Fall 2013

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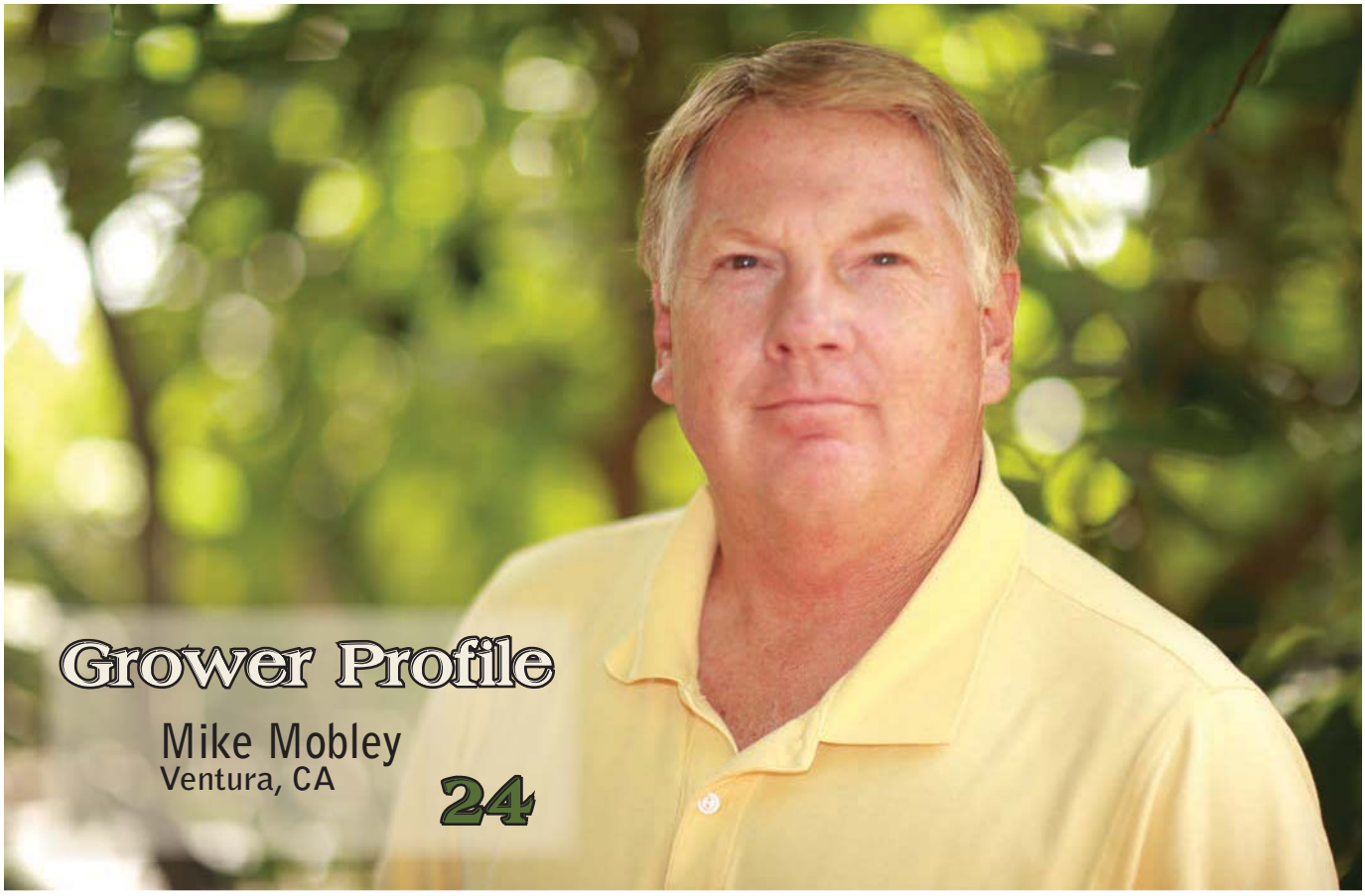

From the Grove

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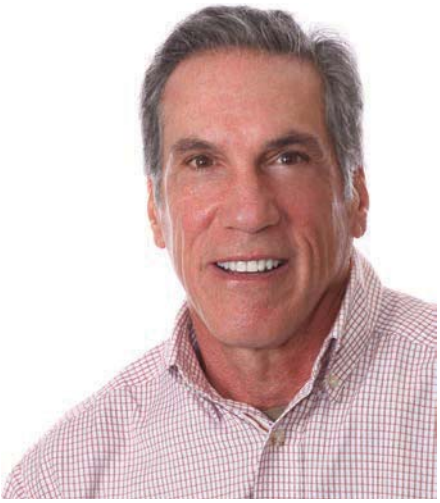
Message from the President



Tom Bellamore

An Early Look at 2013-14

For crop estimating purposes, August is always a challenging month. It is too early to know with any certainty how much fruit our trees will bear in calendar year 2014, but we must put pen to paper all the same. August is when the CAC board sets the tentative assessment rate for the upcoming crop year, which begins November 1.

Next year's crop looks highly variable from grove to grove. Some growers are well situated, expecting good yields based on what the trees are presently carrying. Others can't find much fruit at all when walking through the groves. Now that the commission is a grower, of sorts—we took possession of 11 acres on Cal Poly's Pine Tree Ranch near Santa Paula on July 1—we've experienced, first hand, the disappointment of a poorly-set crop. Still, across the entire growing region the year may produce what we have come to think of as an "average sized" crop. That's one scenario, at least.

In addition to variability from grove to grove, there is the uncertainty of Mother Nature as the fruit progresses to maturation. California has been experiencing some of the driest conditions on record and, should these persist, they likely will take their toll on some of the production promised for next year. Early rains could brighten the outlook considerably. Taking these factors into account, as well as the more isolated but possible effects of freeze, wind or fire, leads us to a range in terms of crop size, which brackets our financial forecasting.

The supply side picture is not complete, however, unless we also make some assumptions about import pressure. Competition bears directly on the field price growers will receive in 2014, despite our steady progress at distinguishing California as a source of premium quality fruit worthy of more of the consumer's dollar. And when it comes to forecasting revenue, price and production weigh equally in the assessment-setting process.

Aggregate U.S. supply of avocados should stay stable at 1.7 billion pounds in 2014, with over half of that amount coming from Mexico. Volume from Chile adds less volatility than in the past, but Peru is looking to double its shipments to the United States. If successful in doing so, the 90 million pounds from that country would land during the California season, bringing with it additional price pressure. Nonetheless, a moderate California crop accompanied by a strong marketing presence should mean favorable returns for growers next year.

At the time this column was written, the essential elements used for modeling assessment scenarios were more elusive than usual. Couple this with the fiscally conservative approach characteristic of your current CAC management and it seems prudent to expect that the 2013-14 assessment rate will have to increase slightly, even with $1.1 million *less* in planned expenditures and a significant draw-down in our reserves.

Growers should know that management and the board are mindful of what it takes to keep farms profitable and expenses in check. For a number of different reasons, the 2013-14 crop year could signal a return to more "normalized" financial conditions at the commission, where reserves are moderated and revenue and spending are more closely aligned. Several years ago, I conducted a balanced budget analysis along with CAC's finance manager, the aim of which was to keep CAC's programs vibrant with a nominally fluctuating, predictable assessment rate. The analysis pointed toward assessment rates in the 1.75 to 2.3 percent range, depending on anticipated variations in crop size and consequent prices. Of course, the analysis did *not* provide for emergencies such as crop failure or an abnormally distressed market that might cause us to deviate temporarily from our financial plan. Those situations, should they occur, can be addressed through more dramatic measures such as program cut-

backs if necessary, to further buffer the need for large swings in the assessment rate.

