

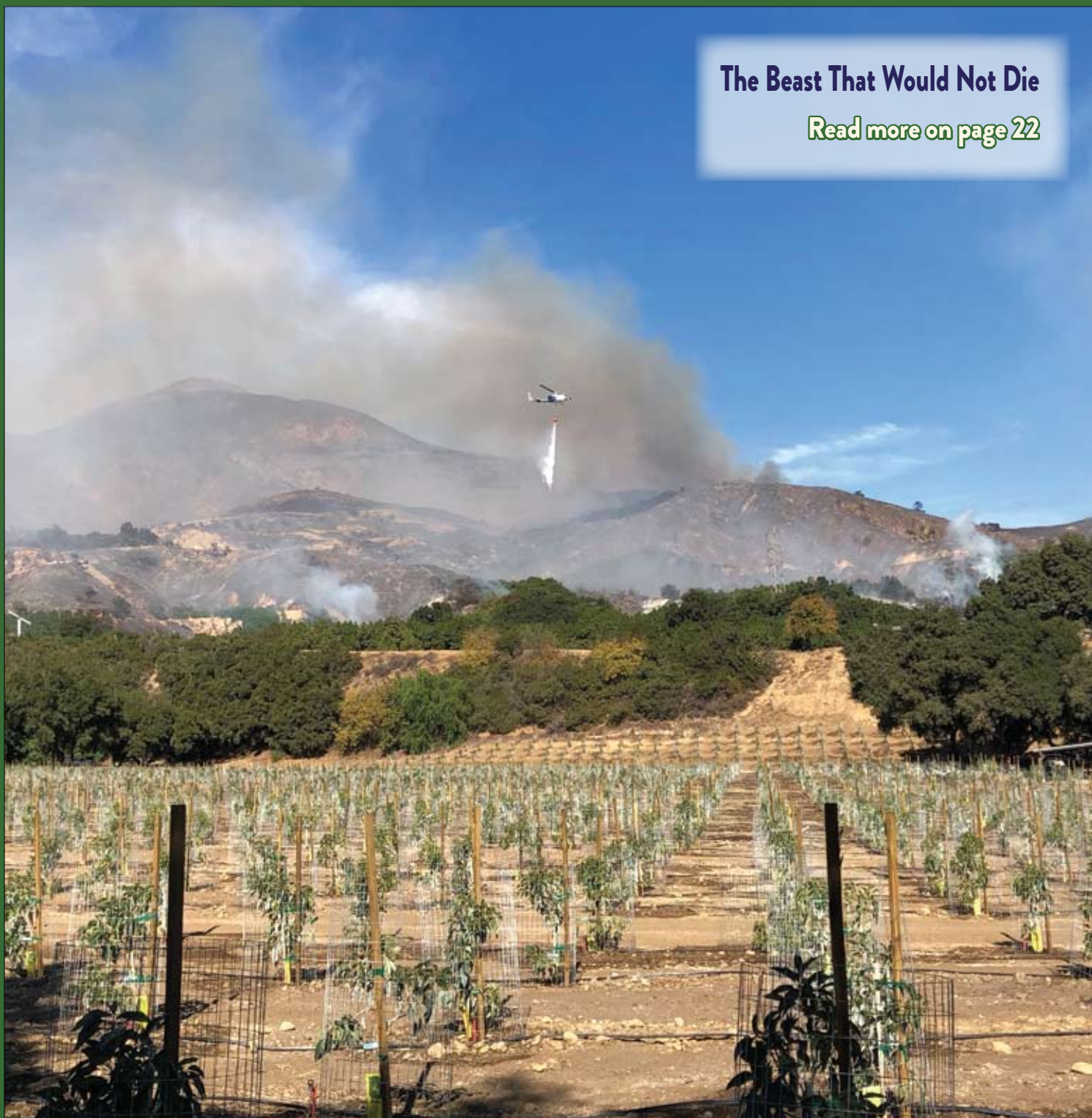
From the **Grove**

Winter 2017

The Latest News from the California Avocado Industry

The Beast That Would Not Die

Read more on page 22





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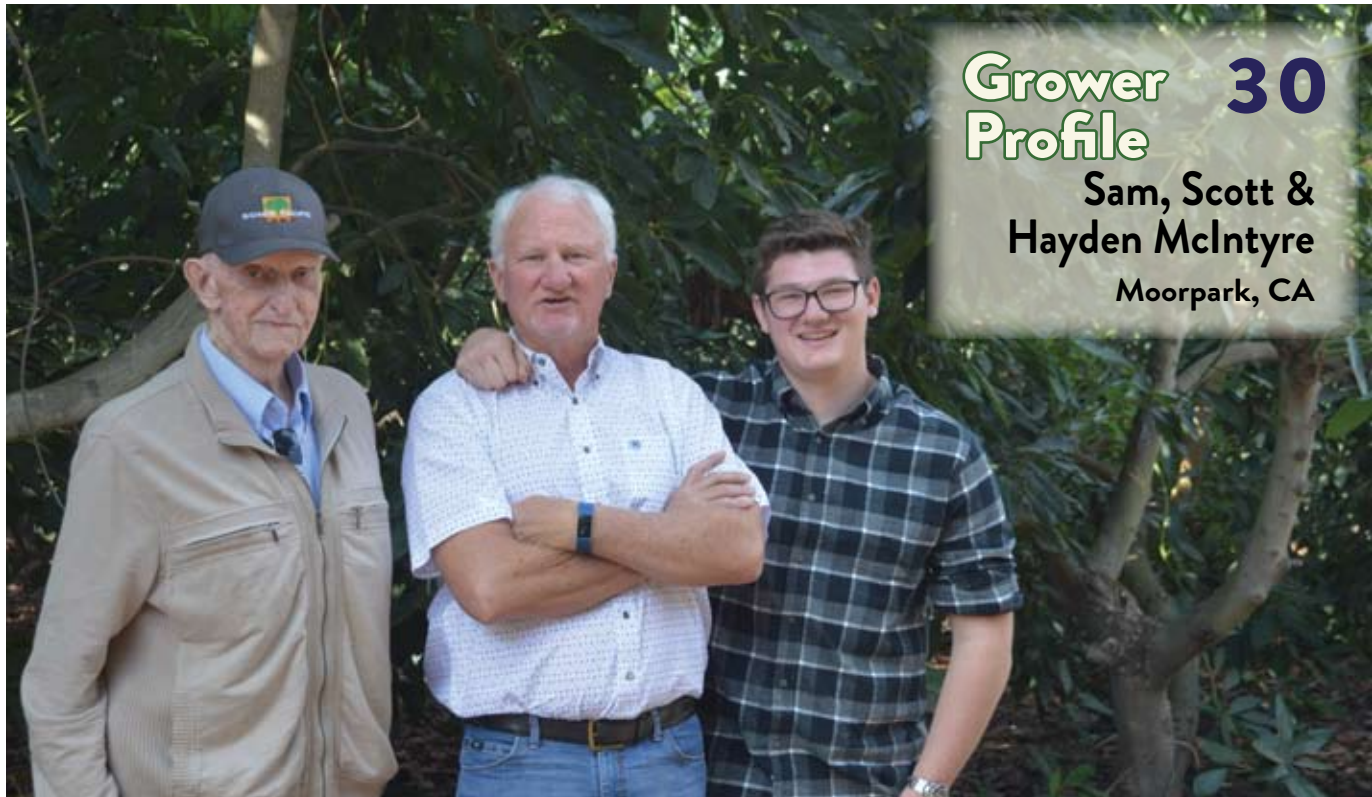
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Grower Profile 30

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From the Grove

Volume 7, Number 4

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The Year in Review

It seems a distant memory now, but in October 2016, as California avocados were about to begin a new crop year, prospects seemed dim for a decent season. Expected volume was 200 million pounds—half of what it had been the year prior—and the market was highly unstable. A work stoppage in Mexico had dramatically reduced fruit inventories and the supply disruption was unnerving to retailers and foodservice operators alike. Avocado promotions plummeted, and restaurants removed menu items featuring avocados; for the first time, our highly-regarded category fell from grace in the eyes of the trade. One of the main marketing goals for the upcoming 2016-17 season, therefore, was “reversing trade disillusionment with the category by underscoring the California avocado difference.” A difficult assignment under any circumstance, the goal was made tougher still by the fact that California avocados would account for only 10 percent of the total supply of 2.1 billion pounds anticipated in calendar year 2017.

At 10 percent of the market, the Commission’s task for 2017 was clear: maintain our presence in the market, our reputation as a reliable brand and our willingness to support the trade, under trying conditions of uncertainty, while focusing on returning value for our growers. If ever there was a year when members of the trade might deem California avocados irrelevant, this was it. Now, in retrospect, we know that this did not happen. In fact, the market coveted California avocados like never

before, and our fruit commanded a premium price that out-performed imports every week of the California season. The market from March through July 2017 was remarkably stable, with consistently high prices, and just when we thought it couldn’t get any better, August was off the charts. As prices rose that month for all supply sources, California led the way by delivering the highest returns.

By the time the last California avocado was packed in 2017, it was more than evident that it had been a banner year. The industry average price of \$1.60 per pound, for all varieties and all grades over the course of 2017, was an historic high. The average lug price for number one, Hass size 48s was \$52.80 for the period from November 1, 2016, through October 31, 2017, and all other conventional sizes set records as well. While it would be nice to be able to say that the Commission was single-handedly responsible for the stellar 2017 season, we all know that various factors contributed to the industry’s success. The Commission’s core strategy of carving out a premium position in the market and focusing on trade accounts whose customers have a willingness to pay is working, however, and Jan DeLyser and her marketing team are to be commended for staying in front of those accounts and preventing California avocados from becoming an afterthought. The packers did their part, too, and it took steel nerves to get the best returns possible for California growers by effectively leveraging the freshness and quality of California fruit



Tom Bellamore

when making sales calls on price-weary retailers.

The strong price performance across the season reaped benefits for the Commission as well. When the year started, we expected to operate with deficit spending of around \$3.4 million. Revenue from the 210-million-pound crop was projected to be about \$9.4 million, and operating expenses were set at about \$12.8 million, mindful of the acute marketing challenge ahead. The record returns across the season changed all that, more closely aligning revenue with spending. Not only did this allow us to maintain our reserves, but we’ve been able to get a jump start on preparing for the 2018 season, when a larger crop and extended harvest window will require increased marketing support.

No two seasons are ever the same, and a 375-400 million-pound California crop in 2018 will be harvested into a 2.4 billion-pound U.S. market, up from 2017. The market will have new entrants, most notably fruit from Colombia and possibly Jalisco, and other suppliers will be closely monitoring weekly inventories, ready to seize any opportunities that may arise. At the November meeting of the Hass Avocado Board, major suppliers to the U.S. market – i.e. Mexico, Peru and Chile – predicted that



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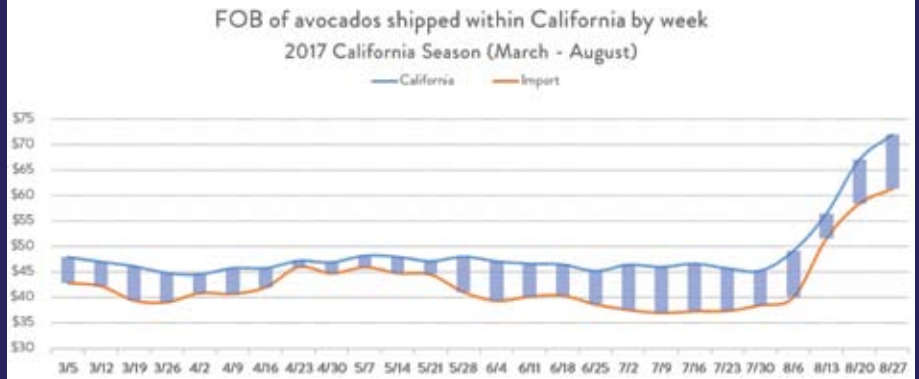
Public Member

Nina Ames

To contact a CAC representative, please visit:
CaliforniaAvocadoGrowers.com/Commission/your-representatives

California Avocados had an FOB price advantage over imports for every week of the 2017 California Season (March - August)

Average: 14%, Max: 25%



California Avocados also had an FOB price advantage for every week when looking at the 3-year average.

*Note - 2015 and 2017 California Seasons reflect early March - August timing, while the 2016 California Season reflects traditional April - September timing



exports to our country in 2018 will be up over the previous year, so expect plenty of competition across the season.

To meet that challenge, the Commission's retail merchandising directors and the foodservice team already have been calling on key accounts, laying the groundwork for an earlier start, planning customized promotions, and working with handlers' sales teams to secure commitments for California fruit. It's a longer list of accounts this year, since higher volume means more fruit will find its way to outer markets or even export destinations. And while it is impossible to predict how the market will behave in 2018, we know that certain fundamentals are requisite for

success. Topping the list is orderly marketing and a steady supply of fruit that matches demand. For California, delivering on our quality promise will be paramount, as will support of loyal trade customers to persuade them to resist the temptation of lower-priced fruit.

If there is a lesson in the strong market of 2017, it should be the realization that trade customers and consumers are increasingly aware of the inherent value of the California avocado crop and this is demonstrated by their willingness to pay for the freshest, high quality, local product they can find. That, by itself, offers promise of another great season in 2018. 🥑

No Two Years Are Ever the Same

Hello and Happy New Year to you! Time flies, so it is time yet again to put together another message from the chairman. This past fall I was honored to represent California avocado growers at the Produce Marketing Association (PMA) Fresh Summit. During the course of the show, I was part of a conversation regarding the avocado business with a group of folks that included Jan DeLyser, vice president marketing for the California Avocado Commission (CAC). Jan related that earlier in her career, when she was considering a move to the Commission, she was told by a trusted mentor to do it. Jan was told that the avocado industry was vibrant, exciting and no two years were ever the same. Jan agreed after her years of service with the Commission that, indeed, some years were similar but no two have ever been the same.

I have the same sentiment regarding the avocado industry. Last year at this time, I was sitting in my office enjoying the peaceful sounds of a Sunday rainfall. We had already accumulated enough rain to stop irrigating, but we were looking at a very small avocado crop. Contrast that with this year: we have not yet had enough rain to measure, at least here at my place in Carpinteria. The trees look great, and we have so much fruit that branches are breaking. In 2017, we finished harvest in July. If history is any guide, I probably won't be getting started picking in 2018 UNTIL July.

The big news in all of this however, is that 2017 was a record year for California avocados. In 2017, we re-

corded the highest average price per pound ever. Of course, there are a number of factors that contributed to this perfect storm for us. The first was that basic law of economics: supply and demand. We simply did not have enough fruit to supply the folks who wanted our great California avocados. The shortfall in our crop and the high demand for our fruit drove prices to record highs. The second important factor is that none of the handlers of California fruit blinked. They held the line and protected the value of our crop. They deserve our thanks and our encouragement to do the same in the upcoming year. The third important factor was the retailers. In the face of high prices for California fruit and adequate supplies of fruit from offshore, they could have very easily thumbed their nose at California and purchased cheaper supplies elsewhere. But they didn't. Lastly, the consumers who value the quality and taste of our fruit continued to purchase at record high prices. The consumers also deserve our gratitude.

