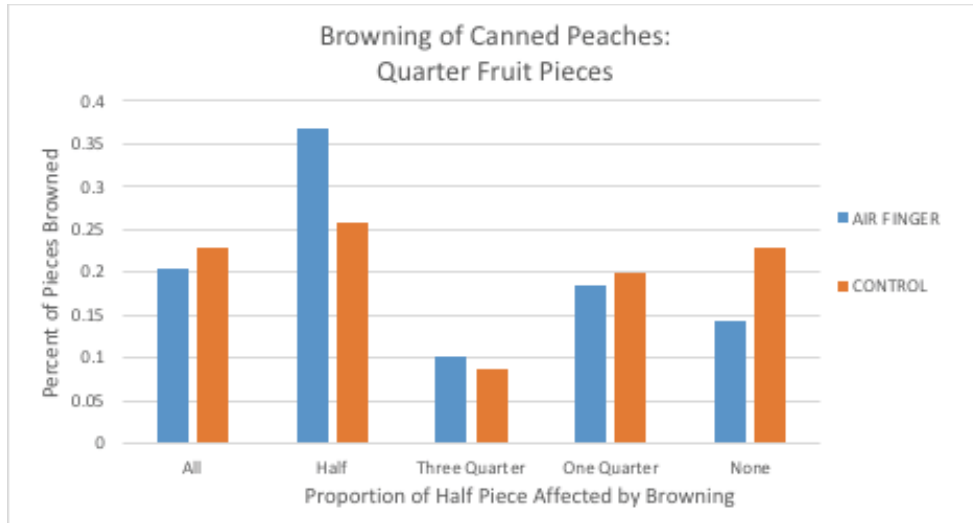
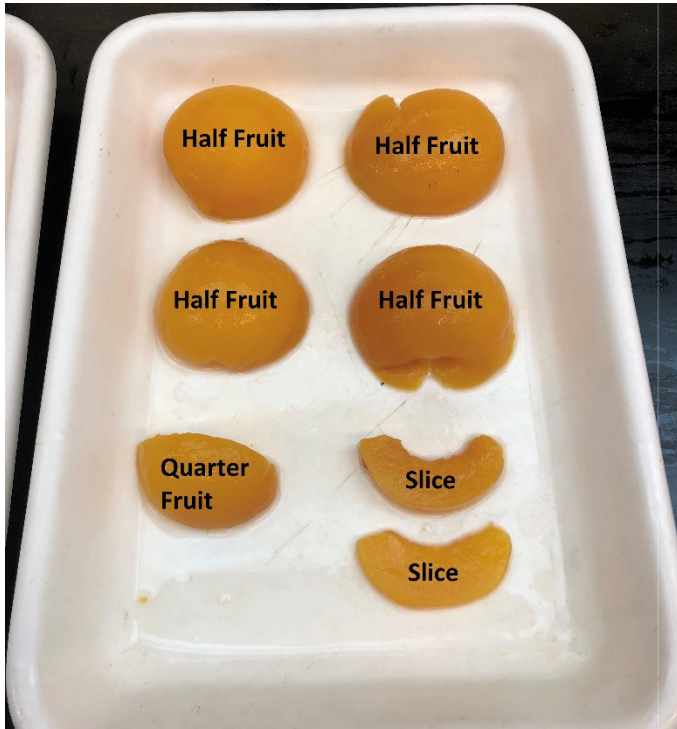


Figure 7 Amount of browning on canned Cling Peaches. Peach quarters from both the control and air tube (mechanical) harvests were evaluated for the amount of browning after canning.



Figure 8 Browning scale used on the Cling Peaches for the post-canning evaluation.



*Figure 9 Peach piece size scale used on the Cling Peaches for the post-canning evaluation.*

### 5.3 Conclusions

The results from our evaluations as displayed in Figure 5 show us that there is not a significant difference in the rate of injury between the two harvest methods. The bruising score for the two methods in the pre-peel evaluation were 1: Mechanical Harvest and 0.8: Control Harvest, while the scores in the post-peel evaluation were 1: Mechanical Harvest and 1: Control Harvest. Figure 5 also shows that there was not a large uptick in the number of punctures and scrapes in either of the two harvest methods between the first two evaluations. Because the fruit was harvested slightly over ripe any punctures or scrapes occurred usually reached past the skin surface and into the softer flesh. This meant they were visible in the both pre and post-peel evaluations.

Figure 6 and Figure 7 show the rate of browning between the two harvest methods after two months in cans. These figures show there was not any significant difference in browning between the two methods. Figure 9 shows the cans contained fruit pieces that were slightly smaller than the half and quarter fruit pieces we chose to focus on in our graphs. We decided not to include these pieces in our evaluations because they did not have enough surface area to provide a reliable visual of browning. The rate of browning in general is higher than would be normally expected in a commercial crop. This high rate is likely a result of harvesting over ripe peaches and the high rate of brown rot present in the field.

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## Project Summary

The U.S. apple industry features 244,000 acres of orchards which produce 240M bushels each year with a farm gate worth of almost 4 billion dollars. Apple rootstocks are the foundation of a healthy and productive apple orchard. They are the interface between the scion and the soil, providing anchorage, water, nutrients, and disease protection that ultimately affect the productivity and sustainability of the orchard. Dwarfing and early bearing apple rootstocks provide unique advantages in fruit growing as they increase the efficiency of fruit production by making the orchard amenable to high density and automated or mechanically assisted operations. Most commercial dwarfing apple rootstocks being used by the U.S. industry are susceptible to devastating diseases (fire blight, apple replant disease, viruses), can be intolerant to other abiotic stresses (cold, drought, nutrient deficiencies, poor water quality) and may not be physiologically compatible with existing grafted scion varieties. This research project concerns breeding and evaluation of improved apple rootstocks and developing an understanding of the genetic and physiological components of apple rootstock traits. In cooperation with other USDA units, universities, and private concerns, the project aims to develop and release improved apple rootstocks and apply genomic, phenomic and bio-informatic tools for marker assisted breeding of apple rootstocks while leveraging discoveries in plant nutrition and root morphology. Research work in greenhouse, laboratory, nursery, and field plots, whether located at the PGRU or at cooperators' facilities, will be used to evaluate the characteristics of interest and examine new rootstock selections for commercial adaptation. The project utilizes cost efficient state of the art technologies to understand how rootstocks can make the orchard more productive and apply such knowledge to develop improved rootstocks. This research impacts all U.S. apple producing regions, with the potential to improve productivity, safety and survivability of apple orchards by 10% to 20% when new rootstock technologies are implemented, and increasing labor efficiency by enabling mechanization of cultural practices.



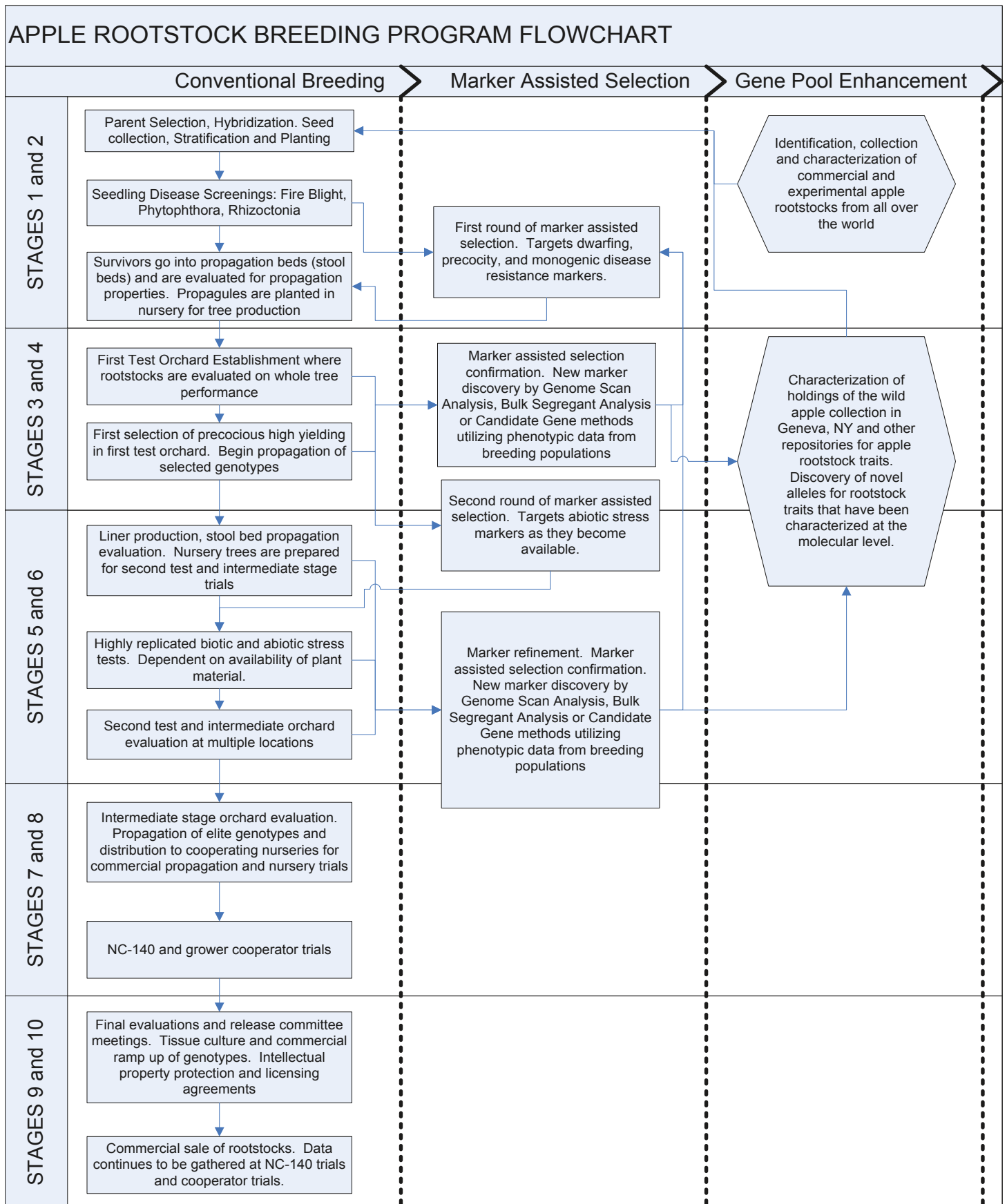


Figure 1. The breeding program has plants in all stages of breeding



## Objectives

The Geneva® Apple Rootstock Breeding Program has a good track record of providing superior apple rootstock genotypes that are more productive and disease resistant than currently available rootstocks for the U.S. and world apple industry. The program will pursue this by means of best affordable technology available, including novel methods of high throughput phenotyping, genomic and bioinformatic tools.

- **Objective 1: Develop and release improved apple rootstocks by leveraging advances in marker assisted breeding, including construction of genetic maps, establishing trait associations, gene discovery for important rootstock traits (dwarfing, early bearing, yield efficient, fire blight resistant), and screening for novel alleles for important rootstock traits. [NP301, C1, PS1A, PS1B]**
  - **Sub-objective 1A** *Perform all breeding and evaluation stages involved in the 15-30 year process (timeline depending on intensity of phenotyping and need to fast-track) of developing new rootstocks with the assistance of recently developed breeding tools, such as high throughput phenotyping and marker-assisted breeding.*
  - **Sub-objective 1B** *Identify and characterize novel germplasm, genes, alleles and trait loci through quantitative trait analyses leveraging new genetic-physical maps.*
- **Objective 2: Identify and dissect important rootstock traits that modify gene activity in the scion, toward enhancing drought tolerance, tree architecture, propagation by nurseries, root growth and physiology, nutrient use efficiency, and disease resistance; incorporate this knowledge into breeding and selection protocols. [NP301, C3, PS3A; C1, PS1A]**
  - **Sub-objective 2A** *Identify components of rootstock induced traits that modify gene expression and metabolic/physiological profiles of grafted scions to increase tolerance to abiotic stresses, improve fruit quality and storability, increase tree productivity, disease resistance and nutrient use efficiency.*
  - **Sub-objective 2B** *Validate relationships between trait components and overall apple tree performance in different rootstock-scion combinations and incorporate new knowledge into breeding and selection protocols.*

## Need for Research

### Description of problem to be solved:

The United States has 7,500 apple producers who, collectively, grow 240 million bushels of apples on average each year on 322 thousand total acres of land. The farm-gate revenue, or wholesale value, of the U.S. apple crop annually is close to \$4 billion, with a predicted additional \$14 billion related downstream economic activity each year (U.S. Apple Statistics). Members of the U.S. apple industry and industry groups (Washington Tree Fruit Research Commission – WTFRC, New York Apple Research and Development Board - NYARDP, U.S. Apple, etc.) have prioritized national and localized research needs that address problem areas identified by stakeholders. For example research needs in the “critical” and “high priority” for 2017 by the WTFRC included “soil health” and “improved rootstock and scion genetics”, highlighting the importance of new rootstock technologies to promote sustainability, efficiency and increased productivity for their industry

([http://www.treefruitresearch.com/images/2017\\_apple\\_hort\\_postharvest\\_priority\\_list.pdf](http://www.treefruitresearch.com/images/2017_apple_hort_postharvest_priority_list.pdf)). Secondary to the choice of a scion variety, the choice of rootstock is perhaps the most important orchard establishment decision growers make because rootstocks affect productivity, fruit quality, orchard longevity, mechanization and many other aspects of apple production. Another aspect that was not evident until recent experiments is that there is a scion by rootstock interaction that can be leveraged to make the system more (or less) efficient i.e. the scion variety Honeycrisp produces more good quality apples with G.890 as a rootstock than G.210. Understanding the underpinnings of that interaction and designing new rootstocks that can be classified or localized to a specific environment and scion variety is very important to apple growers. The scion-rootstock-environment interaction begins at the soil-root interface where water, soil properties, nutrients and rhizospheric biota mingle with rootstock genetics to affect whole tree traits like drought tolerance, nutrient uptake efficiency, anchorage, and replant disease disorder etc. The

interaction continues as the rootstock transcriptome, metabolome, phytohormone apparatus sends and receive signals from the scion – with the graft union as the interface between the two genotypes. More research is needed to understand those interactions and produce improved rootstocks that increase the profitability of the apple industry.

**Relevance to ARS National Program Action Plan:**

Apple growers require improved, economically and environmentally sustainable production systems to compete in the international fruit market. They are doing this by establishing high-density orchards of high-value cultivars. The apple rootstock determines many key aspects of tree performance, including tree size, productivity, fruit quality, nutrient uptake efficiency, pest resistance, stress tolerance, and ultimately profitability. New, improved rootstocks that incorporate improvements in biotic and abiotic stress tolerance/resistance traits are essential to grower profitability because in modern orchards, rootstocks are subjected to numerous biotic and abiotic stresses – rhizospheric pathogens, temperature, water availability, soil pH, and fertility. These stresses end up affecting not only tree productivity, but also the quality of fruit being harvested. The returns from high-density plantings far exceed those of low-density plantings. However, the initial investment may cost 10 times more for high-density plantings than low-density plantings, thus greatly enhancing economic risk. A key component of high-density apple production is the rootstock. The rootstock can induce early cropping, thus allowing close plant spacings. It is critical to develop more rapid means of screening potential rootstock candidates for susceptibility to stresses, to understand how different rootstocks respond to biotic and abiotic stresses, and to develop recommendations for the use of particular rootstocks under changing orchard conditions and production practices. Understanding factors contributing to apple root physiology – stress tolerance, nutrition, and growth related gene networks is vital. Knowledge of the physiological mechanisms that underlie these responses will allow for the development of genetic maps, molecular markers for target traits, new marker assisted breeding strategies, cultural practices, and ultimately practical means for mitigating various stresses for industry.

The proposed research is relevant to the NP 301 Action Plan, Component 1 – Crop Genetic Improvement; Problem Statement 1A: Trait discovery, analysis, and superior breeding methods; Problem Statement 1B: New crops, new varieties, and enhanced germplasm with superior traits; and to Component 3 – Crop Biological and Molecular Processes; Problem Statement 3A: Fundamental knowledge of plant biological and molecular processes.

**Potential benefits expected from attaining objectives –**

**NP 301 Action Plan Anticipated Products to which the project will contribute -**

- 1. Higher yielding plants.
- 2. Plants with resistance or tolerance to diseases and pests.
- 3. Plants tolerant to environmental changes or extremes.
- 4. Plants optimized for production efficiency.

**Specific project products and/or outcomes:**



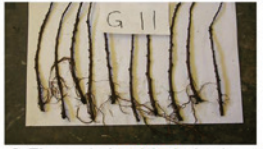

- New apple rootstock varieties with superior performance with regards to dwarfing, productivity and disease resistance.
- New understanding about genetic effects of apple rootstock on several whole tree health traits including tolerance to replant disease, nutrient absorption and translocation.
- New understanding about the application of tree architecture modifying rootstocks to make the orchard/nursery more amenable to mechanized operations.
- Incorporation of new alleles/traits in the apple rootstock breeding pool. Identification and characterization of new gene pools for apple rootstock traits.

- Genetic maps, robust, haplotype-specific molecular markers linked to important traits, and new marker assisted breeding protocols.
- Generation of mass-gene expression profiles of rootstocks in breeding populations and integration of expression profiles with marker assisted breeding.

### **Customers of the research and their involvement**

Our customers are all apple growers, especially those in the regions affected by fire blight (Northeast, Midwest, Northwest U.S.) and growers who plant in soil that is symptomatic for Apple Replant Disease. These customers include small, medium and large conventional and organic fruit growing companies – growers like Jennifer Crist and Jim Bittner in New York and Mike Wittenbach in Michigan who have planted field trials of Geneva® rootstocks because of their need to find better stocks that are resistant to fire blight and that will perform well under organic management (Singer Farms -Bittner); growers near the tri-city area in Washington where they witnessed increased incidence of fire blight in the last five years; and growers in the Yakima (WA) who will need to replant a quarter of older orchards in the next 10 years while virgin land, optimal for apple orchards, is becoming rare in the same area, leaving no alternative to replanting on previous orchard sites needing fumigation with harmful chemicals. Another customer group is made up of organic apple growers and growers participating in integrated pest management like Stemilt Growers Inc., the largest multiple apple variety shipper in the US and the largest organic apple grower in the state of Washington. Two other important customer groups are apple growers planting high density orchard systems and nurseries supplying North America that specialize in the production of apple rootstock liners and finished apple trees, like Richard and Brett Adams of Willow Drive Nurseries (Ephrata, WA), who are propagating test rootstocks for research trials in the US, Devin Cooper, owner of Willamette Nurseries (Canby, OR), Brett Smith of Treco Nursery (Woodburn, OR), Cliff Beumel of Sierra Gold Nurseries (Yuba City, CA), and Todd Cameron of Cameron Nurseries (Quincy, WA) who are among the several nursery operators that are propagating Geneva® rootstocks and selling liners or finished trees to growers everywhere in the US. Additional customers include international apple nurseries and growers that have found value in adopting superior apple rootstock varieties produced by this program.

Commercial apple trees are a combination of two different genetic types: the **rootstock (root system)** and the **scion (aerial system)** which bears fruit.

1. The rootstock mother plants are layered with saw-dust in a stoolbed to generate rooted rootstock shoots
2. The rooted rootstock shoots are harvested from the mother plant and planted in a nursery
3. A bud from a scion variety like Gala or Granny Smith is grafted on the rootstock
4. The scion bud grows into a shoot and then into a mature apple tree. The rootstock will influence the productivity, size and precocity of the apple tree.

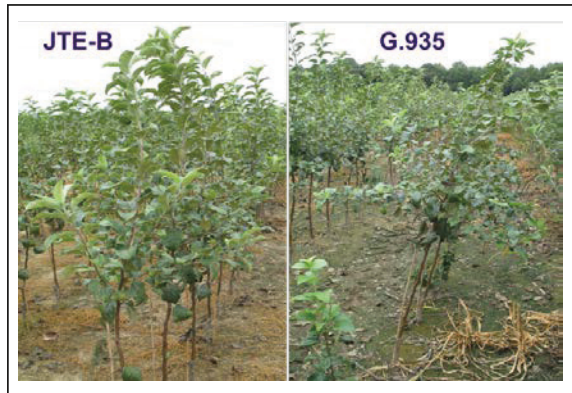


Figure 3. Comparison of nursery tree architecture featuring a flat branching rootstock, G.935 (right), versus an upright branching rootstock (JTE-B).

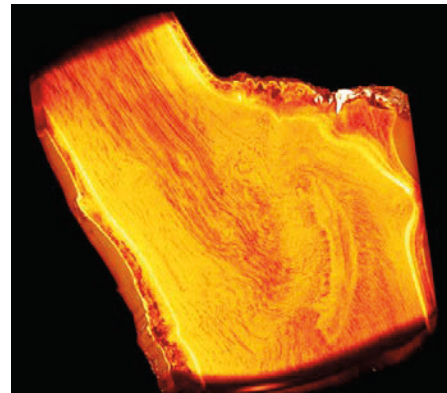


Figure 4. Micro CT scan of a graft union of Honeycrisp on G.41 showing the region where the bud was placed and the unorganized formation of some vessels that may contribute to graft weakness.

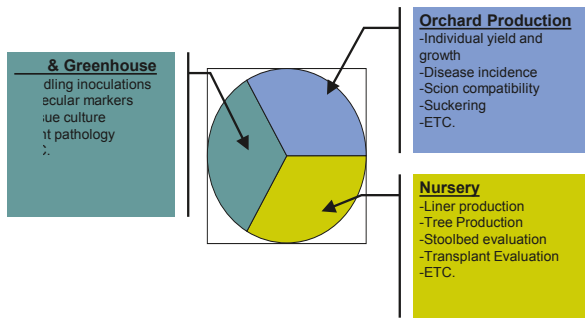


Figure 5. Activities of the apple rootstock breeding program. Laboratory, orchard and nursery components are essential for the success of the program.

Table 1. Selection traits for breeding apple rootstocks. These traits are sometimes evaluated at different locations by the many collaborators of the apple rootstock program.

	YEARS	
Fire Blight resistance	1 or 7	Greenhouse/Field
Phytophthora resistance	1	Greenhouse
Replant Disease Complex	1 or 7	Greenhouse/field
Wholly apple aphid res.	1-5	Greenhouse/field
Juvenility nursery - Spines	3-4	Field/Stoolbed
Stoolbed rooting	3-4	Field/Stoolbed
Growth habit - Brittleness	3-4	Field/Stoolbed
Dwarfing	8-12	Orchard
Precocity	8	Orchard
Suckering	8	Orchard
Yield - Biennial bearing	12	Orchard
Cold hardiness	15	Orchard
Drought tolerance	4	Orchard
Graft union compatibility	5	Orchard

## Scientific Background

**History and foundation germplasm** - The foundations of a productive and healthy orchard are the rootstocks that provide anchorage, water and nutrients essential to the above-ground portions of the trees. The utilization of composite trees has increased the efficiency of breeding productive apple trees by dividing the selection of scion traits and rootstock traits into two genetically (and functionally) different specimens, which are then brought together through grafting. The art and science of grafting scions onto rootstocks spans several millennia; it is thought that it was used initially to aid in the clonal propagation of desirable scion varieties for fruit and nut production (Janick, 2005). In these millennia, it is likely that very little attention was dedicated to the selection of a particular rootstock chosen for its properties (ease of propagation) and the properties it imparted to the scion (Tukey, 1964; Rom and Carlson, 1987; Webster, 2003; Webster and Wertheim, 2003). Clonal selection and the beginning of the science of rootstocks seems to have originated in the latter half of the last millennia, where at least for apple, certain rootstock clonal selections were identified to impart unique productivity and architectural properties (early bearing and dwarfing) onto the grafted scion variety (Monceau, 1768). It is very likely that these properties existed or were selected directly on own-rooted trees first as these trees were early bearing, inherently dwarfed and production of fruit from these curious apple plants was early and abundant compared to seedling trees (Loudon, 1822). The combination of small architecture and productivity is optimal for cultivation in fruiting gardens typical of monasteries, aristocratic and wealthy middle-class dwellings (Rivers, 1866), where the ‘Paradise’ apple, ‘Jaune de Metz’ (Lindley, 1828) otherwise known as Malling 9 (and relatives) could make grafted scions dwarfed, becoming popular in central Europe for making composite dwarfed trees (Hatton, 1917). Scientists at the East Malling Research Station in the United Kingdom, collected many clonal rootstocks from around Europe and painstakingly characterized each of them eliminated duplicates and established foundation material of rootstocks named ‘Malling 1-16’ (Hatton, 1919; 1920). Rootstock “Malling 9” (M.9) and its sport mutations became the primary rootstock that fueled the green revolution of dwarfed apple orchards that occurred in the twentieth century in many apple production regions of the world. Narrow crosses among the Malling rootstocks resulted in two widely used rootstocks: Malling 26 (M.26) and Malling 27 (M.27) that have improved propagability, and different forms of the early bearing and dwarfing effects. Most of the dwarfing founding germplasm was interrelated and had a narrow genetic base (Oraguzie et al., 2005; Gharghani et al., 2009), suggesting the need to introduce new forms of disease resistance and improvement on other horticultural characteristics through wide crosses with germplasm that exhibited the desired phenotypes (Aldwinckle et al., 1999; Momol et al., 1999; Forsline et al., 2002). The results of these wide crosses have produced a series of rootstocks that combine disease and insect resistance with productivity, and represent the second generation of rootstock technologies applied worldwide (Fischer, 1991; Wertheim, 1998; Fischer et al., 2000). The apple rootstock breeding program operated in Geneva, NY is the only one that has commercial deployment of results from these wide crosses. This breeding program has operated in Geneva, NY since 1968 by Cornell University Geneva Campus and joint with the U.S. Department of Agriculture Agricultural Research Service since 1998 (Johnson et al. 2001; Fazio et al. 2015b). This program produced the Geneva® series of apple rootstocks by crossing germplasm that complemented the weaknesses of the Malling germplasm (susceptibility to fire blight, woolly apple aphids, crown rots) and systematically crossed such germplasm with all available dwarfing, precocious rootstock germplasm available to the program (Gardner et al. 1980a, b). The parent Robusta 5 became the source of resistance to fire blight and woolly apple aphids (Aldwinckle et al. 1976; Aldwinckle and Lamb 1978; Cummins et al. 1983). Several novel traits have been identified in the Geneva® germplasm including induction of flat branching (or open tree architecture), increased nutrient concentration, and induction of bud-break in low chilling environments (Fazio and Robinson 2008; Fazio et al. 2012, 2013; Jensen et al. 2012). The Geneva® breeding program continues to make new crosses to improve tolerance to drought and other biotic and abiotic stresses that can be ameliorated in apple rootstocks. (Fazio et al. 2015b; Shin et al. 2016; Tworkoski and Fazio 2016; Tworkoski et al. 2016). As our understanding of physiology of apple trees, both at the whole tree level and at the cellular level, has increased, so has the understanding of how and what scion properties are modulated by rootstocks, thus increasing the target traits that may be

selected to improve whole tree performance by improving rootstock performance (Fazio and Mazzola, 2004). Improving rootstock performance involves two sets of very different types of traits: the inherent apple rootstock traits (rooting for propagation, lack of spines and burr knots, resistance to root pathogens, cold hardiness, etc.) which deal with the interaction between rootstocks and the environment, and scion traits that are modulated by rootstocks (tree architecture, productivity, etc.) that represent the interaction between rootstocks and scions.

**Breeding methods** -Breeding apple rootstocks can be a very lengthy process (Johnson et al., 2001a); there are two ways to accelerate the process: the application of marker- assisted breeding (MAB) in the pipeline and/or the intensification of later stages of field testing (Fazio et al., 2015b). The first aims to eliminate substandard germplasm (non-precocious, non-dwarfing, susceptible to diseases, etc.) from the parental and progeny pools via the development and application of robust diagnostic markers. The second is to increase the number of clonal plants tested for each elite genotype and subject them to multiple phenotyping tests and environments that represent production regions. The theoretical benefits from the application of marker technologies to breeding have been reported in publications (Bus et al., 2000; Fazio et al., 2003; Antanavičiute et al., 2012; Bassett et al., 2015). In 2011 the USDA- ARS apple rootstock breeding program located conducted an internal analysis of the economic impact of applying molecular markers in the breeding program by itemizing the cost per genotype for each stage of selection. A detailed description of the rootstock breeding program stages can be found in Fazio et al. (2015b). Briefly: stages 1 and 2 deal with parent selection, crossing, culling seedlings with disease inoculations and propagation of survivors; stages 3 and 4 deal with the establishment of plants as rootstocks in field orchards and propagation beds (see figure Fig. 1); stage 5 includes the evaluation of propagation beds and replicated tests on biotic and abiotic resistance. Stages 6—7 are secondary highly replicated tests and stages 8—10 deal with pre-commercial testing with multiple varieties and multiple locations. The Geneva breeding program elected to conduct the first round of MAB before stage 3, which involves the initial propagation of plants surviving *Phytophthora* root rot and fire blight screens. The cost of genotyping with two markers including DNA extraction and labor was about \$10 per seedling. The cost to phenotype each seedling for dwarfing and precocity during stage 3 (9 years of evaluation) in 2010 dollars was \$15.40/year for 9 years = \$138. The cost savings by culling non-dwarfing individuals was significant, and in 2012 we were able to plant 2 orchard rows of well- replicated, high- density first- test orchard instead of the 12 previously planted.

**Scion traits affected by rootstocks** - Until recently, the number of traits that were recognized to be modulated by apple rootstocks was pretty small: tree vigor, early bearing, and water use. This list has been expanded to new architecture components such as canopy shape and bud break (syllaptic branching), and effects on fruit size and quality, on disease resistance and on nutrient availability in the scion. Perhaps the biggest breakthrough in our understanding of rootstock effects on scions is the study that monitored gene expression changes in scion tissue by different apple rootstocks (Jensen et al., 2003; Jensen et al., 2010; Jensen et al., 2011; Jensen et al., 2012). At the cellular level, signals sent from the root system of different genotypes to the scion can change the expression levels of genes, which in turn change the composition of proteins and related metabolic processes and compounds in the scion. While there are no experiments in apple that have described the opposite interaction, it is safe to assume that this dramatic change likely occurs as signaling from the scion affects the way roots behave and grow. The science behind understanding the issue of communication and affinity between scion and rootstock seems to be in its infancy and has a lot of potential as the concept of “designer rootstocks” gets more traction in the industry.

**Tree vigor** -The reduction in tree vigor (Figure 2) is perhaps the most important trait imparted by apple rootstocks to the grafted scion (Tukey, 1964). It is imparted to the scion as an early termination of overall season growth (Seleznyova et al., 2008). The benefits due to this trait in modern orchards are enormous and range from increased efficiency in picking and tree management operations, including mechanization, to the decrease of pesticide inputs, ladder accidents, and other ergonomic issues (Groot, 1997a; Groot, 1997b; Masseron and Roche, 1999; Robinson et al., 2007; James and Middleton, 2011). At the physiological level, the dwarfing trait has increased the effective light interception and partition to fruit

production in the orchard and increased the production per unit area by at least 30% when compared to non-dwarfing rootstocks (Brown et al., 1985; Strong and Miller Azarenko, 1991; Atkinson et al., 1998). This means that for an industry worth \$4 billion like the U.S. industry at least \$ 900 million are a result of the efficiency gained through dwarfing rootstocks. While the genetic components to this trait have been described to be the interaction of two main loci (Fazio et al., 2014b) and perhaps additional modifying loci (Harrison et al., 2016, Foster et al. 2015) it is important to mention that this is a complex trait that has fairly big interaction components and that the total effect of these components results in the overall vigor of the tree. Therefore for any scion 'S', the vigor 'V' is equal to the inherent growth dynamic genetics of the scion 'Sg', plus the dwarfing genetic components of the rootstock 'Rg', plus their interaction, plus the interaction of the whole composite tree with environmental effects 'E' such as fertility, water availability, diseases, soil type, soil pH, and soil type, or orchard management, weed competition, and the like, so that when scion vigor is measured, the genetic components of dwarfing rootstocks are only a part of the equation. This is exemplified by observing the effect of stunting caused by soil-borne replant disease, which has a similar effect to the dwarfing loci in apple and sometimes confuses the estimation of vigor potential of a rootstock (Auvil et al. 2011).

While several architectural dwarfs have been identified in domesticated and wild apple populations (Fazio et al., 2009a; Fazio et al., 2014a), this material has not produced commercially viable rootstocks or has not been tested for similarity to the dwarfing characters offered by the alleles contained in M.9, M.8, M.13 and other Malling rootstocks belonging to the initial set selected in East Malling. The dwarfing trait has been shown to be highly heritable, modulated mainly by the combination of alleles of locus Dw1 found on chromosome 5 (Rusholme et al., 2004; Pilcher et al., 2008) and locus Dw2 found on chromosome 11 (Fazio et al., 2014b). Models that take into account some or all combinatorial allelic effects of these two loci have been able to explain upwards of 80% of the genotypic variation for dwarfing (Foster et al., 2015). The two loci interact with each other and do not necessarily seem to be additive, meaning that the lack of one dwarfing locus effect in the model negates the effect of the other. Several physiological models based on phenotypic observation have hypothesized the involvement of hormone signaling (Zhang et al., 2015; Tworkoski and Fazio, 2016), graft union anatomy (Tworkoski and Miller, 2007; Tworkoski and Fazio, 2011), hydraulic conductivity (Atkinson et al., 2003; Cohen et al., 2007), dry matter partitioning to fruit production, or a combination of these (van Hooijdonk et al., 2011), while the underlying causative genes are still largely unknown. Evaluation of this trait for breeding still requires a lengthy period of 7–10 years for the first observation and perhaps another 10–12 years for multi-location trials with multiple scions. As mentioned in the beginning of this section, multiple field trials are needed to evaluate rootstock interactions with different scions and environmental factors.

***Induction of early bearing in scions*** - Apple seedlings planted on their own roots experience a juvenile period anywhere from 4–7 years before they reach sexual maturity and bloom and fruit (Visser, 1967). Some dwarfing rootstocks have the ability to induce early bearing or reduce the juvenile period to 2 years in extreme cases (Visser and Schaap, 1967; Visser, 1973). Early bearing is a major selection criterion for improved apple rootstocks because the intensive types of cultivation of apple require a quick return on investment (early production of apples) to offset the installation and infrastructure costs to build the orchard (Cummins et al., 1995; Robinson et al., 2007; Robinson et al., 2011). The genetic loci underlying the rootstock-induced trait 'early bearing' were first described by Fazio et al. (2014), who identified two loci, Eb1 and Eb2, that roughly co-located with Dw1 and Dw2, perhaps indicating that the two traits may be physiologically and genetically interconnected. Several studies have described the rootstock-induced partitioning effect of photosynthate into sexual (fruit) and vegetative portions of the tree (Seleznyova et al., 2008), comparing the effects of different rootstocks (Marini et al., 2006a; Autio et al., 2011b; Autio et al., 2011c), crop loads on tree growth (Marini et al., 2012), productivity, and bienniality (Marini et al., 2013). However, there is paucity in the literature about the causative elements for these rootstock effects. Breeding for this trait requires field evaluation for four years for the first observation in a replicated experimental orchard and then an additional 5 years in multi-location, multi-scion trials. Visser (1967) showed that scions with reduced juvenility also seemed to be more productive when grafted on M.9



dwarfing rootstocks, indicating the possibility of an inherent scion effect on early bearing and the need to test this scion—rootstock interaction in replicated trials.

***Induction of sylleptic branching in the nursery and other architectural changes*** - Early and abundant fruit production is related to the number of flowering buds produced in the nursery phase and early establishment of the tree in the orchard (Ferree and Rhodus, 1987; Robinson et al., 1991a; Robinson et al., 1991b; Theron et al., 2000). This number can be influenced not only by the early bearing effects of the rootstocks discussed previously, but also by the ability of the rootstocks to produce prolific sylleptic branching (feathers on a nursery tree) in the nursery and later in the orchard. Early yield has been associated with nursery tree caliper, tree height, and number of feathers. Rootstocks with wider genetic diversity than M.9 and Budagovsky 9 (B.9) have been shown to influence the production of sylleptic branches and the formation of crotch angles, that produce trees with a more open (flatter branches) structure (Fazio and Robinson, 2008a; Fazio and Robinson, 2008b). This characteristic is mostly observed in rootstocks developed by the Geneva, New York, breeding program, especially with rootstocks G.935, G.213 G.41 and G.214 (Figure 3). The strength of these effects vary with different scions and continue through the life of the tree in the orchard, as observed in the millions of trees planted on G.935 rootstock throughout the world. One additional characteristic that may be related to sylleptic branching is the ability of some rootstocks in the Geneva breeding program to induce bud break and flowering in low chill environments. This effect was observed in a highly replicated trial in Southern Brazil with ‘Gala’ grafted on three rootstocks (G.213, M.9 and, Marubakaido with M.9 interstem (an interstem is a section of the trunk grafted in between the rootstock and the scion usually made from a third rootstock variety to bridge incompatibility or leverage the qualities of the interstem to increase precocity of the whole tree) where it was observed that in Spring time flowering and bud break were 35% higher in trees with G.213 rootstocks, resulting in higher productivity of the trees (Francescato, pers. comm.). Breeding for these characteristics requires a lot of time and effort as the effects are confounded by the interaction with the dwarfing potential of the rootstocks and the difficulty of measuring crotch angle and branch length of thousands of replicated nursery trees. Our understanding of the genetic effects underlying these traits is in its infancy as the trait was first described in 2007. It is likely that research and breeding efforts aimed at uncovering the genetic factors for these traits will lead to more productive apple trees.

***Propagation traits*** - Apple rootstocks can be clonally propagated by sterile in vitro methods, soft and hard wood cuttings (Bassuk and Howard, 1980), and by layer or stool cuttings (Adams, 2010). While efforts to breed rootstocks amenable to in vitro culture are virtually impossible due to the complexity of media and growing conditions, efforts to improve rooting ability in layering beds and cuttings although difficult may result in superior rooting genotypes. Breeding for nursery performance can be quite complicated as many factors influence apple rootstock performance in the different nursery phases and at times may conflict with field performance. A prime example of this is the fast and easy adventitious rooting trait, highly desired in the propagation phase but correlated with the development of burr knots in the orchard – a harmful trait in certain orchard environments especially where dogwood borers and other insect borers may be present (Bergh and Leskey, 2003). These difficulties can be overcome with improved nursery management practices developed for the establishment of new layer beds, that which include utilization of different propagation techniques like cuttings (Hansen, 1989; Deering, 1991) or micropropagation (Castillo et al., 2015; Geng et al., 2015), and the treatment with plant growth regulators such as prohexadione calcium in the nursery (Adams, 2010) to increase production of primary adventitious roots. The genetics of adventitious root formation have been investigated in the Geneva breeding program revealing a complex trait with low heritability. Therefore, while it may be possible to breed for rooting traits, the importance of these traits is dwarfed by the importance of low suckering and lack of burr knots in the orchard.

Another characteristic affected by the rootstock is graft compatibility. Historically, most problems that were blamed on compatibility turned out to be virus related (Cummins and Aldwinckle, 1983; Lana et al., 1983), however, certain rootstock/scion combinations under unspecified grafting and nursery management conditions have shown a tendency for weak graft unions in very young trees (Robinson et

al., 2003). Graft incompatibility can arise because of the disruption of normal healing between grafted tissues and can result in anatomical and physiological symptoms, biochemical and mechanical issues that lead to graft failure or tree death (Simons and Chu, 1983, 1985; Skene et al., 1983; Simons, 1985; Simons and Chu, 1985). While it is likely that the method of grafting (chip budding, whip -and- tongue grafting, and machine V grafting) (Hartmann et al., 1997) has an effect on healing and union strength at various stages in the nursery cycle, there may be plant- growth- regulator-related and metabolic- compound - related signals that prevent the formation of a strong graft union. Efforts to understand the ability of the rootstock/scion combination to generate enough connective tissue where they meet is underway in the Geneva breeding program through the use of X-Ray tomography (CAT Scans) shown in figure Fig. 4. Some nurseries report that large caliper stocks may not form as strong a graft union as small caliper stocks; therefore, a rootstock genotype that produces smaller caliper liners from the stool bed may be more suitable for nursery tree production.

**Drought tolerance** - It is difficult to define drought tolerance without an objective reference or phenotype to measure and it is even more difficult to define in a rootstock independent of the scion- specific tolerance (Higgs and Jones, 1991; Virlet et al., 2015). The economic definition of drought tolerance (little or no loss of marketable fruit production) is different from some of the physiological definitions, which range from loss of photosynthetic activity (Massacci and Jones, 1990), to shoot and root growth under stress (Atkinson et al., 2000), to water use efficiency. Perhaps drought- tolerant rootstocks are of little value where irrigation water is available and relevant only in regions that utilize rainwater and may experience long stretches of drought. However, as climate changes and fresh water availability is threatened in traditional apple growing regions, the search for rootstocks that can thrive with less water is becoming more and more important (Ebel et al., 2001). It has long been recognized that there are differences in apple rootstock reaction to drought (Preston et al., 1972; Cummins and Aldwinckle, 1974; Ferree and Schmid, 1990), but those observations mostly dealt with spurious drought events and compared vigorous and non-vigorous types (Chandel and Chauhan, 1993; Fernandez et al., 1994). Decreased sensitivity to drought was attributed to ‘Malling 9’ rootstock when compared to ‘Mark’ (Fernandez et al., 1997) in a potted tree study. A comparison of hormonal drought response between M.9 and MM.111 rootstocks indicated that both rootstocks provided drought resistance but by mechanisms which appear to differ — M.9 produces higher levels of abscisic acid (ABA) that may regulate stomatal opening while MM.111 possesses a more extensive root system (increased soil exploration index) (Tworkoski et al., 2016). Water use efficiency, defined as the ratio of biomass produced to the rate of transpiration, and decreased sensitivity to drought (Xiang et al., 1995; Bassett et al., 2011) has been described in wild apple populations indicating the possibility of using this descriptor as a selection method. Breeding for such a complex trait may be possible only at latter stages of selection as discernment of field-meaningful data requires experiments with high replication, special equipment to control water delivery and use, and very- high- density morphological and physiological measurements. Perhaps gain can be made by selection of components of the trait such as improved root morphology, plant growth regulator signals, and nutrient uptake once their effect is identified in breeding populations possessing all the other ‘important’ traits.

**Cold tolerance** - Several rootstocks seem to be tolerant to the different types of cold events that can cause injury of cambial and root tissues (Embree, 1988). Damaging cold events can be quite different in their mode of action as mid-winter, events can have very different modes of action than late fall or spring cold events (Cline et al., 2012). Therefore, the methods used to evaluate sensitivity to differing cold injuring events need to address the physiological conditions specific to each event (Quamme et al., 1997; Moran et al., 2011a; Moran et al., 2011b). Fluctuating temperatures in late fall, early winter and early spring are associated with hardening and de-hardening of tissues. This hardening and de-hardening process may have a strong genetic component (Forsline and Cummins, 1978), where a group of Malus rootstocks seem to have improved ability to be insensitive to such temperature fluctuations and remain dormant and cold-acclimated. Harvesting rootstock liners during these periods and subjecting them to increasingly low temperatures to show cambial damage is perhaps the most meaningful way to select cold hardy apple rootstocks. Observation of black-heart damage can also aid in the discernment of rootstock/scion



combinations that are susceptible to mid-winter injury (Warmund and Slater, 1988; Warmund et al., 1996). Genes associated with cold response have been described for 'Gala' scions (Wisniewski et al., 2008), and similar genes may be found in apple rootstocks. However, the understanding of segregating factors that influence the different types of cold stress adaptation is virtually non-existent, making genetic or genomic-informed breeding impossible, and therefore selection relies entirely on highly replicated phenotyping.

**Root morphology and architecture** - Phenotypic variation in the morphology of roots has been associated with increases in yield and tolerance to abiotic stresses in several crops (Sousa et al., 2012; Chimungu et al., 2014; Lynch et al., 2014; Burton et al., 2015; Zhan et al., 2015). Harnessing genetic and phenotypic variation in root morphology traits in apple rootstocks may improve productivity, tree size, drought tolerance, nutrient uptake, anchorage and other related whole tree functions (Eissenstat et al., 2001). Ample phenotypic variation has been characterized in wild *Malus sieversii* populations and within the Geneva apple rootstock breeding program where genetic factors for fine root formation (highly branched fine roots) have been mapped to chromosome 4 and 11 of the apple genome (Fazio et al., 2009b). Other traits that may be important to characterize may be the volume explored by the roots, the angle of the roots, the longevity of the roots and so on, etc., which are all traits that are difficult to phenotype and for which robust genetic markers may be extremely useful. In Geneva, New York, the apple rootstock breeding program measured several scion and root morphology characteristics of nursery trees of related (half-sibs) *Malus sieversii* seedlings which showed correlation between canopy volume/tree size and number of thick roots (0.38,  $P < 0.001$ ), and a less pronounced correlation between tree size and root mass (0.25,  $P < 0.001$ ), indicating a feedback loop between scion and root growth: the ability of the canopy to support the growth and expansion of a larger primary root system increased the vigor of young trees by their ability to produce root systems with strong primary hierarchy (Fazio et al., 2014a). Apple root systems vary in seasonal growth patterns (Eissenstat et al., 2006), which may affect their ability to forage for nutrients and water, and even colonization with beneficial mycorrhizae (Resendes et al., 2008). Root turnover rates may also play a significant role in tree nutrition and productivity as well as disease resistance or evasion as demonstrated by experiments that utilized replant-tolerant rootstocks from the Geneva breeding program (Atucha et al., 2013; Emmett et al., 2014). While these root traits can be targeted for marker assisted breeding (MAB), the understanding of genes, gene expression patterns and physiological attributes associated with these traits in rootstocks is limited compared to our understating of scion traits; therefore, more research is needed to understand these traits before they become the subject of selection based on genetic markers. The program is currently leveraging aeroponic systems (Appendix B figures 1-3) and mini-rhizotrons to phenotype apple root systems.

**Nutrient uptake** - Another set of root-related traits deals with the genetic variation and inheritance of absorption and translocation of macro- and micronutrients by the rootstock to the scion (Tukey et al., 1962). Rootstocks have been shown to vary significantly with regards to their intrinsic ability to forage for nutrients as well as transfer them up to various sinks in the scion, including fruit, perhaps affecting organoleptic, post-harvest qualities of the fruit and disease resistance (Lockard, 1976; Westwood and Bjornstad, 1980; Om and Pathak, 1983; West and Young, 1988; Chandel and Chauhan, 1990; Rom et al., 1991; Sloan et al., 1996; Chun and Chun, 2004; Kim et al., 2004). Transgenic, cisgenic, or conventional breeding approaches have been suggested to increase nutrient uptake of minerals such as zinc to improve productivity of the orchard (Swietlik et al., 2007). Most research on nutrient uptake by apple rootstocks has focused on developing the best management practices for nutrient application on a genetically restricted set of rootstocks, and it was not until a large set of genetically diverse rootstocks were observed in different soils and pH treatments that the physiological diversity of apple roots was revealed (Fazio et al., 2012). The analysis of scion nutrient concentration in leaves and fruit in several rootstock field trials in New York State have indicated the possibility that specific rootstocks may affect fruit quality of Honeycrisp apples showing that certain rootstocks are able to transfer higher calcium levels to the fruit and that the calcium-linked disorders typical of Honeycrisp are a result of scion-specific intrinsic challenges in the movement of calcium into the fruit (Fazio et al., 2015a). Investigation of the inheritance of nutrient uptake and translocation in a full-sib population of apple rootstocks revealed

quantitative trait loci (QTL) influencing scion leaf mineral concentrations of potassium (K), sodium (Na), phosphorus (P), calcium (Ca), zinc (Zn), magnesium (Mg) and molybdenum (Mo), with the most significant ones on chromosome 5 for potassium, chromosome 17 for sodium and lower significance QTLs for calcium, copper, zinc, and phosphorous (Fazio et al., 2013). Concentrations of some nutrients were highly correlated (K and P, S and P), indicating common nodes in the networked pathway that takes nutrients from the soil through the rootstocks to diverse sinks in the scion (Neilsen and Havipson, 2014). The very different mechanisms (interaction with soil biota, active and passive transport, vessel composition and size, etc.) that impact absorption and transport and the fact that crop load and irrigation can also influence mineral concentrations (Neilsen et al., 2015) makes these traits difficult to improve without the aid of a robust understanding of molecular genetic factors involved. Modeling those factors to achieve a particular balance of nutrients in selected scions is therefore very complicated.

**Disease and pest resistance** - Commercial application of improved disease and insect resistance can be observed in the Geneva, New York, breeding program. Since its inception, the program focused on developing apple rootstocks resistant to fire blight, a North American disease caused by *Erwinia amylovora* while maintaining the resistance to crown and root rot caused by *Phytophthora cactorum* (Aldwinckle et al., 1972; Gardner, 1977; Gardner et al., 1980). This effort over three decades produced rootstocks that are not only resistant to fire blight and crown rot, but that are tolerant to the replant disease complex, and are also resistant to woolly apple aphids WAA (*Eriosoma lanigerum*).

***Resistance to fire blight***- Fire blight is a devastating disease caused by the anaerobic, gram-negative bacterium *Erwinia amylovora*, which causes visible symptoms in blossoms, green tissues, fruit and some woody tissues of apple scions and rootstocks. While this disease seems to have originated in the Eastern part of North America, it has now spread to most of the apple growing regions of the world. Rootstock blight on susceptible rootstocks (M.9, M.27 and M.26) can be devastating as the infection results in girdling and death of the rootstock shank eventually killing the whole tree – entire orchards and millions of trees have been destroyed because of rootstock blight. While spraying antibiotics like Streptomycin can alleviate the onset of rootstock blight, genetic resistance of the rootstock is the best preventive treatment. Rootstock resistance to *E. amylovora* is found in several wild apple species and these have been utilized to breed a new series of fire blight -resistant rootstocks. There seem to be two main types of resistance in apple rootstock: a multi-genic type similar to that is found in *Malus robusta* ‘Robusta 5’ where green tissues and flowers are not affected by the bacterium (Aldwinckle et al., 1974b; Cummins and Aldwinckle, 1974) and an ontogenic type of resistance found in Budagovsky 9 (B.9) rootstock where the green tissues are severely affected, but two- year- old and older wood seems not to react to the bacteria (Russo et al., 2008). Genetic inheritance of the ‘Robusta 5’ type of resistance has been described as having a strain- specific component on chromosome 3 identified as a gene belonging to the NBS-LRR class of resistance genes (Fahrentrapp et al., 2013; Brogginini et al., 2014; Kost et al., 2015) and other minor QTLs on linkage groups 5, 7, 11, and 14, which do not seem to be strain- specific detected in a non-rootstock population (‘Idared’ x ‘Robusta 5’) (Wohner et al., 2014). Another locus that is non -strain specific was discovered on linkage group 7 in a rootstock population derived from a cross between ‘Ottawa 3’ and ‘Robusta 5’ (Gardiner et al., 2012). Cis-genic approaches with the LG03 gene proved only partially successful, suggesting a more complex pathway of resistance than just one gene recognition of the pathogen (Kost et al., 2015).

***Replant disease complex*** - The specific apple replant disease complex is a syndrome observed as stunting and poor growth of young apple trees planted in soil that was previously planted with an apple or pear orchard. This complex disease causes major production losses throughout the life of the orchard. The main causative agents implicated in this syndrome are *Cylindrocarpon destructans*, *Phytophthora cactorum*, *Pythium spp.*, *Rhizoctonia solani* and various pathogenic nematodes (Mazzola, 1998). The occurrence of one or more of these agents will affect the severity of the syndrome and may explain some of the site -to- site variation observed in replant land. This is one of the major problems faced by orchardists as virgin land becomes more rare, major infrastructure investments (hail nets, irrigation, etc.) become more prevalent and require a ‘replant -in- place’ type of renewal of the orchard and as fumigation



chemistries are restricted by environmental laws (Auvil et al., 2011). The removal of the old orchard leaves a major pathogen load in the soil, which overwhelms the young root system of nursery trees. Fumigation treatments (Methyl Bromide, Chloropicrin, and Nematicides) seem to be effective for less than a year as the pathogens implicated in this disease quickly recolonize the sterile soil, and fallow treatments (undesirable because they leave the land in an unproductive state) have shown mixed results, with replant symptoms sometimes appearing even after 4 years of fallow (Leinfelder and Merwin, 2006). Alternative treatments like seed meal amendments, fertilizers, compost teas, and solarization have been proposed and are in various phases of research and development (Utkhede, 1999; Utkhede and Smith, 2000; Mazzola and Mullinix, 2005; Mazzola and Manici, 2012). In addition to the combination of pathogens involved in each orchard, factors like soil type, climate and other edaphic conditions seem to affect the severity of the complex, making it difficult to diagnose (Fazio et al., 2012). The effects of the disease complex are usually measured by comparing the growth of the same rootstock in sterile soil (pasteurization or chemical treatment) to a biologically active soil collected from the rhizosphere of the old orchard (Leinfelder et al., 2004; Rumberger et al., 2004; Yao et al., 2006a). A comprehensive study of multiple rootstock accessions and Malus species indicated that there was sufficient phenotypic diversity to enable growth in non-pasteurized soil (Isutsa and Merwin, 2000); however, the only reported commercially applicable genetic tolerance to the replant disease complex seems to be derived from progeny of 'Robusta 5' and other wild apple species. Certain root genotypes have been reported to promote unique types of microbial communities, indicating a specificity or perhaps a pseudo-symbiotic effect of specific root systems that defeat the presence of pathogenic microbes (Yao et al., 2006b; Rumberger et al., 2007; St. Laurent et al., 2010). Breeding and selection for Phytophthora resistance is performed by inoculating young seedlings (Aldwinckle et al., 1974a). New studies leveraging Next-Generation sequencing of Pythium challenged rootstock seedlings show upregulation of disease resistance-related pathways in resistant plant material indicating the possibility to select for specific resistance to Pythium components of replant disease (Shin et al., 2016). The placement of several apple rootstocks and breeding populations in sterile culture (micropropagation) has enabled identification of separate genetic effects of resistance to the individual replant components, as these rootstocks were inoculated with cultures of Rhizoctonia species and Pythium species independently. While this set of experiments is still ongoing (Zhu, personal communication), preliminary reports indicate segregation of QTLs affecting this trait and the possibility of developing molecular markers to select superior genotypes.

**Resistance to woolly apple aphids** - Woolly apple aphid, *Eriosoma lanigerum* (Hausmann) (Homoptera: Aphididae) has become a more severe pest in apple production areas in the past few years. The retirement of powerful organophosphate pesticides has also increased pressure on orchards. Orchards with resistant rootstocks have been shown to eliminate need for spraying for this pest because the insects cannot overwinter in the rhizosphere. Monogenic resistance to WAA derived from 'Robusta 5' has been mapped to chromosome 17 (Er2 locus) and has been utilized extensively in the Geneva, New York, and New Zealand breeding programs (Bus et al., 2008). Another resistance locus (Er3) from Aotea rootstock has also been mapped on chromosome 8, although it is not as effective as Er1 and Er2 (Sandanayaka et al., 2003; Sandanayaka et al., 2005; Sandanayaka and Backus, 2008). Phenotypic evaluation of this trait consists of rearing insects on susceptible germplasm and then transferring a specific number of insects on actively growing shoots of seedlings or replicated clones in a confined space (usually a netted greenhouse), then observing feeding and proliferation of WAA during a 2 month period after transfer (Beers et al., 2006). The monogenic nature of this type of resistance makes it amenable to utilization of cis-haplotype-specific markers to select parents and cull progeny that do not possess the resistance locus (Bassett et al., 2015). Other sources of WAA resistance are known in the Malus germplasm but very little is known about the genetic inheritance of these sources.

**Rootstock tolerance to phytoplasma and viruses** - Apple viruses and phytoplasmas can cause losses in productivity by interdicting basic plant functions, deforming branches and roots, and by making fruit unmarketable. To date, these pathogens are known to be spread by grafting, where infected clonal rootstocks or scions are the media for transmission (Wood, 1996; James et al., 1997; Silva et al., 2008).



While the goal of apple industries throughout the world should be to work only with material that has been certified tested for viruses, phytoplasmas and other graft-transmissible agents, the eradication of these agents has been elusive due to propagation practices of some growers and homeowners that use infected sources of budwood. It is recommended that apple rootstock improvement programs pay some attention to phenotyping apple rootstocks for susceptibility to some or all of the possible graft-transmissible viruses or phytoplasmas (Lankes and Baab, 2011). Efforts have been made in Germany and Italy to produce rootstocks resistant to the proliferation phytoplasmas (*Candidatus Phytoplasma mali*) found in certain accessions of *M. sieboldii* (Seemuller et al., 2007; Seemuller et al., 2008) and *M. sargentii* (Bisognin et al., 2008, 2009; Jarausch et al., 2008; Bisognin et al., 2009). Susceptibility to Apple Stem Grooving Virus has been observed in ‘Ottawa 3’ rootstocks and some of its derivatives (G.16 and G.814) which exhibited stunting or death upon being grafted with an infected scion. The slow decline caused by graft union necrosis among certain rootstock/scion combinations in the presence of Tomato Ring Spot Virus (ToRSV) (Tuttle and Gotlieb, 1985a; Tuttle and Gotlieb, 1985,b) observed in MM.106 rootstock grafted with ‘Delicious’ scion is also of concern when breeding apple rootstocks. A large trial is underway in collaboration with Cornell University and Virginia Tech to evaluate 50 genotypes for this sensitivity (Robinson, personal communication). Furthermore, there is paucity of genetic studies that describe the inheritance of susceptibility of *Malus* germplasm to viruses and phytoplasmas, making genetically informed breeding impossible. In the Geneva breeding program, virus- sensitive parents like G.16 have been utilized for crosses, and efforts to map susceptibility loci are underway in collaboration with Cornell University virologists as a prerequisite to marker development to be utilized for culling susceptible seedlings before resources are wasted on growing them in larger field trials.

#### **Coordinated testing and evaluation programs in the world**

The varied environments where apples are grown suggest that no one rootstock will be well adapted to all environments and that coordinated, independent evaluation of new material from breeding program be performed by local pomologists. There are some organizations in certain apple growing regions in the world that aim to independently test rootstocks in a regimented way covering multiple environments and scions (Elfving and McKibbin, 1990; Schechter et al., 1991; Usa, 1991; Kviklys, 2011). A considerable program of tree fruit rootstock evaluation in the United States, Canada and Mexico is conducted by a group of 35+ researchers, extension specialists and industry collaborators within the CREES (cooperative research and extension services of the USDA) multi-regional project NC-140 ([www.nc140.org](http://www.nc140.org)) and in Europe through EUFRIN ([www.eufrin.org](http://www.eufrin.org)). As a group the NC-140 researchers have made significant contributions to tree fruit rootstock research over the last 3 three decades and have conducted highly coordinated impactful research for the tree fruit industry (Rom and Rom, 1991; Fernandez et al., 1995; Perry, 1996; Autio et al., 1997, 2011a,b; Barritt et al., 1997; Marini et al., 2002; Marini et al., 2006b; Autio et al., 2011a; Autio et al., 2011b). Other organizations featuring coordinated international research on apple are RosBREED ([www.rosbreed.org](http://www.rosbreed.org)) (Iezzoni et al., 2010), FruitBreedomics ([www.fruitbreedomics.com](http://www.fruitbreedomics.com)) and, the Genome Database for the Rosaceae ([www.rosaceae.org](http://www.rosaceae.org)) are advancing the development of new knowledge about physiology, phenomics, genetics, and genomics of Rosaceous crops and providing useful infrastructure to the development and evaluation of new apple rootstocks (Evans et al., 2012; Evans, 2013a; Evans, 2013,b; Peace et al., 2014; Chagne et al., 2015; Guan et al., 2015; Liverani et al., 2015; Mauroux et al., 2015; Fresnedo-Ramirez et al., 2016). The ultimate goal for all these organizations is to make apple growing more efficient, more environmentally friendly, more profitable for those that grow apples and more nutritious for the customers that eat apples, and the development of new apple rootstocks is an important cog in this intricate effort.

#### **Relationship to Other Projects Search -**

This research is closely tied to the evaluation and utilization of the apple germplasm collection 8060-21000-025-00-D, “Management of Apple, Cold-Hardy Grape, and Tart Cherry Genetic Resources and Associated Information” in Geneva NY with G.Y. Zhong and C.T. Chao as principal investigators – this project is the main source of novel breeding material for our program. CRIS PROJ NO: NYC-625410 “Identification and validation of novel genetic loci linked to fire blight resistance in apples” managed by Dr. Khan at Cornell University is closely associated to our research program in the development of

resistance to fire blight in apple rootstocks. CRIS PROJ NO: CALW-2016-04616 “Characterizing genotype-specific apple root biochemistry and its implications for rhizosphere microbial ecology in apple replant disease (ARD)” is also closely associated with the program as we provide much of the germplasm and some of the root samples to investigate genotype specific associations with rhizospheric biota. Dr. Fazio was one of the inceptors and Co-PI of NIFA SCRI CRIS PROJ NO: NYC-145543 “Accelerating the development, evaluation, and adoption of new apple rootstock technologies to improve apple growers’ profitability and sustainability” led by Dr. Cheng at Cornell University which aims to study many aspects of apple rootstock influence on fruit production that are multidisciplinary and related to the breeding program. The program also works closely with Dr. Zhu of the USDA ARS Tree Fruit Research Laboratory in PROJ NO: 2094-21220-002-10T “Phenotyping resistance traits of apple rootstock germplasm to replant pathogens” where germplasm from the breeding program is being used to discover QTLs and genes related to apple replant disease resistance. We collaborate with Dr. Mazzola also in Wenatchee in PROJ NO: 2094-21220-002-08T “Managing rhizosphere/soil microbiology via apple rootstock chemistry” to study aspects of soil biology related to apple rootstocks. We also collaborate with several scientists at the USDA Appalachian Tree Fruit Research Station in Kearneysville, WV, with PROJ NO: 8080-21000-023-00D “Genetic improvement of fruit crops through functional genomics and breeding” where we are investigating the effect of specific genes on tree architecture and PROJ NO: 8080-21000-024-34S “Three-dimensional modeling system for fruit trees” to see how rootstocks influence the architecture of apple trees. PROJ NO: 8080-21000-024-00D “Integrated orchard management and automation for deciduous tree fruit crops” with Dr. Tabb to investigate how apple rootstocks can aid in developing optimal canopies for orchard automation. The program also collaborates closely with ~35 scientists from all apple growing regions in North-America participating in the NC-140 multi state project CRIS PROJ NO: MO-MSPS0006 “Improving economic and environmental sustainability in tree-fruit production through changes in rootstock use”. PROJ NO: 8060-21000-026-02N “Development of apple rootstock technologies for U.S. and Brazilian apple growers” is one of the many international research projects aimed at studying apple rootstock performance. Our project is the result of a close collaboration between Cornell University and USDA ARS. This collaboration has been ratified with a Cooperative Research and Development Agreement (CRADA No. 58-3K95-4-1668-M)

## APPROACH AND RESEARCH PROCEDURES

**Objective 1:** Develop and release improved apple rootstocks by leveraging advances in marker assisted breeding, including construction of genetic maps, establishing trait associations, gene discovery for important rootstock traits (dwarfing, early bearing, yield efficient, fire blight resistant), and screening for novel alleles for important rootstock traits.

**Sub-objective 1A** Perform all breeding and evaluation stages involved in the 15-30 year process of developing new rootstocks with the assistance of recently developed breeding tools, such as marker-assisted selection.

***Non Hypothesis Goal Driven 1A** Perform all breeding and evaluation stages involved in the 15-30 year process of developing new rootstocks with the assistance of recently developed breeding tools, such as high throughput phenotyping and marker-assisted breeding.*

**Experimental design 1A:** We will select new parents based on their genetic potential and field performance. We will generate new genotypes by crossing these parents and we will continue data collection and subsequent selection on approximately 4,000 genotypes that are at different evaluation and selection stages of the breeding pipeline. This includes performing multi-state and international advanced orchard trials, advanced cooperator trials with commercial stool-bed nurseries and first test orchards on location.

A Crossing Block composed of elite germplasm and commercial varieties is in place in Geneva, NY and will be used to generate new populations segregating for rootstock quality traits (propagation, dwarfing,

and precocity) and disease resistance. We will follow the ten-stage selection and evaluation protocol outlined in Johnson (2001) with some modifications regarding the utilization of molecular markers to assist selection and the incorporation of newly identified traits. This process is also outlined in a flow chart diagram attached to this document describing the breeding program (Page 6). We currently have plants in all of these stages and expect to perform all operations within these stages during the next five year period. Due to space and resource constraints we begin a new breeding cycle (lasting 15-30 years) every three years. We expect to initiate two breeding cycles during the five year period of this project.

**Stage 1. Parental Selection, hybridization, disease screenings, stool plant establishment, Years 1-2 / 2,000-10,000 seedlings.** Parental combinations that have complementary characteristics are chosen for hybridization; for example, an easily propagated dwarfing parent might be crossed with a disease resistant parent. Seeds are collected from the fruit of these crosses, and the seed are stratified (cold treated to break dormancy) and germinated. We then inoculate the seedlings with fire blight bacteria (*Erwinia amylovora*) (Gardner *et al.* 1980) and crown rot fungus (*Phytophthora* spp.) (Cummins and Aldwinckle 1974). Based on the results of previous selection cycles we expect to eliminate 50-80% of the seedlings and establish the rest as single plant stool tree populations. DNA is extracted from all surviving seedlings and tested for dwarfing loci and other markers associated with important traits using high throughput PCR markers (SCARs) that have been developed in our laboratory (Appendix B Figure 4). Depending on the parents used, markers generally eliminate 75-95% of surviving seedlings. *Contingency:* If parents selected for breeding do not have the necessary horticultural and resistance traits then we will select from a pool of novel accessions. If a new virulent pathovar overcomes known resistance then we will search the accessions for resistance to the new pathovar. If PCR markers don't perform as expected for selection, then we will search for alternative methods of high throughput screening.

**Stage 2. Stool plant selection, nursery liner establishment, nursery tree growth, Years 3-4 / 25-100 stool trees.** Genotypes are propagated as single tree stool-bed plants which are then used to propagate rootstock liners harvested from genotypes that show adequate rooting (at least three adventitious roots per shank) and do not have brittle wood. Liners are moved to a nursery (McCarthy farm, Cornell University – Geneva, NY) for years 5 and 6, where finished trees are produced (it takes at least 2 years to make a finished tree: harvest rootstock liner from mother plant in Fall of year 1; plant in field nursery in Spring of year 2; graft scion bud in Summer of year 2; cut tops of rootstock liners in Spring of year 3 to allow grafted bud to push; allow grafted bud to grow a full finished tree in Summer of year 3; harvest finished tree in Fall of year 3; plant finished tree in the field experiment in Spring of year 4 – the procedure can be cut one year if bench-grafts are used instead of August budding). In years 5 and 6 stool trees are again evaluated for resistance to fire blight and for infestation levels with woolly apple aphids (Johnson 2000), and susceptible genotypes are discarded from the nursery and from the stool tree fields. *Contingency:* If stool bed tests for rooting don't work on a particular year then we will repeat them on a subsequent year. If field fire blight and woolly apple aphid tests are inconclusive we will repeat them in a more controlled environment (greenhouse) in successive years.

**Stage 3. First test orchard establishment, precocity evaluation and selection, Years 5-6 / 25-50 rootstock genotypes.** Because marker assisted selection for dwarfing has been implemented, we expect the vast majority of rootstocks to be dwarfing and we will plant four to six finished trees on each rootstock genotype in a medium density first test orchard in two locations in the U.S. In addition to the test genotypes, size standard varieties are included (M.27, M.9, M.26, MM.106). Trees are trained to develop an open branching pattern, but pruning is allowed to pattern a slender spindle system. Data is collected and analyzed annually for yield, yield efficiency, tree vigor, suckering, nutrient uptake efficiency and response to any unique stress events. *Contingency:* If dwarfing phenotype is not recovered efficiently by markers then we will cull larger trees in the orchard.

**Stage 4. First test orchard evaluation and selection, elite stool bed establishment, Years 7-12 / 10-15 rootstock genotypes.** Rootstock genotypes that exhibit precocity and adequate yield efficiency by the fourth leaf (year 10 of breeding cycle) are propagated to increase plant material for an elite stool bed in two locations (Geneva, NY and at cooperating nurseries in the North West). Stool beds are developed from liners retained from stage 2 or from root cuttings of older orchard trees. *Contingency:* If we are not



able to identify precocious genotypes in the test orchard then we will test individuals from different crosses and populations. If we are not able to propagate the selections using root cuttings we will consider the utilization of other methods to establish new elite stool beds.

**Stage 5. Liner production, stool bed evaluation, nursery tree growth, Years 10-15 / 5-10 rootstock**

**genotypes.** The important characteristic of this stage is that by this time we have enough stool bed material (liners) to be able to run replicated tests and produce a reliable estimate of how resistant or tolerant a selection is to the different biotic and abiotic stresses that the genotypes will be faced within the life of an orchard. This critical number of plants per genotype is between 100-1000 and is very difficult to achieve with conventional propagation methods and may be best achieved through micropropagation (Fazio et al. 2015b). At this stage we produce trees with several scion/rootstock combinations to test graft union compatibility and strength. Liners in the nursery are budded with selected scions to produce 30 high quality finished trees. First test orchards are removed after harvest in year 15 (after 9th leaf). After 30 trees are produced in the nursery, liners are collected from elite stool beds and subjected to evaluations of disease resistance and stress tolerance, extreme temperature soil tests (trees are grown in heated pots), replant soil tests (Isutsa and Merwin 2000), fire blight tests, crown rot tests, virus resistance / hypersensitivity tests, graft union strength tests (3-4 year old finished trees with several scion/rootstock combinations are subjected to mechanical stress at the graft union) while in stages 5-7 (Fazio, 2015). Protocols and methods for these techniques are published (J. Cummins and H. Aldwinckle 1974).

*Contingency:* In the event that the stress tolerance tests are not adequate then we will investigate novel ways to test for cold tolerance, soil heat tolerance, etc. If second battery of disease resistance screens reveals susceptible individuals then we will investigate to correct initial screens.

**Stage 6. Intermediate stage orchard establishment and early evaluation, Years 16-18 / 10 rootstock**

**genotypes.** Intermediate stage orchards are planted beginning in year 16 at three sites representing a cross-section of domestic apple production environments. Each year's planting includes commercial standard dwarfing genotypes (M.9, B.9, M.26) and 5 to 10 elite rootstock genotypes that have shown promise in elite stool bed liner production, initial test orchard performance, and biotic and abiotic stress resistance screens. These orchard trees are evaluated for precocity in their early years.

**Stage 7. Intermediate stage orchard evaluation, commercial stool bed trials, Years 19-21 / 5**

**rootstock genotypes.** Intermediate stage orchard trial data collection continues (Russo et al., 2007). Biotic and abiotic stress screenings of rootstock liner trees is completed. The most promising rootstock genotypes (a maximum of 5 per year) from the Cornell/USDA program are distributed to cooperating nurseries for commercial stool bed trials (50 liners to each of 2 cooperating rootstock nurseries) beginning in year 19. The most promising Geneva rootstock genotypes are submitted for phytosanitary certification (NRSP5, Prosser WA) to enable international distribution. It is possible to start the technology transfer to cooperating nurseries at stage 5 or 6 because these nurseries may be the location where the finished trees for intermediate trials are prepared. In that contingency we will transfer plant material (rootstock liners) to cooperating nurseries under contract to generate finished trees. Data on nursery tree performance will be collected at this stage (Fazio et al., 2008a). This will also allow cooperating nurseries to take a first look at these selections and learn to the best cultural practices adapted to the new genotypes.

**Stage 8. NC-140 and on-farm trials, distribution to all cooperators, Years 22-24 / 2 rootstock**

**genotypes.** Intermediate stage orchard trial data collection continues (Robinson et al., 2006). For outstanding rootstock genotypes from the intermediate stage orchard trials and commercial nursery stool bed trials, liner production from cooperating nurseries is used to propagate trees for NC-140 and/or on-farm trials. Each multi-state NC-140 trial and on-farm grower cooperator trial is unique and follows methods and protocols that are established by the cooperators participating in the trial. Generally, data on yield efficiency, productivity, precociousness, hardiness, incidence of disease, tree size is collected for each rootstock for a period of 8-12 years. Best rootstock genotypes, as determined by each unique individual trial's protocol, are distributed to domestic cooperating nurseries for propagation, and to international cooperating nurseries and institutions for propagation and local evaluation trials. Internationally commercially successful genotypes join the USDA/Cornell rootstock evaluation program

as stage 8 materials following evaluation in biotic and abiotic stress screenings – this is done to provide a benchmark for all commercial rootstocks.

**Stage 9. Final evaluations and selections, commercial ramp-up, patent applications, Years 25-27 / <1 rootstock genotype.** Plant material for rootstock genotypes demonstrating marked improvement over commercially available varieties based on results from cooperators and NC-140 trials is increased in commercial stool beds and micropropagation facilities. Intermediate stage evaluation orchards are removed after 11th leaf. Plant Patent and UPOV protection applications are filed on commercially viable rootstock genotypes given that the IP protection is necessary for successful deployment and implementation of the new genotypes.

**Stage 10. First commercial sale of Geneva rootstocks, elimination of all unreleased genotypes from trials, Years 28-30.** Data collection continues for NC-140 and on-farm grower cooperator trials. Unreleased genotypes that showed promise but were not demonstrably superior to commercially available rootstocks are eliminated from the program or selected for release in alternative markets (ornamental etc.).

***Contingencies:*** There are several contingency points in this part of the project as there are many stages. Amendments to the breeding protocol will be made to include innovations in propagation, molecular markers.

***Collaborations: Domestic collaborators:*** Awais Khan, Cornell University, collaborates on fire blight resistance characterization and inoculation, phytophthora root rot inoculations, tissue culture and genetic engineering. T. L. Robinson, Cornell University, provides second test and intermediate orchard evaluation, national and international evaluation of Geneva rootstocks, and commercialization. John Norelli (fire blight resistance), Chris Dardick (modification of plant architecture by rootstocks), all from ARS Kearneysville, West Virginia; C.T. Chao (novel gene pools for rootstock traits) ARS, Geneva, New York; Mark Mazzola and Yanmin Zhu (replant tolerant rootstock genotypes) ARS Wenatchee, Washington. Willow Drive Nursery provides advanced testing locations for stool bed evaluation, nursery tree development and is one of our stakeholders. Dr. Stefano Musacchi (Wenatchee, WA) is testing advanced selections in Washington State. The Washington Tree Fruit Research Commission performs advanced apple rootstock testing including intermediate and commercial trials in organic and replant situations. The NC-140 network of collaborators (list available at [www.nc140.org](http://www.nc140.org)) is essential for proper testing of local adaptations of these new genotypes.

***International collaborators:*** A network of international test sites in which we are actively involved was established in the past 10 years. These test sites are in Germany, France, Italy, Poland, New Zealand, Australia, South Africa, South Korea, Brazil, Uruguay, and Chile and include representatives from major research institutions (University of Bologna, Italy, IRTA, INRA, EMBRAPA) and representatives from international nursery organizations.

**Sub-objective 1B** Identify and characterize novel germplasm, genes, alleles and trait loci through quantitative trait analyses leveraging new genetic-physical maps.

***Hypothesis 1B*** Novel genotyping and phenotyping techniques will allow the discovery of novel sources of germplasm and alleles to be used as new parents in the breeding program.