Your California Avocado Commission board and management are committed to following through on the predictability promise. At the same time, we continually strive to get the most out of every assessment dollar collected, returning value to the growers in the form of marketing programs that make a difference, refocused research, practical outreach, and advocacy on issues of critical importance.

The 2013-14 crop year is right around the corner. By the time you receive this issue, the CAC board will have adopted a tentative assessment rate and spending plan for that period. At the scheduled district meetings in September, growers were to be provided with an overview of how their assessment dollars will be put to work. Talk to your commission representatives and don't be shy about voicing your opinion. A final decision on the 2013-14 assessment rate and budget will not be made until October 10.

Jonathan Dixon Returns To New Zealand

CAC Research Program Director Dr. Jonathan Dixon departed the California Avocado Commission in early September to accept an attractive position in his home country of New Zealand.

In 2009, Dixon joined the CAC staff on a temporary work visa with the primary assignment of evaluating the commission's research investment and assisting with the development of a research strategy consistent with the organization's overall, long-term business strategies and plans.

"During his three and one half years as a CAC employee, Jonathan has made significant contributions to the California avocado industry," said CAC President Tom Bellamore. "He has been instrumental in refocusing the research effort, ensuring that it is strategically-driven, efficient, and responsive to growers' needs. He also laid the foundation for new outreach and communications programs centered on the cultural care of avocados, something the commission consciously avoided for much of its 35 year history. Even with all of that, he found time to walk avocado groves with growers from north to south, becoming a sought-after advisor and welcome source of practical information for professionals and novices, alike."

Bellamore added: "The Commission's Production Research Program remains in good hands, with CAC Research Project Manager Dr. Tim Spann taking up many of Dr.Dixon's responsibilities. We are hoping that we can convince Jonathan to return periodically and remain connected to the California avocado industry; he will always be welcome here."

California Avocado Commission

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

Chairman's Report

Ed McFadden

Summer ~ California's Time to Shine

As I sat down to write this column my thoughts strayed to our crop year so far. What is an average year? There are none; it only happens on paper! Average is a summary of highs, lows and everything in between.

This season what appeared to be an early window of strong returns for large fruit in March that was expected to last for a couple of weeks is still going strong as I write this column in mid-August. Dismal returns for small sizes turned around dramatically in early July giving growers with fruit remaining on their trees unexpectedly good results. When I left California for a Montana fishing trip during the second week of July, some growers were talking about dropping 84s on the ground rather than sending them to handlers and 70s were bringing us around $0.50 per pound or less. The CAC Marketing Advisory Committee (MAC) Chair Bob Lucy commented at the June meeting, "The market is awash in 70s" with no relief in sight. When I returned from my week of fly fishing, the small sizes had nearly doubled in value. The lesson I learned was that I need to spend more time away fishing!

The turn-around was no accident. CAC President Tom Bellamore's team lead by Vice President of Marketing Jan DeLyser shifted from high gear into overdrive and pushed the smaller sizes even harder, with results that helped all California growers during a challenging season. The summer season really is the time for California fruit to shine and thanks to the CAC team, it did just that.

We have been helped in other ways this season. After a cold winter and several early heat spells that caused unusually early fruit maturity, Mother Nature showed us her mellow side with one of the milder five weeks from early July to mid-August that we have seen in years. This allowed fruit to hold longer in our hotter regions and gave protected fruit a chance to add some precious weight. For many of us this was a blessing – labor shortages made a ramping up of harvest impossible. The fruit I have seen in many locations is holding much better than I would have predicted in the late spring.

All in all, after a disappointing early start of the season for groves without size, a sweet end of the season for many, a great middle for some and an unexpectedly good start for others depending on your latitude or distance from the coast.

For much of the state it is time to shift our attention to the next season. As I write this column, I feel that I only have seven things to worry about: 1) August; 2) September; 3) October; 4) November; 5) December; 6) January; and 7) February. The time for Santa Anas, fire season, frost and winter storms is right around the corner. Hillside vegetation remains as dry as it has ever been for this time of year. Stay vigilant and hold onto your fruit, next year could be special if we have something to pick.

In closing, I would like express my appreciation to Jonathan Dixon for his efforts on behalf of our industry. As a board member and chair it was my privilege and pleasure to work with and support Dr. Dixon during his time at CAC. Thank you Jonathan – good on ya mate!

Engaging Nutrition Experts on the Nutrition Benefits of California Avocados:

A Review of 2013 Activities

Consumer perception about the nutrition benefits of avocados has changed significantly in recent years. According to an avocado tracking study conducted by Cooper Roberts Research in 1999, about one third of avocado users perceived avocado fat content to be a barrier to purchase. In a spring 2013 tracking study by the same organization only 13 percent reported the same concern. In fact nearly 75 percent of avocado users now claim "good for you" as a reason to buy avocados, compared to only about 57 percent in 1999. These changes in perception are due in part to nutrition communications from the California Avocado Commission and other avocado marketing associations, according to the study.

The commission has been sharing avocado nutrition information with consumers for more than 30 years, with the "*Would this body lie to you*?" campaign featuring the famous Angie Dickenson in the 1970s kicking off the effort. CAC continues to promote the nutritional benefits of California avocados to consumers directly through its outreach efforts and by educating and engaging with key nutrition stakeholders and nutrition professionals. The commission's nutrition professional outreach program provides information to educate influencers in the healthcare industry about the nutritional benefits of the fruit, so that they in turn can spread the word to their patients and customers.

These nutrition influencers include healthcare professionals, registered dietitians (RDs) and supermarket RDs (SRDs) - who are employed by retailers. Additionally, CAC continues its partnerships with high-profile and media-savvy RDs as "Ambassadors" to help communicate the nutrition profile of California avocados as part of a healthful diet. Commission RD Ambassadors include: Michelle Dudash (Bashas), RD; Katie Ferraro, MPH, RD, CDE; Janice Newell Bissex, MS, RD; Liz Weiss, MS, RD; and Bonnie Taub-Dix, MA, RD, CDN.

CAC furthers the reach of its nutrition efforts through its ongoing partnerships with and support of prominent nonprofit nutrition organizations including the Produce for Better Health Foundation, Mediterranean Foods Alliance and Oldways.

RD Ambassador Michelle Dudash prepares for a rush of SRDs, anxious to try their hand at the "Cut, Nick and Peel" technique.

2013 Engagement Opportunities

Food and Nutrition Conference Exposure

Building upon ongoing outreach efforts to SRDs, the commission served as a sponsor of the 2013 Oldways Supermarket Dietitian Leadership Symposium, which ran from February 29 - March 2 in Savannah, GA. The Symposium attracted 85 of the nation's top dietitians, food experts and industry leaders, including 45 SRDs from many of CAC's top target retail customers.

As part of the commission's sponsorship, one of its RD Ambassadors, Michelle Dudash, hosted a California avocado nutrition presentation and demonstration. The SRDs in attendance were receptive and responsive to the information and materials she provided and she invited some of the SRDs to try their hand at the "Cut, Nick and Peel" avocado preparation technique during a CAC-sponsored break activity. More than 50 guests participated in the activity and then enjoyed a fresh California avocado as a light snack.

In support of the "Wake up to Breakfast with California Avocados" 2013 marketing initiative, the commission provided the symposium caterer with CAC's recipe for Frittata with Avocado, Roasted Red Peppers, Olives and Feta, which was served on the last day of the Symposium.

CAC was also a sponsor of the California Dietetic Association's (CDA) Annual Meeting and Exhibit from April 11 – 13 in Santa Clara, CA, which drew more than 700 RDs from across the state. CAC engaged with attendees one-on-one during the exposition and demonstrated how to select and cut ripe California avocados; provided recipes, nutrition handouts and *Get the Scoop* nutrition brochures; and distributed approximately 600 *Garden Fresh Tomato* and *California Avocado Salsa* samples on April 12. In addition, CDA members were served *Bruschetta with California Avocado and Basil* as part of a sponsored luncheon on Saturday, April 13. The commission also collected feedback from attendees about their consumption of California avocados and information about California avocado usage ideas that they recommend to their patients and clients. Responses will help shape future resources provided to nutrition professionals.