Here are my thoughts on what the events of the past mean. Based on the past, we know that consumers and retailers are willing and able to pay a higher price for our fruit. We do not want to kill the goose that lays the golden eggs, but this is a step in the right direction to maintaining our sustainability as an industry. As I stated earlier, by encouraging the handlers, hopefully we can keep the higher floor price in place. Work with your handler to make sure you do not oversupply the market while you are harvesting. Secondly, it means that the hard work by our award-winning,



Rick Shade

dedicated marketing team is paying off. We could not have held the line on price in the face of low-priced offshore fruit if we did not have a well thought-out and properly-executed marketing program.

None of this would happen without the skilled application and use of our talented staff on our behalf. Our staff members continue to win awards and recognition for their innovative thinking and hard work. Every year, the PMA hosts a reception called "The Top 40 under 40" awards, showcasing 40 bright stars in the produce marketing world under the age of 40. Some years ago, I had the great pleasure of attending the ceremony when CAC's own Dave Cruz was honored. This year I was pleased to be able to attend the ceremony when a second CAC staff member was recognized. This time around the honoree was April Aymami of our Industry Affairs Department. I'm in awe of the talents that these two have, and am amazed at how well they perform under pressure. I rest easy knowing that we have such talented people watching out for our business.

As we look forward to another year let's consider these paraphrased thoughts by former President of the United States Dwight Eisenhower: "Farming looks mighty easy when your picking pole is a pencil, and you're a thousand miles from the orchard." 🍌

Aha



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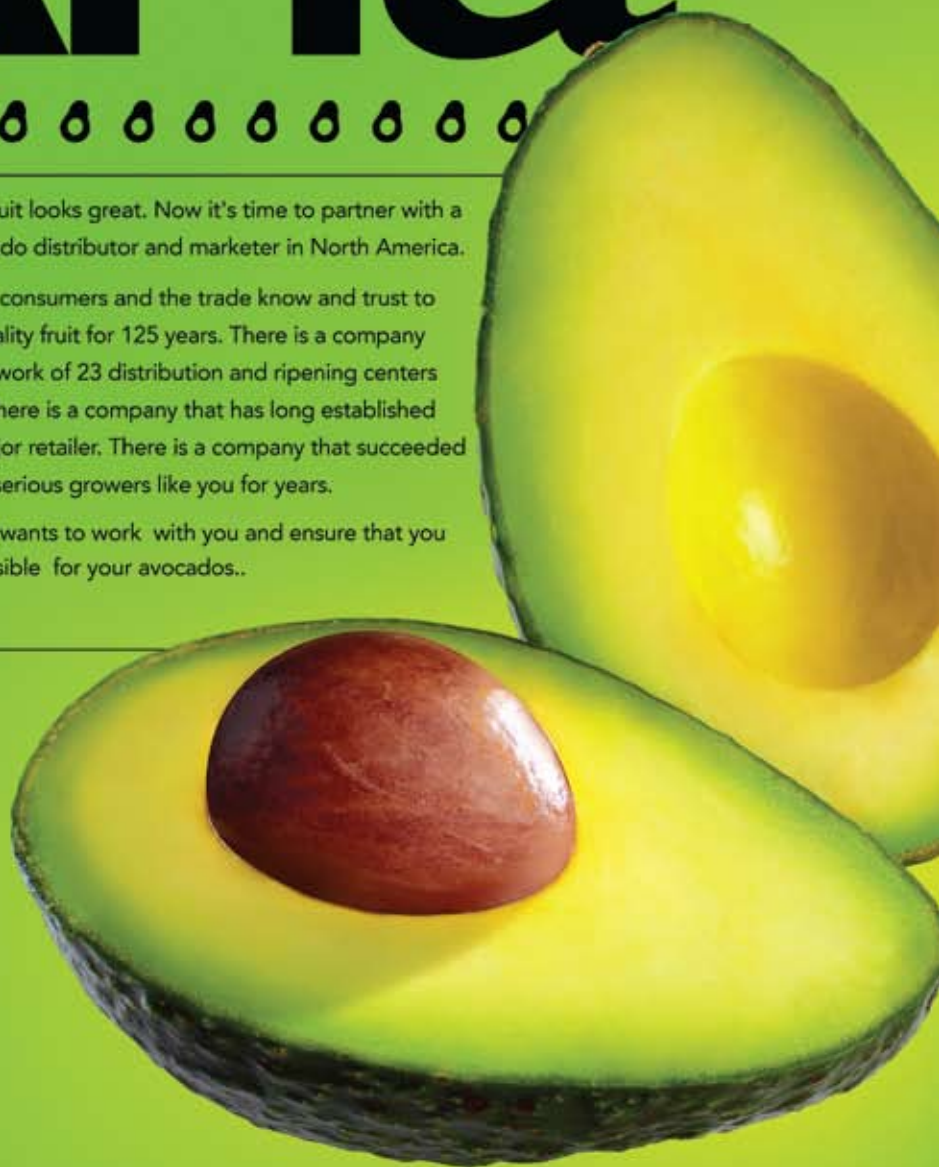
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Department of Labor Meets with Commission Staff, Employer Educational Meetings Set

By Ken Melban

Vice President of Industry Affairs

In December 2017, representatives from the U.S. Department of Labor, Wage and Hour Division's (WHD) San Diego District Office met with California Avocado Commission (CAC) President Tom Bellamore and Vice President of Industry Affairs Ken Melban. WHD requested the meeting to discuss concerns regarding some avocado industry members, including growers and labor contractors.

According to WHD, a high percentage of employer violations has occurred within the avocado industry related to compliance with federal wage and hour requirements. WHD is interested in partnering with CAC to conduct educational outreach on federal labor law to provide industry members with an understanding of the law and how to comply. WHD stressed its interest in providing employers with the critical information and understanding necessary to ensure they are compliant with federal labor regulations.

WHD has a number of compliance-assistance resources tailored specifically to the agriculture industry (<https://www.dol.gov/whd/ag/index.htm>). Under the following existing federal statutes, WHD is responsible for administering laws that extend various protections to different types of agricultural workers:

- The Fair Labor Standards Act (FLSA) contains federal minimum wage, overtime, recordkeeping, and child labor requirements for covered agricultural employers. www.dol.gov/whd/ag/ag_flsa.htm
- The Migrant and Seasonal Agricultural Worker Protection Act (MSPA) protects migrant and seasonal agricultural workers by establishing employment standards related to wages, housing, transportation, disclosures and recordkeeping. The MSPA also requires farm labor contractors (FLCs) and farm labor contractor employees (FLCEs) to register with the U.S. Department of Labor and to obtain special authorization before housing, transporting or driving covered workers. dol.gov/whd/mspa/index.htm
- The H-2A visa program establishes standards related to recruitment, wages, housing, transportation and recordkeeping for employers of temporary non-immigrant agricultural workers admitted to the country under section 218 of the Immigration and Nationality Act. dol.gov/whd/



[ag/ag_h-2a.htm](#)

- The Field Sanitation Provisions of the Occupational Safety and Health Act establish minimum standards for covered agricultural settings for toilets, potable drinking water, hand-washing facilities and for providing information regarding good hygiene practices. dol.gov/whd/ag/ag_field-san.htm

The coverage and requirements of these statutes above may overlap, and it's easy to see how confusion among employers may exist. If you have specific questions, please contact the nearest WHD district. To find your local office call the toll-free number: 1.866.4.USWAGE (1.866.487.9243) or the San Diego District Office for further guidance: 619.557.5110.

CAC has scheduled educational seminars for growers and labor contractors to learn directly from WHD federal labor law requirements. WHD staff will provide an overview of the legal wage and hour requirements and answer employer questions. Growers and labor contractors are encouraged to attend. The meetings will be held as follows. 📍

Tuesday, February 6, 2018

9:00 - 11:00 a.m.

Pala Mesa Resort

2001 Old Highway 395, Fallbrook

Wednesday, February 7, 2018

9:00 - 11:00 a.m.

Santa Paula Ag Museum

926 Railroad Ave., Santa Paula

Thursday, February 8, 2018

9:00 - 11:00 a.m.

San Luis Obispo Farm Bureau

4875 Morabito Place, San Luis Obispo

New California Avocado Bumper Stickers are Here!

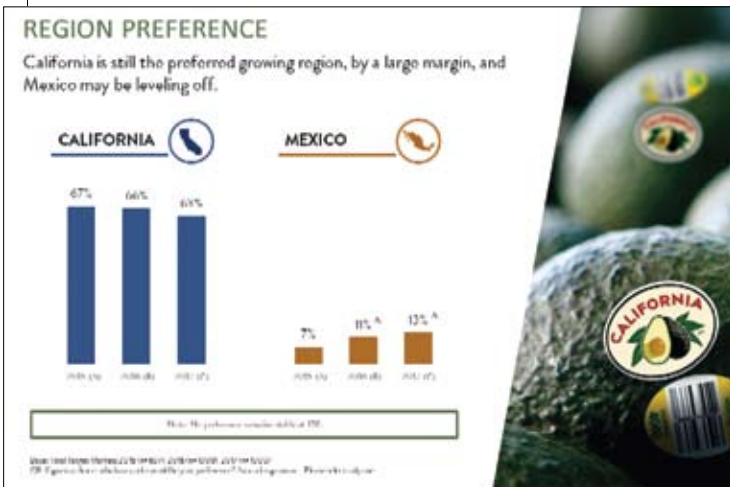


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2017 Avocado Tracking Study Highlights

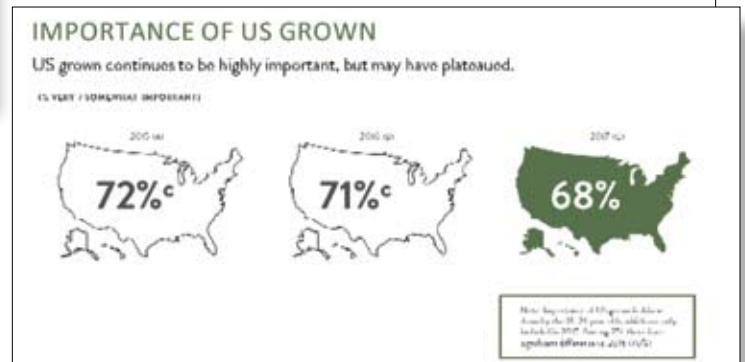
For more than 20 years, the California Avocado Commission (CAC) has used consumer tracking studies to measure consumer preferences, attitudes and usage. CAC's 2017 *Avocado Tracking Study* was conducted by an independent research firm, Temra Wald Consulting. In August and September nearly 2,000 adult avocado purchasers responded to CAC's 20-minute online survey, providing valuable information that will inform CAC's 2018 marketing campaign.

Because of the limited crop volume in 2017 and its overwhelming distribution in the West, an augmented sample of respondents from California was utilized to delve into where consumers from the Golden State shopped. The study also measured opinions across the country and is a large enough sample to measure differences by region. The data below reference the measures for CAC's targeted advertising markets (Los Angeles, San Diego, San Francisco/San Jose, Sacramento, Phoenix, Portland, Seattle, Denver and Salt Lake City). This year the sample included younger millennials ages 18 to 24.



Importance of U.S. Grown Is Highly Important

More than two-thirds of target market avocado shoppers say that it is somewhat or very important for the avocados they buy to be grown in the United States. For shoppers 25 years and older, importance of U.S. grown has remained constant for several years. Consumers 18 to 24 do not consider U.S. grown to be as important as the rest of the sample, deflating the overall rating this year.

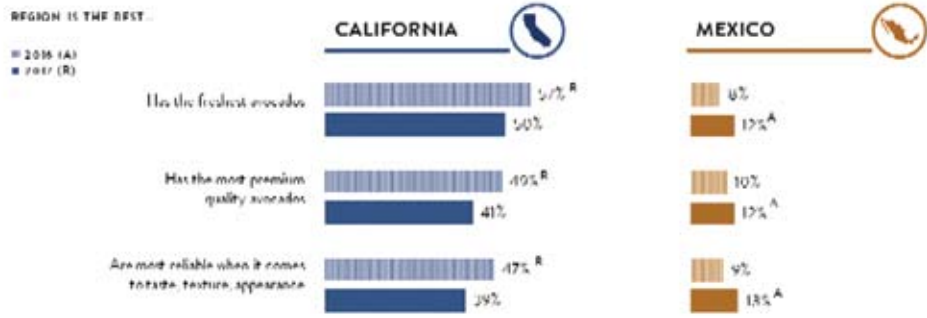


California Still the Preferred Growing Region

In 2017, the Commission's marketing budget was significantly smaller, commensurate with the smaller volume of the crop. Nevertheless, by a large margin California is still consumers' preferred avocado growing region. Shoppers who have no preference remained stable at 13 percent.

PRODUCT PERCEPTIONS

California Avocados continue to stand out as the best. However, their perceived superiority is not as strong as last year.



Avocados 2017
Look most appetizing after being cut: CA 85%, MX 14%. All perform the same 81%.

Base: Avocado eaters in regions 2016 (n=747), 2017 (n=781)
Q21.1 on each phrase below, please choose the region that most describes the phrase.

Only significant declines shown for CA. All other increases are comparable to last year.

Summer Consumption of Avocados

Avocado shoppers continue to associate California avocados most with summer and also associate them with American summer holidays. They reported being more likely to serve avocados in the summer in a wide range of dishes, including guacamole, bread/toast, sandwiches, burgers, potato salad and fruit salad. The Commission's 2018 marketing plan builds on this information, promoting more recipe ideas for California avocados in season.

California Avocados Perceived as Most Premium

More than half of avocado shoppers continue to rate California avocados as the most premium. However, the rating declined versus 2016. Ratings for most attributes, such as taste and food safety, held steady versus the prior year. Marks for California avocado freshness, premium quality, and reliability of taste, texture and appearance were lower than the prior year, but are still significantly higher than the nearest competitor. Thirty-five percent of respondents say that California avocados look the most appetizing after being cut, while 31 percent say all avocados perform the same.

Diving Deeper in the Target Market

This year's tracking study took a much deeper look at consumers in California, providing the CAC marketing team with detailed information about shopper perceptions based on where they shop. This information will be used with retailers to further customize marketing programs.

The 2017 California Avocado Tracking Study identified some opportunities for CAC to act to positively impact consumer attitudes about California avocados. The study also affirmed that California avocados continue to hold an enviable place in consumer opinion. Competitors hold the lion share of the market and spend significantly more to market their brand, yet California is the brand of avocados that most avocado shoppers revere. 🥑

COMPARED TO LAST SUMMER A LOT/ A LITTLE MORE LIKELY TO SERVE...



Base: Total Target Market 2015 (n=677), 2016 (n=688), 2017 (n=688)
Q21. Compared to last summer, how likely are you to serve avocados in the following ways?
Q20. Will it be the following five dishes you cook using this summer?

Editor's Note: In the charts on these two pages, significant differences are denoted by upper and lower-case letters at the 95 percent and 90 percent levels, respectively.

Research Project Indicates High Density Is a Viable Option in High Water Cost Regions

In 2011, it became clear to Dr. Gary S. Bender, University of California Cooperative Extension, San Diego, that California avocado growers in the county were facing increasing pressure due to rising water prices, periodic drought and California's dwindling share of water from the Colorado River. For the average California avocado grower in San Diego County producing 5,000 pounds per acre and applying four acre feet of water per year, the set up was fiscally unsustainable unless a substantial increase in yield per acre occurred.