**Experimental Design 1B.** The program has utilized Single Nucleotide Polymorphism (SNPs), Insertion-Deletion (InDel), microsatellite or simple sequence repeats (SSR) markers to generate DNA fingerprints of apple rootstock populations and potential parents. While these genotyping methods have positive aspects, they mostly lack information about functionality (direct connection to genes) and are not set up to generate haplotype data based on combinations of polymorphisms in longer stretches of DNA. Because of advances in sequencing technologies, in the next five years the program will transition to genotyping by AmpSeq (Yang et al., 2016) which allows the multiplexed (380 individuals x 300 amplicons – Cadle Davison pers. comm.) genotyping of stretches of DNA amplified by PCR. Amplicons are targeted to

genes or specific regions of the genome and the assembly of the sequences onto the apple genome (Velasco et al. 2010; Fazio et al., internal resource), differentiating and grouping sequences based on similarity and haplogroups. Segregation will allow the distinction between homologous and homeologous genes (*Malus* is an ancient tetraploid). We will target a set of genes whose expression is segregating in rootstock breeding populations that have been characterized by gene expression QTL (eQTLs) of published microarray experiments (Jensen et al., 2011; Jensen et al., 2012, Jensen et al., 2014) and eQTLs (internal data, unpublished) derived from RNAseq analyses of areal and root tissues of apple rootstock breeding populations. We will choose germplasm that possesses the best combinatorial arrangement of desirable loci from within the breeding program and novel germplasm from the Malus collection based on feedback from past and future phenotyping experiments (Fazio et al. 2014a; Bassett et al., 2011). As clonally propagated material becomes available, we will design a series of replicated pot experiments (based on statistical power analysis for key parameters) where we will treat rootstocks and finished trees with different water regimens and aeroponically delivered pH treatments. Means and effects will be calculated and relevant multivariate analyses will be conducted for measured parameters including tree growth, photosynthesis, nutrient concentration in the leaves or fruit, tree architecture parameters (bud break, rooting, root morphology, branching, growth, flower induction). We are currently running phenotyping experiments involving root growth imaging and sensing with CI-600 root imagers and root analysis software (CID Bio-Science, RootSnap, Giaroots, etc.) and pH-nutrient treatments in connected aeroponic systems (Appendix B Figures 1-3). We see potential for these measurements to help us and apple growers make more informed decisions regarding the type of rootstock that matches their pedo-climatic conditions. Once the methodology is standardized and the results are interpreted it will be incorporated into the breeding process, possibly at stage 5-8 where availability of enough clonal replicates (rootstock liners) is assured. We will seek collaborations with expert physiologists, plant pathologists, etc. to help in the design and interpretation of these experiments.

**Contingencies** If AmpSeq is difficult to implement, we will seek similar, high throughput genotyping systems as they become available or continue using Malus Consortium Illumina SNP Chips. Expert labor, cost, instrument, greenhouse, plant and land availability are all limiting factors to the success of these experiments. We will tailor each experiment based on resources available each year.

**Collaborations** Dr. Cadle-Davidson (USDA ARS, Geneva) on AmpSeq matters. Dr. Terence Robinson program (Cornell University) and other visiting scientists in his laboratory on evaluation of advanced breeding lines in different orchard systems. Drs. Dardick and Tabb (USDA ARS, Kearneysville, WV) in matters related to tree and root architecture and imaging. Dr. Michael Grusak (USDA ARS, Fargo, ND) in matters regarding nutrient content, impact on tree health and possibly human nutrition. Dr. Moran (University of Maine) to investigate low temperature stress on apple rootstocks. Plant pathologists at Cornell University and Dr. Mark Mazzola (USDA ARS, Wenatchee, WA) to devise and interpret experiments involving soil pathogens associated with replant disease, and Dr. Lee Kalcits (Plant Physiologist, Washington State) on matters of nutrient partitioning by apple rootstocks.

**Objective 2:** Identify and dissect important rootstock traits that modify gene activity in the scion, toward enhancing drought tolerance, tree architecture, propagation by nurseries, root growth and physiology, nutrient use efficiency, and disease resistance; incorporate this knowledge into breeding and selection protocols.

**Sub-objective 2A** Identify components of rootstock induced traits that modify gene expression and metabolic/physiological profiles of grafted scions to increase tolerance to abiotic stresses such as tolerance to drought, improve fruit quality and storability, increase tree productivity, disease resistance and nutrient use efficiency.

**Hypothesis 2A** Genetic maps, QTL analyses, RNAseq, gene expression QTLs, whole genome sequences can be used to deconstruct traits to their segregating components.



**Experimental Design 2A** The Geneva breeding program has successfully used genetic maps in combination with phenotypic data to identify Quantitative Trait Loci (QTLs) associated with several important traits in apple rootstocks **leveraging very diverse interspecific crosses**. We know from Jensen et al., 2011 and 2012, that gene expression in the scion is modified by apple rootstocks, what we do not know is how genetically complex these scion expression modulations are in segregating rootstocks. Similarly to what has been done within our program with eQTLs, we will plant 1-2 apple rootstock replicated segregating populations, graft them with the same scion (Honeycrisp for example) and measure gene expression by 3' RNAseq ([www.lexogen.com](http://www.lexogen.com)), tree growth, photosynthesis, metabolites, nutrient concentration in the leaves or fruit, tree architecture parameters (bud break, branching, growth, flower induction) on the scion to detect rootstock induced gene expression QTLs and possibly associate them with physical traits measured on the same trees. **For example, we have now very strong evidence of rootstock mediated nutrient absorption and translocation (our group was the first in the world to publish on the genetics of such traits) as demonstrated by this dual clustering diagram of boron concentration in grafted Honeycrisp scion from a field experiment with four years of data and multiple.** We would take contrasting rootstocks and progeny to see what genetic elements are fostering such differences. **In this case we have G.935 that consistently confers higher levels of boron and B.9 that has lower levels consistently.** We also have a segregating population that is derived from the cross between G.935 and B.9. **Depending on resources (funds and scientific effort) we plan to hold maximum of two experiments per year.** The next iteration is to apply abiotic stresses on the same populations (drought, pH, lack of nutrients) and follow with performing similar measurements. The next phase is to connect known gene networks (based on functional annotations – MapMan and KEGG analysis software) segregating in the rootstocks with gene networks modulated in the scion by segregating rootstocks using multivariate analyses such as Ward's dual clustering analyses on correlation coefficients, principal component analyses and gene neural network analyses. The program has acquired next generation sequences (Illumina platform) of several founding parents of the apple rootstock breeding program (G.41, M.27, O.3, R.5, M.9, Dolgo), a complete genome assembly of R.5 (obtained by combination 100X Sequel – Pacific Biosciences, BioNano and Phase Genomics data) and has developed an internal database of aligned haplotypes for small genomic regions of interest such as genes with drastically changed expression (expressed or not expressed) identified in the eQTL discovery process. All of the above processes are very data intensive. To accomplish these tasks we will use a combination of off the shelf genomic analysis software, like SAS JMP Pro, Geneious ([www.biomatters.com](http://www.biomatters.com)), JoinMap/MapQTL ([www.kyazma.com](http://www.kyazma.com)), CLC Genomics Workbench ([www.clcbio.com](http://www.clcbio.com)), we will also utilize genomic and breeder's tool box resources available through the Genome Database for Rosaceae ([www.rosaceae.org](http://www.rosaceae.org)), and other bioinformatic tools specifically designed by collaborators.

**Contingencies** If methodology described above is not cost effective or fails to produce high quality data, we will seek different methods to genotype and phenotype plants in the populations. We will also continue to explore and adopt the best available, cost effective methodology to harness DNA information for breeding improved apple rootstocks. Current bioinformatic and statistical tools may not be well suited for our dataset types – we will seek advice from the NEA Computational Biologist and/or Statisticians and, when necessary, devise new tools to enable the analysis and correct interpretation of the results.

**Collaborations** We will collaborate with Dr. Udall and his team (Brigham Young University) with regards to the R.5 genome assembly to be used in this study. Dr. Dardick (USDA ARS, Kearneysville) will aid with mapping and statistical analyses.

**Sub-objective 2B** Validate relationships between trait components and overall apple tree performance in different rootstock-scion combinations and incorporate new knowledge into breeding and selection protocols.

**Hypothesis 2B** *Scion gene expression and phenotype modulation by segregating rootstocks transfers to other apple scions.*



**Experimental Design 2B** Based on the results of experiments in sub-objective 2A, we will validate the strongest rootstock induced scion trait associations on other apple scion varieties like Gala, Golden Delicious, SnapDragon, Autumn Crisp. As an example, if Gene A segregating in rootstock population R had an effect of increasing or decreasing phenotype Y (including gene expression) in Honeycrisp, does it have the same effect on SnapDragon scion? An experiment to validate such effect would only require a subset of rootstock germplasm segregating for such locus (15 with and 15 without) to test the mean separation between phenotypes of the groups (Jensen et al. 2015). We just started experiments in containers and in aeroponics deal with pH: three different levels (5.5, 7 and 8) to measure growth, nutrient uptake and root gene expression of grafted trees. Exploratory experiments with aeroponics: drought response where nutrient mist can be turned off for a number of hours (TBD) or drastically reduced. Items to be measured: physiological traits (photosynthesis, transpiration and hormonal activity), root and scion gene expression. Validated rootstock loci will be transitioned to working DNA markers and published.

**Contingencies** In the event that we are not able validate effects of selected rootstock loci on phenotypes (including gene expression) of other scion varieties, we will select a new set of loci to validate.

**Collaborations** We can perform this type of analysis in house, but will seek expertise and collaborations as needed.



## Physical and Human Resources

The program enjoys cooperation with Cornell University under a Cooperative Research and Development Agreement (CRADA) 58-3K95-4-1668-M specifically with the Cornell University New York State Agricultural Experiment Station in Geneva (NYSAES). Approximately 25 acres of land belonging to NYSAES are dedicated to the apple rootstock breeding program, including land set aside for stool beds, stool nursery, tree nursery, first test orchards, and replicated trials. NYSAES provides rented greenhouse space for controlled experiments (inoculation, propagation), an aeroponic system able to accommodate 350 plantlets and 2000 sq. ft. cold storage space for storage and processing of finished trees and liners during winter months. The Field Research Unit of NYSAES provides (at a subsidized cost to the USDA) equipment and personnel necessary to conduct large field operations such as pruning, pesticide and herbicide spraying of orchards, etc. A Kubota and a John Deere tractors owned by the program are used for small field operations. Our laboratory is located in the Horticulture Section of the Cornell University Campus of NYSAES. It possesses modern molecular genetic laboratory equipment (water baths, freezers, pipettors, centrifuges etc.). This lab is equipped with a sequencing apparatus ABI3130 genetic analyzer for determining SSR parental allele sizes and a capillary sequencer to perform genotyping and DNA fragment sequencing. Seven 96 well thermal cyclers with high throughput agarose gel apparatuses (96-192 samples) are available to genotype with markers having allele size polymorphisms greater than 10bp. A ROCHE real time PCR machine capable of High Resolution Melting is also available to the lab. The program also has access to the Cornell Institute of Biotechnology Resource Center for services like Next Generation Sequencing, Microarrays, etc. Computer resources include a dedicated Dell and HP computers that are able to work with bioinformatics software like CLC Genomics workbench ([www.qiagen.com](http://www.qiagen.com)) and Geneious ([www.biomatters.com](http://www.biomatters.com)). Stable human resources for this project are Lead Scientist Geneticist Gennaro Fazio, Research Leader and Geneticist Gan-Yuan Zhong (5%), Field/Lab technician Todd Holleran, Lab Technician Sarah Bauer, and temporary labor pool during the summer months.

## Project Management and Evaluation

This project is the result of collaboration between USDA ARS and Cornell University that is ratified with a CRADA. While the USDA has a lead role in the project, project co-directors (Dr. Robinson or his staff and Dr. Khan or his staff) meet regularly to evaluate progress, make critical management decisions about testing and release of apple rootstocks. We hold annual meetings and semi-annual phone conferences with Nursery and Industry cooperators to evaluate the progress of the breeding program. We hold regular (bi-weekly) staff meetings to plan and discuss progress on the project's milestones and regular meetings with collaborators in PGRU to coordinate efforts on germplasm collection and evaluation. We utilize tools like AT&T Connect to routinely share data, presentations and interact with collaborative scientists worldwide. Our ARS Location (Geneva) holds regular monthly meetings that include the Research Leader and all location scientists to coordinate research projects and discuss advancements in research.

We also routinely communicate with Area Director and members of the Office of National Programs staff regarding general direction of project, interaction with industry and progress with milestones.

## Data Management

This project produces several types of data assembled in different sizes from small to very large. The smaller sets are phenotypic evaluations of several traits collected during the process of evaluation of genotypes in the breeding program – these sets also include the statistical analyses associated with the traits. Larger data sets are generated as a result of next generation sequencing of samples in the breeding program. All data is backed up and stored on an ARS secure server. Because we work under a CRADA (Cooperative Research and



Development Agreement) with Cornell University, the datasets germane to breeding program genotypes can only be released to the public upon agreement of both parties. This release has been accomplished in many cases through consensual publication. Sequencing datasets are usually published and deposited in related databases like [www.rosaceae.org](http://www.rosaceae.org) or NCBI when they are processed for publication.



**Milestones**

<b>Project Title</b>	<b>Development of Biotic and Abiotic Stress Tolerance in Apple Rootstocks</b>		<b>Project No.</b>	8060-21000-026-00D	
<b>National Program</b>	301, Plant Genetic Resources, Genomics and Genetic Improvement				
<b>Objective</b>	1. Develop and release improved apple rootstocks by leveraging advances in marker assisted breeding, including construction of genetic maps, establishing trait associations, gene discovery for important rootstock traits (dwarfing, early bearing, yield efficient, fire blight resistant), and screening for novel alleles for important rootstock traits.				
<b>Subobjective</b>	1A. Perform all breeding and evaluation stages involved in the 15-30 year process of developing new rootstocks with the assistance of recently developed breeding tools, such as marker-assisted selection.				
<b>NP Action Plan Component</b>	1– Crop Genetic Improvement				
<b>NP Action Plan Problem Statement</b>	Problem Statement 1B: New crops, new varieties, and enhanced germplasm with superior traits				
<b>Hypothesis</b>	<b>SY Team</b>	<b>Months</b>	<b>Milestones</b>	<b>Progress/ Changes</b>	<b>Products</b>
Perform all breeding and evaluation stages involved in the 15-30 year process of developing new rootstocks with the assistance of recently developed breeding tools, such as high throughput phenotyping and marker-assisted breeding.	Fazio	12	Nearly all the procedures in this objective are cyclic in nature – almost every year we select parents, make crosses, select genotypes from first test orchards, inoculate seedlings, send test selections to cooperators, plant nursery, plant orchards, collect yield data, conduct Marker Assisted Breeding for dwarfing, WAA resistance, etc.		Seed from crosses, selections, trees for testing on cooperators farms. Selections distributed to nurseries for advanced testing. Selections distributed to cooperators for comparative testing in multiple U.S. environments prior to release.
	Fazio	24	Select and establish 5 new female parent trees in crossing block		
	Fazio	36	Implement new selection protocols for nutrition and root architecture		Rootstock Release – this will be a rootstock that has probably been in the pipeline for 20 years.
	Fazio	48	Select and establish 5 new female parent trees in crossing block		





	Fazio	<b>60</b>	Implement new protocols for replant disease selection.		Rootstock Release – this will be a rootstock that has probably been in the pipeline for 20 years.
<b>Project Title</b>	<b>Development of Biotic and Abiotic Stress Tolerance in Apple Rootstocks</b>		<b>Project No.</b>	8060-21000-026-00D	
<b>National Program</b>	301, Plant Genetic Resources, Genomics and Genetic Improvement				
<b>Objective</b>	1. Develop and release improved apple rootstocks by leveraging advances in marker assisted breeding, including construction of genetic maps, establishing trait associations, gene discovery for important rootstock traits (dwarfing, early bearing, yield efficient, fire blight resistant), and screening for novel alleles for important rootstock traits.				
<b>Subobjective</b>	1B. Identify and characterize novel germplasm, genes, alleles and trait loci through quantitative trait analyses leveraging new genetic-physical maps.				
<b>NP Action Plan Component</b>	1– Crop Genetic Improvement				
<b>NP Action Plan Problem Statement</b>	Problem Statement 1A: Trait discovery, analysis, and superior breeding methods				
<b>Hypothesis</b>	<b>SY Team</b>	<b>Months</b>	<b>Milestones</b>	<b>Progress/ Changes</b>	<b>Products</b>
Novel genotyping and phenotyping techniques will allow the discovery novel sources of germplasm and alleles to be used as new parents in the breeding program.	Fazio	<b>12</b>	Identification of target genes (1500) and generation of PCR primers in preparation for AmpSeq. Amplicon optimization and validation.		New set of apple primers for multiplexed AmpSeq – deposit to Rosaceae database.
	Fazio	<b>24</b>	Identification of parents and populations for screening with AmpSeq. Run AmpSeq on selected individuals. Design phenotypic experiments on selected individuals (pH, water use efficiency, nutrient uptake, root morphology, etc.)		
	Fazio	<b>36</b>	Analysis of AmpSeq data, identification of unique alleles and haplotypes. Connection to legacy genotypic and phenotypic datasets.		Candidate loci for incorporation into breeding program. If needed, transition to gel based PCR marker types.



	Fazio	<b>48</b>	Selection and crossing of new individuals based on AmpSeq.		Unique parents with desirable combinations of desired trait loci.
	Fazio	<b>60</b>	Second set of phenotypic experiments – to be determined upon need.		
<b>Project Title</b>	<b>Development of Biotic and Abiotic Stress Tolerance in Apple Rootstocks</b>		<b>Project No.</b>	8060-21000-026-00D	
<b>National Program</b>	301, Plant Genetic Resources, Genomics and Genetic Improvement				
<b>Objective</b>	2. Identify and dissect important rootstock traits that modify gene activity in the scion, toward enhancing drought tolerance, tree architecture, propagation by nurseries, root growth and physiology, nutrient use efficiency, and disease resistance; incorporate this knowledge into breeding and selection protocols.				
<b>Subobjective</b>	2A Identify components of rootstock induced traits that modify gene expression and metabolic/physiological profiles of grafted scions to increase tolerance to abiotic stresses such as tolerance, improve fruit quality and storability, increase tree productivity, disease resistance and nutrient use efficiency.				
<b>NP Action Plan Component</b>	Component 3 – Crop Biological and Molecular Processes				
<b>NP Action Plan Problem Statement</b>	Problem Statement 3A: Fundamental knowledge of plant biological and molecular processes.				
<b>Hypothesis</b>	<b>SY Team</b>	<b>Months</b>	<b>Milestones</b>	<b>Progress/ Changes</b>	<b>Products</b>
Genetic maps, QTL analyses, RNAseq, gene expression QTLs, whole genome sequences can be used to deconstruct traits to their segregating components.	Fazio	<b>12</b>	Selection of segregating populations and generation of clonally replicated materials for experiments.		
	Fazio	<b>24</b>	Grafting of same scion, planting in pots or aeroponic systems.		
	Fazio	<b>36</b>	Growth, phenotype measurements and sampling of RNA for 3'RNAseq. Subjection of experimental units to mild drought stress.		Database of rootstock induced phenotype modulation (including gene expression) in non-stressed vs. stressed plants.
	Fazio	<b>48</b>	Analysis of first year data, collection of second year data.		First gene network analysis and first set of candidate loci to test in sub-objective 2B



	Fazio	<b>60</b>	Analysis of second year of data		Publication of research findings
<b>Project Title</b>	<b>Development of Biotic and Abiotic Stress Tolerance in Apple Rootstocks</b>		<b>Project No.</b>	8060-21000-026-00D	
<b>National Program</b>	301, Plant Genetic Resources, Genomics and Genetic Improvement				
<b>Objective</b>	2. Identify and dissect important rootstock traits that modify gene activity in the scion, toward enhancing drought tolerance, tree architecture, propagation by nurseries, root growth and physiology, nutrient use efficiency, and disease resistance; incorporate this knowledge into breeding and selection protocols.				
<b>Subobjective</b>	2B Validate relationships between trait components and overall apple tree performance in different rootstock-scion combinations and incorporate new knowledge into breeding and selection protocols.				
<b>NP Action Plan Component</b>	1– Crop Genetic Improvement				
<b>NP Action Plan Problem Statement</b>	Problem Statement 1A: Trait discovery, analysis, and superior breeding methods				
<b>Hypothesis</b>	<b>SY Team</b>	<b>Months</b>	<b>Milestones</b>	<b>Progress/ Changes</b>	<b>Products</b>
Scion gene expression and phenotype modulation by segregating rootstocks transfers to other apple scions.	Fazio	<b>12</b>			
	Fazio	<b>24</b>			
	Fazio	<b>36</b>	Preparation of comparative rootstock subsets (presence/absence of target locus) and grafting of different scions.		
	Fazio	<b>48</b>	Growth and collection of first year data in stressed and non-stressed comparisons.		First validation of locus effects. Validation of gene networks associated with target loci. Identification of new genes associated with target pathways.
	Fazio	<b>60</b>	Measurement of second year of data. Transition of validated loci into haplotype specific markers to be used in breeding.		



**Prior Research Accomplishments****Terminating Project Number:** 8060-21000-026-00D**Title:** Development of Pest, Disease Resistance, and Stress Tolerance in Apple Rootstocks**Project Period (beginning and ending dates- Month/Day/Year):** March 28 2013-March 27 2018**SY Time – Investigators:** Gennaro Fazio (100%) Gan-Yuan Zhong (5%)**FTE 1.85:** Todd Holleran (100%) Sarah Bauer (85%)**Project Accomplishments and Impact:****Objective 1 Develop superior apple rootstocks, applying advances in marker-assisted breeding for important traits such as dwarfing, precocity, wooly apple aphid resistance, and tree architecture.**

**Technology Transfer** - The major impact of the project relates to the adoption by the U.S. industry of new varieties released in the last cycle where, production of Geneva rootstocks increased from less than 1 million rootstocks/year in 2013 to roughly 10 million rootstocks/year in 2017. This was accomplished by numerous on farm field trials that proved the worth of these new disease resistant and productive rootstocks to the U.S. industry. These technology transfer efforts in the project earned the “Excellence in Technology Transfer” award from the Federal Labs Consortium (competed against NASA, DOE, NIH, and other federal agencies) in April, 2015 and discoveries on apple rootstock dwarfing loci published by the project earned the Outstanding Fruit Research Paper Award by the Journal of the American Society for Horticultural Science in August 2015.

**Release of New Apple Rootstock G.814.** The project provided new solutions and opportunities to the apple industry by releasing this rootstock that addressed issues like replant disease and fruit quality and size. This clonally propagated apple rootstock G.814 is a dwarfing, productive, early bearing, highly yield efficient, resistant to fire blight. Although it is susceptible to wooly apple aphids and to Apple Stem Grooving Virus (ASGV), G.814 has shown tolerance to the replant disease complex. G.814 produces scions that when fully developed are about 40% the size of a standard seedling apple tree. G.814 has the potential to increase productivity of larger, high quality fruit in marginal replanted orchard land.

**Release of new apple rootstock G.213.** Some apple scions like Gala have a tough time blooming in low winter chill subtropical regions. Apple growers needed yield efficient, disease resistant apple rootstocks when growing apples in low chill environments or when current environments are affected by climate change. The project is releasing a new productive, disease resistant apple rootstock which improves bud break and productivity in low chill environments such as Southern U.S., California and Brazil. This rootstock was developed over a 35 year process where it survived a series of inoculations with apple rootstock pests and pathogens (fire blight, crown rot and wooly apple aphid) and was tested over 25 years with multiple grafted scion varieties in multiple environments increasing productivity and producing scions that when fully developed are about 30-40% the size of a standard seedling apple tree. When clonally propagated in the stool bed the mother plants produce rootstock liners that are 30 to 50 cm tall with few spines. This new rootstock seems to be the first in the world that possesses the characteristic of increasing bud break in low chill environments of scion cultivars like Gala, therefore it will increase production of high quality fruit in apple growing regions in the U.S. and worldwide that are affected by low winter chilling hours.

**Characterization of rootstock nutrient uptake.** Apple rootstocks can affect the nutritional status of Honeycrisp and Fuji apples. Mineral nutrient status (calcium, potassium, nitrogen, magnesium and phosphorous) affects the eating quality, health, storability and appearance of apples like Honeycrisp causing many apples to be discarded or apple trees to produce poorly. Recently published in a grower oriented journal (New York Fruit Quarterly) is a first of its kind description of how apple rootstocks affect the mineral nutrient and nitrogen concentration of Honeycrisp and Fuji fruit grafted on more than 40 rootstocks in replicated field trials in New York apple growing regions. As the availability and knowledge of diverse rootstocks increases, it will increase the potential to impact fruit productivity, quality and ultimately profitability of our apple orchards. The choice of the best rootstock for the site, scion and orchard system is going to become more important than ever. The



ability to match the nutritional requirements of a scion cultivar to a specially tuned rootstock will enhance orchard management in the future by allowing healthier trees and more efficient use of fertilizers. This study, first of its kind, lays the foundation for this line of research and will provide better choices to our apple growers in terms of rootstock technologies.

The results of a decade long field trial of 48 apple rootstocks grafted with the apple variety Fuji were published. Rootstocks had significant influence on fruit yield and fruit nutrient concentration. Several Geneva® rootstocks evaluated showed considerable promise as alternatives to M.9. CG.6006, CG.8189, CG.4004, CG.5087, CG.4011, G.969, G.935, and G.890 had good performance on ‘Fuji’. The rootstock induces changes in the concentrations of leaf and fruit nutrients. Cumulative yield efficiency had a moderate positive correlation with leaf Ca concentration. G.214, JM.10, CG.4003, M.9, G.935, CG.4088, CG.2406, G.969, and G.210 had low alternative bearing which means stable production of flowers and fruit year over year. All these data help apple growers determine the best rootstock for their local growing condition and variety and provide apple consumers with consistent high quality apples.

**Graft Union Strength of Geneva Apple Rootstocks.** In collaboration with Utah State University we published research on graft union flexural strength which won the 2016 U.P. Hedrick award of the Journal of the American Pomological Society. Apple rootstock ‘Geneva® 41’ (‘G.41’) and other rootstocks form weak graft unions with multiple scions, this is a problem in the nursery stage of tree development especially under high wind conditions which may cause losses upwards to 80% of trees in some rootstock/scion combinations – one grower reported the loss of 60,000 trees worth more than \$600,000. Exogenous plant growth regulators (PGR) can influence vascular differentiation and wood formation, and thus may improve graft union strength. A series of commercial and experimental PGR formulations were applied to trees on ‘G.41’ rootstock over two seasons, and graft union strength and flexibility were measured. Benzyl adenine (BA) applied in paint solution to the graft union significantly increased the flexural strength per scion cross-sectional area and the flexibility of the union. In addition, foliar applications of Prohexadione-Ca also increased graft union flexural strength and flexibility, but temporarily limited scion extension growth. Applying PGRs in the nursery to more brittle rootstock-scion combinations may be an option for improving graft union strength and preventing tree losses. However, more efficient methods of application are needed for this approach to be commercially viable.

We are continuing work to further develop accomplishments in Objective 1: a. we will continue to release new apple rootstocks; b. we continue to work on nutrient uptake genetic and breeding; c. we continue to work on the analysis of micro-CAT scans of graft unions to establish morphometric parameters of comparison between strong and weak unions.

**Objective 2: Devise and apply genomic and bioinformatic tools for marker-assisted breeding of apple rootstocks including identification of the genes underlying resistance to the replant disease complex and to nutrient uptake efficiency.**

The bioinformatic portion of this objective was accomplished before the separation of Dr. Baldo (20%) from the project early during the course of this reporting period.

**Tool for identification of gene variants for rootstock breeding.** Once a genomic region is identified as being important for the modulation of a specific important trait it is difficult to identify other apple plants that may contain the trait associated genomic region. To solve this we have analyzed raw Genotyping-by-sequencing data from 1995 accessions of apples (31 species) from the Geneva apple germplasm repository and selected additional breeding material. The SNPs identified were made viewable on the published genome assembly, while diversity is also viewable in chromosome order in Tassel software. This makes it possible to identify SNPs among wild and breeding material near and in candidate genes of interest. This tool has the potential to speed up the breeding process, and identify new sources of important apple rootstock traits. (Baldo, Zhong)

**Validation of location and effect of dwarfing genes in the apple genome and relationship to early bearing induction in apple trees.** One trait that makes apple rootstocks very special in the realm of fruit production is the ability to dwarf trees and make them more productive earlier in the life of the orchard. It is estimated that the implementation of these traits in U.S. apple production has increased productivity by more than \$0.75B in the past 30 years. Being able to track the origin and effect of these traits will enable the breeding and selection of new disease resistant improved apple rootstocks. In FY 2013 we completed a genetic map that utilized markers developed by the RosBREED consortium to examine the genetics of dwarfing and early bearing in two apple rootstocks breeding populations. The results of this genetic quest confirmed earlier findings by our lab and made possible modeling of dwarfing gene interactions. This accomplishment made quicker the development of new early bearing apple rootstocks and improved prediction of dwarfing potential of such apple rootstocks. (Fazio)

**We made a first report about the genetics of nutrient absorption by rootstocks in tree fruits.** We utilized quantitative trait analysis in a breeding population to uncover gene locations for leaf mineral concentrations of leaves for important plant nutrients like potassium (K), sodium (Na), phosphorous (P), calcium (Ca), zinc (Zn), magnesium (Mg) and molybdenum (Mo). We also noticed that several nutrient concentrations were correlated indicating the co-absorption or common transport mechanisms for some nutrients. We found significant positive linear correlations between Ca and Cu, Mg, P, and S. A significant correlation was also detected between Cu and K, Cu and P, also between K and P and between S and P. Segregation of a major gene for leaf K concentration in certain rootstocks had strong effects on the concentrations of other nutrients in the leaves, suggesting that it might be a good target for selection in the breeding program. As this is a first report, we are attempting to understand the physiological influence of these genes on other measurable traits in apple rootstocks and scions. It is possible that even subtle changes in plant nutrients caused by variable gene combinations in the rootstocks can affect productivity and disease resistance of apple trees. (Fazio)

**Genes activated during infection with components of replant disease.** RNA-seq technology was applied to identify the transcriptomic changes associated with apple root defense response to *Pythium ultimum* infection. Genes encoding homolog proteins with functions of pathogen detection such as chitin elicitor receptor kinase (CERK) and wall-associated receptor kinase (WAK) were among the differentially expressed apple genes. The biosynthesis and signaling of several plant hormones including ethylene, jasmonate and cytokinin were specifically induced in response to *P. ultimum* inoculation. Genes encoding enzymes of secondary metabolisms, cell wall fortification and pathogenesis related (PR) protein, laccase, mandelonitrile lyase and cyanogenic beta-glucosidase were consistently up-regulated in the later stages of infection.

We are continuing work to further develop accomplishments in Objective 2: we are using data generated in this objective to clone and identify genes and gene networks associated with root and rootstock traits which is related to Objective 2 of the new project plan.



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## Past Accomplishments of Investigators

### GENNARO FAZIO

#### EDUCATION

**Ph.D.** University of Wisconsin-Madison Department of Plant Breeding and Plant Genetics. Area of study: Application of molecular markers for breeding, quantitative genetics, plant variety identification. November 2001.

**M.S.** Agronomy-Molecular Biology, Brigham Young University, Provo, Utah, April 1997. Area of study: Identification of molecular markers linked to crown rot resistance in tomato.

**B.S.** Molecular Biology and Agronomy, Chemistry minor, BYU, Provo, Utah, 1995.

University of Bari, Italy, Agronomy Department, attended 1986-1987.

#### PROFESSIONAL EXPERIENCE

Research Geneticist, Plant Genetic Resources Unit, USDA-ARS, Geneva NY (2001-present).

Adjunct Professor, Dept. of Horticulture, Cornell University, Geneva NY (2001-present).

Research Assistant, University of Wisconsin-Madison (1997-2001).

#### ACCOMPLISHMENTS

1. Patented and released 13 apple rootstocks (G.41, G.935, G.202, G.210, G.214, G.890, G.969, G.814, G.213, G.778, G.228, G.189 and G.222) in the U.S. and internationally. These new rootstocks provide protection from fire blight, tolerance to replant disease, and increased productivity in the orchard. Production of these new Geneva® rootstocks in 2017 approached 10 million plants in the U.S. and is increasing.
2. Discovered inheritance of dwarfing, precocity, fire blight resistance, root morphology, scion branch angle modification in apple rootstocks.
3. Developed marker assisted breeding scheme for selection of dwarfing, precocious, disease resistant rootstocks.
4. Developed concept and initial experiments for the use of prohexadione (Apogee) in apple rootstock liner production. Several apple rootstock nurseries worldwide have adopted this method to increase quality and yield of propagation beds.
5. Discovered quantitative trait loci associated with nutrient absorption and translocation into the scion for important plant nutrients like potassium (K), sodium (Na), phosphorous (P), calcium (Ca), zinc (Zn), magnesium (Mg) and molybdenum (Mo). This study is the first one of its kind performed on apple rootstocks.
6. Characterized in a collaborative study the influence of apple rootstocks on the expression of scion genes.

#### SELECTED HONORS

Co-awardee of the 2016 U.P. Hedrick award of the Journal of the American Pomological Society.

Journal of the American Society for Horticultural Science Outstanding Fruit Research Paper Award for the year 2014, awarded August 2015.

Federal Laboratory Consortium for Technology Transfer “Excellence in Technology Transfer” award winner in 2015 for “New Productive, Disease Resistant Apple Trees”.

North Atlantic Area Technology Transfer Award Winner in 2014 for development and commercialization of apple rootstocks critical for the U.S. industry.

#### SELECTED RECENT INVITED PRESENTATIONS in reporting period 2014-2018:

Utah State Horticulture Association Annual meetings Jan. 2017 Keynote “Overview of current rootstock technologies” and “Breeding methods for development of new apple rootstocks”

Kazakh National Agrarian University Dec. 2016 “Review current research on apple breeding” and “Apple rootstock technologies to aid Kazakh apple growers”.

International Fruit Tree Association Annual meetings Feb. 2016 “Rootstocks Matched to Varieties”.

Europa Fruit Tree Rootstock Consortium Aug. 2015 Angers, France. “Breeding and selection of Geneva® apple rootstocks”

University of Guelph, Department of Plant Agriculture Winter 2015 Seminar Series. “Leveraging genomic resources to breed a difficult perennial crop: apple rootstocks”



- Ohio Produce Growers and Marketers (OPGMA) 2015 Congress. January, 2015, Sandusky, OH. “Updates from the National Apple Rootstock Breeding Program”
- Washington State Horticulture Society Annual Meetings, Special Rhizosphere Symposium. Kennewick, WA. December 2014. “Optimal tree nutrition and fruit production begins underground – the apple rootstock story”
- The Arsenal, Central Park, NYC Parks, New York, NY. October 2014. Title: “Importance of germplasm conservation in context with the loss of wild apple forests in Kazakhstan”
- SELECTED PUBLICATIONS in reporting period 2014-2018**
- Fazio, G., 2017. Evaluating and improving rootstocks for apple cultivation. <http://dx.doi.org/10.19103/AS.2016.0017.08> © Burleigh Dodds Science Publishing Limited, 2017.
- Stuart Adams, Brent L. Black, Gennaro Fazio and Nicholas A. Roberts 2017. The Effect of Plant Growth Regulators on Apple Graft Union Flexural Strength and Flexibility. *J Am Pom Soc. (APS)* 71:8-18
- Norelli JL, Wisniewski M, Fazio G, Burchard E, Gutierrez B, et al. (2017) Genotyping-by-sequencing markers facilitate the identification of quantitative trait loci controlling resistance to *Penicillium expansum* in *Malus sieversii*. *PLOS ONE* 12(3): e0172949. <https://doi.org/10.1371/journal.pone.0172949>
- T. Tworkoski, G. Fazio and D.M. Glenn 2016. Apple rootstock resistance to drought. *Scientia Horticulturae* 204:70-78.
- T. Tworkoski and G. Fazio 2016. Hormone and growth interactions of scions and size-controlling rootstocks of young apple trees. *Plant Growth Regulation* 78:105-119.
- S. Shin, P. Zheng, G. Fazio, M. Mazzola, D. Main and Y. Zhu 2016. Transcriptome changes specifically associated with apple (*Malus domestica*) root defense response during *Pythium ultimum* infection. *Physiological and Molecular Plant Pathology* 94:16-26.
- Z. Migicovsky, K.M. Gardner, D. Money, J. Sawler, J.S. Bloom, P. Moffett, C.T. Chao, H. Schwaninger, G. Fazio, G.-Y. Zhong and S. Myles 2016. Genome to Phenome Mapping in Apple Using Historical Data. *The Plant Genome*.
- Fazio G., T.L. Robinson and H.S. Aldwinckle 2015. The Geneva apple rootstock breeding program. *Plant Breeding Reviews* 39:379-424.
- Tworkoski, T., Fazio, G. 2015. Effects of Size-Controlling Apple Rootstocks on Growth, Abscisic Acid, and Hydraulic Conductivity of Scion of Different Vigor, *International Journal of Fruit Science*, DOI: 10.1080/15538362.2015.1009973
- Volk, G., Chao, C.T., Norelli, J., Brown, S., Fazio, G., Peace, C., McFerson, J., Zhong, G.-Y., and Bretting, P., 2015. The vulnerability of US apple (*Malus*) genetic resources. *Genetic Resources and Crop Evolution*:1-30
- Zhu, Y., Fazio, G., Mazzola, M. 2014. Elucidating the molecular responses of apple rootstock resistant to ARD pathogens: Challenges and opportunities for development of genomics-assisted breeding tools. *Nature Horticulture Research*. doi:10.1038..
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- Fazio, G. 2014. Breeding apple rootstocks in the 21st century – what can we expect them to do to increase productivity in the orchard?. *Acta Horticulturae*. 1058:421-428.
- Robinson, T., Fazio, G., Aldwinckle, H. 2014. Characteristics and performance of four new apple rootstock from the Cornell-USDA apple rootstock breeding program. *Acta Hort.* 1058:651-656.
- Jensen P.J., Fazio, G., Altman, N., Praul, C., McNellis, T.W. 2014. Mapping in an apple (*Malus x domestica*) F1 segregating population based on physical clustering of differentially expressed genes. *BMC Genomics*. 15: 261
- Fazio, G., Y. Wan, D. Kviklys, L. Romero, R.R. Adams, D. Strickland, and T.L. Robinson, 2014. Dw2, a New Dwarfing Locus in Apple Rootstocks and Its Relationship to Induction of Early Bearing in Apple Scions. *J Am Soc Hort Sci* 139:1-12.



**Gan-Yuan Zhong, Ph.D.**

Research Leader/Supervisory Plant Geneticist, USDA-ARS, Grape Genetics Research Unit, Plant Genetic Resources Unit

**Education:**

- 1991 Ph.D. Genetics, University of California, Davis.  
 1985 M.S. Crop Genetics and Breeding, Institute of Crop Germplasm Resources, Chinese Academy of Agricultural Sciences, Beijing, China  
 1982 B.S. Agronomy, Jiangsu Agricultural College, China

**Professional Experience and Research Accomplishments:****January 2010 – Present, Research Leader, USDA-ARS, Plant Genetic Resources Unit**

- Characterized fruit composition and content of polyphenolic compounds in the USDA-ARS *Vitis* germplasm
- Co-led an effort in genotyping USDA-ARS apple and grape collections and mapping populations using the SNP chips and genotyping-by-sequencing techniques.
- Contributed to various USDA-ARS NPGS missions and activities, particularly those relevant to the USDA-ARS Geneva genetic resources.

**May 2007 - Present, Research Leader, USDA-ARS, Grape Genetics Research Unit**

- Demonstrated genome-scale mRNA transmission between scions and rootstocks in grapevine
- Determined the likely genetic and molecular basis for several fruit quality traits of grapes
- Investigated genetic factors controlling resistance to root-knot nematodes and evaluated the feasibility of developing a transgenic solution to root-knot nematodes in grapevines
- Investigated the genetic and molecular mechanisms controlling grapevine plant architecture

**2004 - 2007, Senior Research Scientist, Pioneer Hi-Bred International, Inc. A DuPont Business**

- Developed and implemented molecular markers and other molecular breeding technologies in maize research and product development
- Conducted genetic dissection of complex traits in maize
  - Developed and implemented molecular characterization tools for maize transgenic trait and technology development

**1995 – 2004, Research Manager/Scientist, Pioneer Hi-Bred International, Inc.**

- Led a Transgene Genetics Project for research on transgene silencing and position effect of transgenes in maize
- Carried out QTL mapping of seed quality traits in maize
- Managed product development process, regulatory compliance, and field operations for transgenic maize product development

**Recent publications**

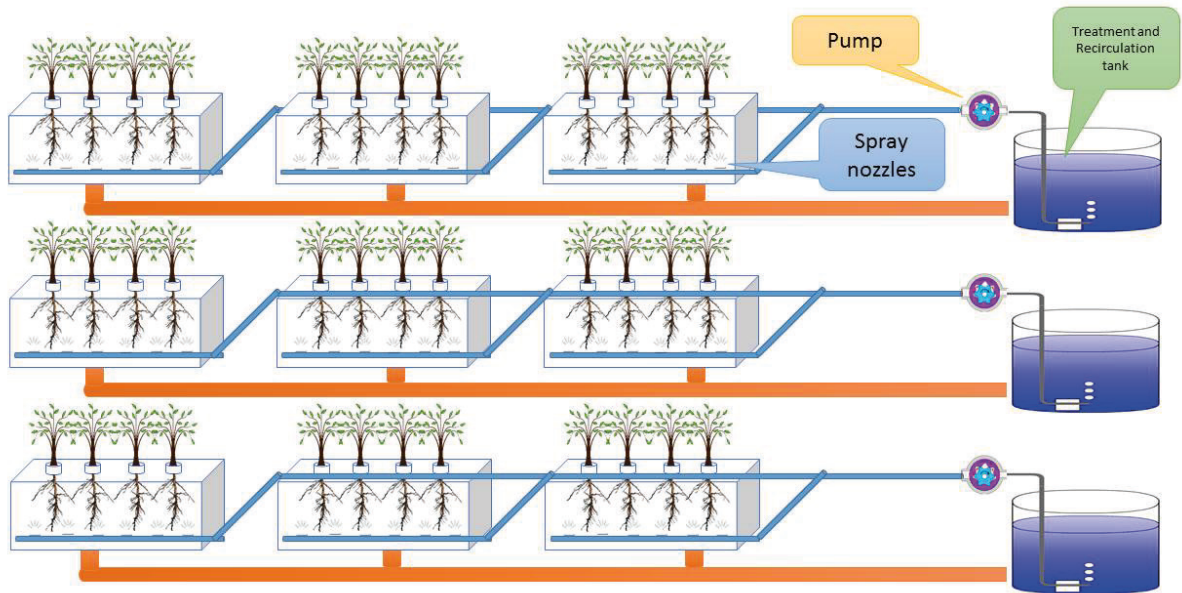
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- Yi Wang, Xianju Liu, Chong Ren, Gan-Yuan Zhong, Long Yang, Shaohua Li, Zhenchang Liang 2016. Identification of genomic sites for CRISPR/Cas9-based genome editing in the *Vitis vinifera* genome. *BMC Plant Biol* 21;16:96. Epub 2016 Apr 21.



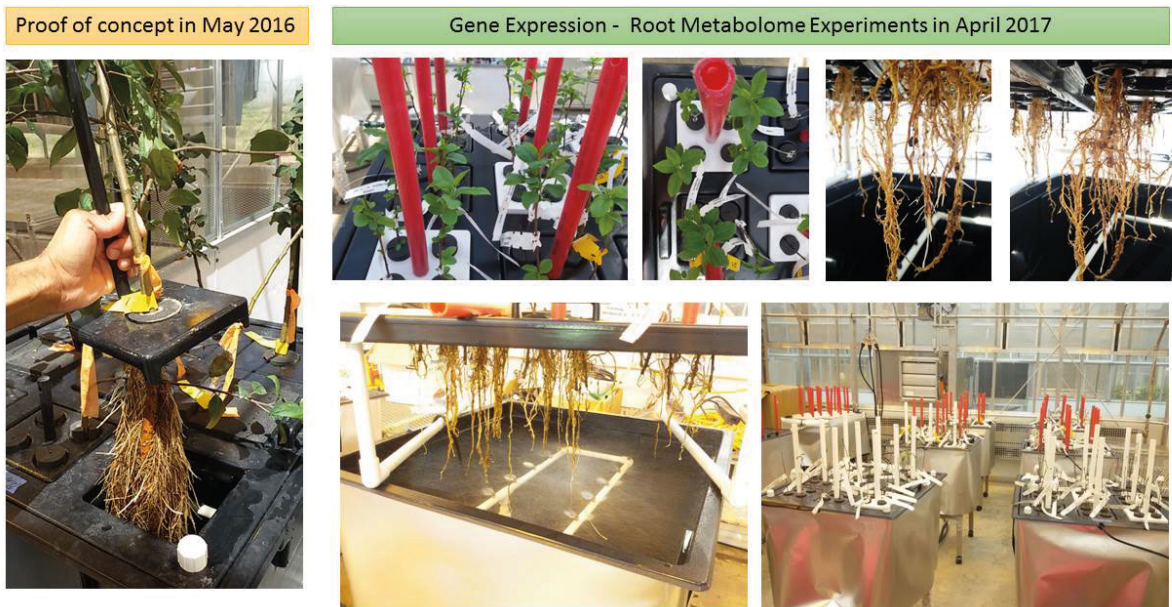
- Migicovsky, Z., Gardner, K., Money, D., Sawler, J., Bloom, J., Moffett, P., Chao, C.T., Schwaninger, H.R., Fazio, G., Zhong, G., Myles, S. 2016. Genome to phenome mapping in apple using historical data. *The Plant Genome*. 9(2) DOI: 10.3835/plantgenome2015.11.0113.
- Wen, Y., Zhong, G., Gao, Y., Lan, Y., Duan, C., Pan, Q. 2015. Using the combined analysis of transcripts and metabolites to propose key genes for differential terpene accumulation across two regions. *Biomed Central (BMC) Plant Biology*. 15:240. DOI: 10.1186/s12870-015-0631-1.
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- Money, D., Gardner, K., Migicovsky, Z., Schwaninger, H.R., Zhong, G., Myles, S. 2015. LinkImpute: fast and accurate genotype imputation for non-model organisms. *G3, Genes/Genomes/Genetics*. Doi: 10.1534/G3.115.021667.
- Bai, Y., Dougherty, L., Cheng, L., Zhong, G., Xu, K. 2015. Uncovering co-expression gene network regulating fruit acidity in diverse apples. *Biomed Central (BMC) Genomics*. 16(1):612. DOI:10.1186/s12864-015-1816-6.
- Cousins, P., Zhong, G. 2015. Hybrid and selfed seedling progenies of *Vitis* hybrid 'Roger's Red' grape segregate for tendril distribution. *Acta Horticulturae Proceedings (ISHS)* 1082:373-378.
- Yang, Y., Labate, J.A., Liang, Z., Cousins, P., Prins, B.H., Preece, J.E., Aradhya, M.K., Zhong, G. 2014. Multiple loss-of-function 5-O-Glucosyltransferase alleles revealed in *Vitis vinifera*, but not in other *Vitis* species. *Theoretical and Applied Genetics*. 127(11):2433-2451.
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- Wan, Y., Schwaninger, H.R., Baldo, A.M., Labate, J.A., Zhong, G. Simon, C 2013. A phylogenomic analysis of the grape genus (*Vitis*) reveals broad reticulation and concurrent diversification during quaternary climate change. *BMC Evolutionary Biology*. 13:141.
- Sawler J, Reisch B, Aradhya MK, Prins B, Zhong G-Y, et al. 2013. Genomics Assisted Ancestry Deconvolution in Grape. *PLoS ONE* 8(11): e80791. doi:10.1371/journal.pone.0080791.
- Miller AJ, Matasci N, Schwaninger H, Aradhya MK, Prins B, Zhong G-Y, et al. 2013. *Vitis* Phylogenomics: Hybridization Intensities from a SNP Array Outperform Genotype Calls. *PLoS ONE* 8(11): e78680. doi:10.1371/journal.pone.0078680
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Appendix B – Additional Figures.



Appendix Figure 1. Schematics of aeroponics system built in Geneva NY in 2017. We plan to expand capabilities of these systems or build new ones with additional sensors.



Appendix Figure 2. Ability to study root systems without the encumbrance of soil is one of the advantages of growing apple roots in air.

## Treatments and Diagnostics Possible with Aeroponics

Integration with robotics will allow multiple automated diagnostics and treatments

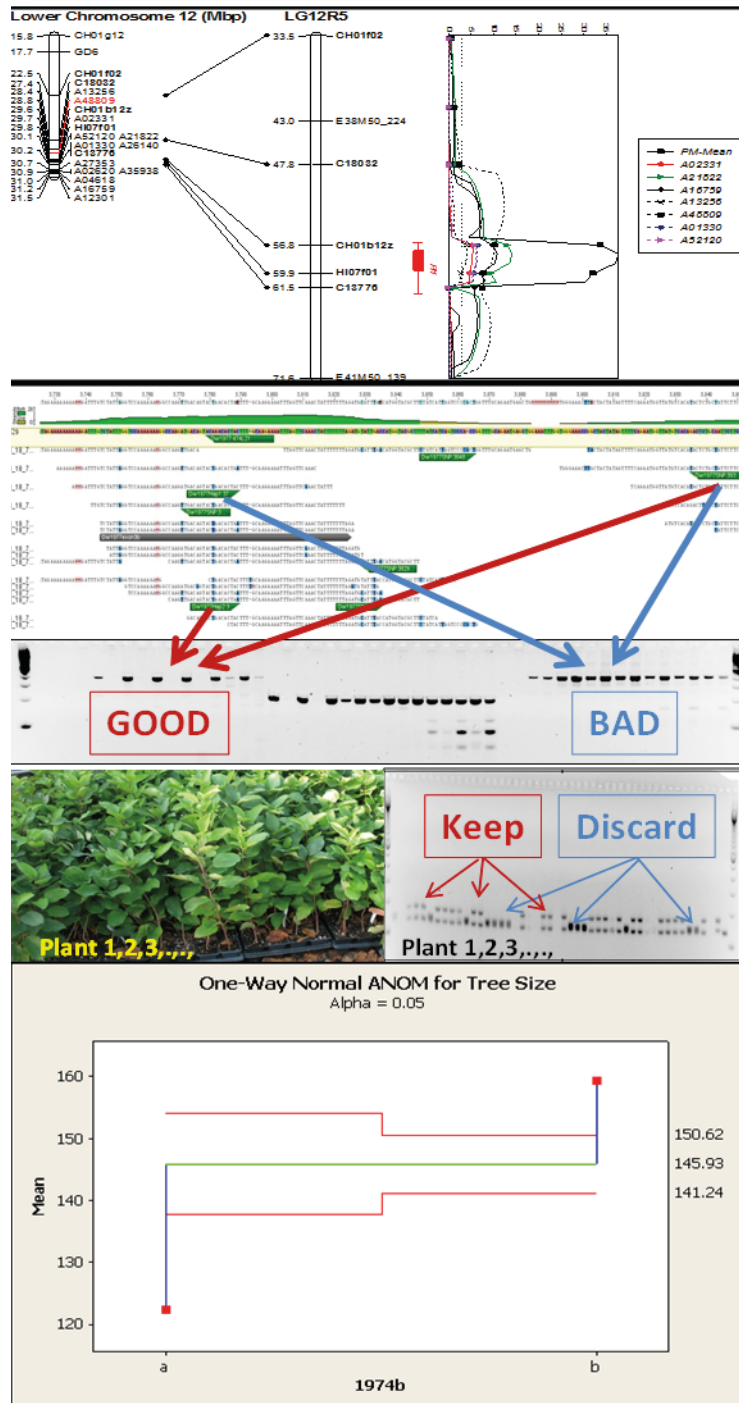
- Mineral nutrients
- pH
- Temperature (cold or heat shock) with the addition of a transducer
- Plant growth regulators
- Root pathogens
- Salinity
- Drought
- Easy access roots – RNA, gene expression
- Root growth
- Architecture
- Genotype specific root metabolites
- Disease resistance
- Nutrient induced architecture
- Root gas exchange and respiration

Appendix Figure 3. Examples of treatments and diagnostic measurements possible with aeroponic systems.





# Marker Assisted Apple Rootstock Breeding Pipeline



Discover QTLs and eQTLs co-located in the genome with QTLs for traits of interest

Harness DNA sequence variation and develop haplotype specific PCR primers

Test primer combinations for robustness and validate on parents. Grow seedlings, extract DNA and use markers to cull undesirable plants

Validate outcome on existing phenotyped populations and older datasets using good statistical methods

Appendix Figure 4. Marker assisted breeding pipeline in the Geneva breeding program.



# 2020-2021 FUTURE RESEARCH

- 1) Evaluation of new bactericides for controls of fire blight of apples caused by *Erwinia amylovora* and evaluation of new postharvest fungicides for pome fruits- Dr. Jim Adaskaveg
- 2) Observing the phytotoxic effects on organic apples from various fungicide applications containing sulfur. A demonstration trial. - Devencenzi Agricultural Pest Management & Research
- 3) Study on Mechanically Mass Harvesting of Cling Peaches (apples are included)- Dr. Starvos Vougioukas
- 4) Apple Rootstock Breeding Program Field Trials - Dr. Gennaro Fazio
- 5) Postharvest Quality and Physiology of 'Gala', 'Granny Smith', and 'Fuji' Apples Subjected to Phytosanitary Irradiation- Dr. Anu Prakash

<b>2020-2021</b>	<b>AMOUNT</b>
Jim Adaskaveg- Evaluation of Bactericide...	\$23,000 <sup>1</sup>
Devencenzi Agricultural Pest Management...	\$12,000 <sup>2</sup>
Mechanically Quality and Physiology...	\$2,500 <sup>3</sup>
Apple Rootstock Breeding Program	\$0
Postharvest Quality...	\$1,500 <sup>4</sup>
<b>FISCAL IMPACT FOR 2020-2021:</b>	<b>\$39,000</b>

<sup>1</sup>Research done by Dr. Adaskaveg will be done on both organic and conventional apples.

<sup>2</sup>\$6,000 of the total balance for this project was paid at the end of the 2019-2020 fiscal year and the remaining \$12,000 is budgeted for 2020-2021.

<sup>3</sup>The CAC has partnered with the California Pear Advisory Board for this research project. The research includes apples and is applicable to our industry as well.

<sup>4</sup>This amount was donated by the California Apple Commission for apples that will be used in the study.



University of California  
Division of Agricultural Sciences  
**PROJECT PLAN/RESEARCH GRANT PROPOSAL**

Project Year: 2020-21 Anticipated Duration of Project: 1<sup>st</sup> year of 3 years

Principal Investigators: J. E. Adaskaveg

Cooperating: D. Thompson, D. Cary, and H. Forster

Project Title: Evaluation of new biological controls and natural products for management of fire blight caused by *Erwinia amylovora* and postharvest decays of apple

Keywords: Biological control, natural products, organic treatments

### JUSTIFICATION/ BACKGROUND

***Epidemiology and management of fire blight.*** Fire blight, caused by the bacterium *Erwinia amylovora*, is one of the most destructive diseases of pome fruit trees including apples. The disease is indigenous to North America but has spread worldwide. In the spring, flowers are infected through natural openings in nectaries and pistils. From there, the bacteria spread into the peduncle, spur, and twig where it causes a canker. During warm, humid weather, ooze droplets consisting of new inoculum are exuded from peduncles and other infected tissues. Inoculum is spread by wind, rain, insects, birds, or by contaminated pruning tools. Secondary infections may occur throughout the growing season. The pathogen overwinters in cankers, flower buds, and diseased fruit.

Current chemical control programs for fire blight are based on protective schedules using available compounds that are best used as contact treatments. Conventional copper compounds are only effective when disease severity is low to moderate. They may cause fruit russeting and therefore, labeled rates are at low amounts of metallic copper equivalent (MCE) that are at the limit of effectiveness. New re-formulated copper products that can be used at reduced MCE rates and that cause less phytotoxicity are available. Some products are OMRI-approved including Badge X2, CS-2005, Cueva, and MasterCop. Among these, Cueva has been often more effective without causing phytotoxicity. Contributing to the low efficacy of copper is that low to moderate levels of copper insensitivity in pathogen populations have been detected in our surveys. Because only few treatments are permitted for organic apple production, research on OMRI-approved copper and other products needs to be continued.

The antibiotics streptomycin, oxytetracycline and kasugamycin can only be used in conventional pome fruit production. The incidence of resistance to streptomycin in California orchards has been fluctuating from very high to low in our surveys between 2006 and 2019. Reduced sensitivity to oxytetracycline has only been found sporadically, and these isolates did not persist. However, in 2018 and 2019, we detected highly resistant strains at two locations. In preliminary studies we characterized these strains genetically and determined that the oxytetracycline resistance genes are similar to those that were previously described from non-plant pathogenic epiphytic bacteria. Apparently, these genes have jumped between bacterial species. It will also be interesting to determine if there is a molecular association between high-streptomycin and high-oxytetracycline resistance. Because kasugamycin (Kasumin) is organically produced by fermentation, it is in the process of being submitted to the NOSB for approval as an organic treatment. Resistance in *E. amylovora* has not been found to date among hundreds of strains evaluated from different pome fruit growing areas in California.

The biocontrol treatments Blight Ban A506 (*Pseudomonas fluorescens* strain A506) and Bloomtime Biological (*Pantoea agglomerans* strain E325), as well as the fermentation product of *Bacillus subtilis* Serenade (strain QST 713) have been inconsistent over the years in their performance in our trials and were most effective under low inoculum levels and less favorable micro-environments. Serenade, using the new liquid formulation ASO showed higher efficacy in mixtures with copper such as Cueva. Research will need to be continued with new copper products or other additives. The biocontrol Blossom Protect (*Aureobasidium pullulans*) has been very effective under less to moderately favorable disease conditions, and it is one of the most consistent biologicals that we have evaluated. Biocontrols are most



effective when they are actively growing on the plant. Several mechanisms have been described for biocontrol agents that lead to the control of the pathogenic agent including: (1) Competition; (2) Antibiosis or biochemical inhibition; (3) Site exclusion; (4) Parasitism; and (5) Systemic-acquired resistance.

In research in 2017 and 2018 on apple, use of the OMRI-approved LifeGard (Certis) to complement copper and other control materials as a systemic acquired resistance (SAR) treatment was unsuccessful. The non-organic compound acibenzolar-S-methyl (Actigard) was also shown to be inconsistent in previous trials on pear. Therefore, we are evaluating other bactericide alternatives such as the natural fermentation compounds lactic acid,  $\epsilon$ -poly-L-lysine, and nisin that have known anti-bacterial activity and are used as US-FDA-approved food preservatives, as well as capric/caprylic acids. They potentially could qualify as biopesticides with the EPA and ultimately as organic compounds with the NOSB and OMRI. Our initial evaluations with these compounds showed high toxicity in in vitro studies, but only moderate activity in the field. Therefore, we continue to try to improve their efficacy by using selected additives. We are currently consulting with a formulation chemist with a major registrant on ways to formulate  $\epsilon$ -poly-L-lysine, and nisin. Plant extracts such as clove, garlic, and cinnamon oils to be evaluated are EF-400, BacStop, ET91, and Gargoil. Other natural products that we plan to continue to evaluate are Alum ( $KAl(SO_4)_2 \cdot 12H_2O$ ), chlorine dioxide ( $ClO_2$ ), and TD-NC-1. These products may be registered in the future and some are part of an IR-4 program to test novel potential solutions for diseases that are difficult to manage such as fire blight.

In a recent international fire blight meeting, information was discussed concerning the pending registration of several mixtures of bacterial phages for reducing *E. amylovora* population levels. We unsuccessfully attempted to obtain a new composite phage product in 2020, but we will try again in 2021. (Note: the company did send a composite phage product in 2020 for walnut blight management). In research done by others, mixtures of the phages with other biological controls such as *Aureobasidium pullulans* (e.g., Blossom Protect) gave a higher level of control than using either product alone (i.e., phages or *A. pullulans*). Our goal is to develop effective rotational programs for organic farming practices with the use of copper, biologicals, and innovative strategies such as registering kasugamycin, food preservatives, and potential phages as OMRI approved natural products. We also will work on conventional programs with the use of antibiotics alone or in mixtures with copper, biologicals, or natural products during bloom or as cover sprays during early fruit development.

**Management of postharvest decays.** Apples like other pome fruits can be stored for some period of time using the correct storage environments. Still, postharvest decays caused by fungal organisms can cause losses that are economically detrimental to storing and marketing of fruit. The major postharvest pathogens of apples include *Penicillium expansum*, *Botrytis cinerea*, *Alternaria alternata*, *Mucor piriformis*, and *Neofabraea* spp. causing blue mold, gray mold, black mold, Mucor decay, and bull's eye rot, respectively. In California, the former three are most common. There is a deficiency of postharvest biocontrols and natural products that are available to prevent decays in storage. BioSave 100 is one of the only materials currently available in the United States, but it is not very effective. Other products like Aspire have been discontinued. Still, new biological products have been registered in other countries.

In our studies we demonstrated that the food preservative natamycin is effective against a spectrum of postharvest pathogens including those causing gray mold, Rhizopus rot, Mucor rot, and Alternaria decays, but it was not highly effective against blue mold. Natamycin was registered as the biopesticide BioSpectra 100SC on stone and citrus fruits but not pome fruit. This fungicide has been federally approved by the US-Food and Drug Administration (FDA) as a food additive to prevent mold growth, including *Penicillium* species, on dairy (e.g., cheese and yogurt) and meat products for many years in the United States. Over all the years in use, resistance in *Penicillium* species against natamycin has not occurred. Working with DSM, the producer, and Pace International, the registrant, we submitted a letter of support to the NOSB for approval of natamycin as an organic postharvest treatment of pome fruits. Unfortunately, the first submission request was rejected by the NOSB in the fall of 2019. Several other registrants of natamycin will pursue conventional and organic registrations. Natamycin is 'exempt from tolerance' by the US-Environmental Protection Agency (EPA). Codex is currently developing a similar category for these types of biopesticides. Therefore, our goal is to continue to evaluate natamycin and other new postharvest fungicides such as an organic formulation of polyoxin-D for the management of postharvest decays of apples.



## Objectives for 2021

### **Fire blight research**

1. Evaluate the efficacy of treatments for managing fire blight.
  - A. Laboratory in vitro tests with copper and zinc products in combination with antibacterial food additives (lactic acid,  $\epsilon$ -poly-L-lysine, and nisin), natural organic acids (capric/caprylic acids), new and biologicals.
  - B. Field trials with protective air-blast spray treatments:
    - i. Kasugamycin in combination with organic treatments to support organic petition to NOSB.
    - ii. New formulations of copper (e.g., Badge X2, CS-2005, Cueva, MasterCop) zinc, and chlorine dioxide in combination with food additives (lactic acid, poly-L-lysine, nisin), and biocontrols (e.g., Serenade ASO) or natural products (Alum, EF-400, BacStop, TDA-NC-1,) as new antibacterial strategies.
    - iii. Bacterial phage-mixture products in combination with other biological control treatments (i.e., Blossom Protect) to provide an integrated strategy.

### **Postharvest research**

2. Comparative evaluation of new postharvest fungicides
  - A. Evaluate natamycin (BioSpectra), other new postharvest fungicides such as organic formulations of polyoxin-D, and Academy at selected rates against gray mold, blue mold, Alternaria decay, and bull's eye rot and compare to fludioxonil.
  - B. Evaluate mixtures of these compounds and new formulations of natamycin to improve performance of the fungicide.

## Plans and Procedures

**Laboratory assays and small-scale field trials to evaluate the efficacy of treatments for managing fire blight.** In laboratory assays, we will evaluate new copper and zinc products, antibacterial food additives such as lactic, poly-L-lysine, and nisin, and capric/caprylic acids for their toxicity to *E. amylovora* in laboratory assays. Growth will be compared between non-amended and amended media, and the most effective additives will be selected for field trials.

In small-scale field tests in an experimental orchard, treatments using the copper products Badge, CS-2005, MasterCop, and/or Cueva, and the biological treatments Blossom Protect, and Serenade, will be applied to during bloom using small field sprayers. Copper treatments will be mixed with newly identified, food grade-additives (e.g., lactic acid, poly-L-lysine, and nisin) based on laboratory results. Additionally, Alum, TDA-NS-1, and chlorine dioxide also will be evaluated based on availability. After a selected time, blossoms will be spray-inoculated with *E. amylovora* ( $10^6$  cfu/ml), and disease will be evaluated based on the number of diseased blossoms per replication.

**Field studies on the management of fire blight using protective treatments during the growing season.** Air-blast sprayer field studies on the relative efficacy of protective treatments will be conducted in experimental apple orchards at KARE and UC Davis. Four applications will be done (at pre-bloom, 10-20%, 60-80% full bloom, and petal fall). The relative efficacy of protective treatments (Kasumin, copper products, Blossom Protect, Serenade, Alum, TDA-NS-1), as well as of selected food grade-additives (e.g., lactic acid, poly-L-lysine, nisin) based on laboratory results will be evaluated alone or in selected mixtures to develop integrated programs for resistance management. Additionally, two companies are willing to provide new bacterial phage-mixture products, and they have suggested integration with treatments with *Aureobasidium pullulans* (i.e., Blossom Protect). For this, we will initially follow recommended guidelines from the registrant, and we are currently cooperating with one company by providing strains of the pathogen from California to select phages that are possibly more specific for these strains. Incidence of new blight infections on blossoms and leaves in addition to potential phytotoxic effects of the treatments (e.g., fruit russetting) will be evaluated. Application timings will be determined based on temperature, rainfall, and host development. Treatments will be replicated on four to eight trees. Data for chemical and biological control will be analyzed using analysis of variance and LSD mean separation procedures of SAS 9.4.

**Efficacy of new postharvest fungicides for managing apple decays in storage.** Fruit (cvs. Granny Smith and Fuji apple) will be treated similar to commercial practices concerning harvest, handling, packing, and temperature-management of fruit. Fruit will be wound-inoculated with conidial suspensions of several decay fungi (*P. expansum*, *B. cinerea*, *Alternaria alternata*) and treated after selected times. Natamycin (BioSpectra 100SC, Cerafruta) and organic formulations of polyoxin-D (Ph-D, Oso) will be evaluated by

themselves and in mixtures with other fungicides (e.g., fludioxonil) in experimental packingline trials at Kearney Agricultural Center at selected rates. Four replications of 24 fruit will be used. For the new fludioxonil-difenoconazole pre-mixture (i.e., Academy), we will compare the efficacy of different application methods (in-line drench, CDA, and T-Jet). Treatments will be compared to fludioxonil. Data will be analyzed using analysis of variance and averages will be separated using least significant difference mean separation procedures of SAS 9.4.

### **Benefits to the industry**

**Fire blight research.** With removal of antibiotics as treatments for organic production due to their use in human medicine and animal agriculture, research on organic alternatives are desperately needed for apple production. Because kasugamycin is not used in human medicine or veterinary science, has a different MOA from other antibacterial products, and is organically produced by fermentation, this pending submission is supported by the registrant (UPL) to the NOSB for approval as an organic treatment. Furthermore, with the limited number of materials available to organic pome fruit growers, new active ingredients that are OMRI approved are needed for managing fire blight in an integrated approach. Our research project has identified biologicals with consistent and inconsistent performance and growth enhancers that may improve their overall performance. Information from this research project will help to develop integrated programs using rotations or mixtures of organic compounds (e.g., copper), biologicals (Serenade, Blossom Protect, etc.), food-grade, antibacterial additives, phage mixtures and possibly residual oxidizers such as chlorine dioxide and TDA-NC-1 to effectively manage the disease. Thus, we are testing innovative solutions for managing fire blight potentially without antibiotics for the organic apple industry. This information is being posted on the UCIPM website and in apple industry newsletters.

**Postharvest decay management research.** For the packer, the challenge is to develop management programs using new fungicides for control of gray mold, blue mold, Alternaria rot, and other decays of apple. The challenge to the industry is to store fruit and provide decay-free, wholesome fruit to local and distant markets. For this, fungicide management programs for apple need to be developed and continually adapted based on new organically certified fungicides that will allow rotations and mixtures to optimize control of postharvest fungal pathogens. The development of several effective postharvest fungicide treatments including materials that are exempt from tolerance (i.e., natamycin), are NOSB approved (i.e., polyoxin-D), and are potentially NOSB- and OMRI-certified (i.e., natamycin) will greatly decrease losses of fruit from various decays during storage in a durable program that will be effective for many years. Thus, information from this research directly benefits growers and packers by identifying and registering new materials, as well as developing improved application practices for control of postharvest diseases of apples.

### **References**

1. Van Der Zwet, T. and Keil, H.L. 1979. Fire Blight - A Bacterial Disease of Rosaceous Plants. United States Department of Agriculture, Handbook No. 510.200 pp.
2. Vanneste, J. (ed.). 2000. Fire Blight: The Disease and its Causative Agent, *Erwinia amylovora*. CAB International, Oxford. 384 pp.

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**Budget Request:**

Budget Year: 2020-2021.

Funding Source: \_\_\_\_\_ Apple Commission of California \_\_\_\_\_

Salaries and Benefits:	Post-Docs/SRA	<u>5,000</u>
	Lab/Field Ass't	<u>1,000</u>
	Subtotal	<u>6,000</u>
	Employees' Benefits	<u>3,500</u>
	Subtotal	<u>9,500</u>
Supplies and Expenses*		<u>12,000</u>
Equipment		<u>0</u>
Operating Expenses/Equipment Travel (Davis Campus only)		<u>0</u>
Travel		<u>1,500</u>
Department Account No. _____		<b>Total <u>23,000</u></b>

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\* - Costs include expenses of \$12,000 for maintaining an apple orchard at the Kearney AgCenter.

Originator's Signature: *J. E. Haskew* \_\_\_\_\_ Date: 8-14-2020

Department Chair: *Katherine Burkovich* \_\_\_\_\_ Date: 8-14-2020

Liaison Office: \_\_\_\_\_ Date: \_\_\_\_\_

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**Devencenzi Agricultural Pest Management & Research**  
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Lodi, Ca. 95258  
Email: [Devencenziag@gmail.com](mailto:Devencenziag@gmail.com)  
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**2020 Observing the phytotoxic effects on Organic Apple from various fungicide applications containing sulfur. A Demonstration Trial  
Performed for the California Apple Commission**

Organic growers are limited on the fungicides that they can use for various diseases. Wettable sulfur and Lime Sulfur are both used in the pre bloom and petal fall period for diseases such as Scab and Powdery Mildew. Both formulations of these sulfur products, depending on the manufacturer, are allowed to be applied at these stages or later, example Wettable sulfur can be used into the season for mildew or scab. The apple industry is inquiring how much of a phytotoxic effect do these have on the tree and the crop itself. Although Lime Sulfur labels may avoid the bloom stage applications, it does not prohibit it. With the prolonged bloom period that occurs in California, due to lack of chill, we have everything from pre bloom to petal fall on the same tree. Thus, the varying stage of crop being subjected to the Lime Sulfur Application. Wettable Sulfur being applied during these bloom stages is a common practice and could have an effect on the crop set, russetting, etc. The CAC has decided to fund a study on the effects of the various labeled rates of both formulations of sulfur on organic apples. The phytotoxic effects of applications of sulfur on the bloom, the foliage, the fruit size at harvest, and the fruit finish is among the concerns that have been expressed. An observation trial evaluating the different grower practices and applications was determined to best way to address these questions. The CAC realizes that this trial is not replicated, has no statistical validity, is solely for Demonstration and Observation purposes. The results could vary from year to year or field to field and will be limited to what we observe at the time we are surveying the treatments. They may provide some insight for further testing, possibly in a replicated trial to better pinpoint concerns that may appear to occur.



## **Trial Design: Treatments**

\*The variety will be organically farmed galas

\*there will be 2 growers participating in the demo

\*Both Growers -- There will be one UTC (untreated control) which will not have Wettable Sulfur or Lime Sulfur applied to it during pre-bloom through petal fall period.

\*Both Growers - One treatment should be Wettable Sulfur applied without Lime -Sulfur applications, both growers should have this treatment as this is the common fungicide that is used during this time of year, I would imagine there would be at least 2 or 3 treatments, if temperatures allows, preferably with the higher rates allowed on the label to create the worst case scenario. The 20 lb per acre / 100 gals is the highest allowed.

\*The remaining treatments can be left up to the individual grower. Lime Sulfur may be applied during this period at the rate of 2 gals/100 gals. Example; 2 applications, the first is at early bloom at the 3 gals Lime Sulfur Solution / 150 gals, follow with 2 gals / 100 gals later in the blooming / petal fall cycle.

\*The applications would be made with the grower's sprayers, on at least 1 acre for observation. Care will be made by the grower as not to drift and contaminate each treatment with the grower standard or another treatment

\*Each treatment will be flagged a designated color by the grower to mark the treatment for observation, from start to finish of the treatment

\*Products to be used should be the same for each grower, Lime Sulfur Solution manufactured by TKI is a common product in our area as is the wettable sulfur Cosavet DF Edge, made by Sulphur Mills. Both are OMRI approved and commonly used in the industry. The labels on these products reflect the above rates.

\*Applications should not be made if 80F or higher is expected during the application timing, this can be left up to the grower.

\*Application dates and time of day will be needed for climate information that is relative to the study. Provided by grower to Devencenzi for reference.

## **Trial Design: Data collection**

\*Ten trees will randomly be selected with in each treatment to be used for data collection and observations. These trees will be selected after the treatments have been made and will be the trees that all data and observations will be taken from for the duration of the season up to harvest.



\*Spur counts -From each of the 10 trees we will randomly select at least 10 - 20 spurs and will count the apples on each spur. This will be done hopefully prior to hand thinning which should occur by the 25 mm fruit stage. There can be no hand thinning on these designated trees prior to the fruit set evaluation. This will indicate how the set was affected by the treatments as compared to the UTC.

\*Tree Phytotoxicity – A subjective evaluation will be made indicating how much leaf burn or foliage damage occurred from the treatments, it will be based on a scale of severity which will be provided with the results, again treatments compared to the UTC.

#### \*Harvest Evaluations

Fruit Weight/size- approx. 1 week or so to harvest we will harvest 10 fruit per tree to equal 100 fruit from each treatment. The fruit will be weighed, which will give us an idea if any phytotoxic effects from the treatments effected fruit size. Treatments compared to UTC.

Fruit Russeting – each of the 100 fruit will be evaluated for severity of russeting or any other deformity that may have occurred. Treatments compared to UTC.

Growth stage of applications should be documented, photos would also help and would be provided if possible. Weather data during and following the applications until hand thinning occurs will be provided. Devencenzi Ag will not be present when application is made, will make effort to visit field that day if possible, to document the bloom stages. Devencenzi Ag can supply flagging tape for grower use.

#### Projected Costs

Trial design and protocol - \$1,000.00

Trial evaluations - \$2,000.00 / treatment, 4 treatments (including UTC) per 2 growers, 8 total - \$16,000.00

Report - \$1200.00

Total cost - \$18,200.00

Due in full after final report; prefer to receive partial payment prior as trial starts.





OFFICE OF RESEARCH  
Sponsored Programs  
1850 Research Park Drive, Ste. 300  
Davis, CA 95618-6153

Telephone: 530.754.7700  
Facsimile: 530.752.0333  
E-Mail: [proposals@ucdavis.edu](mailto:proposals@ucdavis.edu)

November 29, 2018

Rachel Elkins, Liaison Officer  
European Pear Research Advisory Committee Chair  
UC Cooperative Extension  
833 Lakeport Blvd.  
Lakeport, CA 95453

**Proposal entitled: ..... "Study on Mechanical Mass-Harvesting of Pears"**  
**Principal Investigator: ..... Stavros Vougioukas**

Dear Ms. Elkins:

On behalf of The Regents of the University of California, Davis Campus it is our pleasure to present for your consideration the above-referenced proposal.

Please contact me with any administrative questions. We request correspondence pertaining to this proposal be sent via email to [proposals@ucdavis.edu](mailto:proposals@ucdavis.edu) or mailed to the Office of Research Sponsored Programs Office, 1850 Research Park Drive, Suite 300 Davis, CA 95618-6153.

We look forward to working with you on this important project.

Sincerely,

A handwritten signature in blue ink that reads "Marlene Mooshian".

Marlene Mooshian  
Contracts and Grants Analyst

*\*Please refer to Proposal No 19-2336 on all future correspondence.*

**Send Award Notice to:**

Office of Research, Sponsored Programs  
1850 Research Park Drive, Suite 300  
University of California  
Davis, California 95618  
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University of California, Davis

**PROJECT PLAN/RESEARCH GRANT PROPOSAL**

Project Year: 2020: No cost extension granted until July 31, 2021      Anticipated Duration of Project: 3 Years  
Project Leader: Stavros Vougioukas (Dept. of Biological & Agricultural Engineering)      Location: UC Davis  
Cooperating Personnel: Elizabeth Mitcham (Dept. of Plant Sciences, UC Davis), Rachel Elkins (Farm Advisor, UC ANR)

Project Title: Study on Mechanical Mass-Harvesting of Pears

Keywords: Harvesting, Productivity, Mechanization

Commodity(s): 'Bartlett' Pear

Relevant AES/CE Project No.