Attendees enjoyed samples of Garden Fresh Tomato and California Avocado from the Commission Booth, proclaimed as "Best in Show" by some.

The Value of Third-Party Spokespeople

The California Avocado Commission utilizes a variety of third-party spokespeople such as bloggers, registered dietitians and chefs, to help promote the culinary versatility and nutritional benefits of California avocados. CAC is able to leverage the credibility of independent spokespeople as trusted resources to help educate consumers about the delicious and nutritious fruit.

Bloggers continue to be major influencers of their followers and help motivate their grocery shopping purchases by inspiring them with tantalizing recipes. To capitalize on this, the commission has partnered with six well-known food bloggers through its blogger ambassador program. These key bloggers create rich content around California avocados, including the development of new avocado-centric recipes. They consistently deliver key messages to consumers and support CAC's overall marketing efforts.

The commission continues to promote the nutritional attributes of avocados with key media-savvy registered dietitians, as part of its RD ambassador program. These well-credentialed nutrition experts regularly appear in the media and seamlessly integrate key messages about California avocados into their press interviews, direct consumer engagement and through their various print, online and social media communications channels.

To inspire consumers with new culinary applications for California avocados, CAC has developed long-standing relationships with both well-known and up-and-coming chefs to help increase demand, build California avocado awareness and boost coverage in target markets throughout the season. The commission's 14 partner chefs promote the fruit through in-restaurant promotions, media activities, social media promotion and event appearances. Their culinary credibility with consumers, along with the creativity shown in the dishes they create with California avocados is key to driving consumer interest in the fruit.

Michelle Dudash, RD

Katie Ferraro, MPH, RD, CDE

"Meal Makeover Moms"
Janice Newell Bissex, MS, RD
Liz Weiss, MS, RD

Bonnie Taub-Dix, MA, RD, CDN

Online and Social Media Engagement

In addition to traditional media opportunities, CAC works with its four media-influential RD "Ambassadors" on various social and online activities.

The CaliforniaAvocado.com nutrition section receives more than 800,000 visits annually. To keep content fresh and encourage return visits, the commission works with RDs to develop California avocado-centric recipes and preparation ideas.

On social media, CAC featured registered dietitian Bonnie Taub-Dix as one of three Facebook chat experts during the 2013 season kick off in early April. Bonnie engaged with fans over the course of an hour long chat session answering their specific questions about California avocados, nutrition and diet – continuing to field questions several days after. After the chat, fans thanked the commission for including Bonnie, with comments like "A lot of great info in such a short amount of time. Looking forward to the next chat for more recipe ideas."

Retail

Avocado nutrition information is incorporated into CAC's retail and foodservice marketing as well. The commission regularly includes nutrition information on point-of-sales materials including recipe cards and booklets, as well as display cards. More than 200,000 recipe booklets for retail use that include California avocado nutrition messages have been printed for distribution in 2013. Nutrition information is also provided to retailers for their publications, websites and blogs, cooking classes, handouts and other activities.

Our nutrition experts have a variety of credentials. Here's a breakdown of what they all mean:

CDE	Certified Diabetes Educator
CDN	Certified Dietitian-Nutritionist (state-specific licensure)
MA	Master of Arts
MPH	Master of Public Health
MS	Master of Science
RD	Registered Dietitian

Commission Meets with Rep. Duncan Hunter

By Ken Melban
Director, Issues Management

Congressman Duncan Hunter and three of his staff members joined commission representatives on August 22 in Fallbrook for an avocado grove visit and packing facility tour.

Rep. Hunter, serving his third term in Congress, previously represented California's 52nd District. After redistricting he was elected to represent California's 50th District, which includes parts or all of Escondido, Fallbrook, and Temecula. With the significant avocado production in Rep. Hunter's new district, he and his staff were very interested in learning more about avocados. A large part of the discussion was on immigration, and the congressman seemed keenly aware of the importance of comprehensive immigration reform that will address the needs of agriculture. "Congressman Hunter listened to our concerns and understands what we need," said avocado grower Jerome Stehly. "His drive to want to get the problem resolved and get a bill to the floor was very encouraging."

Rep. Hunter said the border needs to be secure and then he would fully support an agricultural guest worker program. Obviously, our industry is feeling the strains of a broken immigration system, and attendees like Jaime Serrato, both a farmer and labor contractor, stressed the absolute urgency of the situation by saying, "I don't think most people understand how difficult it is to find ag labor or how serious the impact on the economy will be if something isn't done soon."

That evening Rep. Hunter hosted a standing room only town hall meeting in Fallbrook. Commission staff was in attendance to hear that the overwhelming majority of comments from attendees were focused on immigration reform. There was strong representation from supporters and opponents, with participants at times shouting at each other, illustrating the tremendous divide that exists on this issue. The time spent with Congressman Hunter earlier in the day proved valuable as he was able to refute some of the comments suggesting undocumented workers in agriculture take jobs from the unemployed and that farmers don't pay enough. In response to a man who was vehemently opposed to any type of immigration reform, Hunter replied,

Rep. Hunter was eager to hear about avocado production.

areas like tax relief or federal agency funding for grower improvements in irrigation technologies, Rep. Hunter could definitely provide important influence. Based on our interaction with him and his staff, it appears the commission will have an ally in Congress.

The commission will continue to work with members of Congress to ensure the collective voice of California's 5,000 avocado growers is heard loud and clear.

"I was in an avocado grove today, and I didn't see anyone lining up to work those jobs, and it's not because they don't pay enough considering they make $15-20 an hour."

After the grove visit, CAC staff was able to spend three more hours with the congressman and have in-depth discussions not only on labor, but on other issues like water. "The visit was great and served to reiterate the fact that the region's avocado growers are an economic asset, supplying jobs and producing a product that millions of Americans enjoy," said Rep. Hunter. "It was a good opportunity to see firsthand the inner-workings of the avocado industry and meet some local growers and distributors who are among the hardest working professionals around."

As the commission's campaign for affordable water continues, no stone is being left unturned, including determining if there are any options at the federal level. As of yet nothing has been identified, but if a possible pathway for federal assistance is discovered, it is likely Rep. Hunter could play an important role. In

Expanded Variety List Could Offer Opportunities

By Tim Linden

Reuben Hofshi of Del Rey Avocados looks at some alternative varieties he is growing at his nursery.

There is no doubt that the Hass avocado will continue to be the avocado of choice for both California growers and those around the world. However, voices just now are beginning to be heard that are urging California to diversify at least a bit for sales and survival reasons.

California Avocado Commission President Tom Bellamore said there is ample reason to believe that there is a niche market for some alternative varieties. He said recently a national magazine wrote an article about some of the non-Hass varieties indicating there is a strong interest in relatively unique fruits and vegetables. And there is plenty of anecdotal evidence that several heritage avocado varieties do very well in farmers' market. In addition, already both the Reed variety and Lamb Hass avocado have devotees on both the shipper and buyer side. Each offers a different profile than the Hass that some buyers like, if for no other reasons than to be different.

Bob Lucy, a partner in Del Rey Avocado Co., Fallbrook, CA, recently said non-Hass varieties are a very important part of his company's program. It is no secret that Del Rey sells a large percentage of its organic production of Reeds to the Whole Foods supermarket chain. Whole Foods tries to position itself as an upscale market that moves off the well-beaten path with its produce offerings. The Reed avocado fits that bill nicely.

Lucy says the Reed variety has its flaws, but added that it does offer a niche opportunity for California growers fighting for market share and better pricing.