In response, Dr. Bender proposed a research project designed to produce the maximum amount of fruit per acre on a sustained basis. Previous research had shown that a few high-density production growers would periodically produce 20,000–30,000 pounds per acre, but reported problems with pruning. Dr. Bender, along with Sonia Rios and Gary Tanizaki, established a goal of consistently producing a minimum of 11,000 pounds per acre in order for growers to break even. During the project, the researchers:

- Compared two styles of pruning
- Tracked hours of pruning labor to determine cost effectiveness
- Tracked irrigation amounts in order to compare water used by a 20' x 20' spaced grove

High Density Plantings Established

The research project was set up at the Nick Stehly Ranch in Valley Center, CA. Because Stehly Ranch had a history of avocado root rot, the experimental groves were established on a hillside that had never been planted and trees were grafted onto Dusa rootstock because it was the most root-rot tolerant rootstock at the time of planting.

In August and September 2012, a 10' x 10' high density Hass grove and a Lamb Hass grove were planted, with topping set at eight feet (later reduced to seven feet). To encourage a pyramidal shape, the top branch of each tree was tied to a metal stake. One B-flowered Zutano pollinizer tree was

surrounded by eight Hass (or Lamb Hass) trees in nine-tree units. Originally, spot spitters were used for irrigation, but were replaced by full circle micro-sprinklers in 2014.

Pruning Trial Results

Pruning avocado trees is difficult and often growers discontinue pruning out of frustration — with the end result being overcrowded groves. Although growers commonly agree that pruning is necessary, there is little agreement concerning how to prune. To that end, Dr. Bender's team compared two commonly used pruning styles.

Style 1 (Traditional). Harvest in early March and prune trees into a fat "Christmas tree" shape, topping at seven feet. Trees were also skirt-pruned to keep skirts one foot off the ground.

Style 2 (Alternate Side). Harvest in early March and prune alternate sides starting with the southwest side the first

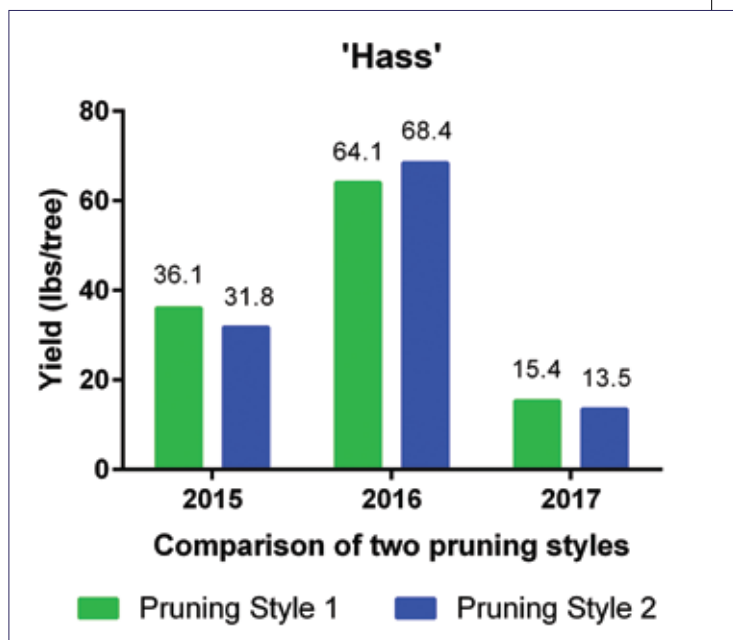


Figure 1. Comparison of 'Hass' high density planting yields for two different pruning styles for 2015 to 2017.

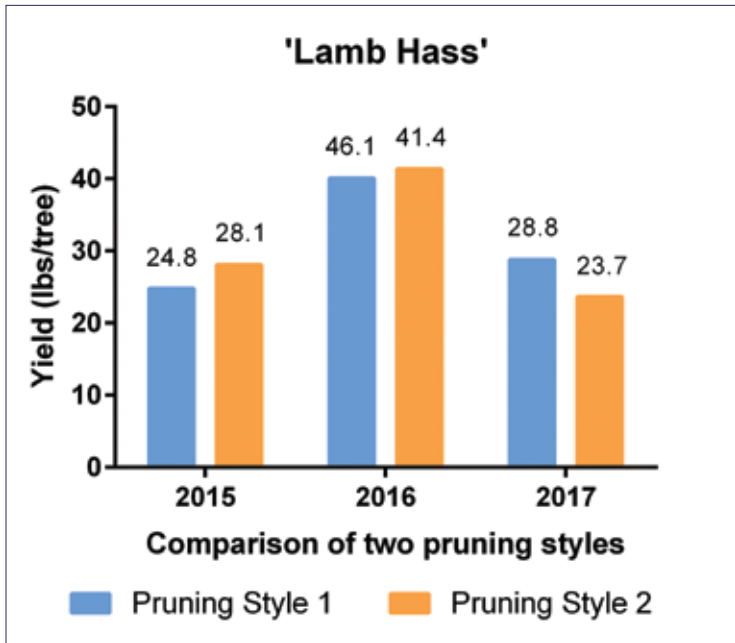


Figure 2. Comparison of 'Lamb Hass' high density planting yields for two different pruning styles for 2015 to 2017.

year. Heading pruning was done to create a 60-degree angle from the lowest branch up to seven feet; the non-pruned side was left alone. The next year, the northeast side was pruned in a similar fashion. Trees were also skirt pruned to one foot off the ground.

Thus far, there has been no significant difference in yield per tree or numbers of fruit per tree between the two pruning styles, thus indicating both are viable options (Figures 1 and 2).

High Density vs Average California Yield Per Acre

As seen in Figure 3, Hass avocado yield per acre for the

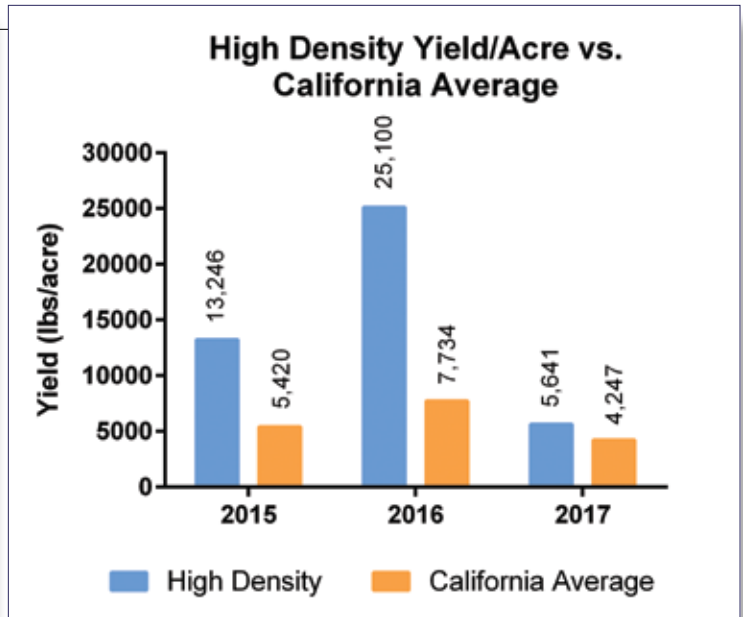


Figure 3. Comparison of the calculated yield per acre for 'Hass' grown at high density versus the California industry average. Industry average data are based on the published annual production volume divided by the bearing acres (Californiaavocadogrowers.com/industry/industry-statistical-data).

high density groves outpaced the average (20' x 20') California yield per acre. It is worth noting that the 2017 harvest was an off-year due to high temperatures in June 2016 and the fact that it was an alternate bearing year. Over a three-year period, an average of 14,662 pounds per acre were produced per year — well over the 11,000 pounds per acre goal set by the research team.

The Lamb Hass trial groves, although in a significant alternate bearing pattern, produced an average of 11,428 pounds per acre per year (Figure 4).

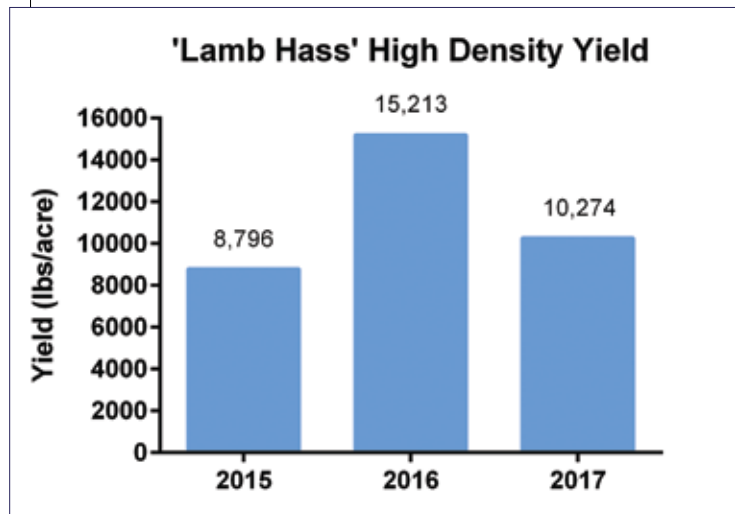


Figure 4. Calculated yield per acre for 'Lamb Hass' grown at high density.

Table 1. Water applied to the 162 trees in the trial was recorded monthly. Yearly summations are presented below. Gallons/acre and acre feet/acre are calculated based on 430 trees/ac planted on a 10' x 10' spacing.

Time period	Gallons applied per 162 trees	Gallons/acre	Acre feet/acre
2/15/2013-10/31/2013	14388	381926	1.17
11/1/2013-10/31/2014	405232	1075615	3.30
11/1/2014-10/31/2015	353610.5	938595	2.88
11/1/2015-10/31/2016	591991.7	1571336	4.82
11/1/2016-10/31/2017	46501.8	1234293.3	3.79

Table 2. Calculated pruning costs per acre for high density plantings based on the average number of hours to prune the trial plot. Per acre costs based on an average number of trees per acre: 48 Zutanos, 387 Hass or 387 Lamb Hass.

Year	Topping Zutanos	Alternate-side pruning-Hass	All sides pruned-Hass	Alternate side pruning-Lamb Hass	All sides pruned – Lamb Hass	Skirt pruning and aisle clearing both Hass and Lamb Hass
Average hours per year in the trial plot (last three years)	2	7.1 for 40 trees	8.1 for 32 trees	2.25 for 40 trees	5 for 32 trees	12.7 for 162 trees
Average per acre	5.3	68.7	98.0	21.8	60.5	30.3
Cost per acre @ \$15/hr	\$79.50	\$1,030.50	\$1,470.00	\$327.00	\$907.50	\$455.08

Irrigation and Pruning Labor Costs

Because the grove soil had a large clay content, trees were irrigated when the Watermarks averaged 35 – 40 cen-

Table 3. Average yield of Hass at standard spacing (20' x 20') and high density (10' x 10'), the increase in \$/ac based on average fruit prices in March for the past three years, and the net increase or decrease in \$/ac after pruning costs are accounted for.

Year	Hass yield/ac*	High density yield/ac	\$/lb*	Increase in \$/ac due to high density	Pruning costs/ac**	Net increase (decrease) in \$/ac
2015	5,240	13,246	\$1.12	\$8,967	\$2,004.58	\$6,962
2016	7,733	25,100	\$0.70	\$12,157	\$2,004.58	\$10,152
2017	4,801	5,641	\$1.53	\$1,285	\$2,004.58	(\$720)

*Based on historical data from www.CaliforniaAvocadoGrowers.com.
 **Calculated as total cost from Table 2 for Zutano pollinizer pruning, Hass all sides pruned and, and skirt pruning and aisle clearing.

tibar. This amount was deemed “perfect” and the trees never experienced tip burn. Table 1 illustrates the yearly irrigation summations. The higher water use in 2016 was due to two incidents in which water was mistakenly left on overnight.

Pruning labor costs included pruning, as well as skirt pruning and aisle clearing to ensure light reached the bottom branches of the trees. As Table 2 indicates, there is a significant cost associated with pruning the high density groves.

That said, due to the increased yield per acre in the Hass high density groves, in two of the last three years the test grove plots produced an increase in dollars earned per acre. With these results in hand, the researchers have determined (Table 3) that high density production “is a viable way to increase income per acre and can help the growers in high water-cost areas to stay in production.”

New Grower Education Courses

As part of the grant, the researchers also hosted new grower education courses each year. Based on new grower turnout (35 – 45 new growers each year), the researchers noted that interest in avocado growing in San Diego County remains strong.

The complete report, *Improvement of Yield Per Acre by Close Spacing, Pruning of Close-Spacing ‘Hass’ and ‘Lamb Hass’ Trees, Combined with New Grower Education Classes — Final Report*, is available at www.CaliforniaAvocadoGrowers.com. 🍌

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By April Aymami
Industry Affairs Director

2017-18 CAC Budget Positioned to Market Increased California Volume

Each October, the California Avocado Commission (CAC) Board of Directors takes up the annual task of approving the budget, business plan and annual assessment rate for the upcoming fiscal year. At this time last year, the CAC Board faced a short crop, with reduced revenues and made the decision to accept management's recommendation to trim down on all budgets, maintain a stable assessment rate, reduce marketing spending by more than \$2 million and focus available funds on targeted marketing efforts.

We've said it before, but it war-rants saying it again: no two years in this avocado business are ever the same, and 2017 proved no different. No one could have predicted the roller coaster ride that this industry has been on for the past two years, one that has resulted in 2017 producing the highest price on record at about \$1.60 per pound and one of the top 10 highest total crop values in Commission history. These factors, combined with prudent spending by the Commission, resulted in CAC finishing the 2016-17 season in a balanced budget scenario, with revenues in line with expenditures while reserves remained level.

In October 2017, the CAC Board reviewed the anticipated final 2016-17 financial position, and then discussed the 2017-18 crop year to come. With consensus across the industry that California's crop volume could be nearly double that of 2017 and increased

shipments expected from off-shore producers, the CAC Board showed strong support for maintaining the existing assessment rate and approved management's recommended 2017-18 business plan and budget. This increases the marketing spend to \$10.5 million, representing about 67 percent of the proposed budget. As part of the approved 2017-18 budget, the industry affairs, production research and administration spending remain level with 2016, resulting in a total budget of \$15.6 million.