**Problem and its Significance:**

Harvesting is one of the most labor-intensive operations in pear production. A 2012 UC ANR pear production cost report estimated the manual harvesting cost for green Bartlett pears at \$1,239/acre, using \$11.20 per hour for general labor (Elkins, Klonsky, Tumber, 2012). This translated to 85% of the total harvest cost, which includes hauling to the packinghouse, and 13% of the total operating cost, per acre. Labor cost will increase significantly due to recent legislation. The greatest problem though, is that in addition to cost, supply of skilled pickers is decreasing; hence, risk of losing crop is increasing too. Therefore, pear growers face a great need for mechanical harvesting solutions.

**Objectives:**

The proposed research aims to investigate a novel approach to intercepting pears during a shake-and-catch operation. The main idea is to design, build and test a prototype system that inserts multiple catching surfaces (e.g., soft rods) into the canopy during shaking, and effectively reduces pear damage during shaking and falling. The envisioned system would be compatible with existing tree shaking operations and equipment, if with minor modifications. Rod insertion systems have been tried in the past for fruits like apples (Millier et al., 1973), plums and pears (Mehlschau et al., 1977), with promising results. Also, simulations performed in the Bio-Automation Lab based on models of pears and cling-peach trees (funding from Pear Advisory Board, Cling Peach Mechanization Fund, USDA-NIFA) have confirmed that properly deployed multi-level rods that penetrate into the canopy can intercept up to 90% of falling fruits (Munic et al., 2016). Our objective is to utilize seed funding provided by this grant and possibly by other commodity boards (a pre-proposal was submitted to the CA Cherry Board) to design prototypes and gather preliminary data that will enable the submission to USDA-NIFA of a large, multi-state Specialty Crops Research Initiative (SCRI) proposal focused on mechanical tree fruit harvesting.

**Plans and Procedures:**

**Year 1:** Four objectives will be pursued. We will compile a detailed literature review of systems developed in the past and analyze their pros and cons (1). Alternative catching surface designs and insertion mechanisms will be explored (2) and some will be fabricated and tested in the lab (3). Alternative designs will include canopy-penetrating inflatable rods and rigid-padded rods with inflatable sides. Controlled pear fruit drop experiments will be performed, and the fruit-rod interaction will be analyzed. The goal is to have an SCRI mechanical harvesting pre-proposal submitted in fall 2017 (4).

**Year 2:** A full-size insertable rod will be fabricated and tested in the lab via controlled fruit drop experiments to: optimize parameters such as side-finger length, diameter, material thickness, inflation pressure, and finger



curling curvature (Objective 1); implement a mechanism for rod extension, retraction and possibly segmentation to reduce overall rod length (Objective 2). Canopy penetration experiments will take place in orchards to assess insertable rod engagement with canopies and fruits (Objective 3).

**Year 3:** A half-size prototype of multi-level insertable rods will be fabricated and actuation and control systems for its operation will be developed (Objective 1). The prototype will be tested in orchards (Objective 2). This will require access to a tree shaker (like a COE C7-E), collaboration with pear growers, and collaboration with the post-harvest center to assess postharvest fruit quality (objective 3).

**References:**

Elkins, R., Klonsky, K., Tumber, K. 2012. SAMPLE COSTS TO ESTABLISH AND PRODUCE PEARS. Un. of California Cooperative Extension.

Mehlschau, J., Fridley, R., Brazelton, R., Gerdts, M. and Mitchell, F., 1977. Mechanical harvester for fresh-market plums. California Agriculture, 31(3), pp.11-11.

Millier W. F., Rehkugler G. E., Pellerin R. A., Throop J. A., Bradley R. B. (1973). Tree Fruit Harvester with Insertable Multilevel Catching System. *Trans. ASABE* 16(5), 844-850.

Munic, J.P., Vougioukas, S.G., Arikapudi, R. (2016). A Study on Intercepting Falling Fruits with Canopy Penetrating Rods. 2016 ASABE Annual International Meeting. Paper Number 162456923, Orlando, Florida.

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**BUDGET REQUEST**

Budget Year: 2019

Funding Source: California Pear Advisory Board

Salaries and Benefits			
	Development engineer – Dennis Sadowski (20%)		\$14,686
	Subtotal	Sub 2	\$14,686
	Employee Benefits	Sub 6	
	Development Engineer		\$7,710
		SUBTOTAL	\$22,396
Supplies and Expenses Electronic, mechanical, pneumatic components. Fruit quality assessment.		Sub 3	\$8,000
Equipment		Sub 4	
Travel		Sub 5	\$1,500
		TOTAL	\$31,896

Notes:



	_____	Date	_____
	Originator's Signature		
COOPERATIVE EXTENSION	County Director	_____	Date _____
	Program Director	_____	Date _____
AGRICULTURAL EXPERIMENT STATION	Department Chair	_____	Date _____
LIAISON OFFICER		_____	Date <u>November 29, 2018</u>
	Marlene Mooshian, Contracts and Grants Analyst		
	Office of Research - Sponsored Programs		

D2454-2(1/84)  
(Rev. 9/96)

## **Internal UCD Document: Budget Justification**

### **PERSONNEL**

**Dr. Stavros Vougioukas - PI:** Will work a 5% calendar month effort in year one on a cost-share basis. Will be the principal PI responsible for the project. He will work closely with the Senior Design Engineer to guide the design, and testing of prototypes.

**Dennis Sadowski – Research and Development Engineer III (7120):** Will work 20% under the direct supervision of Dr. Vougioukas to design, fabricate, and test prototypes for intercepting falling fruits.

### **BENEFITS**

Fringe Benefits are calculated using the UC Davis composite rates developed by the UC Davis Costing and Policy office as required per institutional policy and reflected in the UC Davis federally negotiated rate agreement dated August 2018. Rates are applied by title code and fiscal year.

[http://afs.ucdavis.edu/our\\_services/costing-policy-e-analysis/composite-benefit-rates/](http://afs.ucdavis.edu/our_services/costing-policy-e-analysis/composite-benefit-rates/)

### **TRAVEL**

Funds are requested to travel within California for experiments in commercial orchards, and for renting a truck.

### **OTHER DIRECT COSTS**

*Materials and Supplies*

Various electronic, mechanical, and pneumatic components.

### **INDIRECT COSTS**

There are no indirect costs associated with this proposal.



# Cover Page

**Proposal To:**  
**California Department of Food and Agriculture**  
**Pest Exclusion Branch/Nursery, Seed and Cotton program**  
**Attn: Katherine Filippini**  
**1220 N Street**  
**Sacramento, CA 95814**

**Project Title:** Breeding and Selection of Apple Rootstocks to Match California Industry Needs

**Fiscal year and duration:** July 1, 2020 to June 30, 2021 – Year 1 of 3 years

**Project Leader:** Gennaro Fazio

**Affiliation and Mailing Address:**

USDA ARS Plant Genetic Resources Unit, 635 West North Street, Geneva, NY 14456. Email:  
[Gennaro.fazio@usda.gov](mailto:Gennaro.fazio@usda.gov)

Telephone: 315 787 2480 FAX 315 787 2216

**Official Contact Person for Grants Management:**

Tiffany Fisk Administrative Officer

United States Department of Agriculture Agricultural Research Service

630 W. North Street

Geneva, NY 14456-0462

Office: 315-787-2307

Work Mobile: 315-521-2229

[Tiffany.fisk@usda.gov](mailto:Tiffany.fisk@usda.gov)

**Make Checks Payable to:**

**Additional Sources of Support:** USDA Agricultural Research Service Internal Base Funds



## **Project Title: Breeding and Selection of Apple Rootstocks to Match California Industry Needs**

### **Executive Summary:**

Apple orchards throughout the United States are undergoing a foundational transformation to more productive and disease resistant rootstocks. Rootstocks are the foundation of a healthy and productive orchard. The California apple industry needs location and variety compatible recommendations with regards to newly developed rootstocks by the Geneva breeding program. The breeding program has been cooperating with the California Apple Commission, some California nurseries (Sierra Gold and ProTree) for the evaluation and development of a special set of apple rootstocks that is focused for the challenges faced by California Apple Growers which include compatibility with mechanization, per acre productivity, low chill climate, water and nutrient use efficiency, resistance to fire blight, tolerance to replant disease (a genetic alternative to methyl bromide fumigation), interaction with apple viruses, crown rot and wooly apple aphids. The Geneva® apple rootstock breeding program is the only one in the world that has delivered on these traits in other locations and is poised to conduct grower requested, on farm field trials to identify a set of apple rootstocks compatible with California specific needs. The breeding program cooperates with several California nurseries in order to develop clean nursery stock for propagation – the project includes a component of nursery stock development, evaluation of virus effects on apple rootstocks and micropropagation.

### **Project Benefit to Nursery Industry and California Apple Industry:**

As it has done in other apple growing states like WA, NY, MI, PA, etc. the project will benefit the California apple nursery industry by developing localized, improved apple rootstocks and providing the virus free nursery stock to cooperating California nurseries. A change from traditional (ancient technology) to localized improved apple rootstocks has enabled other U.S. and world industries to increase their productivity by 25%-75%, decreased the quantity of fumigants used in the establishment of an orchard and saved millions of trees from the deadly fire blight disease. We expect the same impact for the California apple industry. A special attention to virus interaction with rootstocks will allow nurseries and apple growers to understand the effects of apple viruses on production and identify stocks that are symptomatic in the presence of viruses.

### **Objectives:**

1. Develop on-farm field trials for diverse apple grower locations throughout California featuring novel and yet to be released apple rootstocks.
2. Monitor growth, productivity and nutrient absorption and study potential virus effects of Granny Smith on apple rootstocks.
3. Develop and provide virus clean nursery stock to California Nurseries of selected materials.

### **Workplans and methods:**

Description of proposed field trials: 2020 On Farm Field Trial – three locations

In 2019 we consulted with the California Apple Commission (see attached letter of support) and drafted a plan to develop on farm field trials at three or more locations. While it takes two years to develop apple trees for a rootstock field trial we had an existing set of trees developed for other U.S. trials with material from ProTree and Sierra Gold nursery and grown at Sierra Gold nursery in Yuba City that were able to be allocate to start this project. We are in the process of developing a second set of trials featuring a more complete set of already released rootstocks and include control rootstocks like B.9, M.9 and newly released Geneva rootstocks G.213, G.890, G.969, G.202, G.41, G.935, G.814, G.222 and G.214. 2020 trees are grafted with Buckeye Gala and

Granny Smith. Additional scion varieties will be selected in coordination with the California growers and CAC. The trees will be planted and managed by apple grower cooperators according to their management style.

Table 1. Trees already developed for CAC trials at Sierra Gold Nursery.

Variety	SG Name Rootstock	Cross	Elite #	# of Buds	Trees to California Trials
Buckeye Gala	NY 01	7672602- 12*R5	4003	92	30
Granny Smith	NY 01	7672602- 12*R5	4003	92	30
Granny Smith	NY 02	847582- 003	4004	106	30
Buckeye Gala	NY 02	847582- 003	4004	106	30
Granny Smith	NY 04	76O3R5	5257	100	30
Buckeye Gala	NY 04	76O3R5	5257	98	30
Granny Smith	NY 05		6006	120	40
Buckeye Gala	NY 05		6006	118	40
Granny Smith	NY 06	G41B9-16		100	30
Buckeye Gala	NY 06	G41B9-16		102	30
Granny Smith	NY 07	84R5P2- 062		125	40
Buckeye Gala	NY 07	84R5P2- 062		124	40
Buckeye Gala	NY 08	02-O3R5- 039		48	20
Granny Smith	NY 08	02-O3R5- 039		50	20
Granny Smith	NY 09	5087	5087	7	
Buckeye Gala	NY 09	5087	5087	6	
Granny Smith	NY 10	02-O3R5- 072		117	40
Buckeye Gala	NY 10	02-O3R5- 072		120	40
Granny Smith	NY 11	02-O3R5- 073		115	40
Buckeye Gala	NY 11	02-O3R5- 073		105	40
Granny Smith	NY 13	02-O3R5- 123		23	10
Buckeye Gala	NY 13	02-O3R5- 123		23	10
Granny Smith	Geneva 210			111	40
Buckeye Gala	Geneva 210			108	40
Buckeye Gala	Geneva 814			35	30
Granny Smith	Geneva 814			78	30
Buckeye Gala	Geneva 814			43	

<b>Granny Smith</b>	Geneva 890			110	40
<b>Buckeye Gala</b>	Geneva 890			107	40

#### Nutrient Uptake Determination

Apple trees are supposed to fill their canopy space by year 2 after planting (depending on rootstocks) When the trees are at a locally adapted state (2-3 years after planting) ten mid position leaves on new extension growth and ten fruit randomly distributed throughout the tree canopy will be harvested 80-90 days after bloom on all tree replicates of each field trial. Leaves and fruit will be oven dried, ground into powder and a subsample will be shipped to the Great Lakes analysis lab for mineral analysis of several macro- and micro-mineral nutrients via inductively coupled plasma optical emission spectrometry. Another subsample will be analyzed using an X-Ray diffraction instrument to calculate relative concentration of nutrients. Soil samples will be collected from field locations from all research plots and will be analyzed for nutrients at a TBD lab. Leaf and fruit nutrient concentration values will be tabulated and analyzed with Minitab 18.0 and JMP 14.0 Pro statistical software packages; the rootstock genotype was treated as the main effect in a randomized complete block analysis. Rootstock genotype means will be used in a multivariate analysis to generate correlation matrices and two-way similarity cluster diagrams based on genotype and variable similarities.

#### Virus indexing and interaction with apple rootstocks

We will use a combination of RT PCR methods and deep sequencing to identify virus composition in the scions and rootstocks that were deployed in these trials. It is likely that Granny Smith is a carrier of latent viruses and virus like elements since it was very hard to source certified virus free wood of this variety. On the other hand, Buckeye Gala came from certified VF wood. Effects of virus interactions with rootstocks can be displayed by unusually poor growth of the trees relative to virus free material. Relative growth differences between Granny Smith and Buckeye Gala on the same rootstocks will be used as a phenotypic diagnostic tool.

#### Remote Growth measurements and yield characteristics

Using a phenotyping app called FieldBook (Figure 1) the grower or a technician will collect images of individual trees in the trial prior to harvest – image analysis will provide an estimate of the crop load on each tree and relative size. In year 5 of the trial when the trees are fully grown and established a full canopy, we will collect fruit from each individual tree and measure total yield for each rootstock on a per acre basis. Mean fruit weight (FW) will be calculated considering the total number of fruits and total yield per tree. Average fruit size will also be calculated as it is one of the main parameters for fruit quality. Cumulative yield (CY) per tree, yield efficiency (YE) and crop load (CL) of each scion-rootstock combination will be computed from the harvest data. Each winter tree size may be estimated using pictures from the FieldBook App when trees are bare. This will allow also the investigation of rootstock effects on tree canopy shape. The tree circumferences will be recorded at 30 cm above the graft union, and the trunk cross-sectional area (TCSA) will then be calculated.

#### Virus indexing and interaction with apple rootstocks

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elements which includes a CLC-Genomics machine with cloud computing and relevant sequence databases of relevant disease causing elements.



Figure 1. The FieldBook App (available in GooglePlay) is a phenotyping app compatible with most android devices (cell phones and tablets) and allows the collection of visual (properly named images by date, plot and tree number), quantitative, qualitative and voice data that can then be exported for secondary analysis in the form of tables or image files.

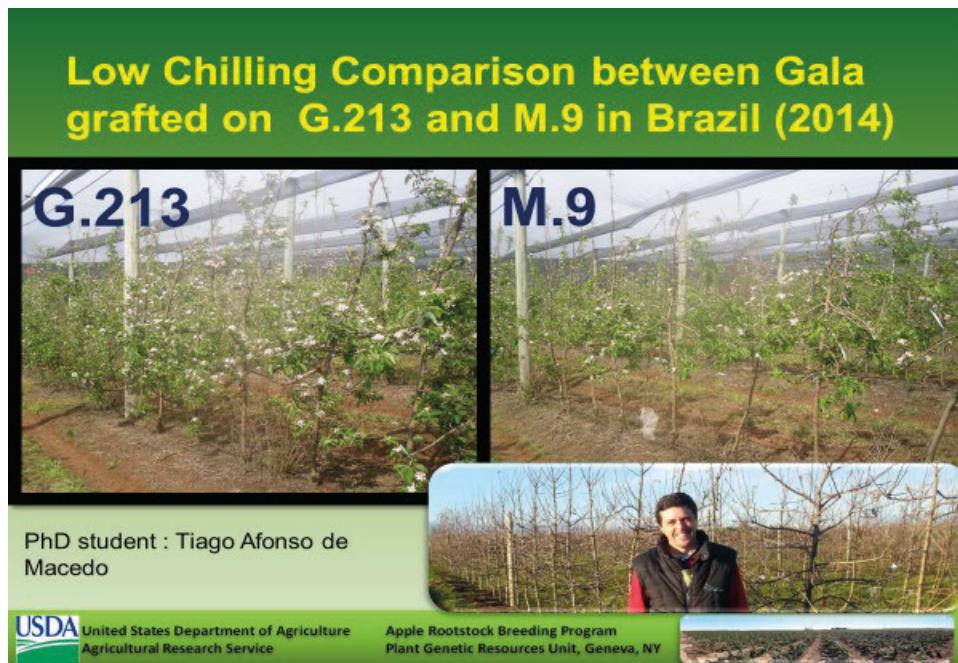


Figure 2. Example of an on-farm field trial in Brazil featuring a Geneva apple rootstock that decreases

### Performance of SnapDragon on Geneva Rootstocks

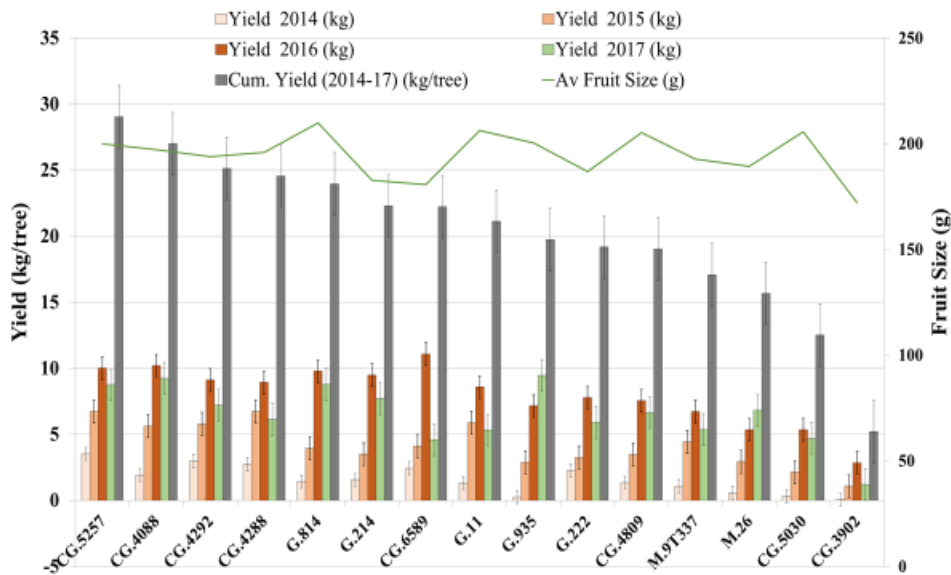


Figure 3. This type of information collected from an on-farm trial in NY state is an example of the valuable yield and performance information that can be obtained by local field trials.

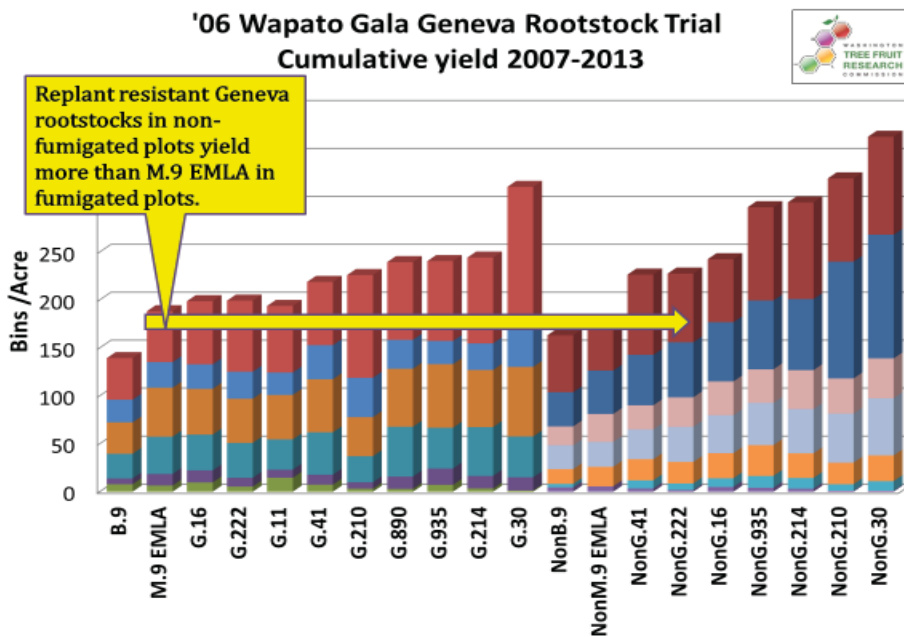


Figure 4. Yield data showing genetic yield potential of apple rootstocks in replant ground in an experiment in collaboration with the Washington Tree Fruit Research Commission planted in 2006 and like the ones proposed in this document.

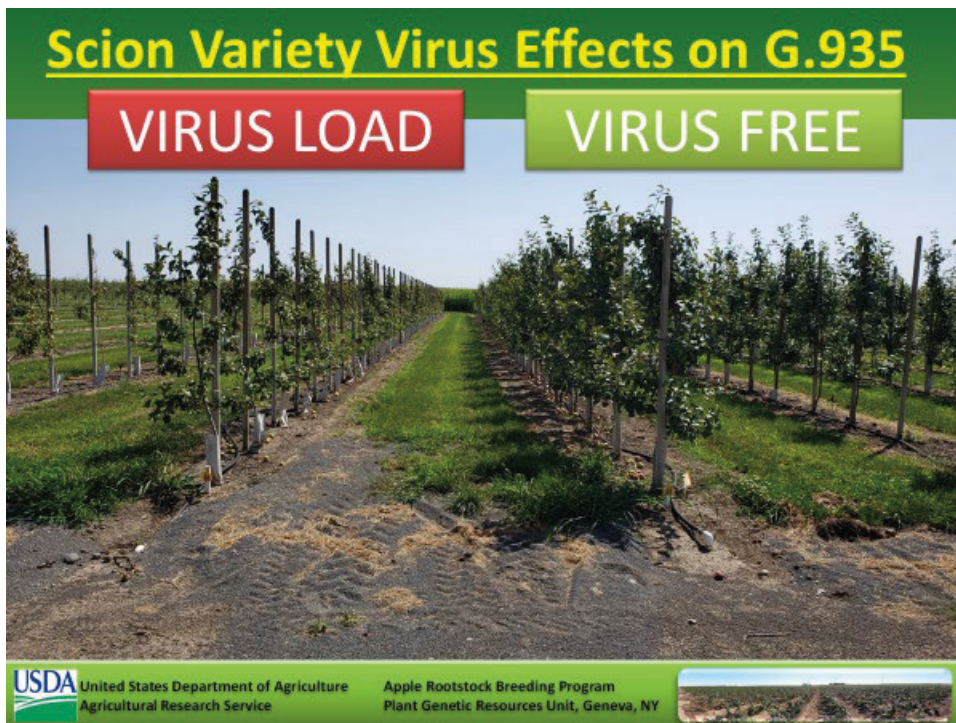


Figure 5. Effects of virus load on G.935 rootstocks. Same Honeycrisp scion variety grafted on all trees except the trees to the right were budded with certified virus free wood.

#### **Project management and evaluation:**

While the day to day decisions about field trial management will be the responsibility of each of the host farm managers and owners, the planning and coordination of data collection, analysis and reporting will be the responsibility of the project leader in Geneva, NY. All laboratory work will be conducted in Geneva, NY as we have ample experience performing all of the laboratory tasks proposed. Reporting will be done in both written and oral reports to the California Apple Commission (CAC), trade journals and grower associations. The CAC will evaluate progress and provide necessary feedback on the progress of the project.

#### **Literature Review:**

The proposed project addresses Research Priorities mostly under Priority V. Miscellaneous, Research that affects the whole industry and in part Priority I. Diseases and genetic disorders – Genetic disorders. While virus issues have impacted the success of apple rootstocks, our priority has been to develop virus free stock, however some scions (like Granny Smith) are known to harbor several apple viruses that may cause green crinkle. California apple growers have been excited and participant in setting up these trials given the opportunities that fire blight and replant resistant apple rootstocks would provide them in establishing significant plantings without the major danger of losing the whole orchard due to fire blight. Now that we have partially addressed one major aspect (disease resistance) they are excited to figure out how these new rootstocks can be managed, what their innate abilities are for productivity and how to best leverage them in their farms. They are also requesting new material that perhaps better addresses some of the different challenges (weed competition, fertilizer composition) posed under conventional or organic management (Thompson et al., 2019).

The implementation of dwarfing apple rootstocks around the world continues to significantly increase the output efficiency connected to yield and fruit quality in modern apple orchards under organic or conventional management. Most apple orchards planted nowadays are a testament of a transformation that has occurred in the past 60 years from seedling to dwarfing rootstocks which initially has utilized centuries old technology

(Malling dwarfing rootstocks have been around for centuries) culminating in the almost total adoption of dwarfing and precocious rootstocks (94% of the 18-30 million apple trees planted each year in the U.S.). A larger portion of these plantings each year is under certified USDA organic management. Choices of which rootstock to plant were simple when the availability of stocks and scion varieties was limited to a few Malling 9 clones and some Budagovsky rootstocks with the standard Golden, Red, Gala, Granny scions. The apple scion variety portfolio available to apple growers is becoming increasingly diversified with new, high-value varieties being released every year and more apple rootstocks are following suit with more specialized characteristics beyond dwarfing. Bigger gains in productivity will be obtained when we are able to match the weaknesses of scion varieties to the strength of the rootstocks and vice versa. Optimal matching between scions and rootstocks requires empirical knowledge gained by testing multiple scions on multiple rootstocks in multiple environments especially under organic management. This is a work in progress for the Geneva® apple rootstock breeding program and has been accomplished for several rootstock scion combinations under conventional management. Rootstock choice, especially under organic management is one of the most important choices that a grower will make when establishing an orchard that will last 15-25 years. This proposal addresses the relative paucity of information for organic apple growers with regards to apple rootstock performance and will develop a set of recommendations with regards to possible choices and possible management strategies to maximize production of high-quality fruit.

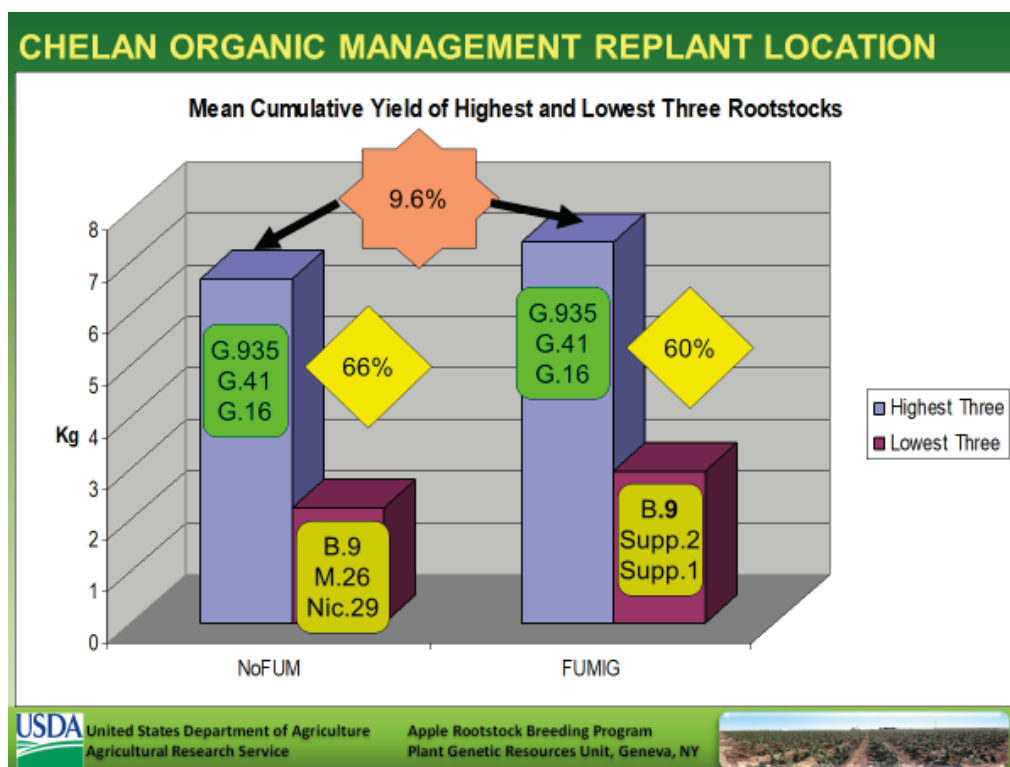


Figure 6. Results from first U.S. organic field trial performed at Fuller Farms (Stemilt) in Chelan, WA (Auvil et al., 2011). Field plots were transitioned to organic management after establishing the fumigation treatment a year prior to planting. The yield differences between traditional rootstocks and novel Geneva® rootstocks are staggering. These are some of the earlier results indicating the potential for using our rootstocks in organic apple orchards and the outcomes are still valid in other trials and field plantings.

Root systems have important roles in tree fruit production as they forage for mineral nutrients and water necessary for fruit development and canopy growth (Nielsen and Hampson, 2014). Apple rootstocks are an important component of organic apple orchards where certain older, traditional rootstocks have shown drastic



deficiencies with regards to nutrient uptake which are then translated into poor tree growth followed by lower yields of lower quality fruit (Garcia et al., 2013; Lanauskas et al., 2014; Racsko et al., 2008; Weibel et al., 2008). Traditionally, nutrient deficiencies found in soils of fruit orchards have been addressed with the addition of different formulations of conventional fertilizers delivered by multiple means – with some constraints, this is true for organic orchards as well (Stefanelli et al., 2009; Thompson et al., 2019). This was done with some knowledge of the inherent potential of a few traditional rootstocks to absorb more or less of a nutrient contained in the rhizosphere. However, most fertilizer recommendations were not tailored to a specific rootstock, creating the potential of making such applications less efficient (more or less than specifically needed by the rootstock-scion combination) and potentially wasteful. This is evident from recently developed data which shows that in case of boron, rootstocks have a major influence on the uptake and delivery of that nutrient consistently over years (Figure 2). The lowest boron absorbers were M.9 (clones) and B.9, which means that if growers keep using old nutrient recommendations for boron developed for the “poor” rootstocks on newer rootstocks like G.935, G.222, G.41 and similar “rich” rootstocks they are probably wasting money and causing unnecessary nutrient imbalances in the orchard.

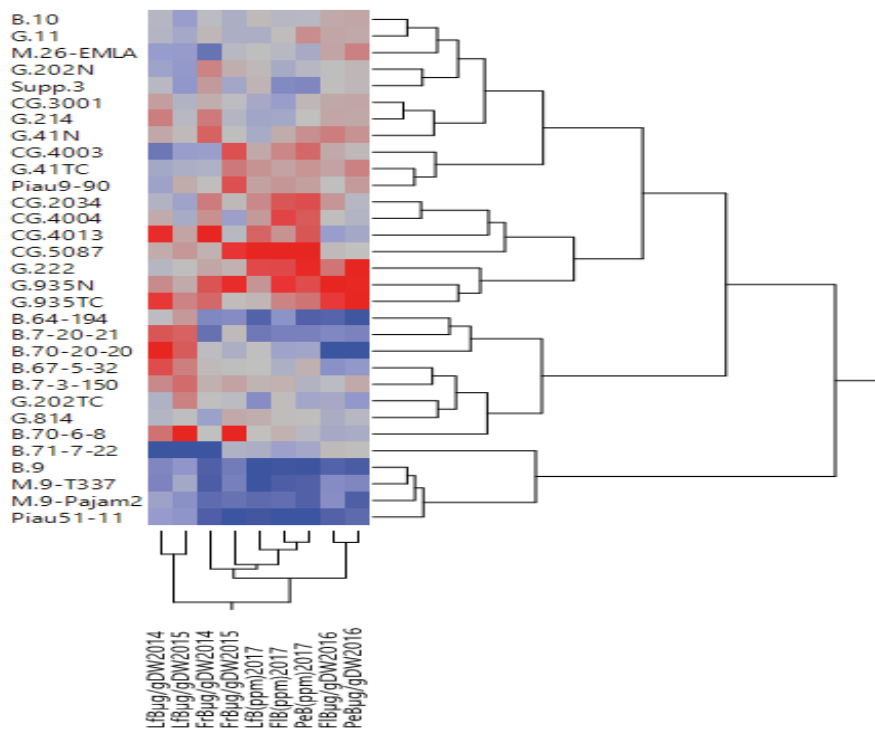


Figure 7. Results from field grown trees of Honeycrisp show that boron concentration in leaves and fruit seems to be highly rootstock dependent as they are highly consistent through time (years). New recommendations on the application of boron should be made for newer rootstocks considering that M.9 and B.9 are among the poorest boron absorbers in group. This information should also be combined with the specific scion nutrient requirements to make fertilizer use more efficient.

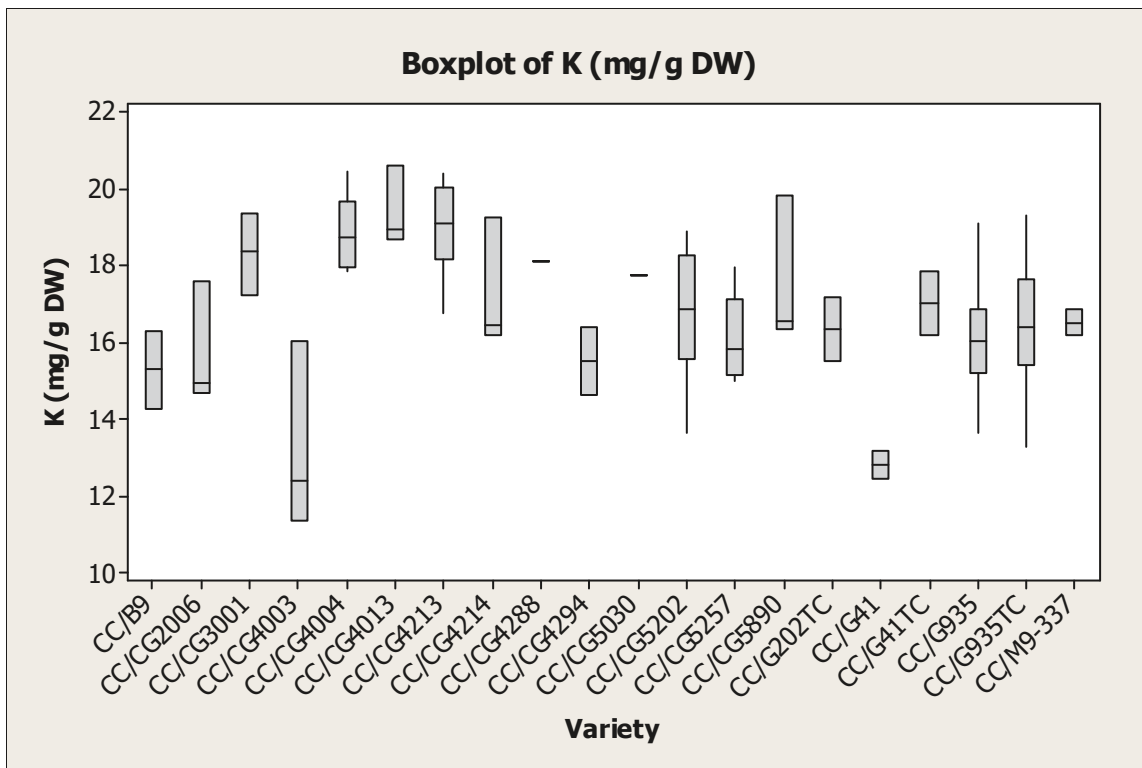


Figure 8. Preliminary results obtained for potassium concentration in leaves of the Singer Farms organic field trial in Albion, NY. These were obtained in 2014 when trees were still young.

Some apple scions are more sensitive than others to nutrient imbalances that cause fruit disorders like bitter pit (Buti et al., 2018; Jemric et al., 2016; Krawitzky et al., 2016; Volz et al., 2006) where the K/Ca ratio has been shown to be associated with bitter pit (Valverdi et al., 2019). The influence of apple rootstocks on K/Ca ratio and associated incidence of bitter pit in Honeycrisp apples was observed in a rootstock breeding population comprised of 150 different rootstocks. Honeycrisp is well known to have deficiencies in calcium transport to the developing fruit (Kalcsits et al., 2017). While some methods have been proposed to increase calcium concentration in organic settings (Weibel, 1997) one of the most efficient ways would be to have rootstocks that can increase calcium and other nutrients. Designer rootstocks able to overcome known nutritional deficits of apples can now be selected from a diverse group of apple rootstocks, perhaps facilitating improvements of overall fruit quality. Several long term field and potted experiments are the basis for producing novel fertilizer and other management recommendations for new apple rootstocks (Fazio et al., 2018a; Fazio et al., 2018b; Fazio et al., 2019; Johnson et al., 2019; Reig et al., 2018; Reig et al., 2019), however all those have been under conventional management. These results need to be translated and interpreted under organic management.

The implementation of new selection traits in a plant breeding program requires knowledge related to the complexity, heritability and reliability of the selection process for the new trait (Fazio and Mazzola, 2004). The complexity of a trait depends on the number of segregating factors and the importance (size) of their contribution. Specifically for apple rootstock nutrition traits, we found that in one breeding population the concentration of K was largely governed by one major factor (locus) on Chromosome 5 of apple, whereas in the same experiments the concentration of Mg was influenced by several factors (loci) residing on multiple chromosomes (Fazio et al., 2013). The implications of these results are that selection for simpler traits (fewer factors) will be easier to perform than more complex traits. Another feature of mineral concentration traits that complicates breeding and selection is that most of them are strongly or loosely correlated with each other. For example, in many of our experiments we observed that leaf concentration of P and K is strongly positively

correlated while P and S are loosely positively correlated. Subsequently, direct selection for higher values of K will indirectly influence P and S. Predicting what the effects that selection for one nutrient will have on other nutrients requires modeling correlated nutrients as a system of connected linear equations. For example the empirical relationship between leaf concentration values of K, P and S for 2014-15 data is  $K=2.97+3.21\times P+1.33\times S$ . Once a selection target is chosen, one can solve for any element in the equation. Obviously, these predictive values will be subject to the statistical probabilities associated with the correlations. Physiologically, the correlated values mean that these nutrients share some genetically similar pathways in their journey from the rhizosphere to the destination tissues. Some correlations are not desirable (K and Ca are negatively correlated in many datasets). It remains to be seen if in such positively or negatively correlated traits those correlations can be broken by means of recombination between genetic factors or by selection of novel parents.

The stability of traits over time is very important. Specifically, for mineral nutrient concentration traits, this can be measured by comparing the consistency of genotypic means year over year. Currently, the most repeated dataset for a trial has three years' worth of measurements. Year to year genotypic mean correlations for a 2010 Honeycrisp trial features values as high as 0.78 for leaf boron and phosphorous between 2014 and 2015 data. The lowest year-to-year correlation was found with sulfur with 0.24. In essence, the year-to-year data reveal some reliable nutrient traits (K, P, and B) and some traits that may be influenced by the changes in year to year environmental conditions (Ca, S), the latter being more difficult to breed for. The reasons why some mineral concentration traits are so environmentally sensitive are subject to speculation. A thorough set of controlled experiments needs to be performed to investigate the effects of temperature, light, scion growth, crop load, etc. on the absorption and translocation of these mineral elements.

The stability of mineral concentration traits over different scion varieties can be measured by monitoring the same rootstocks grafted with different scion varieties. The scion clearly has its inherent tendencies with regards to controlling nutrients as observed by the differences in mean concentrations between varieties. This observation adds a complexity to breeding and selection for mineral nutrient concentrations because of the multiple scion varieties that a particular rootstock will accommodate during its commercial existence. While this task may be simplified by bundling similar scions based on growth habit, productivity, vigor etc. more research needs to be performed to study the rootstock-scion interaction for mineral nutrient traits.

Rootstocks are embedded in a complex environment where interactions with pH, soil particles, fungi, bacteria, insects, soil water status, scion variety, cover crops (and their competing roots) all play into their performance as foragers of nutrients (Fazio et al., 2012). As an example, the scion variety's evapotranspiration potential can have a huge effect on the nutrients passively brought up to the leaves in the xylem (Fallahi et al., 2013). Fruit size and quality have been shown to be highly influenced by transpiration (Lordan et al., 2017), nutrient status (Jivan and Sala, 2014) and subsequently by apple rootstocks (Andziak and Tomala, 2004), where a good portion of the variability may be explained by the rootstock potential to absorb and translocate nutrients to the scion which implies that selection of a particular rootstock may be used to match nutrient weaknesses or requirements of fruit (Fazio et al., 2015; Fazio et al., 2013). Recently, data obtained from a diverse set of rootstock field experiments featuring 35 or more genetically different apple rootstocks have indicated the possibility to select for genetically determined nutrient profiles (Reig et al., 2018). It will likely be possible soon to match the nutrient requirements of the scions and the shortcomings of the soil substrate to the strengths of the rootstocks. Generating rootstock tailored nutrition recommendations that may save the application of nutrients like potassium, boron, and phosphorous may save growers and the environment a significant amount of resources.

Apple production is transitioning to more mechanized industrial applications that require the number of apples on each stem and the whole tree to be adjusted depending on the carrying capacity of stem and whole

tree in order to achieve good fruit size, light penetration for fruit quality and spray efficiency. Apple rootstocks, which can affect crop density, annual bearing capacity, wood production and partition of nutrients to fruit, need to be considered in the “precision management plan” for the modern apple orchard. Breeding apple rootstocks to match cultural and nutrient requirements of scion varieties is a relatively new endeavor in the Geneva® apple rootstock breeding program. Apple rootstock breeding is a long-term process that has mostly focused on yields, disease resistance and efficiencies gained by tree architecture modification like dwarfing of grafted scions (Fazio et al., 2015b). In recent years we have been able to understand more about the interaction between scions and rootstocks and have begun to leverage the interactions to identify scion specific traits such as higher calcium rootstocks for calcium deficient scions (Honeycrisp). The desired result of such efforts is the production of a set of “designer” apple rootstocks that match the management needs for a set of growing conditions (scion variety, soil pH, irrigation, soil type, climate, etc.) to maximize the high-quality fruit production potential of apple orchards. The implementation of new selection traits in a plant breeding program requires knowledge related to the complexity, heritability and reliability of the selection process for the new trait (Fazio and Mazzola, 2004). The complexity of a trait depends on the number of segregating factors and the importance (size) of their contribution. From there we can estimate what these traits are worth to apple growers and the industry at large. We discuss novel genetic and phenotypic diversity witnessed in results of multiple apple rootstock field trials in relation to the role of apple rootstocks in providing precision management options to apple growers worldwide.

Viruses. Some plant viruses are lethal to many apple varieties but other viruses are not lethal to most apple varieties and rootstocks. These can exist in the plant and cause un-recognized effects on the plant. These are termed latent viruses and are spread to new trees by grafting infected wood on clean rootstocks or by grafting clean wood on infected rootstocks. There are 4 main latent viruses: Apple stem pitting virus (ASPV), apple stem grooving virus (ASGV), Chlorotic leaf spot virus (ACLSV) Apple Mosaic Virus (ApMV) and Tomato Ringspot Virus (ToRSV) (Fuchs et al., 2018). Over time, all common commercial rootstocks from the Malling series had become infected with one or more latent viruses. During the 1950’s and 1960’s the Malling stocks were heat-treated to eliminate known viruses, and were given the designation East Malling-Long Ashton (EMLA). The clean versions of Malling stocks were slightly more vigorous than the infected versions. In addition to the effort at East Malling and Long Ashton stations, the Dutch organization NAKB and the French organization CTIFL produced their own versions of clean M.9. The Dutch clean M.9 is referred as M.9T337 and the French version is referred as M.9Pajam1 and Pajam2.

A specific case of lethality was with MM.106 rootstock. When Delicious scions were grafted on MM.106 and the trees were later infected with Tomato Ringspot virus through nematode vectors the trees developed a brown (dead) line of cells at the graft union and the trees died (Tuttle and Gotlieb, 1985).

More recently several of the Geneva rootstocks have shown susceptibility to one or more of the latent viruses. G.16 was very sensitive to the 3 most common latent viruses and required the use of virus free bud wood or the trees would die in the nursery or in the first year in the orchard. Two other Geneva rootstocks (G.814 and G.935) have shown lesser susceptibility to latent viruses. The case of G.935 is still unclear since it seems tolerant of individual viruses but possibly combinations of viruses result in poor growth although the trees do not die. Nevertheless, the solution to these sensitivities is the use of virus free bud wood since the common latent viruses are only transmitted by grafting.

Some apple growing regions such as the European Union have very good virus elimination programs and require both rootstocks and scion wood to be virus free. However, other areas such as the USA have allowed virus elimination programs to lapse due to limited government funding and currently there is widespread latent virus infections in NY orchards (Fuchs et al., 2018). It is imperative that all apple regions of the world strengthen their virus elimination programs.

## References

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- Buti, M., D.J. Sargent, L. Bianco, P. Magnago, R. Velasco, and R.J. Colgan, 2018. A study of gene expression changes at the Bp-2 locus associated with bitter pit symptom expression in apple (*Malus pumila*). *Molecular Breeding* 38.
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# APPLE EDUCATION

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# APPLE EDUCATION SUMMARY

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The California Apple Commission strives to provide educational information for classrooms throughout California. Throughout 2019-2020, the California Apple Commission disseminated informational fact sheets, coloring pages, and other information specific to California apples to the California Foundation for Agriculture in the Classroom. The Foundation provides educational resources for students and facilitates outreach to California teachers and their students who have an interest in California agriculture.

The Commission's goal through this educational sponsorship is to create agriculture awareness in classrooms and create a basis for the appreciation of the importance of agriculture in the everyday lives of students. The Commission will continue to make a positive impact on the way students view agriculture and the world around them.

The Foundation provides informational guides for a variety of agriculture commodities. Their website provides books and videos for students, as well as pamphlets, lesson plans, and informational fact sheets for teachers to use in their classrooms. The learning materials provided on their website are created with all grade levels in mind, assuring the most effective learning material. The California Foundation for Agriculture in the Classroom also funds scholarships and grant opportunities for students in the agriculture industry. To learn more about what the Foundation has to offer, please visit their website: <http://learnaboutag.org/index.cfm>

The following is the fact sheet that the California Foundation for Agriculture in the Classroom provides on their website for the California Apple Commission. This information will be distributed to schools in California and other educational institutes.

## Commodity Fact Sheet

# Apples

Information compiled by the California Foundation for Agriculture in the Classroom

**How Produced** – Grafting, a horticultural technique that joins two plant structures together, is the first step in apple production to ensure that rootstock and varieties will bare fruit. Once planted, it takes four to five years for the tree to produce the first fruit and will produce fruit for up to 100 years. Most apple varieties are self-sterile, meaning unable to pollinate themselves and rely upon cross-pollination. The most commonly used pollinator is crab apples (also known as wild apples) in which pollination takes place in the spring, when trees are in blossom. Once pollinated, blossoms fall to the ground and small apples begin to grow in the blossom's place.

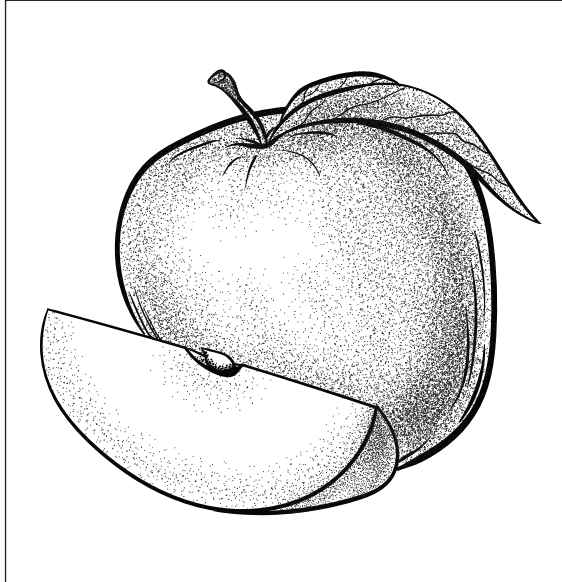
During spring and summer, apple trees require frequent watering. Apple trees can tolerate a great deal of heat if they have sufficient water. The apple crop is harvested by hand in the fall. To insure crop production for the following year, trees must be pruned yearly in the winter to promote new vegetative growth.

**History** – The first documented history of apples dates to 300 B.C. in the Persian Empire, where the cultivation and enjoyment of apples was an essential part of civilized life. In the 1400s apples were rediscovered and in the 1500s regained popularity again as a common commodity. During this time, European settlers of the Americas brought with them their English custom varieties, and the first apple orchard was planted in America. William Blackstone was the first pilgrim to plant apples trees grown in the United States in the Massachusetts Bay Colony in 1629.

In the early 1800s stories began circulating about John Chapman, better known as Johnny Appleseed, who traveled across the Ohio Valley carrying bags of apple seeds. Venturing westward, he planted seeds and grew apple trees wherever he roamed to ensure that settlers living in the western frontier would have nutritious apples to eat. Apples have a place in more recent history, too. In 1962, the first American to orbit the Earth carried pureed applesauce to consume during the flight.

**Varieties** – The apple, scientifically known as *Malus domestica*, is a member of the rose family. California has almost 14,000 acres dedicated exclusively to apple production. California grows four main varieties: Gala, Fuji, Granny Smith, and

Cripps Pink. Within the United States, roughly 2,500 varieties of apples are grown. The top 10 apple varieties grown within the United States are Red Delicious, Golden Delicious, Fuji, Granny Smith, Rome Beauty, McIntosh, Idared, Jonathan, Gala, and York Imperial.



**Commodity Value** – The United States' 7,500 apple producers grow approximately 240 million bushels of apples each year on 322 thousand total acres of land. The wholesale value of the United States apple crop is approximately \$4 billion annually. Worldwide, the United States ranks second to China in apple production. California ranks fourth in U.S. apple production, generating 12 percent of the national apple crop which is approximately 800 million pounds annually. Seventy-five percent of the apples produced in California will be shipped domestically and

25 percent are exported. Canada, Malaysia, Mexico, Taiwan, and Panama are five of the 27 global destinations California exports to.

**Top Producing Counties** – There are five major regions in which apples are grown in California. Historically, apple production was limited to the coastal mountains, the Sierra foothills, and in the Southern California mountains. Recently apple production has expanded into the Central Valley with new plantings of Granny Smith, Fuji, Gala, and other varieties. Important coastal apple producing counties are Sonoma, Santa Cruz, and San Luis Obispo. The major apple production areas are in the San Joaquin Valley with Kern, Fresno, San Joaquin, and Madera counties being the leading producers.

**Nutritional Value** – One medium-sized apple provides 20 percent (five grams) of the daily requirement for dietary fiber, eight percent of the daily requirement for vitamin C, and is a healthful source of potassium. One apple has approximately 80 calories and contains no fat, cholesterol, or sodium.

**For additional information:**

California Apple Commission

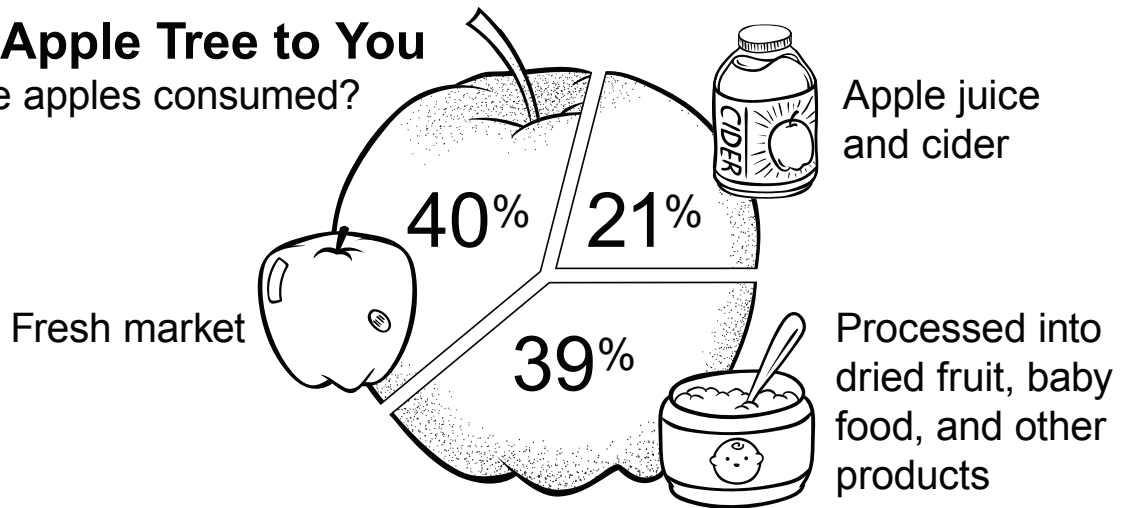
Phone: (559) 225-3000

Website: [calapple.org](http://calapple.org)



# Apples Activity Sheet

## From Apple Tree to You How are apples consumed?



### Lesson Ideas

- Dissect and examine the anatomical parts of an apple. Observe and identify the function of each structure.
- Research and explain the aphorism “an apple a day keeps the doctor away” using nutritional information.
- Observe and practice various grafting techniques used to grow apples.
- Compare hand and machine harvesting methods. Invent a harvesting machine for apples.
- Perform experiments that show the different methods of preserving apples.
- Research and determine what the top ten apple varieties are and why they are most popular amongst consumers.
- Calculate the percentage of water weight in apples by dehydrating the fruit.
- Sprout an apple plant from a seed.

### Fantastic Facts

1. The crabapple is the only apple native to North America.
2. Apples are propagated by two methods: grafting or budding.
3. The apple variety “Red Delicious” is the most commonly grown apple variety worldwide.
4. Apples are a member of the rose family.
5. Twenty-five percent of an apple’s volume is air, which makes it naturally buoyant.
6. It takes the energy from 50 leaves to produce one apple.
7. World’s top apple producers are China, United States, Turkey, Poland, and Italy.
8. Archeologists have found evidence that humans have been enjoying apples since 6500 B.C.
9. Apples account for 50 percent of the world’s deciduous fruit tree production.
10. Two-thirds of an apple’s fiber and antioxidants are found in the peel.

### Lesson Plan: Sugar or Starch

**Introduction:** Apples naturally contain starch also known as carbohydrates. When an apple begins its ripening process, starches are converted into sugar. This conversion process starts at the core of the apple and moves outward toward the skin. To check the ripeness of the apple an iodine test can be used to identify the amount of starch present.

**Objective:** Students will investigate the ripening process of apples by conducting an iodine experiment.

**Standards:** NGSS: 4-LS1-2, 3-5-ETS1-3; CC ELA: L.W.4-5.7

**Materials:** Variety of apples, iodine tincture, nitrile gloves, safety goggles, paintbrush, knife, paper plates or towels

#### Procedure:

1. Safety note: Iodine tincture is a hazardous material and should be handled with care. Wash hands after use and avoid contact with the eyes and skin.
2. Place individual, whole apples on labeled plates (1, 2, 3, 4,

etc.) and instruct students to observe each apple’s size, color, texture, and firmness. Have students hypothesize, based on their previous knowledge, which apples are at peak ripeness.

3. Cut apples in half, displaying both sides of the apples on each labeled plate. Have students observe each apple’s internal characteristics.
4. With the paintbrush, evenly apply iodine across the cut surface of each top apple half. Let the apple sit for two minutes. Leave the other apple half untouched as a control to compare changes in each apple.
5. Observe the surfaces of the apples. Large amount of purple indicates high starch/low sugar. Little to no purple indicates low starch/high sugar.
6. Place apples on a continuum from least to most ripe. Make concluding observations.
7. Write a conclusion paragraph on your experimental findings.

# EDUCATION THROUGH SOCIAL MEDIA

This year, the California Apple Commission began to enhance social media efforts in order to motivate the consumer to specifically look for and buy California apples when they are in season. Instagram, Facebook, and Pinterest accounts will all be utilized to connect with consumers. These platforms will feature content on how to use apples, information on seasonality of the different varieties most commonly grown in California, and Meet the Grower stories which allows the consumer to see who is growing their apples. Content will specifically encourage the California consumer to follow the seasons of California apple varieties to guarantee they are eating fresh apples. Educating the consumer on the seasonality of apples will provide them the tools to ask their retailers to carry California grown apples in their local grocery stores. In order to keep content development as cost efficient as possible, the CAC will rely on existing partnerships with CA Grown and US Apple. In addition, in July 2020, the CAC team was provided a two-day training from Poppy Social Media that was funded by the California Olive Committee. This training outlined specific methods tailored to the growth of developing social media accounts. We will be incorporating these techniques as we establish our social media presence. Please see the example below of how the website will be refreshed as well as samples of Instagram posts.

## Current Website- Home Page:

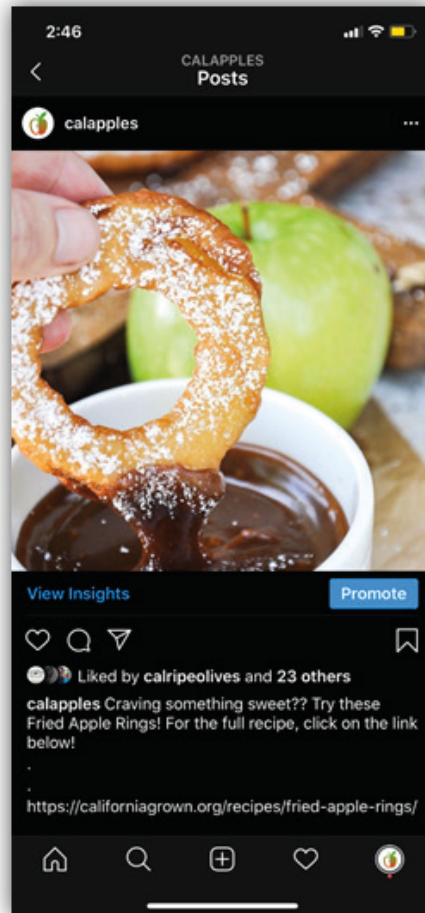


# EDUCATION THROUGH SOCIAL MEDIA

## New Website- Home Page:



## Instagram Posts:

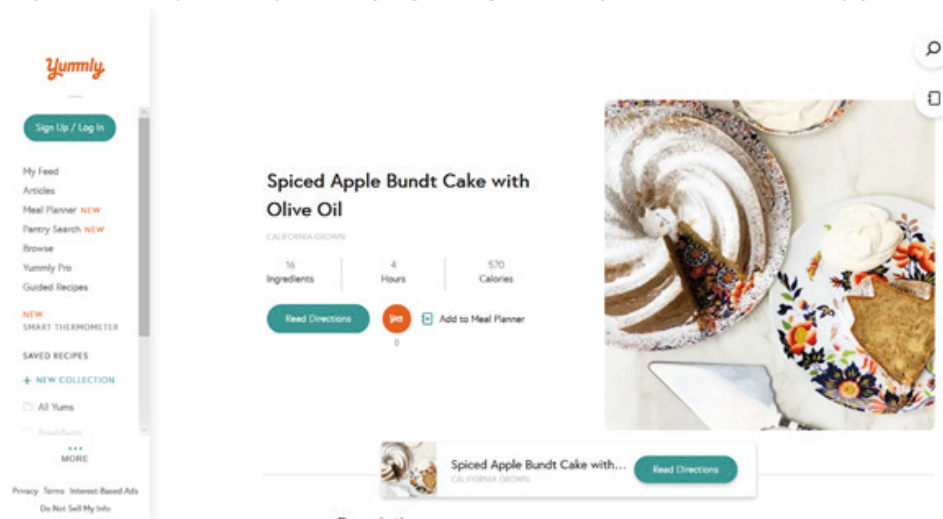


# EDUCATION THROUGH SOCIAL MEDIA

## Sample Instagram Grid:



The CAC also opted in to CA Grown’s most recent Direct-to-Consumer Digital Program that features five California apple recipes appearing on the California Grown page on Yummly. Yummly is a website that is used for meal planning and recipe searches. Consumers have the ability to search for recipes that include California apples and are then redirected to the CA Grown website to view the full recipe directions. Below is an example of how a recipe appears on Yummly. Visit this link to view more California apple recipes on Yummly! <https://www.yummly.com/page/cagrown?q=California%20Apples>



# CA GROWN PARTNERSHIP



California Grown, also known as the Buy California Marketing Agreement (BCMA), is a joint effort of agricultural industry groups representing the products of California's farms, ranches, forests, and fisheries. Working as an advisory board to the California Department of Food and Agriculture, BCMA brings together industry and government resources to increase the awareness, consumption, and value of California agricultural products, helping the state's consumers enjoy the best of the California lifestyle.

California Grown is funded through public and private contributions by the U.S. Department of Agriculture, the California Department of Food and Agriculture, and California agricultural organizations.

The Commission participates as an active member of the California Grown partnership by attending regular board meetings and joining internal committees. Through this partnership, the Commission is able to feature California apples at various events including, California Agriculture Day at the Capitol, the Produce Marketing Association's Fresh Summit Exposition, and many more.







# PEST, DISEASE, & STANDARDIZATION

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# PEST, DISEASE, & STANDARDIZATION SUMMARY

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The California apple industry continuously strives to produce a healthy and safe product. Through its work in pest, disease, and standardization, the Commission continues to partner with other entities to represent the industry on critical issues.

The Food Safety Modernization Act (FSMA) was signed into law on January 4th, 2011 by President Barack Obama. The purpose of the law mandates the U.S. Food and Drug Administration (FDA) to implement a comprehensive, science-based, preventative control across the food supply. The FSMA rules are put in place to ensure specific actions are taken at each of the following points to prevent contamination. FSMA consists of seven different final rules, listed below. The Produce Safety rule specifically focuses on production practices and ultimately establishes science-based minimum standards for the safe growing, harvesting, packing, and holding of produce. The rule puts more responsibility on farms to protect their crops from contamination by creating requirements for water quality testing, raw manure application, examining grazing areas, employee health and hygiene training, and more. The rule gives special attention to sprouts due to their frequent association with foodborne illness outbreaks.

For more information, please visit the following link to view the most recent publication of the rules for the Food Safety Modernization Act:

<https://www.fda.gov/Food/GuidanceRegulation/FSMA/>

Please see the following pages for information regarding CDFA's Produce Safety Program for industry members, in addition to more information on the FSMA Produce Safety Rule itself.



# FSMA TRAINING

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Under the Produce Safety Rule, every produce farm must have an individual employed who has completed an FDA-approved Produce Safety Rule Grower Training course. This course provides training to ensure a responsible party employed by the farm understands the required food safety practices. The Produce Safety Rule Grower Training need only be taken once; however, the certificate of completion belongs to the individual and not the farm. California Produce Safety Program inspectors will ask to see your designated food safety employee's certificate as part of your on-farm inspection.

## **About the Training Program**

Currently, only courses that have been accredited by the Produce Safety Alliance will satisfy the requirement for training under the Produce Safety Rule.

The 7-hour Produce Safety Rule Grower Training course covers the following topics:

- Introduction to Produce Safety
- Worker Health, Hygiene and Training
- Soil Amendments
- Wildlife, Domesticated Animals and Land Use
- Agriculture Water (Part I: Production Water, Part II: Postharvest Water)
- Developing a Farm Food Safety Plan
- Postharvest Handling and Sanitation

The California Department of Food and Agriculture has received funding from the FDA to provide Produce Safety Rule Grower Training courses at a reduced rate. Due to the COVID-19 pandemic, there are currently no in-person courses in California; however, participants have the choice of signing up for online or remote delivery of the course.

- Online delivery course is a three-week course that can be completed at your own pace. The online course is expected to take 15-30 hours for successful completion. The enrollment cost will be \$150 during the COVID-19 crisis (until 30 September 2020) by applying discount code VIRTUAL20. The standard enrollment cost is \$450.
- Remote delivery course is led in real time by instructors delivered with video conferencing software, such as Zoom or Webex. This is a temporary option being supported during the COVID-19 outbreak.

To sign up please go to <https://safefoodalliance.com/events/>



May 30, 2018

**Re: Produce Safety Program Website**

Dear California Produce Associations:

The California Department of Food and Agriculture is pleased to inform you our new Produce Safety Program (PSP) has launched a website that will serve as a resource to California farmers who must comply with new regulations under the Produce Safety Rule (PSR).

The website, which can be found at [www.cdfa.ca.gov/producesafety](http://www.cdfa.ca.gov/producesafety), includes basic information about the PSP and our efforts to help California produce farmers understand how to comply with the requirements of the PSR under the Food Safety Modernization Act (FSMA).

Our hope is that you will use this website and share it with your grower-members as the official resource for information about PSR implementation in California. Additional information will be added to the site in coming months. Currently, California produce farmers can use the website to learn about mandatory [Produce Safety Rule Grower training](#) that is required of at least one employee on every produce farm. Our website provides access to registration information for several courses being offered throughout the state that are subsidized by the U.S. Food and Drug Administration so that farms can complete the required training at a reduced price.

The site provides California produce industry members with some initial information about the upcoming PSP [inspections](#) that will be conducted by our staff on behalf of the FDA beginning in spring of 2019. To prepare for inspections, the Department is offering on-farm readiness reviews. Growers can [schedule a review](#) directly from the website. A [Frequently Asked Questions](#) section has been developed, along with some talking points that can be used to explain the new program to [consumers](#). A regular [blog](#) is also part of the website and will be used to provide updates on program activities and resources.

In addition to the website, a Facebook page has been created for the program under [@CDFAProduce Safety](#). Interested industry members can also join a [mailing list](#) to receive updates and information.

It is estimated over 20,000 farms in California are covered under the PSR, and we will need your assistance in reaching this audience with important information about the





CALIFORNIA DEPARTMENT OF  
FOOD & AGRICULTURE

Karen Ross, Secretary

new regulation. We encourage your organization to share these new resources with your membership. We also welcome any questions you may have.

Sincerely,

Karen Ross, Secretary  
California Department of Food and Agriculture

Enclosures

cc: Natalie Krout-Greenberg, Director  
Inspection Services Division

Steve Patton, Branch Chief  
Inspection Services Division

Shelley Phillips, Supervising Senior Environmental Scientist  
Produce Safety Program





September 13, 2017

Steve Patton  
Branch Chief  
1220 N Street  
Sacramento, CA 95814

Dear Mr. Patton:

On September 12, 2017, the Food and Drug Administration (FDA) announced a postponement of the implementation of routine inspections of farms subject to the Produce Safety Rule until spring 2019. The announcement also addressed the extension of the compliance date for agricultural water standards and described how FDA will work with stakeholders to modify agricultural water standards in the future.

In light of this announcement, we are modifying the approach outlined in the cooperative agreements so that routine inspections will begin in spring 2019. This will allow states and FDA an opportunity to focus on issuing guidance and training plans, along with conducting On-Farm Advisory (Readiness) Reviews (OFRRs) in 2018. "For-cause" inspections (such as those related to outbreak investigations) will still occur, as needed, and will not change in light of this announcement. The new routine inspection timeline is as follows:

- Large Farms
  - Compliance Date - 1/26/2018; Inspection Start Date – March - June 2019
- Small Farms
  - Compliance Date - 1/28/2019; Inspection Start Date – March - June 2020
- Very Small Farms
  - Compliance Date - 1/27/2020; Inspection Start Date – March - June 2021

We ask that all State Produce Implementation Cooperative Agreement Program (CAP) grantees adjust their inspection implementation timelines according to the above schedule and reassess their strategic plans and budgets to determine the impact of these decisions, if any. We encourage states to consider reprogramming resources planned for inspections in 2018 to conducting OFRRs.

FDA, working closely with our association partners, is scoping out all activities that can be performed in lieu of routine inspections in Year 2. We will also be finalizing CAP-related information and decisions necessary to implement inspections in 2019. We will share this information with you no later than November 1, 2017, so you will have time to revise your strategic plans and budgets, if necessary, and submit them, along with your mid-year progress reports, by December 1, 2017.

U.S. Food & Drug Administration  
10903 New Hampshire Avenue  
Silver Spring, MD 20903  
[www.fda.gov](http://www.fda.gov)

While reassessing your program's strategic plan and budget please be mindful that all other planned activities under your existing cooperative agreement will continue including:

- Developing and continually updating your strategic plan for produce safety (continuation from Year 1)
  - Developing, documenting, and tracking performance measures
- Conducting a jurisdictional self-assessment (continuation from Year 1)
- Establishing and verifying a farm inventory (continuation from Year 1)
- Conducting legislative research and continuing any efforts to obtain regulatory authority (continuation from Year 1)
- Developing program and program infrastructure (continuation from Year 1 and/or new)
  - Developing and implementing a continuing education program to ensure regulatory jurisdiction personnel are trained
  - Establishing ties with FDA's Produce Safety Network and FDA's Technical Assistance Network to ensure that any questions or issues are raised and state/territory regulators receive necessary technical assistance
  - Researching, designing, and implementing a compliance program for applicable produce safety regulations at the jurisdictional level, which includes:
    - Continuing program development work, but adjusting for the new targeted start date; and
    - Delaying implementation of the inspection program and redirecting those resources to OFRRs and other education and outreach programs
  - Continuing communication and collaboration amongst CAP stakeholders
- Performing education and outreach (continuation from Year 1 and/or new)
  - Evaluating educational needs and implementing an educational system to provide for an informed farming community
  - Participating in and providing opportunities for OFRRs

The implementation of the Food Safety Modernization Act (FSMA) and the Produce Safety Rule has been and continues to be a top priority for FDA. As you know, states have a long history of effectively working with and understanding your farming communities. Successful implementation of the Produce Safety Rule cannot happen without the support of our state partners who are helping food producers and growers understand and achieve the new requirements.

FDA is committed to ensuring our regulatory partners and industry have the tools needed to implement the new standards. As we continue to work together with FSMA implementation, we recognize that achieving our shared food safety goals is a continuous effort from all of us.

Thanks for your commitment to integration and food safety. We look forward to our continued partnership.



# **Temporary Policy During the COVID-19 Public Health Emergency Regarding the Qualified Exemption from the Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption**

## **Guidance for Industry**

This guidance represents the current thinking of the Food and Drug Administration (FDA or Agency) on this topic. It does not establish any rights for any person and is not binding on FDA or the public. You can use an alternative approach if it satisfies the requirements of the applicable statutes and regulations. To discuss an alternative approach, contact the FDA staff or Office responsible for this guidance as listed on the title page.

### **I. Introduction**

FDA plays a critical role in protecting the United States from threats such as emerging infectious diseases, including the Coronavirus Disease 2019 (COVID-19) pandemic. FDA is committed to providing timely guidance to support response efforts to this pandemic.

FDA is issuing this guidance to announce flexibility in the eligibility criteria for the qualified exemption from the Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption (Produce Safety Rule) (21 CFR Part 112) due to disruptions to the supply chain for the duration of the COVID-19 public health emergency.

This policy is intended to remain in effect only for the duration of the public health emergency related to COVID-19 declared by the Secretary of Health and Human Services (HHS) on January 31, 2020, effective January 27, 2020, and renewed for 90 days on April 21, 2020, effective April 26, 2020, including any renewals made by the HHS Secretary in accordance with section 319(a)(2) of the Public Health Service Act (PHS Act) (42 U.S.C. 247d(a)(2)). When the public health emergency concludes, FDA intends to issue additional guidance regarding the eligibility criteria for the qualified exemption from the Produce Safety Rule, which depends on the calculation of a three-year average as described below.

## *Contains Nonbinding Recommendations*

Given this public health emergency, this guidance is being implemented without prior public comment because FDA has determined that prior public participation for this guidance is not feasible or appropriate (see section 701(h)(1)(C) of the Federal Food, Drug, and Cosmetic Act (FD&C Act) (21 U.S.C. 371(h)(1)(C)) and 21 CFR 10.115(g)(2)). This guidance document is being implemented immediately, but it remains subject to comment in accordance with statutory requirement and the Agency's good guidance practices.

In general, FDA's guidance documents, including this guidance, do not establish legally enforceable responsibilities. Instead, guidances describe the Agency's current thinking on a topic and should be viewed only as recommendations, unless specific regulatory or statutory requirements are cited. The use of the word *should* in Agency guidance means that something is suggested or recommended, but not required.

## **II. Background**

### **A. Coronavirus**

There is currently an outbreak of respiratory disease caused by a novel coronavirus. The virus has been named "SARS-CoV-2" and the disease it causes has been named "Coronavirus Disease 2019" (COVID-19). On January 31, 2020, HHS issued a declaration of a public health emergency related to COVID-19 and mobilized the Operating Divisions of HHS.<sup>1</sup> In addition, on March 13, 2020, the President declared a national emergency in response to COVID-19.<sup>2</sup>

State and local governments across the United States have instituted public health orders resulting in the temporary closure or limited operational status of many restaurants, retail food establishments, and institutional food service establishments (including schools). These closures and limitations have had a significant impact on the supply chain for food by significantly reducing the demand for food normally sold to these establishments. These changes in the supply chain have impacted the ability of some farms to sell food to typical buyers and, consequently, may impact some farms' eligibility for a particular exemption under the Produce Safety Rule.<sup>3</sup>

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<sup>1</sup> Secretary of Health and Human Services Alex M. Azar, Determination that a Public Health Emergency Exists. (Jan. 31, 2020, renewed April 21, 2020), available at <https://www.phe.gov/emergency/news/healthactions/phe/Pages/default.aspx>.

<sup>2</sup> Proclamation on Declaring a National Emergency Concerning the Novel Coronavirus Disease (COVID-19) Outbreak (Mar. 13, 2020), available at <https://www.whitehouse.gov/presidential-actions/proclamation-declaring-national-emergency-concerning-novel-coronavirus-disease-covid-19-outbreak/>.

<sup>3</sup> The Current Good Manufacturing Practice, Hazard Analysis, and Risk-Based Preventive Controls for Human Food (21 CFR Part 117) and the Current Good Manufacturing Practice, Hazard Analysis, and Risk-Based Preventive Controls for Food for Animals (21 CFR Part 507) regulations established criteria for a food facility to be a qualified facility. If you believe your status as a qualified facility under either part 117 or part 507 will be impacted by market disruptions related to COVID-19, please contact us as described in the preface of this guidance.

## **B. Qualified Exemption under the Produce Safety Rule**

As set forth in 21 CFR 112.5(a), a farm is eligible for a qualified exemption and associated modified requirements in a calendar year if during the previous three-year period preceding the applicable calendar year, the average annual monetary value of food the farm sold directly to qualified end-users exceeded the average annual monetary value of the food the farm sold to all other buyers during that period, and the average annual monetary value of all food the farm sold during the three-year period was less than \$500,000, adjusted for inflation.<sup>4</sup> “Qualified end-user” is defined in 21 CFR 112.3 as the consumer of the food (where the term consumer does not include a business); or a restaurant or retail food establishment that is located in the same State or the same Indian reservation as the farm that produced the food or not more than 275 miles from such farm. The modified requirements with which qualified exempt farms must comply are described in 21 CFR 112.6 and include disclosing the name and complete business address of the farm where the produce was grown either on the label of the produce or at the point of purchase. These farms are also required to establish and keep certain documentation.

FDA recognizes that the ability of farms to shift food sales to available buyers during the COVID-19 public health emergency has the potential to help reduce food shortages and food waste and to help support both farms and the U.S. economy. In order to support affected farms in selling food to all available buyers during the COVID-19 public health emergency, under the circumstances described in section III FDA does not intend to enforce the criteria for sales to qualified end-users when determining eligibility for the qualified exemption under the Produce Safety Rule, for the duration of the public health emergency.