Another shipper -- Jared Bray who handles sales for Stehly Farms Organic in Valley Center, CA, – said his packing shed does very well with five different avocado varieties: Zutanos, Bacons, Fuertes, Reeds and Pinkertons. "It's a very nice niche for us. We actually have a huge following for our Reed avocados."

Bellamore said additional varieties could offer another dimension to the California brand and help CAC expand its talking points to the buyer community as well as extend the California avocado season. Many of these heritage varieties have a different harvest time frame and could allow marketers to extend the season, and allow the commission to talk to consumers about California avocados for much more of the year.

Commission member Ron Araiza, who is director of sales

for Mission Produce Inc., Oxnard, CA, said from a packer's viewpoint there is no downside to pursuing other varieties as long as sufficient volume can be amassed. "If there is enough volume to pack and promote, we'd love it," he said. "We could keep our packing houses going longer and have something additional to market."

He did emphasize, however, that there has to be enough volume to make it economical to cover picking costs and keep the machinery running. "At this point I am not sure that's the case, but I am favorable to the idea."

Bellamore said an initial step in exploring the opportunity with non-Hass varieties is to get a handle on just how big the volume currently is. Virtually all groves use "off-varieties" as pollinizers but very little of that fruit makes it to the packing shed. Some stays in the grove; others go home to be shared with friends and neighbors; and a fair amount ends up in the aforementioned farmer's markets. "Is there enough to promote?" Bellamore asked. "We just don't know."

Longtime grower and handler Reuben Hofshi is a big proponent of experimenting with different varieties of avocados. In fact, his office doubles as a breeding lab for avocados with many different containers sprouting avocado seeds. He also has a nursery near his office where he is experimenting on a larger scale with many different avocado varieties.

From a practical standpoint, he said the industry needs to diversify as an insurance policy against a disease issue. He said if some disease swept through the Hass variety, the California industry could be ruined almost overnight. He argues that diversity of varieties not only is an insurance policy against that happening but also creates natural buffer zones in the event of a spreading disease.

Hofshi believes there are several varieties that could offer many niche marketing opportunities for the industry. In the first place, he said many of the heritage varieties – if grown and harvested properly – already can compete against the Hass. He said the Hass became popular because it was easy to pick causing most growers to eliminate their other varieties. Or worse, they were treated as Hass and not allowed to be grown and harvested according to their own timetable and needs. "The problem is they are handled like Hass and they are not Hass. If we developed protocols for each of these different varieties we could be a multiple variety producer," he said. "All avocados have their optimum picking time. Hass is excellent from April to July."

As a niche marketer, Hofshi said California growers have to sell their fruit at its prime tasting period – not before and not after.

A case in point is the Reed. Lucy of Del Rey said the Reed was harvested too early for many years. He said it is a later season variety that does much better if you leave it on the tree longer.

Alternative varieties could offer an extended season for the California avocado industry.

Bray of Stehly concurs. Stehly leaves its Reed variety avocados on the tree as long as possible and tries to market them in the September through November time frame. "By then the oil content is very good and it is just a great piece of fruit. I could absolutely ship more if I had them," he said, stating that he always gets a premium for that variety over the prevailing market price for Hass.

Hofshi said at farmer's markets, the Reed avocado is a trendsetter, always commanding a better price than Hass. But he said it is a very large avocado and would need a different packing protocol if it were to increase tremendously in volume. He said using foam pads or packing it in a one layer carton could work as the large size of the avocado can bruise avocados underneath it.

He said the Gem is another good variety that is getting serious consideration in South Africa, and could have great utility in California in both northern and southern districts. Hofshi also likes the Sharwil, which was developed in Hawaii. He has several of the trees in his nursery and is very happy about their progress.

Hofshi lists one more practical reason for expanding beyond the Hass: he says the Hass isn't as well suited to California growing conditions as it is in other climates around the world. The United States, he says, is the lowest producer of Hass in the world with average production of only 5,000-6,000 pounds per-acre.

Bellamore says if some California growers do go down this road of alternative varieties, they will have market differentiation. He said the other producers in the world selling in the U.S. market are very committed to the Hass, and almost certainly will not be offering direct competition to these alternative varieties, in part because they are more difficult to ship.

Fourth of July Promotion

Resonates with Consumers & Retailers

By Tim Linden

Numbers don't lie. In 2011, avocado sales were a healthy 54.5 million pounds over the Fourth of July holiday promotion period. In 2013, there was an 80 percent jump in sales with 98 million pounds during that same time frame.

"Three years ago during one of our strategic planning sessions," recalls Jan DeLyser, vice president of marketing for the California Avocado Commission, "we noted an opportunity to create a key avocado consumption activity during the summer months that was similar to what the commission had done previously for the Super Bowl and Cinco de Mayo."

DeLyser said it didn't take long for CAC's marketing team to focus on the many uniquely American holidays that define summer in the United States. The Memorial Day weekend has long been considered the kick off to summer with the Labor Day weekend sitting at the opposite end of the season. And right dab in the middle is the Fourth of July, resplendent with its flags, banners and ubiquitous picnics.

California avocados often play a role in festive gatherings, which was evident by the solid 2011 sales that preceded the Fourth of July marketing push, but there was a strong inkling that the industry could do better.

Last year, CAC launched its picnic-themed Fourth of July promotion and repeated it this year. "The results have exceeded our expectations," DeLyser said.

Last year, more than 85 million pounds of California avocados were consumed during the holiday period, representing a 56 percent increase from the previous year. This year's 15 percent gain on that already-robust figure has easily propelled the Fourth of July into one of the top avocado consumption events during the year.

DeLyser said this only bodes well for the future as the Fourth of July is the peak harvesting and shipping period for California avocados and there is no reason to expect that to be any different as the future unfolds, regardless of the individual size of the crop from year to year. For example, early estimates project lighter volume for the 2014 California crop. DeLyser said that less volume could impact the length of the season, but during the May to September time period there would be ample supplies to continue to strengthen the connection between California avocados and Fourth of July consumption. "That will be the peak period for our volume and we want to continue the momentum that has been created over the past two years," DeLyser said.

The promotion itself utilized a multi-pronged approach to get the message to both the consumer and the trade. Television advertising flights in California's major markets and general market radio advertising in other core markets started in late June and ran through the holiday week. For continuity the same TV and radio spots introduced in 2012 were utilized. The creative focus used a vintage 1950s/'60s thematic to suggest that California avocados have long been a Fourth of July tradition.

In addition, new print and online advertising were developed to support the creative theme while communicating premium positioning for California avocados. The print advertising ran nationally in epicurean publications. Online display banners, recipe site sponsorships and in-grocery radio advertising were used to encourage consumers to buy California avocados for the holiday and throughout the season.

CAC also reached out to food bloggers discussing the holiday promotion. This resulted in extensive on-line coverage. CAC's social media effort included advertising on Facebook and an email promotion featuring new recipes and a recipe contest.

The Too Hot Tamales, chef partners Mary Sue Milliken and Susan Feniger, who are official spokespeople for CAC, were featured on a segment of "Good Day L.A." The two restaurateurs also hosted a media lunch at their Border Grill restaurant, featuring avocado-centric dishes perfect for summer cooking and entertaining.

On the retail promotion front, CAC provided retailers with "Have a Blast with California Avocados", a fireworks-themed booklet packed with California avocado recipes and nutrition information for their displays and consumer events. There was very good retail promotional support during the period as CAC shipped more than 1,750 California avocado display bins for the holiday, and many retailers held display contest for their produce managers. The contests were supported with retailer ads featuring the Hand Grown in California logo.