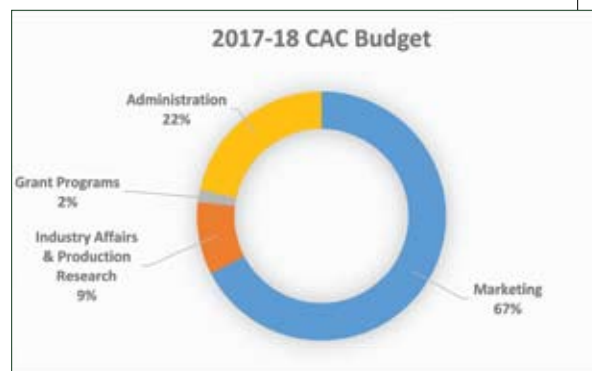
Included below are just a few of the business plan highlights for the 2017-18 fiscal year. Review the complete business plan and budget online at the following locations:

Business Plan: Californiaavocadogrowers.com/commission/accountability-reports/business-plans

Budget: Californiaavocadogrowers.com/commission/accountability-reports/finance

Marketing

- Extend the Made of California integrated campaign focusing on California's unique terroir and seasonal availability while efficiently engaging with targeted fans
- Redesign the recipe, nutrition and how-to sections of the consumer website to provide enhanced user functionality



- Review and optimize email program by updating the email sign-up, welcome and reactivation experiences and enhancing the current template design
- Rework social strategy based on previous season's lessons and continue to manage and monitor social media customer service and analytics
- Leverage third-party advocates to share key California avocado brand messages, including artisan chefs, food blogger advocates, health and wellness blogger advocates, retailers, and foodservice operators
- Explore experiential marketing opportunities that integrate the California avocado brand with pop culture experiences
- Partner with registered dietitian nutritionists to develop content that supports California avocado brand messaging and engages fans
- Coordinate co-promotion sponsorships with food companies to produce co-branded California avocado food products

- Continue tiered-marketing approach by targeting retailer and foodservice operators willing to pay for premium California avocados and providing these Tier 1 operators with customized POS planning and promotions, a steady stream of California avocado information and recipes, and responsive communications
- Continue to sponsor and participate in select retail and foodservice events to reinforce CAC's position as the trusted resource for avocado information
- Create customized menu concepts and promotions for existing and new top-tier foodservice operations

Industry Affairs

- Conduct field meetings, seminars and workshops to educate and update growers and industry stakeholders on pertinent industry and cultural management issues, and expand the reach of effective industry communications through CAC's grower website
- Monitor water issues, explore possible federal actions that would impact agricultural water supplies and represent industry stakeholder interests related to water conservation
- Identify water use efficiency technologies and work to improve the Metropolitan Water District water efficiency agricultural program
- Stay abreast of regulatory, legislative and trade issues that affect the industry and advocate on behalf of growers concerning food safety/regulation, immigration reform, invasive species, conservation/water efficiency, free trade agreements and emerging and foreign market development
- Identify California avocado production practices that will help demonstrate the California avocado industry's impact on sustainability
- Utilize Pine Tree Ranch for high-

density pruning demonstrations and a mulch project/trial with a Resource Conservation District

Production Research

- Develop rootstock varieties resistant to *Phytophthora cinnamomi* and salinity

- Continue risk assessment of PSHB and document transmission factors, risk areas and crop yields in both infested and non-infested groves
- Conduct branch canker situation assessment
- Maintain important germplasm collections 🥑

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2017 CAC General Election Results and a Newly Elected Executive Committee

This past fall, the California Avocado Commission (CAC) saw the last of its modernization efforts unfold through its annual election of the Board of Directors. The CAC Board, once 29 members in size (including alternates), stood at 22 members in 2016-17 through the reduction of seven alternate member seats. In 2017-18, the board size has been further reduced by two handler members and one alternate handler member, resulting in a board composition of 19 members and alternates, consisting of 15 producers (10 members/five alternates), three handlers (two members/one alternate) and one public member. In addition to the changes in board composition, CAC's

voter base has also evolved, going from nearly 4,000 growers in 2016 to just over 2,000 for the 2017 election, as a result of the implementation of the new producer exemption. These final changes to the Commission were a direct result of the board's action from nearly two years ago to streamline the Board of Directors while positioning the organization to provide the resources necessary to ensure the viability of the state's commercial growers now and into the future.

Below is a summary of the results of the 2017 CAC General Election. A listing of the full Board of Directors can be found on page 5. Please take note of the current commissioners who represent your district. If you are unsure

which district your grove resides in, please contact the Commission or locate your city/zip code on the following chart: Californiaavocadogrowers.com/commission/district-map.

The newly elected commissioners were seated at the regular meeting of the CAC Board on November 16, 2017, where the following individuals were then elected to serve on CAC's Executive Committee for the term ending October 31, 2018. 🍌

Chairman: Rick Shade
Vice Chair: Tyler Cobb
Treasurer: Robert Grether
Secretary: Jessica Hunter

District 1:

Elected to 2-Year Term, Ending 2019
Member: Ryan Rochefort
Alternate: Michael Perricone

District 2:

Elected to 2-Year Term, Ending 2019
Member: Ohannes (Onnig) Karaoghlanian
Alternate: Bob Schaar

District 3:

Elected to 2-Year Term, Ending 2019
Member: Robert Grether
Alternate: John Lloyd-Butler

District 4:

Elected to 2-Year Term, Ending 2019
Member: Jason Cole
Alternate: Bryce Bannatyne, Jr.

District 5:

Elected to 2-Year Term, Ending 2019
Member: Tyler Cobb
Alternate: Randy Douglas

Handlers:

Elected to 2-Year Term, Ending 2019
Alternate: Gary Caloroso, Giumarra



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By Tim Linden

Packers Optimistic That Strong Season Awaits CA Growers

There are potential pitfalls to the upcoming avocado season for California growers, but several handlers interviewed were unanimous in their belief that, managed properly, 2018 will be a good year.

"The crop looks to be twice as large so the average (in the field) price is not going to be as high as it was last year, but we do think it's going to be better than half as much," said Robb Bertels, vice president of marketing for Mission Produce Inc., Oxnard, CA.

He added that the average field price in 2017 set a record at about \$1.60 per pound. While no record will be set in 2018, he noted that with twice the volume (about 400 million pounds) and a solid field price, most growers should do well. He added the increased volume will allow for a longer season and the opportunity to market this year's crop farther east.

Gahl Crane, sales director at Eco Farms Avocados Inc., Temecula, CA, added: "We are looking forward to the California season. Once harvest begins, we expect a slow, steady, predictable flow of fruit from January into September."

Crane said the extended length of the season should allow many growers, especially the larger ones, to hedge their bets and capitalize when the market is strong. He also expects the organic market to be strong and more predictable than the conventional market throughout the year for California growers.

Gary Caloroso, regional business

development director for The Giumarra Companies, Los Angeles, CA, also pointed to the 400 million pound estimate as advantageous this year. "Most folks we are talking to are excited and optimistic about the season," he said.

While he acknowledged that some growers will pick early for their own reasons, including maintenance of the trees and groves, others will be able to gauge the market a bit and time their harvest to coincide with stronger marketing periods.

Rob Wedin, vice president of sales and marketing for Calavo Growers Inc., believes the timing of the marketing of this year's California crop will be critical to its profitability. "Thank goodness we have some volume to compete with this year," he said of the significantly larger crop.

While the final size of the crop depends on many factors, in late November Calavo's estimators were guessing that it will come in around the 390 million pound mark. Wedin said that will allow packers to offer the fruit to many customers and to supply promotions with sufficient volume, though he noted the number was "very, very unofficial."

He suspects that a significant portion of the California crop will be moved in the first five months of the year before Peru starts its peak shipping period, but Wedin said field price will dictate that for many growers. Speaking in late November, he said it appeared that the field price as California begins to ship in December would be acceptable for 48 size

and larger fruit. In late November that fruit was returning about \$1 per pound in the field.

The marketing situation on avocados has been quite unsettled for the past 18 months and it has been almost impossible to accurately forecast even two to three weeks down the road. For prolonged periods since late April of 2016, the market has been red hot. That was caused largely by a shortage of Mexican fruit in the late spring of 2016 and continuing through much of 2017. That was exacerbated by California's small crop in 2017.

The fact is that Mexico, with its exportable potential in excess of two billion pounds for the 2017/18 season, is in control of the situation. Throughout the fall, Mexico's shipments to the United States have been anything but consistent. Often, two weeks of strong volume are followed by a drop-off for a week as growers seek higher field prices. That was also the case in late November. On average, Mexico shipped only about 36 million pounds per week to the U.S. market in November.

Wedin said expectations are that Mexico's shipments will be in the 45 million pounds per week range in December and top 50 million pounds each week on average in January leading up to the Super Bowl, which will probably be the top avocado consumption weekend of 2018.

Crane of Eco Farms noted the difficulty in guessing what Mexico is going to do. On November 30, talking in general about the marketing situation, he said, "If you asked me 10 days ago, I'd say supplies were going to be increasing. But today they are trying to raise prices and are only sending small volume this way. Unfortunately Mexico controls the destiny."

Wedin said the good news is that Mexico, California and Peru all have good avocado crops that will be market-

ed over the next year and U.S. retailers appear ready to promote the commodity. After a slow 15 months in terms of sales, because of lack of volume, demand appears ready to continue the growth pattern that it established during the previous 10 years. "Retailers are showing a willingness to come back and promote," he said, adding that he expects strong promotions through the Christmas/New Year's holiday period.

He said January 16, which is the date that all California fruit, regardless of size, can be picked, should start the ball rolling on good volume from California.

Bertels of Mission said it is California's increased volume that is good news for retailers, packers and growers alike. California's consistent volume should add stability to the marketplace and create trust by retailers that supplies will remain strong. It is this movement, he said, that will help create profitability for avocados from all points of origin. The Mission Produce executive indicated that while 2017 was a great year for pricing, it created a difficult marketing situation because oftentimes there just wasn't enough fruit. "We are looking forward to good movement, which we think will create a strong market. We want to keep the volume moving."

He added that California fruit should be able to command a premium even as supplies increase. "The (California Avocado) Commission has numbers that prove that," he said.

He reiterated that California fruit will be shipped to a wider geographic region this year...even as far away as Europe and Asia. "There are export customers that want California fruit and we'll send it to them."

He also agreed with Wedin of Calavo that California growers would appear to have their best marketing opportunity in the first half of 2018. Bertels said that Peru sent about 145 mil-

lion pounds of fruit to the United States in 2017 and that number could be higher in 2018. "They have a good crop and the trees are maturing. We have trees that produced their first crop last year. They have more fruit this year."

Peru will probably start shipping to the United States in late April with

supplies increasing in May and peaking in June and July.

Crane said that while many California growers will market fruit during the first half of the year, he still expects June to be the peak in terms of volume. He also expects that there will be California fruit available into September. 🥑

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Avocado growers Dan and Susan Pinkerton, with their children Catherine and Doug, count their blessings amidst the ashes of their home.

The Beast That Would Not Die

By Ken Melban
Vice President of Industry Affairs

On the morning of December 4, 2017, with Santa Ana winds forecast to begin later that day and throughout the week, California avocado growers knew they would be facing some challenges. What no one realized, however, was the unimaginable fire headed their way. The fire started on December 4, 2017, just after 6 p.m. near the Thomas Aquinas College just north of Santa Paula, in Ventura County, and quickly became known as the Thomas Fire. By December 18, 2017, the fire had burned out of control for 15 days. More

than 1,000 homes and other structures were destroyed in its path, and more than 272,000 acres had burned.

It had moved into Santa Barbara County and was threatening communities there, while it continued burning through the Los Padres National Forest. This fire truly was “The Beast That Would Not Die.” Unfortunately, many avocado groves were burned too, and tragically some farmers lost their homes. Then, on December 14, 2017, as over 8,000 fire personnel battled this apocalyptic fire, the unimaginable occurred. Cory Iverson, a Cal Fire engineer from San Diego County, lost his



Jason Cole begins the rebuilding process.



Josh Pinkerton assesses fire damage in his grove.

life while fighting the fire near an avocado grove north of Fillmore. The heroic Iverson is survived by his wife, two-year old daughter and unborn baby. Cal Fire has set up a benevolent fund for the family (<http://12881sd.org/index.cfm?section=1>). By December 22, 2017, the Thomas Fire had become the largest fire in California history and was only 65 percent contained.

While the Thomas Fire raged in the north, to the south, in San Diego County, the Lilac Fire broke out on December 7, 2017. Also fanned by Santa Ana winds, the fire burned through 4,100 acres, including some avocado groves and more than 150 structures. Fortunately, fire crews were able to get the upper hand and by December 15, 2017, the fire was fully contained.

The California Avocado Commission (CAC) has remained in daily contact with growers and industry members to try and assess the extent of grove damage. Based on GIS grove location imagery, CAC was able to identify approximately 4,900 acres in Ventura and Santa Barbara counties within the Thomas Fire's perimeter. In addition, another 130 avocado acres were within the Lilac Fire's perimeter.

CAC immediately began to coordinate with the United States Department of Agriculture's Farm Service Agency (FSA) to ensure impacted growers could apply for federal emergency relief programs. Potential FSA disaster assistance programs for affected growers are as follows:

The Tree Assistance Program provides financial assistance to qualifying orchardists to help them replant or rehabilitate trees damaged by natural disasters (separate from crop insurance).

The Emergency Conservation Program offers funding and technical assistance to growers to help them rehabilitate land damaged by natural disasters. This program may provide cost share assistance for debris removal, land leveling and shaping,



Firemen protect an avocado grove.



Congresswoman Julia Brownley tours Rancho Simpatica to see first-hand the fire damage with Jamie Johnson, Ed McFadden, and Ken Melban (CAC).



(L-R) CA state senator Hannah-Beth Jackson, Ken Melban (CAC), Catherine Pinkerton Keeling, Susan Pinkerton, and Congresswoman Julia Brownley discuss the devastation caused by the Thomas Fire.



Catherine Pinkerton Keeling (L) and her mother Susan Pinkerton (C) discuss federal government assistance programs with Congresswoman Julia Brownley.

irrigation replacement, and cattle fencing.

Emergency loans are available to producers located in counties that receive a primary or contiguous disaster designation.

An FSA Disaster Assistance Programs fact sheet is available online at this address: https://www.fsa.usda.gov/Assets/USDA-FSA-Public/usdafiles/FactSheets/2017/fsa_disaster_assistance_programs_at_a_glance_oct2017.pdf

CAC staff have conducted field visits to burned groves, and while there is significant damage to quite a few groves, in many instances it's too early to determine the severity. When a grove is burned, the fire may not travel through the entire grove and/or trees may have an opportunity for rehabilitation. Many of the groves suffered damage on their perimeter, but the fire did not progress through the entire grove. Some very young groves appear to be unscathed. The leaf litter in groves provided a tremendous source of fuel for the fire, but damage to trees has varied by grove and even within a grove. It will take weeks if not months to fully ascertain the fire damage to the California avocado industry.

Story after story has emerged of amazing avocado growers and their heroic efforts as they fought to save their groves and their neighbor's grove. Many prevailed, yet others were not so fortunate. Ultimately, as Santa Ana winds reached hurricane level strength, in some instances the Thomas Fire would not be stopped. The forces of nature were just too strong.

Remarkably, as growers faced unfathomable losses, another set of stories began to emerge. Stories of California avocado farmers' determination and resilience. These growers, who've lost their livelihood and their homes, have risen above the ashes and maintained the most amazing optimistic spirit. Grower after grower has indicated they are going to rebuild. Dan Pinkerton, a Santa Paula grower who lost his home and part of his grove, said it best, "That which is important is secure!"

As growers begin the process of rebuilding, there will be a



An avocado grove caught in the fire's path.



These avocado trees illustrate the sporadic damage in some instances as the fire moved through groves.



This grove like many was hit with a double whammy – the Thomas Fire fueled by ferocious Santa Ana winds that also caused windfall fruit.