## **III. Discussion**

In order to provide flexibility to affected farms during the COVID-19 public health emergency, under the circumstances described below FDA does not intend to enforce the requirement in 21 CFR 112.5(a)(1) that a majority of sales be to qualified end-users for a farm to be eligible for the qualified exemption under the Produce Safety Rule. This policy will apply to any calendar year during which the COVID-19 public health emergency is ongoing and will remain in effect until the public health emergency is terminated. FDA intends to provide timely notice about the eventual withdrawal of this policy. At that time, FDA intends to issue additional guidance, which will take into account comments received on and our experience with the implementation of this guidance, regarding how the three-year averages should be calculated moving forward.

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<sup>4</sup> In the preamble to the final rule, “Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption,” the Agency described how a new farm can establish eligibility for a qualified exemption if it does not yet have three years of records. When a farm has not yet begun operations, the preamble states that, “it would be reasonable for the farm to rely on a projected estimate of revenue (or market value) when it begins operations. We would evaluate the credibility of the projection considering factors such as the farm’s number of employees.” The preamble goes on to state that, “After the farm has records for one or two preceding calendar years, it would be reasonable for the farm to make the calculation based on records it has (i.e., for one or two preceding calendar years) and we will accept records for the preceding one or two years as adequate to support its eligibility for a qualified exemption in these circumstances.” (80 FR 74354 at 74413 (Nov. 27, 2015).) In section III, we provide examples of how the temporary policy announced in this guidance will apply to farms in these situations.

## ***Contains Nonbinding Recommendations***

As described below, for farms that met the criteria for the qualified exemption in 2020 based on sales that were made in 2017-2019, FDA does not intend to enforce the criteria regarding the portion of sales that are made to qualified end-users in 2020 (and any subsequent years that are affected by the COVID-19 public health emergency). This means that farms that are currently eligible for the qualified exemption and associated modified requirements will still be considered eligible even if they shift food sales away from qualified end-users, provided that they continue to meet the requirement that the average annual monetary value of all food they sell is less than \$500,000, adjusted for inflation. Similarly, for farms that did not have three years of sales prior to 2020, but that met the relevant requirements during the years they were in operation prior to 2020, FDA does not intend to enforce the criteria regarding the portion of sales that are made to qualified end-users in 2020 (and any subsequent years that are affected by the COVID-19 public health emergency), provided the farms continue to meet the requirement regarding the average annual monetary value of all food they sell.

This guidance does not affect the status of farms who continue to sell a majority of their food to qualified end-users despite COVID-19 market disruptions. Any farm that is able to meet the requirements of 21 CFR 112.5 using contemporaneous sales data (e.g., using sales data from 2020 as part of their eligibility calculation for 2021) will be eligible for the qualified exemption, even if they are not within the scope of the enforcement discretion policy described below.

All farms are responsible for ensuring that the food they produce is not adulterated under the Federal Food, Drug, and Cosmetic Act (FD&C Act). FDA strongly encourages farms to use good agricultural practices (see, e.g., FDA's "Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables," at <https://www.fda.gov/regulatory-information/search-fda-guidance-documents/guidance-industry-guide-minimize-microbial-food-safety-hazards-fresh-fruits-and-vegetables>).

### ***How do I determine eligibility for the qualified exemption in 2021 if I met the criteria for the qualified exemption in 2020?***

For farms that were eligible for the qualified exemption in 2020, eligibility for qualified exemption status for 2021, and until the end of the public health emergency, may be determined based on:

- (1) Documentation that the farm met all of the criteria for the qualified exemption in 2020, based on records from 2017, 2018, and 2019; and
- (2) Documentation that the average annual monetary value of all food the farm sold during the preceding three-year period (e.g., 2018, 2019, and 2020 for determining status in 2021) was less than \$500,000, adjusted for inflation. FSMA inflation adjusted cut off values can be found at: <https://www.fda.gov/food/food-safety-modernization-act-fsma/fsma-inflation-adjusted-cut-offs>.

*For example:*

Farm A had previously determined that they were eligible for the qualified exemption for 2020, based on sales data from 2017, 2018, and 2019. Furthermore, the average annual monetary value of all food sold by Farm A in 2018, 2019, and 2020 was less than \$500,000, adjusted for inflation.

## *Contains Nonbinding Recommendations*

FDA does not intend to enforce the criteria regarding sales by Farm A to qualified end-users in 2020. FDA therefore intends to treat Farm A as eligible for the qualified exemption in 2021, regardless of the monetary value of sales to qualified end-users in 2020.

Farm B did not meet the criteria for the qualified exemption in 2020 because the average monetary value of food sold directly to qualified end-users **did not** exceed the average monetary value of food sold to all other buyers in 2017, 2018, and 2019. The average annual monetary value of all food sold by Farm B in 2018, 2019, and 2020 was less than \$500,000, adjusted for inflation. The temporary policy described in this guidance does not apply to Farm B.

### *How do I determine eligibility for the qualified exemption if I did not have three years of sales prior to 2020?*

If the farm has not been in operation long enough to have annual values of sales for the three-year period prior to 2020, eligibility for qualified exemption status for 2021, and until the end of the public health emergency, may be determined based on:

- (1) Documentation that for the year(s) the farm was in operation prior to 2020, the average annual monetary value of food sold directly to qualified end-users exceeded the average annual monetary value of food sold to all other buyers, and the average annual monetary value of all food the farm sold was less than \$500,000, adjusted for inflation; and
- (2) Documentation that the average annual monetary value of all food the farm sold during the preceding three years (or the year(s) for which the farm was in operation if less than 3 years) was less than \$500,000, adjusted for inflation. FSMA inflation adjusted cut off values can be found at: <https://www.fda.gov/food/food-safety-modernization-act-fsma/fsma-inflation-adjusted-cut-offs>.

*For example:*

Farm C began operations in 2018. The average monetary value of food sold directly to qualified end users in 2018 and 2019 exceeded the average monetary value of food sold to all other buyers, and the average annual monetary value of all food the farm sold in 2018 and 2019 was less than \$500,000, adjusted for inflation. Furthermore, the average annual monetary value of food sold by Farm C in 2018, 2019, and 2020 is less than \$500,000, adjusted for inflation. FDA does not intend to enforce the criteria regarding sales by Farm C to qualified end-users in 2020. FDA therefore intends to treat Farm C as eligible for the qualified exemption in 2021, regardless of the monetary value of sales to qualified end-users in 2020.

Farm D began operations in 2018 and the average monetary value of food sold directly to qualified end users in 2018 and 2019 **did not** exceed the average monetary value of food sold to all other buyers. The average annual monetary value of food sold by Farm D in 2018, 2019, and 2020 is less than \$500,000, adjusted for inflation. The temporary policy described in this guidance does not apply to Farm D.

### *How do I determine eligibility for the qualified exemption if I began sales in 2020?*

## *Contains Nonbinding Recommendations*

If a farm was newly operational and began sales in 2020, eligibility for qualified exemption status for 2021, and until the end of the public health emergency, may be determined based on:

(1) Documentation (e.g. contracts with buyers) that provides a sufficient basis to establish that, had there not been market disruption due to the COVID-19 pandemic, the average monetary value of food sold directly to qualified end-users in 2020 was reasonably anticipated to exceed the average annual monetary value of food sold to all other buyers; and the monetary value of all food sold in 2020 was less than \$500,000; and

(2) Documentation that the average annual monetary value of all food the farm sold during the preceding three years (or the year(s) for which the farm was in operation if less than 3 years) was less than \$500,000, adjusted for inflation. FSMA inflation adjusted cut off values can be found at: <https://www.fda.gov/food/food-safety-modernization-act-fsma/fsma-inflation-adjusted-cut-offs>.

*For example:*

Farm E began selling food in 2020 and had contracts that demonstrate that the average monetary value of food sold directly to qualified end-users was reasonably anticipated to exceed the average annual monetary value of food sold to all other buyers. Due to market disruptions, in 2020 the monetary value of food sold directly to qualified end-users by Farm E did not exceed the monetary value of food sold to all other buyers. The monetary value of food sold in 2020 was less than \$500,000. FDA does not intend to enforce the criteria regarding sales by Farm E to qualified end-users in 2020. FDA therefore intends to treat Farm E as eligible for the qualified exemption in 2021, even though the monetary value of food sold directly to qualified end-users by Farm E did not exceed the monetary value of food sold to all other buyers, due to market disruptions.

## *Contains Nonbinding Recommendations*

part 112, or the FSVP regulation are still required to make necessary disclosures. Subsequent entities in the distribution chain will continue to be subject to applicable requirements related to food adulteration in Federal and/or state and local laws and regulations, e.g., part 117, part 507, and the Retail Food Code.

### **C. Enforcement Policy for Importation of Food Contact Substances Under the FSVP Regulation**

The FSVP regulation requires food importers to develop, maintain, and follow an FSVP that provides adequate assurances that the foreign supplier uses processes and procedures that provide the same level of public health protection as those required under the preventive controls or produce safety provisions of FSMA (if applicable) and regulations implementing those provisions, as well as assurances that the imported food is not adulterated and that human food is not misbranded with respect to allergen labeling (21 CFR 1.502(a)). Among other things, the FSVP regulation (21 CFR 1.500-1.514) requires most food importers to do the following:

- Analyze the hazards for the foods they import (21 CFR 1.504);
- Evaluate the performance of their potential foreign suppliers and the risk posed by the foods to be imported (21 CFR 1.505); and
- Determine and conduct appropriate foreign supplier verification activities, such as onsite auditing of foreign suppliers, sampling and testing, and review of supplier food safety records (21 CFR 1.506).

The FSVP regulation applies (with certain exceptions) to the importation of food as defined in section 201(f) of the FD&C Act (see 21 CFR 1.500). Food contact substances are included in the definition of “food” for purposes of the FSVP regulation (21 CFR 1.500). However, for the reasons stated below, we intend to exercise enforcement discretion for importers of food contact substances with respect to the FSVP regulation.

A food contact substance is any substance that is intended for use as a component of materials used in manufacturing, packing, packaging, transporting, or holding food if such use of the substance is not intended to have any technical effect in such food (section 409(h)(6) of the FD&C Act (21 U.S.C. 348(h)(6)); 21 CFR 170.3(e)(3)). The term “food” is defined in section 201(f)(3) of the FD&C Act to include articles used as components of food. In the preamble to the FSVP final rule, we stated that the definition of “food” for purposes of FSVP includes food contact substances that are considered “food” in section 201(f) of the FD&C Act (80 FR 74225 at 74233). Therefore, the FSVP regulation applies to importers of food contact substances that meet the definition of “food” in section 201(f).

In the compliance date final rule, we extended the compliance date for the importation of food contact substances by 2 years so that we could consider how best to address concerns raised about the feasibility of importers of food contact substances meeting the FSVP requirements (81 FR 57784 at 57792-57793). As a result of this extension, the earliest that an importer would be required to comply with FSVP for the importation of food contact substances would be May 28, 2019.

## *Contains Nonbinding Recommendations*

- Subpart C of part 507 includes provisions for disclosure statements and written assurances that apply when a manufacturer/processor of food for animals identifies a hazard requiring a preventive control, does not control the identified hazard, and relies on an entity in its distribution chain to control the hazard (§§ 507.36(a)(2), (3), and (4), 507.36(c), 507.36(d), and 507.37). A manufacturer/processor that complies with these provisions of part 507 is not required to implement a preventive control for the identified hazard. The combination of these requirements was intended to provide assurance that the food will be processed to control the identified hazard before it reaches the consumer feeding the food to animals.
- Subpart F of part 507 specifies the elements to be included in the written assurances required by § 507.36(a)(2)(ii), (3)(ii), and (4)(ii). (See § 507.215(b).)

The FSVP regulation includes “customer provisions” that apply when an importer imports a food for which the hazards are controlled after importation (§ 1.507). As with the customer provisions in part 117 and part 507, the requirements in the customer provisions of the FSVP regulation were intended to provide assurance that the food will be processed to control the identified hazard before it reaches the humans or animals that would consume the food.

The produce safety regulation applies to “covered produce” as set forth in §§ 112.1 and 112.2. Produce that would otherwise be covered is eligible for an exemption from most of the requirements of the produce safety regulation if: (1) The produce receives commercial processing that adequately reduces the presence of microorganisms of public health significance (§ 112.2(b)(1)); and (2) certain other conditions are met, including requirements for disclosure statements and written assurances analogous to the requirements for disclosure statements and written assurances in the “customer provisions” required by part 117, part 507, and the FSVP regulation (§ 112.2(b)(2) through (4) and (6)).

FDA has received feedback from industry expressing concern that certain product distribution chains would require vastly more written assurances (and consequently resources to comply with the requirement) than anticipated by FDA during the rulemaking process (Ref. 1). For example, a manufacturing facility may sell food products subject to the customer provisions to a distributor, who may sell numerous items requiring assurances to multiple restaurants, cafeterias, delicatessens, and other distributors. It is estimated that this could result in hundreds or even thousands of written assurances needed by a single distributor (Ref. 1). After considering this feedback from industry, we stated our belief that the requirement for written assurance in the customer provisions of part 117 significantly exceeds the current practices of even the largest facilities; compliance by those facilities by September 19, 2016, may not be feasible; and it is appropriate to extend the compliance dates for 2 years for the written assurance requirements for part 117, part 507, the FSVP regulation, and the produce safety regulation while we considered the best approach to address feasibility concerns (81 FR 57784 at 57786).

FDA intends to initiate a rulemaking that takes into consideration the complex supply chain relationships and resource requirements. To provide sufficient time for us to pursue that rulemaking, we are exercising enforcement discretion with regard to the written assurance requirements of part 117, part 507, part 112, and the FSVP regulation until completion of that rulemaking process. In the meantime, entities with disclosure duties under part 117, part 507,



squash, winter; sweet potatoes; and water chestnuts.

(2) Produce that is produced by an individual for personal consumption or produced for consumption on the farm or another farm under the same management; and

(3) Produce that is not a raw agricultural commodity.

(b) Produce is eligible for exemption from the requirements of this part (except as noted in paragraphs (b)(1), (2), and (3) of this section) under the following conditions:

(1) The produce receives commercial processing that adequately reduces the presence of microorganisms of public health significance. Examples of commercial processing that adequately reduces the presence of microorganisms of public health significance are processing in accordance with the requirements of part 113, 114, or 120 of this chapter, treating with a validated process to eliminate spore-forming microorganisms (such as processing to produce tomato paste or shelf-stable tomatoes), and processing such as refining, distilling, or otherwise manufacturing/processing produce into products such as sugar, oil, spirits, wine, beer or similar products; and

(2) You must disclose in documents accompanying the produce, in accordance with the practice of the trade, that the food is "not processed to adequately reduce the presence of microorganisms of public health significance;" and

(3) You must either:

(i) Annually obtain written assurance, subject to the requirements of paragraph (b)(6) of this section, from the customer that performs the commercial processing described in paragraph (b)(1) of this section that the customer has established and is following procedures (identified in the written assurance) that adequately reduce the presence of microorganisms of public health significance; or

(ii) Annually obtain written assurance, subject to the requirements of paragraph (b)(6) of this section, from your customer that an entity in the distribution chain subsequent to the customer will perform commercial processing described in paragraph (b)(1) of this section and that the customer:

(A) Will disclose in documents accompanying the food, in accordance with the practice of the trade, that the food is "not processed to adequately reduce the presence of microorganisms of public health significance"; and

(B) Will only sell to another entity that agrees, in writing, it will either:

(1) Follow procedures (identified in a written assurance) that adequately reduce the presence of microorganisms of public health significance; or

(2) Obtain a similar written assurance from its customer that the produce will receive commercial processing described in paragraph (b)(1) of this section, and that there will be disclosure in documents accompanying the food, in accordance with the practice of the trade, that the food is "not processed to adequately reduce the presence of microorganisms of public health significance"; and

(4) You must establish and maintain documentation of your compliance with applicable requirements in paragraphs (b)(2) and (3) in accordance with the requirements of subpart O of this part, including:

(i) Documents containing disclosures required under paragraph (b)(2) of this section; and

(ii) Annual written assurances obtained from customers required under paragraph (b)(3) of this section; and

(5) The requirements of this subpart and subpart Q of this part apply to such produce; and

(6) An entity that provides a written assurance under § 112.2(b)(3)(i) or (ii) must act consistently with the assurance and document its actions taken to satisfy the written assurance.

#### § 112.3 What definitions apply to this part?

(a) The definitions and interpretations of terms in section 201 of the Federal Food, Drug, and Cosmetic Act apply to such terms when used in this part.

(b) For the purpose of this part, the following definitions of very small business and small business also apply:

(1) *Very small business.* For the purpose of this part, your farm is a very small business if it is subject to any of the requirements of this part and, on a

# FSMA PRODUCE SAFETY RULE



## What Produce Associations Need to Know

- California Department of Food Agriculture (CDFA) is launching the California Produce Safety Program, which will include educational information designed to assist California produce farms in understanding the requirements of the FDA's Produce Safety Rule and how to comply with this new regulation.
- Beginning January 26, 2018, California produce farms designated as "large" (those with annual sales greater than \$500,000) are expected to comply with the Produce Safety Rule. Smaller farms will be phased in over the next few years.
- The Produce Safety Rule is mandatory throughout the United States beginning January 26, 2018. Any produce farm found to be out of compliance may be subject to regulatory actions.
- In 2018, the Produce Safety Program will be doing everything possible to inform and educate California produce farmers about the requirements of the Produce Safety Rule.

## Who Must Follow the Produce Safety Rule?

- California farms producing fruits, nuts and vegetables must comply with this new rule.
- Multiple rules exist within the federal Food Safety Modernization Act (FSMA). The Produce Safety Program deals specifically with the Produce Safety Rule. Information about other FSMA Rules is available [here](#).
- The exact rule an operation falls under will vary depending upon the type of activities performed. To determine if an operation falls under the Produce Safety Rule, please use this [flow chart](#) provided by The National Sustainable Agriculture Coalition.

## CDFA Produce Safety Program Website Coming Soon

[www.cdffa.ca.gov/producesafety/](http://www.cdffa.ca.gov/producesafety/)

CDFA is currently developing a new Produce Safety Program website. This will serve as the go to place for individuals looking for PSR information.



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## Who is Exempt from the Produce Safety Rule?

- A list of exemptions from the Produce Safety Rule can be found [here](#). Exemptions generally include the following:
- Thirty commodities have been identified by the FDA as exempt from the Produce Safety Rule because they are rarely consumed raw. Farms exclusively producing these commodities are not covered by the Produce Safety Rule. (Examples of exempt commodities include: dried kidney beans, potatoes and pumpkins.)
- Farms that grow produce only for personal consumption or very limited distribution may also be exempt from the law.
- Some farms may qualify for an exemption from the Produce Safety Rule if their sales are below certain levels or if they grow produce that is processed in a way that would kill pathogens. Farms falling in these categories will be required to verify their exemption status.
- If your organization represents commodities that may be eligible for a qualified exemption because the finished product is processed in a way that kills pathogens, CDFA strongly urges you to seek guidance from FDA regarding documentation requirements to verify this exemption.
- CDFA is also urging associations to work with industry members to ensure procedures for documentation for qualified exemptions required of both farmers and processors are well understood and communicated.

## Education and Training

- FDA has determined that official Produce Safety Rule on farm inspections will begin in 2019. The Produce Safety Program will spend 2018 working to make sure California produce farmers understand the requirements of the Produce Safety Rule.
- An informational website providing detailed information on the Produce Safety Program will be available soon and CDFA will be conducting other outreach efforts to educate California produce farms about this new rule and how to comply.
- One of the first steps toward Produce Safety Rule compliance is for every produce farm to have an individual employed who has completed an FDA-recognized Produce Safety Rule Grower Training Course. The training need only be taken once and the certificate of completion belongs to the individual. Available courses are posted on the Produce Safety Alliance website [here](#).
- CDFA has also contracted with outside organizations to provide subsidized Grower Training that meets Produce Safety Rule requirements. These courses are offered at a reduced rate and are being conducted throughout the state in both English and Spanish. A list of dates and locations of these courses is provided with this packet.
- In addition to the required Produce Safety Rule Grower Training, all produce farms must show documentation of ongoing food safety training of farm and contracted employees as part of the required practices under the Produce Safety Rule.
- Any information or assistance your association can provide to ensure farmers are meeting Produce Safety Rule training requirements is greatly appreciated.
- In preparation for official Produce Safety Rule inspections in 2019, CDFA's Produce Safety Program will be offering a series of On-Farm Readiness Reviews (OFFRR). These are designed to give produce farmers a better understanding of what they can expect from a Produce Safety Program routine inspection. Information on how to schedule an OFFRR will be available very soon.

## Information for the Public and Other Stakeholders

- Please note that California Produce Safety Program inspections are a means of verifying compliance and enforcement of the Produce Safety Rule. They are not meant to replace existing quality assurance activities that may be requested of farmers or handlers by their customers.
- Suggested messaging for use in talking about the Produce Safety Program with trade and consumers is included in this packet.
- CDFA urges you to share information contained in this packet with your membership.

## Implementation of Required Food Safety Practices

- Produce farms with sales greater than \$500,000 per year are expected to implement Produce Safety Rule practices beginning January 26, 2018. The full Produce Safety Rule requirements are available on the FDA website [here](#).
- If your association has commodity specific guidelines that are aligned with the Produce Safety Rule, we encourage you to share these with your membership.
- We also urge you to advise your membership that private audit firms should conduct audits that are aligned with the Produce Safety Rule so that farmers are well prepared for Produce Safety Program inspections when they begin taking place in 2019.

## Produce Safety Program Inspections

- CDFA has created a new unit as part of its Inspection Services Division specifically to conduct Produce Safety Rule inspections. This unit is known as the Produce Safety Program.
- Produce Safety Rule inspections will be done on behalf of the U.S. FDA. As such, Produce Safety Program inspectors are credentialed by the FDA and have specific education and training.
- As with all other programs within the CDFA's Inspection Services Division, Produce Safety Program inspectors are part of a public agency mandated to protect the food supply. Inspectors are: accountable to the public, legislature and the industry; financially independent and unbiased; consistent and uniform; and are required to report potential public health threats to the California Department of Public Health.
- CDFA is working with an existing database of California farms acquired from other agencies and organizations to identify California produce farms that are likely subject to this new rule. Farms from this list will be selected for routine inspection by the Produce Safety Program on a random basis following verification of the farm's status.



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# Suggested Messaging for Retail and Foodservice Produce Buyers



## About the Produce Safety Rule

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- Beginning January 26, 2018, the Produce Safety Rule under the new Food Safety Modernization Act will become law on produce farms throughout the U.S.
- All California farms producing fruits, nuts and vegetables must comply with this new law. Some exceptions apply. Your supplier can provide verification if they are exempt from the Produce Safety Rule.
- The law will be phased in according to farm size over the next few years beginning in 2018 with large farms, defined as those with annual sales of \$500,000 or more.
- To implement this new law across the nation, the U.S. FDA is working with State Departments of Agriculture to conduct inspections that will verify produce farms are in compliance with the Produce Safety Rule.
- The U.S. FDA has determined that Produce Safety Rule on-farm inspections will begin in 2019.

## Implementation in California

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- It is estimated some 20,000 produce farms in California are subject to the Produce Safety Rule.
- The California Department of Food and Agriculture has created a new unit as part of its Inspection Services Division specifically to conduct inspections that will verify compliance with the Produce Safety Rule. This unit is known as the Produce Safety Program.
- The goal of CDFFA's Produce Safety Program is to assist and verify that California produce farms are following FDA's Produce Safety Rule.
- This is a big job and it will take time to fully implement. CDFFA's goal is for Produce Safety Rule requirements to become ingrained in the culture of California produce farming so that our state is growing the safest produce possible.
- The California Produce Safety Program's role is to first educate California produce farmers on the requirements of the Produce Safety Rule and then regulate farms to ensure they are following this new rule.

## About the Produce Safety Program Inspections

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- California Produce Safety Program inspections are a means of verifying compliance and enforcement of the Produce Safety Rule. They are not meant to replace existing quality assurance activities provided by farmers or handlers.
- Beginning in 2019, California produce farms will be selected for inspection by the Produce Safety Program on a random basis following verification of the farm's status.
- Unlike audit based certification programs, farms may not request an inspection, but will instead be selected by the Produce Safety Program.

# Suggested Messaging for Consumers



## About New Food Safety Regulations for Produce

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- Beginning on January 26, 2018 fruit, vegetable and nut farms in California and throughout the U.S. will be required to follow specific food safety practices under a new federal regulation known as the Produce Safety Rule.
- The U.S. Food and Drug Administration (FDA) has been charged with oversight of this new rule and it is being implemented in California by the California Department of Food and Agriculture (CDFA).
- Food safety practices required on farms are similar to what is required of restaurants or to precautions you might take in your own kitchen. The practices are designed to ensure produce is properly handled by workers who are trained to use good hygiene; to make sure farm equipment is sanitary, to ensure soils where produce is grown are safe and, that measures are in place to prevent contamination of produce by wildlife or nearby domesticated animals. Additionally, farmers are required to keep written records to document their farming practices.
- Many produce farms have been implementing these kinds of food safety practices on their farms for years.

## What Consumers Can Expect from Produce Grown in California

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- Routine on-farm Inspections to verify farmers are following new food safety regulation will be conducted through an inspection unit created by the California Department of Food and Agriculture called the Produce Safety Program.
- It's estimated that 20,000 farms in California are subject to the Produce Safety Rule. It is the goal of CDFa that requirements of this new food safety rule become ingrained in the culture of California produce farming so that our state is growing the safest produce possible.
- Over the next year, the role of the California Department of Food and Agriculture's Produce Safety Program will be to educate California produce farmers about the requirements of the Produce Safety Rule.
- Beginning in 2019, CDFa's Produce Safety Program inspectors will conduct random, routine inspections of produce farms to ensure they are following the new law.
- Inspectors in California are credentialed by the FDA and have specialized education and training. The inspectors are part of a government agency charged with protecting the food supply. They provide independent, unbiased, consistent inspections of California produce farms.
- Most grocery stores and restaurants already require farmers to follow food safety practices on their farms. In addition, many organizations conduct research and provide food safety guidelines that produce farmers have been following for years.
- Requirements for produce safety on farms is now the law. Farmers found to be out of compliance with these new requirements may face economic, regulatory and legal consequences.



# CALIFORNIA APPLE EXPORT MARKETS

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# CALIFORNIA APPLE EXPORT AND DOMESTIC OVERVIEW

The California Apple Commission has culminated the final export numbers for the 2019-2020 season. California exported a total of 58,115 boxes. The decrease in apple exports this year is likely attributed to the fact that California has historically relied less on apple exports over the past several years. This has been the case for a number of reasons. First, the domestic pricing and early availability of California apples has priced out most foreign buyers. Further, the main varieties produced in California are better suited for the domestic market rather than the international market. Additionally, the international apple market has become highly competitive. For example, China has been flooding South East Asia with less expensive apples thus squeezing California out of the market. Finally, international trade agreements have created a difficult landscape with the inception of retaliatory tariffs from many countries across the globe. Unfortunately, many of these retaliatory tariff lists contain apples. Despite the industry's challenges, California is still heavily focused on maintaining a presence and supportive role in the international apple arena. The Commission believes that with the assistance of the US Apple Export Council, the entire US apple industry can remain competitive in key international markets, thus relieving pressure on the domestic market.

California is still one of the largest exporters of apples in the United States and actively receives Market Access Program (MAP) dollars through the Foreign Agricultural Service in order to maintain crucial export markets. Last season, the Commission, in conjunction with the US Apple Export Council (USAEC), received \$865,470 for 2019-2020 in MAP funding. Additionally, a new funding program, the Agricultural Trade Promotion (ATP) program, was announced by FAS in late 2018 as part of their efforts to provide support in order to offset recent tariffs on US agricultural products. In 2019, FAS announced a second round of ATP funding as well. The USAEC applied for ATP program funds and received a combined total of \$202,000 for 2019-2020. The funds are available for use for up to three program years, and \$158,000 of these funds will be rolled into the 2020-2021 program year to conduct further activities.

California receives numerous benefits from the total MAP and ATP funding allocation since the state is considered one of the largest exporters on the Council, and has demonstrated a significant level of participation in nearly every export program. Below is a list of the top three countries that California shipped to during the 2019-2020 season; an overview of specific markets that are important to California; information on markets that receive Market Access Program (MAP), Technical Assistance for Specialty Crops (TASC), Emerging Market Program (EMP), or Agricultural Trade Promotion Program (ATP) funding; and all statistical apple shipping and destination information.

## **Top Countries**

1. Canada (27,106)
2. Taiwan (15,378)
3. Mexico (15,288)

# FOREIGN AGRICULTURAL SERVICE

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The Foreign Agricultural Service (FAS) helps expand and maintain foreign markets for U.S. agricultural products by removing trade barriers and enforcing U.S. rights under existing trade agreements. The FAS works with foreign governments, international organizations, and the office of the U.S Trade Representative to establish international standards and rules to improve accountability and predictability for agricultural trade. Additionally, FAS partners with the cooperators, such as U.S. Apple Export Council, to help U.S. exporters develop and maintain agricultural export markets. FAS distributes funding to these cooperators via the Farm Bill under programs such as the Market Access Program (MAP), Technical Assistance for Specialty Crops (TASC), Emerging Market Programs (EMP), and the limited-time Agricultural Trade Promotion (ATP) Program. Each of these programs keeps U.S. products more competitive and counter the subsidized foreign competition in the international markets.

Continuing into 2019-2020, the USDA Foreign Agricultural Service announced \$12 billion of immediate funding availability to assist farmers impacted by recent tariff retaliations. The Agricultural Trade Promotion Program (ATP) accounts for \$200 million in funding to develop foreign markets for U.S. agriculture. The ATP program will help U.S. agricultural exporters develop new markets and will help mitigate the adverse effects of other countries' tariff and non-tariff barriers. The ATP provides cost-share assistance to eligible U.S. organizations for activities such as consumer advertising, public relations, point-of-sale demonstrations, participation in trade fairs and exhibits, market research, and technical assistance. The ATP is available to all sectors of U.S. agriculture, including fish and forest product producers, mainly through partnerships with non-profit national and regional organizations. FAS administers the ATP under authorities of the Commodity Credit Corporation Charter Act. In May of 2019, the U.S. Department of Agriculture also announced a second round of trade mitigation funding, including additional ATP funds. Specifically, the President has authorized USDA to provide an additional \$16 billion in overall program funding. These funds have already been allocated and are available for use up to the year 2022. The Commission has had the opportunity to benefit from this new funding opportunity through their relationship with the U.S. Apple Export Council.

Currently, the California Apple Commission, through partnership with the U.S Apple Export Council, received a share of \$859,700 in MAP funds for the 2019-2020 season. This funding allocation covered nine export markets, in which California participated in four of the markets. These dollars funded programs such as the Mexico inspection program, import and retail trade servicing within the export markets, consumer communication, trade missions, education, and market research. Also for the 2019-2020 season, the USAEC received a total of \$158,000 in ATP funds for use in Latin America and the Middle East. This brings the total FAS funding for the USAEC to \$1,017,700 for the 2019-2020 season.

# U.S.-MEXICO-CANADA AGREEMENT

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This new free trade agreement, which replaced NAFTA, is mostly focused on aspects of trade that affects the automotive industry. In terms of agriculture, it focuses mostly on the trade of dairy products from the U.S. to Canada, but is shown to be in favor of the U.S. and has been estimated to provide about \$70 million value to the U.S. dairy industry. With regard to other commodities, including apples, some additional factors that benefit all three countries include: Added modern language to enhance information exchange and cooperation in relation to Ag. biotechnology trade-issues; science-based sanitary and phytosanitary (SPS) measures will be used to facilitate trade; an agreement on grading standards and services; and a commitment from the U.S., Mexico, and Canada to provide notification of any issues with SPS inspection issues within 5 days, rather than 7 days as the Trans-Pacific-Partnership called for.

On November 30, 2018, during the G-20 Summit, President Trump, Canadian Prime Minister Justin Trudeau, and former Mexican President Enrique Peña Nieto officially signed the USMCA. On December 19, 2019 the USMCA passed the House with a vote of 385 to 41. About a month later, the Senate overwhelmingly approved the USMCA, 89 to 10. On January 29, 2020 Trump officially signed the USMCA, notching a major achievement for the president as he heads into the 2020 election. Canada ratified the agreement in March 2020, and the USMCA went into force on July 1, 2020.

If you have any questions regarding this new agreement or its official passage, please do not hesitate to contact the Commission office.



Shown left to right: former Mexican President Enrique Peña Nieto, U.S. President Donald Trump and Canadian Prime Minister Justin Trudeau formally signed the USMCA on November 30, 2018.

# CANADA

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The United States remains the largest exporter of apples to Canada with nearly an 80% market share. Unfortunately, this luxury has been decreasing in recent years due to the influx of apples being imported by Canada from China and other countries in the southern hemisphere. Canada is California's largest export market, and remains one of the largest export markets for the US Apple Export Council (USAEC). Several apple varieties are exported to Canada, and the Gala and Granny Smith varieties represent the majority of the volume exported from California.

In 2020, the USAEC continued the strategy it began in 2018 in the Canadian market. The strategy included coordinating with California shippers and targeting specific retailers at specific times based on the shipments that were going to Canada, otherwise referred to as, "Following the fruit." Suitable national online publications were selected to run banner ads to advertise a California Apples Crunch for Cash Contest where entrants could win one of 10, \$100 gift cards, which resulted in the selection of six media outlets that were geo-targeted to reach primary grocery shoppers. This geo-targeted ad campaign resulted in roughly a 20% increase in imports of California apples in October alone. Due to the successes of 2018, the USAEC plans to continue this strategy during the upcoming season with the hopes of partnering with other commodities to pool resources. Additionally, the USAEC will also be focused on wholesalers or smaller regional retailers that are heavily invested in organics and niche markets. The USAEC will also continue to utilize geo-targeted advertising tactics that will focus on individual zip codes to increase location specificity. The USAEC has found that in addition to the major retailers, these smaller, regional outlets have been increasing their requests for California fruit and USAEC assistance. Finally, the USAEC has allocated additional funding to conduct store audits in both the major retailers and small, regional outlets to establish a sense of whether California apples are present throughout the season and to assist in timing the planned advertising tactics.

The Commission has also been closely monitoring and discussing the current US/Canada trade situation. Fortunately, in January 2020, the U.S. officially passed and signed the new U.S.-Mexico-Canada Free Trade Agreement (USMCA) into law, and it officially went into force on July 1, 2020.

Finally, the Foreign Agricultural Service will contribute \$83,342 in 2020-2021 on behalf of the California Apple Commission to help maintain the Canadian market.

# MEXICO

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In 2019-2020, the Mexico inspection program concluded the final year of the phase-out process for the newly negotiated work plan. In the new work plan, which begins during the 2020-2021 year, the inspector will not be required to conduct inspections prior to the season. Rather, the inspections will be conducted by local USDA-APHIS officials. The Mexico inspector will have the option to return every three years to conduct follow-up inspections, but is not required to.

Additionally, the Commission, in conjunction with USDA-APHIS and Chapman University, was successful in adding irradiation as an additional treatment protocol to the Mexico export program. California apples are now allowed to be irradiated in the U.S. or Mexico (if tarped) as a treatment protocol. California apples are being used as a trial run for other commodities. With the help of Chapman University, research on irradiation and apples will continue throughout the 2020 season. Additionally, Chapman University received federal funding through the most recent USDA Farm Bill to continue their work on irradiation as an alternative treatment method to methyl bromide for apples and have submitted an additional application for Technical Assistance for Specialty Crops (TASC) fund consideration for 2020.

The Commission has also been closely monitoring and discussing the current US/Canada trade situation. Fortunately, in January 2020, the U.S. officially passed and signed the new U.S.-Mexico-Canada Free Trade Agreement (USMCA) into law, and officially went into force on July 1, 2020.

The Foreign Agricultural Service will contribute \$6,000 in 2020-2021 on behalf of the California Apple Commission to help maintain this market.

# SOUTHEAST ASIA- INCLUDING TAIWAN

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South East Asia (SEA), a region which includes Malaysia, Thailand, Indonesia, Singapore, Vietnam, Taiwan, and the Philippines, has historically been one of California's largest export markets. While the market has declined in importance for California, SEA continues to be a valuable market to the USAEC. Over the last several years, California has relied less on the SEA market for a number of reasons. First, California has not needed to export to SEA in recent years due to the strong domestic market and a smaller Granny Smith variety crop. Further, competition from China and Washington State have strained the window for California apples in the SEA market. Nearly 80% of China's apple exports are specifically focused on SEA and California is simply not able to compete at this level. Additionally, the USAEC has been focusing on expanding the presence of other varieties, such as the Empire and Honeycrisp, in recent years. These varieties of apples are not grown in California, but are increasing in terms of popularity in growing regions throughout the East Coast and Michigan. The USAEC continues to promote and educate buyers on all U.S. apples, which, in turn, benefits the entire US apple production, including California and Washington State.

The main competition for California in SEA continues to be China and Washington State. The CAC and the USAEC realize that California will simply not be able to compete with China and Washington State in terms of volume. However, the USAEC's objective has been to compete in terms of quality and therefore extend California's marketing window by several weeks. Since many consumers are concerned with quality and food safety, the USAEC believes that California's marketing window can be extended with precise targeting of specific retailers. According to the USAEC representative, health trends and food safety concerns are the key factors in the development of SEA's retail and wholesale markets. The USAEC will attempt to capitalize on these factors by "piggy-backing" on the promotional campaigns conducted by the South East Asian governments which are emphasizing the importance of fruit and vegetable consumption to achieve a healthy lifestyle.

The future of the SEA market is uncertain. The current population of 600 million people has been growing significantly over time, and the opportunity for increased apple exports certainly exists. Unfortunately, the SEA market opportunity becomes less available to the U.S. as China increases their total apple production and other countries such as New Zealand, Australia, and Chile increase their ability to store apples long term. It is simply too difficult to compete with the lower prices and close proximity of these other apple producing countries. For the USAEC, and more specifically California, remaining successful in the SEA market will require an increased emphasis on quality of size, color, taste, and the safety of the product. This must be emphasized by both the USAEC and specific apple handlers.

In 2020-2021, the Foreign Agricultural Service will contribute \$187,500 on behalf of the California Apple Commission to help maintain this market.



# INDIA

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Since India has one of the largest middle classes in the world, the US apple industry has been attempting to expand market access for a number of years. In early 2019, the USAEC contracted the services of a new in-country representative in India to facilitate all market activities. This representative will continue to work on behalf of the USAEC in 2020 as well. Initial difficulties within the Indian market included lack of infrastructure to transport and store apples. As retail giants such as Costco and Walmart gained access, they began investing in improved infrastructure and transportation methods and, therefore, began to dramatically reduce these initial challenges. Additionally, the retailers' investments were supported by additional outside investments and commitments by the Indian government to open the market to US investments. This made India a very attractive market and helped expand the US apple market share from 100k metric tons in 2009 to over 300k metric tons in 2016. Unfortunately, this growth has been stymied by the implementation of a 75% tariff on all US apples being imported into India in 2019.

In early 2018, India notified the World Trade Organization of their intention to impose a retaliatory tariff on U.S. apples, among other goods, in response to America's tariffs on steel and aluminum from India. The proposed tariff of 25% will be added to the existing 50% tariff, thus totaling a 75% tariff on fresh U.S. apples to India. The tariff was initially set to be implemented on August 4, 2018, and after being delayed 7 times, was officially applied on June 16, 2019 and still remains in effect in 2020.

For California specifically, India is not a market of priority. The varieties grown in California and the availability of California apples are not conducive to California's marketing/shipping window to India. That being said, the CAC supports the US Apple Export Council's push to gain a larger market segment for other U.S. apple producing states. If large volumes of apples from Washington State and the Eastern U.S. are exported to India, it would greatly decrease the pressure domestically and could ease the pressure on localized export markets such as Mexico and Canada. India has historically been a market of great importance for the United States in general, and roughly 9.2 million boxes were exported to India from the U.S. in 2017-2018 just before the tariffs went into effect. However, exports in 2018-2019 dropped to roughly 3 million boxes.

The Foreign Agricultural Service and the US Apple Export Council will contribute \$98,648 on behalf of the California Apple Commission to help maintain this market.

# LATIN AMERICA

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The Latin American region of focus for the USAEC refers to the countries within both South and Central America. This region is not a major market of concern for California specifically, however California exported a small amount of apples to both Columbia and El Salvador in 2018-2019. While California is not specifically focused on this market, other states in the U.S. have been relying on these markets more since the implementation of tariffs on other key U.S. apple export markets. Increasing exports to Latin America will potentially eliminate pressure on markets that California does ship to, such as Mexico.

In 2019, members from the USAEC traveled to Columbia and Peru to conduct a trade mission aimed to increase overall U.S. apple shipments to these markets in addition to gain further market information. The strategy in the Latin American market thus far has been to conduct broad-scale retail promotions during the U.S. apple shipping season without limiting working relationships to specific retailers or importers. The USAEC has found that volumes tend to fluctuate between importers from season to season, depending on price and availability, and it was more feasible to focus on a larger group of retailers/importers rather than a specific few. With this, the USAEC aims to conduct in-store promotions with at least 2 supermarket chains this year, and implement cooking workshops and recipe sampling programs for consumers. The USAEC has previously coordinated a school program and other activities targeting children. The purpose of these projects was to provide information to kids about US apple varieties and the importance of fruit and vegetables in a nutritious diet. This year, however, the USAEC did not find significant value in this approach, and decided to allocate these funds elsewhere. Further, technical training has been one of the most important activities conducted in Central America for the trade. The purpose of this is to educate supermarkets and importers and retailers' personnel in order to assure greater quality product, proper handling procedures, and lesser product damage, all factors that can negatively impact sales.

The Foreign Agricultural Service and the USAEC will commit \$240,225 to maintain and establish a market in Latin America (Central and South America combined). A total of \$202,000 in Agricultural Trade Promotion (ATP) funding was also received to launch and maintain activities in Brazil and South America. \$158,000 of these funds will be utilized in 2020. In early 2019, the U.S. was granted market access to Brazil following the completion of successful negotiations on a systems approach between the two countries. The USAEC plans to continue to explore opportunities in the Brazilian market in 2020.



# CHINA

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China continues to be the world's largest producer of both fresh and processed apples. In 2019, they produced a total of 33 million tons. In 2020, China is expected to produce a near-record crop of 41 million tons. This is expected to be a result of good growing conditions in most major growing provinces. Until recently, China's domestic production has historically been consumed by the Chinese population. However, with rising unemployment and an economy that remains sluggish, China is expected to increase its focus on exports. Despite disruptions due to COVID-19, exports are estimated to exceed 1 million tons, making China the lead exporter of apples in the world. As China's apple production rises, China will continue to rely more on exports to neighboring countries, particularly South East Asia. Additionally, China was recently granted access to export apples to the United States. Apple exports to the United States from China are currently minimal, however, there is potential for dramatic increases due to China's large production and the overall demand for apples in the United States. However, due to recent trade conflicts between the United States and China, there is a 40% retaliatory tariff being applied to all apples exported from the US to China. This radically decreases the competitiveness of US apples in China and could significantly affect exports from Washington. Since California does not currently export apples to China, California is more concerned with the ripple effect this disruption will have on other international markets and domestic markets.

# ISRAEL

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The process of establishing access into the Israeli market for US apples has been difficult and burdensome. Shipments to Israel have been limited to only a few shippers, all of which are located on the East Coast, due to the country's strict phytosanitary issues and pest control measures. Since California does not have a proximity or varietal advantage, the state does not currently view Israel as a market of potential. However, the USAEC sees Israel as a potential niche market for apples from the East Coast. Packers from the East Coast have been reluctant to export to Israel in any significant volume due to the high risks involved with shipment rejection concerns. The USAEC continued its partnership with their current in-market representative throughout 2019-2020. The USAEC evaluates the potential of each market on an annual basis, and the level of commitment to Israel was discussed in terms of the level of involvement the USAEC wants to commit to for 2020-2021. It was agreed that the USAEC should remain in Israel for the foreseeable future due to the potential shipping window for the East Coast. Additionally, as other markets reduce apple trade opportunities with the U.S., alternative markets will be needed to offset these losses. The Foreign Agricultural Service and the USAEC will commit \$176,215 to maintain and establish a market in Israel, primarily for the East Coast.

# MIDDLE EAST

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During the 2019-2020 season, the U.S. faced sharp competition from competing apple producing countries when exporting to the Middle East. Exports to the Middle East were down this year once again when compared to previous seasons due to increased prices that resulted from overall lower production levels. The US is finding it difficult to compete with the lower priced apples being imported from countries including Russia, Italy, Poland, Turkey, and Ukraine. Additionally, the ongoing war in Yemen, coupled with increased taxes in Dubai and Saudi Arabia to cover the cost of the war, are resulting in a 20% reduction in the region's overall economy. This is thought to also have an impact on apple imports as Saudi Arabia and Dubai are the two largest markets for US Apples in the Middle East.

The Middle East is a new market for the USAEC, and representatives from the Commission and USAEC travelled to the Middle East in order to meet with members of the trade and gather a sense of opportunities that might exist for future in-market activities and potential for market expansion. Despite the trade mission, recent decreases in export volume to the region, coupled with increased competition from other apple producing countries, has led the USAEC to adjust its priorities within this market. As a result, the USAEC decided not to allocate funding to conduct activities in this market for 2020-2021, however, there is potential to revisit this market in the future.

# RUSSIA AND THE EU

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Unfortunately, the ban on western products to Russia is still in effect. This not only has an effect on the U.S., but has also resulted in a ripple throughout the global apple industry. Initially, it was anticipated that China would fill the majority of the western apple export gap through traditional avenues, and other avenues would be utilized by Poland in order to meet Russia's demand. While China did account for roughly 17% of total apple exports to Russia in 2019, Moldova is by far the main supplier of apples to the Russian market, accounting for 29% of total Russian imports. Russia has also imported a significant amount of apples from Serbia and Azerbaijan, and despite sanctions imposed by the Government of Russia Federation, small amounts of apples were also imported from Poland and the Ukraine via back channels.

While apple exports from China to Russia have increased over the past year, the amount of apples that did go to Russia from China have done little to alleviate the pressure on the overall international market. China has instead continued to remain heavily focused on exporting to SEA. While Poland has used other avenues to export apples to Russia, they have continued to remain heavily focused on the EU market. In addition, Poland has been aggressively pursuing access into the US by claiming that they should fall under the parameters of the existing EU work plan. This is extremely problematic and would result in additional pressure on an already overcrowded domestic market. As of now, access has not been granted and the current political climate in regards to trade agreements could work in favor of the US.

The EU has been notorious for implementing strict pesticide regulations in the past, and continues to disrupt trade opportunities for US apples. Specifically, EU action on pesticides, particularly diphenylamine (DPA) and morpholine wax, have eroded the US's access for apples to the EU market. While California does not ship to the EU, these regulations heavily affect the East Coast apple producing states. The East Coast must now find new markets for these apples, thus increasing competition for California in both the domestic and alternative international markets. Additionally, the EU has historically purchased significant volumes of specific varieties, such as Empire and Macintosh. However, with trade volumes to the EU in decline, the US must now find alternative outlets for these varieties, thus placing undue pressure on other varieties that California does produce, such as Gala.

Due to the consistent decline in US apples shipments to the EU, the USAEC decided not to allocate funding for this market in 2019-2020. However, the USAEC will continue to fund and participate with a booth at the Fruit Logistica trade show held annually in Berlin.

# CALIFORNIA APPLE DOMESTIC AND EXPORT STATISTICS

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**CALIFORNIA APPLE COMMISSION- UNITED STATES**  
**DOMESTIC SHIPMENTS 2019-2020**  
(MEASURED IN 40 lb. BOXES)

STATE	GALA	GRANNY SMITH	FUJI	CRIPPS PINK	BRAEBURN	OTHER	TOTAL
ALABAMA	47,685	10,615	8,470	385			67,155
ARIZONA	54,674	30,538	12,458	1,320			98,990
ARKANSAS			715	385			1,100
CALIFORNIA	226,839	120,442	93,078	41,777	689	4,266	487,091
COLORADO	196		49	1,648	49		1,942
CONNECTICUT	196						196
FLORIDA	5,684	27,599	14,877	1,496	49		49,705
GEORGIA	3,976	6,788	6,113	1,047			17,924
ILLINOIS	4,998	4,523	1,624	495			11,640
INDIANA	40,765	442	3,279		84		44,570
IOWA	294	179					473
KANSAS	28		1,389	49			1,466
KENTUCKY	9,711	746	1,632	98			12,187
LOUISIANA	2,852	980	713				4,545
MAINE	9,575						9,575
MARYLAND	329	1,748	42				2,119
MASSACHUSETTS	490	231					721
MICHIGAN	10,046	392	490				10,928
MINNESOTA	5,220	8,129	533	1,418	98		15,398
MISSISSIPPI	6,445	2,255	2,475				11,175
MISSOURI	1,259	49	1,589	770			3,667
NEBRASKA	1,045	220	605	1,045			2,915
NEVADA	54,708	34,988	14,374	12,491			116,561
NEW JERSEY	395	1,740					2,135
NEW MEXICO	13,151	5,538	2,090	1,373			22,152
NEW YORK	14,509	3,443	280	165			18,397
NORTH CAROLINA	1,223	70	407	56	59		1,815
OHIO	6,531	182	832				7,545
OKLAHOMA	1,030		1,250	275			2,555
OREGON	49		1,274				1,323
PENNSYLVANIA	8,366	5,560	911	576	142		15,555
SOUTH CAROLINA	9,145	91	3,740				12,976
TENNESSEE			2,920				2,920
TEXAS	39,133.50	19,823.10	6,855	4,103			69,914.60
UTAH	246	140	2,504	1,320			4,210
VIRGINIA	4,900		1,029	98			6,027
WASHINGTON	917	98	2,441				3,456
WISCONSIN	21,621	110	1,100	1,834	49		24,714
WYOMING	1,370	220	770	2,815			5,175
<b>TOTAL</b>	<b>609,602</b>	<b>287,879</b>	<b>192,908</b>	<b>77,039</b>	<b>1,219</b>	<b>4,266</b>	<b>1,172,913</b>

**CALIFORNIA APPLE COMMISSION-UNITED STATES**  
**DOMESTIC SHIPMENTS 2018-2019**  
(MEASURED IN 40 lb. BOXES)

STATE	GALA	GRANNY SMITH	FUJI	CRIPP PINK	BRAEBURN	OTHER	TOTAL
ALABAMA	17,490						17,490
ARIZONA	14,316	1,112.30					15,428.30
ARKANSAS	11,601		440				12,041
CALIFORNIA	257,288.30	354,122.60	93,051	47,975	2,448	15,237	770,121.90
COLORADO	609		49	245	294	196	1,393
CONNECTICUT	245					637	882
FLORIDA	10,776.50	2,138	2,233		49	349	15,545.50
GEORGIA	21,045	8,198	1,395	805	7	121	31,571
HAWAII	98						98
ILLINOIS	22,383.20	1,876.70	2,095	294		84	26,732.90
INDIANA	9,769	5,821	3,486	126	168	280	19,650
IOWA	966						966
KENTUCKY	8,939	3,279	1,066	1,791	36	146	15,257
LOUISIANA	5,935		605				6,540
MAINE			550				550
MARYLAND	2,481		4	449		196	3,130
MASSACHUSETTS	539						539
MICHIGAN	10,417	10,249	2,574	2,847			26,087
MINNESOTA	13,683	3,801	1,192	931	306	133	20,046
MISSISSIPPI	6,215		55				6,270
MISSOURI	15,800	7,593	984	147	70	429	25,023
NEBRASKA	6,215		220	110			6,545
NEVADA	43,006	19,279	18,486	6,768			87,539
NEW HAMPSHIRE						21	21
NEW JERSEY	539	844	98	49	98	322	1,950
NEW MEXICO	3,905	882					4,787
NEW YORK	13,004	2,924	858	98			16,884
NORTH CAROLINA	16,655	196	2,234	98	49	195	19,427
OHIO	7,091	16,288	4,727	196			28,302
OKLAHOMA	15,567		2,445				18,012
OREGON	415						415
PENNSYLVANIA	5,559	2,254	2,274	660		343	11,090
SOUTH CAROLINA	960	2,730	825				4,515
TENNESSEE	9,392	6,668	1,540	660			18,260
TEXAS	77,571	31,267	19,126	14,167			142,131
UTAH	7,532			3,513			11,045
VIRGINIA	11,204	2,540					13,744
WASHINGTON		440	330	110		25	905
WISCONSIN	15,915	1,021	879	676			18,491
WYOMING	8,930		440				9,370
<b>TOTAL</b>	<b>674,056.00</b>	<b>485,523.60</b>	<b>164,261.00</b>	<b>82,715.00</b>	<b>3,525.00</b>	<b>18,714.00</b>	<b>1,428,794.60</b>



**CALIFORNIA APPLE COMMISSION-UNITED STATES**  
**DOMESTIC SHIPMENTS 2017-2018**  
(MEASURED IN 40 lb. BOXES)

STATE	GALA	GRANNY SMITH	FUJI	CRIPP PINK	BRAEBURN	OTHER	TOTAL
ALABAMA	833	196					1,029
ARIZONA	15,402	12,684	2,952	1,876	44		32,958
ARKANSAS	16,638	3,338	3,420				23,396
CALIFORNIA	353,753	163,117.40	85,418.40	58,328.80	2,259	16,220	679,096.60
COLORADO	13,291	9,120	207		383	786	23,787
CONNECTICUT	1,127	308				1,960	3,395
FLORIDA	14,461	3,955.60	1,156		98	973	20,643.60
GEORGIA	58,261.20	52,055.70	8,825		7	497	119,645.90
HAWAII	280	515					795
ILLINOIS	10,380	7,154	1,586	784		321	20,225
INDIANA	12,528	7,679	1,813		68	651	22,739
IOWA	7,104	4,981					12,085
KANSAS	5,697	2,778	635				9,110
KENTUCKY	12,139	8,658	1,770	559	147	684	23,957
LOUISIANA	12,011	3,233	1,020				16,264
MAINE	8,880	3,000	1,380	1,003			14,263
MARYLAND	4,326	4,036	114	75		534	9,085
MASSACHUSETTS	2,177	4,141	294				6,612
MICHIGAN	22,080	4,465	3,786	1,875			32,206
MINNESOTA	14,802	17,265	2,176	98	410	420	35,171
MISSISSIPPI	1,320						1,320
MISSOURI	9,896	2,882	5,880				18,658
MONTANA							
NEBRASKA	1,334		2,580				3,914
NEVADA	3,332	1,257					4,589
NEW HAMPSHIRE							
NEW JERSEY	87,023	36,474	2,296	490	343	344	126,970
NEW MEXICO		980					980
NEW YORK	8,808	16,276	7,668	477			33,229
NORTH CAROLINA	5,490	817	77		227	271	6,882
OHIO	33,762	18,563	3,971			98	56,394
OKLAHOMA	8,280	5,094	5,739			357	19,470
OREGON	1,470	389	98		229	469	2,655
PENNSYLVANIA	6,511	3,302	2,041	2,311	126	530	14,821
SOUTH CAROLINA	1,421						1,421
TENNESSEE	9,151	5,599	1,591	3,548			19,889
TEXAS	114,599	35,204	17,319	5,379		1,263	173,764
UTAH	8,649	2,891					11,540
VERMONT							
VIRGINIA	9,282	5,593	1,568				16,443
WASHINGTON	52,905	7,332	147		294	501	61,179
WISCONSIN	6,743	335	3,436		28	155	10,697
WYOMING	4,392		2,620				7,012
<b>TOTAL</b>	<b>960,538</b>	<b>455,668</b>	<b>173,583</b>	<b>76,804</b>	<b>4,663</b>	<b>27,034</b>	<b>1,698,290</b>

**CALIFORNIA APPLE COMMISSION-UNITED STATES**  
**DOMESTIC SHIPMENTS 2016-2017**  
(MEASURED IN 40 lb. BOXES)

STATE	GALA	GRANNY SMITH	FUJI	PINK LADY	BRAEBURN	OTHER	TOTAL
ALABAMA	6,429	588	5,640				12,657
ARIZONA	36,216	28,494	765	4,837	400		77,312
ARKANSAS	13,800		3,840				17,640
CALIFORNIA	208,719	169,507	146,279	66,989	3,611	26,982	622,087
COLORADO	10,465	882	588		559	547	13,041
CONNECTICUT		686	98				784
FLORIDA	58,350	8,882	10,836		98	2,104	80,270
GEORGIA	31,989	13,808	6,062	88	98		52,045
HAWAII	405		1,614				2,019
ILLINOIS	50,886	5,546	5,140				61,573
INDIANA	19,781	1	4,367		363	1,324	25,836
IOWA	3,905	2,086	175	147	7		6,320
KANSAS	560		176				736
KENTUCKY	10,359	419	3,584		441	1,882	16,685
LOUISIANA	10,197	784	720				11,701
MAINE	8,880	3,000	1,380	1,003			14,263
MARYLAND	436	1,302	49			1,470	3,257
MASSACHUSETTS	1,918	702	294				2,914
MICHIGAN	30,174	2,922	4,507				37,603
MINNESOTA	24,279	42,951	6,099	1,212	294	1,987	76,823
MISSISSIPPI	10,143	98	2,640				12,881
MISSOURI	28,121	1,958	4,679				34,758
MONTANA							
NEBRASKA	10,620		180				10,800
NEVADA	12,019	21,686	14,809	5,065			53,579
NEW HAMPSHIRE		70					70
NEW JERSEY	1,653	1,504			47		3,204
NEW MEXICO	16,100	10,329	2,820	240			29,489
NEW YORK	10,811	16,276	3,525	1,564			32,176
NORTH CAROLINA	16,502	247	4,285		49	1,407	22,490
OHIO	34,717	836	5,943			686	42,182
OKLAHOMA	16,406	12,214	4,020	4,100			36,740
OREGON	70	46	98		49	70	333
PENNSYLVANIA	26,187	24,401	7,969	2,311		364	61,232
SOUTH CAROLINA	11,620	441	2,040				14,101
TENNESSEE	15,066	2,352	3,479				20,897
TEXAS	83,273	20,873	16,661	8,012	23	3,422	132,264
UTAH	30,975	3,120	9,747	4,350			48,192
VERMONT			98		484		582
VIRGINIA	13,200	196	2,141				15,537
WASHINGTON	6,144	3,430	3,128		98	191	12,991
WISCONSIN	19,219	2,688	3,157		343		25,407
WYOMING	5,180		200				5,380
<b>TOTAL</b>	<b>895,776</b>	<b>405,326</b>	<b>300,434</b>	<b>99,919</b>	<b>6,964</b>	<b>42,436</b>	<b>1,750,856</b>

**CALIFORNIA APPLE COMMISSION-UNITED STATES**  
**DOMESTIC SHIPMENTS 2015-2016**  
(MEASURED IN 40 lb. BOXES)

STATE	GALA	GRANNY SMITH	FUJI	CRIPPS PINK	BRAEBURN	OTHER	TOTAL
ALABAMA	21,302	455	1,552				23,309
ALASKA	217						217
ARIZONA	28,834	15,001	735	2,596			47,166
ARKANSAS	10,214	160	325				10,699
CALIFORNIA	240,232	163,692	120,450	49,540	8,910	29,721	612,547
COLORADO	6,853	441	540		196	119	8,149
CONNECTICUT	196	49					245
FLORIDA	57,843	10,004	5,635	25	266	119	73,892
GEORGIA	25,217	12,066	4,220				41,503
HAWAII	392		645				1,037
ILLINOIS	42,631	21,879	7,268	490	441	322	73,031
INDIANA	25,827	4,375	2,394		357	47	33,000
IOWA	3,159	2,266	49	56	21		5,551
KANSAS	1,880	147		595			2,622
KENTUCKY	15,272	848	1,313		390	190	18,013
LOUISIANA	14,208	4,599	2,991				21,798
MAINE	8,515	3,398					11,913
MARYLAND	588	2,122	49				2,759
MASSACHUSETTS	4,760	2,425	309	877	27	98	8,496
MICHIGAN	23,078	3,692	7,090	98	98		34,056
MINNESOTA	8,128	32,437	147	1,922	1,058	539	44,231
MISSISSIPPI	12,558	195	969				13,722
MISSOURI	31,929	7,839	5,605				45,373
NEBRASKA	11,887	260					12,147
NEVADA	14,280	9,782	9,045	4,144			37,251
NEW HAMPSHIRE	98	196				21	315
NEW JERSEY	2,800	2,366	35		391	98	5,690
NEW MEXICO	18,311	14,588	2,176	2,278	301		37,654
NEW YORK	15,790	18,715	2,161	294			36,960
NORTH CAROLINA	18,743	4,611	3,825		112		27,291
OHIO	34,639	5,433	4,923		145	98	45,238
OKLAHOMA	18,967	7,795	4,005				30,767
OREGON	539	882	98		82	31	1,632
PENNSYLVANIA	24,206	21,171	5,475	1,029			51,881
RHODE ISLAND	1						1
SOUTH CAROLINA	11,775	260	520				12,555
TENNESSEE	8,586	2,906	946				12,438
TEXAS	101,285	37,828	13,882	11,278	178	49	164,500
UTAH	26,866	3,499	2,786				33,151
VIRGINIA	6,611	130					6,741
WASHINGTON	4,601	244					4,845
WISCONSIN	22,636	4,365	4,330				31,331
WYOMING	4,110	2,836	1,365				8,311
<b>TOTAL</b>	<b>930,566</b>	<b>425,958</b>	<b>217,859</b>	<b>75,222</b>	<b>12,973</b>	<b>31,452</b>	<b>1,694,032</b>

# CALIFORNIA'S TOP 5 STATES

(MEASURED IN BOXES)

## 2010 - 2011

1 California	1,083,854
2 Texas	215,150
3 Arizona	104,286
4 New York	78,624
5 Illinois	71,447

## 2015 - 2016

1 California	612,547
2 Texas	164,500
3 Florida	73,892
4 Illinois	73,031
5 Pennsylvania	51,881

## 2011 - 2012

1 California	651,580
2 Texas	218,016
3 Illinois	92,009
4 Minnesota	90,347
5 Ohio	75,800

## 2016 - 2017

1 California	622,088
2 Texas	132,264
3 Florida	80,270
4 Arizona	77,312
5 Minnesota	76,823

## 2012 - 2013

1 California	678,730
2 Texas	197,916
3 Michigan	60,972
4 Illinois	54,998
5 Florida	54,230

## 2017 - 2018

1 California	679,097
2 Texas	173,764
3 New Jersey	126,970
4 Georgia	119,646
5 Washington	61,179

## 2013 - 2014

1 California	969,932
2 Texas	248,105
3 Washington	59,851
4 Illinois	53,648
5 Florida	42,993

## 2018 - 2019

1 California	770,122
2 Texas	142,131
3 Nevada	87,539
4 Georgia	31,571
5 Ohio	28,302

## 2014 - 2015

1 California	661,422
2 Texas	195,680
3 Florida	70,100
4 Pennsylvania	64,343
5 New York	57,448

## 2019 - 2020

1 California	487,091
2 Nevada	116,561
3 Arizona	98,990
4 Texas	69,915
5 Alabama	67,155

**EXPORT TOTALS**  
**2019-2020**  
**(MEASURED IN BOXES)**

COUNTRY	GALA	GRANNY SMITH	FUJI	CRIPPS PINK	BRAEBURN	OTHER	TOTAL
CANADA	17,708	8,715	448	88	147		27,106
MALAYSIA		49					49
MEXICO	7,056	8,232					15,288
PANAMA	294						294
TAIWAN	3,360		12,018				15,378
<b>TOTAL</b>	<b>28,418</b>	<b>16,996</b>	<b>12,466</b>	<b>88</b>	<b>147</b>	<b>0</b>	<b>58,115</b>

**EXPORT TOTALS**  
**2018-2019**  
**(MEASURED IN BOXES)**

<b>COUNTRY</b>	<b>GALA</b>	<b>GRANNY SMITH</b>	<b>FUJI</b>	<b>CRIPPS PINK</b>	<b>OTHER</b>	<b>TOTAL</b>
CANADA	25,997	24,830	13,959	196	3,584	68,566.00
COLUMBIA		2,009				2,009.00
EL SALVADOR	1,840					1,840.00
MEXICO	18,542	11,229				29,681.00
TAIWAN			5,468			5,468.00
<b>TOTAL</b>	<b>46,379</b>	<b>38,068</b>	<b>19,427</b>	<b>196</b>	<b>3,584</b>	<b>107,564</b>

**EXPORT TOTALS  
2017-2018  
(MEASURED IN BOXES)**

<b>COUNTRY</b>	<b>GALA</b>	<b>GRANNY SMITH</b>	<b>FUJI</b>	<b>CRIPPS PINK</b>	<b>OTHER</b>	<b>TOTAL</b>
CANADA	35,203.20	17,736.90	1,368	4,671	196	<b>59,175.10</b>
MALAYSIA	49		49			<b>98</b>
MEXICO	427	7,593				<b>8,020.00</b>
PUERTO RICO	294	245				<b>539</b>
THAILAND	290					<b>290</b>
<b>TOTAL</b>	<b>36,263.20</b>	<b>25,574.90</b>	<b>1,417</b>	<b>4,671</b>	<b>196</b>	<b>68,122.10</b>

**EXPORT TOTALS  
2016-2017  
(MEASURED IN BOXES)**

<b>COUNTRY</b>	<b>GALA</b>	<b>GRANNY SMITH</b>	<b>FUJI</b>	<b>BRAEBURN</b>	<b>CRIPPS PINK</b>	<b>OTHER</b>	<b>TOTAL</b>
CANADA	53,736	15,360	245	225	147	483	70,196
MEXICO	1,896	8,820					10,716
TAIWAN			5,552				5,552
TOTAL	55,632	24,180	5,797	225	147	483	86,464



**EXPORT TOTALS**  
**2015-2016**  
**(MEASURED IN BOXES)**

COUNTRY	GALA	GRANNY SMITH	FUJI	CRIPPS PINK	BRAEBURN	OTHER	TOTAL
CANADA	34,166	9,394	549	133	546	196	44,984
HONG KONG							
INDIA							
INDONESIA							
MALAYSIA							
MEXICO	11,760	6,853					19,908
PANAMA	514	6,853	6,853.00				661
PUERTO RICO		6,853					49
SRI LANKA							
TAIWAN			6,853.00				13,682
THAILAND							
VIETNAM							
TOTAL	46,440	17,689	14,280	133	546	196	79,284

# CALIFORNIA'S TOP 5 COUNTRIES

(MEASURED IN BOXES)

## 2010 - 2011

1 Canada	116,882
2 Taiwan	36,954
3 Mexico	34,636
4 Indonesia	14,592
5 Malaysia	13,643

## 2015 - 2016

1 Canada	44,984
2 Mexico	19,908
3 Taiwan	13,682
4 Panama	661
5 Puerto Rico	49

## 2011 - 2012

1 Canada	232,788
2 Malaysia	30,818
3 Mexico	20,825
4 Taiwan	15,629
5 Ecuador	5,965

## 2016 - 2017

1 Canada	70,196
2 Mexico	10,716
3 Taiwan	5,552
4 -	-
5 -	-

## 2012 - 2013

1 Canada	216,027
2 Mexico	39,703
3 Taiwan	36,536
4 Malaysia	31,713
5 Thailand	9,775

## 2017 - 2018

1 Canada	59,175
2 Mexico	8,020
3 Puerto Rico	539
4 Thailand	290
5 Malaysia	98

## 2013 - 2014

1 Canada	132,105
2 Malaysia	46,509
3 Mexico	31,184
4 Sri Lanka	11,680
5 Taiwan	10,309

## 2018 - 2019

1 Canada	68,566
2 Mexico	29,681
3 Taiwan	5,468
4 Columbia	2,009
5 El Salvador	1,840

## 2014 - 2015

1 Canada	94,599
2 Taiwan	28,852
3 Malaysia	17,933
4 Mexico	11,151
5 Thailand	9,690

## 2019 - 2020

1 Canada	27,106
2 Taiwan	15,378
3 Mexico	15,288
4 Panama	294
5 Malaysia	49

## HISTORICAL PACK OUT REPORT (MEASURED IN BOXES)

VARIETY	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020
FUJI	367,770.30	227,475.00	213,223.00	245,745.00	262,849.80	232,140.00	306,231.00	175,000.00	183,688.00	205,374.00
GALA	969,350.20	1,011,727.00	801,831.00	761,904.00	758,736.90	977,006.40	951,408.40	996,801.20	720,435.00	638,020.00
GRANNY SMITH	1,085,746.00	1,113,778.00	905,965.00	969,320.00	763,849.30	443,648.00	429,506.20	481,242.90	523,591.60	304,875.00
CRIPPS PINK	146,317.50	119,219.00	95,446.00	142,530.00	63,208.60	75,355.30	100,066.00	81,475.00	82,911.00	77,127.00
BRAEBURN	22,812.00	7,201.00	10,675.00	18,460.00	6,694.10	13,519.60	7,189.40	4,663.00	3,525.00	1,366.00
ARKANSAS BLACK	6,796.40									
GOLDEN DELICIOUS	1,452.00					5.00				
GRAVESTON	8.00									
HONEYCRISP	9,010.60			8,998.00	6,192.00					
JONAGOLD										
LADY APPLE	293.13									
PIPPIN	274.00									
RED DELICIOUS	512.00	639.00	671.00	2,015.00	2,778.00	1,366.00	2,547.00	182.00		
SPITZENBERG	180.00									
SUNDOWNER								155.00		42.00
SWEETIE					2,766.00					
OTHER	21,469.00	169,775.00	30,146.00	37,499.00	57,679.00	30,277.00	40,372.00	26,893.00	22,298.00	4,224.00
<b>Total Packed</b>	2,631,991.13	2,649,814.00	2,057,957.00	2,186,471.00	1,924,753.70	1,773,317.30	1,837,320.00	1,766,412.10	1,536,448.60	1,231,028.00
<b>Total Shipped</b>	2,631,991.13	2,649,814.00	2,057,957.00	2,186,471.00	1,924,753.70	1,773,317.30	1,837,320.00	1,766,412.10	1,536,448.60	1,231,028.00



# COVID-19 PANDEMIC UPDATES AND IMPACTS

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# COVID-19 EFFECTS ON THE CALIFORNIA APPLE INDUSTRY

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The COVID-19 pandemic presented unforeseen challenges to nearly every sector and industry in the country with the California apple industry being no exception. COVID-19 impacted and changed the day-to-day operations of the apple industry, as employees are now mandated to wear face-coverings when at work, employers must stagger work shifts in effort to limit crew size, and employers must also provide additional shade structures and seating to allow employees to take breaks while maintaining proper social distancing. Additional challenges, such as possible upcoming legislation that will mandate employers in the agriculture industry to provide Personal Protective Equipment (PPE) to all employees or changes to wages and sick pay, should be expected.

Despite the obstacles, the California Apple Commission has continued to work through the challenges on behalf of the California apple industry as efficiently and timely as possible. A notable bright spot amidst the pandemic included the Paycheck Protection Program (PPP) loan forgiveness that was granted an extension by President Trump on June 5th. The bill extended the covered period for loan forgiveness from 8 weeks, after the date of loan disbursement, to 24 weeks after the date of loan disbursement. In addition, on behalf of the California Apple Commission, the U.S. Apple Association submitted a proposal to USDA in an effort to obtain funding for direct payment to apple growers through the Coronavirus Food Assistance Program (CFAP) which was ultimately granted on July 9th. Growers now have the ability to apply for direct payments under the CFAP program if they can demonstrate at least a 5% loss in sales between January 15 and April 15, 2020. The CAC understands that these dates unfortunately eliminate the majority of California apple producers from funding eligibility; however, the CAC team is working closely with USDA and members of Congress to advocate for additional funding opportunities to benefit the California apple industry as well.

The CAC has also had daily calls with Kahn, Soares & Conway, LLP to stay up-to-date on how COVID-19 continues to affect the California apple industry and agriculture as a whole. For more information in regards to how the California Apple Commission has attempted to mitigate the effects of COVID-19, please refer to our weekly COVID-19 updates that are included in the following pages. In addition, you will also find several letters the CAC has either commented on or signed onto in an effort to support the California apple industry during this crisis. As this pandemic has not come to end yet, the California Apple Commission will continue to work on behalf of the California apple industry to ensure that growers are continuously updated on how COVID-19 will impact their industry.



## APPLES NOW INCLUDED IN CRITICAL CFAP FUNDING CATEGORY

July 9, 2020

Dear CA Apple Industry Members:

The United States Department of Agriculture (USDA) issued a modification to its original Coronavirus Food Assistance Program (CFAP) ruling. Apples were initially left out of the program's component dealing with price declines, but have been reconsidered by USDA and growers will now be awarded a payment rate of \$0.05 per pound.

Growers can now apply for direct payments under the CFAP program by visiting <https://apps.fsa.usda.gov/cfap/index.jsp>. We encourage growers to act quickly to apply for this critical funding. Once a grower applies, they should receive their payment within a few days. **The application deadline for this program is August 28, 2020.** The CFAP program was included in the Coronavirus Aid, Relief and Economic Security (CARES) Act and was passed by Congress with overwhelming, bipartisan support and eventually signed into law by President Trump on March 27, 2020.

Last month, the CAC worked alongside the US Apple Association and other state apple organizations across the nation to urge USDA to reconsider growers for CFAP funding. As part of our team effort, a 30 page document detailing the actual sales data on more than 43 million bushels of apples, was sent to USDA. This data demonstrated price declines ranging from 6.5 percent to 24.9 percent. USDA's threshold for payment eligibility is a price decline of at least 5 percent; it now agrees that the average price decline was 10.9 percent.

The CAC would like to thank the US Apple Association, state apple organizations, the Washington State Tree Fruit Association, and the Northwest Horticultural Council for their combined efforts to obtain this successful outcome. If you have any questions or comments, please do not hesitate to contact the CAC office.





August 12, 2020

To: Senate Appropriations Committee

Subject: AB 196 (Gonzalez) – Conclusive WC Presumption for COVID-19  
**OPPOSE**

The organizations listed below are respectfully **OPPOSED** to **AB 196**, which would create a permanent and indisputable legal presumption that all COVID-19 infections suffered by “essential workers” are work related for purposes of workers’ compensation benefit eligibility. This proposal violates any reasonable standard of fairness that could possibly be expected by employers across our state, and it would divert vital resources away from recovering businesses and stretched state and local budgets. We respectfully urge you to abandon this legislation.

Many of the undersigned organizations delivered a letter dated 4/26/2020 to Governor Gavin Newsom and the legislative leaders in both the Senate and Assembly. The purpose of that letter was to provide a common voice to the concerns from all corners of California’s public and private sectors about the possibility of shifting the medical and social costs of this pandemic onto California’s workers’ compensation system through the enactment of a workers’ compensation presumption. We believe that the existing workers’ compensation system is certainly capable of effectively and efficiently meeting the needs of workers who are indeed infected while in the course and scope of their employment. In fact, there hasn’t even been a clearly established “problem” with the operation of the current system relative to COVID-19.

Notwithstanding employer concerns or a demonstrated problem with acceptance of claims, Governor Newsom issued Executive Order N-62-20 on May 6 to establish a rebuttable presumption for confirmed positive cases of COVID-19 among any California worker who reported to work outside of their home between March 19 and July 5. With such a broad presumption now in place for workers during the period in which the greatest number of Californians were ordered to stay home, we urge the legislature to thoughtfully consider the problems that need to be addressed beyond the broad scope of the Executive Order. Expansion of such extraordinary measures take California’s workers’ compensation system further away from its intended design and purpose and shift greater liability for the pandemic onto California employers.

AB 196 proposes a broad-based permanent and conclusive presumption for all essential workers. Below we have outlined our major concerns with the policy as contained in AB 196.

### **Basics of California Workers’ Compensation**

California’s workers’ compensation system is a no-fault, employer-funded system that must be liberally-construed by the courts with the purpose of extending benefits to workers who claim an injury or illness is work-related. This means that California’s system has been designed and consistently operates in a manner that broadly extends benefits for injuries and illnesses that occur on the job. Under existing rules, there needs to be some medical evidence that the illness was related to work. Therefore, employers are currently accepting COVID-19 claims, but some claims are likely to be denied because they are simply not work related or even lack any diagnosis of COVID 19. California law also requires employers to pay for health care services up to \$10,000 while the claim is reviewed, even if it is ultimately denied.

California’s system is specifically designed to address workplace injury and illness and is limited to that sole purpose. To meet that important threshold, workers need to establish some reasonable factual basis for asserting workplace causation of an injury or illness. With a no-fault standard that awards benefits without consideration of negligence, and a statutory directive that the courts must construe the state’s laws in favor of providing benefits, California workers’ compensation claims are accepted by employers at a rate of roughly 90%.