Anecdotally, retailers stepped up to the plate and hit the ball out of the park. Many retailers submitted display images that showed very creative, patriotic displays with prominent placement of California avocados. Bristol Farms Tweets mentioned California avocados and the holiday; Hy-Vee distributed recipe booklets and avocado cutters in-store; Wegmans distributed booklets leading up to the holiday…the list of participants goes on and on.

Commission Forges Partnership with Cal Poly at Historic Pine Tree Ranch

By April Aymami
Director of Operations

A-1 Tree Service makes quick work chipping the old lemon acreage.

Nearly three years after the idea was first introduced to the California Avocado Commission Board of Directors, on July 1, 2013, CAC management executed a long term ground lease with the Cal Poly Foundation for 11 acres of land located at historic Pine Tree Ranch in Santa Paula.

The leased acreage, coined a "demonstration grove", is centrally located in Ventura County, between north and south avocado growing regions, and will serve as the site where CAC can test and demonstrate, through hands-on grower field days, cultural management practices and research results. This is an effort designed to achieve the commission's mission of improving grower sustainability through better grower communications and education,

The journey to this day began mid-2010 with a meeting between CAC and Cal Poly management to discuss the opportunity of the commission leasing the entire Pine Tree Ranch parcel consisting of nearly 60 acres, an old historic house and multiple outbuildings. At that time, CAC was beginning to explore the idea of having a northern office situated on or close to a demonstration grove and the Foundation was in need of both a revenue stream and activity at the ranch to bring some life to the location. The idea of a demonstration grove originated with the commission's Production Research Committee, as a way to supplement—but not replace—the role of grower cooperators who volunteered acreage for research and education.

Initially, a non-binding Memorandum of Understanding (MOU) was developed to keep CAC and the Foundation at the negotiating table. The protracted negotiations involved a number of CAC representatives, but it was the tenacity and commitment of Commissioner Bradley Miles who kept the discussions moving forward.

The commission's focus and primary driving force was to lease a piece of reasonably-priced land on which it could conduct demonstrations and research for grower education. Of course, depending upon the specific research project, this could mean sacrificing fruit production and potential loss of revenue to the Foundation because Cal Poly sells fruit produced at Pine Tree Ranch at its student store on the Pomona campus. Foundation officials were adamant about the need to continue receiving fruit from the ranch for this purpose. And so with each conversation between the parties, the original terms of the MOU were modified to try and best meet the needs of both parties.

It is important to note that concurrent with the Foundation discussions, CAC management continued to explore additional demonstration grove options, including the pos-

sibility of multiple demonstration grove locations (north and south) and the pros and cons of purchasing versus leasing. However with each option presented, and the negotiations still continuing with the Foundation, the board consensus was to hold off on a decision until negotiations with the Foundation were finalized.

It was March of this year that CAC President Tom Bellamore announced that an agreement with the Foundation had been reached, and the board subsequently approved tentative lease terms on 11 acres at the front of the Pine Tree Ranch property. Currently that acreage consists of two acres of Hass avocados and nine acres of lemons. The final agreement presented at this meeting includes a base rent approximately 8 percent under appraised value, a 10-year lease term with options to renew, and a provision declaring CAC's ownership of the fruit produced on the acreage. As part of the agreement, the Foundation called for collaboration with CAC to ensure that research and education activities at the ranch provide for some level of student involvement, a prospect CAC welcomes.

Following board approval at the March meeting, CAC management continued to button up all terms of the Pine Tree Lease agreement, which culminated in the transfer of keys to the property on July 1.

Over the past two months there has been a whirlwind of activity at the ranch. The first item of business was the selection of a farm management company to oversee the day-to-day operations of the newly leased acreage. CAC management immediately set to work to create a request for proposals for these services and sent it to all farm management firms on record with the commission. Upon review of submissions, Progressive Land Management based out of Santa Paula was selected to partner with us on this task.

Jonathan Dixon tours CAC's 2 acres of existing avocado acreage with members of the CAC Board.

Commission management discusses plans for development of new avocado acreage at Pine Tree Ranch.

Next up on our agenda was dealing with the nine acres of lemons. Since CAC is not in the business of growing lemons, it was quickly decided that rather than continue irrigating the trees, it would be best to push and pile the trees and begin prepping that land for future avocado acreage development. While the initial instinct was to burn the piles, it seemed the better route was to chip the trees and use the mulch for the existing avocados and those soon to be planted. Going out to bid for the chipping services, A-1 Tree Service of Nipomo was contacted, and after hearing about the commission's demonstration grove project readily offered up its profits to assist in tackling this task.

At this point the commission's focus has turned to creating a business plan for the demonstration grove, and CAC's Research Project Manager Tim Spann has recently met with an advisory group to discuss potential projects and how the land might best be utilized. The advisory group, consisting of local area growers and farm managers as well as a representative of Cal Poly Pomona, held an initial meeting in mid-September and the formal business plan is currently under development. Based on input from this group, ideas for future land use include grower field days on pruning and irrigation management on the existing avocado acreage, and a variety block, high density planting block and rootstock/scion block are envisioned for the undeveloped nine acres.

In the process of finalizing the demonstration grove plan, CAC will work with the Foundation to identify specific projects in which we can partner with Cal Poly to provide students a site for hands-on experience in the grove. The plan should be finalized in the next few weeks, and following board approval of the 2013-14 budget in October, CAC management will set to work on implementation.

In the meantime, stay tuned to The Greensheet and future issues of *From the Grove* for more details about the demonstration grove including scheduled projects and upcoming grower field days.

By April Aymami
Director of Operations

The California Avocado Grower Website One Year Later

Nearly one year ago, we started the redesign of our California avocado grower website, www.CaliforniaAvocadoGrowers.com. The first step was gathering grower input — finding out what information you needed, how you'd like to receive that information and discovering how we could facilitate interaction. The second step was redesigning the site, rewriting content and producing new content. The third was driving greater awareness of the grower website and new content — utilizing The Greensheet as a tool to alert you to the latest content available on the website.

CaliforniaAvocadoGrowers.com Google Analytics

Data	6/20 - 8/20, 2012	6/20 - 8/20, 2013	Change
Total Visits	6,139	7,596	+23.73%
Unique Visits	4,258	5,009	+17.64%
Pageviews	16,495	27,566	+67.12%
Pages/Visit	2.69	3.63	+35.06%
Average Visit/Duration	2:14	3:30	+57.36%
Bounce Rate	53.07%	45.88%	-13.55%

So nearly one year later, how is the website faring?

Brilliantly.

The redesigned California avocado grower website was launched on June 20, 2013. When comparing web statistics for June 20 – August 20, 2012, to June 20 – August 20, 2013, the following gains are noted:

- Total grower website visits have increased by nearly 24 percent.
- The number of unique visits (individual visitors to the site that are non-duplicates) has grown by nearly 18 percent.
- People are viewing more pages when they visit the site. Currently, visitors access 3 – 4 web pages per visit, an increase of 35 percent. This is a great sign — the more pages a person visits, the more they interact with the website.
- Growers are staying on the site longer, indicating that the site is more engaging. The average visit has increased by 57 percent.
- Finally, our bounce rate (the percentage of visits in which a person views one page and then leaves the site) has decreased by almost 14 percent — another good sign.

Mobile and tablet web access is growing

During the listening sessions held in September 2012, the majority of growers indicated an increasing preference for mobile and tablet

devices. Our website data indicates that California avocado growers are increasingly relying on these technologies to stay connected with CAC. While the majority (81 percent) of visitors access the site via a desktop or laptop computer, there has been a 46 percent increase in mobile viewing and a 79 percent increase in tablet viewing over a one-year period.

And your favorite content is…

The table at right provides us with an in-depth look at what topics are currently of greatest interest to California avocado growers. CAC publications (predominantly The Greensheet) have the most visitors, followed by the Selling avocados web pages and the Growing avocados web pages. The Market Industry Trends and News — which features articles about the California and global avocado industries was most popular in this category.