Although this avocado grove and tractor burned, somehow the weather station was spared.



Flames from the Thomas Fire illuminate an avocado grove.

shortage of trees needed for replanting. Typically, in the avocado industry there is a year or so lead time in getting new trees. With the Thomas Fire that lead time will undoubtedly be extended. If you have trees on order, and can delay your planting, please consider helping your neighbor in need by making those trees available to them.

CAC will continue to work with FSA on federal relief assistance for farmers, and explore any other avenues for help. Over the next few weeks CAC will gather information on the overall impact of the fires and provide industry updates when information becomes available. If you have any questions or need assistance, please contact the CAC office at 949-341-1955. 🍏

If you were impacted by the wildfires, notify FSA and your county agricultural commissioner's office at the contacts below:

**USDA-Farm Service Agency
Santa Barbara/Ventura County**

Daisy Banda
Key Program Technician
Daisy.Banda@ca.usda.gov
805.928.9269 ext. 2

Riverside/San Diego Counties

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County Executive Director
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Ventura County

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Korinne.Bell@ventura.org
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Santa Barbara County

Debbie Trupe, Deputy Agricultural Commissioner,
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Stephanie Stark, Deputy Agricultural Commissioner,
sstark@agcommissioner.com
805.681.5600

San Diego County

Vince Acosta, Information Technology Principal,
vince.acosta@sdcounty.ca.gov
858.967.8623



An avocado tree canopy completely desiccated by heat from fire combined with high winds and extremely low relative humidity. Note the presence of weeds still around the tree and the lack of trunk damage; this tree will mostly likely recover, but the existing crop is lost.

Post-Fire Grove Recovery

By Tim Spann, P.h.D.
Research Program Director

Our deepest sympathies go out to all those who suffered losses in the recent wildfires that swept across major growing areas in Ventura, Santa Barbara and San Diego Counties. Please contact the California Avocado Commission (CAC) at 949.341.1955 if you have any difficulties getting the assistance you need; we will do all we can to help.

Grove damage caused by wildfires and post-fire orchard rehabilitation are summarized herein. While this information is based on the past experiences of many growers, grove managers and our UC Farm Advisors, it is important to appreciate that the wildfires of December 2017 were of virtually unprecedented magnitude in the industry's history. It is likely that in some cases orchard replanting will be the best and only option. Before you make such major management decisions, consider consulting a local grove management company or local UC Farm Advisor.

Fire Damage Symptoms

The damage to avocado trees from fire is based on two primary factors – the speed of the fire and the heat of the fire. A fast moving, cool fire will be far less destructive than a slow moving, hot fire. When fire burns through a grove it may damage the trees superficially, scorching those parts of the tree facing the fire's heat, or – if heat and wind persist – the entire canopy may desiccate and next season's crop is certainly lost on these trees. If orchards were subject to intense heat, damage to tissues within the trunk and branches may be permanent and trees may never fully recover.

It may take weeks, months or even longer to know the full extent of damage to avocado trees following a fire, and it all depends on the damage to the trunk. In a fast-moving fire, the leaves may turn completely brown soon after the fire has swept through. It may look like the grove is devastated, but there is a good chance these trees can recover – just keep a

watchful eye.

In a slower, hotter fire, damage to the tree trunks can be significant and they are less likely to recover. If the trunk has been blackened and charred, recovery is unlikely. In some cases, the trunk may not be significantly charred, but in the days and weeks following the fire if the tree develops cankers or boils where the sap bubbles to the surface, it is unlikely the tree will recover. If a tree begins to sprout from its base, at ground level, the tree is a goner; the graft union has died and the tree is trying to resprout from the roots.

In the months following a fire, a recovering tree will sprout out indicating where it is still alive. However, this new growth may suddenly collapse the following year when stressful conditions — high winds or heat — occur.

Growers who have lived through past fires generally agree that struggling to resuscitate badly-damaged trees is time lost, and in such cases tree replacement may be the best option. Just as with freeze damage, dealing with fire-damaged groves requires patience and discipline. It is best not to rush assessment of tree damage and consider getting a second opinion before making major pruning cuts or replacing trees. With that in mind, it is worthwhile to consider the following points concerning grove fire recovery and preparation for potential future fire events.

Document, Document, Document

Growers should take copious notes and document everything related to any fire damage and recovery. Growers also must take into consideration the Food Safety Modernization Act (FSMA), which was not in place the last time our industry was significantly impacted by fires. Growers affected by the fires should record a “notice of unusual occurrence and corrective action” in their food safety plan. A form for this is available in CAC’s Food Safety Manual, which is available online (<http://www.californiaavocadogrowers.com/growing/food-safety/food-safety-manual-resources>). In addition, growers should document all costs associated with the fire in their grove(s). This includes keeping records of things such as labor costs, and receipts for any materials and supplies purchased in association with recovery. These records are necessary for any future insurance claims or potential litigation related to the fires.

Irrigation Is Critical, But Must be Adjusted According to Fire Damage

Replace all damaged sprinklers, risers and other irrigation system components as soon as possible, make sure underground plumbing is operational and test your system. The dry winds and fires will have caused considerable tree stress, so a thorough deep irrigation should be applied as soon as irrigation systems are operational. Remember that fire-damaged



The side of an avocado tree canopy facing a fire shows signs of leaf damage.

trees will use less water if leaves are scorched because they will have a reduced functional leaf surface area. If irrigation continues per pre-fire schedules, the ground may become saturated and cause further tree damage during recovery due to root asphyxiation. In consideration of this, it may be worth investing in soil moisture sensors to help ensure that a bad situation is not worsened.

In post-fire irrigation management, growers should be especially cognizant of the fact that fire damage is unlikely to be uniform across a block. Individual trees or areas within a block may have been damaged differently and will now have distinct irrigation needs. It may be necessary to run a second line in some blocks to accommodate trees with different water requirements, change microsprinkler sizes, or even swap some microsprinklers for drip emitters to accommodate this variation.

Protect Trees from Sun Damage

It is extremely important to whitewash (using a diluted interior white latex paint) all sun-exposed branches and trunks



An avocado tree trunk completely blackened and charred by fire. Note the lack of any weeds or mulch remaining and the complete loss of leaves on some branches, indicating the high heat and intensity of the fire. This tree will not recover.

that were previously shaded by leaves. Sunburn on exposed branches, limbs and trunks can cause considerable additional tree damage. You may unnecessarily whitewash some trees that will not survive, but it is better to be cautious and whitewash everything to protect those trees that will recover.

Be Patient with Pruning

It is important to wait to prune until you can determine the extent of damage to the trees. Cutting away the bark and looking for live cambium may not necessarily be a good measurement of how badly a tree has been damaged, because it may be hard for the inexperienced grower to discern differences between living and dead tissues. Wait to see where the new growth flush occurs on damaged trees before making pruning cuts. In hot areas, give the trees a chance to test new growth in warm weather before pruning, because some new growth will inevitably collapse. By waiting to assess damage to your trees, you will know where to make definitive pruning cuts, thus allowing you to salvage as much of the damaged tree as possible and return to production as quickly as possible. If your grove was overcrowded or was too tall to efficiently manage, this may be a good opportunity to modify your management practices by thinning trees and reducing tree height.

Fire Preparation

Remember, the danger from Santa Ana conditions and fires is not over and it is worthwhile to consider precautions to reduce potential damage in the future. Keep stacks of dead pruning wood away from trees and structures. Remove brush, weeds and other fuels from areas adjacent to the grove and within tree rows. Debris will add fuel to the fire making it more difficult for fire crews to control and resulting in more permanent damage to trees, especially when debris is close to tree trunks. Keep fire rakes handy to clear away leaves when fire is approaching. They are better than regular rakes because they do not get clogged with avocado leaves.

Finally, during times of extreme fire danger in fire prone areas it may be worthwhile to turn irrigation systems on to wet down dry litter under trees, raise orchard humidity and keep trees stress-free. Check with your local fire department to be certain that your irrigation system does not reduce the water pressure in nearby hydrants, which could jeopardize efforts to save lives and structures in a fire event.

Dr. Ben Faber, University of California Cooperative Extension farm advisor, contributed to this article and has assembled a wealth of information about fire preparedness and recovery that can be found on the Tropics in Subtropics blog, ucanr.edu/blogs/topics/index.cfm. 🍌



Sap blisters on the trunk of an avocado tree following a fire. These blisters indicate the sap in the tree boiled during the fire and the tree will not recover. Photo courtesy of Ben Faber.

By Ken Melban
Vice President of Industry Affairs

Sustainability: What Does It Mean and Why Is It Important

“Sustainability” is a term that has become more common over the last few years. Companies are more frequently touting the importance they place on sustainable practices. But what exactly does sustainability mean?

That’s a great question, and the definition varies depending on whom you ask. When we’ve talked with growers, they tend to speak about the sustainability (in other words, the longevity or viability) of the California avocado industry and, to some degree, their own businesses. While that is completely understandable and important, the term sustainability doesn’t primarily focus on the future economic viability of an individual company or even an industry.

While economic factors are part of sustainability, so are environmental and societal factors. When we speak of the sustainability profile of a company or an industry, we are considering its use of fossil fuels, carbon footprint, treatment of workers, impact on water quality, etc. Sustainability is about how well your company and aggregate industry protect the earth’s resources, and the impact they have on the environment, society and the economy. The sustainability life-cycle profile of a California avocado grove encompasses the development of the land in preparation for planting the avocado trees, the power required to bring water to your grove, the transportation of fruit to market and everything in between.

Recently, buyers have asked some

California avocado packers to complete a sustainability profile questionnaire. Questions asked for information concerning:

- Crop Supply Mapping (identify country, region, or farm)
- Child Labor Use
- Fertilizer Applications (focus on nitrogen and phosphorous use)
- Greenhouse Gas Emissions
- Labor Rights
- Pesticide Applications

With the increase in global trade, most buyers rely on multiple countries of origin for supplies. Buyers are facing increasing pressure from consumers to make sure they are “sourcing responsibly.” An increasing number of consumers want to ensure that the produce they are purchasing is being produced in a manner that doesn’t exploit workers and protects the environment. Information suggests that millennials are willing to pay more for products and services from companies that are committed to making a positive social and environmental impact.

Answering sustainability questions about topics like those noted above can be understandably frustrating for a California farmer because we know California has very strict laws governing such areas as child labor, worker protection and pesticide use, just to name a few. California is inarguably one of the most regulated growing areas in the world. That said, consum-

ers are increasingly paying attention to a company’s/industry’s sustainability profile.

To that end, the California Avocado Commission is working to identify the current laws and regulations California avocado growers comply with, which can help California avocado growers demonstrate their commitment to sustainability practices. For example, California has eight state agencies and six federal agencies whose purview is regulatory oversight of agricultural employers and ensuring the occupational safety, health and well-being of California farm workers. In addition, California is the only state in which overtime conditions for agriculture workers align with those of other workers (eight hours per regular work day). Finally, California has four state agencies with regulatory oversight of agricultural practices related to pesticides, fertilizers and dust.

The Commission is compiling this sustainability information to ensure that California avocado growers are recognized for their current environmentally friendly farming and fair employment practices. It will be up to the other countries to address their avocado sustainability practices, but rest assured the Commission will do everything within its power to call out the existing high-quality farming and employment standards of California avocado growers. 🥑

Grower Profile



Future Is Bright for Third Generation

By Tim Linden

When 83-year-old Sam McIntyre was a younger man, he didn't think his son Scott should follow him into the business of growing avocados and lemons in California. Today, Sam and Scott have no such reservations as the third generation of the McIntyre family takes up avocado production for a living.

"He wanted me to be a doctor or a lawyer," says Scott McIntyre, who is the chief executive officer of Somis Pacific, which is a professional farm management firm based in Moorpark, CA. The company manages 4,500 acres of fruit trees from San Diego to Ventura counties. About 2,000 are avocados and 2,500 are citrus, mostly lemons.

Sam McIntyre was born in 1934 in Anaheim, CA, and raised on a chicken ranch. "My folks had 8,000 laying hens," he remembers. In the early 1950s, the elder McIntyre entered junior college, was drafted and served two years in the military, and then finished his education at the agricultural school at Cal Poly Pomona.

He started his agricultural career working in the chemical end of the business for Standard Oil, which was a large Southern California land owner. Soon thereafter, he was in the lemon business handling pest control issues and living in Somis in eastern Ventura County. It has been his hometown ever since.

By the 1960s, Sam was in the farm management business with a large landowner managing a number of crops including sugar beets, lima beans and avocados. In the 1970s, he was involved with another firm that developed thousands of acres

into 20-40 acre ag parcels that were mostly avocado groves. In those years, Sam was deeply involved in the avocado industry and served several terms on the California Avocado Commission. "I was there in the Angie Dickinson years," he quipped.

Next, Sam and three partners formed a farm management company that was originally called Pro Ag. Sam eventually bought out his partners and renamed the operation Somis Pacific.

Though his dad wasn't certain that farm management held a future for his son, Scott had no doubts. "I wanted to be a farm manager. I knew I'd get a two-way radio, a new truck every year and could wear a cowboy hat. That was good enough for me."

He went to Fresno State University, graduated in farm management and soon landed a job managing avocado groves in Temecula. It wasn't long after that he opened up a division of Pro Ag in Temecula. In 1988, he transitioned the firm to his own control and renamed it Sierra Pacific Farms. He continued to grow the avocado portion of the business, mostly managing other people's groves, but also owning some of his own.

In 2000, the companies reunited as Scott took over day-to-day operations of Somis Pacific. Sierra Pacific is now a subsidiary. Sam has backed away from the table a bit, but Scott calls him the company's water expert as he serves on many water boards and is integral to that very crucial part of farming.

Besides water, Sam says he always focused on the lemon

part of the business and credits his son for greatly increasing the company's involvement in avocado management over the past couple of decades.