Employers in California's workers' compensation system, which had a cost of \$23.5 Billion in 2018, are approximately 67% insured and 30.2% self-insured (the State of California makes up 2.8%). It is important to note that for many large employers and nearly all public entities, the cost of workers' compensation is largely self-funded and come directly out of those organizations' annual budgets.

### **Conclusive v. Rebuttable Presumption**

The function of a legal presumption in workers' compensation law is to shift the burden of proof from the employee to the employer. Currently a worker claiming work-related COVID-19 would need to offer some reasonable basis to support their claim that they contracted COVID-19 at work, or that their work put them at a special risk for contracting COVID-19, and their claim would be evaluated as described above. A presumption, whether rebuttable or conclusive, would shift the burden onto the employer and require them to *prove that the employee did not get sick at work*.

When the burden of proof is shifted to the employer through a presumption the law also needs to establish what standard overcomes the presumption. In other words, what legal standard must an employer meet in order to demonstrate under the law that an infection is not work related and therefore not eligible for workers' compensation benefits?

A **"conclusive presumption"** would clearly declare, as a matter of law, that employers must provide workers' compensation benefits for eligible employees even if the evidence clearly indicates that the infection did not occur at work.

The California Department of Public Health (CDPH) noted in their [April 8, 2020 Press Release](#) that, "Since COVID-19 is moving rapidly within the community, health care workers now appear just as likely, if not more so, to become infected by COVID-19 outside the workplace." Nearly every day since that press release CDPH has noted in their daily update that hospital workers continue to contract COVID-19 both through the workplace and community exposure. A conclusive presumption, or anything that operates like a conclusive presumption, would unquestionably push these non-industrial infections into the workers' compensation system.

A **"rebuttable presumption"** would shift the burden of proof onto employers as described above but wouldn't allow benefits for infections that could be proven to be unrelated to work. This would be accomplished by establishing a standard of evidence for the employer to meet – typically in a rebuttable presumption the burden can be overcome by establishing non-industrial causation through preponderance of the evidence. Even under a rebuttable standard we expect that employers would still ultimately provide workers' compensation benefits for a substantial number of COVID-19 infections that are not work related.

AB 196 was recently amended, and the conclusive presumption was replaced with a rebuttable presumption.

### **Time Limited**

Any policy proposal that fundamentally alters how our workers' compensation system works relative to COVID-19 should be considered a temporary and extraordinary measure with a clearly defined end date. Even under the statewide shelter-in-place order it would seem, again based on the CDPH press release linked above, that even employees with an elevated occupational risk are prone to contract COVID-19 through community spread. As California re-opens in stages and people across the state return to their lives the evidence would suggest that community spread is and will continue to be a probable source of COVID-19 infections.

AB 196 proposes to enact a broad-based conclusive legal presumption that forces employers to pay for infections that did not occur at work, and it does so in perpetuity. Our coalition is opposed to this sort of broad and permanent shift of pandemic-related costs onto a system that was designed to treat and compensate workers hurt on the job. Additionally, AB 196 maintains the legal presumption for 90 days after termination of service from the employer.

### **Scope of Workers**

Many workers are doing heroic work at this time to care for the sick, produce food and other essentials, and make deliveries so most Californians can stay at home. At the same time, continuation of work during the shelter-in-place directive, by itself, should not be used as a proxy for exposure risk. Workers face a wide range of risk, from front-line, public-facing workers, to those who work in relative isolation and adequate social distancing.

Therefore, any suspension of existing causation standards should be targeted to workers who face a demonstrably higher risk of exposure. We oppose proposals that would apply a presumption for COVID-19 to every worker that has reported to work outside of the home during the statewide shelter-in-place order, because such a policy would significantly increase the number of non-work claims shifted into the workers' compensation system.

Presumption policy typically applies to small subsets of workers and injuries / illnesses and we believe that a narrow scope is appropriate here, as well. AB 196 takes the opposite approach and grants a conclusive presumption based on inclusion on a "essential workers" list from a March executive order that was issued under very different circumstances than exist now or might exist into the future.

### **Looking Ahead**

These are important issues and we commend your attention to these matters as you, your colleagues, and your staff work diligently to keep California on track. However, any legislative proposal needs to focus on extending benefits for *work-related* injuries and illnesses. We believe AB 196 fundamentally violates this premise and we oppose the bill for that reason.

July 20, 2020

TO: Members, Senate Labor, Public Employment and Retirement Committee

**SUBJECT: AB 685 (REYES) OCCUPATIONAL SAFETY: COVID-19 EXPOSURE: NOTIFICATION OPPOSE – AS AMENDED JUNE 29, 2020**

The California Chamber of Commerce and the listed organizations respectfully **OPPOSE AB 685 (Gómez Reyes)**, as amended June 29, 2020 because it will not improve safety, but instead will subject public and private employers to unworkably vague standards and criminal liability when they fail to comply with those standards.

Briefly, **AB 685** attempts to create a “notice” to employees and authorities upon “exposure.” However, as discussed below, its definition of “exposure” is broad and vague, resulting in triggering “exposures” in non-sensical scenarios. In addition, its notice provisions will not help workplace safety and ignore already-existing notification mechanisms functioning for Cal/OSHA.

### **AB 685’s Triggering Event – So-Called “Exposure” - Is Overly Broad and Vague**

As drafted, the triggering event for **AB 685’s** notification requirements is “if an employee is exposed to COVID-19”, with “exposed” defined as, “exposure to a person with any of the following”: (1) “a positive COVID-19 test,” (2) “a COVID-19 diagnosis,” (3) “a COVID-19-related order to quarantine” or (4) “a fatality that could have been caused by COVID-19.” (emphasis added). This language has a host of issues as drafted.

**No connection to the workplace – AB 685’s** “exposure” language in Section 6409(a) contains no requirement that the triggering “exposure” take place in the workplace, or indeed, that the exposed person ever visit the workplace in any way after exposure.<sup>1</sup> For example: consider if, over the Fourth of July weekend, an employee had a barbeque with a group of friends and, despite wearing masks, discovered that they came near someone who later tested positive for COVID-19. This “exposure”<sup>2</sup> would be entirely outside of the workplace - but if the employee called in sick and reported a “barbeque with some coworkers,” then an argument could be made that an employer “should” have known about this gathering or potential exposure, then **AB 685** would be triggered. This is absurd at a logical level, as the hypothetical exposure is not a workplace issue. But moreover, it is doubly absurd considering that **AB 685** would then require the employer to inform Cal/OSHA of the event as a serious injury in the workplace (see below) - even though it had nothing to do with the workplace.

**“Exposure” is not clearly defined** - Fundamentally, the bill fails to clearly define what qualifies as “exposure.” Despite including a definition of “exposure to COVID-19” that lists who might qualify as potentially infected individuals (positive test, diagnosis, etc.), that definition *relies on the same term - exposure* - without defining exactly what constitutes “exposure” to a potentially infected person.<sup>3</sup> The practical implication of this is that it remains unclear what qualifies as “exposure” to one of the identified categories of people. For example, in the hypothetical used above – a Fourth of July social gathering in a backyard – if we assume all attendees wear masks at all times when not eating, and sit at least 6 feet apart while eating, then it remains unclear whether one guest subsequently receiving a positive test would qualify as “exposure” for all other attendees. In the workplace context: if an infected employee (or customer) briefly visits a workplace, wearing a mask, drops off an item, speaks briefly to a clerk who is 10 feet away behind a desk, then leaves - is that an “exposure?” How close does contact need to be to constitute exposure? These questions are not theoretical – as the bill is drafted, employers have only 24 hours to determine exactly where the employee had been, exactly how close their contact was, and whether this constituted

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<sup>1</sup> The following sub-section, 6409.6(a)(1) includes a mention of the worksite as to one group of notice recipients, but that does not mean that the only triggering exposures are in the workplace – that merely specifies who receives notice subsequently.

<sup>2</sup> Notably, whether being at a backyard gathering while both wearing masks qualifies as “exposure” is unclear. See discussion of what qualifies as “exposure” below.

<sup>3</sup> Specifically, AB 685 provides that is triggered “[I]f an employee is exposed to COVID-19 . . .” and defines “[e]xposed to COVID-19” as “*exposure* to a person with any of the following. . .”).

“exposure,” then comply with the notice requirements (discussed below) or face criminal consequences. Because of this vagueness, even employers doing their best to comply will face potential criminal liability under **AB 685**.

**The Triggering “Persons” Definition Is Overbroad – AB 685’s** definition of potentially infected individuals (see Section 2, proposed Section 6409.6(b)) is also vague. To be clear, we agree that a positive COVID-19 test or diagnosis are appropriate grounds to consider as a potentially infectious individual. However, this definition should not include those under an “order to quarantine” or deaths that “could have been caused by COVID-19.” There is no legal definition of an “order to quarantine,” which will certainly lead to ambiguous interpretations. For example – if a colleague is suspected of having COVID-19 and is tested, and a friend had been in close contact, local health officials or state guidelines might instruct the close friend to quarantine until test results are out. That is reasonable. However, under this bill, employers are now being forced to put out worksite-wide notices and inform Cal/OSHA because an employee *may* have been in contact with someone who *might* have COVID-19. Without a clear legal definition of an “order to quarantine,” which establishes some clear boundaries and ensures it does not result in over-notice, it should not trigger notice under **AB 685**. Similarly, deaths that “could have been caused by COVID-19” should not be included because employers are not situated to determine, within 24 hours, whether an employee’s death “could” have been caused by COVID-19, particularly given the similarity in symptoms between influenza and COVID-19. California’s businesses do not have doctors on staff and should not be forced to hypothesize about an employee (or employee’s associates) cause of death, particularly when it may occur outside the workplace.

**“Should have known” Language Forces Employers to Guess With Criminal Penalties – AB 685’s** exposure trigger provides that “If an employee is exposed to COVID-19, the employer shall take all of the following actions within 24 hours [sic] that the employer knew or should have known of exposure to the employee.” (emphasis added). This “should have known” language is unacceptable. Employers should not face potential criminal penalties for failing to provide notice in ambiguous scenarios, particularly with a disease that we do not yet understand well and can be asymptomatic. For example – assume an employee calls their manager and reports that they aren’t feeling well, have a fever, and intend to stay home. Though they are not tested, they self-diagnose as feeling like it is COVID-19. How is the employer to determine whether it is, in fact, COVID-19, and thereby they need to provide notice to anyone else who was near that worker recently under **AB 685**? And how far back does the employer need to consider the potentially-infected person as sick? Does the employer notify anyone working nearby during the last week? Or the last two weeks? Or three weeks? Non-medical personnel will be forced to make these judgments within 24 hours.

#### **AB 685’s Notice Provisions Are Duplicative of Existing Law and Will Not Improve Safety**

Though we appreciate **AB 685’s** goal of providing information to the public, we believe there are numerous errors or oversights in the present language that will eliminate any safety benefits.

**AB 685’s Notice to Employees and Employee Representatives Needs Clarification.** As of the date of this letter, notice to employees of potential exposure is limited to those “at the worksite where the exposure occurred (Section 6409.6(a)(1)) but notice to employees and representatives regarding leave policies is not limited to the worksite. As a result, it appears company-wide communications regarding leave policies are necessary whenever **AB 685** is triggered, but an exposure warning will only go to the worksite where the potential exposure occurred.

In addition, “every reasonable effort necessary to notify workers verbally” is vague – are employers in large worksites required to have a large meeting of every employee in the event of a potential triggering exposure? Should they fail to provide verbal notice and instead opt for a company-wide email, are criminal penalties on the line? Finally, if an employer learns of a potential exposure at noon on a Friday (via a phone call from a potentially exposed employee) - is the employer required to provide notice by noon on Saturday? Businesses and managers do not necessarily have staff on hand to investigate a report within 24 hours or provide individual verbal notice, particularly during the weekend. This is particularly true for small businesses.

**AB 685 Will Lead to Over-warning, Negating Any Positive Effects of Notice.** The vagueness discussed above regarding what constitutes exposure creates the potential that some employers will provide warnings constantly to avoid liability for failing to warn. However, such over-warning negates the benefits intended by **AB 685**, as it will become background noise for employees, and pointlessly dilute the data of Cal/OSHA and the Department of Public Health.

**AB 685's Notice of Leave Programs is Pointless – Such Leave Policies Must Already Be Posted.** Employers must *already* post leave policies pursuant to the Family and Medical Leave Act and state legislation. It is unclear what benefit, if any, requiring repeated notice of a company's leave policies serves here – except to lengthen and dilute the value of any such notice.

### **AB 685's Notice to Cal/OSHA and Public Health Agencies Is Duplicative of Existing Notice and Will Prompt Over-Reporting**

Employers are already required to report serious injuries to Cal/OSHA under Labor Code 6409.1. This reporting must occur within either five days or immediately, depending upon the severity of the illness or injury, and face penalties for failure to do so. These *reports* are required to occur so rapidly because the law already recognizes the importance of informing Cal/OSHA of severe injuries or illnesses. For other, less immediate or urgent injuries, employers are required to *record* (instead of immediately reporting) such occurrences and maintain these records for Cal/OSHA to review. Via these already-existing mechanisms, Cal/OSHA is already gathering information on COVID-19. Presently, Cal/OSHA requires employers to record potential COVID-19 illnesses,<sup>4</sup> but would require rapid reporting in the event of a death pursuant to Labor Code Section 6409.1.

**AB 685** would ignore Cal/OSHA's present structure and force even hypothetical cases of exposure to be reported among each worksite's report of its most severe/fatal injuries. In doing so, **AB 685** would dilute the usefulness of companies' present reports because it will force employers to report cases of uncertain harm and risk (see discussion of "exposure" above) as part of their most urgent report to Cal/OSHA, even though Cal/OSHA already has a mechanism for recording these cases. Similarly – testing laboratories are already required to report positive tests to the appropriate state or local public health departments, pursuant to CDC guidelines,<sup>5</sup> so **AB 685** appears to provide no benefit on this front as well.

### **AB 685's "Name and Shame" Provision Will Shame Even Businesses Who Are Doing Their Best and Poses Privacy Concerns**

**AB 685** also includes a "name and shame" provision, requiring DOSH and the State Department of Public Health to publish information received on their website including tracking "the number of COVID-19 cases reported by any workplace and the occupation of the employees involved."

However, **AB 685's** publication requirements make no distinction regarding the cause of the infection and would instead shame employers merely based on cases – regardless of whether that employer played any role in the infection. Though we are generally opposed to name-and-shame tactics, that approach makes particularly little sense here, where an employee could become infected without any misconduct by the employer. For example – if an employee reports a positive COVID-19 test to their manager, **AB 685** would compel notice and disclosure to any other workers who may have worked in some (undefined) radius around that employee for an undefined amount of time in the past. This notice would then be reported to Cal/OSHA, despite the employer having done nothing wrong, and would be published as a report of exposure at that worksite. This will doubtless make it appear that larger worksites (who have more employees) are failing in some way because they have more cases – when in fact it is simply a matter of statistics that they will have more employees become sick, regardless of their conduct, as the disease spreads socially among the population. Such publication does not in any manner distinguish between good and bad actors and serves no public good.

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<sup>4</sup> See <https://www.dir.ca.gov/dosh/coronavirus/Reporting-Requirements-COVID-19.html>.

<sup>5</sup> See <https://www.cdc.gov/coronavirus/2019-ncov/lab/reporting-lab-data.html> ("All laboratories with a Clinical Laboratory Improvement Amendments (CLIA) external icon certificate must report the results of the COVID-19 tests that they conduct to the appropriate state or local public health department")

In addition, publication poses potential privacy concerns, as reporting an individual's "occupation" and worksite may render the person identifiable. For example, a location may have only one or two managers or technicians. Merely identifying that a manager at a specific worksite was "exposed" would implicitly identify the individual on a public website as having a potential medical condition. Of course, this concern depends on implementation – again, **AB 685** is vague here – but we do not see a medical or social benefit to including the specific occupation of the person involved, any more than there is a benefit to shaming both good and bad employers.

Though we understand the intent of incentivizing good behavior, employers already have incentives to prevent the spread of COVID-19 in the workplace. Aside from common decency and an interest in being able to continue operating, workers compensation presently creates this incentive by increasing costs for employers who have repeated COVID-19 cases – so **AB 685** will not add any useful incentive for employers.

### **AB 685 Fails to Consider What Constitutes the "Worksite" in a Time of Telecommuting.**

While we believe this is not the intent of the bill and appreciate that this new reality of telecommuting is something that we are all adjusting to, we believe **AB 685's** language fails to consider that many workers are working from home presently. This will lead to absurd outcomes. For example, if an employee's spouse is diagnosed with COVID-19, and the employee informs the employer, **AB 685** would be triggered because the employer is now aware that an employee will likely be "exposed" to a COVID-19 positive person. The employer would then be compelled to provide a non-sensical notice to the employee (as a potentially exposed person at the worksite), any exclusive representative, as well as Cal/OSHA and the California Department of Public Health - all because of an intra-family transmission of the disease occurring at home.

In conclusion – we appreciate the good intentions of the author to try to help workers in this pandemic – but we find **AB 685** to be a confusing and ineffective bill which will not help public safety and will put potential criminal liability on public and private employers.

For these reasons, we **OPPOSE AB 685 (Gómez Reyes)**.

Sincerely,



Robert Moutrie  
Policy Advocate  
California Chamber of Commerce

## JOB KILLER

July 16, 2020

TO: Members, Senate Committee on Labor, Public Employment & Retirement

FROM: Ben Ebbink   
California Chamber of Commerce

Acclamation Insurance Management Services  
Agricultural Council of California  
Allied Managed Care  
American Pistachio Growers  
Associated Builders and Contractors Inc. – Northern California Chapter  
Associated General Contractors  
Auto Care Association  
California Agricultural Aircraft Association  
California Apple Commission  
California Association of Boutique & Breakfast Inns  
California Association of Health Facilities  
California Association of Joint Powers Authorities  
California Association of School Business Officials  
California Association of Sheet Metal and Air Conditioning Contractors National Association  
California Association of Winegrape Growers  
California Attractions and Parks Association  
California Bankers Association  
California Beer and Beverage Distributors  
California Blueberry Association  
California Blueberry Commission  
California Citrus Mutual  
California Cotton Ginners and Growers Association  
California Employment Law Council  
California Farm Bureau Federation  
California Food Producers  
California Fresh Fruit Association  
California Grocers Association  
California Hospital Association  
California Hotel & Lodging Association  
California Landscape Contractors Association  
California Manufacturers and Technology Association  
California Poultry Federation  
California Professional Association of Specialty Contractors  
California Restaurant Association  
California Retailers Association  
California Rice Commission  
California Special Districts Association  
California State Council of the Society for Human Resource Management (CalSHRM)  
California Tomato Growers Association  
California Trucking Association  
CAWA – Representing the Automotive Parts Industry  
Coalition of Small and Disabled Veteran Businesses  
CSAC Excess Insurance Authority  
Family Business Association of California  
Family Winemakers of California  
Far West Equipment Dealers Association  
Flasher Barricade Association



Grower-Shipper Association of Central California  
Hospitality Santa Barbara  
Hotel Association of Los Angeles  
Leading Age California  
League of California Cities  
Long Beach Hospitality Alliance  
National Federation of Independent Business  
Official Police Garages of Los Angeles  
Olive Growers Council of California  
Torrance Area Chamber of Commerce  
Tree Care Industry Association  
United Ag  
Western Agricultural Processors Association  
Western Carwash Association  
Western Electrical Contractors Association  
Western Growers Association  
Western Plant Health Association

**SUBJECT: AB 3216 (KALRA/GONZALEZ) EMPLOYMENT LEAVE: AUTHORIZATION  
OPPOSE/JOB KILLER – AS AMENDED JUNE 4, 2020**

California Chamber of Commerce and the organizations listed above respectfully **OPPOSE AB 3216 (Kalra/Gonzalez)**, as amended June 4, 2020, which has been labeled a **JOB KILLER**.

**AB 3216** imposes staggering, significant and unprecedented new requirements on businesses of all sizes in California during a time of crisis when they can least afford it. These include drastic new family and medical leave requirements, significant new paid sick leave requirements, and unprecedented (and likely unconstitutional) “right of recall” requirements for certain businesses.

We certainly acknowledge that these are unprecedented times, and that many employees are suffering from lack of work, reduction in hours, and other financial difficulties as a result of this crisis and government-mandated shutdowns.

We certainly agree that the short- and long-term health of all Californians should be everyone’s priority and businesses throughout California are doing everything they can to protect their employees while still providing essential services and goods. Many businesses and their owners are themselves casualties of the necessary economic shutdown. They cannot be expected to shoulder a new employer-financed social safety net, with expensive new mandates, at precisely the moment when small businesses are shuttering, employee hours are cut, and uncertainty about the future is the new normal.

Therefore, we do not believe that the approach proposed in AB 3216 is the proper course of action at this time.

### **AB 3216 Expands the California Family Rights Act to Cover Leave for a Host of New Reasons**

**AB 3216** proposes to expand the California Family Rights Act (CFRA) to cover a number of new leave entitlements related to states of emergency, including school and childcare closures, being subject to a quarantine or isolation order, and being advised to self-quarantine. This leave would also extend to such broad and undefined categories of “being a member of a vulnerable population at high risk,” or living with or being responsible for providing care for a family member who is a member of a vulnerable population.

Combined with proposed changes contained in budget trailer bill language and passed by both houses of the Legislature, CFRA would now apply to employers of any size and would therefore especially burden small employers. Therefore, if the budget trailer bill language is adopted, the mandate established by **AB 3216** will apply to all employers, even the smallest employers in the state.

n addition, leave for these new qualifying reasons would put CFRA out of conformance with the federal Family and Medical Leave Act (FMLA). Therefore, an employee could potentially be entitled to 12 weeks of job-protected leave under the CFRA (which would now apply to all employers, regardless of size), and 12 weeks of leave under the FMLA– for a staggering total of **24 weeks** of job protected leave, which would create a tremendous burden on employers.

Moreover, as discussed below the new leave under **AB 3216** comes on the backs of numerous (and in most cases paid) leave entitlements enacted at the federal, state and local levels in recent weeks in direct response to the COVID-19 crisis.

### **AB 3216 Enacts a New Employer-Funded Emergency Paid Sick Leave Entitlement**

**AB 3216** requires all employers to provide employees with an additional 56 hours or 7 days of paid sick leave to use for any specified purpose related to a public health emergency and/or state of emergency. This is in addition to the three days of paid sick leave already required under existing law. Qualifying reasons for this leave include (1) when the employee is subject to a federal, state or local public health order, (2) to care for a family member subject to such an order, (3) to care for a child or family member if a school or place of care is closed, (4) when the place of employment is closed by the employer or a public health official due to a state of emergency, and (5) when the employee is subject to a federal, state, or local evacuation order.

This new mandate differs and in broader in scope from similar emergency paid sick leave requirements enacted at the federal, state, and local level in recent weeks.

For example, the federal Families First Coronavirus Response Act (FFCRA) provides for emergency paid sick leave and emergency family and medical leave only where the employee is unable to work or telework due to specified qualifying reasons. The terms under the FFCRA have engendered numerous guidance and regulations from the Department of Labor clarifying the meaning of terms and operation of the statutory provisions. **AB 3216** provides little, if any, clarification of the meaning of important terms and the circumstances under which the employee would qualify for paid sick leave. In addition, the FFCRA (as interpreted by the DOL) does not apply where the employer is closed down directly or indirectly by an emergency shutdown order because there is no work available for the employee. By contrast, **AB 3216** specifically provides that an employee is entitled to paid sick leave even when the “place of employment is closed,” and when the employer has no work for them to perform.

Most importantly, the new emergency paid sick leave mandated by **AB 3216** is completely and 100% employer funded. Requiring an employer who is suffering economic catastrophe (and is likely closed down) during a state of emergency to provide significant paid sick leave is simply not realistic or feasible.

And finally, states of emergency regularly last for significant periods of time, long past the time of a pressing emergency. For example, the emergencies declared on November 8, 2018 and October 27, 2019 due to wildfires and extreme weather conditions in Ventura County and other counties remain in effect today, long after the fire season has ended. On December 23, 2019, Governor Newsom terminated more than 70 ongoing states of emergency that had been declared at various times over the last decade, from January 27, 2011 to November 30, 2018. Accordingly, this new paid sick leave mandate is not “limited” to defined periods of time, but rather will be an ongoing mandate long after the pressing emergency exists.

### **The Timing Could Not Be Worse - California Employers Can Ill Afford Yet Additional Leave Mandates**

California employers are certainly sympathetic towards their employees who are unable to work due to COVID-19 related (or similar emergency) reasons experienced by the employee or a family member. However, the entirely new leaves proposed in AB 3216 come on the heels of numerous leave provisions under existing law, including several new mandates enacted at the federal, state, and local levels in recent weeks.

At the federal level, the Families First Coronavirus Protection Act (FFCRA), which went into effect on April 1, already provides for various forms of job-protected and paid leave for employees impacted by COVID-19. The law provides for up to 80 hours of emergency paid sick leave for a variety of COVID-19 related reasons, including when the employee or a family member has been quarantined or has need for care due to COVID-19. In addition, the FFCRA provides for 12 weeks of job-protected leave (10 of which are paid) for any employee who has worked at least 30 days for a covered employer to care for a child who is home due to school or childcare closures. Notably, emergency family and medical leave under the FFCRA runs concurrently with leave a covered employee may be entitled to under the FMLA.

Most importantly, the federal law recognizes the new burden created by this mandate, and therefore provides employers with a tax credit to offset all of their costs. Given the prompt action by the federal government, additional state-only protected leaves, such as that proposed in **AB 3216**, with their related costs and litigation risks, are unnecessary and duplicative.

In addition, Governor Newsom recently issued an executive order to provide 80 hours of paid sick leave for certain food sector workers, many of whom would also be covered by **AB 3216**. On top of that, a number of local jurisdictions in California (including Los Angeles, San Francisco, San Jose and Emeryville) have enacted their own COVID-19 paid sick leave requirements in recent weeks, many of which apply to employers not already covered by the federal FFCRA.

Even before the COVID-19 crisis, California had numerous protected, overlapping leaves, which already burden employers. In addition to the new federal, state and local COVID-19 leave laws discussed above, there are numerous additional state leave proposals this year, including budget trailer bill language, to further expand these leave mandates. The continued mandates placed on California employers to provide employees with numerous rights to protected leaves of absences is simply overwhelming, especially during this current unprecedented crisis when many employers have been ordered to close their doors and can least afford it.

### **AB 3216 Proposes a New Unworkable and Constitutionally-Suspect “Right of Recall” Requirement**

**AB 3216** establishes a new “right to recall” requirement that applies to certain hotels, event centers, airport hospitality operations, or the provision of building services to office, retail, or other commercial buildings. These rights also extend where an employer goes out of business and there is a change in control or ownership.

In the midst of the current crisis, California employers have been struggling simply to continue operations and avoid going completely out of business – which means no workers would have any jobs. Employers have also adjusted their operations in order to retain as many of their workers as possible during these challenging times. This proposal would completely eliminate the crucial flexibility that businesses need to navigate crises such as this and preserve jobs over the long term.

Among other things, **AB 3216** requires covered employers to offer to recall laid-off workers, and to provide such employees at least 10 business days to respond. This is completely unworkable and would serve to stifle and delay a business returning to normal operations following such an emergency. Requiring recall based on seniority also hurts young workers and newer skilled workers, and eliminates the judgment and flexibility employers need to best structure their operations.

The “right of recall” provisions of **AB 3216** also raise significant legal and constitutional concerns. Any law that substantially impairs pre-existing contractual obligations violates the contract clauses of both the federal and California constitutions. The statutory right of recall contained in **AB 3216** is legally suspect and would likely be struck down as violating the contracts clause. In addition, several aspects of the proposal may be preempted by federal law, including federal labor law. Similar proposals have already been proposed, and in some cases, enacted at the local level in recent weeks and are likely to be the subject of protracted litigation over these same issues.

The answer to the current crisis (or future similar emergencies) is not to further weaken struggling employers with novel and burdensome legal requirements.

## Conclusion

We understand that these are unprecedented times and that policymakers are striving to ensure that constituents and employees are provided certainty and protection during the current crisis and similar emergencies that may develop in the future. However, it is critical to remember that many businesses and their owners are themselves casualties of this economic shutdown. They cannot be expected to shoulder a new employer-financed social safety net, with expensive new mandates, at precisely the moment when small businesses are shuttering, employee hours are cut, and there is so much uncertainty about the future.

For these reasons, we respectfully **OPPOSE AB 3216** as a **JOB KILLER**.

cc: Stuart Thompson, Office of the Governor  
Justin Delacruz, Office of Assembly Member Kalra  
Gideon Baum, Senate Committee on Labor, Public Employment & Retirement  
Cory Botts, Senate Republican Caucus  
Scott Seekatz, Senate Republican Caucus

## JOB KILLER

July 15, 2020

TO: Members, California State Assembly

**SUBJECT: SB 1383 (JACKSON) UNLAWFUL EMPLOYMENT PRACTICE: FAMILY LEAVE  
OPPOSE AS AMENDED JUNE 29, 2020 – JOB KILLER**

The California Chamber of Commerce and the organizations listed below respectfully **OPPOSE SB 1383** (Jackson) as amended on June 29, 2020 as a **JOB KILLER**, as it will significantly harm small employers in California by requiring any employer with only 5 employees to provide 12-weeks of protected leave each year and threatening them with litigation for any unintentional mistake. It will also impact large employers by providing the opportunity for a 6 month mandatory leave of absence.

**SB 1383** is not limited in scope to only address COVID-19 and will place a significant burden on employers at a time when they can least afford it. Now is not the time to be placing such burdens on employers who are struggling to reopen and rebuild.

### **SB 1383 Disproportionately Impacts Small Employers in California with Only 5 Employees:**

**SB 1383** imposes a mandatory 12-week leave of absence on any employer with five or more employees. According to the most recent labor market data from the Employment Development Department (EDD), out of California's approximately 1.6 million employers, approximately 173,000 employers in California have between 5-10 employees, and will be limited in their ability to manage this leave.

Specifically, based upon a study conducted on California's **six-week** Paid Family Leave Program in 2011 by Eileen Applebaum and Ruth Milkman, they found the following with regard to small employers:

"The smallest business we visited, an optometrist's office, was the least well equipped to cover leaves. This business only has three employees (apart from the owner), one of whom is a highly skilled technician. When this individual is absent, the optometrist fills in himself and takes fewer clients. ***Very small businesses like this one do face special challenges since an inevitable effect of their size is that very few co-workers are available to cover the work when someone is absent.***" (emphasis added)

**SB 1383** imposes a 12-week leave, double the amount of time considered in the above-referenced study. There is not a significant difference between 3 employees referenced in the study and 5 employees as proposed in **SB 1383**. It will devastate small employers.

### **SB 1383 Exposes Small Employers to Costly Litigation Even for Unintentional Mistakes:**

The leave mandated under **SB 1383** at the option of the employee, is enforced through a private right of action that includes compensatory damages, injunctive relief, declaratory relief, punitive damages, and attorney's fees. Any employee who believes an employer did not properly administer the leave, interfered with the leave, or denied the leave, can face litigation.

An employer with only five employees does not have a dedicated human resources team or in-house counsel to advise them on how to properly administer this leave, document it, track it, obtain medical verifications, etc. The regulations on implementing the 12 weeks of leave under CFRA are approximately 36 pages long. A small employer is bound to make an unintentional mistake along the way, which will cost them in litigation.



A 2015 study by insurance provider Hiscox regarding the cost of employee lawsuits under FEHA estimated that the cost for a small to mid-size employer to defend and settle a single plaintiff discrimination claim was approximately \$125,000. This amount, especially for a small employer, reflects the financial risk associated with defending a lawsuit under FEHA, such as the litigation created by **SB 1383**.

While the argument regarding litigation has previously been that no employee will pursue litigation under CFRA against an employer who has provided the required leave, cases show otherwise: in *Richey v. Autonation*, 60 Cal.4<sup>th</sup> 909 (2015), an employee took CFRA leave from his employer for 12 weeks due to his own medical condition. However, while on “medical leave,” the employee opened and worked at his own restaurant. The employer fired the employee and the employee sued the employer for retaliation for taking CFRA leave. Although the employer ultimately prevailed, the employer had to pay for litigation for over six years. See also *McDaneid v. Eastern Municipal Water District Board*, 109 Cal.App.4<sup>th</sup> 702 (2003) (finding against employee who sued his employer for violation of CFRA after employee was terminated because he was found golfing and performing intermittent sprinkler installation/repair while he had requested time off to care for his father); *Rankins v. Verizon Communications Co.* (unpublished) 2007 WL 241154 (finding against employee who sued employer for violation of CFRA when the employee was terminated by employer for submitting false medical certification/letter for CFRA leave); *Holley v. Waddington North America, Inc.* (unpublished) 2012 WL 883134 (finding against employee who sued employer for interference with his rights under CFRA, even though employer provided the employee with over 14 months of leave).

Also, there is no need to subject small employers to litigation as there is a dedicated agency, the Department of Fair Employment and Housing, equipped to handle any complaint regarding CFRA leave. As recently reported, for those employees who choose to have the agency investigate instead of pursuing civil litigation, the agency investigates and resolves 100% of the cases within one year. That is more efficient than civil litigation, which can take years to resolve.

### **SB 1383 Imposes a Significant Administrative Burden:**

Providing leave under CFRA is not as simple as just counting out 12 weeks on a calendar and providing that time off. For medical conditions, employees can take the leave in increments as small as one to two hours at a time. An employee is only required to provide an employee with “reasonable notice,” which is subjective and can literally be minutes before a shift begins – leaving an employer with limited employees in a challenging situation.

Also, an employer must track the time off as “CFRA leave” or it may not count against the 12 weeks. Retroactively designating leave as “CFRA” is a risky employment practice that could lead to litigation.

Small employers do not have dedicated staff to track and document each hour an employee takes off for CFRA leave.

### **SB 1383 Adds Costs to Small Employers Even Though It Is Not Paid:**

Even though the leave required in **SB 1383** is not “paid” by the employer, that does not mean the employer will not endure added costs. The leave is “protected,” meaning an employer must return the employee to the same position the employee had before going out on leave. This means holding a position open for three months or more. While an employer can temporarily fill the position with a new employee, that replacement usually comes at a premium. A replacement employee knows it is short term and, therefore, requires a premium wage, is less dedicated to the position, and often leaves for a better opportunity at a moment’s notice. Also, many jobs require extensive amount of time and money to train a new employee, adding another cost. Some employers shift the work to other existing employees, which often leads to overtime pay. And, most of the leaves of absence require employers to maintain health benefits while the employee is out.

Due to the passage of AB 5, the option to hire an independent contractor to fill the position is either extremely restricted or eliminated.

**The 12-Weeks of Leave in SB 1383 is in Addition to Other Existing Leaves on Small Employers:**

This 12-week leave of absence on small employers cannot be viewed in isolation, but must be considered with regard to all of the other California specific leaves employers must juggle including the following: Pregnancy Disability Leave (up to four months); disability leave under Fair Employment and Housing Act (no specific amount of time – but not unlimited either. The leave provided must be considered as a “reasonable” accommodation for the disability); Worker’s Compensation injury (amount of leave based upon doctor’s recommendation); California Paid Sick Leave (minimum of 3 days); Paid leave for Organ/Bone Marrow Donation Leave (30 days/year); Jury Duty Leave (unlimited); Victim of Crime or Witness Leave (unlimited); Victim of Domestic Violence/Sexual Assault (unlimited); Emergency Duty of volunteer firefighters, reserve peace officers, or emergency rescue personnel (unlimited); Civil Air Patrol Leave (10 days/year); School Suspension Leave (unlimited); School Activities Leave (40 hours/year).

**For Employers with 50 or More Employees, SB 1383 Will Expand the Amount of Protected Leave an Employee May Take to Half of a Year:**

**SB 1383** changes requirements for qualifying for the California Family Rights Act (CFRA) leave by amending the definition of family member for whom the employee can take leave. This means that the Family and Medical Leave Act’s (FMLA) and CFRA’s qualifying requirements no longer conform with each other. This is a significant issue because California cannot preempt or limit the application of federal law under FMLA. In other words, simply because the employee already took leave under CFRA does not negate their ability to then qualify for FMLA leave as well.

CFRA leave provides qualifying employees with 12 weeks of job protected leave during a 12-month period for his or her own medical condition or the medical condition of his or her spouse, child or parent, or for the birth, adoption or foster care placement of a child. The federal equivalent of CFRA is FMLA. CFRA and FMLA leave normally run together, so the total time taken is a maximum of 3 months.

However, **SB 1383** greatly expands the definition of “family member” to include a child of a domestic partner, grandparent, grandchild, sibling, or domestic partner. Additionally, the bill removes the requirement that a “child” be under the age of 18 or a dependent adult child. Because a domestic partner, a child of a domestic partner, a grandparent, a grandchild, or a sibling are not family members covered under FMLA, these leaves will not coincide.

Accordingly, the employee could take leave under **SB 1383** for 3 months to care for a domestic partner, child of a domestic partner, grandparent, grandchild, or sibling, return to work, and then take another 3 months off under FMLA for the employee’s own medical condition or the medical condition of a spouse, child or parent or for the birth, adoption or foster care placement of a child.

3 months – CFRA leave for a domestic partner, child of a domestic partner, grandparent, grandchild, or sibling;

**PLUS (+)**

3 months – FMLA leave for his or her own medical condition or the medical condition of his or her spouse, child or parent, or for the birth, adoption or foster care placement of a child.

Thus, **SB 1383** creates 6 months of job protected leave for employers covered by FMLA.

Notably, an employee can take intermittent leave under CFRA and FMLA in increments as small as one hour at a time, thereby providing an extensive amount of protected time off for California employees that California employers would have to administer and track properly in order to protect themselves against potential liability. The initial intent of CFRA was to provide a balance between an individual’s work life and personal life. However, this proposed change would certainly disrupt that balance and negatively impact California employers.

**SB 1383 Is Not Necessary to Implement the Budget:**

**SB 1383** does not impact the budget in any way. It is a policy change with no appropriation.

For these reasons, we respectfully **OPPOSE SB 1383** as a **JOB KILLER**.

July 14 2020

The Honorable Robert Rivas  
California State Assembly  
State Capitol, Room 5158  
Sacramento, CA 95814

**SUBJECT: AB 2043 (R. RIVAS) OCCUPATIONAL HEALTH AND SAFETY,  
AGRICULTURAL WORKERS: COVID-19  
OPPOSED UNLESS AMENDED**

Dear Assembly Member Rivas:

The organizations listed below agree with the need for worker safety and are heavily engaged in this effort. We greatly appreciate the July 8 amendments to your **AB 2043** and look forward to continue working with you to resolve remaining technical issues. However, at this time remain opposed unless amended to AB 2043. With the amendments outlined in this letter we would remove our opposition.

### **Outreach Campaign by Cal/OSHA**

We support the need to consistently inform and educate employers and employees on workplace safety relative to COVID-19. This is why our organizations continually disseminate the various guidance documents from the Center for Disease Control and Prevention, Cal/OSHA, U.C. Davis Western Center for Agricultural Health and Safety, California county health officers, and much more. Agriculture employers comply with the strictest guidelines, and are making every effort to keep employees safe. We are also reaching out to agricultural employees through a variety of means including public service announcements on Spanish radio stations advising workers on the need to stay healthy.

Our concerns with the outreach campaign laid out in subdivision (c) of the bill is in how the campaign would be conducted. We want to make sure that it involves a collaborative process which includes 501 (c) (3) organizations, and groups that represent employers and employees. Further, we request the following amendment to subdivision (c) to ensure only Cal/OSHA, and not outside groups, can access the worksite and distribute materials to the worksite for the purposes of this bill. We do not want this outreach campaign to result in distractive disruptions at the workplace that put employees at risk of contracting COVID-19, pose a food safety risk, or put members of the public at risk. We appreciate that this is not the intent of the bill, but request the language on how the outreach campaign is conducted be clarified.



(c) The division, working collaboratively with community organizations and organizations representing employees and employers, shall conduct a statewide outreach campaign, targeted at agricultural employees, to assist with the statewide dissemination of the best practices information described in subdivision (b) and to educate employees on any COVID-19-related employment benefits to which they are entitled, including access to paid sick leave and workers' compensation. The campaign shall include, but shall not be limited to, public service announcements on local Spanish radio stations and the distribution of workplace signs. **Nothing in this subdivision shall authorize access to the worksite by any individuals who are not employed by the division.**

### **Cal/OSHA Monthly Report**

We appreciate the desire for holding bad actors accountable. However, we do not believe that AB 2043's present language is a fair or accurate tool towards accountability. As written, employers would see their names published by Cal/OSHA merely because a complaint is filed, even if that underlying complaint is completely without merit. This tool does nothing to separate good or bad actors because it short circuits due process.

Though we disagree entirely with such publication, we offer the following suggestion: if it is to be effective, Cal/OSHA should be provided the opportunity to conduct an investigation and determine the validity of a complaint before any information becomes public. It is unfair to the employer and would cause unnecessary concern in the workplace if complaints were posted without due process and an investigation. Further, as only agricultural workplaces would be subject to this public disclosure by Cal/OSHA, it creates an incomplete and inaccurate perception that complaints are only filed and investigations are only conducted in the agricultural industry.

We also need to be keenly aware that we are dealing with our food chain. It is unnecessary to inadvertently create the problematic situation where a monthly report under this bill highlights an alleged workplace problem, but the workplace is later found to be in full compliance and there are no COVID-19 issues at the workplace. In this situation, if the information is posted before the investigation is complete, the public alarm has been sounded and people would become unnecessarily suspicious of the safety of the food chain.

While we still have concerns about this requirement only applying to the agricultural industry, we request the following amendments to subdivision (d):

(d) **(1)** Each month the division shall compile and report, via its internet website, **the findings or results of any investigation by the division relating to a COVID-19 illness or injury at a workplace of agricultural employees including, but not limited to, statistics and summary descriptive information and whether the division's response to the initial complaint leading to the investigation of the COVID-19 illness or injury relating to complaints received by the division involving a workplace of agricultural employees, any investigation by the division of those workplaces and the findings or result of any investigation, including, but not limited to, involved an onsite inspection or only a letter to the employer.**

**(2) To the extent the division collects and maintains statistics of investigations by the division of COVID-19 illnesses or injuries of workplaces of agricultural employees compared to the number of investigations by the division of COVID-19 illnesses or injuries of workplaces of non-agricultural employee, the division shall compile and include this comparative information in any report provided under this subdivision. The report shall also indicate if the division fails to collect and maintain data relative to COVID-19 illnesses or injuries in workplaces of non-agricultural employees.**

### **Summary**

We greatly appreciate the amendments of July 8 and we look forward to continue working together on this critical issue of workplace safety.

UPDATED

**JOB KILLER**

June 26, 2020

The Honorable Holly Mitchell  
Chair, Senate Budget Committee  
State Capitol  
Sacramento, CA 95814

The Honorable Jim Nielsen  
Vice Chair, Senate Budget Committee  
State Capitol  
Sacramento, CA 95814

Members, Senate Budget Committee  
State Capitol  
Sacramento, CA 95814

Members, California State Senate  
State Capitol  
Sacramento, CA 95814

*Sent via email*

**SUBJECT: SB 1383 (JACKSON) UNLAWFUL EMPLOYMENT PRACTICE: FAMILY LEAVE  
OPPOSE AS AMENDED JUNE 23, 2020 – **JOB KILLER****

The California Chamber of Commerce and the organizations listed below respectfully **OPPOSE SB 1383** (Jackson) as a **JOB KILLER**, as it will significantly harm small employers in California by requiring all employers to provide 12-weeks of protected leave each year and threatening them with litigation for any unintentional mistake.

**SB 1383** is not limited in scope to only address COVID-19 and will place a significant burden on employers at a time when they can least afford it. Now is not the time to be placing such burdens on employers who are struggling to reopen and rebuild.

**SB 1383 Disproportionately Impacts the Smallest of Employers in California:**

**SB 1383** imposes a mandatory 12-week leave of absence on any employer with one or more employees. According to the most recent labor market data from the Employment Development Department (EDD), out of California's approximately 1.6 million employers, over 1.1 million employers in California have fewer than 5 employees. **SB 1383** will overwhelmingly hit the smallest employers in California, who are the least equipped to handle this proposal.

Specifically, based upon a study conducted on California's **six-week** Paid Family Leave Program in 2011 by Eileen Applebaum and Ruth Milkman, they found the following with regard to small employers:

"The smallest business we visited, an optometrist's office, was the least well equipped to cover leaves. This business only has three employees (apart from the owner), one of whom is a highly skilled technician. When this individual is absent, the optometrist fills in himself and takes fewer clients. ***Very small businesses like this one do face special challenges since an inevitable effect of their size is that very few co-workers are available to cover the work when someone is absent.***" (emphasis added)

**SB 1383** imposes a 12-week leave, double the amount of time considered in the above-referenced study. It will devastate small employers.

**SB 1383 Includes In-Home Care Providers and Will Impact Working Families:**

Given the broad definition of employer in **SB 1383** to include any employer that has one or more employees, it captures working families who have in home childcare providers or senior care. Many working families are choosing to keep their kids home while they return to work in order to minimize any risk of infection. **SB 1383** would impose a 12-week leave of absence on parents who utilize this as an option and threaten them with litigation if they make any mistake in its implementation. Working parents are not the same as a large employer and do not have the capacity or resources to implement this type of leave or respond to a lawsuit, as discussed below.



### **SB 1383 Exposes Small Employers and Working Parents to Costly Litigation Even for Unintentional Mistakes:**

The leave mandated under **SB 1383** is enforced through a private right of action that includes compensatory damages, injunctive relief, declaratory relief, punitive damages, and attorney's fees. Any employee who believes an employer did not properly administer the leave, interfered with the leave, or denied the leave, can face litigation.

An employer with only one employee does not have a dedicated human resources team or in-house counsel to advise them on how to properly administer this leave, document it, track it, obtain medical verifications, etc. Parents are not labor and employment experts. They are bound to make an unintentional mistake along the way, which will cost them in litigation.

A 2015 study by insurance provider Hiscox regarding the cost of employee lawsuits under FEHA estimated that the cost for a small to mid-size employer to defend and settle a single plaintiff discrimination claim was approximately \$125,000. This amount, especially for a small employer, reflects the financial risk associated with defending a lawsuit under FEHA, such as the litigation created by **SB 1383**.

While the argument regarding litigation has previously been that no employee will pursue litigation under CFRA against an employer who has provided the required leave, cases show otherwise: in *Richey v. Autonation*, 60 Cal.4th 909 (2015), an employee took CFRA leave from his employer for 12 weeks due to his own medical condition. However, while on "medical leave," the employee opened and worked at his own restaurant. The employer fired the employee and the employee sued the employer for retaliation for taking CFRA leave. Although the employer ultimately prevailed, the employer had to pay for litigation for over six years. See also *McDanel v. Eastern Municipal Water District Board*, 109 Cal.App.4th 702 (2003) (finding against employee who sued his employer for violation of CFRA after employee was terminated because he was found golfing and performing intermittent sprinkler installation/repair while he had requested time off to care for his father); *Rankins v. Verizon Communications Co.*(unpublished) 2007 WL 241154 (finding against employee who sued employer for violation of CFRA when the employee was terminated by employer for submitting false medical certification/letter for CFRA leave); *Holley v. Waddington North America, Inc.* (unpublished) 2012 WL 883134 (finding against employee who sued employer for interference with his rights under CFRA, even though employer provided the employee with over 14 months of leave).

### **SB 1383 Imposes a Significant Administrative Burden:**

Providing leave under CFRA is not as simple as just counting out 12 weeks on a calendar and providing that time off. For medical conditions, employees can take the leave in increments as small as one to two hours at a time. An employee is only required to provide an employee with "reasonable notice," which is subjective and can literally be minutes before a shift begins – leaving an employer with limited employees in a challenging situation.

Also, an employer must track the time off as "CFRA leave" or it may not count against the 12 weeks. Retroactively designating leave as "CFRA" is a risky employment practice that could lead to litigation.

Small employers and working parents do not have dedicated staff to track and document each hour an employee takes off for CFRA leave.

### **SB 1383 Adds Costs to Small Employers Even Though It Is Not Paid:**

Even though the leave required in **SB 1383** is not "paid" by the employer, that does not mean the employer will not endure added costs. The leave is "protected," meaning an employer must return the employee to the same position the employee had before going out on leave. This means holding a position open for three months or more. While an employer can temporarily fill the position with a new employee, that replacement usually comes at a premium. A replacement employee knows it is short term and, therefore, requires a premium wage, is less dedicated to the position, and often leaves for a better opportunity at a moment's notice. Also, many jobs require extensive amount of time and money to train a new employee,

adding another cost. Some employers shift the work to other existing employees, which often leads to overtime pay. And, most of the leaves of absence require employers to maintain health benefits while the employee is out.

Due to the passage of AB 5, the option to hire an independent contractor to fill the position is either extremely restricted or eliminated.

### **The 12-Weeks of Leave in SB 1383 is in Addition to Other Existing Leaves on Small Employers:**

This 12-week leave of absence on small employers cannot be viewed in isolation, but must be considered with regard to all of the other California specific leaves employers must juggle including the following: Pregnancy Disability Leave (up to four months); disability leave under Fair Employment and Housing Act (no specific amount of time – but not unlimited either. The leave provided must be considered as a “reasonable” accommodation for the disability); Worker’s Compensation injury (amount of leave based upon doctor’s recommendation); California Paid Sick Leave (minimum of 3 days); Paid leave for Organ/Bone Marrow Donation Leave (30 days/year); Jury Duty Leave (unlimited); Victim of Crime or Witness Leave (unlimited); Victim of Domestic Violence/Sexual Assault (unlimited); Emergency Duty of volunteer firefighters, reserve peace officers, or emergency rescue personnel (unlimited); Civil Air Patrol Leave (10 days/year); School Suspension Leave (unlimited); School Activities Leave (40 hours/year) .

### **For Employers with 50 or More Employees, SB 1383 Will Expand the Amount of Protected Leave an Employee May Take to Half of a Year:**

**SB 1383** changes requirements for qualifying for the California Family Rights Act (CFRA) leave by amending the definition of family member for whom the employee can take leave. This means that the Family and Medical Leave Act’s (FMLA) and CFRA’s qualifying requirements no longer conform with each other. This is a significant issue because California cannot preempt or limit the application of federal law under FMLA. In other words, simply because the employee already took leave under CFRA does not negate their ability to then qualify for FMLA leave as well.

CFRA leave provides qualifying employees with 12 weeks of job protected leave during a 12-month period for his or her own medical condition or the medical condition of his or her spouse, child or parent, or for the birth, adoption or foster care placement of a child. The federal equivalent of CFRA is FMLA. CFRA and FMLA leave normally run together, so the total time taken is a maximum of 3 months.

However, **SB 1383** greatly expands the definition of “family member” to include a child of a domestic partner, grandparent, grandchild, sibling, or domestic partner. Additionally, the bill removes the requirement that a “child” be under the age of 18 or a dependent adult child. Because a domestic partner, a child of a domestic partner, a grandparent, a grandchild, or a sibling are not family members covered under FMLA, these leaves will not coincide.

Accordingly, the employee could take leave under **SB 1383** for 3 months to care for a domestic partner, child of a domestic partner, grandparent, grandchild, or sibling, return to work, and then take another 3 months off under FMLA for the employee’s own medical condition or the medical condition of a spouse, child or parent or for the birth, adoption or foster care placement of a child.

3 months – CFRA leave for a domestic partner, child of a domestic partner, grandparent, grandchild, or sibling;

**PLUS (+)**

3 months – FMLA leave for his or her own medical condition or the medical condition of his or her spouse, child or parent, or for the birth, adoption or foster care placement of a child.

Thus, **SB 1383** creates 6 months of job protected leave for employers covered by FMLA.

Notably, an employee can take intermittent leave under CFRA and FMLA in increments as small as one hour at a time, thereby providing an extensive amount of protected time off for California employees that California employers would have to administer and track properly in order to protect themselves against potential liability. The initial intent of CFRA was to provide a balance between an individual's work life and personal life. However, this proposed change would certainly disrupt that balance and negatively impact California employers.

**SB 1383 Is Not Necessary to Implement the Budget:**

**SB 1383** does not impact the budget in any way. It is a policy change with no appropriation.

For these reasons, we respectfully **OPPOSE SB 1383** as a **JOB KILLER**.

Sincerely,



Jennifer Barrera  
Executive Vice President  
California Chamber of Commerce

**SUBJECT: AB 3216 (KALRA/GONZALEZ) EMPLOYMENT LEAVE: AUTHORIZATION  
OPPOSE/JOB KILLER – AS AMENDED JUNE 4, 2020**

California Chamber of Commerce and the organizations listed above respectfully **OPPOSE AB 3216 (Kalra/Gonzalez)**, as amended June 4, 2020, which has been labeled a **JOB KILLER**.

**AB 3216** imposes staggering, significant and unprecedented new requirements on businesses of all sizes in California during a time of crisis when they can least afford it. These include drastic new family and medical leave requirements, significant new paid sick leave requirements, and unprecedented (and likely unconstitutional) “right of recall” requirements for certain businesses.

We certainly acknowledge that these are unprecedented times, and that many employees are suffering from lack of work, reduction in hours, and other financial difficulties as a result of this crisis and government-mandated shutdowns.

We certainly agree that the short- and long-term health of all Californians should be everyone’s priority and businesses throughout California are doing everything they can to protect their employees while still providing essential services and goods. Many businesses and their owners are themselves casualties of the necessary economic shutdown. They cannot be expected to shoulder a new employer-financed social safety net, with expensive new mandates, at precisely the moment when small businesses are shuttering, employee hours are cut, and uncertainty about the future is the new normal.

Therefore, we do not believe that the approach proposed in **AB 3216** is the proper course of action at this time.

**AB 3216 Expands the California Family Rights Act to Cover Leave for a Host of New Reasons**

**AB 3216** proposes to expand the California Family Rights Act (CFRA) to cover a number of new leave entitlements related to states of emergency, including school and childcare closures, being subject to a quarantine or isolation order, and being advised to self-quarantine. This leave would also extend to such broad and undefined categories of “being a member of a vulnerable population at high risk,” or living with or being responsible for providing care for a family member who is a member of a vulnerable population.

Combined with proposed changes contained in budget trailer bill language and passed by both houses of the Legislature, CFRA would now apply to employers of any size and would therefore especially burden small employers. Therefore, if the budget trailer bill language is adopted, the mandate established by **AB 3216** will apply to all employers, even the smallest employers in the state.

In addition, leave for these new qualifying reasons would put CFRA out of conformance with the federal Family and Medical Leave Act (FMLA). Therefore, an employee could potentially be entitled to 12 weeks of job-protected leave under the CFRA (which would now apply to all employers, regardless of size), and 12 weeks of leave under the FMLA– for a staggering total of **24 weeks** of job protected leave, which would create a tremendous burden on employers.

Moreover, as discussed below the new leave under **AB 3216** comes on the backs of numerous (and in most cases paid) leave entitlements enacted at the federal, state and local levels in recent weeks in direct response to the COVID-19 crisis.

**AB 3216 Enacts a New Employer-Funded Emergency Paid Sick Leave Entitlement**

**AB 3216** requires all employers to provide employees with an additional 56 hours or 7 days of paid sick leave to use for any specified purpose related to a public health emergency and/or state of emergency. This is in addition to the three days of paid sick leave already required under existing law. Qualifying reasons for this leave include (1) when the employee is subject to a federal, state or local public health order, (2) to care for a family member subject to such an order, (3) to care for a child or family member if a school or place of care is closed, (4) when the place of employment is closed by the employer or a public health official due to a state of emergency, and (5) when the employee is subject to a federal, state, or local evacuation order.



This new mandate differs and is broader in scope from similar emergency paid sick leave requirements enacted at the federal, state, and local level in recent weeks.

For example, the federal Families First Coronavirus Response Act (FFCRA) provides for emergency paid sick leave and emergency family and medical leave only where the employee is unable to work or telework due to specified qualifying reasons. The terms under the FFCRA have engendered numerous guidance and regulations from the Department of Labor clarifying the meaning of terms and operation of the statutory provisions. **AB 3216** provides little, if any, clarification of the meaning of important terms and the circumstances under which the employee would qualify for paid sick leave. In addition, the FFCRA (as interpreted by the DOL) does not apply where the employer is closed down directly or indirectly by an emergency shutdown order because there is no work available for the employee. By contrast, **AB 3216** specifically provides that an employee is entitled to paid sick leave even when the “place of employment is closed,” and when the employer has no work for them to perform.

Most importantly, the new emergency paid sick leave mandated by **AB 3216** is completely and 100% employer funded. Requiring an employer who is suffering economic catastrophe (and is likely closed down) during a state of emergency to provide significant paid sick leave is simply not realistic or feasible.

And finally, states of emergency regularly last for significant periods of time, long past the time of a pressing emergency. For example, the emergencies declared on November 8, 2018 and October 27, 2019 due to wildfires and extreme weather conditions in Ventura County and other counties remain in effect today, long after the fire season has ended. On December 23, 2019, Governor Newsom terminated more than 70 *ongoing* states of emergency that had been declared at various times over the last decade, from January 27, 2011 to November 30, 2018. Accordingly, this new paid sick leave mandate is not “limited” to defined periods of time, but rather will be an ongoing mandate long after the pressing emergency exists.

### **The Timing Could Not Be Worse - California Employers Can Ill Afford Yet Additional Leave Mandates**

California employers are certainly sympathetic towards their employees who are unable to work due to COVID-19 related (or similar emergency) reasons experienced by the employee or a family member. However, the entirely new leaves proposed in **AB 3216** come on the heels of numerous leave provisions under existing law, including several new mandates enacted at the federal, state, and local levels in recent weeks.

At the federal level, the Families First Coronavirus Protection Act (FFCRA), which went into effect on April 1, already provides for various forms of job-protected and paid leave for employees impacted by COVID-19. The law provides for up to 80 hours of emergency paid sick leave for a variety of COVID-19 related reasons, including when the employee or a family member has been quarantined or has need for care due to COVID-19. In addition, the FFCRA provides for 12 weeks of job-protected leave (10 of which are paid) for any employee who has worked at least 30 days for a covered employer to care for a child who is home due to school or childcare closures. Notably, emergency family and medical leave under the FFCRA runs concurrently with leave a covered employee may be entitled to under the FMLA.

Most importantly, the federal law recognizes the new burden created by this mandate, and therefore provides employers with ***a tax credit to offset all of their costs***. Given the prompt action by the federal government, additional state-only protected leaves, such as that proposed in **AB 3216**, with their related costs and litigation risks, are unnecessary and duplicative.

In addition, Governor Newsom recently issued an executive order to provide 80 hours of paid sick leave for certain food sector workers, many of whom would also be covered by **AB 3216**. On top of that, a number of local jurisdictions in California (including Los Angeles, San Francisco, San Jose and Emeryville) have enacted their own COVID-19 paid sick leave requirements in recent weeks, many of which apply to employers not already covered by the federal FFCRA.

Even before the COVID-19 crisis, California had numerous protected, overlapping leaves, which already burden employers. In addition to the new federal, state and local COVID-19 leave laws discussed above, there are numerous additional state leave proposals this year, including budget trailer bill language, to further expand these leave mandates. The continued mandates placed on California employers to provide



employees with numerous rights to protected leaves of absences is simply overwhelming, especially during this current unprecedented crisis when many employers have been ordered to close their doors and can least afford it.

### **AB 3216 Proposes a New Unworkable and Constitutionally-Suspect “Right of Recall” Requirement**

**AB 3216** establishes a new “right to recall” requirement that applies to certain hotels, event centers, airport hospitality operations, or the provision of building services to office, retail, or other commercial buildings. These rights also extend where an employer goes out of business and there is a change in control or ownership.

In the midst of the current crisis, California employers have been struggling simply to continue operations and avoid going completely out of business – which means no workers would have any jobs. Employers have also adjusted their operations in order to retain as many of their workers as possible during these challenging times. This proposal would completely eliminate the crucial flexibility that businesses need to navigate crises such as this and preserve jobs over the long term.

Among other things, **AB 3216** requires covered employers to offer to recall laid-off workers, and to provide such employees at least 10 business days to respond. This is completely unworkable and would serve to stifle and delay a business returning to normal operations following such an emergency. Requiring recall based on seniority also hurts young workers and newer skilled workers, and eliminates the judgment and flexibility employers need to best structure their operations.

The “right of recall” provisions of **AB 3216** also raise significant legal and constitutional concerns. Any law that substantially impairs pre-existing contractual obligations violates the contract clauses of both the federal and California constitutions. The statutory right of recall contained in **AB 3216** is legally suspect and would likely be struck down as violating the contracts clause. In addition, several aspects of the proposal may be preempted by federal law, including federal labor law. Similar proposals have already been proposed, and in some cases, enacted at the local level in recent weeks and are likely to be the subject of protracted litigation over these same issues.

The answer to the current crisis (or future similar emergencies) is not to further weaken struggling employers with novel and burdensome legal requirements.

### **Conclusion**

We understand that these are unprecedented times and that policymakers are striving to ensure that constituents and employees are provided certainty and protection during the current crisis and similar emergencies that may develop in the future. However, it is critical to remember that many businesses and their owners are themselves casualties of this economic shutdown. They cannot be expected to shoulder a new employer-financed social safety net, with expensive new mandates, at precisely the moment when small businesses are shuttering, employee hours are cut, and there is so much uncertainty about the future.



For these reasons, we respectfully **OPPOSE AB 3216** as a **JOB KILLER**.

cc: Stuart Thompson, Office of the Governor  
Justin Delacruz, Office of Assembly Member Kalra  
Megan Lane, Assembly Committee on Labor and Employment  
Lauren Prichard, Assembly Republican Caucus



**ASSEMBLY FLOOR ALERT**  
**AB 2043 – OPPOSE**

June 8, 2020

TO: Members, California State Assembly  
FROM: Rob Moutrie,   
Policy Advocate,  
California Chamber of Commerce  
Michael Miiller,   
Director of Government Relations  
California Association of Winegrape Growers

Agricultural Council of California  
American Pistachio Growers  
California Apple Commission  
California Blueberry Association  
California Blueberry Commission  
California Citrus Mutual  
California Cotton Ginners and Growers Association  
California Farm Bureau Federation  
California Farm Labor Contractors Association  
California Fresh Fruit Association  
California League of Food Producers  
California Manufacturers & Technology Association  
California Professional Association of Specialty Contractors.  
California Rice Commission  
California Tomato Growers Association  
Family Winemakers of California  
Far West Equipment Dealers Association  
Olive Growers Council of California  
United Ag  
Western Agricultural Processors Association  
Western Growers Association  
Western Plant Health Association  
Wine Institute

**SUBJECT: AB 2043 (R. RIVAS) OCCUPATIONAL HEALTH AND SAFETY,  
AGRICULTURAL WORKERS: COVID-19  
OPPOSE – AS AMENDED JUNE 4, 2020**

The California Chamber of Commerce, California Association of Winegrape Growers and the organizations listed above are respectfully **OPPOSED** to **AB 2043 (R. Rivas)** as amended June 4, 2020 and ask for your NO vote. We fully agree with the intent of this bill as our employees are the heart of our industry and we care deeply about their safety and health. However, by codifying evolving guidelines, creating an overlaying



standard, and relying on county guidelines as well, this bill would create confusion in the workplace as employers try to determine what is required of them to best protect employees. While this is not the intent of the bill, it would ultimately put employees at risk.

The negative impacts resulting from the confusion created by this bill would not only effect agricultural employers but also those companies throughout our supply chain. Our primary concerns are listed below:

**This bill proposes an inflexible standard when instead, requirements need to evolve as we learn more about COVID-19.**

Federal, state, and local agencies have been constantly revising and tweaking their health guidance as our understanding of COVID-19 has evolved. Such evolutions, though difficult to keep up with, are somewhat necessary with such a new and grave hazard. However, by requiring Cal/OSHA to pass an emergency standard that would be difficult to change down the road, AB 2043 misses this critical element of COVID-19: Our evolving knowledge and best practices.

**Existing guidance is already enforceable by Cal/OSHA.**

As Cal/OSHA states they already have full authority to cite employers for not implementing guidance, this bill is unnecessary and would not provide greater safety for workers. To the contrary it would only create confusion by subjecting employers to guidelines that do not apply to their workplace.

For example, this bill would require packing houses to comply with a guidance for employees handling livestock. Additionally, it would apply a food processing guidance to vineyard operations. This makes no sense.

**Cal/OSHA Safety & Health Standards Board is considering adopting a standard.**

The Board has already been formally petitioned to adopt an emergency regulation related to COVID-19 in the workplace. The Board does not need this bill to adopt COVID-19 workplace standard as it is required by law to act on the petition.

**AB 2043** is unnecessary and would not improve safety. Instead, this bill would create workplace confusion which could ultimately put workers at risk.

For these reasons, we are **OPPOSED** to **AB 2043**.

cc: Stuart Thompson, Office of the Governor  
Barbara Mohondro, Office of Assembly Member R. Rivas  
Megan Lane, Assembly Committee on Labor and Employment  
Lauren Prichard, Assembly Republican Caucus



June 5, 2020

The Honorable Robert Rivas  
California State Assembly  
State Capitol, Room 5158  
Sacramento, CA 95814

**SUBJECT: AB 2043 (RIVAS) OCCUPATIONAL HEALTH AND SAFETY,  
AGRICULTURAL WORKERS: COVID-19  
OPPOSE AS AMENDED JUNE 4, 2020**

Dear Assembly Member Rivas:

The organizations listed below respectfully **OPPOSE** your **AB 2043 (R. Rivas)**. The most recent amendments move in the wrong direction by mandating compliance with overlapping, conflicting and unknown requirements.

We entirely agree with the need for worker safety and are heavily engaged in this effort. This is why the industry has been working closely with Cal/OSHA and county health officers to develop statewide guidelines that were released in the beginning of April.

We continually share with ag employers the various guidance documents from the Center for Disease Control and Prevention, Cal/OSHA, U.C. Davis Western Center for Agricultural Health and Safety, California county health officers, and much more. Ag employers comply with the strictest guidelines, and are making every effort to keep employees safe. We are also reaching out to ag workers through a variety of means including public service announcements on Spanish radio stations advising workers on the need to stay healthy.

However, despite our engagement and best efforts to comply with evolving federal, state, and local guidance – we are very concerned that this bill and is unnecessary will not improve safety. And, the negative impacts resulting from the confusion created by this bill will not only effect Ag employers but also those companies throughout our supply chain. Below are our primary concerns with the bill as amended on June 4, 2020.

**Existing Guidance Is Already Enforceable by Cal/OSHA.**

As employers, labor groups, and Cal/OSHA staff all acknowledged at the May 21, 2020 Cal/OSHA Safety and Health Standards Board Meeting, the present guidance documents are enforceable and citable. The Cal/OSHA Interim General Guidelines on Protecting Workers from COVID-19 specifically states, ***“If it is a workplace hazard, then employers must implement infection control measures, including applicable and relevant recommendations from the Centers for Disease Control and Prevention (CDC), Interim Guidance for Businesses and Employers to Plan and Respond to Coronavirus Disease 2019 (COVID-19), and Coronavirus Disease 2019 (COVID-19): How to Protect Yourself & Others. For most California workplaces, adopting changes to their IIPP is mandatory since COVID-19 is widespread in the community.*** As Cal/OSHA can (and is) citing employers based on this guidance, this bill is unnecessary and will not provide greater safety for workers.



## **The Cal/OSHA Safety and Health Standards Board is Already Considering Adoption of a Standard**

The Board is already considering a petition to adopt an emergency regulation related to COVID-19 in the workplace. The Board is required to consider and respond to that petition under Sections 142.2 and 147 of the Labor Code. That process is underway and – though we have concerns about implementing an unchanging, hard-and-fast rule (see below) - we also believe that petition makes this bill's push unnecessary.

Simply stated, the Board does not need this bill to act on COVID-19 – it already has the vehicle to do so in front of it.

## **Adoption of a Standard is Ill-suited to the Rapidly-Changing World of COVID-19.**

Federal, state, and local agencies have been constantly revising and tweaking their health guidance as our understanding of COVID-19 has evolved. Such evolutions, though difficult to keep up with, are somewhat necessary with such a new and grave hazard. However, by requiring Cal/OSHA to pass an emergency standard, AB 2043 misses this critical element of COVID-19: Our evolving knowledge and best practices.

Consider the following changes in guidance in the last several weeks:

- At the state level alone, COVID-19 guidance was updated at least five times during May 2020.
- Cal/OSHA issued a Daily Checklist for Agricultural Employers on May 8<sup>th</sup>.
- Cal/OSHA issued a General Checklist for Agricultural Employers which was updated on May 26<sup>th</sup>.
- Cal/OSHA updated their "Interim General Guidelines on Protecting Workers from COVID-19" on May 14<sup>th</sup>.
- Cal/OSHA posted a new video guidance on May 20<sup>th</sup>.

All of these updates are visible on Cal/OSHA's COVID-19 website. Though some of these changes may be smaller than others, the central issues remain – there is value in this flexibility for Cal/OSHA.

In contrast, unlike IIPP guidance, a standard cannot be revised quickly. Therefore, AB 2043's goal of compelling Cal/OSHA to adopt a standard doesn't fit the needs of COVID-19. Moreover, it will not add enforcement because Cal/OSHA already has enforcement power based on the present guidance – which Cal/OSHA staff acknowledged at the May 21, 2020 Cal/OSHA Safety and Health Standards Board meeting.

As a result, AB 2043 will only serve to waste limited public resources (in the form of Cal/OSHA's staff time in crafting a regulation) and private resources (as businesses try to figure out conflicting standards).

## **Lack of Conformity – Which Would Benefit Both Employees and Employers**

As written, the bill now mandates compliance with at least four different requirements:

- CDC guidance (by reference to the Cal/OSHA Interim General Guidelines on Protecting Workers from COVID-19).
- Cal/OSHA guidance documents, which are subject to change.
- A standard approved by the Standard's Board, which once approved will be impossible to change on a timely basis.
- And county health orders, which are different from county to county and are subject to change.

This makes it impossible to fully assess the potential breadth and scope of this bill.

We are in agreement with the author's statements in the Labor and Employment Committee that conformity is important so that employers can determine what protections must be in place and employees can demand that they receive this protection. However – this bill does not presently create conformity among competing and evolving federal, state, and local standards. Instead, the most recent amendments explicitly enshrine the ability of counties to implement different, more stringent standards. As such, this will not create conformity.

### **Dissemination Requirements are Vague and Potentially Costly.**

We are very concerned that the bill defines "Guidance documents" very broadly. As currently defined by the bill, "documents disseminated by the division," could be in the form of a handwritten note from a Cal/OSHA safety engineer that provides additional instructions beyond the guidance on Cal/OSHA's website.

Additionally, because COVID-19 guidance is being constantly improved, AB 2043's requirement of disseminating information and targeted outreach whenever guidance is updated seems difficult to implement and potentially costly for Cal/OSHA. These costs and staff time could be directly spent on enforcement or investigating workplace hazards, which we believe would be more helpful to worker safety than mandating an update at every change of guidance.

### **Insertion of Already-Enforceable Guidance Into the Labor Code Will Unnecessarily Create Additional Potential PAGA Liability**

By including an obligation for businesses to comply with the Cal/OSHA guidance in the Labor Code, AB 2043 would create the possibility of Private Attorney General Act (PAGA) lawsuits to enforce compliance with these evolving federal, state and local guidelines, orders, and standards. Such litigation risk does not make employees safer (as Cal/OSHA can already enforce on this front), and will create existential risks for California's businesses as employers struggle to rebuild from this economic crisis..

### **Summary**

We are very concerned that this bill is unnecessary and will not improve safety. Instead, this bill would create workplace confusion which could ultimately put workers at risk.

Thank you for your consideration of the concerns raised in this letter.



June 5, 2020

The Honorable Lorena Gonzalez  
California State Assembly  
State Capitol, Room  
Sacramento, CA 95814

Subject: AB 196 (Gonzalez) – Conclusive WC Presumption for COVID-19  
**OPPOSE**

Dear Assemblymember Gonzalez,

The organizations listed below are respectfully **OPPOSED** to your **AB 196**, which would create a permanent and indisputable legal presumption that all COVID-19 infections suffered by “essential workers” are work related for purposes of workers’ compensation benefit eligibility. This proposal violates any reasonable standard of fairness that could possibly be expected by employers across our state, and it would divert vital resources away from recovering businesses and stretched state and local budgets. We respectfully urge you to abandon this legislation.

Many of the undersigned organizations delivered a letter dated 4/26/2020 to Governor Gavin Newsom and the legislative leaders in both the Senate and Assembly. The purpose of that letter was to provide a common voice to the concerns from all corners of California’s public and private sectors about the possibility of shifting the medical and social costs of this pandemic onto California’s workers’ compensation system through the enactment of a workers’ compensation presumption. We believe that the existing workers’ compensation system is certainly capable of effectively and efficiently meeting the needs of workers who are indeed infected while in the course and scope of their employment. In fact, there hasn’t even been a clearly established “problem” with the operation of the current system relative to COVID-19.

Notwithstanding employer concerns or a demonstrated problem with acceptance of claims, Governor Newsom issued Executive Order N-62-20 on May 6 to establish a rebuttable presumption for confirmed positive cases of COVID-19 among any California worker who reported to work outside of their home between March 19 and July 5. With such a broad presumption now in place for workers during the period in which the greatest number of Californians were ordered to stay home, we urge the legislature to thoughtfully consider the problems that need to be addressed beyond the broad scope of the Executive Order. Expansion of such extraordinary measures take California’s workers’ compensation system further away from its intended design and purpose and shift greater liability for the pandemic onto California employers.

AB 196 proposes a broad-based permanent and conclusive presumption for all essential workers. Below we have outlined our major concerns with the policy as contained in AB 196.

### **Basics of California Workers’ Compensation**

California’s workers’ compensation system is a no-fault, employer-funded system that must be liberally-construed by the courts with the purpose of extending benefits to workers who claim an injury or illness is work-related. This means that California’s system has been designed and consistently operates in a manner that broadly extends benefits for injuries and illnesses that occur on the job. Under existing rules, there needs to be some medical evidence that the illness was related to work. Therefore, employers are currently accepting COVID-19 claims, but some claims are likely to be denied because they are simply not work related or even lack any diagnosis of COVID 19. California law also requires employers to pay for health care services up to \$10,000 while the claim is reviewed, even if it is ultimately denied.



California's system is specifically designed to address workplace injury and illness and is limited to that sole purpose. To meet that important threshold, workers need to establish some reasonable factual basis for asserting workplace causation of an injury or illness. With a no-fault standard that awards benefits without consideration of negligence, and a statutory directive that the courts must construe the state's laws in favor of providing benefits, California workers' compensation claims are accepted by employers at a rate of roughly 90%.

Employers in California's workers' compensation system, which had a cost of \$23.5 Billion in 2018, are approximately 67% insured and 30.2% self-insured (the State of California makes up 2.8%). It is important to note that for many large employers and nearly all public entities, the cost of workers' compensation is largely self-funded and comes directly out of those organizations' annual budgets.

### **Conclusive v. Rebuttable Presumption**

The function of a legal presumption in workers' compensation law is to shift the burden of proof from the employee to the employer. Currently a worker claiming work-related COVID-19 would need to offer some reasonable basis to support their claim that they contracted COVID-19 at work, or that their work put them at a special risk for contracting COVID-19, and their claim would be evaluated as described above. A presumption, whether rebuttable or conclusive, would shift the burden onto the employer and require them to *prove that the employee did not get sick at work*.

When the burden of proof is shifted to the employer through a presumption the law also needs to establish what standard overcomes the presumption. In other words, what legal standard must an employer meet in order to demonstrate under the law that an infection is not work related and therefore not eligible for workers' compensation benefits?

A "**conclusive presumption**" would clearly declare, as a matter of law, that employers must provide workers' compensation benefits for eligible employees even if the evidence clearly indicates that the infection did not occur at work.

The California Department of Public Health (CDPH) noted in their [April 8, 2020 Press Release](#) that, "Since COVID-19 is moving rapidly within the community, health care workers now appear just as likely, if not more so, to become infected by COVID-19 outside the workplace." Nearly every day since that press release CDPH has noted in their daily update that hospital workers continue to contract COVID-19 both through the workplace and community exposure. A conclusive presumption, or anything that operates like a conclusive presumption, would unquestionably push these non-industrial infections into the workers' compensation system.