Taking a closer look at the Cultural Management library, we note that the majority of growers are interested in topics that pertain to avocado tree root health; irrigation is another popular topic during the hot summer months. Data indicate that growers are also interested in CAC events and accountability reports. While industry stakeholders noted their interest in the CAC marketing program during the listening session discussions, web data indicate that while the Marketing landing page is of interest to growers, it currently ranks eight in web visits.

CaliforniaAvocadoGrowers.com Website Page Views*

Page Views are the amount of times visitors arrive on individual pages of your Website. Page views allow you to see which pages on your site are the most popular.

Where People Enter the Site	Pageviews	Most Popular Pages
Publications	4834	The Greensheet From the Grove
Selling	4387	Market Trends and Industry News Pounds and Dollars Variety Crop Projections and Estimates Industry Statistical Data Packers and Handlers
Growing	4188	Cultural Management Library How a CA Avocado Tree Grows New Growers GAP Seminars
Home Page	3513	Home Page
Cultural Management Library	1799	Avocado Root Health Branch Canker Disease ID Fusarium Dieback Manage Water Costs by Assessing Your Irrigation System Irrigating Avocado Trees
Commission	931	Calendar CAC Staff Meeting Agendas/Minutes Your Representatives Accountability Reports
Marketing	774	Marketing Page

*This information was taken from www.californiaavocadogrowers.com, using Google Analytics data.

CAC welcomes your input

A website is always a work in progress. Your needs change with every season — often every day. With that in mind, we plan to send an email survey your way in order to adjust our communication strategies as needed — and we welcome your input. After all, this website is your website and we want to be certain we're providing you with the content and tools you need to be more productive and profitable.

We'd also like input concerning The Greensheet. While our open rate (38 percent) is above the "ideal" industry open rate (34 percent), we'd like to reach a greater percentage of California avocado growers and provide them with the most useful and relevant data possible.

Look for the email survey soon — and please provide us with your insights so we can better customize the Commission's grower communication program to best meet your needs.

By Tim Spann
Research Project Manager

Preparing for Winter

Although temperatures drop and the activities in an avocado grove are fewer in the winter, it is not a time to rest. Avocados are tropical rainforest trees, and as such are active year-round. Winter is a great time to assess your previous year's production, the current status of your trees and how well set-up your trees are for the coming spring's bloom. As we go into winter, remember that your trees are sizing and maturing the fruit you will harvest next year, and developing the flower buds that will produce flowers and set fruit in spring. Following are some of the things that you should be evaluating in your grove going into and through winter to help ensure optimal tree health and productivity.

Freeze Protection

The fall is a great time to begin getting ready for the most dangerous winter events—freezes. While there's no way to be certain if or when a freeze will occur, there are certain things you can do in and around your grove to be prepared.

Air drainage is critical during a freeze. Cold air will drain and settle in the lowest place in or around your grove and can cause severe damage to your trees. To allow for the best air drainage during a freeze consider doing some light pruning on the skirts of your trees so the air can flow easily across the grove floor. If there are barriers along the lowest point in your grove (e.g., a tree line thick with undergrowth) cut holes or channels so that the cold air can flow through. If the air is stopped, it will back up into your grove and cause damage that could have been prevented.

During the coldest nights many growers will run their irrigation for frost protection. It's important to go through your grove well in advance of a freeze and check your irrigation system and make any needed repairs. Getting wet trying to fix a broken microsprinkler when it's 30°F is not fun. Remember, the small spaghetti tubes feeding microsprinklers freeze quickly when temperatures drop so have a plan in place to monitor the temperature in the cold spots of your grove and turn on the water before the system freezes.

If you have wind machines in your grove the fall is a great time to have them serviced and make any needed repairs or upgrades. Wind machines work best during radiational freezes when an inversion layer forms (cold air near the ground and warm air aloft). The wind machines mix the warm and cold air, raising the temperature near the ground, to protect the trees.

Fertilization and Pruning

Fall is the recommended time to collect leaf samples for nutrient analysis. Sampled leaves should be from the spring flush (6-7 months old) and from non-fruiting branches. A good indicator of whether your nutritional program is on track is if your leaves remain dark green through the winter and do not yellow and drop prematurely. To understand your leaf analyses you will need to look at the report in the context of the crop you just finished harvesting, the crop the trees are carrying for next year's harvest, and their bloom potential. If you are carrying a good crop through the winter, but your leaf analyses are marginal, it is likely you will see leaf yellowing as the tree mobilizes nutrients from the leaves to support the growing fruit. This may translate into a weak bloom and poor fruit set in spring. Being a tropical evergreen tree the avocado can take up nutrients throughout the winter so you still have the opportunity to improve your trees' nutrient status. However, due to cooler air and soil temperatures the rate of uptake will be slower than in spring and summer so your fertilizer should be applied at a lower rate than during those times. Be careful not to apply too much nitrogen late in the year, which can stimulate a growth flush that is easily damaged by frost. Work with your grove manager or farm advisor to develop specific fertilizer recommendations for your grove.

A tree's typical response to pruning is to produce a growth flush so, like nitrogen, pruning needs to be carefully timed to not stimulate a flush that will be damaged by frosts

or freezes. However, winter is a good time to evaluate your trees and think about their pruning needs. What kind of crop load are your trees carrying? Did they produce a strong summer flush that is now developing a lot of flower buds for a strong bloom? These are scenarios that could put your tree into a strong alternate bearing cycle and you may want to be thinking about pruning as a tool to correct that. Pruning can be used to thin a heavy bloom to prevent setting too heavy a crop. Likewise, pruning in late spring can be used to stimulate a strong summer flush to improve bloom potential the next year.

Irrigation and Salinity Management

Avocados are the most sensitive fruit tree crop to salinity so properly managing salinity is critical. Salts occur naturally in irrigation water, but can be much higher than occur naturally in reclaimed water. As the tree takes up water from the soil, salts are left behind and can accumulate to toxic levels over time. Thus, it is necessary to routinely run a "leaching fraction" following irrigation (typically 10% to 15%) to push salts out of the root zone.

As we move into winter, the soils in avocado groves have accumulated salts over the summer from irrigation. Because winter rainfall in Southern California typically comes in small doses, the salts accumulated in the soil can go back into solution and be highly concentrated in the root zone, causing severe salt burn to the trees. Thus, running a couple of good leaching irrigations prior to the winter rainy season will help to avoid this. Also, be prepared to run your irrigation during or immediately following the first couple of rain events to help dilute and further leach the salts that the rain puts back into solution.

These are just a few things to be considering as you prepare your grove for winter. As you make your management decisions it will be important to consider where your trees are in their current year's growth cycle and keep in mind how this is affected by the previous year's growth and will affect the next year's growth (see Better Growing, Fall 2012 *From the Grove*). Since every grove is different it is important to consult with your grove manager or farm advisor to develop specific recommendations for your grove that take into account soil type, microclimate, and grove history.

Foodservice Firm Visit Focuses on Food Safety Practices

By Ken Melban
Director, Issues Management

In July the California Avocado Commission hosted representatives from Brinker International, owner of Chili's and Maggiano's restaurants, as they traveled to California to learn more about our industry's food safety practices.

Three senior Brinker staff and one from FreshPoint (the largest foodservice distributor of fresh produce in the country) spent two days visiting groves in both Ventura and San Luis Obispo counties along with a packing facility. The purpose of their visit was not to scrutinize our food safety program, but rather to learn about the Good Agricultural Practices (GAPs) growers are implementing.

"I appreciate the time the Brinker representatives spent with us in our groves to see first-hand how we grow our fruit," said CAC Chairman Ed McFadden, and host for one of the grove visits. "There is nothing like a hands-on, 'muddy-boots' walk-through of a beautiful avocado grove to see how special what we do every day really is, especially to those who are seeing it for the first time."