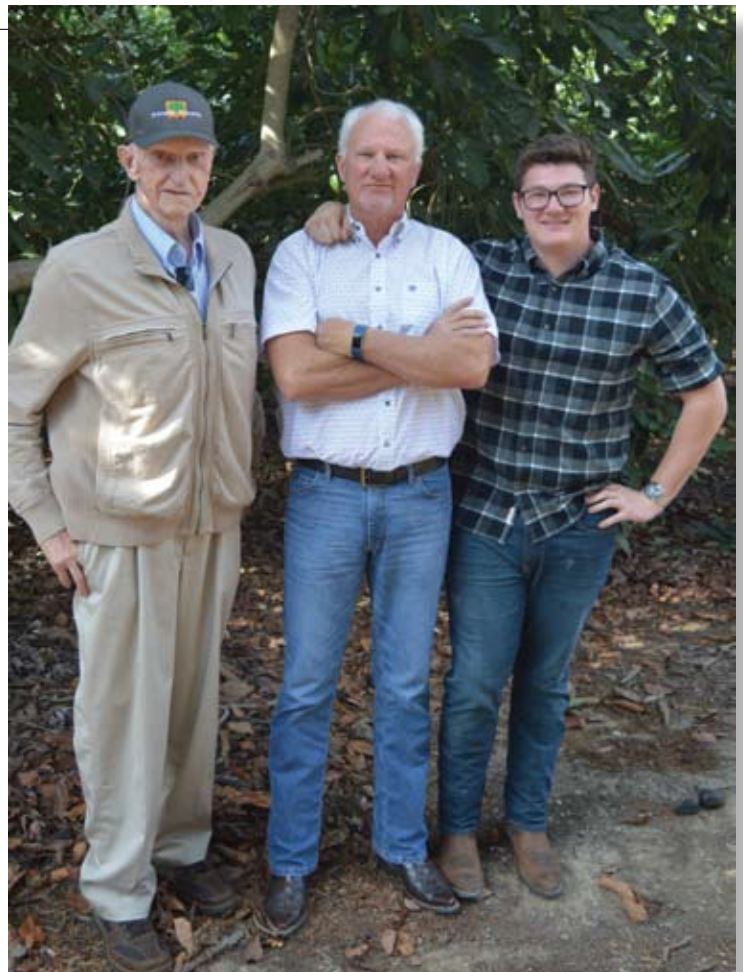
While Sam didn't encourage Scott to get into the business, the two admit that Scott's son Hayden has been brainwashed to become the third generation of McIntyres to be in the farm management business. Hayden is now 19 years old and going to San Diego Mesa College. He plans to transfer to a four-year college soon and study ag management and viticulture. Hayden has been working in the company since he was 16 and spends most of his spare time learning the business. He said he is focused on avocados but wine grapes also interest him. In fact, Scott's brother Steve is a wine growing expert in the Central Coast region operating a firm called Monterey Pacific, offering professional expertise and services to growers in that area.

All three of the Somis Pacific McIntyres believe wine grapes may offer some opportunities in the future, but they are very bullish on California avocados. Scott points to the more than two billion pounds of avocados that will be consumed in the United States this year as proof that the commodity has a bright future. And he says as the only locally-grown product in that sector, the California avocado has a marketing advantage. He expects California avocados to be sold very close to home where that locally grown moniker resonates with consumers and commands a premium.

With water being virtually all-important, he predicts that within a few years, only groves with access to less expensive irrigation will survive commercially. He said it's just a matter of dollars and cents. Rising water rates in many parts of the state – especially San Diego County – are causing and will cause growers to abandon their groves. He said as water costs per acre get up to \$12,000 it's impossible to make a living. As such, he expects some acreage to go out of production and for a 400 million pound crop, like the one expected in 2018 – to be a high water mark. "I don't think we'll ever see 500 million pounds again," he said, speaking of California's total avocado production.

But he believes the fewer pounds will create a great marketing situation for California's fruit. Already, he credits the California Avocado Commission for keeping the industry so vibrant over the past several decades. "It's all about marketing," he said. "I'm a very big fan of Jan DeLyster. As long as the Commission continues to promote, I think we will do just fine."

But on the other hand, he believes the industry needs to continue to make a commitment to production research. "There is a lot we don't know. Pruning is still unknown. We still don't have it down," he said, referring to his belief that there needs to be more information that gives a blueprint for best pruning techniques.



Sam, Scott and Hayden McIntyre

While there is a lot of talk about high density plantings, Scott says Somis Pacific is moving in the other direction. "We are looking at 20 by 20 plantings."

He opines that because of increased knowledge, it's possible to grow avocado trees bigger and faster. He said it's all about the canopy...the more canopy per acre, the more avocados you are going to produce, regardless of the number of trees. And fewer trees mean less water and reduced water costs.

It is the topic of water that causes Sam McIntyre to survey his years in the business and note that the most important change to avocado production was the introduction of drip irrigation. That technological advance allowed for greater concentration of water in the right spot and allowed the industry to survive soaring water rates for so long.

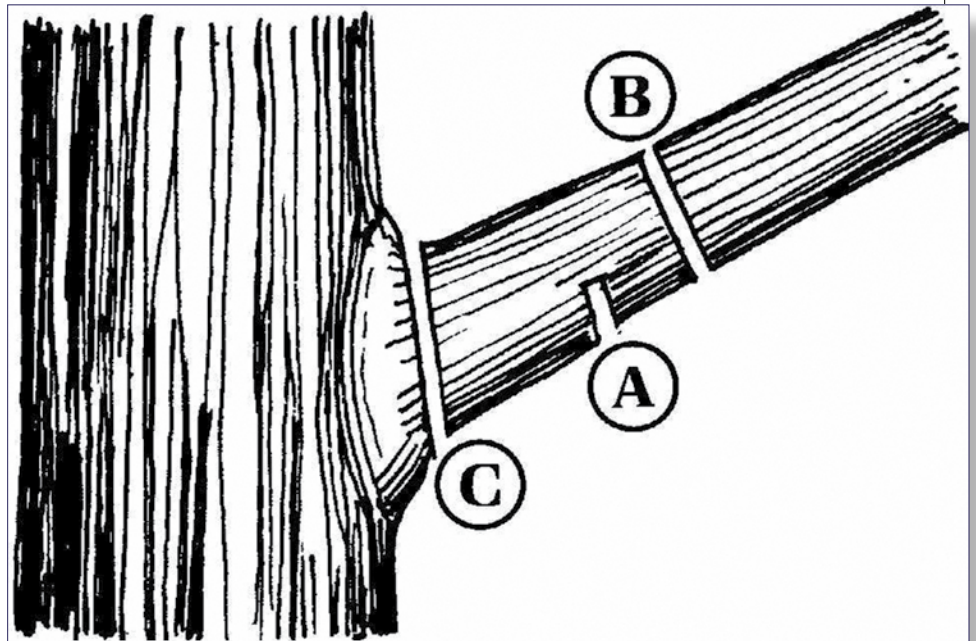
Scott believes technology will continue to advance the business of farming and help solve problems and avert disasters. He points to his cell phone and notes that when it's time to turn on the wind machines because of a looming freeze, he now gets an alert via his cell phone telling him the machines have automatically been turned on. That surely beats the phone calls in the middle of the night that the first generation of farm manager McIntyres would get from a field man so he could go turn on the machine manually. 📞

Pruning 101: Pruning Dos and Don'ts for Healthy Trees

In late October, during the last major heat wave of 2017, I had the unfortunate experience of visiting an avocado grove that had been recently pruned by an inexperienced pruning crew with little or no supervision. Unfortunately, that grove will suffer from the effects of that pruning for several years, and it will probably require follow up pruning to correct the tree structure. Although this was a devastating experience for this grower, it can be a learning experience for the rest of us. Here are a few basic dos and don'ts about pruning that should always be followed.

Use Sharp, Clean Pruning Tools

You should always make sure that the pruning crew's tools are clean and sharp prior to the starting of any pruning work in your grove. Sharp tools will make clean cuts that heal quickly. Clean tools will prevent the spread of pathogens. We are fortunate in avocado that we don't have many pathogen problems, but avocado sun blotch viroid (ASBVd), *Fusarium euwallaceae*, and dothiorella branch canker can all be moved via contaminated pruning tools. Good sanitation practices always should be followed



An illustration of the three-cut pruning method. The first cut is a shallow undercut about 12 inches from the branch's point of origin (A); the second cut is made on the top side of the branch about 1 to 2 inches beyond the undercut (B); the final cut is made at the branch collar to remove the remainder of the branch (C).

and pruning tools cleaned between each tree. Lysol® disinfectant spray, alcohol or 10 percent chlorine bleach all can be used to effectively disinfect tools. Wipe away any debris prior to sanitizing the tool to ensure the disinfectant contacts the metal.

Follow the Three-Cut Method for Large Branches

Any branch over about 1½ to 2 inches in diameter should be pruned using the three-cut method to ensure a clean cut and no bark tearing. The three-cut method is done as follows:

Make a shallow relief cut on the



When a large branch is removed without following the three-cut method the result is a large jagged wound that will not heal properly and is an opportunity for disease to enter the tree.

underside of the branch about 12 inches from the branch collar. The relief cut should go about one-third of the way through the branch.

Remove the bulk of the branch by making a second cut about one to two inches beyond the relief cut from the top side of the branch. As the cut is made from the top side, the branch will break free between the top cut and relief cut.

Make a final, clean cut at the branch collar to remove the remainder of the branch.

Apply Whitewash

Avocados are very sensitive to sunburn, especially when pruned heavily and areas of the canopy that were previously shaded are exposed to direct sunlight. Sunburn can occur very

quickly following pruning, so it is a good practice to follow immediately behind a pruning crew and whitewash newly exposed areas of the canopy. There are commercially available whitewash products and sun protectants, such as Surround®, which is a kaolin clay product. But the most economical whitewash is cheap interior latex paint diluted 50:50 with water. Exterior latex paint or latex paint formulated for bathrooms should never be used. These often contain fungicides and mildewcides that can be harmful to the trees.

Watch the Weather Forecast

Although we generally have good weather in California, you should pay attention to the forecast if you are planning to prune, especially if you're going to be making heavy pruning cuts. If a heatwave is forecast, it is best to wait for the heat to pass before pruning to help avoid sunburn. Likewise, if rain is in the forecast, wait for the rain to pass. Fresh pruning wounds are susceptible to pathogen entry until the wound surface

has a chance to dry and cure — usually 24 to 48 hours. Rain immediately following pruning could wash pathogens into the pruning wounds, so it is better to play it safe and wait for the rain to pass.

Don't Apply Pruning Wound Sealant

Pruning wound sealants, commonly tar or wax-based products, should not be used. Countless studies have shown that properly-made pruning cuts created with sharp tools heal more quickly than those treated with pruning wound sealants. These sealants actually prevent the tree's natural wound response from occurring and can lead to more disease and rot issues than they prevent.

Pruning avocados in California is never an easy task since there is always fruit on the trees that will be removed. But following a few basic steps can help ensure that your pruning job doesn't turn into a pruning nightmare. 🥑



Severe branch and fruit sunburn due to the lack of whitewash following pruning.



CAC Board members Jessica Hunter and Bryce Bannatyne spoke with local and backyard growers and provided Commission information about growing practices at AvoFest.

Meeting California Avocado Fans Face-to-Face

California avocado festivals are ripe with opportunity. The events provide California avocado growers, handlers and the California Avocado Commission (CAC) with the opportunity to connect one-on-one with fans — answering their questions about the growing practices and providing them with new recipe ideas they can try at home. And it all takes place in a festive atmosphere featuring unique California avocado dishes, California avocado-branded giveaways and other entertainment for attendees.

As an event sponsor, the Commission is granted premier placement of signage at the venues and the California Avocado

brand logo figures prominently in the festivals' print, digital and social media posts and promotions.

California avocado fans are always eager to visit the green-canopied Commission tent where CAC Board members and staff join avocado handlers and growers to answer questions and distribute information and promotional items such as bumper stickers, avocado cutters, and recipe booklets. This year's volunteers included Bryce Bannatyne, Robb Bertels, Art Bliss, John Burr, Jessica Hunter, Leo McGuire, Bradley and Emily Miles, Ryan Rochefort, Trish and Rick Shade and Charley Wolk.

To celebrate the start of the California avocado season, the



Consumers who visited CAC's tent could use the California avocados' Snapchat filter to share California avocados' branded images.

Commission joined nearly 100,000 celebrants at the Fallbrook Avocado Festival on April 17. In September, the Commission sponsored a sold-out *Taste of the Grove* event at the Packing Shed on the evening before the Morro Bay Avocado and Margarita Street Festival. The intimate evening included an all-inclusive farm-to-table pairing with California avocado-themed dishes showcasing local produce and crafted by area chefs. Sheryl Salazar, assistant produce sales manager for Albertsons/Vons, was a guest of the Commission that evening. She then joined Commission staff, California avocado growers and nearly 12,000 attendees at the Morro Bay Festival.

To close out the festival series in October, the Commission sponsored the 31st Annual California Avocado Festival (affectionately known as AvoFest) in Carpinteria. This event, which



Connie Stukenberg introducing California avocado grower Emily Miles to Sheryl Salazar (Albertsons/Vons) at the *Taste of the Grove* event in Morro Bay.

drew more than 100,000 fans, is recognized as one of the largest free festivals in California. The event featured more than 75 live musical acts on four stages, had countless stands filled with avocado merchandise and was home to huge vats of fresh California avocado guacamole made by Carpinteria High School cheerleaders. Those interested in learning more about California avocado history and care visited the on-site agriculture tent.

In total, the Commission and its team of volunteers joined more than 200,000 California avocado fans to celebrate California avocados, explore new usage ideas and create demand for the locally grown fruit. 🥑



The California Avocado Commission tent, located at the entrance to the AvoFest in Carpinteria, was very popular with attendees. Board member Art Bliss volunteered to help at the event.

Behind the Scenes:

Pre-Season Preparation With CAC's Foodservice Team

The California Avocado Commission's (CAC's) foodservice program is designed to demonstrate the value and versatility of California avocados. Featuring usage concepts that reflect the latest trendsetting culinary applications, CAC's foodservice team showcases the unique promotional opportunities available to foodservice operators who partner with the Commission.

The prior year's foodservice programs are evaluated for effectiveness with a focus on three key areas: foodservice advertising and public relations activities (PR), industry events and chain promotions. Foodservice print and digital ads and PR activities are reviewed utilizing print magazine *Readership Studies*, digital ad response data and ad click-through results. Industry events provide the opportunity to demonstrate CAC's leadership, strengthen existing partner relationships and secure new foodservice operator partners. Utilizing the tiered-account approach in reviewing prior year foodservice operator partnerships, the team calculates each chain's promotion cost against the number of pounds used during the promotion period and evaluates each chain's prospects for the upcoming season.

Foodservice operators look to the Commission for menu applications that will appeal to their unique audience and set them apart from their competitors. To that end, the Commission's foodservice team re-

LET'S TALK ABOUT ... menu ideation

LET'S TALK TO DAVE WOOLLEY ABOUT ... menu ideation

What is menu ideation?

Menu ideation is the process that conceptualizes and formulates new menu items on a chain restaurant menu. Depending on the size of the chain, new menu creations may involve several players, such as the F&B/culinary team, the marketing team and the purchasing/distribution team. It always includes three key components: ideas (marketing), need (purchasing/distribution) and innovation (culinary R&D).

What are the stages of menu ideation?

While each chain takes a different approach to ideation, every ideation session has "stage gates." At the first gate, initial menu concepts are conceived, discussed and approved. Then, marketers test menu concepts in predetermined locations/operations to assess whether the proposed item fits into the chain's menu structure, pleases customers, and adapts profitability to existing operational, purchasing and distribution structures.

Where does inspiration come from?

In my capacity as an external resource, I approach new menu items from several points of view. I always include some items that take the brand in new directions based on current and global trends. More importantly, I immerse myself in the chain's brand identity, going back of the house to understand what the kitchens can realistically produce, identify underutilized ingredients and look for break-the-mold opportunities.

What makes a successful ideation session?

Ideation sessions generally gather representatives from the principal departments: R&D, marketing and purchasing. My job is to encourage the participants to think about their menu/products from new angles, and to understand how ingredients can combine and please in trend-forward, unexpected ways. Often, the session focus is to develop a limited time offer (LTO), but occasionally, a hit will migrate to the permanent menu.

What skills/experience are important for an R&D chef?

My route to menu concept and development began traditionally—culinary program, apprenticeship and fine dining kitchen experience. I was approached by a recruiter to head a chain R&D kitchen, and initially rejected moving into high-volume production. Fortunately, I realized that as a chef, I had many different creative avenues to explore.