A "**rebuttable presumption**" would shift the burden of proof onto employers as described above but wouldn't allow benefits for infections that could be proven to be unrelated to work. This would be accomplished by establishing a standard of evidence for the employer to meet – typically in a rebuttable presumption the burden can be overcome by establishing non-industrial causation through a preponderance of the evidence. Even under a rebuttable standard we expect that employers would still ultimately provide workers' compensation benefits for a substantial number of COVID-19 infections that are not work related.

AB 196 establishes a conclusive presumption that would inarguably shift nonoccupational COVID-19 infections into California's workers' compensation system. This is violative of 100 years of common understanding of the purpose of the workers' compensation system, and quite possibly unconstitutional.

### **Time Limited**

Any policy proposal that fundamentally alters how our workers' compensation system works relative to COVID-19 should be considered a temporary and extraordinary measure with a clearly defined end date. Even under the statewide shelter-in-place order it would seem, again based on the CDPH press release linked above, that even



employees with an elevated occupational risk are prone to contract COVID-19 through community spread. As California re-opens in stages and people across the state return to their lives the evidence would suggest that community spread is and will continue be a probable source of COVID-19 infections.

AB 196 proposes to enact a broad-based conclusive legal presumption that forces employers to pay for infections that did not occur at work, and it does so in perpetuity. Our coalition is opposed to this sort of broad and permanent shift of pandemic-related costs onto a system that was designed to treat and compensate workers hurt on the job. Additionally, AB 196 maintains the legal presumption for 90 days after termination of service from the employer.

### **Scope of Workers**

Many workers are doing heroic work at this time to care for the sick, produce food and other essentials, and make deliveries so most Californians can stay at home. At the same time, continuation of work during the shelter-in-place directive, by itself, should not be used as a proxy for exposure risk. Workers face a wide range of risk, from front-line, public-facing workers, to those who work in relative isolation and adequate social distancing.

Therefore, any suspension of existing causation standards should be targeted to workers who face a demonstrably higher risk of exposure. We oppose proposals that would apply a presumption for COVID-19 to every worker that has reported to work outside of the home during the statewide shelter-in-place order, because such a policy would significantly increase the number of non-work claims shifted into the workers' compensation system.

Presumption policy typically applies to small subsets of workers and injuries / illnesses and we believe that a narrow scope is appropriate here, as well. AB 196 takes the opposite approach and grants a conclusive presumption based on inclusion on a "essential workers" list from a March executive order that was issued under very different circumstances than exist now or might exist into the future.

### **Looking Ahead**

These are important issues and we commend your attention to these matters as you, your colleagues, and your staff work diligently to keep California on track. However, any legislative proposal needs to focus on extending benefits for *work-related* injuries and illnesses. We believe AB 196 fundamentally violates this premise and we oppose the bill for that reason.



**SUBJECT: AB 3216 (KALRA/GONZALEZ) EMPLOYMENT LEAVE: AUTHORIZATION  
OPPOSE/JOB KILLER – AS AMENDED MARCH 12, 2020**

California Chamber of Commerce and the organizations listed above respectfully **OPPOSE AB 3216 (Kalra/Gonzalez)**, as amended May 12, 2020, which has been labeled a **JOB KILLER**.

**AB 3216** imposes staggering, significant and unprecedented new requirements on businesses of all sizes in California during a time of crisis when they can least afford it. These include drastic new family and medical leave requirements, significant new paid sick leave requirements, and unprecedented (and likely unconstitutional) “right of recall” requirements for certain businesses. Moreover, **AB 3216** makes significant changes to several areas of the law – including the California Family Rights Act (CFRA), Pregnancy Disability Leave (PDL), and Paid Family Leave (PFL) – which have nothing to do with the current crisis and are changes that advocates have long sought. These permanent and far-reaching changes are now being proposed under the cover of attempting to protect workers during the COVID-19 crisis.

We certainly acknowledge that these are unprecedented times, and that many employees are suffering from lack of work, reduction in hours, and other financial difficulties as a result of this crisis and government-mandated shutdowns.

We certainly agree that the short- and long-term health of all Californians should be everyone’s priority and businesses throughout California are doing everything they can to protect their employees while still providing essential services and goods. Many businesses and their owners are themselves casualties of the necessary economic shutdown. They cannot be expected to shoulder a new employer-financed social safety net, with expensive new mandates, at precisely the moment when small businesses are shuttering, employee hours are cut, and uncertainty about the future is the new normal.

Therefore, we do not believe that the approach proposed in **AB 3216** is the proper course of action at this time.

**AB 3216 Attempts to Enact a “Wish List” of Permanent Changes to the Law that Advocates Have Sought Unsuccessfully for Years – Under the Cover of the Current Crisis**

**AB 3216** proposes a number of changes to various leave laws that worker advocates have been pushing for a number of years. These efforts have been opposed by the business community over concerns regarding the resulting burdens to employers and have been unsuccessful thus far. Now, **AB 3216** attempts to include these same policy proposals – many of which have nothing to do with the current crisis - under the guise of this bill.

These proposed unrelated changes include the following:

- The bill amends CFRA (not just the new emergency family and medical leave requirement) to apply to employers of any size. CFRA currently applies to employers with 50 or more employees within 75 miles of the worksite. This proposal to lower the 50-employee threshold in CFRA has been an agenda item for advocates for many years. California recently enacted the New Parent Leave Act (NPLA) which, after significant legislative debate was enacted to apply to employers with 20 or more employees. This bill completely eliminates that new law and instead applies *all* of CFRA to employers of any size.
- The bill expands the categories of “family members” under CFRA to include leave to care for a grandparent, grandchild, or sibling. Advocates have been attempting to expand CFRA in this manner for well over a decade.
- The bill expands employer coverage under California’s Pregnancy Disability Leave (PDL) law from 5 employees to one or more employees – which has no apparent relationship for leave related to the current crisis.
- The bill eliminates the provision of existing law under the Paid Family Leave (PFL) program that provides an employee is not eligible for leave if another family member is ready, willing and able to provide care.
- The bill eliminates the provision of existing law under the PFL that allows an employer to require the employee to take up to two weeks of earned but unused vacation prior to the receipt of PFL benefits. This has long been a target for elimination by worker advocates well before this crisis.

It is one thing to generate a conversation about the need to develop new policies that apply to workers during a state of emergency such as COVID-19. That is a conversation the Legislature can and should be having. However, it is disingenuous and another thing altogether to use the cover of the current crisis to propose a worker advocate “wish list” of leave-related proposals that they have sought unsuccessfully for years. At a minimum these proposals should be eliminated from **AB 3216**. Continued debate over these long-standing issues can continue after this crisis.

### **AB 3216 Enacts a New 12-Week Emergency Family and Medical Leave Entitlement That Applies to All Employers Regardless of Size**

**AB 3216** proposes a brand-new 12-week emergency leave entitlement for family care and medical leave taken because of a “state of emergency,” including a public health emergency declared by a local, state, or federal authority.

This new leave would apply to employers of any size and would therefore especially burden small employers. Moreover, this new emergency leave would apply to all employees, regardless of how long they have been employed or how many hours they have worked for the employer. By contrast, CFRA applies to employees who have been employed for at least 12 months and who have worked at least 1,250 hours during the previous year. Therefore, on day one an employee would immediately be entitled to 12 weeks of job-protected emergency leave. Therefore, the mandate established by **AB 3216** will apply to all employers, even the smallest employers in the state.

Therefore, **AB 3216** would provide for 12-weeks of job protected emergency leave in addition to 12 weeks of leave under the CFRA (which now would apply to all employers, regardless of size). This would result in a total of 24 weeks of leave. Moreover, while the bill purports that the leave under this bill and the federal FMLA shall not exceed 24 weeks, this language is meaningless and has no effect. As the Legislature is well aware from looking at this issue over the years, California cannot mandate that state leave runs concurrently with the FMLA – that requires an act of Congress or a regulatory change at the federal level. Therefore, under **AB 3216** an employee could potentially be entitled to 12 weeks of emergency leave, 12 weeks of leave under CFRA, and 12 weeks of leave under the FMLA – for a staggering total of **36 weeks** of job protected leave, which would create a tremendous burden on employers.

Moreover, as discussed below the new leave under **AB 3216** would be in addition to numerous (and in most cases paid) leave entitlements enacted at the federal, state and local levels in recent weeks in direct response to the COVID-19 crisis.

### **AB 3216 Enacts a New Employer-Funded Emergency Paid Sick Leave Entitlement**

**AB 3216** requires all employers to provide employees with at least 80 hours or 10 days of paid sick leave to use for any specified purpose related to a “state of emergency.” Qualifying reasons for this leave include (1) when the employee is subject to a federal, state or local public health order, (2) to care for a family member subject to such an order, (3) to care for a child or family member if a school or place of care is closed, (4) when the place of employment is closed by the employer or a public health official due to a state of emergency, and (7) when the employee is subject to a federal, state, or local evacuation order.

This new mandate differs and is broader in scope from similar emergency paid sick leave requirements enacted at the federal, state, and local level in recent weeks – and will likely be in addition to all of these other paid leave requirements.

For example, the federal Families First Coronavirus Response Act (FFCRA) provides for emergency paid sick leave and emergency family and medical leave only where the employee is “unable to work or telework” due to specified qualifying reasons. **AB 3216** does not even specify that employee must be unable to work due to the qualifying reasons in order to take the leave. Moreover, the terms under the FFCRA have engendered numerous guidance and regulations from the Department of Labor clarifying the meaning of terms and operation of the statutory provisions. **AB 3216** provides little, if any, clarification of the meaning of important terms and the circumstances under which the employee would qualify for paid sick leave. In addition, the FFCRA (as interpreted by the DOL) does not apply where the employer is closed down directly or indirectly by an emergency shutdown order because there is no work available for the employee. By contrast, **AB 3216** specifically provides that an employee is entitled to paid sick leave even when the “place of employment is closed,” and when the employer has no work for them to perform.

Most importantly, the new emergency paid sick leave mandated by **AB 3216** is completely and 100% employer funded. Requiring an employer who is suffering economic catastrophe (and is likely closed down) during a state of emergency to provide significant paid sick leave is simply not realistic or feasible.

And finally, states of emergency regularly last for significant periods of time, long past the time of a pressing emergency. For example, the emergencies declared on November 8, 2018 and October 27, 2019 due to wildfires and extreme weather conditions in Ventura County and other counties remain in effect today, long after the fire season has ended. On December 23, 2019, Governor Newsom terminated more than 70 *ongoing* states of emergency that had been declared at various times over the last decade, from January 27, 2011 to November 30, 2018. Accordingly, this new paid sick leave mandate is not “limited” to defined periods of time, but rather will be an ongoing mandate long after the pressing emergency exists.

## **The Timing Could Not Be Worse - California Employers Can't Afford Yet Additional Leave Mandates**

California employers are certainly sympathetic towards their employees who are unable to work due to COVID-19 related (or similar emergency) reasons experienced by the employee or a family member. However, the entirely new leaves proposed in **AB 3216** are in addition to numerous leave provisions under existing law, including several new mandates enacted at the federal, state, and local levels in recent weeks.

The new leaves under **AB 3216** would likely be in addition to numerous (and in most cases paid) leave entitlements enacted at the federal, state and local levels in recent weeks in direct response to the COVID-19 crisis.

At the federal level, the Families First Coronavirus Protection Act (FFCRA), which went into effect on April 1, already provides for various forms of job-protected and paid leave for employees impacted by COVID-19. The law provides for up to 80 hours of emergency paid sick leave for a variety of COVID-19 related reasons, including when the employee or a family member has been quarantined or has need for care due to COVID-19. In addition, the FFCRA provides for 12 weeks of job-protected leave (10 of which are paid) for any employee who has worked at least 30 days for a covered employer to care for a child who is home due to school or childcare closures. Notably, emergency family and medical leave under the FFCRA runs concurrently with leave a covered employee may be entitled to under the FMLA.

Most importantly, the federal law recognizes the new burden created by this mandate, and therefore provides employers with **a tax credit to offset all of their costs**. Given the prompt action by the federal government, additional state-only protected leaves, such as that proposed in **AB 3216**, with their related costs and litigation risks, are unnecessary and duplicative.

In addition, Governor Newsom recently issued an executive order to provide 80 hours of paid sick leave for certain food sector workers, many of whom would also be covered by **AB 3216**. On top of that, a number of local jurisdictions in California (including Los Angeles, San Francisco, San Jose and Emeryville) have enacted their own COVID-19 paid sick leave requirements in recent weeks, many of which apply to employers not already covered by the federal FFCRA. All of these state and local mandated leaves would likely be in addition to the new leave requirements proposed under **AB 3216**.

Even before the COVID-19 crisis, California had numerous protected, overlapping leaves, which already burden employers. In addition to the new federal, state and local COVID-19 leave laws discussed above, there are numerous additional state leave proposals this year, including budget trailer bill language, to further expand these leave mandates. The continued mandates placed on California employers to provide employees with numerous rights to protected leaves of absences is simply overwhelming, especially during this current unprecedented crisis when many employers have been ordered to close their doors and can least afford it.

## **AB 3216 Proposes a New Unworkable and Constitutionally-Suspect "Right of Recall" Requirement**

**AB 3216** establishes a new "right to recall" requirement that applies to certain hotels, event centers, airport hospitality operations, or the provision of building services to office, retail, or other commercial buildings. These rights also extend where an employer goes out of business and there is a change in control or ownership.

In the midst of the current crisis, California employers have been struggling simply to continue operations and avoid going completely out of business – which means no workers would have any jobs. Employers have also adjusted their operations in order to retain as many of their workers as possible during these challenging times. This proposal would completely eliminate the crucial flexibility that businesses need to navigate crises such as this and preserve jobs over the long term.

Among other things, AB 3216 requires covered employers to offer to recall laid-off workers, and to provide such employees at least 10 business days to respond. This is completely unworkable and would serve to stifle and delay a business returning to normal operations following such an emergency. Requiring recall based on seniority also hurts young workers and newer skilled workers, and eliminates the judgment and flexibility employers need to best structure their operations.

The “right of recall” provisions of **AB 3216** raise significant legal and constitutional concerns. Any law that substantially impairs pre-existing contractual obligations violates the contract clauses of both the federal and California constitutions. The statutory right of recall contained in **AB 3216** is legally suspect and would likely be struck down as violating the contracts clause. In addition, several aspects of the proposal may be preempted by federal law, including federal labor law. Similar proposals have already been proposed, and in some cases, enacted at the local level in recent weeks and are likely to be the subject of protracted litigation over these same issues.

The answer to the current crisis (or future similar emergencies) is not to further weaken struggling employers with novel and burdensome legal requirements.

### **Conclusion**

We understand that these are unprecedented times and that policymakers are striving to ensure that constituents and employees are provided certainty and protection during the current crisis and similar emergencies that may develop in the future. However, it is critical to remember that many businesses and their owners are themselves casualties of this economic shutdown. They cannot be expected to shoulder a new employer-financed social safety net, with expensive new mandates, at precisely the moment when small businesses are shuttering, employee hours are cut, and there is so much uncertainty about the future.

It is especially difficult for us to engage in meaningful policy discussion over these issues when the proposal at hand improperly attempts to include a laundry list of long-sought and permanent changes to California’s leave laws that had been pushed by advocates well before the current crisis.

For these reasons, we respectfully **OPPOSE AB 3216** as a **JOB KILLER**.

cc: Stuart Thompson, Office of the Governor  
Justin Delacruz, Office of Assembly Member Kalra  
Luke Reidenbach, Assembly Committee on Appropriations  
Lauren Prichard, Assembly Republican Caucus



May 29, 2020

The Honorable Lorena Gonzalez  
Chair, Assembly Committee on Appropriations  
State Capitol, Room 2114  
Sacramento, CA 95814

Dear Chair Gonzalez:

We represent organizations and public agencies who support Senate Bill (SB) 559, a bill introduced by Senator Melissa Hurtado in 2019 to address major water-related challenges in the San Joaquin Valley. As you and your colleagues consider SB 559, we want to ensure you understand that even during these challenging financial times, the investments it proposes are critical for the Valley's future and essential for Californians. SB 559 focuses on repairing a major "pinch point" in the Friant-Kern Canal (FKC) where its capacity has diminished by 60 percent, due to regional land subsidence, to achieve its two primary purposes: (1) to supply water for Valley farms and (2) to provide surface and groundwater sources of drinking water for many communities along the canal delivery system and supplied by nearby groundwater basins, including dozens of disadvantaged communities.

Last session, SB 559 sought to authorize \$400 million in state funds for the project, but that request has since been reduced to \$175 million. This is commensurate with two companion federal bills introduced by Congressman TJ Cox and Senator Dianne Feinstein to authorize \$200 million for the canal repairs; both bills are currently moving through the appropriation process and have bipartisan support. Friant Water Authority (FWA) is also working to develop the local cost share of the project. In addition to the jobs created directly by implementation of the Friant-Kern Canal Middle Reach Capacity Correction Project, the project is critically needed for preserving thousands of jobs in the southern San Joaquin Valley that will certainly disappear if land is permanently retired due to the Friant-Kern Canal's conveyance restriction.

California has been an agricultural powerhouse since the 19<sup>th</sup> century. As other industries have ground to a halt during the COVID-19 crisis, California's ag economy is one of the truly essential services during this time – not just for California, but for Americans throughout the country. Tulare and Kern counties – the two counties most severely affected by the reduced water deliveries possible from the Friant-Kern Canal – are also two of the top three agricultural counties in the United States. Addressing the canal's delivery limitations will be critical to local economic stability in the next few years as well as not causing supply disruptions for essential foods Americans need.

Thank you for your consideration of this important bill.

Sincerely,

[Signatures on following page]

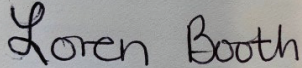




Richard Matoian, President  
American Pistachio Growers



Edwin Camp, President  
Arvin-Edison Water Storage District



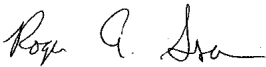
Loren Booth  
President/Owner, Booth Ranches LLC  
Chair, Hills Valley Irrigation District



Todd Sanders, Executive Director  
California Apple Commission  
California Blueberry Association  
California Blueberry Commission  
Olive Growers Council of California



Casey Creamer, President  
California Citrus Mutual



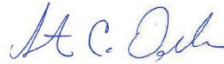
Roger Isom, President/CEO  
California Cotton Ginners and Growers Association  
Western Agricultural Processors Association



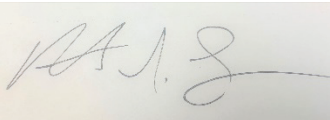
Ian LeMay, President  
California Fresh Fruit Association



Jason Phillips, Chief Executive Officer  
Friant Water Authority



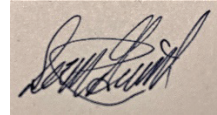
Steve Dalke, General Manager  
Kern-Tulare Water District



Matthew Leider  
Vice President, Laux Management, Inc.  
Board of Directors President, Tea Pot Dome Water  
District



Craig Wallace, General Manager  
Lindsay-Strathmore Irrigation District



Sean Geivet, General Manager  
Porterville Irrigation District  
Saucelito Irrigation District  
Terra Bella Irrigation District



Aaron Fukuda, Secretary  
Tulare Irrigation District



Renee Pinel, President/CEO  
Western Plant Health Association



## OPPOSE JOB KILLER AB 3216 (Kalra)

- **AB 3216** imposes staggering, significant and unprecedented new requirements on businesses of all sizes in California during a time of crisis when they can least afford it.
- These include drastic new family and medical leave requirements, an additional 7 days of paid sick leave, and unprecedented (and likely unconstitutional) “right of recall” requirements for certain businesses.
- These new leave obligations are 100% on the backs of businesses – unlike the federal leave law enacted in March, there are no tax credits, loans, deferrals, or other financial assistance to employers to comply with these new obligations.
- Many businesses and their owners are themselves casualties of the recent economic shutdown.
- They cannot be expected to shoulder a new employer-financed social safety net with expensive new mandates, at precisely the moment when businesses are suffering.
- The “right of recall” provisions of **AB 3216** are unnecessary, unworkable, and unconstitutional.
- The answer to the current crisis (or future similar emergencies) is not to further weaken struggling employers with novel and burdensome legal requirements.

**Vote “NO” on AB 3216**



**SUBJECT: AB 3216 (KALRA/GONZALEZ) EMPLOYMENT LEAVE: AUTHORIZATION  
OPPOSE/JOB KILLER – AS AMENDED MARCH 12, 2020**

We respectfully **OPPOSE** your **AB 3216 (Kalra/Gonzalez)**, as amended May 12, 2020, which has been labeled a **JOB KILLER**.

**AB 3216** imposes staggering, significant and unprecedented new requirements on businesses of all sizes in California during a time of crisis when they can least afford it. These include drastic new family and medical leave requirements, significant new paid sick leave requirements, and unprecedented (and likely unconstitutional) “right of recall” requirements for certain businesses. Moreover, **AB 3216** makes significant changes to several areas of the law – including the California Family Rights Act (CFRA), Pregnancy Disability Leave (PDL), and Paid Family Leave (PFL) – which have nothing to do with the current crisis and are changes that advocates have long sought. These permanent and far-reaching changes are now being proposed under the cover of attempting to protect workers during the COVID-19 crisis.

The California Chamber of Commerce certainly acknowledges that these are unprecedented times, and that many employees are suffering from lack of work, reduction in hours, and other financial difficulties as a result of this crisis and government-mandated shutdowns.

We certainly agree that the short- and long-term health of all Californians should be everyone’s priority and businesses throughout California are doing everything they can to protect their employees while still providing essential services and goods. Many businesses and their owners are themselves casualties of the necessary economic shutdown. They cannot be expected to shoulder a new employer-financed social safety net, with expensive new mandates, at precisely the moment when small businesses are shuttering, employee hours are cut, and uncertainty about the future is the new normal.

Therefore, we do not believe that the approach proposed in **AB 3216** is the proper course of action at this time.

**AB 3216 Attempts to Enact a “Wish List” of Permanent Changes to the Law that Advocates Have Sought Unsuccessfully for Years – Under the Cover of the Current Crisis**

**AB 3216** proposes a number of changes to various leave laws that worker advocates have been pushing for a number of years. These efforts have been opposed by the business community over concerns regarding the resulting burdens to employers and have been unsuccessful thus far. Now, **AB 3216** attempts to include these same policy proposals – many of which have nothing to do with the current crisis - under the guise of this bill.

These proposed unrelated changes include the following:

- The bill amends CFRA (not just the new emergency family and medical leave requirement) to apply to employers of any size. CFRA currently applies to employers with 50 or more employees within 75 miles of the worksite. This proposal to lower the 50-employee threshold in CFRA has been an agenda item for advocates for many years. California recently enacted the New Parent Leave Act (NPLA) which, after significant legislative debate was enacted to apply to employers with 20 or more employees. This bill completely eliminates that new law and instead applies *all* of CFRA to employers of any size.
- The bill expands the categories of “family members” under CFRA to include leave to care for a grandparent, grandchild, or sibling. Advocates have been attempting to expand CFRA in this manner for well over a decade.
- The bill expands employer coverage under California’s Pregnancy Disability Leave (PDL) law from 5 employees to one or more employees – which has no apparent relationship for leave related to the current crisis.
- The bill eliminates the provision of existing law under the Paid Family Leave (PFL) program that provides an employee is not eligible for leave if another family member is ready, willing and able to provide care.
- The bill eliminates the provision of existing law under the PFL that allows an employer to require the employee to take up to two weeks of earned but unused vacation prior to the receipt of PFL benefits. This has long been a target for elimination by worker advocates well before this crisis.

It is one thing to generate a conversation about the need to develop new policies that apply to workers during a state of emergency such as COVID-19. That is a conversation the Legislature can and should be having. However, it is disingenuous and another thing altogether to use the cover of the current crisis to propose a worker advocate “wish list” of leave-related proposals that they have sought unsuccessfully for years. At a minimum these proposals should be eliminated from **AB 3216**. Continued debate over these long-standing issues can continue after this crisis.

### **AB 3216 Enacts a New 12-Week Emergency Family and Medical Leave Entitlement That Applies to All Employers Regardless of Size**

**AB 3216** proposes a brand-new 12-week emergency leave entitlement for family care and medical leave taken because of a “state of emergency,” including a public health emergency declared by a local, state, or federal authority.

This new leave would apply to employers of any size and would therefore especially burden small employers. Moreover, this new emergency leave would apply to all employees, regardless of how long they have been employed or how many hours they have worked for the employer. By contrast, CFRA applies to employees who have been employed for at least 12 months and who have worked at least 1,250 hours during the previous year. Therefore, on day one an employee would immediately be entitled to 12 weeks of job-protected emergency leave. Therefore, the mandate established by **AB 3216** will apply to all employers, even the smallest employers in the state.

Therefore, **AB 3216** would provide for 12-weeks of job protected emergency leave in addition to 12 weeks of leave under the CFRA (which now would apply to all employers, regardless of size). This would result in a total of 24 weeks of leave. Moreover, while the bill purports that the leave under this bill and the federal FMLA shall not exceed 24 weeks, this language is meaningless and has no effect. As the Legislature is well aware from looking at this issue over the years, California cannot mandate that state leave runs concurrently with the FMLA – that requires an act of Congress or a regulatory change at the federal level.

Therefore, under **AB 3216** an employee could potentially be entitled to 12 weeks of emergency leave, 12 weeks of leave under CFRA, and 12 weeks of leave under the FMLA – for a staggering total of **36 weeks** of job protected leave, which would create a tremendous burden on employers.

Moreover, as discussed below the new leave under **AB 3216** would be in addition to numerous (and in most cases paid) leave entitlements enacted at the federal, state and local levels in recent weeks in direct response to the COVID-19 crisis.

### **AB 3216 Enacts a New Employer-Funded Emergency Paid Sick Leave Entitlement**

**AB 3216** requires all employers to provide employees with at least 80 hours or 10 days of paid sick leave to use for any specified purpose related to a “state of emergency.” Qualifying reasons for this leave include (1) when the employee is subject to a federal, state or local public health order, (2) to care for a family member subject to such an order, (3) to care for a child or family member if a school or place of care is closed, (4) when the place of employment is closed by the employer or a public health official due to a state of emergency, and (7) when the employee is subject to a federal, state, or local evacuation order.

This new mandate differs and is broader in scope from similar emergency paid sick leave requirements enacted at the federal, state, and local level in recent weeks – and will likely be in addition to all of these other paid leave requirements.

For example, the federal Families First Coronavirus Response Act (FFCRA) provides for emergency paid sick leave and emergency family and medical leave only where the employee is “unable to work or telework” due to specified qualifying reasons. **AB 3216** does not even specify that employee must be unable to work due to the qualifying reasons in order to take the leave. Moreover, the terms under the FFCRA have engendered numerous guidance and regulations from the Department of Labor clarifying the meaning of terms and operation of the statutory provisions. **AB 3216** provides little, if any, clarification of the meaning of important terms and the circumstances under which the employee would qualify for paid sick leave. In addition, the FFCRA (as interpreted by the DOL) does not apply where the employer is closed down directly or indirectly by an emergency shutdown order because there is no work available for the employee. By contrast, **AB 3216** specifically provides that an employee is entitled to paid sick leave even when the “place of employment is closed,” and when the employer has no work for them to perform.

Most importantly, the new emergency paid sick leave mandated by **AB 3216** is completely and 100% employer funded. Requiring an employer who is suffering economic catastrophe (and is likely closed down) during a state of emergency to provide significant paid sick leave is simply not realistic or feasible.

And finally, states of emergency regularly last for significant periods of time, long past the time of a pressing emergency. For example, the emergencies declared on November 8, 2018 and October 27, 2019 due to wildfires and extreme weather conditions in Ventura County and other counties remain in effect today, long after the fire season has ended. On December 23, 2019, Governor Newsom terminated more than 70 *ongoing* states of emergency that had been declared at various times over the last decade, from January 27, 2011 to November 30, 2018. Accordingly, this new paid sick leave mandate is not “limited” to defined periods of time, but rather will be an ongoing mandate long after the pressing emergency exists.

### **The Timing Could Not Be Worse - California Employers Can Ill Afford Yet Additional Leave Mandates**

California employers are certainly sympathetic towards their employees who are unable to work due to COVID-19 related (or similar emergency) reasons experienced by the employee or a family member. However, the entirely new leaves proposed in **AB 3216** are in addition to numerous leave provisions under existing law, including several new mandates enacted at the federal, state, and local levels in recent weeks.

The new leaves under **AB 3216** would likely be in addition to numerous (and in most cases paid) leave entitlements enacted at the federal, state and local levels in recent weeks in direct response to the COVID-19 crisis.

At the federal level, the Families First Coronavirus Protection Act (FFCRA), which went into effect on April 1, already provides for various forms of job-protected and paid leave for employees impacted by COVID-19. The law provides for up to 80 hours of emergency paid sick leave for a variety of COVID-19 related reasons, including when the employee or a family member has been quarantined or has need for care due to COVID-19. In addition, the FFCRA provides for 12 weeks of job-protected leave (10 of which are paid) for any employee who has worked at least 30 days for a covered employer to care for a child who is home due to school or childcare closures. Notably, emergency family and medical leave under the FFCRA runs concurrently with leave a covered employee may be entitled to under the FMLA.

Most importantly, the federal law recognizes the new burden created by this mandate, and therefore provides employers with ***a tax credit to offset all of their costs***. Given the prompt action by the federal government, additional state-only protected leaves, such as that proposed in **AB 3216**, with their related costs and litigation risks, are unnecessary and duplicative.

In addition, Governor Newsom recently issued an executive order to provide 80 hours of paid sick leave for certain food sector workers, many of whom would also be covered by **AB 3216**. On top of that, a number of local jurisdictions in California (including Los Angeles, San Francisco, San Jose and Emeryville) have enacted their own COVID-19 paid sick leave requirements in recent weeks, many of which apply to employers not already covered by the federal FFCRA. All of these state and local mandated leaves would likely be in addition to the new leave requirements proposed under **AB 3216**.

Even before the COVID-19 crisis, California had numerous protected, overlapping leaves, which already burden employers. In addition to the new federal, state and local COVID-19 leave laws discussed above, there are numerous additional state leave proposals this year, including budget trailer bill language, to further expand these leave mandates. The continued mandates placed on California employers to provide employees with numerous rights to protected leaves of absences is simply overwhelming, especially during this current unprecedented crisis when many employers have been ordered to close their doors and can least afford it.

### **AB 3216 Proposes a New Unworkable and Constitutionally-Suspect “Right of Recall” Requirement**

**AB 3216** establishes a new “right to recall” requirement that applies to certain hotels, event centers, airport hospitality operations, or the provision of building services to office, retail, or other commercial buildings. These rights also extend where an employer goes out of business and there is a change in control or ownership.

In the midst of the current crisis, California employers have been struggling simply to continue operations and avoid going completely out of business – which means no workers would have any jobs. Employers have also adjusted their operations in order to retain as many of their workers as possible during these challenging times. This proposal would completely eliminate the crucial flexibility that businesses need to navigate crises such as this and preserve jobs over the long term.

Among other things, **AB 3216** requires covered employers to offer to recall laid-off workers, and to provide such employees at least 10 business days to respond. This is completely unworkable and would serve to stifle and delay a business returning to normal operations following such an emergency. Requiring recall based on seniority also hurts young workers and newer skilled workers, and eliminates the judgment and flexibility employers need to best structure their operations.

The “right of recall” provisions of **AB 3216** raise significant legal and constitutional concerns. Any law that substantially impairs pre-existing contractual obligations violates the contract clauses of both the federal and California constitutions. The statutory right of recall contained in **AB 3216** is legally suspect and would likely be struck down as violating the contracts clause. In addition, several aspects of the proposal may be preempted by federal law, including federal labor law. Similar proposals have already been proposed, and in some cases, enacted at the local level in recent weeks and are likely to be the subject of protracted litigation over these same issues.

The answer to the current crisis (or future similar emergencies) is not to further weaken struggling employers with novel and burdensome legal requirements.

### **Conclusion**

We understand that these are unprecedented times and that policymakers are striving to ensure that constituents and employees are provided certainty and protection during the current crisis and similar emergencies that may develop in the future. However, it is critical to remember that many businesses and their owners are themselves casualties of this economic shutdown. They cannot be expected to shoulder a new employer-financed social safety net, with expensive new mandates, at precisely the moment when small businesses are shuttering, employee hours are cut, and there is so much uncertainty about the future.

It is especially difficult for us to engage in meaningful policy discussion over these issues when the proposal at hand improperly attempts to include a laundry list of long-sought and permanent changes to California's leave laws that had been pushed by advocates well before the current crisis.

For these reasons, we respectfully **OPPOSE** your **AB 3216** as a **JOB KILLER**.

cc:     Stuart Thompson, Office of the Governor  
        Justin Delacruz, Office of Assembly Member Kalra  
        Megan Lane, Assembly Committee on Labor and Employment  
        Lauren Prichard, Assembly Republican Caucus



## JOB KILLER

May 13, 2020

The Honorable Ash Kalra  
California State Assembly  
State Capitol, Room 2196  
Sacramento, CA 95814

The Honorable Lorena Gonzalez  
California State Assembly  
State Capitol, Room 2114  
Sacramento, CA 95814

**SUBJECT: AB 3216 (KALRA/GONZALEZ) EMPLOYMENT LEAVE: AUTHORIZATION  
OPPOSE/JOB KILLER – AS AMENDED MARCH 12, 2020**

Dear Assembly Member Kalra and Gonzalez:

The California Chamber of Commerce and the organizations listed below respectfully **OPPOSE** your **AB 3216 (Kalra/Gonzalez)**, as amended May 12, 2020, which has been labeled a **JOB KILLER**.

**AB 3216** imposes staggering, significant and unprecedented new requirements on businesses of all sizes in California during a time of crisis when they can least afford it. These include drastic new family and medical leave requirements, significant new paid sick leave requirements, and unprecedented (and likely unconstitutional) “right of recall” requirements for certain businesses. Moreover, **AB 3216** makes significant changes to several areas of the law – including the California Family Rights Act (CFRA), Pregnancy Disability Leave (PDL), and Paid Family Leave (PFL) – which have nothing to do with the current crisis and are changes that advocates have long sought. These permanent and far-reaching changes are now being proposed under the cover of attempting to protect workers during the COVID-19 crisis.

The California Chamber of Commerce certainly acknowledges that these are unprecedented times, and that many employees are suffering from lack of work, reduction in hours, and other financial difficulties as a result of this crisis and government-mandated shutdowns.

We certainly agree that the short- and long-term health of all Californians should be everyone’s priority and businesses throughout California are doing everything they can to protect their employees while still providing essential services and goods. Many businesses and their owners are themselves casualties of the necessary economic shutdown. They cannot be expected to shoulder a new employer-financed social safety net, with expensive new mandates, at precisely the moment when small businesses are shuttering, employee hours are cut, and uncertainty about the future is the new normal.

Therefore, we do not believe that the approach proposed in **AB 3216** is the proper course of action at this time.

### **AB 3216 Attempts to Enact a “Wish List” of Permanent Changes to the Law that Advocates Have Sought Unsuccessfully for Years – Under the Cover of the Current Crisis**

**AB 3216** proposes a number of changes to various leave laws that worker advocates have been pushing for a number of years. These efforts have been opposed by the business community over concerns regarding the resulting burdens to employers and have been unsuccessful thus far. Now, **AB 3216** attempts to include these same policy proposals – many of which have nothing to do with the current crisis - under the guise of this bill.

These proposed unrelated changes include the following:



- The bill amends CFRA (not just the new emergency family and medical leave requirement) to apply to employers of any size. CFRA currently applies to employers with 50 or more employees within 75 miles of the worksite. This proposal to lower the 50-employee threshold in CFRA has been an agenda item for advocates for many years. California recently enacted the New Parent Leave Act (NPLA) which, after significant legislative debate was enacted to apply to employers with 20 or more employees. This bill completely eliminates that new law and instead applies *all* of CFRA to employers of any size.
- The bill expands the categories of “family members” under CFRA to include leave to care for a grandparent, grandchild, or sibling. Advocates have been attempting to expand CFRA in this manner for well over a decade.
- The bill expands employer coverage under California’s Pregnancy Disability Leave (PDL) law from 5 employees to one or more employees – which has no apparent relationship for leave related to the current crisis.
- The bill eliminates the provision of existing law under the Paid Family Leave (PFL) program that provides an employee is not eligible for leave if another family member is ready, willing and able to provide care.
- The bills eliminates the provision of existing law under the PFL that allows an employer to require the employee to take up to two weeks of earned but unused vacation prior to the receipt of PFL benefits. This has long been a target for elimination by worker advocates well before this crisis.

It is one thing to generate a conversation about the need to develop new policies that apply to workers during a state of emergency such as COVID-19. That is a conversation the Legislature can and should be having. However, it is disingenuous and another thing altogether to use the cover of the current crisis to propose a worker advocate “wish list” of leave-related proposals that they have sought unsuccessfully for years. At a minimum these proposals should be eliminated from **AB 3216**. Continued debate over these long-standing issues can continue after this crisis.

### **AB 3216 Enacts a New 12-Week Emergency Family and Medical Leave Entitlement That Applies to All Employers Regardless of Size**

**AB 3216** proposes a brand-new 12-week emergency leave entitlement for family care and medical leave taken because of a “state of emergency,” including a public health emergency declared by a local, state, or federal authority.

This new leave would apply to employers of any size and would therefore especially burden small employers. Moreover, this new emergency leave would apply to all employees, regardless of how long they have been employed or how many hours they have worked for the employer. By contrast, CFRA applies to employees who have been employed for at least 12 months and who have worked at least 1,250 hours during the previous year. Therefore, on day one an employee would immediately be entitled to 12 weeks of job-protected emergency leave. Therefore, the mandate established by **AB 3216** will apply to all employers, even the smallest employers in the state.

Therefore, **AB 3216** would provide for 12-weeks of job protected emergency leave in addition to 12 weeks of leave under the CFRA (which now would apply to all employers, regardless of size). This would result in a total of 24 weeks of leave. Moreover, while the bill purports that the leave under this bill and the federal FMLA shall not exceed 24 weeks, this language is meaningless and has no effect. As the Legislature is well aware from looking at this issue over the years. California cannot mandate that state leave runs concurrently with the FMLA -- that requires an act of Congress or a regulatory change at the federal level. Therefore, under **AB 3216** an employee could potentially be entitled to 12 weeks of emergency leave, 12 weeks of leave under CFRA, and 12 weeks of leave under the FMLA -- for a staggering total of 36 weeks of job protected leave, which would create a tremendous burden on employers.



Moreover, as discussed below the new leave under **AB 3216** would be in addition to numerous (and in most cases paid) leave entitlements enacted at the federal, state and local levels in recent weeks in direct response to the COVID-19 crisis.

### **AB 3216 Enacts a New Employer-Funded Emergency Paid Sick Leave Entitlement**

**AB 3216** requires all employers to provide employees with at least 80 hours or 10 days of paid sick leave to use for any specified purpose related to a “state of emergency.” Qualifying reasons for this leave include (1) when the employee is subject to a federal, state or local public health order, (2) to care for a family member subject to such an order, (3) to care for a child or family member if a school or place of care is closed, (4) when the place of employment is closed by the employer or a public health official due to a state of emergency, and (7) when the employee is subject to a federal, state, or local evacuation order.

This new mandate differs and in broader in scope from similar emergency paid sick leave requirements enacted at the federal, state, and local level in recent weeks – and will likely be in addition to all of these other paid leave requirements.

For example, the federal Families First Coronavirus Response Act (FFCRA) provides for emergency paid sick leave and emergency family and medical leave only where the employee is “unable to work or telework” due to specified qualifying reasons. **AB 3216** does not even specify that employee must be unable to work due to the qualifying reasons in order to take the leave. Moreover, the terms under the FFCRA have engendered numerous guidance and regulations from the Department of Labor clarifying the meaning of terms and operation of the statutory provisions. **AB 3216** provides little, if any, clarification of the meaning of important terms and the circumstances under which the employee would qualify for paid sick leave. In addition, the FFCRA (as interpreted by the DOL) does not apply where the employer is closed down directly or indirectly by an emergency shutdown order because there is no work available for the employee. By contrast, **AB 3216** specifically provides that an employee is entitled to paid sick leave even when the “place of employment is closed,” and when the employer has no work for them to perform.

Most importantly, the new emergency paid sick leave mandated by **AB 3216** is completely and 100% employer funded. Requiring an employer who is suffering economic catastrophe (and is likely closed down) during a state of emergency to provide significant paid sick leave is simply not realistic or feasible.

And finally, states of emergency regularly last for significant periods of time, long past the time of a pressing emergency. For example, the emergencies declared on November 8, 2018 and October 27, 2019 due to wildfires and extreme weather conditions in Ventura County and other counties remain in effect today, long after the fire season has ended. On December 23, 2019, Governor Newsom terminated more than 70 *ongoing* states of emergency that had been declared at various times over the last decade, from January 27, 2011 to November 30, 2018. Accordingly, this new paid sick leave mandate is not “limited” to defined periods of time, but rather will be an ongoing mandate long after the pressing emergency exists.

### **The Timing Could Not Be Worse - California Employers Can Ill Afford Yet Additional Leave Mandates**

California employers are certainly sympathetic towards their employees who are unable to work due to COVID-19 related (or similar emergency) reasons experienced by the employee or a family member. However, the entirely new leaves proposed in **AB 3216** are in addition to numerous leave provisions under existing law, including several new mandates enacted at the federal, state, and local levels in recent weeks.

The new leaves under AB 3216 would likely be in addition to numerous (and in most cases paid) leave entitlements enacted at the federal, state and local levels in recent weeks in direct response to the COVID-19 crisis.

At the federal level, the Families First Coronavirus Protection Act (FFCRA), which went into effect on April 1, already provides for various forms of job-protected and paid leave for employees impacted by COVID-19. The law provides for up to 80 hours of emergency paid sick leave for a variety of COVID-19 related reasons, including when the employee or a family member has been quarantined or has need for care due to COVID-19. In addition, the FFCRA provides for 12 weeks of job-protected leave (10 of which are paid) for any employee who has worked at least 30 days for a covered employer to care for a child who is home due to school or childcare closures. Notably, emergency family and medical leave under the FFCRA runs concurrently with leave a covered employee may be entitled to under the FMLA.

Most importantly, the federal law recognizes the new burden created by this mandate, and therefore provides employers with a tax credit to offset all of their costs. Given the prompt action by the federal government, additional state-only protected leaves, such as that proposed in **AB 3216**, with their related costs and litigation risks, are unnecessary and duplicative.

In addition, Governor Newsom recently issued an executive order to provide 80 hours of paid sick leave for certain food sector workers, many of whom would also be covered by **AB 3216**. On top of that, a number of local jurisdictions in California (including Los Angeles, San Francisco, San Jose and Emeryville) have enacted their own COVID-19 paid sick leave requirements in recent weeks, many of which apply to employers not already covered by the federal FFCRA. All of these state and local mandated leaves would likely be in addition to the new leave requirements proposed under **AB 3216**.

Even before the COVID-19 crisis, California had numerous protected, overlapping leaves, which already burden employers. In addition to the new federal, state and local COVID-19 leave laws discussed above, there are numerous additional state leave proposals this year, including budget trailer bill language, to further expand these leave mandates. The continued mandates placed on California employers to provide employees with numerous rights to protected leaves of absences is simply overwhelming, especially during this current unprecedented crisis when many employers have been ordered to close their doors and can least afford it.

### **AB 3216 Proposes a New Unworkable and Constitutionally-Suspect “Right of Recall” Requirement**

**AB 3216** establishes a new “right to recall” requirement that applies to certain hotels, event centers, airport hospitality operations, or the provision of building services to office, retail, or other commercial buildings. These rights also extend where an employer goes out of business and there is a change in control or ownership.

In the midst of the current crisis, California employers have been struggling simply to continue operations and avoid going completely out of business – which means no workers would have any jobs. Employers have also adjusted their operations in order to retain as many of their workers as possible during these challenging times. This proposal would completely eliminate the crucial flexibility that businesses need to navigate crises such as this and preserve jobs over the long term.

Among other things, **AB 3216** requires covered employers to offer to recall laid-off workers, and to provide such employees at least 10 business days to respond. This is completely unworkable and would serve to stifle and delay a business returning to normal operations following such an emergency. Requiring recall based on seniority also hurts young workers and newer skilled workers, and eliminates the judgment and flexibility employers need to best structure their operations.

The “right of recall” provisions of **AB 3216** raise significant legal and constitutional concerns. Any law that substantially impairs pre-existing contractual obligations violates the contract clauses of both the federal and California constitutions. The statutory right of recall contained in **AB 3216** is legally suspect and would likely be struck down as violating the contracts clause. In addition, several aspects of the proposal may be preempted by federal law, including federal labor law. Similar proposals have already been proposed, and in some cases, enacted at the local level in recent weeks and are likely to be the subject of protracted litigation over these same issues.

The answer to the current crisis (or future similar emergencies) is not to further weaken struggling employers with novel and burdensome legal requirements.

## Conclusion

We understand that these are unprecedented times and that policymakers are striving to ensure that constituents and employees are provided certainty and protection during the current crisis and similar emergencies that may develop in the future. However, it is critical to remember that many businesses and their owners are themselves casualties of this economic shutdown. They cannot be expected to shoulder a new employer-financed social safety net, with expensive new mandates, at precisely the moment when small businesses are shuttering, employee hours are cut, and there is so much uncertainty about the future.

It is especially difficult for us to engage in meaningful policy discussion over these issues when the proposal at hand improperly attempts to include a laundry list of long-sought and permanent changes to California's leave laws that had been pushed by advocates well before the current crisis.

For these reasons, we respectfully **OPPOSE** your **AB 3216** as a **JOB KILLER**.

Sincerely,

A handwritten signature in blue ink that reads "Ben Ebbink". The signature is fluid and cursive, with the first name "Ben" being the most prominent.

Ben Ebbink  
California Chamber of Commerce



May 13, 2020

The Honorable Phil Ting  
Chair, Assembly Budget Committee  
California State Assembly  
State Capitol  
Sacramento, California 95814

The Honorable Holly Mitchell  
Chair, Senate Budget Committee  
California State Senate  
State Capitol  
Sacramento, California 95814

**Subject: Request for \$193 Million in FARMER Program Funding in the FY 2020/21, FY 2021/22, and FY 2022/23 State Budgets to Improve Public Health in Valley Communities**

Dear Chair Ting and Chair Mitchell:

As stakeholders of the environmental justice and agricultural communities in the San Joaquin Valley, we are writing to request that the state continues to invest in the Funding Agricultural Replacement Measures for Emission Reductions (FARMER) Program at appropriate levels.

We understand in these uncertain times, you will need to make difficult budget decisions to control the already devastating impacts COVID-19 has had on the people and economy of California, especially in our rural regions. We encourage you in making these decisions to fund programs, like the FARMER Program, that maintain and boost the economy in rural California and that provide clean air for rural residents. The FARMER program is one of the most important programs to improve community health in disadvantaged communities, fulfill state commitments to cleaner air in the San Joaquin Valley, and allow the agricultural industry to remain a vibrant and sustainable part of the San Joaquin Valley and state's economy.

The San Joaquin Valley faces one of the most significant air quality challenges in the country due to its unique topography and geography and is currently in nonattainment with the latest federal ozone and PM2.5 standards. This difficult air quality problem creates a significant public health challenge for Valley residents. As an example, the California Department of Public Health's: "California Breathing" report April 2019, shows residents' asthma rates in Kern, Kings, Merced and Stanislaus counties to be in the 75<sup>th</sup> percentile compared to other California counties. Higher even than Los Angeles or San Francisco. That's more than 1 in 6 residents suffering from the disease. The San Joaquin Valley also experiences some of the highest childhood asthma rates in California. Individual cities like Fresno and Bakersfield experience childhood asthma rates as high as 1 in 4. Air pollution from internal combustion engines, mostly diesel powered, is a significant asthma trigger. The San Joaquin Valley is also home to a large number of the state's low income and disadvantaged communities of color, including 20 of the 30 most disadvantaged communities in California while the percentage of Valley children living in concentrated poverty is higher than the statewide average, and is increasing faster in the region as well. Asthma attacks are directly responsible for tens of thousands of missed educational opportunities for these children who miss school because of illness, and parents missing work to take care of them. This compounds the problem by more immediately threatening their already fragile household economy and in the long term threatening the children's future academic success.

The San Joaquin Valley has made significant clean air investments and progress through the implementation of multiple clean air attainment plans and stringent regulations. However, in addition to stringent regulatory measures, funding is necessary to further reduce air pollution and expedite public health benefits in disadvantaged communities and attainment of the federal standards through incentive-based measures, particularly with respect to mobile sources that now make up over 85% of the Valley's remaining air pollution. The Valley's recently adopted PM2.5 plan includes a wide range of aggressive regulatory and incentive-based measures to be implemented by both the District and California Air Resources Board (CARB), including several incentive-based mobile source control measure commitments by CARB to significantly accelerate the deployment of new clean vehicles, equipment, and technologies across a variety of sectors. Implementing these new measures will require \$5 billion of new incentive funding investment between now and the federal attainment deadline of 2024. Replacing this equipment both in agriculture and in the goods movement system is absolutely essential to protecting children's health in California.

The San Joaquin Valley has been a leader and pioneer in the utilization of incentive grants to achieve voluntary emissions reductions from mobile sources to improve public health. In particular, utilizing FARMER funding, the District has allocated \$84 million to replace over 2,400 pieces of equipment including electric utility vehicles, tractor replacements, and the electrification of agricultural irrigation pumps. This public investment is matched with private money and has resulted in the reduction of nearly 5,000 tons of harmful air pollutants, as well as significant reductions in fuel combustion and greenhouse gas emissions. With ongoing funding of \$193 million from the Greenhouse Gas Reduction Fund for FARMER for the next three fiscal years, we can meet the goal of CARB's State Implementation Plan of achieving 11 tons per day (tpd) of NOx reductions in the San Joaquin Valley by 2024.

Recent state budgets have included significant funding, through Greenhouse Gas Reduction Funds and other funding, for the FARMER program. Fully funding the state's commitment to reducing air pollution from agricultural equipment is critical to our collective efforts to improve public health for Valley communities.

To support these public health goals, we request the following be included in the FY 20/21, FY 21/22, and FY 22/23 State Budgets:

- **Allocate \$193 million per fiscal year through fiscal year 2022/23 in funding to the "Funding Agricultural Replacement Measures for Emission Reductions Program" (FARMER).** These funds will assist in achieving the state's commitment to reduce emissions from heavy-duty agricultural off-road equipment in the San Joaquin Valley (12,000 tractors by 2024) and provide for significant air quality, and related community health, improvements throughout the Valley, and state.

Thank you for your consideration of these requests. We look forward to working closely with your offices and the Legislature to ensure that these vital air quality and public health issues are adequately addressed in the Budget.

April 24, 2020

The Honorable Ben Hueso  
State Capito, Room 4035  
Sacramento, CA 95814

**Re: Opposition to Senate Bill 1352**

Dear Senator Hueso:

While we are supportive of the development and use of biomethane where appropriate, we must strongly oppose your Senate Bill 1352 relating to a 20 percent biomethane procurement requirement by 2030. This measure is unnecessary, costly and unworkable, and will undoubtedly exacerbate the state's economic recovery as California seeks to emerge from the COVID-19 pandemic.

As you are well aware, the legislature passed, the Governor enacted, and the California Public Utilities Commission (CPUC) is currently implementing your Senate Bill 1440 (2018), which allows the CPUC to adopt appropriate biomethane procurement targets for the state's gas service providers. Many of us supported the carefully negotiated provisions of that legislation because it properly balanced ratepayer concerns and state climate policies to initiate a structured procurement program for biomethane resources. The CPUC has recently initiated implementation. Unfortunately, SB 1352 would simply and unnecessarily kick all of those efforts aside and instead mandate an unworkable and costly 20 percent biomethane mandate.

The Southern California Gas Company and San Diego Gas and Electric are also seeking adoption (settlement pending) of a **voluntary** customer biomethane tariff program that would allow customers to have all, or a portion, of their natural gas needs met by biomethane. As a result, it is both premature and unnecessary for the legislature to enact yet another biomethane procurement program. Policymakers and utility customers would be well served to allow these initial programs to inform both the cost and benefits of biomethane before adopting yet another mandate as proposed by SB 1352.

Biomethane is exceedingly expensive at five to ten times the cost (maybe more) than conventional fossil natural gas. Wholesale prices for fossil gas are currently below \$3/MMBtu while biomethane costs between \$15 and \$60/MMBtu. As a result, a 20 percent biomethane procurement mandate could easily double or even triple the cost of natural gas service for residents and businesses in California. As businesses, we cannot expect to contend with our competitors in other regions, nationally or internationally if we are paying two or three times as much for biomethane.

Moreover, biomethane is expected to get more expensive, not less, as additional supplies are developed and procured. Extensive cost analysis conducted by the California Energy Commission documents rapidly increasing costs associated with additional, small biomethane resources coming on-line due to the high fixed-costs of cleaning, conditioning and interconnection associated with pipeline quality requirements.



Further, SB 1352 is also unworkable because a 20 percent biomethane procurement cannot be met with cost-effective biomass resources from national, let alone California suppliers. It should not be lost on legislators that national supplies also provide few, if any, jobs or greenhouse gas reduction benefits in California. Large supplies of out-of-state landfill gas do not provide short-lived climate pollutant reductions in California and few, if any, additional benefits globally. Finally, it must be recognized that while biomethane is a renewable resource, it is not a clean energy resource. Biomethane emits the same level of CO<sub>2</sub> and other GHGs and pollutants when burned in homes and buildings. As a result, it does not contribute to California's long-term clean energy goals and will only thwart progress toward the state's ambitious carbon-neutral policies.

Finally, it should be recognized that additional costly energy mandates, such as those proposed by SB 1352, will only prolong the state's important economic recovery as we seek to emerge from the COVID-19 crisis. All of us will be far better served by focusing on the important work necessary to respond to the immediate public health emergency and ensuing economic recovery. New, unnecessary, costly and unworkable energy mandates are not needed at this time.

For all of these reasons, we must oppose SB 1352.

April 24, 2020

The Honorable Susan Talamantes Eggman  
State Capitol, Room 4117  
Sacramento, CA 95814

Dear Assemblymember Talamantes Eggman:

While we are certain your attention and priorities – like ours – are appropriately focused on the COVID-19 crisis gripping our state, we feel compelled to communicate our concerns with one of your proposed legislative measures. We are very concerned about Assembly Bill 2255 and strongly encourage you to drop this unnecessary, costly and potentially damaging measure.

The agricultural and food and fiber processing industries do not oppose the procurement of long-duration bulk energy storage. However, we strongly believe that all energy procurement must take place in a coordinated, strategic and cost-effective process. Such a process is currently ongoing and is known as the Integrated Resource Plan (IRP) and Long-Term Planning Process (LTTP). The IRP and LTTP are an umbrella planning process designed to consider *all* of the state's electrical procurement needs, policies and programs to ensure California has a safe, reliable and cost effective electricity supply.

As you are well aware, energy costs in California are high and going higher. California's electricity rates are already, on average, more than double the national average and rising five times faster than other regions of the country. These high costs not only impact our businesses and ability to compete in regional, national and international markets, but greatly harm our employees and their families. Valley residents face much higher energy use than coastal areas of the state, further adding to the already disproportionate cost of living in our region. Estimates by leading consumer groups document that energy costs will go much higher as our utilities spend tens of billions of dollars to further harden their grids to prevent wildfires. Valley residents and businesses, as a result, will be saddled with a disproportionate share of these costs even though the Valley is not prone to wildfire and farms provide an important buffer to limit advancing wildfires.

In conclusion, in light of the rising energy costs, public health and economic crisis currently facing our state and nation, our state cannot afford to pay higher rates to benefit NextEra and other energy companies who stand to benefit from the passage of AB 2255. California is facing a significant economic downturn and higher electricity rates will only exacerbate that problem and prolong our ability to recover. Policymakers must allow our energy agencies to properly implement the state's ambitious clean energy goals in a coordinated, cost effective and orderly fashion. Adding additional specific mandates designed to benefit one or two additional, expensive, projects is not in the best interests of your district, the Central Valley or the state. It is certainly not in the best interest of our businesses or our employees. We encourage you to drop AB 2255, a costly, unnecessary and nonessential measure. All of us will be better served by focusing on the important work necessary to respond to the immediate public health emergency and ensuing economic recovery.





# COVID-19 UPDATE



## **ADDITIONAL \$1 BILLION ALLOCATED TO FARMERS TO FAMILIES FOOD BOX PROGRAM**

Last week, President Trump announced that an additional \$1 billion will be added to the Farmers to Families Food Box Program. Following the President's announcement of additional funding up to \$1 billion, USDA also announced last week that it intends to extend current contractors that desire to continue to deliver food boxes through September 18. These extensions will ensure adequate capacity for food box distribution as USDA plans to incorporate the additional funding. USDA continues to review proposals received for the upcoming third round, and will issue additional agreements in the near future, with subsequent contracts to deliver food boxes the remainder of September and through October 31.

In the ongoing second round of purchasing and distribution, which began July 1 and will conclude Aug. 31, 2020, USDA has purchased more than \$1.113 billion of food through extended contracts of select vendors from the first round of the program as well as new contracts focused on Opportunity Zones in order to direct food to reach underserved areas, places where either no boxes have yet been delivered, or where boxes are being delivered but where there is additional need.

In the upcoming third round, which begins September 1, USDA plans to purchase combination boxes to ensure all recipient organizations have access to fresh produce, dairy products, fluid milk and meat products. Additional box types will be considered on an as needed basis. Entities that proposed under the previous solicitation, including current vendors, will have to reapply. Proposals will be expected to illustrate how coverage will be provided to areas identified as Opportunity Zones, detail subcontracting agreements, and address the "last mile" delivery of product into the hands of the food insecure population.

The first round of purchases occurred from May 15 through June 30, 2020 and saw more than 35.5 million boxes delivered in the first 45 days.

Updates to the number of food boxes verified as delivered will continue to be displayed on the USDA's Agricultural Marketing Service (AMS) [website](https://www.ams.usda.gov/selling-food-to-usda/farmers-to-families-food-box), with breakdowns by performance period on the Farmers to Families Food Box Program page: <https://www.ams.usda.gov/selling-food-to-usda/farmers-to-families-food-box>.

## CALIFORNIA REOPENING GUIDELINES

Governor Newsom released new guidelines for reopening, calling it the Blueprint for a Safer Economy. The new guidelines are based on a 4-tier system. Every county in California is assigned to a tier based on its rate of new cases and positivity. At a minimum, counties must remain in a tier for at least 3 weeks before moving forward. Data is reviewed weekly and tiers are updated on Tuesdays. To move forward, a county must meet the next tier's criteria for two consecutive weeks. If a county's metrics worsen for two consecutive weeks, it will be assigned a more restrictive tier. Public health officials are constantly monitoring data and can step in if necessary – ex) ICU and/or hospitalizations rates spike. Counties can only move 1 tier at a time. The first weekly assessment will be on Sept. 8th.

Measures*	Higher Risk → Lower Risk of Community Disease Transmission			
	Widespread Tier 1	Substantial Tier 2	Moderate Tier 3	Minimal Tier 4
<b>New cases**/100,000 population per day (7 day average; 7 day lag)</b>	>7	4-7	1-3.9	<1
<b>Testing % Positivity (7 day average; 7 day lag)</b>	> 8%	5-8%	2-4.9%	<2%

County count per tier:

1. Widespread (this tier replaces the County Monitoring List) – 38 Counties
2. Substantial – 9 Counties
3. Moderate – 8 counties
4. Minimal – 3 counties

### Initial step applied on August 28, 2020:

Each county is assigned to a tier based on an adjusted case rate and test positivity from the prior two reporting periods. If a county's case rate and test positivity measure fall into two different tiers, the county will be assigned the more restrictive tier. This tier status will be effective on Monday, August 31, 2020.

If a county is initially assigned to Purple Tier 1 and has met the criteria for a less restrictive tier the prior week, the county only needs to meet the criteria for a less restrictive tier for one more week to move to the Red Tier 2. (For the September 8, 2020 assignment, a county does not need to remain in the Purple Tier 1 for three weeks. For all subsequent assessments, a county must remain in a tier for three weeks and meet the criteria to advance as described below.)

For more information on these tiers and counties- <https://covid19.ca.gov/safer-economy/>. You can find specific sector/activity information for each county on the website, as well.

## WEBINAR ON COVID-19 PREVENTION PROGRAM FOR EMPLOYERS

On September 17, 2020, the National Council of Ag Employers will be hosting a webinar design to assist employers in building a COVID-19 prevention program. Space is limited, so please register by clicking the following link: <https://register.gotowebinar.com/register/7452019631276671758>



## CALIFORNIA STATE LEGISLATURE BILL UPDATE

Please see below for an update on recent activity in the California State Legislature. If you have any questions regarding any of these bills, please do not hesitate to contact our office.

- AB 685 (Reyes)-Passed.
- SB 1102 (Monning)-Passed.
- Worker's Compensation: SB 1159 (Hill) was passed and AB 196 (Gonzalez) failed to be brought up for a vote.
- SB 1383 (Jackson) was put on call twice, but with pressure from the Speaker, reached 41 votes a few minutes before midnight.
- Senator Hertzberg tried a last minute play to push AB 1659 to the Assembly, but was stopped. The alternative bond proposal was never given the rule waiver to be placed into print.
- AB 6 (Reyes) was never brought up for a vote on the Senate floor.
- SB 54 (Allen) was brought up for a vote on the Assembly floor, but failed to get 41 votes, so has failed this year. AB 1080 was not brought up for a vote.



# COVID-19 UPDATE



## **CAL/OSHA TO HOST AGRICULTURAL INDUSTRY WEBINARS**

Cal/OSHA Consultation Services are hosting webinars for agricultural employers to help clarify what their responsibilities are in regards to employee health and safety during the ongoing COVID-19 pandemic. The webinar will address employer responsibilities to effectively implement their Injury and Illness Prevention Program, COVID-19 Plans, and best practices to ensure employees work safely.

The seminar is intended for agricultural business owners, managers and supervisors. Space is limited and you must register prior to the webinar by contacting [SFVConsultation@dir.ca.gov](mailto:SFVConsultation@dir.ca.gov). The webinar will be offered in English and Spanish. For a list of dates and times along with additional information, [click here](#).

## **USDA RELEASES CFAP TOOLKIT FOR STAKEHOLDERS**

Agricultural producers can now apply for USDA's Coronavirus Food Assistance Program (CFAP), which provides direct payments to offset impacts from the coronavirus pandemic. Options to apply are available on [farmers.gov/cfap](https://farmers.gov/cfap) and USDA's Farm Service Agency (FSA) has launched a call center to help answer questions. FSA staff members are available via phone, fax and online tools to help producers complete applications.

FSA wants to ensure producers are aware of available online tools and the call center, as well as how FSA is working virtually with producers to complete applications. This toolkit is meant for producers and agricultural organizations to use to share information in their networks. This toolkit includes:

- Key messages
- Newsletter article
- Social media posts
- Social media story posts
- Posters

The full toolkit can be found here:

<https://www.farmers.gov/sites/default/files/documents/CFAP-StakeholdersToolkit-08202020.pdf>

## **CAL/OSHA REMINDS EMPLOYERS TO PROTECT WORKERS FROM UNHEALTHY AIR DUE TO WILDFIRE SMOKE**

Cal/OSHA released a reminder to all employers of the emergency regulation set forth by state-run Cal/OSHA in 2019, and extended to early 2021, designed to protect workers from the dangers of wildfires. Cal/OSHA reminded employers that they are required to take steps to identify and reduce exposure for workers exposed to wildfires. The regulation applies to workplaces where the current Air Quality Index (AQI) for airborne particulate matter (PM 2.5) is 151 or greater, and where employers should reasonably anticipate that employees could be susceptible.

Effective through early 2021, a California employer must take the following steps:

- Identify harmful exposure to airborne particulate matter from wildfire smoke at the start of each shift and periodically thereafter by checking the AQI for PM 2.5 in regions where workers are located.
- Reduce harmful exposure to wildfire smoke if feasible, for example, by relocating work to an enclosed building with filtered air or to an outdoor location where the AQI for PM 2.5 is 150 or lower.
- If employers cannot reduce workers' harmful exposure to wildfire smoke so that the AQI for PM 2.5 is 150 or lower, they must provide:
  - Respirators such as N95 masks to all employees for voluntary use and
  - Training on the new regulation, the health effects of wildfire smoke, and the safe use and maintenance of respirators.

More information regarding this regulation and recent reminder announcement can be found here: <https://www.dir.ca.gov/dosh/wildfire/Worker-Protection-from-Wildfire-Smoke.html>



# COVID-19 UPDATE



## USDA TO HOST CFAP PRODUCER WEBINAR ON AUGUST 19TH

The U.S. Department of Agriculture (USDA) will host a webinar on August 19 at 12:00 noon PDT (3 p.m. EDT or 12 p.m. PST) to discuss recently added commodities eligible for the Coronavirus Food Assistance Program (CFAP).

The Farm Service Agency (FSA) will explain how CFAP works for eligible specialty crops, nursery crops and cut flowers, aquaculture commodities and certain types of eggs, and will share detailed examples of how to apply.

USDA has extended the deadline and is accepting applications for CFAP through September 11. CFAP helps offset price declines and additional marketing costs because of the coronavirus pandemic.

Producers must register [HERE](#) to participate in the webinar.

Additional CFAP resources are available at [farmers.gov/cfap](https://farmers.gov/cfap).

## STEPS FOR RESPONDING TO INVESTIGATIVE LETTERS FROM U.S. DEPARTMENT OF LABOR AND OTHER GOVERNMENT AGENCIES

The Commission has been made aware that various regulatory agencies, such as Cal/OSHA and the California Department of Labor Standards Enforcement (DLSE), have begun notifying employers of inspections designed to audit employer's compliance with new laws and regulations related to COVID-19. Companies have received letters from the U.S. Department of Labor's (DOL) Wage and Hour Division (WHD) notifying of workplace inspections for the purpose of determining their compliance with various federal laws which the DOL is responsible for administering and enforcing. These laws include the Fair Labor Standards Act (FLSA), the Migrant and Seasonal Agricultural Worker Protection Act (MSPA), and the Families First Coronavirus Response Act (FFRCA), which includes the Emergency Paid Sick Leave Act (EPSLA) and Emergency Family and Medical Leave Expansion Act (EFMLA).

The letters notify the employer of a date that has been unilaterally set by the DOL investigator for an "initial conference" between the DOL investigator and a representative from the employer. In addition, the letters demand the employer produce a number of records and information, including, but not limited to, two years' worth of the company's tax records, payroll records (including time records) for all employees, a list of all owners and company officers, a list of all current and former employees and their contact information, the general ledger for the past two years, records related to the company's compliance with the Families First Coronavirus Response Act, and the company's employee handbook.

The California Fresh Fruit Association has provided the Commission guidance with the steps that all employers should consider taking in responding to the DOL's letters. While the memo focuses on responding to DOL investigative inquiries, its principles are generally applicable to answering to other governmental investigations such as Cal/OSHA and the DLSE. If you receive an investigative letter from a governmental agency, you should immediately contact your labor and employment counsel for specific guidance.

To view the complete guidance document, click [here](#).

## **HIGH HEAT ADVISORY REMINDER**

Over the next 7 days the temperature is expected to reach over 105 degrees, with some parts of the Valley reaching even higher. This serves as a reminder to follow high heat advisory protocols to ensure the safety of yourself and your workers.

Follow your water replenishment program and make sure you have enough shade available. If you are unable to adjust your hours of operation for your employees to avoid working when the temperature reaches 95 degrees, then make sure you follow your High Heat Procedures. Your procedures should include:

1. Tail gate meetings before the commencement of work to review high heat procedures, encourage employees to drink plenty of water, and remind employees to take a cool down rest when needed.
2. Observing employees for alertness and signs or symptoms of heat illness either by the crew leader and/or having a buddy system. For tractor drivers communicate with by phone or other communication device.
3. Reminding employees throughout the shift to drink plenty of water.
4. Ensure effective communication by voice, observation, or electronic means is maintained so employees can contact a supervisor when necessary.
5. A minimum ten minute cool down rest period every two hours. If the timing of the cool down rest coincides with a meal period or their regular rest period, then employees don't need to take a separate cool down break.

Please keep yourself and your employees safe while working out in the heat.



# COVID-19 UPDATE



## **USDA ANNOUNCES MORE ELIGIBLE COMMODITIES FOR CORONAVIRUS FOOD ASSISTANCE PROGRAM**

The U.S. Department of Agriculture announced today that additional commodities are covered by the Coronavirus Food Assistance Program (CFAP). Applicants will now have until September 11th to apply, and producers with approved applications will receive their final payment.

USDA announced the following additional commodities are now eligible for CFAP:

- Specialty Crops - aloe leaves, bananas, batatas, bok choy, carambola (star fruit), cherimoya, chervil (french parsley), citron, curry leaves, daikon, dates, dill, donqua (winter melon), dragon fruit (red pitaya), endive, escarole, filberts, frisee, horseradish, kohlrabi, kumquats, leeks, mamey sapote, maple sap (for maple syrup), mesclun mix, microgreens, nectarines, parsley, persimmons, plantains, pomegranates, pummelos, pumpkins, rutabagas, shallots, tangelos, turnips/celeriac, turmeric, upland/winter cress, water cress, yautia/malanga, and yuca/cassava.
- Non-Specialty Crops and Livestock - liquid eggs, frozen eggs and all sheep. Only lambs and yearlings (sheep less than two years old) were previously eligible.
- Aquaculture - catfish, crawfish, largemouth bass and carp sold live as food fish, hybrid striped bass, red drum, salmon, sturgeon, tilapia, trout, ornamental/tropical fish, and recreational sportfish.
- Nursery Crops and Flowers - nursery crops and cut flowers.

Other changes to CFAP include:

- Seven commodities - onions (green), pistachios, peppermint, spearmint, walnuts and watermelons - are now eligible for Coronavirus Aid, Relief, and Economic Stability (CARES) Act funding for sales losses. Originally, these commodities were only eligible for payments on marketing adjustments.
- Correcting payment rates for onions (green), pistachios, peppermint, spearmint, walnuts, and watermelons.

Additional details can be found at [www.farmers.gov/cfap](http://www.farmers.gov/cfap).



# INJUNCTION DENIED REGARDING ALLEGED VIOLATION OF COVID-19 REQUIREMENTS

## **Brent v. Amazon.com**

In yet another COVID-19 related lawsuit regarding employee health and safety, Amazon has been sued in the San Francisco Superior Court. The Plaintiff asserts that Amazon has failed to take adequate measures to protect employee health and safety in their warehouse, (known as UCA1), because (1) Amazon failed to sanitize common areas and equipment used by multiple employees; (2) Amazon failed to sanitize "freezer suits" used by multiple employees; and (3) Amazon failed to ensure proper social distancing. Brent alleges that these failures violate numerous provisions of the labor code, Cal-OSHA regulations, and the local shelter-in-place ("SIP") order.

Various agencies became involved in investigations of the warehouse, including the City of San Francisco ("City") through the San Francisco Department of Public Health ("SFPDH"), Cal-OSHA, and the Office of the Attorney General ("OAG"). After investigating UCA1, the City and SFPDH determined that no injunction was necessary. Cal-OSHA is still conducting an ongoing investigation into the UCA1 facility and the OAG has initiated a request for information regarding Amazon's practices and policies related to COVID-19.

The Court refused to grant a preliminary injunction finding that plaintiff had not shown that there is an ongoing serious regulatory violation posing a risk of irreparable harm to employees or the public. This is evidenced by the fact that the City found no violations in their most recent inspection. In addition, the Court found that an injunction would require the court to expend vast amounts of time and expertise it does not have and courts have deferred to the expertise of responsible agencies. Here, the City and SFPDH, Cal-OSHA, and the OAG all are tasked with enforcing the relevant laws and regulations for the alleged violations. These agencies and their enforcement powers provide Plaintiff several alternate forms of relief if Amazon fails to comply with the relevant laws and regulations.

## **CFFA REQUESTING SUPPORT FOR PROP 15 OPPOSITION EFFORT**

*The message below is shared on behalf of the California Fresh Fruit Association:*

The California Fresh Fruit Association is asking you to join the effort to protect California's agriculture industry by making a contribution to defeat Proposition 15 (2020), the split-roll initiative which will appear on the November 3, 2020 ballot.

Advocates for Proposition 15 deceptively state that agriculture will be continue to be safeguarded under Prop 13's (1978) property tax increase protections. This is false. Prop 15 will remove the cap for agricultural land with any improvements - barns, shops, irrigation wells, packing sheds, even trees. If Prop 15 passes this November, California agriculture will take a financial hit in the hundreds of millions of dollars annually beginning in 2021. The total impact to California businesses will be at least \$12 billion a year.

CFFA has aligned with other statewide agricultural associations as part of The Alliance of California's Farmers and Ranchers ("Alliance"), a 501 (c)(6) not-for-profit organization promoting pro-agriculture, business and processing policies in Sacramento. The Alliance is taking a leadership role on this issue, with the mission of educating California's voters about the severely negative impact that Prop 15 will have on our family farms. With a goal of raising \$1 million, this campaign will be conducted in close coordination with larger efforts conducted by pro-business groups, such as the California Business Roundtable, and other agricultural organizations, such as the California Farm Bureau Federation, Western Growers, and Agricultural Council. CFFA's goal is to raise \$50,000 as part of the Alliance's campaign.

If you would like to learn more or contribute to the Alliance's "Protecting our Family Farms" campaign to oppose Prop 15, please contact CFFA President Ian LeMay (ilemay@cafreshfruit.com) and Director of Government and Public Policy Adam Borchard (aborchard@cafreshfruit.com).



# COVID-19 UPDATE



## **CORONAVIRUS FOOD ASSISTANCE PROGRAM APPLICATION DEADLINE APPROACHING**

As you may recall, in early July, the United States Department of Agriculture (USDA) issued a modification to its original Coronavirus Food Assistance Program (CFAP) ruling. Apples were initially left out of the program's component dealing with price declines, but have been reconsidered by USDA and growers will now be eligible for a payment rate of \$0.05/pound. However, it is important to note that growers applying for these funds must be able to demonstrate at least a 5% loss in sales during the eligibility time frame set by USDA from January 15-April 15, 2020.

Eligible growers who qualify based on the parameters mentioned above, can now apply for direct payments by visiting [www.farmers.gov](http://www.farmers.gov). The application deadline for this program is August 28, 2020. The CFAP program was included in the Coronavirus Aid, Relief, and Economic Security (CARES) Act and was passed by Congress with overwhelming bipartisan support and eventually signed into law by President Trump on March 27, 2020.

If you have any questions regarding this application or your potential eligibility for funding, please do not hesitate to contact the CAC office.

## **USDA-ERS RELEASES UPDATED COVID 19 ECONOMIC IMPLICATION STUDIES FOR AGRICULTURE**

The United States Department of Agriculture's Economic Research Service (ERS) has compiled a list of the economic impacts the COVID-19 pandemic has had on agriculture. The ERS' research program considers links in the farm-to-consumer supply chain that may be affected by the pandemic, including farms, processors, handlers, retail outlets, and trade. ERS also examines the economic impacts of the pandemic on consumers, food assistance program participants, residents of rural America, and farmers. Topics of their research and links to relevant reports can be found at the following link: <https://www.ers.usda.gov/covid-19/>

# COVID-19 UPDATE



## GOVERNOR NEWSOM ANNOUNCES EXPANDED ESSENTIAL EMPLOYEE PROTECTIONS

Last week, Governor Gavin Newsom announced new employee protection campaign that expands safeguards for California essential workers. His protection plan covers four main areas outlined below.

### **Helping Workers Isolate and Quarantine**

Providing safe, suitable places for isolation outside a home can help stop the spread to other household members, especially for those who live in multigenerational households. The state will allocate existing federal funds to local public health departments and community-based organizations to assist with supportive services for isolation and quarantine.

A new program, "Housing for the Harvest" will provide temporary isolation spaces for agricultural employees who test positive or were exposed to the virus. The goal is to limit the risk of spreading COVID-19 to their coworkers or households. This program will operate in partnership with counties and local partners in the Central Valley, Central Coast, and Imperial Valley - the regions with the highest number of agricultural workers.