So, what did they think? In a nutshell, they were impressed, and so were we! We were impressed that a foodservice company the size of Brinker (Chili's has more than 1,400 restaurants, and there are another 50 Maggiano's locations) would take the time to come to our groves and

learn about our food safety practices. It demonstrates that Brinker, which purchases more than 20 million pounds of fresh avocados annually, is working to ensure its suppliers take food safety serious.

"We (Brinker International Supply Team) greatly appreciated the time the California Avocado Commission and their growers took to educate our restaurant company on the current avocado industry and standards in place," said Colista Yates, Brinker senior manager for global quality assurance. "Thank you for sharing your in-depth knowledge and best practices with our group!"

The visit provided the first opportunity to get a major foodservice operator into our groves and have a dialogue, not only about our food safety practices, but equally important, their expectations. "They were delightful people who asked very intelligent questions," said Bill Coy, a Cayucos grower. "It was a great learning experience for all of us."

As the commission continues to assist growers with implementing GAPs, we are also working to facilitate discussions such as this with foodservice and retailers to educate them on the low risk nature of our fruit. We are communicating our willingness to demonstrate applicable safety measures, but will continue to resist efforts that create arduous expectations on growers that in no way improve the safety of our fruit.

The increasing concern for the safety of fruits and vegetables sold in the United States over the last few years is undeniable. In 2011 Congress passed the Food Safety Modernization Act (FSMA) requiring growers, harvesters and handlers demonstrate that measures are in place to mitigate possible contamination. Many in the avocado industry question the rationale for including avocados as they are arguably a "low-risk" commodity. In reality, though, under FSMA, all produce that is consumed raw in the United States must show compliance. The commission has proactively worked to prepare California's avocado growers for the pending FSMA requirements through the development of an avocado-specific GAP manual, along with providing training and financial incentive. With more than 35 percent of California's acreage GAP-certified, it's obvious that many growers are accepting the pending requirements and taking action. Some growers, however, have not been quite as motivated to pursue GAP certification. Although no buyer to date is demanding only GAP certified fruit, this visit from Brinker International is yet another indication that retailers and restaurateurs are serious about having GAP-certified fruit.

More information on the CAC GAP program and rebate may be found at this link: www.californiaavocadogrowers.com/growing/gap.

The commission sends our thanks again to the Brinker International representatives: Senior Manager, Global Quality Assurance Colista Yates, Quality Assurance Manager Jessica Kojder and Produce Buyer Cathy Leffingwell; along with Fresh Point National Account Manager Trish Davies, for taking the time to come and learn about our great industry.

Upcoming California Avocado Commission GAP Educational Seminars

Tuesday, December 10
9:00 am – 11:00 am
Grand Tradition Estate & Gardens
220 Grand Tradition Way, Fallbrook, CA 92028

Wednesday, December 11
1:00 pm – 3:00 pm
Museum of Ventura County
100 East Main Street, Ventura, CA 93001

Thursday, December 12
9:00 am – 11:00 am
SLO Veterans Memorial Building
801 Grand Avenue, San Luis Obispo, CA 93403

Grower Profile

SUMMER JOB
Leads to Ag Career

By Tim Linden

It was a summer job as a teenager planting citrus and avocados trees that brought Mike Mobley into the agricultural community. Forty years later he is still doing some of the same work…albeit from a different perch.

Mobley grew up in Ventura and still lives there today. His father was a commercial banker and though he always had ag clients, he wasn't involved in the county's top business in any direct way. "I got into the ag business because Paul Leavens offered me a job when I was 15 planting citrus and avocado trees in Moorpark. I did that for seven summers."

Along the way, Mobley took some ag classes at Ventura College and decided he wanted to make a career of it. He transferred to Cal Poly San Luis Obispo and in 1979 graduated with an ag management degree. Combining his college degree and his love for agriculture with the family business, Mobley began his post-college career in ag financing working for the Ventura Production Credit Association.

"I did that for a couple of years but I wasn't getting enough dirt under my fingernails," Mobley said.

So he traded in the desk job for a ranch management position with Alan Pinkerton's operation. Alan is the son of the founder of the Pinkerton avocado. Mobley worked for that company for seven years before starting his own ranch management firm.

Today, he is president of Progressive Land Management Inc., which manages about 750 acres mostly of citrus and avocados in the Ventura County area, including his own 66 acre ranch called Rancho La Paz. "I have 33 acres of avocados, which are almost all Hass," he said. "I still see a great future for avocados and we are continuing to increase our acreage."

However, he admits that finding good land with cheap water is almost impossible. There is a lot of competition for the good land from other growers with berries being a big competitor at this point. Mobley said most of the land

made available for avocados that has viable water costs are steeper hillsides, which present their own issues. Moving forward, he expects some of the citrus acreage in Ventura County to be taken out and replaced by avocados over the next handful of years. He said older Valencia orange and lemon groves are being replaced as growers look for higher value crops. "Avocados are definitely a higher value crop that can compete for that land."

One cultural practice that Mobley swears by is inoculating the trees before planting with a "dry water" polymer that gives them a head start in their very early stages. "They take off much faster, use less water and tend to grow very fast," he said.

This doesn't necessarily produce a crop earlier, but he said it produces healthier, larger trees which in the long run do produce more volume.

Mobley also has become a big believer in organic avocado production from a business viewpoint, especially this year. The to-the-grower price differential between conventional avocados and organic ones has been tremendous this

year. Speaking in early August, he said packing sheds were paying above $1.90 per pound on the spot market for the larger-sized organic avocados that day compared to about $1.20 for the same size of conventionally-grown fruit. "And this year, most people have a decent crop. I have one organic orchard where we are getting more than 24,000 pounds to the acre."

He is very bullish on organic avocados stating that the demand is still increasing faster than the supply.

As the summer wears on, he said growers of avocados are doing pretty well as long as they have good sized fruit. He cautioned that every year the same math won't pencil out. Next year, in fact, he said the on-tree crop for many of his organic orchards, as well as the conventional ones, is way down. "We are going to be way off next year. I have some groves that only have 25-30 percent of what they had this year."

Mobley said the alternate bearing nature of some avocado trees is partly to blame, but weather conditions have also played a big role. "We had cooler temperatures earlier in the year and so the fruit wasn't sizing. Usually you want to get a quarter or a third of your crop picked before bloom to lighten up the load and minimize the alternate bearing tendency. We weren't able to do that this year."

Continuing on the economic issues, Mobley said the price differential this year has been so great between the small sizes and the large sizes that it has altered picking patterns. On this day, he said the 48s and larger were returning three times as much to growers as the 84s.

While Mobley has grown the Hass variety almost exclusively in his career, he does see utility in expanding the season by growing other varieties. "We are starting to look at other varieties…mostly Lambs and Gems. It could be a way to expand the harvest and that would be advantageous."

Moving forward, Mobley is bullish about the California avocado industry but he said there are challenges to overcome and cited water and labor as the two most obvious. With some people paying as much as $1300 for an acre-foot of water, he said that's "way beyond what you can afford for avocados."

For most of the groves he manages, the water systems have been switched to low volume sprinklers in most instances. Practicing all the water conservation techniques he knows, Mobley said it usually takes 2.25 to 2.5 acre-feet of water per acre to produce avocados. This year was a dry year, so much of the acres he manages needed 2.75 acre-feet per acre. Good yields and pretty good returns will help that pencil out this year but when water needs approach 3.0 acre-feet, he said it is difficult to make any money unless you have very cheap water. He added that avocados are "water-loving trees" and he is convinced if water was no concern, yields would be off the charts.