What's your favorite R&D accomplishment?

Successfully introducing a chain's R&D team to the versatility and menu potential of a new ingredient has got to top my list. For example, demonstrating how a chain can integrate a new fresh item—such as California avocados—is a real challenge. Every angle has to be explored (availability, purchasing, storage, handling, waste) before we even start talking menu applications. But when the avocado menu item is in the stores and sales are skyrocketing, that's a huge thrill.



Your advice for chefs interested in menu R&D?

Understand your customer's business inside and out, including how trends impact its core and LTO menus. Keep an open mind. Cultivate the ability to work with all participating departments: R&D, marketing and purchasing/distribution. 🍌

DAVE WOOLLEY HEADS CO-CULINARY APPROACH, DENVER, WHERE HE SERVES AS A MENU DEVELOPMENT RESOURCE FOR FOODSERVICE SUPPLIERS, INCLUDING THE CALIFORNIA AVOCADO COMMISSION, IRVINE, CALIFORNIA, AND HIGH VOLUME FOODSERVICE OPERATORS.

PHOTO: CHEFNET / COURTESY OF CAC / CHEFNET / COURTESY OF CAC / CHEFNET / COURTESY OF CAC

ACFCHEFS.ORG 9

CAC's Foodservice PR program engages media to educate and inspire their readers with California avocado messages and operator success stories.



Chef Dave Woolley works on new menu concepts that balance foodservice operators' need to develop new menu items with on-trend ingredients and flavor pairings with operational considerations.

views trend forecasts to identify ingredients, flavoring/spices and cuisines that are making headlines in industry publications and on social media channels.

Once CAC identifies the target accounts and themes it will communicate throughout the season, Chef Dave Woolley develops a series of new California avocado menu concepts that reflect those trends and can be showcased at industry events. The team also develops season and trend-specific talking points that will be used throughout the year for public relations purposes, in discussions with foodservice repre-

sentatives, during media grove tours and integrated into the Commission's print and digital ad campaigns.

The Commission also holds one-on-one menu ideation sessions and on-site demonstrations with targeted chains, showcasing menu items specifically created by Chef Woolley for that chain. Once CAC has secured a partnership, the team develops a brand-specific promotional plan that includes showcasing the California Avocados brand logo and mouth-watering photos of the California avocado-centric dishes on in-store POS pieces. 🥑

FUTURE 50: EMERGING BRANDS

Restaurant Business magazine's annual ranking of the fastest-growing small chains in America

FUTURE 50: EMERGING BRANDS

THE MATADOR



Contemporary Tex-Mex chain The Matador offers a design-focused atmosphere with scratch-made tortas and enchiladas, and a massive tequila selection. Owners...

FUTURE 50: EMERGING BRANDS

ROCCO'S TACOS AND TEQUILA BAR



From multiconcept operator Big Time Restaurant Group, Rocco's features a party-like atmosphere with upbeat music and bright colors. To further the...

FUTURE 50: EMERGING BRANDS

BARTACO



The goal: make diners feel like they are at a stylish beach resort, eating tacos and sipping tequila. Named as one of the best tacos in America by...

FUTURE 50: EMERGING BRANDS

NORTH ITALIA



The upscale Italian chain from restaurateur Sam Fox's Fox Restaurant Group is known for its handmade pastas and pizzas, made from scratch daily. Across its...

By identifying emerging foodservice brands within targeted markets, CAC can select partners whose menus complement California avocados.

CAC Continues to Promote Nutritional Story of Avocados

Consumers have become more aware of the importance of what they eat, with 44 percent having experimented with some type of diet or eating approach in the past 12 months.* Their desire to improve health through better food choices and other beneficial behaviors provides an opportunity for healthy, naturally nutritious California avocados. The California Avocado Commission (CAC) has had a strong program of nutrition communications for more than 30 years and continues to leverage the influence of renowned registered dietitians, supermarket dietitians and the favorable avocado nutrition research news from the Hass Avocado Board and other resources.

California avocados have been certified for the American Heart Association's® Heart-Check Certification program. When consumers see the Heart-Check mark, they instantly know our fruit has been certified to meet the American Heart Association's heart-healthy nutrition requirements. The California Avocado Commission now benefits from this certification as it provides another way to promote the health benefits of California avocados. CAC recently developed 16 new recipes that were certified by the American Heart Association®. These new recipes can now feature the American Heart Association® Heart-Check Certification mark which certifies the recipes meet the criteria for heart-healthy recipes. The recipes are featured in a new California avocado recipe booklet for use in retailer programs and are included in the recipe section of CaliforniaAvocado.com.

This past season the Commission worked with four high-profile registered dietitian nutritionists (RDNs) who act as resources and spokespersons to share California avocado news from a nutrition perspective. The RDNs cover various target markets and deliver California avocado messages via traditional media as well as online and social media.



Katie Ferraro, MPH, RDN, CDE, mother of five (including one-year old quadruplets) did a blog post on California avocados as a perfect first baby food.



One of the Ferraro babies eating California avocados.

Ferraro joined RDN partner Liz Weiss, of Liz's Healthy Table, on a podcast introducing *Baby Led Weaning*. This podcast featured a new recipe, *Fluffy California Avocado and Ricotta Pancakes*, developed in partnership with CAC.



CAC's Fluffy California Avocado and Ricotta Pancakes are a favorite for babies and teens.

Manuel Villacorta, MS, RD, created a video and blog post entitled *5 Ways to Reboot Your Gut for Good Health, the Importance of Probiotics and Prebiotics for Gut Health* that addressed the role of avocados as part of a prebiotic diet. This nationally recognized, award winning RDN discussed California avocados and prebiotic diets on a Univision television segment that reached more than 100,000 homes in the California Bay Area.

In addition to working with Ferraro and Villacorta, Bonnie Taub-Dix, MA, RDN, CDN and Michelle Dudash, RDN, also contributed important consumer outreach encouraging the consumption of California avocados.

The Commission continued its gold-level sponsorship of the Produce for Better Health (PBH) foundation Supermarket Dietitians (SDs) at the 2017 Produce Marketing Association Fresh Summit Conference. PBH hosts SDs from leading retailers across the country who are key influencers through their daily contact with consumers and other health professionals.

In addition to the presentation by Villacorta on "Healthy Gut Reboot with California Avocados: the Important Role of Prebiotics" at the Commission's Fresh Summit booth with SDs from around the country, CAC engaged with the group throughout the nearly three-day event to increase the use of California avocado-branded assets during the 2018 season. CAC held conversations with Albertsons/Safeway, Harmons, The Kroger Company, Natural Grocers, Raley's and others about early volume projections, timing of California avocado availability and ideas to showcase California avocados. The team also informed the SDs of the resources CAC has available for their use.

CAC Vice President Marketing, Jan DeLyser and others on the CAC team encouraged the SDs to work with the Commission to promote California avocados and the health benefits of avocados. 🥑

* *The Hartman Group, Health + Wellness 2017*



In this YouTube video, renowned RDN Manuel Villacorta prepared California avocado recipes while discussing the role avocados can play in gut health.



Dr. Tim Spann, CAC research program director, addresses the group in one of Mission Produce's groves.

Florida Educators Visit California To Warn of a Deadly Threat

By Jeff Wasielewski

In early August of this year, a group of scientists and educators from the University of Florida traveled across the country to share their knowledge of a deadly disease with the avocado growers of California. California grows more than 80 percent of all the avocados produced in the United States and the group from South Florida had dire news of a potential danger to the lucrative California avocado industry. The group was hosted by the California Avocado Commission and spoke to growers in three different avocado growing regions: San Luis Obispo, Ventura and Fallbrook.

The scientists and educators on the trip traveled from

Homestead, FL, where most of the remaining percentage of domestic avocados are grown. South Florida is currently dealing with the devastating effects of a disease called laurel wilt. This disease is transmitted by tiny ambrosia beetles that bore into trees in the Laureaceae, or laurel family, in order to grow a fungus they transport to feed to their young. The fungus, *Raffaelea lauricola*, is deadly to avocados and some related native species. Avocados are in the laurel family and severely overreact when exposed to the fungus. The tree tries to wall off the fungus by blocking its xylem tissue, but the fungus quickly jumps the blockade. The tree responds with a more aggressive xylem wall, which eventually leads to the tree's death as it can

no longer draw water and nutrients up to the canopy through the blocked tissue.

The disease has killed more than 40,000 avocado trees since its arrival in South Florida in 2012. Laurel wilt entered the country in 2002 through Port Wentworth, GA, and has since reached as far north as North Carolina and as far west as Texas. The disease has spread primarily on native species and has killed more than 500 million native swampbay and redbay trees. Laurel wilt gets its name from the fact that it affects trees in the laurel family and trees with the disease quickly wilt, turning once healthy leaves to a crispy brown in a matter of days. The disease works so quickly that the leaves do not have time to fall and will remain on the tree — a hallmark of laurel wilt.

The disease is vectored by the tiny aforementioned ambrosia beetles and also can move through root grafts. Most avocado groves in South Florida are more than 20 years old with the roots of adjacent trees in the grove overlapping, and in many cases, grafted together, allowing elements to pass from tree to tree. Once laurel wilt gets into a grove through beetle infestation, the disease will often move right down a row killing tree after tree through adjacent root grafted trees.

The purpose of the group's trip to California was to impart the knowledge they had compiled after years of dealing with this deadly disease. The group consisted of Dr. Jonathan Crane, a tropical fruit specialist; Dr. Daniel Carrillo, a tropical fruit entomologist; Jeff Wasielewski, an extension agent; Dr. Randy Ploetz, a pathologist; Dr. Edward 'Gilly' Evans, an economist; and Dr. Bruce Schaffer, an ecophysiologicalist. Each team member spoke about his area of expertise to the avocado growers and educators present at the three meetings.

The take-home message from the group was that California growers should have a plan in place on how to collectively deal with the disease in the event that it makes it to California. Frequent scouting of groves and fast and efficient removal and destruction of trees is currently the best tool available to battle this disease. Removed trees need to be burned or chipped in place. The root system also must be broken and separated from adjacent trees so transmission by root grafting cannot contribute to the spread of the disease.

The information flow was not only one way and the group from South Florida delighted in being educated about the growing techniques employed in Califor-



Avocado trees die so quickly from this disease that they are unable to shed their leaves.



Dr. Bruce Schaffer (L) and Dr. Jonathan Crane (R) speak to Arby Kitzman (C) avocado grower in Morro Bay.



Dr. Gilly Evans speaks with Gabe Filipe from Mission Produce.

nia. The group visited several groves and the Brokaw Nursery. Producers shared information on pruning techniques, water quality issues, root stock types, pest control and harvesting methods.

The group would like to extend a special thank you to Dr. Tim Spann, the research program director of the Cali-

fornia Avocado Commission. Dr. Spann was an affable host and safely transported the group hundreds of miles all while maintaining a productive schedule and a great attitude. Thank you Dr. Spann, and may laurel wilt never make it to California! 🥑



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Dr. Daniel Carrillo inspects leaf samples to find insect damage.



Dr. Randy Ploetz examines an avocado tree for signs of disease.

California Avocado Growers Visit Michoacán, Mexico

The California Avocado Society (CAS), in cooperation with the Association of Producers and Exporters of Avocados from Mexico (APEAM), organized a tour of Mexican avocado production in Michoacán state from October 3 – 9, 2017. Twenty growers — large and small, north and south — participated in what was a very enlightening trip.

The Michoacán Avocado Industry

We received background information on the Mexican avocado industry in separate presentations from Dr. Ramon Paz-Vega, strategic advisor to APEAM, and Armando López Orduña, director general of APEAM. In 2016, Mexico produced 4.17 billion pounds of avocados, about 38 percent of world production, from 441,500 acres and exported 2.26 billion pounds of fruit — about 65 percent of the world avocado trade.

Michoacán is considered to have an ideal climate for avocado production, with the primary growing area extending in a narrow band about 100 miles east and west of the city of Uruapan. Annual temperatures in this area range from 45 °F to 90 °F, and the area receives about 63 inches of rainfall annually — only 3 percent of groves have irrigation. Throughout this region, there are 365,000 acres of avocados, producing about 3.22 billion pounds of fruit with 2.08 billion pounds for ex-



The tour group and several representatives from Rancho las Pajas following the tour of the ranch.

port. Michoacán fruit can be exported to the United States, China, Chile and Korea.

For comparison, in Jalisco, there are about 44,000 acres of avocados planted, producing 322 million pounds of fruit, of which 145.6 million pounds potentially can be exported.

In Michoacán, avocados are grown at an elevation of 4,400 to 7,900 feet. Under these conditions, the trees bloom three to four times per year, with two of those blooms — the normal and flor loca blooms — producing most of the crop. This blooming habit, coupled with the varying elevation, allows Michoacán to harvest fruit year-round. Harvest of fruit from the normal bloom begins in September at the lower elevations and extends through Febru-

ary at the higher elevations. Harvest of fruit from the flor loca bloom generally begins in June at the lower elevations and extends through September at the higher elevations.

Harvest and Handling of Export Fruit

Harvesting of avocados in Mexico is controlled by the packers. Growers negotiate an on-tree price for their fruit with a packer, and the packer is responsible for the harvesting and hauling of the fruit. On average, growers receive about \$1 to \$2 per kilogram (\$0.45 to \$0.91 per pound) for their fruit. Growers are not necessarily loyal to a packinghouse and will “shop around” prior to each harvest.

The export of avocados from

Michoacán to the U.S. is highly regulated and the rules and regulations are based on a systems approach to mitigate phytosanitary risks. There are 80 United States Department of Agriculture (USDA) inspectors based in Mexico full time to ensure that protocols are being followed. APEAM was established in 1997 – at that time the M stood for Michoacán – to oversee the export program and help growers and packers comply with export requirements.

44 pounds), and each box is labeled to identify the grove and block details. We were told several reasons why field boxes, rather than bins, are used: field boxes can be managed with manual labor, whereas bins require equipment; boxes also allow for fruit to be harvested and recorded by tree (we saw one grove where every tree was labeled with a bar code). Labeled field boxes are loaded on fully enclosed trucks in the grove, and the door of the truck is sealed with a tamper proof seal.

When the truck arrives at the packinghouse it is met by USDA inspectors who check to make sure that the seal is intact and matches the driver's paperwork. The inspectors then open the truck and verify that the boxes inside match the door seal and paperwork. Only after the inspector has signed-off that everything is in order can

of regulatory significance is found, the load is rejected (it can be sent to a domestic packinghouse) and the grove is quarantined for two weeks and must be re-inspected before harvest can resume.

Growth of the avocado export program in Michoacán since 1997

	1997	2017-18
Acres certified	3,652	285,656
Growers	60	>21,000
Packers	5	>48
Exports (pounds)	13.3 million	1.85 billion

For exports to occur, a municipality in which groves are located must first be declared free of pests of regulatory concern. After that, each grower who wants their fruit to go to export must register with the local plant health agency, the Sanidad de Vegetal.

Prior to harvest, each registered grove must be inspected by the local authorities to ensure that the grove is complying with all phytosanitary and quality requirements. These inspections will look at fruit dry matter, the height of the grass in the grove – grass cannot be taller than four inches, and there must not be any fallen fruit on the orchard floor, among other requirements. If a grove passes, it can be harvested.