### **Outreach and Education**

Governor Newsom announced California's public awareness campaign to #WearAMask and #StoptheSpread, the campaign will expand its reach to employers, to workers and to their families. Below are radio spots for essential workers released by the state about how employees can safely transition from work to home here:

- [Essential Workers \(English\)](#)
- [Essential Workers \(Spanish\)](#)

### **Support for Employees**

Governor Newsom said he will work with the Legislature to build on previous executive action and advance worker protections such as expanded paid sick leave and access to workers' compensation.

### **Employer Resources**

An Employer Playbook was released today will guide businesses throughout the state on how to provide a clean environment for workers and customers to reduce risk. Additionally, the state will provide employers information to share with their workers regarding health insurers' COVID-19 testing coverage and eligibility requirements.

### **Enforcement**

Cal/OSHA and the Labor Commissioner's office have strategically targeted investigations in high-risk industries, where the state has seen the most workplace outbreaks. Expedited enforcement authority and advanced reporting of health and safety hazards at work will improve enforcement outcomes. Businesses will be required to report outbreaks to their local health departments will help track county transmission. This enforcement authority has not been established yet.

To view the complete announcement, [click here.](#)

## **COVID-19 EMPLOYER PLAYBOOK FOR SAFE REOPENING**

On July 24, 2020, the State of California released the "COVID-19 Employer Playbook for a Safe Reopening." According to the playbook, its purpose is to help employers "plan and prepare for reopening their businesses and to support a safe, clean environment for workers and customers." The Employer Playbook's table of contents lists four major areas that the playbook addresses: (1) steps employers can take to open safely; (2) what to do if a COVID-19 case occurs in the workplace; (3) enforcement and compliance; and (4) worker education. In addition, the playbook includes three appendixes consisting of employer and worker resources, enforcement and compliance contacts, and case studies illustrating the playbook's principles.

To view a copy of the complete document, please [click here.](#)

## **FARMERS TO FAMILIES FOOD BOX ROUND 3 SOLICITATION**

As part of the Coronavirus Food Assistance Program Secretary Perdue announced on April 17, the U.S. Department of Food & Agriculture (USDA) is exercising authority under the Families First Coronavirus Response Act to purchase and distribute agricultural products to those in need. Through this program, USDA's Agricultural Marketing Service (AMS) is partnering with national, regional and local distributors, whose workforces have been significantly impacted by the closure of restaurants, hotels and other food service businesses, to purchase up to \$3 billion in fresh produce, dairy and meat products from American producers of all sizes.

The program will supply food boxes of fresh fruits and vegetables, dairy products, meat products and a combination box of fresh produce, dairy or meat products. Distributors will package these products into family-sized boxes, then transport them to food banks, community and faith-based organizations, and other non-profits serving Americans in need. The first round of purchases totaling up to \$1.2 billion occurred from May 15 through June 30, 2020. The second round will aim to purchase up to \$1.47 billion July 1 through August 31, 2020. AMS may elect to extend the period of performance of the contracts, via option periods, dependent upon program success and available remaining funds, up to \$3 billion.

For additional details, please [click here.](#)



# COVID-19 UPDATE



## **FRONTLINE DOCUMENTARY: "COVID'S HIDDEN TOLL" TO AIR TONIGHT ON PBS**

The PBS documentary series Frontline will air a program tonight, Tuesday, July 21, titled "COVID's Hidden Toll," that purports to show conditions at California farms and meat-packing plants.

The trailer for the program may be viewed here: <https://www.pbs.org/wgbh/frontline/film/covids-hidden-toll/>

The 30-second trailer on the website includes several clips of broccoli harvest (with workers wearing surgical masks), plus clips of a man driving a forklift in a warehouse and of what appears to be the outside of a meat-packing plant. The soundtrack includes several soundbites with unidentified people; the closing clip is of a man saying, "It doesn't feel like we're essential; it feels like we're slaves."

The brief narrative on the website reads: "FRONTLINE examines how the COVID crisis has hit vulnerable immigrants and undocumented workers. The documentary follows the coronavirus pandemic's invisible victims, including crucial farm and meat-packing workers who lack protections and have been getting sick."

As you can gather from the material above, we would expect this to be a mostly negative depiction of the care California farm and agricultural employers have given to employee health and safety.

## TITLE VI RELATED TO WORKPLACE COVID-19 POLICIES

Food Chain Workers Alliance v. Tyson Foods, Inc. On July 8, 2020, Food Chain Workers Alliance (“FCWA”) and other worker’s rights entities filed a complaint with the United States Department of Agriculture (“USDA”) under Title VI of the Civil Rights Act of 1964 against Tyson, JBS USA, Inc., and other meat processing facilities.

Title VI specifically protects workers from disparate impacts based on race and is invoked when a company receives federal funding from federal agencies such as USDA. The majority of the 32,151 COVID-infected individuals working in the processing facilities are African American or Hispanic. FCWA claims these processing facilities failed to implement Center for Disease Control (“CDC”) recommended policies to mitigate their minority workers’ exposure to COVID-19. Alternatives suggested by FCWA to mitigate COVID-19 associated risks include: 6-foot distancing, barriers between workers, slowing processing rates and increasing available shifts, requiring face coverings, and conducting health screenings before the start of each shift.

The Commission will monitor the status of this case and USDA’s response. We continue to recommend that facilities implement policies and procedures in compliance with CDC and Cal/OSHA COVID-19 guidelines. If you have any questions, please do not hesitate to contact our office.

\*Information courtesy of Kahn, Soares, and Conway, LLP.

## HIGH HEAT ADVISORY REMINDER

As temperatures continue to remain elevated in the Central Valley, please continue to follow a water replenishment program and also ensure employees have access to shade. If you are unable to adjust the hours of operation for your employees to avoid working when the temperature reaches 95 degrees, then make sure you follow your High Heat Procedures. These procedures should include:

- Tail gate meetings before the commencement of work to review high heat procedures, encourage employees to drink plenty of water, and remind employees to take a cool down rest when needed.
- Observing employees for alertness and signs or symptoms of heat illness either by the crew leader and/or having a buddy system. For tractor drivers communicate with by phone or other communication device.
- Reminding employees throughout the shift to drink plenty of water.
- Ensure effective communication by voice, observation, or electronic means is maintained so employees can contact a supervisor when necessary.
- A minimum ten minute cool down rest period every two hours. If the timing of the cool down rest coincides with a meal period or their regular rest period, then employees don’t need to take a separate cool down break.

Please be safe and feel free to reach out to the Commission with any questions regarding high heat procedures.



# COVID-19 UPDATE



## WESTERN GROWERS COVID-19 WEBINAR SERIES

As California enters peak summer harvest season, there is increasing concern over the potential impact of COVID-19 on the agricultural workforce. To minimize the risks of disruption to our farms and food supply, the CDC and U.S. Department of Labor recently released joint guidance for agriculture workers and employers. To facilitate industry-wide adoption of this guidance, Western Growers has teamed up with experts from U.C. Davis, Rutgers University and Colorado State University to conduct a three-part webinar series addressing the practical implementation of COVID-19 prevention and control measures on produce farms and in facilities.

Western Growers is making the recordings of the first two webinars available for the benefit of the entire California agriculture industry. Click on the links below to access the first two webinar recordings:

**Part One: Basics of COVID-19 Assessment and Control Plans-** Click [HERE](#)

### *Topics Covered*

- Current COVID-19 state-of-play
- Key risk factors for produce operations
- How to develop an assessment and control plan
- Screening and monitoring workers
- What to do if a worker gets COVID-19, or has been exposed to COVID-19

**Part Two: Assessment and Control Plans: Do's and Don'ts-** Click [HERE](#)

### *Topics Covered*

- Hierarchy of controls approach
- Engineering controls
- Cleaning and sanitizing
- Administrative controls
- Personal Protective Equipment

**The third and final webinar, which will focus on shared housing and transportation, will be held on July 9th at 11:00 a.m.** Please contact Cory Lunde at [clunde@wga.com](mailto:clunde@wga.com) or 949-370-8560 for access to any of the resources covered in the first two webinars, or for information on how to register for the final presentation in the Western Growers COVID-19 Webinar Series.

## **CA DEPARTMENT OF PUBLIC HEALTH RELEASES GUIDANCE ON THE USE OF FACE COVERINGS**

On June 29th, the California Department of Public Health (CDPH) released updated the original guidance on the use of face coverings from June 18th. In the new guidance, the CDPH provides guidance for both employees and the general public on use of face masks when outside the home. The new guidance mandates that face coverings be work state-wide in the circumstances outlined in the full document. Essentially, the guidance mandates face-coverings for individuals when inside public spaces, at healthcare facilities, during use of public transportation, when engaged in work, when interacting with other individuals, etc. The guidance also includes several exceptions to the mandate including, persons younger than two years of age, persons with a medical condition, persons seated at a restaurant while eating, persons engaged in outdoor work or recreation, etc. A copy of the full guidance can be found here:

[https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/COVID-19/Guidance-for-Face-Coverings\\_06-18-2020.pdf](https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/COVID-19/Guidance-for-Face-Coverings_06-18-2020.pdf)

## **CDFA OFFERS GUIDES ON COVID-19 AWARENESS AND BEST PRACTICES FOR EDUCATING FARMWORKERS**

The California Department of Food and Agriculture has added two educational documents to the COVID-19 Resources for Food and Agriculture webpage: <https://www.cdfa.ca.gov/coronavirus/>. The below linked documents are designed to help distill the latest COVID-19 guidance and resources specific for agricultural workers into one place.

COVID-19 Awareness for Agriculture- Click [HERE](#)

This document offers straightforward advice on how to prevent, educate and respond to COVID-19.

TIPS: Educating Farmworkers on COVID-19- Click [HERE](#)

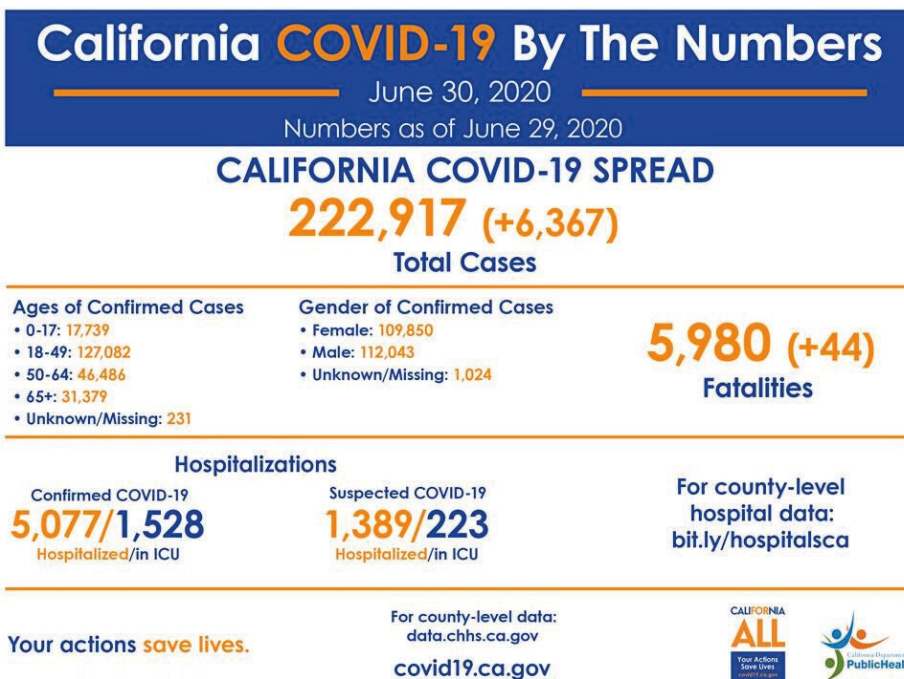
This document reinforces and broadens the education component through highlighting what actions have worked best in the field for farmworker education.



# COVID-19 UPDATE



## COVID-19 SURGE IN CENTRAL VALLEY CASES OVER THE WEEKEND



Over the past week, surges in COVID-19 cases were seen across California, specifically in Los Angeles, Fresno, San Joaquin, Kings, Kern, Imperial and Tulare counties. Fresno County added 197 cases of COVID-19 Tuesday bringing the total in the county to 5,008 according to an update from the Department of Public Health. Another death has also been reported as the number of people who have succumbed to the virus stands at 73. Health officials say 56 people have recovered from COVID-19 bringing the recovery count to 1,222.

Tulare County's spike in COVID-19 case is continuing. Public health officials report there are now 4,156 cases, an increase of 451 new infections since Friday. Additionally, another four people died due to complications from the virus. There are now 126 deaths reported in Tulare County. In Kings County, health officials say the number of coronavirus cases in the county is up by 44, bringing the total to in the county to 2,394. Of those, 1,138 are associated with state-operated correctional facilities. According to the Kings County Department of Public Health, the number of recoveries in the county is up 74 to a new total of 1,492. The Kern County Health Department reported 107 new COVID-19 cases Tuesday, raising the county total to 4,655. Two more people died from COVID-related causes in the past 24 hours, raising the death toll to 70. Finally, San Joaquin County has been struggling with an uptick in virus cases for some time. Their online coronavirus dashboard shows that nearly 45% of their 3,093 cases happened within the past two weeks.

## **PUBLIC NUISANCE RELATED TO COVID-19**

Various workplaces have been the target of litigation from impacted employees alleging unsafe working conditions due to inadequate COVID-19 prevention measures. In recent months, several notable court cases from various jurisdictions, including California, have addressed the issue of whether various workplace conditions constitute a public nuisance.

These cases underline the importance of following the CalOSHA COVID-19 guidance, as well as CDC guidance and state/local government orders.

### **Milan, MO: Rural Community Workers Alliance v. Smithfield Foods, Inc. ("Smithfield")**

Workers sued Smithfield for public nuisance, alleging they had inadequate COVID-19 prevention measures in place at a meat-packing facility in Milan, Missouri. On May 5, 2020, the Western District of Missouri granted the defendant's motion to dismiss, finding that the Occupational Safety and Health Administration ("OSHA") was a more appropriate institution to oversee Smithfield's operations, enforce any relevant COVID-19 orders or penalize Smithfield upon discovering any violations to those orders. In addition, the court held that even if the judicial intervention was appropriate, the plaintiffs failed to show an immediate threat of irreparable harm because they only demonstrated a potential contraction of the virus, as opposed to an actual injury. No employee at the Smithfield location had been diagnosed with the virus and management implemented various health and safety measures to prevent exposure to the virus.

### **Alameda, CA: Hernandez v. VES McDonald's**

On June 16, 2020, workers at a McDonald's restaurant in Oakland filed a class action suit against the restaurant owners and management. The plaintiffs sued for public nuisance abatement and were granted a temporary restraining order requiring the restaurant to remain closed until the defendants show compliance with all COVID-19 health orders. Plaintiffs include three employees of the McDonald's restaurant, who contracted the virus while working, and unknowingly spread the virus to family members and friends. Plaintiffs allege this initial contraction of the virus has led to a small outbreak resulting in at least 25 cases of COVID-19 tied to this McDonald's location, thus causing a public nuisance.

### **Chicago, IL: Massey v. McDonald's Corp.**

Most recently, on June 24, 2020, the circuit court of Cook County, Illinois partially granted the plaintiffs' request for preliminary injunction in a public nuisance suit to compel the management at a McDonald's restaurant in Chicago to enforce necessary COVID-19 prevention measures. This case also presents a potential for a virus outbreak with two positive cases of COVID-19 for workers at the restaurant. The order outlines the various virus prevention measures that were not enforced by the defendant, including providing an adequate supply of hand sanitizer and accommodating for and enforcing social distancing.

## **JOINT STATEMENT FROM USDA AND FDA ON FOOD EXPORT RESTRICTIONS PERTAINING TO COVID-19**

Today, U.S. Secretary of Agriculture Sonny Perdue and FDA Commissioner Stephen M. Hahn, M.D., issued the following statement regarding food export restrictions pertaining to COVID-19:

“The United States understands the concerns of consumers here domestically and around the world who want to know that producers, processors and regulators are taking every necessary precaution to prioritize food safety especially during these challenging times. However, efforts by some countries to restrict global food exports related to COVID-19 transmission are not consistent with the known science of transmission.”

“There is no evidence that people can contract COVID-19 from food or from food packaging. The U.S. food safety system, overseen by our agencies, is the global leader in ensuring the safety of our food products, including product for export.”

Background: The U.S. Centers for Disease Control and Prevention (CDC), in conjunction with the U.S. Occupational Safety and Health Administration (OSHA), has issued guidance for manufacturing facilities, including food facilities, specific to controlling the spread of COVID-19 between workers. But the COVID-19 guidelines from CDC and OSHA are separate and distinct from the food safety requirements that all U.S. facilities must follow to ensure food safety. The FDA, an agency within the U.S. Department of Health and Human Services, protects the public health by assuring the safety, effectiveness, and security of human and veterinary drugs, vaccines and other biological products for human use, and medical devices. The agency also is responsible for the safety and security of our nation’s food supply, cosmetics, dietary supplements, products that give off electronic radiation, and for regulating tobacco products.

# COVID-19 UPDATE



## **CA PUBLIC HEALTH OFFICIALS RELEASE GUIDANCE FOR EMPLOYERS ON COVID-19 OUTBREAKS IN THE WORKPLACE**

The California Department of Public Health has released guidance on employer responses to Covid-19 outbreaks in the workplace. This checklist is intended for use by employers experiencing an outbreak of COVID-19 in their workplace. Employers should be proactive and keep in mind that identification of even a single positive case among employees may quickly develop into an outbreak. As outbreak circumstances and work practices vary, employers may need assistance from their local health department (LHD) to plan and coordinate a response to the outbreak that meets the needs of the workplace. A copy of the guidance can be found [here](#).

## **COUNTY AGRICULTURAL COMMISSIONERS DISTRIBUTING FACE COVERINGS AROUND CALIFORNIA**

County Agricultural Commissioner offices across in partnership with the California Department of Food and Agriculture are distributing face coverings (2-ply surgical masks) to agricultural operations and businesses free of charge. As an effect of Covid-19, agricultural operations have seen a shortage of PPE materials and these face coverings will provide a means to help fill the void the industry has seen while ensuring employees are safe.

Please contact your local county ag commissioner's office to schedule a time to pick up the face coverings. For a listing a of state offices, [click here](#).

## **SBA PUBLISHES PPP FLEXIBILITY LOAN FORGIVENESS INTERIM FINAL RULE AND UPDATED APPLICATIONS**

On June 19, the Small Business Administration (SBA) published an update to its Interim Final Rules (New IFR) to reflect changes to the Paycheck Protection Program (PPP) put in place under the new Paycheck Protection Program Flexibility Act of 2020 (Flexibility Act). In addition, the SBA provided a new PPP Loan Forgiveness Application and Instructions as well as a new PPP "EZ" Loan Forgiveness Application and Instructions. Below are some key changes in the New IFR and the new PPP forgiveness applications:

1. New 24-week forgiveness period; existing borrowers can still elect eight-week forgiveness period
2. New PPP loans have five-year maturity period and longer covered period
3. 75/25 rule changed to 60/40 rule
4. Employee compensation cap for 24-week forgiveness period increased to \$46,154; owner compensation cap limited to \$20,833 for 24-week forgiveness period.
5. Updated PPP forgiveness application and new "EZ" forgiveness application

Click [here](#) for a copy of the updated PPP forgiveness application and [here](#) for a copy of the new "EZ" forgiveness application.

## **SBA'S ECONOMIC INJURY DISASTER LOANS AND ADVANCE PROGRAM REOPENED**

To further meet the needs of U.S. small businesses and non-profits, the U.S. Small Business Administration reopened the Economic Injury Disaster Loan (EIDL) and EIDL Advance program portal to all eligible applicants experiencing economic impacts due to COVID-19 last week. SBA's EIDL program offers long-term, low interest assistance for a small business or non-profit. These loans can provide vital economic support to help alleviate temporary loss of revenue. EIDL assistance can be used to cover payroll and inventory, pay debt or fund other expenses. Additionally, the EIDL Advance will provide up to \$10,000 (\$1,000 per employee) of emergency economic relief to businesses that are currently experiencing temporary difficulties, and these emergency grants do not have to be repaid.

### **SBA's COVID-19 Economic Injury Disaster Loan (EIDL) and EIDL Advance**

- The SBA is offering low interest federal disaster loans for working capital to small businesses and non-profit organizations that are suffering substantial economic injury as a result of COVID-19 in all U.S. states, Washington D.C., and territories.
- These loans may be used to pay debts, payroll, accounts payable and other bills that can't be paid because of the disaster's impact, and that are not already covered by a Paycheck Protection Program loan. The interest rate is 3.75% for small businesses. The interest rate for non-profits is 2.75%.
- To keep payments affordable for small businesses, SBA offers loans with long repayment terms, up to a maximum of 30 years. Plus, the first payment is deferred for one year.
- In addition, small businesses and non-profits may request, as part of their loan application, an EIDL Advance of up to \$10,000. The EIDL Advance is designed to provide emergency economic relief to businesses that are currently experiencing a temporary loss of revenue. This advance will not have to be repaid, and small businesses may receive an advance even if they are not approved for a loan.
- SBA's EIDL and EIDL Advance are just one piece of the expanded focus of the federal government's coordinated response.
- The SBA is also assisting small businesses and non-profits with access to the federal forgivable loan program, the Paycheck Protection Program, which is currently accepting applications until June 30, 2020.
- For additional information, please visit the SBA disaster assistance website at [SBA.gov/Disaster](https://www.sba.gov/disaster).

# COVID-19 UPDATE



## ON BEHALF OF THE CAC, US APPLE ASSOCIATION SUBMITS APPLICATION FOR USDA CFAP FUNDING FOR DIRECT PAYMENTS TO APPLE GROWERS

On behalf of the California Apple Commission, the U.S. Apple Association has submitted a proposal to the U.S. Department of Agriculture in an effort to obtain funding for direct payments to apple growers through the Coronavirus Food Assistance Program (CFAP). A copy of the submitted proposal is attached to this email for your review. Please do not hesitate to reach out with any questions or comments.

## CENTRAL VALLEY EXPERIENCES SURGE IN CONFIRMED CORONAVIRUS CASES OVER PAST WEEK

Central Valley counties, including Fresno, Tulare, Kings, Kern, San Joaquin, Madera, Merced, and Stanislaus, were several of the 30 total counties who experienced increases in confirmed COVID-19 cases over the past 7 days. Kings County experienced a 245.5% surge in cases. With the onset of this increase in COVID-19 cases, we encourage our members to ensure they are continuing to practice safety precautions utilizing the CDC's guidelines. The guidance specific for agricultural businesses and workers can be found here: <https://www.cdc.gov/coronavirus/2019-ncov/community/guidance-agricultural-workers.html>

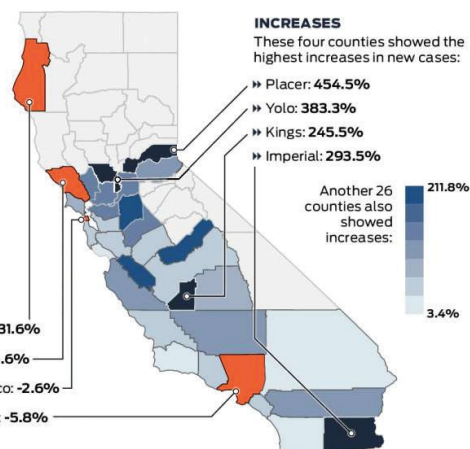
### Change in new COVID-19 cases since reopening

The change is the difference in the average number of new cases for the seven days prior to moving into advanced Stage 2 (May 18 for the six Bay Area counties that didn't advance, along with Imperial County) and all days since, through Sunday.

#### DECLINES

Four counties showed decreases in the average number of new cases:

- ▶ Humboldt: -31.6%
- ▶ Sonoma: -13.6%
- ▶ San Francisco: -2.6%
- ▶ Los Angeles: -5.8%



## **CDC AGRICULTURAL EMPLOYER CHECKLIST FOR CREATING A COVID-19 ASSESSMENT & CONTROL PLAN**

To prevent and slow the spread of COVID-19, agricultural employers can use this checklist to create a COVID-19 assessment and control plan for applying specific preparation, prevention, and management measures. This checklist has been developed based on the Agriculture Workers and Employers Interim Guidance from CDC and the U.S. Department of Labor.

This checklist has five sections:

- Section 1: Assessment
- Section 2: Control Plan based on the Hierarchy of Controls
  - » Screening and Monitoring Workers
  - » Managing Sick Workers
  - » Addressing Return to Work after Worker Exposure to COVID-19
  - » Engineering Controls
  - » Cleaning, Disinfection, and Sanitation
  - » Administrative Controls
  - » Personal Protective Equipment (PPE)
- Section 3: Special Considerations for Shared Housing
- Section 4: Special Considerations for Shared Transportation
- Section 5: Special Considerations for Children

This checklist can be used to reassess, update, and modify your assessment and control plan on a regular basis or as conditions change. You can find a copy of the full checklist [here](#).

## **PENDING LEGISLATION COULD CREATE NEW LEAVE OF ABSENCE BURDENS**

Even in the face of the coronavirus pandemic and a historic economic shock, the Legislature is considering legislation to increase the cost on employers of maintaining workers on the payroll. Currently, there are four bills pending that, if enacted, would expand or create a new leave of absence on employers with at least a single employee:

- AB 3216 (Kalra) - 12 weeks of leave under CFRA per year, four months of pregnancy disability leave, 80 hours of emergency leave/year, and at least three days of paid sick leave/year.
- AB 2999 (Low) - 10 days of bereavement leave per year.
- SB 1383 (Jackson) - unlimited time off from work for a school closure or day care closure.
- AB 2992 (Weber) - protected time off for an employee who is a victim of a crime or a family member who is a victim of a crime.

Supporters claim that the leaves of absence are generally "unpaid" (except for sick leave and the new emergency leave) and therefore should not be a burden on employers. Of course, just because a leave is unpaid, does not mean there is not a cost. Usually left out of the discussion is the method of enforcement, which is one of the biggest cost factors. Also, these proposed leaves cannot be viewed in isolation, but must be considered as a part of the existing leaves California already offers.

An unpaid leave of absence has a significant burden and cost on an employer. Each leave is "protected," meaning an employer must return the employee to the same position the employee had before going out on leave. Under AB 3216, this means holding a position open for three months or more. While an employer can temporarily fill the position with a new employee, that replacement frequently comes at a premium (temp agency fees, etc.). A replacement employee knows he or she is short term, and therefore, requires a premium wage, is less dedicated to the position, and often leaves for a better opportunity at a moment's notice. Also, many jobs require extensive amount of time and money to train a new employee, adding another cost. Some employers shift the work to other existing employees, which often leads to overtime pay. Further, most of the leaves of absence require employers to maintain health benefits while the employee is out. Each of the leaves of absence also comes with a threat of costly litigation if there is any dispute regarding the leave.

## UNITED FRESH HOSTING "UNITED FRESH LIVE" THIS WEEK

The United Fresh Produce Association is currently hosting their annual United Fresh conference in a virtual format. The online conference began yesterday (June 15) and will continue through Friday, June 19. Registration for this online event is free! Their produce safety line up is listed below:

- Audits: Why Do We Bother? (Wednesday)
- Smarter Food Safety, Big Data, and Predictive Analytics (Thursday)
- Adding COVID-19 to the Produce Safety Job Description (Friday)
- COVID-19: Lessons Learned from other Industries (Wednesday)
- Developing Effective Produce Safety Leaders (Thursday)
- Food Safety Reception (Monday)

To register for this event, please use the following link:

<https://www.unitedfreshlive.org/uf20/Public/Enter.aspx>

## CALIFORNIA LEGISLATURE PASSES STATE BUDGET

Yesterday, the Legislature passed a state budget attempting to account for a projected \$54 billion deficit caused by the COVID-19 pandemic. The vote is largely a formality, however, as a few key elements are missing, including:

- Total revenue the state will bring in as the tax deadline was pushed to July 15;
- How much further aid, if any, the federal government will provide the state; and
- Agreement with Governor Gavin Newsom.

Pursuant to 2010 initiative approved by the voters, lawmakers are required to pass a budget by June 15 to continue or risk losing their salary. There is no requirement of an agreement between the Legislature and the Governor.

The budget passed today reflects an agreement the Senate and Assembly reached earlier this month, which rejects many of the Governor's proposed cuts. The Senate and Assembly will now negotiate with the Governor to reach consensus on several significant points of disagreement:

- The Governor has proposed \$14 billion in cuts from schools, health care and safety net programs unless the federal government sends funds by July 1. The Legislature's budget flips the presumption, and instead assumes federal funding will arrive, and if it doesn't arrive by October 1, limits cuts to \$7 billion by drawing on reserves.
- The Legislature's budget rejects several proposed cuts to programs by the Governor, including cuts to affordable housing programs and the California State Universities and University of California systems.
- The Legislature's budget rejects the Governor's proposed 10% pay cut to all state employees and rather defers this to the union negotiation process.

Lawmakers have acknowledged they will need to make changes to budget passed today as negotiations with the Governor continue and the state's economic situation becomes clearer. It is expected an additional budget bill or bills will be agreed upon between now and July 1, the beginning of the state's fiscal year. This will be followed by one or more additional budget bills in July and August, after the delayed July 15 tax deadline has passed, and lawmakers have much clearer picture of the state's fiscal outlook.



# COVID-19 UPDATE



## PPP LOAN FORGIVENESS GRANTED AN EXTENSION

On Friday, June 5, President Trump signed into law the Paycheck Protection Program (PPP) Flexibility Act, a bill that provides small businesses more time and flexibility to use their PPP loans. The bill extends the covered period for loan forgiveness from 8 weeks after the date of loan disbursement to 24 weeks after the date of loan disbursement. Additionally, the bill reduces the requirement that 75 percent of a borrower's loan proceeds must be used for payroll costs to qualify for full loan forgiveness to 60 percent of a borrower's loan proceeds. The Treasury Department and the U.S. Small Business Administration (SBA) will issue rules guidance in the coming weeks to address these changes. To learn more, [click here](#).

## COVID-19 WEBINAR OPPORTUNITY

The California Fresh Fruit Association and Zenith Insurance Company have partnered to co-host a webinar "Navigating Through Covid-19: Reducing Risk in the Workplace", on June 11th (10am PST) and June 15th (9am PST).

The webinar will focus on providing employers with how to deal with the impacts of Covid-19, along with having the proper guidance, information, and resources that are vital to protecting their business and the health of their employees.

Topics will include:

- Zenith Covid-19 Resources
- Routes of Transmission
- Employee Health Monitoring
- Employee and Workplace Hygiene
- Social (Physical) Distancing
- Personal Protective Equipment
- Visitors and Non-Employee Interaction

To register for the June 11th seminar, click [here](#).

To register for the June 15th seminar, click [here](#).

## COVID-19 RESOURCES ON FDA WEBSITE

The FDA has posted a number of useful CDC and other useful COVID-19 resources that can be accessed at the following link: [https://www.fda.gov/food/food-safety-during-emergencies/food-safety-and-coronavirus-disease-2019-covid-19?utm\\_campaign=FoodCOVID\\_06032020&utm\\_medium=email&utm\\_source=Eloqua#whatsnew](https://www.fda.gov/food/food-safety-during-emergencies/food-safety-and-coronavirus-disease-2019-covid-19?utm_campaign=FoodCOVID_06032020&utm_medium=email&utm_source=Eloqua#whatsnew)

## COMMUNAL HOUSING SITUATIONS INFOGRAPHIC

The American Frozen Food Institute has created a helpful infographic containing information regarding communal housing situations. Please see below.

**TIPS TO MITIGATE COVID-19 IN COMMUNAL/SHARED HOUSING**

Consider cohorting with roommates you work with and regularly monitor one another for symptoms of illness.

**Tip 1:** Clean bathroom and other high touch point surfaces such as doorknobs at least 2x per day. Avoid placing toothbrushes or other personal items on the counter.

**Tip 2:** Wash hands for 20 seconds after sneezing or coughing.

**Tip 3:** Dispose or wash face coverings. Clean and disinfect buttons of laundry machines, laundry baskets and shared laundry items.

**Tip 4:** Restrict the number of people allowed in the kitchen or dining room at one time to stay 6 ft. (2m) apart. Do not share utensils.

**Tip 5:** Clean and disinfect all surfaces before and after mealtimes.

**Tip 6:** When there are multiple individuals in vehicles, wear cloth face coverings, consider putting down windows for more ventilation and take your temperature before you travel to work.

Visit [www.AFFIFoodSafety.org/coronavirus](http://www.AFFIFoodSafety.org/coronavirus) for more resources.

**AFFI** AMERICAN FROZEN FOOD INSTITUTE

## **UNITED FRESH TO HOST "UNITED FRESH LIVE"**

The United Fresh Produce Association will be hosting their annual United Fresh conference in a virtual format from June 15-19. Registration for this online event is free! Their produce safety line up is listed below:

- How to Turn 3rd Party Audits into More Than Just a Certificate (Monday)
- Audits: Why Do We Bother? (Wednesday)
- Smarter Food Safety, Big Data, and Predictive Analytics (Thursday)
- Adding COVID-19 to the Produce Safety Job Description (Friday)
- COVID-19: Lessons Learned from other Industries (Wednesday)
- Developing Effective Produce Safety Leaders (Thursday)
- Food Safety Reception (Monday)

To register for this event, please use the following link:

<https://www.unitedfreshlive.org/uf20/Public/Enter.aspx>



# COVID-19 UPDATE



## HEAT ILLNESS PREVENTION MEASURES

With harvest beginning and temperatures climbing in many parts of California, it is imperative that close attention is paid to the state's heat illness prevention requirements covering access to water and shade, high heat procedures, weather monitoring and acclimatization, employer and supervisor training and written procedures.

The following represents a general overview of some of the steps employers must take to comply with California's heat illness prevention regulation.

### Water

- Should be as close as practicable given the working conditions and layout of the worksite
- Encourage the frequent drinking of water
- Ensure that water is readily accessible, and if needed, move it to insure that it remains as close as practicable to workers
- It is insufficient to only place water in shaded areas and/or where toilet facilities if it is possible to place water closer to where employees are working

### Shade

- Shade structures must be erected if no other shade is readily available when the temperature exceeds 80 degrees Fahrenheit
- Locate it as close as practical to the area where employees are working
- Natural means of shade qualifies as shade under the regulation and may be deemed as superior artificial shade sources provided the canopy of the natural shade source (ex: a tree or vineyard canopy) is sufficiently dense so as to provide substantial blockage of direct sunlight and the branches from shade source are not so low to the ground that employees must crouch or cannot sit up straight without contacting vegetation. Spots of sunlight are acceptable as long as, overall, the shade provides substantially complete blockage of sunlight.
- Must have enough shade to accommodate all employees taking a rest and preventative cool-down break and who remain on-site during the meal period.
- Allow and encourage employees to take a cool-down rest in the shade for a period of no less than five minutes at a time when they feel the need to do so to protect themselves from overheating.
- Ensure that employees are being monitored when taking cool down breaks.

### **High Heat Procedures**

Additional preventive measures must be implemented when the temperature equals or exceeds 95 degrees Fahrenheit and include:

- Ensuring means of effective communication (by voice, observation, or electronic means)
- Observation for signs and symptoms of heat illness
  - Supervisor or other designee responsible for the observation of 20 or fewer employees) or
  - Implement buddy system, or
  - Having some other means of regular communication with an employee
- Conduct Pre-shift meetings before work begins to review high-heat procedures

### **Acclimatization**

- Employees newly assigned to work in a high heat must be observed by a supervisor or designee for their first 14 days of employment
- All employees must be observed by a supervisor or designee during a heat wave, which means any day in which the predicted high temperature for the day will be at least 80 degrees Fahrenheit and at least ten degrees Fahrenheit higher than the average high daily temperature in the preceding five days.
- And remember, when the temperature equals or exceeds 95 degrees, employers must provide one ten-minute "preventative cool-down rest period" every 2 hours. During the first 8 hours of a shift, the cool-down periods may be provided at the same time as the rest periods already required by the applicable wage order

## **FDA GUIDANCE ON REPORTING TEMPORARY CLOSURE OR SIGNIFICANTLY REDUCED PRODUCTION DURING COVID-19**

The FDA has developed guidance outlining a process for registered facilities to request assistance from the agency in the event of a shut down or significant reduction in operations. FDA notes it will not target inspections toward firms who voluntarily provide information and request assistance.

Please use the following link to review the guidance document:

<https://www.fda.gov/media/138375/download>

## **EPA RELEASES TEMPORARY GUIDANCE ON RESPIRATORY PROTECTION FOR AGRICULTURAL PESTICIDE HANDLERS DURING COVID-19**

There is no higher priority for EPA than protecting the health and safety of Americans, especially during the COVID-19 public health emergency. EPA has heard from states and stakeholders about Personal Protective Equipment shortages in the agricultural sector. To respond to these reports and to help ensure the health and safety of America's farmers, EPA is providing temporary guidance regarding respiratory protection requirements for agricultural pesticide handlers. Our guidance aligns with recent OSHA memos on respirators while addressing EPA's responsibilities under FIFRA and the Agricultural Worker Protection Standard (WPS).

### **Additional Information**

The temporary guidance outlines approaches to address the unavailability of required respiratory protection and respiratory fit testing that should first be exhausted before considering any alternative options. Options include:

- Use alternative NIOSH-approved respirators offering equivalent or greater respiratory protection than those required on the pesticide label;
- Hire commercial applicator services with enough respirators and respiratory protection capabilities;
- Opt to use agricultural pesticide products that do not require respirators; or
- Delay pesticide applications until another compliant option is available.



If the above options are exhausted, EPA's guidance provides additional options with strict terms, conditions, and exhaustion requirements to minimize potential incremental risks to workers:

- Reuse and extended use of disposable N95 filter face piece respirator;
- Use of "expired" respirators;
- Use of respirators certified in certain other countries or jurisdictions meeting protective conditions outlined; or
- Delay the annual respirator "fit test."

This is a temporary policy. EPA will assess the continued need for and scope of this temporary guidance on a regular basis. To read the guidance in full and to learn more about EPA's Worker Protection Standard, visit this webpage: <https://www.epa.gov/enforcement/statement-regarding-respiratory-protection-shortages-and-reduced-availability-respirator>.

## **CDC AND DOL RELEASE COVID-19 RELATED GUIDANCE FOR AGRICULTURAL WORKERS AND EMPLOYEES**

The CDC and the Dept of Labor released COVID-19 related guidance for Agriculture Workers and Employers. While this is not enforceable, the first few sentences suggest that it could be adopted at the state and local level. Key points from this interim guidance include:

- Management in the agriculture industry should conduct work site assessments to identify coronavirus disease 2019 (COVID-19) risks and infection prevention strategies to protect workers.
- Work site guidance for COVID-19 prevention and control should be taken into consideration in employer-furnished shared worker housing, transportation vehicles and work settings.
- Prevention practices should follow the hierarchy of controls, which includes using source control and a combination of engineering controls, administrative controls (especially proper sanitation, cleaning, and disinfection), and personal protective equipment.
- Grouping workers together into cohorts may reduce the spread of COVID-19 transmission in the workplace by minimizing the number of different individuals who come into close contact with each other over the course of a week, and may also reduce the number of workers quarantined because of exposure to the virus.
- Owners/operators should maximize opportunities to place farmworkers residing together in the same vehicles for transportation and in the same cohorts to limit exposure.
- Basic information and training about infection prevention should be provided to all farmworkers in languages they can understand.
- Agriculture work sites developing plans for continuing operations where COVID-19 is spreading among workers or in the surrounding community should work directly with appropriate state and local public health officials and occupational safety and health professionals.

To view the entire document, please visit: <https://www.cdc.gov/coronavirus/2019-ncov/community/guidance-agricultural-workers.html>

## **GUIDANCE DEVELOPED SPECIFIC TO HARVESTING AND SHARED HOUSING FOR AGRICULTURAL WORKERS & EMPLOYEES**

United Fresh, American Frozen Food Institute (AFFI), and Western Growers, with input from the FDA and CDC, have developed a guidance documents specific for harvesting and shared housing following the CDC and Department of Labor's recently released guidance for agricultural workers and employers. The documents can be reviewed here:

[https://www.unitedfresh.org/content/uploads/2020/06/Communal-Housing\\_Harversting\\_Processing-Guidance\\_version-2.1-May\\_27\\_2020.doc.pdf](https://www.unitedfresh.org/content/uploads/2020/06/Communal-Housing_Harversting_Processing-Guidance_version-2.1-May_27_2020.doc.pdf)



# COVID-19 UPDATE



## UNION ACTIVITY REPORTED IN THE CENTRAL VALLEY

Union protests, organized by the United Farm Workers (UFW), have been occurring over the past couple of days involving several blueberry growers in the Central San Joaquin Valley. Beginning on Monday, May 25th, it was reported that nearly 200 employees walked off a job site after a dispute involving a previously agreed upon change in wages. Activity has reportedly continued at additional blueberry production sites today as well.

It is important to note that in situations like this, clear communication with crews regarding wage adjustments is of paramount importance. It is also important to note that the UFW uses these cases to build support, garner press attention, and push for union elections.

As the situation continues to evolve, the Commission will continue to provide updates. If you have any questions in the meantime, please do not hesitate to contact our office.

## APPLICATION FOR CORONAVIRUS FOOD ASSISTANCE PROGRAM BEGINS TODAY

Starting today, producers of all the eligible commodities may apply for assistance through their local USDA Farm Service Agency center. Interested applicants can locate their service center and find the application at [www.farmers.gov/cfap](http://www.farmers.gov/cfap).

The United States Department of Agriculture (USDA) announced last week that it will provide up to \$2.1 billion in direct payment to specialty crop producers as part of the Coronavirus Farm Assistance Program (CFAP). The payments will be based on losses where prices and market supply chains have been impacted as result of Covid-19.

A payment calculator is available here: <http://fsa.usda.gov/Assets/USDA-FSA-Public/usdafiles/cfap/cfap-payment-calculator-public-facing-version-1-final.xlsm>

You may also access a copy of the application here:  
[https://www.farmers.gov/sites/default/files/documents/AD3114\\_200519V01%20%20FINAL.pdf](https://www.farmers.gov/sites/default/files/documents/AD3114_200519V01%20%20FINAL.pdf)

# USDA PROPOSAL ON HOW SUBMIT ADDITIONAL COMMODITIES TO RECEIVE CFAP PAYMENTS

On Friday, USDA issued a proposed rule around requesting assistance for identifying additional commodities that should be eligible for CFAP payments. Here is the link:

Link to Doc: <https://www.govinfo.gov/content/pkg/FR-2020-05-22/pdf/2020-11155.pdf>

Per the proposed rule, USDA will be receiving comments until June 22, 2020. As part of the comment for submission, USDA is looking for the following information:

- (1) What commodities not listed above have suffered a 5-percent-or greater price loss between January and April 2020 and face additional marketing costs due to COVID-19?
- (2) What was the price received per unit of measure sold the week of January 13 through January 17, 2020, (or if not available, the nearest to this date) and what is the basis for the determination of this price?
- (3) What was the price received per unit of measure sold the week of April 6 through April 10, 2020, (or if not available, the nearest date to this) and what is the basis for the determination of this price?

According to the Federal Register Notice: If sufficient information is received and a decision is made to add commodities to the program, USDA will issue another NOFA listing the additional commodities, the respective payment rates, application dates, and any other unique information that producers will need to know for those commodities and the availability of CFAP payments.





# COVID-19 UPDATE



## **USDA SUPPORTS SPECIALTY CROP PRODUCERS WITH DIRECT PAYMENTS FOR LOSSES DUE TO COVID-19**

The United States Department of Agriculture (USDA) announced today that it will provide up to \$2.1 billion in direct payment to specialty crop producers as part of the Coronavirus Farm Assistance Program (CFAP). The payments will be based on losses where prices and market supply chains have been impacted as result of Covid-19. Specialty Crop producers that fall into one of the categories outlined below may be eligible to receive a direct payment:

- Sales with a price loss of 5% or more between January 15th and April 15th of this year.
- Producers with the following commodities are eligible: Almonds, artichokes, beans, broccoli, cabbage, carrots, cauliflower, sweet corn, cucumbers, eggplant, lemons, iceberg and Romaine lettuce, dry onions, peaches, pears, pecans, bell and other types of peppers, rhubarb, spinach, squash, strawberries, and tomatoes.
- Shipments that left the farm by April 15th and spoiled due to no market or for which no payment was received.
- Shipments that have not left the farm or mature crops that remained unharvested by April 15th.

Starting on May 26th, producers of all the eligible commodities may apply for assistance through their local USDA Farm Service Agency center. Interested applicants can locate their service center and find the application at [www.farmers.gov/cfap](http://www.farmers.gov/cfap).

## **CA APPLE COMMISSION MONITORING UPCOMING PENDING STATE OF CALIFORNIA LEGISLATION**

Through daily updates with the Governor's office, the CAC has been made aware of several pieces of potential upcoming legislation regarding workers' compensation, labor, and energy/environment. These bills are currently circulating through the State Legislature, and the CAC is closely monitoring their approval process. These bills were introduced in response to the ongoing COVID-19 pandemic and may have lasting impacts on many industries, including agriculture. The CAC will continue to provide updates as these bills progress, but if you have any specific questions in the meantime, please do not hesitate to contact our office.

# US DEPARTMENT OF TRANSPORTATION MODERNIZES HOURS OF SERVICE RULES TO IMPROVE SAFETY AND INCREASE FLEXIBILITY FOR AMERICA'S TRUCKERS

The U.S. Department of Transportation's Federal Motor Carrier Safety Administration (FMCSA) today published a final rule updating hours of service (HOS) rules to increase safety on America's roadways by updating existing regulations for commercial motor vehicle (CMV) drivers.

First adopted in 1937, FMCSA's hours of service rules specify the permitted operating hours of commercial drivers. In 2018, FMCSA authored an Advanced Notice of Proposed Rulemaking (ANPRM) to receive public comment on portions of the HOS rules to alleviate unnecessary burdens placed on drivers while maintaining safety on our nation's highways and roads. Subsequently, in August 2019, the Agency published a detailed proposed rule which received an additional 2,800 public comments.

Based on the detailed public comments and input from the American people, FMCSA's final rule on hours of service offers four key revisions to the existing HOS rules:

- The Agency will increase safety and flexibility for the 30-minute break rule by requiring a break after 8 hours of consecutive driving and allowing the break to be satisfied by a driver using on-duty, not driving status, rather than off-duty status.
- The Agency will modify the sleeper-berth exception to allow drivers to split their required 10 hours off duty into two periods: an 8/2 split, or a 7/3 split—with neither period counting against the driver's 14-hour driving window.
- The Agency will modify the adverse driving conditions exception by extending by two hours the maximum window during which driving is permitted.
- The Agency will change the short-haul exception available to certain commercial drivers by lengthening the drivers' maximum on-duty period from 12 to 14 hours and extending the distance limit within which the driver may operate from 100 air miles to 150 air miles.

FMCSA's final rule is crafted to improve safety on the nation's roadways. The rule changes do not increase driving time and will continue to prevent CMV operators from driving for more than eight consecutive hours without at least a 30-minute break.

In addition, FMCSA's rule modernizing hours of service regulations is estimated to provide nearly \$274 million in annualized cost savings for the U.S. economy and American consumers. The trucking industry is a key component of the national economy, employing more than seven million people and moving 70 percent of the nation's domestic freight. The new hours of service rule will have an implementation date of 120 days after publication in the Federal Register.

The complete final rule is available here: <https://www.fmcsa.dot.gov/regulations/hours-service/hours-service-drivers-final-rule>

Truckers have played a key role in getting America through the COVID-19 public health emergency. FMCSA has provided regulatory relief to commercial drivers to get critically important medical supplies, food, and household goods to Americans in need. The nation's truck drivers have been on the front lines of this effort and are vital to America's supply chain. The latest information, declarations, and resources on FMCSA's response to the COVID-19 are available at <https://www.fmcsa.dot.gov/COVID-19>

## **UPDATE FROM USDA REGARDING EFFORTS TO ADDRESS FOOD AND AGRICULTURE SECTOR PPE CHALLENGES**

Obtaining personal protective equipment, face coverings, cleaning and sanitations supplies for essential workers and businesses has been an ongoing challenge across multiple segments of the food and agriculture sector.

We'd like to take this opportunity to remind you of the FEMA Fact Sheet (at the following link) [Coronavirus \(COVID-19\) Pandemic: Addressing PPE Needs in Non-Healthcare Setting](#), which summarizes how organizations should consider and manage their personal protective equipment (PPE) needs while ensuring the protection of workers during the coronavirus (COVID-19) pandemic response. We have communicated with the National Emergency Management Association, and they have affirmed the process laid out in this document for critical infrastructure PPE and cloth face covering needs as described below:

For PPE and Cloth Face Covering needs: if suppliers are unable to provide for your needs, and the PPE is urgently required, submit a request for assistance to your state emergency management agency. If the state is unable to address needs, the state should submit a request for support to their FEMA Regional Response Coordination Center.

## **SINGLE-USE SURGICAL MASKS AVAILABLE THROUGH COUNTY AGRICULTURAL COMMISSIONER'S OFFICES**

County Agricultural Commissioner offices across the state have received single-use surgical masks from the California Department of Food and Agriculture as result of the Personal Protective Equipment (PPE) survey that was conducted earlier this month. As an effect of Covid-19, agricultural operations have seen a shortage of PPE materials and these single-use masks will provide a means to help fill the void the industry has seen while ensuring employees are safe.

To be placed on the distribution list for the masks, please contact your local county agricultural commissioner's office. For a listing a of state offices, [click here](#).

## **ADDITIONAL COVID-19 RESOURCES**

On the following pages, please view information related to COVID-19 that can be shared with your industry contacts:

- Updated Cal OSHA Guidance Document: COVID-19 Daily Checklist for Agricultural Employers
- Updated Cal OSHA Guidance Document: COVID-19 General Checklist for Agricultural Employers
- Updated Cal OSHA Guidance Document: COVID-19 Infection Prevention for Agricultural Employers and Employees

## Cal/OSHA COVID-19 Daily Checklist for Agricultural Employers

May 8, 2020

This checklist should be reviewed and completed daily to help agricultural employers prevent the spread of COVID-19 in the workplace. Refer to the [Cal/OSHA's Safety and Health Guidance on COVID-19 Infection Prevention for Agricultural Employers and Employees](#) for additional information and guidance.

### ***Procedures to Prevent the Spread of COVID-19***

- Screen employees for COVID-19 symptoms when they arrive at work, observe for symptoms throughout the day and immediately send workers home or to medical care if they have acute respiratory illness symptoms.
- Ensure adequate cleaning supplies are readily available.
- Ensure handwashing facilities, including soap and paper towels, are readily available.
- Frequently check supplies of soap and paper towels.
- Ensure restrooms are kept clean and sanitary.
- Ensure handwashing facilities are located at or near restrooms.
- Ensure additional handwashing facilities and supplies are placed as close to work areas as possible.
- Ensure employees are encouraged to frequently use washing facilities.
- Ensure employees are instructed to not share tools or equipment and/or to sanitize between uses.

### ***Procedures to Increase Physical Distancing***

- Use a stick or tape measure to demonstrate six feet of distance (wherever it is practiced whether outdoors, in vehicles or in structures).
- Adjust work practices, work stations, line speeds and other processes to enable employees to maintain safe physical distancing.
- Provide additional seating and shade structures to allow employees to be at least six feet apart.
- Hold meetings and trainings in small groups so workers can maintain six feet of distance between each other.
- Place drop-boxes or drop-off locations near the road so vehicles do not need to enter the farm.



# Cal/OSHA COVID-19 General Checklist for Agricultural Employers

May 8, 2020

This checklist is intended to help agricultural employers implement their plan to prevent the spread of COVID-19 in the workplace. Refer to [Cal/OSHA's Safety and Health Guidance on COVID-19 Infection Prevention for Agricultural Employers and Employees](#) for additional information and guidance.

## ***Employee Training (Topics that should be covered)***

- COVID-19 symptoms and when employees should seek medical help.
- How COVID-19 is spread.
- How an infected person can spread COVID-19 to others even when they are not sick
- The employer's plan for screening workers for COVID-19.
- How employees can protect themselves and prevent the spread of COVID-19.
- Wash hands and scrub with soap for at least 20 seconds:
  - When employees arrive and before they leave work.
  - Before and after eating or using the toilet.
  - After close interaction with other persons.
  - After contacting shared surfaces or tools.
  - Before and after wearing a mask or gloves.
  - After blowing nose, coughing or sneezing.
  - Explain that hand sanitizers are not as effective as hand-washing but can be used as an interim measure if a hand-washing station is not immediately available.
  - Time spent hand-washing is compensable as nonproductive time for piece-rate workers.
- Avoid social greetings with contact such as handshakes and hugs.
- How to properly use cloth face covers and what they do, including:
  - CDC guidelines** that everyone should use cloth face covers when around other persons.
  - Cloth face covers can help protect persons around the user of the cloth face cover when combined with physical distancing and frequent hand washing.
  - Cloth face covers are not protective equipment and do not protect the person wearing a cloth face cover from COVID-19.
- Avoid touching eyes, nose and mouth.
- Cough and sneeze into their elbows or a tissue and immediately dispose of tissue.
- Safely use cleaners and disinfectants:
  - Carefully follow label directions.
  - Assess the hazards of all cleaners and disinfectants used.
  - Wear personal protective equipment (gloves, etc.)

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- Ensure cleaners and disinfectants are used in a manner that does not endanger employees.
  - Limit close contact with others, maintain at least six feet of separation.
  - Remind employees not to come to work if they have frequent cough, fever or difficulty breathing, or if they live with or have had close contact with someone who does.
  - Discuss the employer's plan and procedures to protect employees from COVID-19 illness.
  - Report to a supervisor when beginning to feel symptoms.

### ***Procedures to Prevent the Spread of COVID-19***

- Screen employees for COVID-19 symptoms when they arrive at work, observe for symptoms throughout the day and immediately send workers home or to medical care if they have acute respiratory illness symptoms.
- Establish procedures to notify local health officials upon learning that someone has a COVID-19 infection.
- Encourage workers to report their condition to their supervisor if they feel sick and ask them to stay home, and do not punish them for missing work due to an illness.
  - Advise employees about any available sick leave benefits for agricultural workers, including paid sick leave under the federal Families First Coronavirus Recovery Act (for agricultural employers with fewer than 500 employees) and Governor Newsom's Executive Order N-51-20 (for agricultural employers with 500 or more employees).
  - Educate eligible employees on other possible benefits.
- Provide face covers or encourage employees to use their own face covers, and ensure they are used in accordance with CDC guidelines.
- Establish procedures to more frequently clean and disinfect commonly touched surfaces and objects, including restrooms, door handles, tools and equipment, water jug spigots, benches, tables, trashcans, seat belts and insides of toilet facilities.
  - Use EPA-approved products according to the manufacturer's instructions when cleaning and disinfecting.
  - Provide employees with EPA-registered disposable wipes to sanitize commonly used surfaces before use.
  - Follow the manufacturer's instructions for all cleaning and disinfection products.
- Ensure adequate cleaning supplies are readily available.
- Ensure handwashing facilities, including soap and paper towels, are readily available.
- Frequently check supplies of soap and paper towels.
- Ensure restrooms are kept clean and sanitary.
- Ensure handwashing facilities are located at or near restrooms.
- Ensure additional handwashing facilities and supplies are placed as close to work areas as possible.
- Ensure employees are encouraged to frequently use washing facilities.
- Ensure employees are instructed to not share tools or equipment and/or to sanitize between uses.

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### ***Procedures to Increase Physical Distancing***

- Use a stick or tape measure to demonstrate six feet of distance (wherever it is practiced whether outdoors, in vehicles or in structures).
- Provide adequate time and space for workers to clock in and out at the beginning and end of the work shift without crowding.
- Adjust work practices, work stations, line speeds and other processes to enable employees to maintain safe physical distancing.
- Stagger breaks and lunch times.
- Limit crew sizes by staggering shifts or increasing the number of shifts.
- Provide additional seating and shade structures to allow employees to be at least six feet apart.
- Hold meetings and trainings in small groups so workers can maintain six feet of distance between each other.
- Discourage employees from large gatherings and encourage physical distancing during non-work hours.
- Encourage employer-housed workers to be proactive in physical distancing and take affirmative steps to quarantine any housed workers exhibiting symptoms.
- Establish locations for receiving regular deliveries away from on-farm high-traffic areas and housing.
- Create specific written instructions for deliveries.
- Provide signage that easily identifies drop-off points, including contact information.
- Place drop-boxes or drop-off locations near the road so vehicles do not need to enter the farm.



# SAFETY AND HEALTH GUIDANCE

## COVID-19 Infection Prevention for Agricultural Employers and Employees

May 5, 2020

California employers are required to establish and implement an Injury and Illness Prevention Program (IIPP) to protect employees from all worksite hazards, including infectious diseases. This guidance contains information, recommendations, and requirements for agricultural employers on how to update their IIPPs to include preventing the spread of COVID-19 in the workplace. This guidance does not introduce any new legal obligations, but because COVID-19 is widespread in the community, most California workplaces must consider the disease a workplace hazard.

### Employee Training on COVID-19

Agricultural employers must provide training in a way that is readily understandable by all employees. Employees should be trained on the following topics:

- Information related to COVID-19 from the **Centers for Disease Control and Prevention (CDC)**, including:
  - What COVID-19 is and **how it is spread**.
  - **Preventing the spread of COVID-19 if you are sick**.
  - **Symptoms of COVID-19 and when to seek medical attention**.
- Information from **California's COVID-19 Response Webpage** for additional resources, including ones in Spanish.
- The importance of frequent hand-washing with soap and water, including:
  - Following CDC guidelines to wash for at least 20 seconds.
  - When employees arrive at work and before they leave work.
  - Before and after eating or using the toilet.
  - After close interaction with other persons.
  - After contacting shared surfaces or tools.



- Before and after wearing masks or gloves.
- After blowing nose or sneezing.
- That hand sanitizer is not as effective as hand-washing but can be used as an interim measure if a hand-washing station is not immediately available.
- Methods to avoid touching eyes, nose, and mouth.
- Coughing and sneezing etiquette, including covering a cough or sneeze with a tissue or a sleeve instead of a hand.
- Safely using cleaners and disinfectants on surfaces and objects, which includes:
  - Carefully following label directions.
  - Assessing the hazards of all cleaners and disinfectants used at the worksite.
  - Wearing personal protective equipment (such as gloves).
  - Ensuring cleaners and disinfectants are used in a manner that does not endanger employees.
- Limiting close contact with others as much as possible and maintaining safe physical distancing (see Physical Distancing information on next page).
- The importance of not coming to work if they have a frequent cough, fever, difficulty breathing, chills, muscle pain, headache,

*(continued on next page)*



sore throat, or recent loss of taste or smell, or if they live with or have had close contact with someone who has been diagnosed with COVID-19.

- To seek medical attention if the symptoms become severe including persistent pain or pressure in the chest, confusion, or bluish lips or face. Updates and further details are available on [CDC's webpage](#).
- The employer's plan and procedures to protect employees from COVID-19 illness.

### **Procedures to Help Prevent the Spread of COVID-19 at the Worksite**

IIPP administrators should establish and implement the following procedures to help prevent the spread of COVID-19:

- Immediately send employees with acute respiratory illness symptoms home or to medical care as needed.
- Establish procedures to notify local health officials upon learning that someone has a COVID-19 infection. These officials will help employers determine a course of action.
- Encourage sick workers to stay home by not punishing them for missing work. Consider sick leave benefits to help prevent the spread among workers who might otherwise work out of economic necessity. Educate eligible employees on other benefits they can access if symptoms, illness, or caring for an ill family member prevents them from working. See [FAQs on laws enforced by the California Labor Commissioner's Office](#) (questions 1 and 2).
- Make hand-washing stations more readily available and encourage their use. Employers are advised that hand-washing is compensable as nonproductive time for piece-rate workers (see [FAQs on piece-rate compensation](#)).
- Establish procedures to routinely clean and disinfect commonly touched surfaces and objects (e.g., water containers, steering wheels, shared tools, shared work stations, door handles, seat belts, insides of toilet facilities) throughout the workday. These procedures should include:
  - Using products that are **EPA-approved**

for use against the virus that causes COVID-19.

- Providing EPA-registered disposable wipes for employees to wipe down commonly used surfaces before use.
- Following the manufacturer's instructions for all cleaning and disinfection products (e.g., safety requirements, protective equipment, concentration, contact time).
- Ensuring there are adequate supplies to support cleaning and disinfection practices.

### **Procedures to Increase Physical Distancing**

Physical distancing is an infection control measure that can stop or slow down the spread of an infectious disease by limiting contact between people. Safe physical distancing means maintaining a distance of at least six feet from other people. Agricultural employers should use the following physical distancing measures to stop or slow down the spread of COVID-19:

- Physical distancing should be practiced, whether outdoors, in vehicles, or in structures.
- Establish work practices and work stations, and adjust line speed and other processes to enable employees to maintain safe physical distancing while working.
- Stagger break and lunch times.
- Limit crew size by staggering work shifts or increasing the number of work shifts.
- Provide additional seating and shade structures to allow employees to take breaks while staying at least six feet apart.
- Encourage employees to avoid large gatherings and practice physical distancing during non-work hours. Employers who house workers are encouraged to be proactive in

**Health experts do not recommend the use of respirators by the general public or the general workforce for COVID-19. However, if available, employers should provide them to agricultural workers when needed to protect workers against excessive dust, *Coccidioides* fungus (the source of Valley Fever), or other harmful agents.**

*(continued on next page)*

making physical distancing possible and to take affirmative steps to quarantine any housed worker exhibiting symptoms.

- Establish a location for receiving regular deliveries away from on-farm high-traffic areas and housing.
  - Place drop-boxes or drop-off locations near the road so vehicles do not need to enter the farm.
- Create specific instructions for deliveries.
  - Provide suppliers and customers with the location of and all the procedures to be used at the drop-off point.
  - Create signage to easily identify drop-off points. Include contact information on the signs to assist with questions leading up to delivery and upon arrival.

## Good Sanitation Practices

Agricultural employers must ensure bathrooms and hand-washing facilities are readily accessible to all employees at all times.

- Restrooms must be clean and sanitary.
- Hand-washing facilities must be located at or near the restrooms.
- Soap or other suitable cleansing agent and single-use towels must be provided.
- Additional hand-washing supplies should be placed as close to work areas as possible to allow for frequent hand-washing.
- Enough time must be allowed for frequent hand-washing.
- Due to increased hand-washing, the employer should frequently check the supply of soap, paper towels, and toilet paper, and replenish them before they run out.

## Additional COVID-19 Resources for Agricultural Employers

### Agricultural Employers

- California Department of Public Health. [Coronavirus Disease 2019 \(COVID-19\) and the Food Supply Chain](#)
- Oregon Department of Agriculture. [Effective Disinfectants to Help Prevent the Spread of Coronavirus Disease \(COVID-19\) on Food Contact Surfaces](#)
- Pennsylvania Department of Agriculture. [COVID-19 Guidance: Farm and Farm Deliveries](#)

### General Information

- [California Coronavirus \(COVID-19\) Response](#)
- California Division of Occupational Safety and Health. [Cal/OSHA Interim Guidelines for General Industry on 2019 Novel Coronavirus Disease \(COVID-19\)](#)
- California Labor and Workforce Development Agency. [Coronavirus 2019 \(COVID-19\) Resources for Employers and Workers](#)
- [Centers for Disease Control and Prevention. Coronavirus Disease \(COVID-19\)](#)
- Centers for Disease Control and Prevention. [Coronavirus Disease \(COVID-19\): Interim Guidance for Businesses and Employers](#)
- Centers for Disease Control and Prevention. [Coronavirus Disease \(COVID-19\): Symptoms](#)
- Centers for Disease Control and Prevention. [Coronavirus Disease \(COVID-19\): How It Spreads](#)
- Centers for Disease Control and Prevention. [Coronavirus Disease \(COVID-19\): Steps to help prevent the spread of COVID-19 if you are sick](#)
- U.S. Environmental Protection Agency. [Disinfectants for Use Against SARS-CoV-2](#) (the virus that causes COVID-19)



This document is available with active links at [www.dir.ca.gov/COVID19AG](http://www.dir.ca.gov/COVID19AG)  
For assistance regarding this subject matter, employers may contact  
Cal/OSHA Consultation Services at: 1-800-963-9424 or [InfoCons@dir.ca.gov](mailto:InfoCons@dir.ca.gov)  
[www.dir.ca.gov/dosh/consultation.html](http://www.dir.ca.gov/dosh/consultation.html)

# COVID-19 UPDATE



## GOVERNOR NEWSOM ISSUES EXECUTIVE ORDER EXTENDING WORKERS' COMPENSATION BENEFITS

On May 6, 2020, Governor Newsom announced he signed an Executive Order to expand the scope of workers' compensation benefits during the COVID-19 Pandemic. This was in response to front line workers and others in the essential workforce contracting the virus and movement by the Legislature to expand workers' compensation coverage through legislation.

The Governor announced the Executive Order will do the following:

1. The Executive Order is retroactive to March 19 and extends for 60 days from today's announcement.
2. Employees working outside the home that test positive for COVID-19 or are diagnosed positive by a physician or surgeon licensed by the California Medical Board within the time period of the Executive Order are presumed to have contracted the disease at the workplace. If it is a diagnosis, the diagnosis must be confirmed by a positive test within 30 days.
3. The presumption applies to all employees directed to work outside the home by their employer. It is not limited to essential employees.
4. The presumption is rebuttable by the employer, however, the time for the employer to deny a claim is reduced from the current 90 days to 30 days.
5. The rebuttable presumption is in effect for 60 days from May 6, 2020, but coverage continues after the 60 day expiration date.
6. Temporary disability payments begin only after the employee uses all other state or federal sick leave benefits.
7. Re-testing is required every 15 days during first 45 days of temporary disability payments.
8. The Department of Industrial Relations will not require or accept a "no beneficiary" death benefit.

A link to the Executive Order can be found here: <https://www.gov.ca.gov/wp-content/uploads/2020/05/5.6.20-EO-N-62-20-text.pdf>

We suggest you reach out to your individual workers' compensation insurance provider to determine how the Executive Order will impact your business and the procedure to follow should you have an employee test positive for COVID-19.

## **CALIFORNIA'S DEPARTMENT OF PESTICIDE REGULATION ISSUES PESTICIDE ENFORCEMENT GUIDANCE AMID COVID-19 PANDEMIC**

The Department of Pesticide Regulation (DPR), which is a department within the California Environmental Protection Agency (CalEPA), issued guidance last week to local county agricultural commissioners on expectations around the enforcement of pesticide regulations near schools and homes amid the COVID-19 pandemic.

The guidance, issued at the [direction of Governor Gavin Newsom](#), clarifies existing legal requirements limiting pesticide use near school sites that continue in operation. While schools are physically closed, many continue to perform critical functions, such as providing on-site meals, homework assignments, and other services. "These are unprecedented times in our state and working together to ensure the health and safety of schoolchildren and families, as well as continuing to support growers, is a priority," said Jared Blumenfeld, California Secretary of Environmental Protection.

DPR is directing all commissioners to:

- Strictly enforce all applicable pesticide health protections around homes and schools during the COVID-19 emergency. Pesticide applications are prohibited when there is a reasonable possibility of contamination of people not involved in the pesticide application process.
- Continue to work with schools to understand when children and others are likely to be present at school sites and restrict pesticide applications, as appropriate, accordingly.
- Take a strict approach to assessing penalties. Violations that occur near homes or schools during the COVID-19 emergency should be considered among the most serious and should carry fines at the top of the range. This could mean fines of up to \$5,000 per person per incident.

Also, DPR is increasing its enforcement oversight to:

- Enhance the transparency of pesticide applications that occur near homes and schools.
- Ensure that CACs prioritize investigations of violations near homes and schools. DPR may refer violations to the Attorney General's Office for prosecution as appropriate.
- Work with community residents to facilitate the reporting of pesticide incidents. The Department will continue to promote use of the California's System for Pesticide Incident Reporting (CASPIR) mobile application for quick and anonymous reporting of pesticide incidents.

California's pesticide rules and regulations were designed to limit certain pesticide applications that could expose school-aged children, while also supporting growers and their ability to protect their crops. Local county agricultural commissioners are responsible for enforcing these rules at the county level.

## **GOVERNOR NEWSOM RELEASES UPDATED INDUSTRY GUIDANCE**

On May 8, 2020, Governor Gavin Newsom released updated industry guidance – including agriculture – to begin reopening with modifications that reduce risk and establish a safer environment for workers and customers. As California moves into Phase II of the resilience roadmap, businesses are now encouraged to take every step possible to reduce the risk of infection, including: Plan and prepare for reopening; Make radical changes within the workplace; and Adjust practices by employees and help educate customers. The new guidance for agriculture is available here: <https://files.constantcontact.com/35cbbf3f001/c4bcef14-f225-4c61-9172-cb7d29302233.pdf>

## **AG INDOOR GRANTS NOW OPEN FOR APPLICATIONS**

USDA announced last week the availability of \$3 million for grants through its new Office of Urban Agriculture and Innovative Production which was supported by United Fresh and the Specialty Crop Farm Bill Alliance. The competitive grants will support the development of urban agriculture and innovative production projects through two categories, Planning Projects and Implementation Projects. USDA will accept applications on Grants.gov until midnight July 6, 2020. To learn more about the new grants' purpose, project types, eligibility and basic requirements for submitting an application more about the grants they will host a [webinar](#), June 3, 2020, at 2 p.m. Eastern Daylight Time.

## **USDA NOMINATIONS OPEN FOR RESEARCH ADVISORY BOARD**

USDA announced last week the opening of the solicitation for nominations to fill vacancies on the National Agricultural Research, Extension, Education, and Economics (NAREEE) Advisory Board and its subcommittees. There are fourteen vacancies on the NAREEE Advisory Board; four vacancies on the National Genetic Resources Advisory Council; three vacancies on the Specialty Crop Committee; and three vacancies on the Citrus Disease Subcommittee. The deadline for these nominations is July 31, 2020. For more information, please visit: <https://s3.amazonaws.com/public-inspection.federalregister.gov/2020-09931.pdf>

## **FARMERS TO FAMILIES FOOD BOX PROGRAM LAUNCHED**

USDA launched the Farmers to Families Food Box program that will distribute fresh produce, milk, meat, and/or dairy products to food banks, schools, and other emergency feeding sites. At least \$100 million per month will be allocated towards fresh produce purchases and deliveries through the end of the year. RFPs were due last Friday, and USDA is scheduled to announce the first awards in the next 24 hours. We will be monitoring this process closely and continue to provide updates as they arise. For those engaged in the program, we encourage you to keep us updated on your experiences. Check out the following link for additional information. <https://www.ams.usda.gov/selling-food-to-usda/farmers-to-families-food-box>

## **CDFA COVID-19 RESOURCES UPDATE**

Just this week the Governor's Office of Emergency Services (Cal-OES) State Operations Center made available two-million surgical masks and 10,000 cloth masks for farmworkers and other agricultural employees, with the cloth masks intended specifically for migrant housing facilities. These are being shipped to County Ag Commissioners' offices and will be made available according to local needs. This is a one-time emergency shipment to fill the gap while the supply chain catches up with high-volume demand. There continues to be a significant shortage of N95 masks for health care workers, first responders, and the various agricultural and industrial activities that require N95 masks.

The State has been working to establish additional testing sites, especially in rural communities.

Use the link below to find a testing site:

<https://www.arcgis.com/apps/Nearby/index.html?appid=43118dc0d5d348d8ab20a81967a15401>

Baseline COVID-19 (Drive-through testing) information:

<https://www.projectbaseline.com/study/covid-19/>

Use the link below to view information on making an appointment to get tested.

<https://lhi.care/covidtesting>

<https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/testing.html>



# COVID-19 UPDATE



## **ECONOMIC INJURY DISASTER LOANS ARE NOW AVAILABLE FOR AGRICULTURAL BUSINESSES**

The United States Department of Agriculture Secretary Sonny Perdue has announced that agricultural producers are now for the first time eligible for the Small Business Administration's (SBA) Economic Injury Disaster Loan (EIDL). SBA's EIDL portal has been closed since April 15th but announced that it will reopen today as a result of funding authorized by Congress through the Paycheck Protection Program. This legislation, which was signed by President Trump on April 24th, will provide additional funding for farmers and ranchers affected by Covid-19.

SBA is re-opening the Loan and Advance application portal to agricultural enterprises only. For producers that had submitted an EIDL load application through the portal prior to the legislative change, SBA will move forward and process these applications without needing to re-apply.

For more information or to access the EIDL application, click [here](#).

## **DEPARTMENT OF MOTOR VEHICLE – PARTIAL YEAR VEHICLE REGISTRATION RENEWAL**

The DMV has created a step-by-step video guide to partial year vehicle registration via the Virtual Field Office. The video can also be found on the California DMV YouTube Channel using the link below: <https://youtu.be/lzoDzcVWZqk>

## **CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE'S COVID-19 WEBPAGE**

Please be reminded that CDFA continues to post up-to-date COVID-19 information and resources for the food and agricultural industry on its website. The dedicated page related to COVID-19 can be accessed using the link below: <http://www.cdfa.ca.gov/coronavirus/>

## **FDA GUIDELINES ON USE OF RESPIRATORS, FACEMASKS, AND CLOTH FACE COVERINGS IN THE FOOD AND AGRICULTURE SECTOR DURING COVID-19 PANDEMIC**

The Centers for Disease Control and Prevention (CDC) advise the use of simple cloth face coverings to slow the spread of the virus and to help people who are unaware they have the virus from spreading it to others. This has led to questions from the Food and Agriculture Sector about what respirators, disposable facemasks, such as surgical or medical masks, or cloth face coverings are most appropriate for various settings. This fact sheet, developed in collaboration with CDC, provides a quick reference to these items potentially worn by workers in the Food and Agriculture Sector. Respirators, disposable facemasks, or cloth face coverings are designed and worn for different purposes as described in the following PDF link: <https://www.fda.gov/media/137327/download>



# COVID-19 UPDATE



## **ADDITIONAL PAYMENT PROTECTION PROGRAM AND ECONOMIC INJURY DISASTER LOAN FUNDING AVAILABLE**

On April 24th, President Trump signed the "Phase 3.5" Coronavirus relief package into law. This funding will replenish the Paycheck Protection Program (PPP) to assist small businesses with payroll and other operating expenses.

Phase 3.5 adds an additional \$310 billion to the PPP to provide needed relief to small businesses so their companies can stay in operation. Please see below for additional resources and information on the PPP.

[U.S. Department of Treasury & SBA Paycheck Protection Program](#)

[Assistance for Small Businesses Resource Page](#)

[Small Business Administration Final Rule](#)

[PPP Frequently Asked Questions](#)

[How to Calculate Loan Amounts](#)

In addition to the Payment Protection Program (PPP), the Small Business Administration (SBA) is also offering Enhanced Economic Injury Disaster Loans (EIDL). Similar to PPP, initial funds were depleted, but CV-3.5 provides \$50 billion in additional funding for the Economic Injury Disaster Loan (EIDL) program, and \$10 billion in additional funding for SBA's EIDL Grant program.

The U.S. Small Business Administration is offering designated states and territories low-interest federal disaster loans for working capital to small businesses suffering substantial economic injury as a result of the Coronavirus (COVID-19).



Upon a request received from a state's or territory's Governor, the SBA will issue under its own authority, as provided by the Coronavirus Preparedness and Response Supplemental Appropriations Act that was recently signed by the President, an Economic Injury Disaster Loan declaration. Any such Economic Injury Disaster Loan assistance declaration issued by the SBA makes loans available statewide to small businesses and private, nonprofit organizations to help alleviate economic injury caused by the Coronavirus (COVID-19). This will apply to current and future disaster assistance declarations related to Coronavirus. The SBA's Economic Injury Disaster Loans offer up to \$2 million in assistance and can provide vital economic support to small businesses to help overcome the temporary loss of revenue they are experiencing. These loans may be used to pay fixed debts, payroll, accounts payable and other bills that can't be paid because of the disaster's impact. The interest rate is 3.75% for small businesses. The interest rate for non-profits is 2.75%. The SBA offers loans with long-term repayments in order to keep payments affordable, up to a maximum of 30 years. The SBA's Economic Injury Disaster Loans are just one piece of the expanded focus of the federal government's coordinated response, and the SBA is strongly committed to providing the most effective and customer-focused response possible. For questions, please contact the SBA disaster assistance customer service center at 1-800-659-2955 (TTY: 1-800-877-8339) or e-mail [disastercustomerservice@sba.gov](mailto:disastercustomerservice@sba.gov).

## **AGRICULTURAL WORKERS EXEMPT FROM EXECUTIVE ORDER SUSPENDING IMMIGRATION**

Last week President Trump announced that he wanted to suspend legal immigration programs through an executive order. After various agricultural organizations weighed in about the importance of programs like H-2A to the food supply, the administration further clarified that the executive order would be limited in scope and should not impact any temporary workers or their employers. On Thursday, the President signed the Executive Order temporarily pausing immigration for 60 days. A copy of the full executive order can be found here: <https://www.whitehouse.gov/presidential-actions/proclamation-suspending-entry-immigrants-present-risk-u-s-labor-market-economic-recovery-following-covid-19-outbreak/>

## **USE OF RESPIRATORS, FACEMASKS, AND CLOTH FACE COVERINGS IN THE FOOD AND AGRICULTURE SECTOR DURING CORONAVIRUS DISEASE (COVID-19) PANDEMIC**

The U.S. Food and Drug Administration (FDA) recently published a fact sheet designed to help answer questions from the Food and Agriculture Sector about what respirators, disposable facemasks, such as surgical or medical masks, or cloth face coverings are most appropriate for various settings. Developed in collaboration with the Centers for Disease Control and Prevention (CDC), this fact sheet provides a quick reference to respirators, disposable facemasks, or cloth face coverings potentially worn by workers in the Food and Agriculture Sector.

[https://www.fda.gov/food/food-safety-during-emergencies/use-respirators-facemasks-and-cloth-face-coverings-food-and-agriculture-sector-during-coronavirus?utm\\_campaign=FoodCOVID\\_04242020&utm\\_medium=email&utm\\_source=Eloqua](https://www.fda.gov/food/food-safety-during-emergencies/use-respirators-facemasks-and-cloth-face-coverings-food-and-agriculture-sector-during-coronavirus?utm_campaign=FoodCOVID_04242020&utm_medium=email&utm_source=Eloqua)

# WHAT TO DO IF YOU HAVE COVID-19 CONFIRMED POSITIVE OR EXPOSED WORKERS IN YOUR FOOD PRODUCTION, STORAGE, OR DISTRIBUTION OPERATIONS REGULATED BY FDA

The FDA also published a summary on what to do if you have COVID-19 confirmed positive or exposed workers in your food production, storage, or distribution operations regulated by FDA. Derived from CDC recommendations, this summary outlines key steps that employers and workers can take to help stay open, prevent and slow the spread of COVID-19, and support continuity of essential operations if workers are diagnosed with or exposed to COVID-19, or show symptoms associated with COVID-19.

[https://www.fda.gov/food/food-safety-during-emergencies/what-do-if-you-have-covid-19-confirmed-positive-or-exposed-workers-your-food-production-storage-or?utm\\_campaign=FoodCOVID\\_04242020&utm\\_medium=email&utm\\_source=Eloqua](https://www.fda.gov/food/food-safety-during-emergencies/what-do-if-you-have-covid-19-confirmed-positive-or-exposed-workers-your-food-production-storage-or?utm_campaign=FoodCOVID_04242020&utm_medium=email&utm_source=Eloqua)

## CALIFORNIA HEAT ILLNESS AND SOCIAL DISTANCING GUIDELINES

As the temperature across California are expected to rapidly rise this week, members with outdoor operations are asking about how to comply with the obligation to adhere to Cal/OSHA's high heat regulations, and the social distancing recommendations relating to COVID-19. The Cal/OSHA high heat procedures are located [here](#).

High heat procedures begin when the temperature "equals or exceeds 95 degrees Fahrenheit." Specific to agriculture, the high heat regulations state:

- When the temperature equals or exceeds 95 degrees, employers must provide one 10-minute "preventative cool-down rest period" every 2 hours. During the first 8 hours of a shift, the cool-down periods may be provided at the same time as the rest periods.
- If employees work longer than 8 hours, the employer must provide an additional 10-minute cool-down rest period every 2 hours. For example, if the shift extends beyond 8 hours, an additional rest period is required at the end of the 8th hour of work. If the shift extends beyond 10 hours, another is required at the end of the 10th hour.
- Employers must ensure that employees take the cool-down rest periods required under this section.
- Employers are required to provide additional breaks as soon as the temperature equals or exceeds 95 degrees. For example, even if the temperature does not reach 95 degrees until the last half of an 8-hour shift, the employer must ensure that employees take cool-down rest periods starting at the end of the 8th hour of work.

Cal/OSHA has also issued recommendations for dealing with COVID-19 [here](#). The guidance includes suggestions for how to adhere to social distancing, which includes potentially staggering rest breaks and meal breaks, along with providing additional seating and shade structures to allow employees to stay at least six feet apart. The guidance acknowledges that there is not a "one size fits all" approach that will work in each situation. Therefore, it is important for employers to be able to show that they have, in fact, contemplated how best to meet the intent of the guidance in their specific workplace.

# POSTER ON CA COVID-19 SUPPLEMENTAL PAID SICK LEAVE FOR FOOD SECTOR WORKERS

## CA COVID-19 Supplemental Paid Sick Leave for Food Sector Workers

Executive Order N-51-20 requires hiring entities with **500 or more employees** to provide supplemental paid sick leave to food sector workers for specified reasons related to COVID-19.

### Qualifying Reasons for Taking COVID-19 Supplemental Paid Sick Leave

*A food sector worker may take leave if the worker is unable to work for any of the following reasons:*

- |  |  |   |
|--|--|---|
| ① The worker is subject to a Federal, State, or local quarantine or isolation order related to COVID-19. | ② The worker is advised by a health care provider to self-quarantine or self-isolate due to COVID-19 related concerns. | ③ The worker is prohibited from working by the worker's hiring entity due to health concerns related to the potential transmission of COVID-19. |
|--|--|---|

### Workers Are Covered if They Meet the Following Criteria:

- Work for an employer with 500 or more employees nationwide, and
- Qualify as a "food sector worker," which means that they:
  - ✓ Perform work in a certain food-related industry or in the retail food supply chain, including pick-up, delivery, warehousing, packaging, retail, or preparation;
  - ✓ Perform work outside the worker's home; AND
  - ✓ Are exempt as critical infrastructure workers from any statewide stay-at-home order
- Workers do not have to be classified by the hiring entity as an employee in order to be covered.
- Examples of covered workers: farm workers, grocery store workers, food pick-up and food delivery workers

### Paid Leave Entitlement

- Amount of Hours of COVID-19 Supplemental Paid Sick Leave:
  - ✓ 80 hours for those considered full-time workers, in addition to any other accrued paid sick leave.
  - ✓ For part-time workers with a normal weekly schedule, the number of hours the employee is normally scheduled to work over two workweeks.
  - ✓ For part-time workers with variable schedules, 14 times the average number of hours worked per day over the past 6 months.
- Rate of Pay for COVID-19 Supplemental Paid Sick Leave:
  - ✓ Highest of (1) regular rate of pay for last pay period, (2) State minimum wage, or (3) local minimum wage,
  - ✓ Not to exceed \$511 per day and \$5,110 in total

### Enforcement:

- Any food sector worker denied COVID-19 supplemental paid sick leave can file a claim with the Labor Commissioner's Office. Leave must be made available for use immediately upon oral or written requests of the worker.
- Retaliation or discrimination against a food sector worker requesting or using COVID-19 supplemental paid sick leave is strictly prohibited.** A worker who experiences such retaliation or discrimination can file a claim with the Labor Commissioner's Office.

**This poster must be displayed where workers can easily read it. If workers do not frequent a physical workplace, it may be disseminated to workers electronically.**



# COVID-19 UPDATE



## USDA ANNOUNCES CORONAVIRUS FOOD ASSISTANCE PROGRAM

U.S. Secretary of Agriculture Sonny Perdue last week announced the Coronavirus Food Assistance Program (CFAP). This new U.S. Department of Agriculture (USDA) program will take several actions to assist farmers, ranchers, and consumers in response to the COVID-19 national emergency. President Trump directed USDA to craft this \$19 billion immediate relief program to provide critical support to our farmers and ranchers, maintain the integrity of our food supply chain, and ensure every American continues to receive and have access to the food they need.

"During this time of national crisis, President Trump and USDA are standing with our farmers, ranchers, and all citizens to make sure they are taken care of," Secretary Perdue said. "The American food supply chain had to adapt, and it remains safe, secure, and strong, and we all know that starts with America's farmers and ranchers. This program will not only provide immediate relief for our farmers and ranchers, but it will also allow for the purchase and distribution of our agricultural abundance to help our fellow Americans in need."

CFAP will use the funding and authorities provided in the Coronavirus Aid, Relief, and Economic Security Act (CARES), the Families First Coronavirus Response Act (FFCRA), and other USDA existing authorities. The program includes two major elements to achieve these goals:

**Direct Payments:** There will be \$16 billion in direct payment to agricultural producers who can demonstrate lost demand and short-term oversupply for 2020 as a result of COVID-19. Allocations will be determined by utilizing the two following calculations:

1. Price losses that occurred January 1-April 15, 2020. Producers will be compensated for 85% of price loss during this period.

2. Expected losses from April 15 through the next two quarters, and will cover 30% of expected losses.

Overall, payment is limited to \$125,000 per commodity, with an overall limit of \$250,000 per individual or entity. Qualified commodities must have experienced a 5% price decrease between January and April. Although it has not been finalized, USDA expects to expedite the sign-up process in early May to release payments to growers by the end of May or early June.

**USDA Purchases:** There will also be \$3 billion in USDA purchases, in partnership with regional and local distributors whose workforce has been affected by the closure of schools, restaurants, hotels, etc. This program will begin with \$100 million per month in fresh fruits and vegetables, \$100 million per month in dairy products, and \$100 million per month in meat products.

On top of these targeted programs USDA will utilize other available funding sources to purchase and distribute food to those in need.

USDA has up to an additional \$873.3 million available in Section 32 funding to purchase a variety of agricultural products for distribution to food banks. The use of these funds will be determined by industry requests, USDA agricultural market analysis, and food bank needs.

The FFCRA and CARES Act provided an at least \$850 million for food bank administrative costs and USDA food purchases, of which a minimum of \$600 million will be designated for food purchases. The use of these funds will be determined by food bank need and product availability.

Further details regarding eligibility, rates, and other implementation will be released at a later date. The Commission is actively working with USDA to gather all available information regarding this available funding. Please do not hesitate to contact us if there are any questions regarding these funds.

## USDA FARM SERVICE LOAN INFORMATION

Given some of the unique challenges that some agricultural producers face regarding PPP loans surrounding Farm Labor Contractor workers and affiliation rules, it is important to note that the USDA Farm Service Agency (FSA) Farm Operating Loans are also available for additional support. These can be guaranteed loans through a FSA-approved lender to farmers or FSA direct loans to farmers. FSA direct loans are limited to \$400,000 and guaranteed loans are capped at \$1.776M, and both have relatively low interest rates.

One of the eligibility requirements for the FSA guaranteed and direct loan programs is that an agricultural producer must be denied credit elsewhere – the producer self-certifies this in the FSA loan application. Given a number of folks who have not been able to get a PPP loan, perhaps the FSA programs are another alternative. These loans can cover farm operating expenses, including labor costs.

Additionally, it should be noted that farmers can apply for both PPP loans and FSA guaranteed/direct loans. However, according to USDA, FSA would not authorize a loan for the same purposes that another lender is financing. USDA also said that even if there is overlap in a loan purpose, it may only be for the covered period allowable for the PPP and FSA could provide financing for that expense for the remainder of the year.



USDA recommends that agricultural producers interested in FSA guaranteed or direct loans should contact their local FSA office for more information and application assistance. To find a local FSA office, you can use the USDA Service Center locator tool here:

<https://offices.sc.egov.usda.gov/locator/app>

You can learn more about the FSA Direct Loan Program

here: <https://www.fsa.usda.gov/programs-and-services/farm-loan-programs/farm-operating-loans/index>

You can learn more about the FSA Guaranteed Loan Program

here: <https://www.fsa.usda.gov/programs-and-services/farm-loan-programs/guaranteed-farm-loans/index>

Other information about USDA programs to assist agricultural

producers during the pandemic can be found online here: <https://www.farmers.gov/coronavirus>

## **GOVERNOR NEWSOM ANNOUNCES PAID SICK LEAVE BENEFITS FOR FOOD SECTOR WORKERS IMPACTED BY COVID-19, ADDITIONAL PROTECTIONS FOR CONSUMERS**

Last Thursday, Governor Gavin Newsom today signed an executive order to support California workers from large employers in the food sector industry impacted by the COVID-19 pandemic with two weeks of paid sick leave, filling a gap left by federal relief that had provided similar paid leave benefits for employers with fewer than 500 workers.

Workers in the food sector, including farmworkers, agricultural workers, and those working in grocery stores and fast food chains, and as delivery drivers, are part of the state's essential infrastructure workforce, and have continued to work to serve Californians.

"These workers on the front lines of this crisis are our unsung heroes for continuing to work to ensure that Californians have food on their tables during these challenging times, and we must do everything in our power to make sure they are taken care of at home and in the workplace. Making sure they have paid sick leave and added protections in their place of work is critical," said Governor Newsom.

Additionally, the Executive Order provides health and safety standards to increase worker and customer protection by permitting workers at food facilities to wash their hands every 30 minutes, or as needed, to increase proper sanitation measures.

The Administration has taken several actions to ensure food worker protections, including recently issued guidance by Cal/OSHA for the grocery industry on best practices on physical distancing, disinfecting, and the use of reusable bags. Also, the Governor released \$100 million to support child care for essential infrastructure workers, including grocery workers, and vulnerable populations last week.

A copy of the Governor's executive order can be found [here](#).

Learn more about the state's ongoing COVID-19 response efforts here.

Visit [covid19.ca.gov](https://covid19.ca.gov) or [covid19.ca.gov/es](https://covid19.ca.gov/es) for critical steps Californians can take to stay healthy, and resources available to those impacted by the outbreak.



# COVID-19 UPDATE



## GOVERNOR NEWSOM'S ISSUES EXECUTIVE ORDER ON CHILDCARE FOR ESSENTIAL EMPLOYEES

On April 4th, Governor Newsom signed Executive Order N-45-20 to provide expanded access to childcare for essential workers during COVID-19 by granting the flexibility to waive certain programmatic and administrative requirements. The order directs the California Department of Education (CDE) and the California Department of Social Services (DSS) to work together to develop and issue guidance on how the essential worker prioritization will roll out. This has been finalized and can be found [HERE](#). The purpose is to provide guidance to state-subsidized early learning and care programs that will continue to provide services to currently enrolled families or begin to provide, what CDE refers to as, "Emergency Childcare" for essential workers and other populations. The "Food and Agriculture Sector" has been classified as a priority under this effort.

Additional child care information can be found in the March 17 guidance on [CDE's website](#) on Child Care and Student Supervision. Also DSS's Community Care Licensing Division (CCLD) continues to post Provider Information Notices with new waivers [HERE](#) under the Child Care Program section. One of the waivers put out on March 16 (PIN 20-04-CCP) provides a statewide waiver for operation of childcare facilities, including temporary employer sponsored childcare. CCLD has established a dedicated e-mail address to receive public inquiries related to CCLD-licensed facilities and COVID-19. This e-mail address is: [CCLCOVID-19INFO@dss.ca.gov](mailto:CCLCOVID-19INFO@dss.ca.gov) A list of DSS's Child Care Regional Offices can also be found [HERE](#).

## FDA TO TEMPORARILY CONDUCT FSVP INSPECTIONS REMOTELY

The U.S. Food and Drug Administration announced last week that it will begin requesting that importers send records required under the Foreign Supplier Verification Programs for Importers of Food for Humans and Animals (FSVP) rule electronically (or through other prompt means) to the Agency as it shifts to conducting these inspections remotely during the COVID-19 public health emergency.

The FSVP rule requires importers to perform certain risk-based activities to verify that their foreign supplier is producing the food in accordance with U.S. food safety standards. Until now, FSVP inspections to review FSVP records typically have been conducted at an importer's place of business. However, under the FSVP regulation FDA has the authority to make written requests for importers to provide records to the agency electronically or by other prompt means. Because of the travel restrictions, social distancing, and other advisories associated with the COVID-19 outbreak, the FDA has determined that most routine onsite inspections are temporarily impractical to conduct at this time.

Therefore, the Agency will shift to temporarily conducting FSVP inspections remotely as practical until further notice. The FDA will immediately begin conducting a limited number of remote inspections, prioritizing the inspections of FSVP importers of food from foreign suppliers whose onsite food facility or farm inspections have been postponed due to COVID-19. The Agency is also planning to continue to conduct previously assigned routine and follow-up inspections remotely during this time. Importers subject to the remote inspections will be contacted by an FDA investigator who will explain the process for the remote inspection and make written requests for records. If you have any questions regarding these remote inspections, please submit them here via email: [FDImportsInquiry@fda.hhs.gov](mailto:FDImportsInquiry@fda.hhs.gov)

## CA FARMWORKER FEDERATION EXPANDING FREE VIRTUAL HEALTH CLINIC SERVICES

The California Farmworker Foundation is currently expanding their free virtual health clinics for Farmworkers who suffer from chronic diseases or respiratory illnesses. Given the current demand of COVID-19 on their healthcare systems, they have partnered with Dr. Nidia Payan to continue to provide care for Farmworkers who suffer from the mentioned illnesses. They have asked us to refer Farmworkers who meet the guidelines so that they can provide them with access to care. If you would like to host an on-site virtual health clinic, please give them a call at: 661-446-4077

**FREE VIRTUAL MEDICAL CONSULTATIONS FOR FARMWORKERS IN CALIFORNIA**      **CONSULTAS MÉDICAS VIRTUALES GRATUITAS PARA TRABAJADORES DEL CAMPO EN CALIFORNIA**



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for Farmworkers who suffer from chronic diseases and respiratory illnesses such as:

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- ENFERMEDADES RESPIRATORIAS
- ALTA PRESION
- ASMA
- ENFERMEDADES DEL CORAZÓN
- FIEBRE DEL VALLE

**PLEASE CALL OUR FARMWORKER HOTLINE AT 661-446-4077 TO RESERVE YOUR APPOINTMENT**

**PARA HACER UNA CITA, LLAME A NUESTRA LINEA DIRECTA PARA LOS TRABAJADORES DEL CAMPO - 661-446-4077.**

BROUGHT TO YOU BY:





PATROCINADO POR:







## **CALTRANS ISSUES SPECIAL PERMITS AUTHORIZING OVERWEIGHT TRUCKS TO DELIVER EMERGENCY COVID-19 SUPPLIES**

Caltrans will temporarily issue special permits for overweight trucks transporting emergency supplies in support of COVID-19 relief and prevention efforts following Governor Gavin Newsom's recent State of Emergency declaration and subsequent activation of the federal Stafford Disaster Relief and Assistance Act. "Authorizing these special exceptions clears a path for greater volumes of material vital in the fight against COVID-19," said Caltrans Director Toks Omishakin. "Emergency medical supplies and equipment, groceries, perishable items, water and countless other essential items will now reach their destinations more rapidly than they did before, at a time when people need them most."

Caltrans will issue permits for overweight trucks on the State Highway System and will help support transportation operators in obtaining permits from local agencies for local roads. These permits increase the maximum allowable gross vehicle weight from 80,000 to 88,000 pounds and will be valid until further notice.

To expedite the permits, Caltrans is performing advance review and analysis on major corridor routes, including: I5, US-101, I-15, SR 60, I-405, SR 99, I-10, SR 91, I-80, and I-710.

This Emergency Declaration provides regulatory relief for commercial motor vehicle operations moving essential goods in support of relief and preventive measures associated with the COVID-19 pandemic.

"Essential Goods" are defined as the following:

- Medical supplies and equipment related to the testing, diagnosis and treatment of COVID-19
- Supplies and equipment necessary for community safety, sanitation, and prevention of community transmission of COVID-19 such as masks, gloves, hand sanitizer, soap and disinfectant
- Food, paper products and other groceries for emergency restocking of distribution centers or stores
- Immediate precursor raw materials such as paper, plastic or alcohol that are required and to be used for the manufacture of items above
- Fuel
- Equipment, supplies and persons necessary to establish and manage temporary housing, quarantine, and isolation facilities related to COVID-19

In response to COVID-19, Caltrans continues its critical functions during this crisis, including highway maintenance and roadway access to medical facilities and facilitating transport of essential goods and services throughout the state.

## **CAL-OSHA HEALTH AND SAFETY GUIDELINES AVAILABLE IN SPANISH**

As mentioned in our last newsletter update, the California Department of Industrial Relations Division of Occupations Safety & Health (OSHA) has released health and safety guidance for Covid-19 prevention for agricultural employers and employees. This guidance contains information and recommendations for agricultural employers on how to update their Injury and Illness Prevention Program's to include prevention in the spread of Covid-19 in the workplace.

The guidelines can be found here: <https://www.dir.ca.gov/dosh/Coronavirus/COVID-19-Infection-Prevention-in-Agriculture.pdf>

The Spanish version is also available here: <https://www.dir.ca.gov/dosh/Coronavirus/COVID-19-Infection-Prevention-in-AgricultureSP.pdf>



## **SECRETARY ROSS SENDS MESSAGE EXPRESSING GRATITUDE TO THE RETAIL INDUSTRY**

California Secretary of Food and Agriculture Karen Ross sends message of thanks to retail industry for stepping up during country's time of need. As a record number of shoppers head to their local grocery store to stock up on much needed food items during shelter in place orders, the nation's retailers, grocers and distributors continue to keep shelves stocked and food the flowing.

“Our California farmers, ranchers and farmworkers understand the challenge this crisis has delivered to our retailer partners: to manage adequate supply, maintain efficient distribution, and most of all provide a safe shopping environment for customers and employees. All of this has been accomplished with a level of care, service and dedication that makes us proud to be part of your supply chain,” stated Ross.

The letter of gratitude recognizes the efforts of warehouse workers pulling double shifts, truck drivers adding routes, in-store employees, direct-to-consumer serves and retail managers. In addition, the letter offers a promise from the agriculture community to continue to provide nutritious food for retailers to serve the community. “Each harvest provides a brighter future, and together we will do what we've always done to provide healthy nutritious food (and beautiful flowers) for your customers, our neighbors and communities across this state and nation,” said Ross.

You can a copy of the full letter on the CA Grown blog here:

<https://californiagrown.org/blog/thank-you-to-our-nations-retailers-and-distributors/>



# COVID-19 UPDATE



## **CAL-OSHA RELEASES HEALTH & SAFETY GUIDANCE FOR COVID-19**

The California Department of Industrial Relations Division of Occupational Safety & Health (OSHA) has released health and safety guidance for Covid-19 prevention for agricultural employers and employees.

This guidance contains information and recommendations for agricultural employers on how to update their Injury and Illness Prevention Program's to include prevention in the spread of Covid-19 in the workplace.

The guidance covers the following topics:

- Employee Training on Covid-19
- Procedures to Help Prevent the Spread of Covid-19 at the Worksites
- Procedures to Increase Physical Distancing
- Good Sanitation Practices

The full health guidance document can be found here:

<https://www.dir.ca.gov/dosh/Coronavirus/COVID-19-Infection-Prevention-in-Agriculture.pdf>

## **MANDATORY POSTING REQUIREMENTS FOR FAMILIES FIRST CORONAVIRUS RESPONSE ACT (FFCRA)**

All employers with less than 500 employees must post this Notice in a conspicuous place. The Notice shall be provided to all current employees and new hires. For more information please visit the [Department of Labor website](#).

Click on the links here "[English Poster](#)" and "[Spanish Poster](#)" to print the new required posting notices. Notices should be posted alongside the Labor Law All-In-One poster at your work site in a location that is easily visible to your employees (typically in a lunch/break room).

# PAYCHECK PROTECTION PROGRAM INFORMATION & RESOURCES

On March 27th, President Trump signed the Coronavirus Aid, Relief, and Economic Security (CARES) Act. As a result, the Small Business Administration (SBA) and U.S. Treasury Department have initiated an effort between banks and other lending institutions to provide small businesses with the capital they need.

The CARES Act establishes a \$349 billion Paycheck Protection Program (PPP) to provide needed relief to millions of small businesses so their companies can stay in operation and they can keep their employees working. Businesses can begin to apply for these funds now. To access the borrower application, [click here](#). To access the lender application, [click here](#).

The program will assist small businesses with their payroll and other operating expenses. It will provide critical capital without collateral requirements, personal guarantees, or SBA fees. All loan payments will be deferred for six months and will forgive the portion of the loan proceeds that are used to cover the first eight weeks of payroll costs, utilities and mortgage interest. For additional information on the Assistance for Small Businesses, please [click here](#).

The new loan program will be available retroactively from February 15, 2020, so employers can rehire their recently laid-off employees through June 30, 2020.

## Loan Terms & Conditions:

- All businesses, including non-profits, Veterans organizations, Tribal concerns, sole proprietorships, self-employed individuals, and independent contractors with 500 or fewer employees or no greater than the number of employees set by the SBA as the size standard for certain industries
- Maximum loan amount is up to \$10 million
- Loan forgiveness if proceeds used for payroll costs and other designated business operating expenses in the eight weeks following the date of the loan origination
- All loans under this program will have the following features:
  - Interest rate of .5%
  - Maturity of two years
  - First payment deferred for six months
  - 100% guarantee by SBA
  - No collateral
  - No personal guarantees
  - No borrower or lender fees payable to SBA

For additional information [click here](#) or visit [www.sba.gov/coronavirus](http://www.sba.gov/coronavirus).

## CONGRESSIONAL SUPPORT ON COVID-19 PART III IMPLEMENTATION

In conjunction with the United Fresh Produce Association, and other commodity representative organizations, the Commission has requested the support of Congressional leadership to urge USDA to allocate the recently approved \$9.5 billion COVID-19 response package. The message to Congress is to urge USDA to appropriately allocate available funding to better serve the agricultural industries we represent. As additional information regarding fund allocation becomes available, the Commission will be sure to provide the industry with relevant updates.



# FAMILIES FIRST CORONAVIRUS RESPONSE ACT (FFCRA) UPDATE

The FFCRA requires employers to provide paid leave through two separate provisions: (i) the Emergency Paid Sick Leave Act (EPSLA), which entitles workers to up to 80 hours of paid sick time when they are unable to work for certain reasons related to COVID-19, and (ii) the Emergency Family and Medical Leave Expansion Act (Expanded FMLA), which entitles workers to certain paid family and medical leave. The FFCRA provides that employers subject to the EPSLA and the Expanded FMLA paid leave requirements are entitled to fully refundable tax credits to cover the cost of the leave required to be paid for these periods of time during which employees are unable to work (which for purposes of these rules, includes telework). Certain self-employed persons in similar circumstances are entitled to similar credits.

Below are recent updates regarding the FFCRA.

The US Treasury Department updated its Q and A: <https://www.irs.gov/newsroom/covid-19-related-tax-credits-for-required-paid-leave-provided-by-small-and-midsize-businesses-faqs>.

The following are some highlights regarding federal tax-credit reimbursements to eligible employers who pay COVID- related sick and family leave.

Immediate Reimbursement:

- Employers can be immediately reimbursed for the credit by reducing their required deposits of payroll taxes that have been withheld from employees' wages by the amount of the credit. An employer that pays qualified leave wages to its employees in a calendar quarter before it is required to deposit federal employment taxes with the IRS for that quarter may reduce the amount of federal employment taxes it deposits for that quarter by the amount of the qualified leave wages (and allocable qualified health plan expenses and the employer's share of Medicare tax on the qualified leave wages) paid in that quarter.
- Eligible employers will claim the credits on their federal employment tax returns (e.g., Form 941, Employer's Quarterly Federal Tax Return), but they can benefit more quickly from the credits by reducing their federal employment tax deposits. Form 941 will have instructions on how to reflect the reduced liabilities for the quarter related to the deposit schedule.

Advancement:

- If the employer's employment tax deposits are not sufficient to cover the credit, the employer may receive an advance payment from the IRS by submitting Form 7200, Advance Payment of Employer Credits Due to COVID-19. Employers should first reduce its remaining federal employment tax deposits for wages paid in the same quarter to zero.
- An employer can claim the credits once it has paid the employee for the period of paid sick leave or expanded family and medical leave.
- If an employer fully reduces its required deposits of federal employment taxes otherwise due on wages paid in the same calendar quarter to its employees in anticipation of receiving the credits, and it has not paid qualified leave wages (and any allocable qualified health plan expenses and the Eligible Employer's share of Medicare tax on the qualified leave wages) in excess of this amount, it should not file the Form 7200. If it files the Form 7200, it will need to reconcile this advance credit and its deposits with the qualified leave wages on Form 941 (or other applicable federal employment tax return such as Form 944 or Form CT-1), and it may have an underpayment of federal employment taxes for the quarter.

Additionally, Department of Labor issued a temporary rule implementing the FFCRA, available at: <https://www.federalregister.gov/documents/2020/04/06/2020-07237/paid-leave-under-the-families-first-coronavirus-response-act>.



# FAMILIES FIRST CORONAVIRUS RESPONSE ACT (FFCRA) UPDATE--CONTINUED

The following are some highlights related to small businesses and employee requests for leave.

## Small Business Exemption

- Small businesses with fewer than 50 employees can deny an employee paid sick leave or expanded family and medical leave when:
  1. Such leave would cause the small employer's expenses and financial obligations to exceed available business revenue and cause the employer to cease operating at a minimal capacity;
  2. The absence of the employee or employees requesting leave would pose a substantial risk to the financial health or operational capacity of the small employer because of their specialized skills, knowledge of the business, or responsibilities; or
  3. The employer cannot find enough workers who are able, willing, and qualified, and who will be available at the time and place needed, to perform the labor or services the employee or employees requesting leave provide, and these labor or services are needed for the employer to operate at a minimal capacity.
- For reasons 1, 2, and 3, the employer may deny paid leave only to those otherwise eligible employees whose absence would cause the employer's expenses and financial obligations to exceed available business revenue, pose a substantial risk, or prevent the small employer from operating at minimum capacity, respectively.
- Employer must document the facts and circumstances that meet this criteria. The employer should not send such documentation to the Department, but rather retain the records in its files.

## Employee Requests for Leave

- Employers may require employees to follow reasonable notice procedures as soon as practicable after the first workday or portion of a workday for which an employee receives paid sick leave in order to continue to receive such leave.
- It will be reasonable for an employer to require notice as soon as practicable after the first workday is missed, and to require that employees provide oral notice and sufficient information for an employer to determine whether the requested leave is covered under the FFCRA. Employers may not require that the notice include documentation beyond, and employees must provide:
  1. The employee's name;
  2. Date(s) for which leave is requested;
  3. The COVID-qualifying reason for leave; and
  4. A statement representing that the employee is unable to work or telework because of the COVID-qualifying reason.
- Employees must provide additional documentation depending on the qualifying reason for leave, such as:
  - Employees requesting paid sick leave because of a quarantine order must provide the name of the government entity that issued the order.
  - Employees requesting paid sick leave due to health care provider advice must provide the provider's name.
  - Employees requesting paid sick leave to care for another must provide either (1) the government entity that issued the order to which the individual is subject or (2) the name of the health care provider who advised the individual to self-quarantine, depending on the precise reason for the request.
  - Employees requesting paid sick leave or family and medical leave to care for his or her child must provide (1) name of the child, (2) name of the school/place of care that is unavailable due to COVID-19 concerns, and (3) a statement representing that no other suitable person is available to care for the child during the period of requested leave.



## **COVID-19 PRECAUTIONS FOR AGRICULTURAL FIELD WORKERS**

- Emphasize to employees not to come to work if feeling sick.
- Encourage employees to seek medical attention if experiencing COVID-19 symptoms.
- Supervisor observes employees for possible physical symptoms of COVID-19, i.e.coughing and trouble breathing and follows procedures if employee exhibit symptoms.
- Posting information in English and Spanish from Centers for Disease Control and Prevention.
- Adhere to social distancing guidelines while employees are in the fields working and during tail gate meetings.
- Provide extra shade trailers or tents and hand washing systems to adhere to social distancing guidelines.
- Encourage frequent washing of hands with soap and water for at least 20 seconds.
- Retrain employees on proper hand washing when supervisor notices employees not washing hands correctly.
- Emphasize to employees the sharing of food or other personal items with one another may spread COVID-19.
- Encouraging employees to practice personal hygiene cleanliness and sanitization of personal items.
- Provide a letter to employees to in case they get stopped by law enforcement on their way to or from work that they are considered essential employees.
- Emphasize to employees that their health and safety is of utmost importance and to let employer know if they have any questions or concerns.

*Courtesy of Nisei Farmer's League*

## **COVID-19 PRECAUTIONS FOR PACKER AND PROCESSOR EMPLOYEES**

- Emphasize to employees not to come to work if feeling sick.
- Encourage employees to seek medical attention if experiencing COVID-19 symptoms.
- Supervisor observes employees for possible physical symptoms of COVID-19, i.e.coughing and trouble breathing and follows procedures if employee exhibits symptoms.
- For employers who wish to take temperature of employees, they follow the guidelines of U.S. Equal Employment Opportunity Commission.
- Encourage frequent washing of hands with soap and water for at least 20 seconds.
- Posting information in English and Spanish from Centers for Disease Control and Prevention.
- Emphasize to employees the sharing of food or other personal items with one another may spread COVID-19.
- Provide mask to the workers when available
- When feasible employees follow social distancing guidelines or as close as possible.
- Stagger employee rest and lunch breaks to prevent large clusters of employees.
- Encouraging employees to practice personal hygiene cleanliness and sanitization of personal items.
- Emphasize to employees that their health and safety is utmost important and to let employer know if they have any questions or concerns.
- Provide a letter to employees to in case they get stopped by law enforcement on their way to or from work that they are considered essential employees.

*Courtesy of Nisei Farmer's League*



# COVID-19 UPDATE



## **U.S. Small Business Administration Economic Injury Disaster Loan Information**

These are unprecedented times and SBA is stretching its Economic Injury Disaster Loan (EIDL) approval criteria to help as many businesses as we can in response to the unprecedented disruption created by COVID-19. Here are some updates:

- EIDL's are typically being approved based on the working capital needed to keep the business operational for 6 months. The first installment on the loan won't be due for 12 months.
- Don't disqualify yourself based on your self-assessment of the program criteria. SBA has begun waiving a lot of the standard EIDL rules like "credit elsewhere" and real estate collateral.
- When applying only two forms are necessary at the initial stage – Form 5 (or Form 5C if the business is a sole proprietorship) and "EIDL Supporting Information ((P-019)". If more information or forms are needed, SBA will let you know. These forms are available here: <https://disasterloan.sba.gov/ela/Home/OfflineApply>
- Currently the best way to apply is to download the application forms, fill them out, scan them, and then electronically upload them (to the drop box here: <https://disasterloan.sba.gov/apply-for-disaster-loan/index.html>). The uploading function is reportedly more reliable now.
- Applicants will soon begin receiving an email confirmation that their application was received. If anyone wants to check in on their application status, they can call 1-800-659-2955 or email [disastercustomerservice@sba.gov](mailto:disastercustomerservice@sba.gov).

Finally, we have heard there are some people trying to scam others in SBA's name. There is no immediate deadline for an EIDL application, and it does not cost anything to apply, get the papers together, no credit card is needed, etc. If you get inquiries about this, please help us stop the rumors.

Bottom line: SBA wants every business to apply for an EIDL loan that needs a working capital infusion to stay operational. Remember, there's no cost to apply and if a loan is offered, there's no obligation or penalty for not accepting it. So if a business needs this loan, please apply.



## Stimulus Bill Signed by President Trump

Friday, President Trump signed the \$2 trillion Coronavirus Aid, Relief, and Economic Security (CARES) Act or what is commonly being called COVID III. This follows the Senate passage of the CARES Act on Wednesday by a vote of 97-0. The CARES Act is the third piece of legislation that Congress has passed since the beginning of March to address COVID-19 outbreak. Several key areas to highlight that will be critical to the fresh produce industry include the following:

- \$9.5 Billion Targeted Emergency COVID-19 Fund – \$9.5 billion under emergency declaration to support agriculture industries impacted by COVID-19, including fruit and vegetable producers, livestock producers, and producers focused on local food systems.
- Paycheck Protection Program – \$350 billion for new SBA 7(a) Loan Program for businesses with no more than 500 employees. Loans can be used for the following: payroll and benefits; mortgage interest payments (excluding principal and excluding pre-payments); rent; utilities; and interest payment on other debts.
- Middle Market Loan Program – \$454 billion will be available to “businesses not otherwise receiving adequate economic relief in loans and guarantees.” Most importantly, it requires the Treasury Secretary to provide financing to banks and other lenders to make direct loans to businesses with 500 to 10,000 employees at interest rates of not more than 2% and no interest or principal payments due within at least 6 months of loan origination.
- Charitable Deductions – The CARES Act Increases the limitations on deductions for charitable contributions for corporations and individuals who itemize. In particular, it increases the limitation on deductions for contributions of food inventory from 15% to 25%; for corporations, the 10% limitation is increased to 25% of taxable income; and for individuals, the 50% of AGI limitation is suspended for 2020.

Here is a [link to the complete summary](#) of the bill courtesy of the United Fresh Produce Association. We will be providing additional information as it becomes available.

## Additional H-2 Flexibility Announced by State Department

Following industry recommendations, the State Department announced last night they are taking additional steps to increase processing of H-2 visa holders through consulates around the world. In particular, they are waiving the interview requirement for first-time and returning H-2 applicants who have no potential ineligibility. In addition, the State Department is expanding the period in which returning workers may qualify for an interview waiver from 12 months to 48 months. Guidance on this and other H-2 questions can be found on [USDA H-2A webpage](#) along with a [FAQ document provided by the Department of State](#).

## Department of Homeland Security Travel Restriction for Mexico Exempts Farm Workers

U.S. and Mexican officials have mutually determined that non-essential travel between the United States and Mexico poses additional risk of transmission and spread of COVID-19. Beginning at midnight March 20, land ports of entry along the U.S.-Mexican border suspended normal operations and process for entry will be allowed only to those travelers engaged in “essential travel.” In its [announcement](#), DHS clearly defines “essential” as individuals traveling to work in the United States - including individuals working in the farming or agriculture industry who must travel between the United States and Mexico in furtherance of such work.

\*Article courtesy of AG AMSI, Inc.



## EEOC Issues Updated Guidance for Pandemic Preparedness in the Workplace

While most food and ag businesses have been granted status as “essential services,” it is critically important that employers follow proper guidance to prevent spread of COVID-19 among employees. Please use the following [link for updated information](#) from the U.S. Equal Employment Opportunity Commission to assist employers and employees in following guidance from the Centers for Disease Control and Prevention (CDC) as well as state/local public health authorities on how best to slow the spread of this disease and protect workers, customers, clients, and the general public. We encourage all members to read and follow these important guidelines.

*\*Article courtesy of AG AMSI, Inc.*

## CDFA Food Safety Inspection Services to Continue

The California Department of Food and Agriculture (CDFA) has notified the public it will continue to serve Californians during the COVID-19 pandemic by maintaining its food inspection work to ensure a safe, healthy and abundant food supply. The continued work of CDFA inspection personnel is vital to providing consumers, as well as national and international markets, ongoing assurance that California’s food and agricultural commodities continue to be held to the highest standards of safety and quality during the COVID-19 public health emergency.

*\*Article courtesy of AG AMSI, Inc.*

## Shipping and Transportation Issues

The American Steed Trade Association is another of the many national trade groups working to issue information to members across the country. Today ASTA emailed an important resource that industry members may find helpful as you work to communicate precautions that need to be taken to protect your workforce. Below are links to these documents which you may want to print, post and/or email throughout your operations. A big thanks to ASTA and AAMSI for providing these resources.

### Beat COVID-19 on the worksite

#### FOR WORKERS:

- Stay home if you're sick.
  - Don't shake hands.
  - Avoid large meetings and gatherings.
  - Stay six feet away from others on the job site, meetings, and trainings.
  - Cover your mouth and nose with a tissue or your elbow if you cough or sneeze.
  - Don't touch your eyes, nose or mouth with unwashed hands.
- Avoid contact with sick people.
  - Wash your hands often with soap and water for at least 20 seconds or use alcohol-based sanitizer.
  - It is especially important to clean your hands after using the restroom, before eating, and after coughing, sneezing, or blowing your nose.



*Guidelines by NABTU*

### Beat COVID-19 on the worksite

#### FOR EMPLOYERS:

- Create at least six feet of space between workers by staging and staggering crews.
  - Provide soap and running water on all jobsites for frequent handwashing. If that is not possible, provide hand sanitizer.
  - Frequently clean and disinfect high-touch surfaces including handrails, door knobs, and portable toilets.
- Plan for office staff to have the ability to work from home.
  - If possible, expand onsite medical clinics, screen workers and pre-stage disinfected equipment prior to check-in.



*Guidelines by NABTU*

## Shipping and Transportation Issues

Please see below for important information concerning trucking and transportation issues. Much of this information pertains to agricultural and consumer products in addition to produce, so we wanted to pass it on to all industry members. We thank the Produce Marketing Association and AAMSI for sharing the information below:

**Truck Weight and Hours:** As of this morning, 28 states have temporarily increased weight limits on trucks. [American Trucking Association COVID-19 Update Hub](#) has a summary of weight waivers by state. In case you are looking to maximize truck capacity with the temporary increase in weight limits, click the following link for a copy of the [Blue Book Temperature and Ethylene Compatibility Guideline](#) and also see the following [link to the UC Davis Compatibility Chart](#). Additionally, the Federal Motor Carrier Safety Administration have waived hours of work restrictions for essential service drivers, including all food loads [FMCSA's](#).

**Travel Certificates:** In the United States, the government has determined that food and agricultural workers, along with food and agricultural supplies, are part of Critical Infrastructure Industries. To help you and your employees prove that they are vital and are allowed to travel within the United States, despite other travel bans, PMA has provided you [this certificate](#) that your employees can carry with them as they travel on food/ag business. We also offer [this certificate](#) about transporting food/ag supplies.

**Outside Drivers:** Receivers and shippers are encouraged to separate outside drivers to minimize the risk of spreading COVID-19. Companies choosing to implement this will need to make provisions for outside drivers to facilitate access to refreshments and bathroom facilities. If they are not able to count the load on/off their truck, the terms need to be reflected on the bill of lading.

**Border Crossings and Rates:** Please verify that your carrier will be willing to cross borders when contracting the freight. We have heard of instances of carriers refusing to cross a border due to their insurance companies' refusal to cover the drivers if they contract COVID-19. As of last Friday, freight rates were up between 5-20% due to tightening equipment and driver supply. Some freight companies are asking for significant increases but are not getting much business. Unloading times at receivers have also increased due to prioritization and increased volume.

**FMCSA Annual Safety Blitz:** The Federal Motor Carrier Safety Administration (FMCSA) performs an annual 2-day safety inspection in June. They have announced that they will be not only be moving forward this year but are planning on moving it to early May. There is great concern that this will severely decrease the number of trucks available and skyrocket rates. Last June, the highest rates all year were during the June safety inspection blitz. PMA is working with the appropriate authorities in DC to have this blitz inspection suspended; however, for the time being, please plan accordingly.

\*Article courtesy of AG AMSI, Inc.



# COVID-19 UPDATE

*Governor Newsom orders "Shelter-In-Place" in California;  
Agricultural Jobs deemed "critical infrastructure" and therefore  
essential; PACA Trust Important Update*



## **Governor Newsom orders "Shelter-In-Place" for all Californians**

Yesterday evening Governor Gavin Newsom ordered a statewide "Shelter-In-Place" to begin today. Despite these unsure times and the continually evolving situation surrounding the COVID-19 concerns, the California Apple Commission has continued to engage with both national and state public health and government leaders to advocate on the importance of maintaining operations at your individual facilities.

Below is information provided to us by Governor Newsom's Office regarding his announcement yesterday evening:

The Executive Order is attached and can be found here: <https://covid19.ca.gov/img/N-33-20.pdf>

More information on California's response to COVID-19 and other resources can be found here: <https://covid19.ca.gov/>

The Order uses the federal guidance on critical infrastructure sectors to define essential businesses and services. Information on critical infrastructure sectors can be found here: <https://www.cisa.gov/critical-infrastructure-sectors>

# Agricultural Jobs Deemed “Critical Infrastructure” and Therefore Essential

The summary of critical infrastructure sectors in agriculture are defined as shown below. Additionally, attached to this email is a letter that you may complete with your company’s details and provide to your employees so that they may travel to and from work without any issue. If you have any questions regarding the use of this letter or the definitions listed below, please do not hesitate to contact us.

The summary of critical infrastructure sectors in agriculture are listed below:

## **Food and Agriculture:**

- Workers supporting groceries, pharmacies and other retail that sells food and beverage products
- Restaurant carry-out and quick serve food operations - Carry-out and delivery food employees
- Food manufacturer employees and their supplier employees-to include those employed in food processing (packers, meat processing, cheese plants, milk plants, produce, etc.) facilities; livestock, poultry, seafood slaughter facilities; pet and animal feed processing facilities; human food facilities producing by-products for animal food; beverage production facilities; and the production of food packaging
- Farm workers to include those employed in animal food, feed, and ingredient production, packaging, and distribution; manufacturing, packaging, and distribution of veterinary drugs; truck delivery and transport; farm and fishery labor needed to produce our food supply domestically
- Farm workers and support service workers to include those who field crops; commodity inspection; fuel ethanol facilities; storage facilities; and other agricultural inputs
- Employees and firms supporting food, feed, and beverage distribution, including warehouse workers, vendor-managed inventory controllers and block chain managers
- Workers supporting the sanitation of all food manufacturing processes and operations from wholesale to retail
- Company cafeterias - in-plant cafeterias used to feed employees
- Workers in food testing labs in private industries and in institutions of higher education
- Workers essential for assistance programs and government payments
- Employees of companies engaged in the production of chemicals, medicines, vaccines, and other substances used by the food and agriculture industry, including pesticides, herbicides, fertilizers, minerals, enrichments, and other agricultural production aids
- Animal agriculture workers to include those employed in veterinary health; manufacturing and distribution of animal medical materials, animal vaccines, animal drugs, feed ingredients, feed, and bedding, etc.; transportation of live animals, animal medical materials; transportation of deceased animals for disposal; raising of animals for food; animal production operations; slaughter and packing plants and associated regulatory and government workforce
- Workers who support the manufacture and distribution of forest products, including, but not limited to timber, paper, and other wood products
- Employees engaged in the manufacture and maintenance of equipment and other infrastructure necessary to agricultural production and distribution

## **Critical Manufacturing:**

- Workers necessary for the manufacturing of materials and products needed for medical supply chains, transportation, energy, communications, food and agriculture, chemical manufacturing, nuclear facilities, the operation of dams, water and wastewater treatment, emergency services, and the defense industrial base.



# PACA Financial Information Update

One of the most important regulations supporting the fresh produce trade is the Perishable Agricultural Commodities Act, and especially the PACA Trust. The PACA trust enables produce sellers to have first priority for repayment of debts in the event of a customer's bankruptcy. Produce sellers actually have higher priority than banks, tax payments or any other debts in the event of dissolution of assets to debtors.

We strongly advise you to be careful to not inadvertently waive your rights under the PACA trust. In discussions with the USDA PACA branch today, we have confirmed the following:

All produce sellers – whether growers, shippers, wholesalers, or others should NOT enter into extended payment terms beyond 30 days, before the initial 30-day payment period is past. We know that many companies want to cooperate with one another, but extending terms before the end of the 30-day period waives your PACA trust rights and the ability to have preferential trust rights in the event of your customer's bankruptcy.

However, regulations DO ALLOW a seller and buyer to agree to a partial payment plan or enter into a payment schedule AFTER the 30-day period without losing your PACA trust rights. The specific regulatory language provided to us from the USDA PACA branch is as follows:

*Section 46.46.(e)3: If there is a default payment as defined in 46.46(a)(3), the seller, supplier, or agent who has met the eligibility requirements of paragraphs (e)1 and (2) of this section will not forfeit eligibility under they trust by agreeing in any manner to a schedule for payment of the past due amount or by accepting a partial payment.*



# INDUSTRY COMMUNICATIONS

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# APPLE COMMUNICATIONS

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The California Apple Commission takes pride in ensuring that our audience is kept up to date with issues concerning the apple industry. The CAC is on social media. Please follow us on the following social media outlets and let us know what you think. We would love to know what you want to hear more about.



[Facebook.com/CaliforniaAppleCommission](https://www.facebook.com/CaliforniaAppleCommission)



[Pinterest.com/calapple](https://www.pinterest.com/calapple)



[Instagram.com/calapples](https://www.instagram.com/calapples)

The Commission has published a series of newsletters throughout the season and they are included in the following pages. The Commission encourages you to sign up for our newsletters that are available both online and as a hard copy. To sign up for the California Apple Commission's online newsletter, visit [calapple.org](http://calapple.org) under the "About Us" tab. You can subscribe in the "Newsletter" section. To subscribe to our hard copy newsletter, please contact the Commission office. The Commission sends out newsletters on a bi-monthly basis. However, due to the COVID-19 pandemic, the regular newsletter schedule was disrupted this year. The Commission looks forward to resuming regularly published newsletters in the next year.



# Newsletter

Issue No. 139

January/February 2020

## U.S.-CHINA SIGN PHASE ONE TRADE DEAL

On January 15, 2020, President Trump and Chinese Vice Premier Liu He signed an initial "Phase One" trade agreement. This agreement is said to include commitments by China to purchase \$200 billion of U.S. goods, including an additional \$32 billion in agricultural products over two years. This \$32 billion will be broken down to \$12.5 billion in the year 2020 and \$19.5 billion in the year 2021. It is important to note that U.S. apples could potentially be included in the list of products subject to China's purchase commitments; there are no specific purchase commitments for U.S. apples outlined in the agreement at this time. Rather, the list remains vague and features general HS code chapter headings, such as HS code 0810 for "fruit, fresh."

Aside from additional agricultural purchase commitments, this agreement also includes commitments from both the U.S. and China to uphold science and risk-based sanitary and phytosanitary measures, in addition to increasing technical consultation on maximum residual levels (MRLs). Further, this agreement unfortunately did not include any commitments from China to reduce and/or eliminate any of the existing retaliatory tariffs on U.S. products. Therefore, the existing 40% tariff on U.S. apples will remain at this time, however, it has been suggested that a "Phase Two" agreement could address these tariff issues in the near future.

The CAC staff will continue to monitor the "Phase One" deal, and will provide any additional information as it becomes available. Please do not hesitate to contact the CAC office with any questions.

## PRESIDENT TRUMP SIGNS USMCA TRADE AGREEMENT

In late January, the U.S. Mexico Canada Free Trade Agreement (USMCA) was officially signed by President Trump. It is expected that the agreement will be put into force in July, however no affirmative date has been provided at this point. Canada still remains the last country who must ratify the agreement, although it has been reported that Canada has begun the ratification process to approve the agreement following recent actions by the U.S. The CAC will continue to monitor the progress of this agreement in the Canadian government, and will keep the industry informed. Please do not hesitate to reach out to the CAC office with any questions regarding this agreement.

## eDISCLOSURE FOR e-FILING FORM 700

As outlined by CDFA and the Fair Political Practices Commission (FPPC), all Board of Directors must complete the necessary Form 700. Board members are now eligible to submit their Form 700s

electronically through eDisclosure. To access the eDisclosure system and complete e-filing Form 700, please log on to [www.form700.fppc.ca.gov](http://www.form700.fppc.ca.gov). Upon logging in, you will see a list of positions that you are required to file a Form 700 for. Once completed, your Form 700 will be saved in your online-filing cabinet under "Previous Filings" menu.

*As a reminder, the Form 700 is due April 1, 2020.*

Should you have any problems accessing or completing your eDisclosure Form 700, please contact your assigned filing officer, Andrea Carey, at (916) 323-3213 or via email at [Form700@fppc.ca.gov](mailto:Form700@fppc.ca.gov). As always, the Commission can help you file your Form 700. Please contact the Commission office for assistance.

## UPCOMING CA APPLE ELECTIONS

The California Apple Commission will host district meeting conference calls to nominate its candidates for the 2020 – 2021 Board of Directors. All district meeting conference calls will be on Wednesday, May 6, 2020, at the Apple Commission office via Zoom Meeting at <https://zoom.us/j/992137841> or by Conference Call at 1(669) 900 - 6833 - Meeting ID: 992 137 841. District 1 will begin at 9:00 a.m., District 2 will begin at 9:30 a.m., and District 3 will begin at 10:00 a.m. An election notice was mailed to all California growers. Please contact the CAC with any questions.

## COMMISSION TO ATTEND CAPITOL HILL DAY

The California Apple Commission will be visiting Washington, D.C. from March 9-12, 2020. The purpose of this visit is to attend the US Apple Association and U.S. Apple Export Council Board Meetings, and to meet with Congressional members to provide information on current problems facing the apple industry. Topics to be discussed will include labor, trade, water, tariffs and export issues, among others. If you would like more information about the upcoming visit, please contact the Commission office.

## COMMISSION ATTENDS FRUIT LOGISTICA TRADESHOW

On February 3-7, 2020, the California Apple Commission, along with CAC's Chairman, Jeff Colombini, participated in the Fruit Logistica trade show, located in Berlin, Germany, through the U.S. Apple Export Council. Fruit Logistica is the largest fresh fruit show in the world. It covers the fresh produce business and offers a complete picture of the latest innovations, projects, and services in the international supply chain.

This trade show provides the Commission with the unique opportunity to reach a vast audience of retailers and importers from around the world. If you would like more information and plan on attending next year, please contact the Commission office.

#### INTERN PARTICIPATES IN STUDY ABROAD PROGRAM

On January 2-12, the Commission's intern, Nicole Helms, participated in a 10-day study abroad through Fresno State to Santiago, Chile. The Chilean study abroad program primarily focused on agricultural production in Chile. In addition to touring farms and packing houses, the students had the opportunity to meet with USDA at the U.S. Embassy and tour the APHIS inspection site at Valparaiso's port. The exposure to another country's agricultural production and practices has instilled a greater appreciation and understanding of the importance of pest and control measures and trade that the U.S. and other countries participate in.



Intern, Nicole Helms, visited an avocado farm in Quillota, Chile.

## APPLE BITES

### Kale & Feta Salad

#### Ingredients:

- 1 bunch kale, large stems discarded, leaves finely chopped
- 1/2 teaspoon salt
- 1 tablespoon apple cider vinegar
- 1 California apple, diced
- 1/3 cup feta cheese
- 1/4 cup currants
- 1/4 cup toasted pine nuts

#### Directions:

1. Massage kale with salt in a large mixing bowl for 2 minutes. Pour vinegar over the kale and toss to coat. Fold apple, feta cheese, currants, and pine nuts into the kale.

*Recipe courtesy of [allrecipes.com](http://allrecipes.com)*

#### CALENDAR OF EVENTS

- Capitol Hill Day/US Apple/USAEC
  - March 9-12, 2020
  - Washington, D.C.
- CA Grown Board Meeting
  - March 28, 2020
  - Sacramento, CA



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*Wishing you a Happy New Year!*

# Newsletter

Issue No. 138

November/December 2019

## U.S.-JAPAN TRADE DEAL APPROVED BY JAPAN'S PARLIAMENT

On Wednesday, December 4, 2019, Japan's Parliament officially approved the trade deal that was agreed upon by President Trump and Japanese Prime Minister Shinzo Abe earlier in 2019. It is also important to note that Congress does not have to pass this agreement. This trade deal will eliminate and reduce tariffs between the U.S. and Japan on a number of products, including apples. The agreed upon tariff reductions and eliminations are set to take effect on January 1, 2020. Specifically, the agreement includes the following tariff concessions from Japan on apples:

- **Immediate 25% reduction** on January 1, 2020 of Japan's **17.0% tariff on fresh apples** (HS 08010.00)
- **Additional 10% reduction** of remaining tariff rate on January 1, 2020
- **9 stage tariff elimination phase-out** to follow beginning on April 1, 2021
- Fresh apples to be **duty free** by April 1, 2029

Additionally, the CAC has been working closely with the Animal Plant Health Inspection Service (APHIS) on a systems approach program that would allow for the option of exporting apples to Japan without a cold treatment requirement. This proposal has been submitted to Japan, and we are currently awaiting their response. Once we receive a status update on this request, we will be sure to communicate with the industry. If you have any questions regarding the trade agreement or systems approach program proposal, please do not hesitate to contact the Commission office.

## HOUSE PASSES FARM WORKFORCE MODERNIZATION ACT

On December 11, 2019, the U.S. House of Representatives voted to pass the Farm Workforce Modernization Act with a strong bipartisan vote of 260-165. The legislation, introduced by members Zoe Lofgren (D-CA) and Dan Newhouse (R-WA), includes provisions designed to stabilize the current domestic workforce by creating an earned legalization

process, as well as improvements to the current H-2A program, including wage relief.

The Farm Workforce Modernization Act will not head to the U.S. Senate for a vote, and then must be signed by President Trump. Further negotiations are expected to begin after the holiday season, and it has been reported that the bill could be introduced to the Senate as early as March. The CAC will continue to voice support for the passage of this bill in upcoming meetings with CA's Senate representatives. The CAC understands that while this bill is not perfect, it does include many provisions that will help establish a continuous, reliable, and skilled labor force in California. If you have any questions regarding the Farm Workforce Modernization Act, please do not hesitate to contact the Commission office.

## USMCA AGREEMENT REACHED

In December, President Trump and House of Representatives Democratic Members have reportedly reached a deal that will allow the much anticipated ratification of the U.S. Mexico Canada Free Trade Agreement (USMCA) by the end of 2019.

According to House Speaker, Nancy Pelosi (D-CA), Democrats have made improvements to the initial agreement made between the U.S., Canada, and Mexico, which was signed last November by the three countries' leaders. Specifically, these changes involve labor, enforcement, and several pharmaceutical provisions contained in the deal. Regardless of these changes, however, USMCA still offers significant improvements over NAFTA, which it will replace following an official vote from the House of Representatives and ratification from all three countries. At this point, Mexico is the only country that has officially passed the USMCA through the appropriate government channels. If you have any questions regarding the USMCA, please do not hesitate to contact the Commission office.

## NEW YORK PRODUCE SHOW

On December 11-13, 2019, the Commission attended the New York Produce Show (NYPS) annual convention held at the Javits Center in New York City, NY, hosted by the Eastern Produce Council and Produce Business magazine. The four-day event included networking opportunities, a one-day trade show featuring over 400 companies, retail “thought-leader” breakfast panel hosted by Perishable Pundit Jim Prevor, educational micro-sessions, and tours of the region’s vibrant industry, including local retailers, wholesalers, foodservice distributors, urban farms, and unique eateries. The NYPS provides connections that allow members within the industry to expand business opportunities and increase sales and consumption. If you would like more information, please contact the Commission office.

## CAC BOARD MEETING TO BE HELD IN JANUARY

The CAC will be holding a board meeting in January 2020. The date is to be determined, and further 2020 information will be provided shortly.

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Did you know you can receive an e-newsletter instead of the snail mail version? If you would like to sign up, please email [intern@calapple.org](mailto:intern@calapple.org)

## APPLE BITES Spiked Apple Cider Cocktails



### Ingredients:

- 1/4 gallon apple cider
- 1/2 cup dark rum
- 1/2 cup cinnamon schnapps
- 1 California Granny Smith apple, peeled, cut into large chunks
- 1/2 cup lemon juice

### Directions:

Mix together the cider, rum, and schnapps in a large pitcher. Add the apples to a small bowl and toss them with the lemon juice. Thread the diced apples onto skewers. Pour the spiked cider into glasses filled with ice, then garnish with an apple skewer and serve.

Recipe courtesy of [www.foodnetwork.com](http://www.foodnetwork.com)

### CALENDAR OF EVENTS

- CAC Board Meeting
  - January 2020 - TBD
- APHIS Apple Sector Meeting
  - Washington, D.C.
  - January 17, 2020
- 1st Annual Symposium for Sustainable Agriculture
  - January 31, 2020
  - International Agri-Center - Tulare, CA
- Fruit Logistica
  - Berlin
  - February 5-7, 2020



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# Newsletter

Issue No. 137

September/October 2019

## COMMISSION APPLIES FOR 2 SPECIALTY CROP BLOCK GRANTS

The Commission has submitted two proposals for the Specialty Crop Block Grant program through the California Department of Food and Agriculture (CDFA), titled "Increasing availability of California specialty crop products at local retail establishments through educational outreach" and "Testing new apple rootstocks in California." The CDFA SCBG review committee will review these initial proposals on December 10, 2019 to evaluate whether they will be invited to submit an application for Phase 2. The Commission will provide updates as they are received. For any questions regarding these grant proposals, please contact Elizabeth Carranza at the Commission office.

## UNITED FRESH PUBLIC POLICY CONFERENCE

On September 16-18, 2019, the California Apple Commission attended the United Fresh Washington Public Policy Conference. This conference is an annual event held in Washington, D.C. which provides the produce industry the opportunity to engage in face to face dialogue with key members of Congress and address the industry's most pressing public policy matters. For example, the Commission had the opportunity to discuss issues concerning labor, trade and tariffs, and more. If you would like more information regarding the Commission's meetings or the conference in general, please contact the Commission office.

## COMMISSION ATTENDS ASIA FRUIT LOGISTICS

On September 2-4, 2019, the Commission staff joined the U.S. Apple Export Council (USAEC) in Hong Kong for the Asia Fruit Logistics. This is the largest fresh fruit trade show in Asia and provides the Commission the unique opportunity to reach a vast audience of consumers and buyers. Asia is a promising market for California apples,

and the Commission provided information to potential buyers about the availability of California apples. The Commission would like to thank the Foreign Agricultural Service (FAS) and USAEC for facilitating this opportunity. For additional information, please contact Elizabeth Carranza at the Commission office.

## COMMISSION ATTENDS PMA

On October 17-19, 2019, the Commission attended the Produce Marketing Association's (PMA) Fresh Summit annual convention and exposition, held at the Anaheim Convention Center in Anaheim, CA. PMA helps members grow by providing connections that expand business opportunities and increase sales and consumption. In addition, PMA allows the Commission to meet and maintain relationships with other industry leaders, and it ensures that they are updated on current industry topics and workshops. In 2020, PMA will be held in Dallas, Texas. If you would like to attend PMA next year, or would like more information, please contact the Commission office.



Commission staff at PMA

**USAEC ANNUAL NETWORKING  
BREAKFAST AT PMA FRESH SUMMIT**

As an affiliate member of the USAEC, all apple industry members and shippers were invited to attend the annual networking breakfast at the PMA Fresh Summit on October 19, 2019. This event was well attended, and is a great way to connect with importers, distributors, retailers, and other trade contacts from around the world in a casual setting. If you have questions about PMA or the breakfast, please contact the Commission office.

**FARM WORKFORCE MODERNIZATION ACT**

On October 30, 2019, members of Congress, Zoe Lofgren (D-CA) and Dan Newhouse (R-WA), among others, will introduce the Farm Workforce Modernization Act to the House of Representatives. This bipartisan legislation will stabilize the current agricultural workforce through the creation of an earned legalization program for those who continue to work in agriculture. The bill also brings needed modernization and cost containment to the H-2A agricultural guest worker program. It represents a significant improvement over the status quo for California apple growers in the H-2A program and those who employ domestic workers. The Commission encourages you to contact your local Congressional Representative to voice your support for this new legislation. For more information regarding the bill, please do not hesitate to contact the Commission office.

**APPLE BITES**   
**CARAMEL APPLE BITES**

**Ingredients:**

- 2 California Fuji Apples
- Caramel Dip
- Crushed pretzels, popcorn, and walnuts
- 6 inch skewers

**Directions:**

- Peel the apples and use a melon baller to make apple balls. Stick a skewer in each apple ball and arrange on a plate.
- Serve with a bowl of caramel and bowls of crushed pretzels, popcorn, and walnuts.
- Dip the apple balls in the caramel and toppings and enjoy!

*Recipe courtesy of [usapple.org](http://usapple.org)*

**CALENDAR OF EVENTS**

- **USAEDC**
  - Baltimore, MD
  - November 19-20, 2019
- **Specialty Crop Block Grant Review Committee Meeting**
  - Sacramento, CA
  - December 10, 2019



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# Newsletter

Issue No. 136

July/August 2019

## **MEXICO INSPECTOR**

In late July, the Mexico inspector arrived in California to review the California/Mexico apple export program. In ordinance with the California/Mexico work plan, the Mexico inspector must certify all packing sheds and fumigation chambers that will be used to treat all apples exported to Mexico. Thanks to the Commission's efforts, there is a reduction in oversight from Mexico, and this was the last year the inspector will be required to visit California for the next three years. Rather, APHIS will handle all inspections for Mexico moving forward. If you have any questions regarding the Mexico Export Program, please contact Elizabeth Carranza at the Commission office.

## **U.S. APPLE OUTLOOK CONFERENCE**

On August 22-23, 2019, the Commission attended the U.S. Apple Outlook and Marketing Conference in Chicago, Illinois. The conference was hosted by The U.S. Apple Association, with the purpose of creating and maintaining relationships with key leaders from all sectors of the apple industry. For more information on the U.S. Apple Outlook Conference, please visit [usapple.org](http://usapple.org).

## **CHINA TARIFF UPDATE**

The U.S. apple industry is already feeling the effects of the latest round of retaliatory tariffs from China. In late August, China announced an additional 10% tariff on a wide range of U.S. goods, including apples. This additional 10% tariff will bring the total tariff on U.S. apples to China up to 60% beginning on September 1, 2019. While China is not necessarily a target market for California, these tariffs are resulting in increased pressure within both the domestic market and other target markets that have been traditionally important to California. Please contact Elizabeth Carranza at the Commission office with any questions or concerns regarding this latest tariff announcement.

## **USAEC HIRES BRYANT-CHRISTIE, INC.**

### **AS NEW MANAGEMENT**

At the latest U.S. Apple Export Council (USAEC) Board meeting held in Chicago, IL in August, the Board made the decision to hire Bryant-Christie, Inc. (BCI) as their new management company. Formerly, the USAEC worked with Washington, DC-based company Smith Bucklin, Inc. The USAEC is looking forward to a new partnership with BCI, which will begin in December 2019. Founded in 1992, BCI has earned a very positive reputation among many agricultural organizations and agencies within USDA. BCI helps companies and industry organizations through the U.S. to develop, execute, evaluate, and strengthen their market access and market development strategies. They have been instrumental in the process of obtaining market access for various commodities, in addition to growing the existing market presence of U.S. agricultural products overseas. The CAC is a participating member of the USAEC and will have the opportunity to benefit from the services that BCI will provide. Please do not hesitate to contact the Commission office with any questions.

## **COMMISSION ATTENDS ASIA FRUIT**

### **LOGISTICA TRADE SHOW IN HONG KONG**

On September 4-6, 2019, the California Apple Commission will travel to Hong Kong for the Asia Fruit Logistica Trade Show. This is the largest fresh fruit trade show in Asia and provides the Commission the opportunity to reach a vast audience and allows visitors to get direct contact with exhibitors. The USAEC will be hosting a booth at this year's tradeshow, thus allowing a space for the CAC to represent the California apple industry at the show. Asia is a promising market for California apples, and the Commission will provide information to buyers about the availability of California apples. For additional information, please contact Elizabeth Carranza at Commission office.





## USAEC ANNUAL NETWORKING BREAKFAST PLANNED FOR 2019 PMA FRESH SUMMIT

As an affiliate member of the USAEC, all apple industry members and shippers are invited to attend the annual networking breakfast at the PMA Fresh Summit on Saturday, October 19, 2019 from 8:00-9:45 AM at the Hilton Anaheim in Sam Simeon Room AB, across the street from the Anaheim Convention Center. This event is a great way to connect with importers, distributors, retailers, and other trade contacts from around the world in a casual setting. Please contact the Commission office with your RSVP no later than October 11, 2019 if you are interested in attending.

### CAC ANNUAL REPORT

In the near future, please be on the lookout for the California Apple Commission Annual Report. The Annual Report includes information on current and future research, education projects, market reports, and other pertinent industry information. If you would like a copy, please contact the Commission office or email us at [calapple@calapple.org](mailto:calapple@calapple.org). Additionally, the Annual Report can be found on the CAC website at [www.calapple.org/AnnualReport](http://www.calapple.org/AnnualReport).

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## APPLE BITES Apple Spinach Salad



### Ingredients:

1. 10 ounces baby spinach
2. 2 large California apples (Gala & Granny Smith), cored & thinly sliced
3. 1/2 small red onion, peeled & thinly sliced
4. 1 cup walnut halves, toasted
5. 2/3 cup dried cranberries
6. 5 ounces goat cheese, crumbled
7. Apple cider vinaigrette

### Directions:

1. Add spinach, California apples, red onion, walnuts, dried cranberries, and half of the goat cheese to a large bowl. Drizzle with the vinaigrette, and toss to combine.
2. Serve immediately, garnished with the remaining goat cheese.

### CALENDAR OF EVENTS

#### Asia Fruit Logistica

- Date: September 2-4, 2019
- Location: Hong Kong

#### United Fresh Produce Association Public Policy Conference

- Date: October 1-3, 2019
- Location: Richland, WA

#### Produce Marketing Association

- Date: October 18-20, 2019
- Location: Anaheim, CA



### California Apple Commission

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# Newsletter

Issue No. 135

May/June 2019

## **INDIA IMPLEMENTS TARIFFS ON APPLES FROM THE UNITED STATES**

In early 2018, India notified the World Trade Organization of their intention to impose a retaliatory tariff on U.S. apples, among 27 other goods, in response to America's tariffs on steel and aluminum from India. The proposed tariff of 20% will be added to the existing 50% tariff, thus totaling a 70% tariff on fresh apples to India. The tariff was initially set to be implemented on August 4, 2018, but was delayed 7 times following this date. However, India finally made a move to officially apply the tariff on June 16, 2019. Although California does not export a significant volume of apples to India, Washington state exported about 8 million boxes in 2018 making it one of the largest export markets for U.S. apples to date. Unfortunately, Washington has been down about 66% in total export volume to India this year, and expects export activity to slow even further following the recent tariffs. The CAC will continue to monitor the India market situation and will provide industry updates accordingly. For more information, please contact the Commission office.

## **U.S.-MEXICO-CANADA FREE TRADE AGREEMENT**

On November 30, 2018, during the G-20 Summit, President Trump, Canadian Prime Minister Justin Trudeau, and former Mexican President Enrique Peña Nieto officially signed the U.S. Mexico Canada Free Trade Agreement, otherwise known as the USMCA. Although it has been signed by the three leaders, and officially ratified by Mexico, this agreement must still make its way through Congress for approval. Both Republican and Democrat members of Congress have their issues with the USMCA, however, the Trump administration's top trade official and current U.S. Trade Representative, Robert Lighthizer, has increased his outreach on Capitol Hill in recent weeks. At this point, it seems that both sides of the aisle are hopeful that the administration and House Democrats could reach some sort of resolution to get the USMCA through Congress with bipartisan support before the summer 2019 recess. The U.S.'s recent decision to lift the Section 232 tariffs on steel and aluminum against both Mexico and Canada will hopefully increase the chances of Congressional approval as well. The removal of these Section 232 tariffs have been a top priority of the Commission and the U.S. Apple Association, and we are now focusing our efforts on securing Congressional support of the USMCA. For more information regarding the USMCA, please contact the Commission office.

## **U.S. IMPLEMENTS TARIFFS ON \$300 BILLION WORTH OF CHINESE GOODS, CHINA RETALIATES**

On May 10, 2019, the U.S. increased tariffs on \$200 billion worth of Chinese goods following a failed attempt to negotiate a trade deal between the two countries. The U.S. imposed tariffs consisted of an increase from 10% to 25% on the third released list of goods. This list includes fresh, dried, pureed, and "otherwise prepared or preserved" apples. These tariffs went into effect on all products shipped from China to the U.S. beginning on May 10, 2019. China retaliated shortly after with an additional \$60 billion worth of tariffs on U.S. goods, effective June 1, 2019. Despite the U.S.'s announcement of these additional tariffs on Chinese goods, the retaliatory rate of tariffs on apples remains unchanged at the current 40%. These new retaliatory tariffs were on products contained within China's list 3 (annex list 1-4), on which apples were not present. The Commission will continue to remain in contact with officials at the U.S. Embassy in China regarding the current trade situation, and will provide updates to the industry accordingly. Please contact the Commission office for more information or with any questions at this time.

## **NEW APPLE TREE INSURANCE POLICY**

On June 5, 2019, the Board of the Federal Crop Insurance Commission (FCIC) approved a new crop insurance policy that covers apple trees. U.S. Apple's Risk Management Task Force has been working with AgriLogic Consulting, LLC, to develop the insurance that would address the needs of growers. This new apple tree policy is separate from the insurance policy in existence since the 1990's, which only covers fruit. This new program will provide a tree-based dollar amount of insurance with liability being established on a per tree basis. The program will be offered in the 2021 crop year with an initial sales closing date beginning of April 15, 2020. For more information, please contact the Commission office.

## **MEXICO INSPECTOR**

In late July, the Mexico inspector will arrive in California to review the California/Mexico apple export program. In ordinance with the California/Mexico work plan, the Mexico inspector must certify all packing sheds and fumigation chambers intending on exporting apples to Mexico. Thanks to the Commission's efforts, there is a reduction in oversight from Mexico, and this is the last year the inspector will visit California. Rather, APHIS will handle all inspections for Mexico



moving forward. If you would like to be added to the list of acceptable packing sheds, please let the Commission office know. If you have any further questions regarding the Mexico Export Program, please contact Elizabeth Carranza at the Commission office.

**NEW BOARD SET FOR 2019 – 2020**

**Congratulations to the California Apple Commission’s Board of Directors for the 2019 – 2020 year!**

District 1	District 2	District 3	PUBLIC MEMBER
<b>PRODUCER MEMBER</b>	<b>PRODUCER MEMBER</b>	<b>PRODUCER MEMBER</b>	
Robert Jackson	Chris Britton	Jeff Colombini	Steve Blizzard
Lance Shebelut	Virginia Hemly-Chhabra	Steve Chinchio	
<b>HANDLER MEMBER</b>	<b>HANDLER MEMBER</b>	<b>HANDLER MEMBER</b>	
Bill Denevan	VACANT	Tim Sambado	
<b>ALTERNATE MEMBER</b>	<b>ALTERNATE MEMBER</b>	<b>ALTERNATE MEMBER</b>	<b>ALTERNATE MEMBER</b>
VACANT	Doug Hemly	VACANT	VACANT

The California Apple Commission is actively searching for a mid-term Handler Alternate for District 1. If you are interested in any of these positions or have any questions, please telephone the Commission office at (559) 225-3000.

**Find us on social media!**



#calapple

@calapple

Did you know you can receive an e-newsletter instead of the snail mail version? If you would like to sign up, please email [intern@calapple.org](mailto:intern@calapple.org)

**TAIWAN TRAINING SEMINAR**

On July 16, 2019, the California Apple Commission will hold the Taiwan training seminar at Prima Frutta in Linden, CA. The seminar is organized in conjunction with USDA-APHIS with the intent on training the necessary personal from different packing sheds in the process of detecting Codling Moth as outlined by the Taiwan work plan. If you would like to participate in the seminar or have any questions, please contact the Commission office.

**APPLEBITES  
Bacon Apples**



**Ingredients:**

- 2 California apples, cored
- 1/4 cup brown sugar
- 1 teaspoon cinnamon, or to taste
- 4 slices cooked bacon, crumbled

**Directions:**

1. Build a campfire and allow the fire to burn until it has accumulated a bed of coals. Rake the coals into a flat bed on one side of the fire. Alternatively, preheat an outdoor grill.
2. Place apples in a loaf pan. Combine brown sugar and cinnamon in a bowl; spoon into each apple.
3. Place the loaf pan into the campfire or grill; cook for about 3 minutes. Carefully remove the pan from the fire and sprinkle bacon over apples. Place in the fire or on the grill for about 5 minutes more.

Recipe courtesy of [www.allrecipes.com](http://www.allrecipes.com)

**CALENDAR OF EVENTS**

- USAEDC
  - Date: July 10-12, 2019
  - Arlington, Virginia
- Taiwan Training Seminar
  - July 16, 2019
  - Linden, CA
- U.S. Apple Association Apple Crop Outlook & Marketing Conference
  - August 22-23, 2019
  - Chicago, IL



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