Fruit in Mexico are harvested into field boxes (about 20 kilograms,

the packinghouse crew begin to handle the fruit.

As the boxes are being unloaded, the USDA inspectors randomly remove pieces of fruit to sample for pests, and the field boxes are held in a separate part of the packinghouse until the inspection is complete. These phytosanitary samples can only be handled by USDA inspectors and only the packinghouse manager can interact with the inspectors. The weight of fruit in the phytosanitary sample is deducted from the grower's payment.

Once the samples have been collected, they are run through a machine that chops the fruit into pieces and the inspectors check for pests. If no pests are found, the load is cleared, and it can enter the packing process. If a pest



A tree with a barcode tag at Rancho las Pajas. Every tree was labeled with a barcode and yields are tracked by tree.

The Groves and Nursery

We visited three different groves and one nursery during our visit. The overwhelming impression from the group was: WOW! The groves, thanks to plentiful rainfall and rich volcanic soils, are very lush. And because of the grass height requirement for export certification, many of the groves had a park-like appearance.

A common theme among all the groves we visited was the use of the 'Carmen' variety (called 'Mendez' locally). They particularly like 'Carmen's' narrower growth habit and that the fruit are more internal and protected within the canopy. One grower we visited was in the process of switching his entire grove to 'Carmen' because in his microclimate the trees bloom once per year and the fruit could be harvested in July when prices are usually highest.

Because of the amount of rainfall in Michoacán and the lack of irrigation, most growers apply dry fertilizer during the rainy season. At least one grower we visited specified the use of slow release fertilizer, which allows him to make fewer applications and ensure that the fertilizer is not leached away. Potassium was mentioned as a critical nutrient element that growers focus on. Overall, the trees we saw appeared very healthy in terms of nutrition. The only deficiency symptom we saw was some minor magnesium deficiency, which is to be expected in a high rainfall climate where soils are heavily leached and pH is low.

In terms of yield, the growers we visited quoted average yields of 12 to 25 metric tons per hectare (10,000 to 22,000 pounds per acre). One grower told us that his record for the grove we were visiting was 31 tons per hectare (almost 28,000 pounds per acre)! Although these numbers sound incredibly high, we did see some large, old trees with two bins or more of fruit per tree, so they are not unrealistic.

Most of the younger trees we saw, in addition to being ‘Carmen’, are being planted closer together than the older large trees — 4 x 6 meter (13 x 19 feet) is common for new plantings. Depending on location, growers are using berms to better manage root-zone moisture. In addition, most growers talked about using mycorrhizae, trichoderma and other beneficial soil microbes to help reduce soil fungal pathogens. At least one grower credited his use of commercial beneficial soil microbes to Global GAP, which now restricts his use of manure in his groves.

The nursery we visited produces about 50,000 to 60,000 trees per year and they sell for about MEX\$50 to MEX\$60 (\$2.65 to \$3.15). All of the trees are grown on seedling ‘Criollo’ rootstocks, a native avocado variety. Total propaga-



Criollo seedlings in the nursery almost ready for grafting.

tion time takes about one year — seeds are planted in May, grafted in November or December, and are ready for sale for planting during the following rainy season (May to October).

This particular nursery is working to have its mother tree blocks certified as avocado sunblotch viroid (ASBVd) free. But the owner explained to us that ASBVd is new to the area and infected trees are generally symptomless. He hypothesized that this is because the climate is ideal, and the trees rarely experience any stress, so they may be able to tolerate the pathogen.

The nursery purchases only whole ‘Criollo’ fruit for their seeds to ensure that they are getting the right variety. There are more than 50 different variants of ‘Criollo’, and they prefer the small fruited variety with a large seed. Seeds are washed, dried, disinfected and peeled prior to planting, but they do not clip the seed as is common in California nurseries.

Despite the popularity of ‘Carmen’ in the groves we visited, the nursery owner told us his production is about 80 percent ‘Hass’. He attributes this to ‘Hass’ being an easier tree to

grow, telling us that ‘Carmen’ needs more water and grows best at elevations below 1800 meters (5,900 feet).

Insects and Diseases

Although we saw a number of different pests, none of them appeared to be very significant. Mites were the most common pest we saw, including Persea mite (sometimes referred to as white mite) and red mite, which is very similar to the brown mite we have here in California. We also saw several caterpillar pests that can damage leaves and fruit, including looper and amorbia. The pest of most significance that we saw was an unknown beetle species that can skeletonize a significant portion of the canopy on young trees.

Many growers we met talked about using *Bacillus thuringiensis* (Bt)



We were told these beetles can skeletonize the leaves of young trees, significantly debilitating them.

and *Beauveria* spp. for insect control. These two biologicals are naturally occurring soil microbes — a bacteria and entomopathogenic fungus, respectively. Bt controls lepidopteran pests and *Beauveria* is a more broad-spectrum control agent. Pesticides mentioned were pyrethroids and abamectin.



Blue copper fungicide residue on an avocado ready for harvest.



Magnesium deficiency symptoms were common due to the heavy rainfall and low soil pH.

We only saw one grove that appeared to have a significant amount of phytophthora damage. The grower explained that the grove is in an exceptionally wet area, so new trees are being planted in berms to help better control the water and increase drainage. With the high rainfall, foliar fungal pathogens are an issue that growers must stay on top of. Copper-based fungicides appeared to be the products of choice based on the blue residue we saw on a lot of fruit.

It was somewhat surprising, although not entirely unexpected, the number of different insects we saw visiting avocado flowers. We did see an occasional honeybee, and most growers said they bring bees in during the main bloom, but we most commonly saw native bee species, wasps and flies visiting the flowers. This abundance of apparently native pollinators also may help explain the high yields that growers claimed to achieve.

Overall, the trip was exceptionally well planned and presented a great overview and cross section of the avocado industry in Michoacán. It was good for California avocado growers to see firsthand the phytosanitary protocols that are in place to help protect our industry. I believe it is safe to say that everyone on the trip learned a lot and has a much better appreciation for our fellow growers south of the border.

CAS's Director Cristina Leon and Executive Administrator Sawsan Knobel did an outstanding job with all the planning and logistics involved in making this trip a success. I know all my fellow tour participants join me in offering them a huge, "THANK YOU!" This trip was new territory for CAS and, given its success, it will probably be the first of many adventures to avocado producing countries. You can learn about future trips by visiting www.californiaavocadosociety.org. 🥑



New 'Carmen' trees being planted at Rancho las Manantiales. The trees are planted on large berms because of issues with trunk canker. We were told these trees were two years old and almost 8 feet tall.



Avocado trees toppled by Hurricane Irma on September 10, 2017. Growers must stump the toppled trees and prop up the stumps to get the trees to reroot.

Florida's Avocado Industry Hit Hard by Hurricane Irma

By Tim Spann, Ph.D.,
Research Program Director

On Sunday, September 10, 2017, Hurricane Irma, a powerful category 4 hurricane, made landfall on Florida's southwest coast, sparing Florida's 7,500-acre avocado industry in southeast Florida from a direct hit. However, what was once the most powerful storm ever recorded in the Atlantic did not spare the industry from significant damage as there were wind gusts of up to 109 miles per hour.

Florida's avocado industry was expected to harvest about one million bushels or 55 million pounds of avocados in the 2017-18 crop year, their largest crop since 2014-15. At the Florida Avocado Administrative Committee meeting on November 8, 2017, it was reported that just under 600,000 bushels had been harvested when Irma came through. The remaining 40 percent of the crop is now rotting on the ground, and estimates for the 2018-19 crop are for no more than 500,000 bushels or 27.5 million pounds.



Hurricane Irma as it approaches southern Florida on Sunday, Sept. 10, 2017. Hurricane Jose can be seen in the lower right corner. Photo by NOAA/NASA.



Jonathan Crane, UF TREC, next to an avocado tree showing early wilting symptoms of laurel wilt disease. The tree is on the edge of a clearing where previously infected trees were removed. Following Hurricane Irma, the grower was unable to maintain his grove sanitation practices, and trees adjacent to the cleared area began to exhibit disease symptoms.

In addition to the lost crop, virtually every grove has toppled trees and broken limbs that will affect production for several years to come. When I visited in early November, two months post-Irma, many growers were just beginning to get into their groves to assess the damage and try to prop trees up and remove broken limbs, having been preoccupied with fixing holes in their roofs and dealing with other storm damage.

On top of Hurricane Irma, Florida's avocado industry is still dealing with laurel wilt, a deadly disease spread by ambrosia beetles, which has been impacting their industry for several years. Since Irma struck, it has been difficult to routinely scout groves and immediately remove affected trees, making good grove sanitation — the only sustainable solution for this disease at this time — a near impossibility. As a result, there was an uptick in beetle activity in groves in late October and early November, likely due to the downed branches and debris available for the beetles to reproduce in after Irma.

I visited several groves with Jonathan Crane, horticulturist, and Daniel Carillo, entomologist, both with the Univer-

sity of Florida's Tropical Research and Education Center (UF TREC). These groves had been model examples of how rigorous scouting and sanitation can control the spread of laurel wilt in groves. Each of these groves had new trees showing very recent symptoms of laurel wilt because the grower's sanitation program had been disrupted.

There will likely be some growers, who were already struggling to manage laurel wilt, for whom it will not be possible to recover from Irma. However, there are many others who see this as an opportunity to replant new varieties, top work trees and generally get a fresh start.

Crane sees this as a learning experience for the industry, validating practices he's been advocating for years — mainly pruning. Groves that were regularly pruned and where trees were maintained at less than about 20 feet tall fared much better than groves with taller, unpruned trees. It is also much easier to scout for laurel wilt in smaller trees with open canopies. 🥑



Late-season fruit that was lost during Hurricane Irma rots on the grove floor. About 40 percent of Florida's 2017-18 avocado crop was lost.

First Round of FSMA Compliance Set for January 26, 2018 – Are You Ready?

By Ken Melban
Vice President of Industry Affairs

The Food Safety Modernization Act (FSMA) was signed into law in January 2011, and requires those companies involved with the production, harvesting, packing and distribution of fresh produce sold in the U.S. to demonstrate compliance with certain policies and procedures. The purpose of FSMA is to ensure actions are taken that will help mitigate food safety risks. There are multiple rules under FSMA, but only the Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption (Produce Safety Rule) is applicable to California avocado growers. Farms that have \$500,001 or more in average annual produce sales during the previous three-year period must be compliant with the Produce Safety Rule on January 26, 2018. Farms classified as “very small” and “small” have additional time for implementation (see Produce Safety Rule Compliance Dates box).

The Produce Safety Rule focuses on the core areas associated with potential pathways for microbial contamination:

- People – worker hygiene and health
- Water – hand washing, drinking, irrigation, application mixes, run off
- Soil – soil amendments, prior uses, adjacent uses, contamination
- Animals – wild or domestic

Although the FSMA law was signed in 2011, the Food and

Drug Administration (FDA) spent the next five years finalizing the FSMA rules through two rounds of drafts and comment periods. FSMA was finalized in early 2016, with the first compliance deadline set for January 26, 2018.

In 2011 the California Avocado Commission (Commission), in cooperation with the handler community, developed a food safety manual for growers. During the last five years the Commission has conducted annual trainings for growers interested in becoming Food Safety certified. Multiple harvester trainings also have been conducted. The Commission’s Food Safety Manual is now in its third edition and supports a farm audit against the Global Food Safety Initiative (GFSI). Based on a side-by-side analysis it seems a grower who has successfully completed a GFSI audit, if inspected, will likely be in compliance with the Produce Safety Rule requirements, except for the water testing requirements. FDA recently issued a two-year delay on implementation of the water testing requirements based on concern from industry members. As such, those requirements are yet to be finalized.

WINDFALL FRUIT AND FRUIT THAT CONTACTS THE GROUND

As the Commission has previously reported, Produce Safety Rule implementation will impact current California avocado industry practices in two key areas. First, under the Produce

Safety Rule, the harvesting of windfall fruit is no longer allowed. The Produce Safety Rule prohibits the distribution of produce that drops to the ground before harvesting. In late 2017, the California Department of Food and Agriculture (CDFA) removed the California Code of Regulations law that had allowed the testing of windfall fruit to ensure alignment with the Produce Safety Rule.

The second item under the Produce Safety Rule that impacts our industry is the disallowance of harvesting produce that comes in contact with the ground unless it grows naturally on or in the ground. Strawberries and carrots are examples of produce that grow on or in the ground. According to the Produce Safety Rule, avocados that contact the ground – such as those hanging from a low branch – will be illegal to harvest.

INSPECTION AND ENFORCEMENT

CDFA has a cooperative agreement with FDA to provide on-farm enforcement of the Produce Safety Rule. FDA and CDFA have indicated that their activities for 2018 will focus on Produce Safety Rule education, and that inspection and enforcement activities will commence in 2019. It's important to realize, though, that all farms (except those classified as "very small" or "small") must be able to demonstrate, through record keeping, their Produce Safety Rule compliance beginning in 2018.

CDFA is planning to conduct On-Farm-Readiness-Reviews (Reviews) in 2018 as part of their Produce Safety Rule educational outreach activities. The purpose of these Reviews is to help growers determine their readiness for a Produce Safety Rule inspection. The Commission is working with CDFA to schedule a few Reviews of avocado groves that are currently Food Safety certified. Once completed, the Commission will have a better understanding of how well the Commission's Food Safety certification process positions a Food Safety certified farm against a Produce Safety Rule inspection.

With more than 50,000 farms in California, the sheer task of conducting Produce Safety Rule audits is daunting. However, CDFA does intend to begin inspections beginning in 2019 and it's imperative that you, as a grower, take the necessary steps to ensure your operation is compliant with the Produce Safety Rule.

The FSMA Produce Safety Rule, as outlined in §112.22(c), requires that, "At least one supervisor or responsible party for your farm must have successfully completed food safety training at least equivalent to that received under standardized curriculum recognized as adequate by the Food and Drug Administration." These are typically full day trainings, and the Commission will continue to provide information on training opportunities as they become available.

If you would like to contact the Commission to request a

Food Safety Manual or get additional help, please send an email to cac.ia@avocado.org or call 949-341-1955. In addition, the Commission's Food Safety Manual and related information can be accessed here: Californiaavocadogrowers.com/growing/food-safety. 🍌

Produce Safety Rule COMPLIANCE DATES

- Very small farms: More than \$25,000 but no more than \$250,000 in average annual produce sales during the previous three-year period – January 26, 2020
- Small farms: More than \$250,000 but no more than \$500,000 in average annual produce sales during the previous three-year period – January 26, 2019
- All other farms: January 26, 2018

Produce Safety Rule EXEMPTIONS

The Rule does not apply to:

- Farms that have an average annual value of produce sold during the previous three-year period of \$25,000 or less
- Or a qualified exemption based on two requirements:
 - The farm must have food sales averaging less than \$500,000 per year during the previous three years; and
 - The farm's sales to qualified end-users must exceed sales to all others combined during the previous three years. A qualified end-user is either (a) the consumer of the food or (b) a restaurant or retail food establishment that is located in the same state or the same Indian reservation as the farm or not more than 275 miles away.

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