Labor is another problem that seems to be getting worse. He said labor has been tight all year and he rarely can get a full crew. That means it takes longer to harvest a grove, adding that there are some groves that may not get picked this year. "Many crews used to have 25-30 people in them. Now you are lucky to get 10-15 guys. Obviously that takes you twice as long to pick a grove and you fall further and further behind. I know one large block that totally missed the pick."

Nonetheless, Mobley is very happy about the career he picked. He works hard and likes to play hard when he gets the time, which includes surfing and bicycling. He's 57 years old but still enjoys surfing. "I have been surfing since I was 10 years old. I still surf a couple of times a month," he said. "I have salt water in my blood."

He and his wife of 31 years, MaryAnne, have a 20 year old son, Tyler, who attends the University of Hawaii at Hilo. "He's a surfer like me but he has not expressed any interest in following me into agriculture…but you never know."

CAC Staff Visit Florida Avocado Researchers

By Tim Spann
Research Project Manager

Jonathan Dixon and I traveled to Florida from August 4-7 to visit with several avocado and plant breeding researchers at the United States Department of Agriculture lab in Miami, and the University of Florida (UF). Our goals were to get an update on the laurel wilt situation and on the research being done in Florida, learn what's new in avocado genomics, and discuss plant breeding strategies with expert breeders and variety managers.

While at the USDA lab we primarily met with Dr. David Kuhn, a plant molecular biologist, who is an expert in avocado genetics and molecular biology. We discussed at length the potential to use knowledge from the avocado genome sequencing project in Mexico to advance avocado breeding efforts. David was careful to explain that even with this new knowledge it will not be possible to "design" a perfect rootstock or variety. Rather, this information has the potential to tell us where desired traits (e.g., salinity tolerance) lie in the genome, identify which selections possess those traits, and then use those selections as parents in a more directed breeding program. Essentially, this new knowledge is a tool that can help take some of the variability out of breeding, but it is not a solution in and of itself.

The second day of our trip we met with Dr. Jonathan Crane, professor of horticulture at UF's Tropical Research and Education Center in Homestead. Dixon assembled a small group of other UF faculty and representatives of the Florida Avocado Administrative Committee to update us on the red bay ambrosia beetle and laurel wilt situation. The disease has been decimating native laurel species along the eastern and gulf coasts of the United States. Fortunately for avocado growers, the beetle populations have been found to be much higher in the native laurel species than in cultivated avocados. They believe this has helped to slow the spread within commercial avocado groves since avocado is apparently not the beetle's preferred host. However, because of the highly systemic nature of the laurel wilt pathogen, tree-to-tree spread through root grafts is a rapid means of spread in commercial groves. They told of one example where two trees were detected in a commercial grove and the owner did not remove the affected trees. Within six months 95 trees were affected due to spread through root grafts. In other groves where the infected trees were removed immediately, including the root system, there has been little to no spread of the disease. They shared with us a recent discovery that several other beetles (both native and invasive) have been found to be able to pick up and transmit the laurel wilt fungus, but it is unknown how much this is contributing to the spread of the disease. It is important for us to keep this thought of secondary vector spread in mind as we continue to study the polyphagous shot hole borer and fusarium wilt here in California.

Our next visit was with Peter Chaires, executive director of the New Varieties Development and Management Corporation (NVDMC). The NVDMC is a relatively new organization formed by Florida citrus growers to manage releases and licensing for new citrus varieties. During the organization's development, Chaires spent nearly a year traveling the country to meet with different breeding programs to learn how they manage variety releases and licensing issues. He took what he learned and created the model that

NVDMC is now using. Although still in its infancy, NVDMC appears to be working well and is viewed favorably by university and USDA breeding programs and citrus growers alike. One of their major efforts has been a program to get new material into growers' hands sooner and allow growers to help in the evaluation process in a very formal and controlled manner. In addition, they have negotiated an agreement with the University of Florida whereby they are the exclusive licensee for UF-bred citrus varieties. This allows the Florida citrus growers, who have invested heavily in developing the varieties, to ensure that overseas competitors don't out compete them with their own product. It will be interesting to observe this program as it matures to see if it could be applied to avocados.

Our last visit was with Dr. José Chaparro, associate professor of horticulture, who is UF's breeder of stone fruits (peaches, plums) and cold hardy citrus. We discussed at length with Dr. Chaparro how he has structured the breeding program since he took it over nine years ago and developed short, mid and long term goals. As a breeder, he told us he has to have things in the pipeline to address growers' immediate needs (present to five years out), their mid-term needs (about 10 years out) and their long term needs (20 years out). The long term goals being addressed may not be things growers even realize they need, but are fundamental changes to the crop to ensure its continued relevance in the marketplace. The example he used was a pit-less peach. As seedless fruits become more desired by the consumer, peaches will lose market share unless they can adapt to this market requirement. While a pit-less avocado may not be what is needed for our industry, a dwarf tree or one with a fundamentally different architecture suited to mechanical harvesting may be what is needed to overcome future labor limitations.

Dr. Chaparro likened a breeding program to a large freighter – it is much easier to make frequent small course corrections than to make very large sudden changes. This is done through frequent communication with the commodity's leadership and developing well-defined goals and objectives that will still be relevant in 5, 10 or 20 years when the final product emerges from the breeding program.

We also discussed how new genetic tools could be used to advance plant breeding. He was quick to point out that genetic modification has only been used to introduce novel traits that don't naturally exist in a group of plants (e.g., Roundup resistance genes). For traits that exist within a group of plants and need to be moved from one variety to another, traditional breeding methods are still the accepted means (e.g., by crossing a high chill and low chill peach, Dr. Chaparro can produce a peach with intermediate chilling requirements). He also indicated that, in his opinion, marker-assisted breeding should only be used for traits that are absolutely required or must be avoided. This is because even though a plant may not be exactly what is being bred for in a program, it may still possess desirable traits and it can be useful in future crosses. Throwing out this variation based on a single trait through marker-assisted selection may actually limit a program's chances for success.

Something that both UF researchers touched on that is very important for the long term sustainability of a plant breeding program is the need to have a royalty stream that allows the program to become, at least partially, self-funded over time. This is achieved through negotiations with the owners of the intellectual property and the licensee, but it also requires a steady flow of new material from the program to continuously generate the necessary revenue. In a long-lived tree crop such as avocado, where the number of new trees sold each year is limited, it may be necessary to look at having some material flowing from the program that is more suited to overseas growers to increase income to the program.

We learned a great deal from the experts we visited on this trip. It will take some time for us to fully digest the information they shared with us and integrate it into our thinking on avocados in California. It is through these types of exchanges that new ideas for a better avocado industry are born.

By Jonathan Dixon
Research Program Director

Production Research:

Where is the Commission Program after Three Years?

Over the past three years a great deal has changed in the way the California Avocado Commission approaches its investment in production research.

The Production Research Committee (PRC) has a different form, most notably it is smaller in size, and is analyzing research proposals and active projects from a perspective that is based on strategic needs and for increased returns to growers. It has taken some time to bring about a change in the philosophical approach used by the commission to determine how to get the best value from the production research budget. The last three PRC meetings have reflected this new approach where the committee members' discussions on research proposals have included both the merits of the project from a scientific point of view, and the wider implications of addressing industry issues and how the research would impact growers.

Investment in production research does not usually result in an immediate increase in grower profitability. Rather, production research is an investment in the future that will result in increased profitability down the road. A well-managed production research program can lead to substantial improvements in productivity and a reduction in the costs of growing as well as provide the necessary technical support for marketing messages and better quality through the supply chain. Investment in production research is needed to keep the California avocado industry's productivity increasing over time and avoid industry stagnation.

The other very important reason to invest in production research is to overcome crises that could result in the elimination of avocado growing in California. The most obvious example is when a pest becomes established in California avocado groves reducing yields or quality, and grower incomes.

By viewing production research as an investment in the future it becomes clear that determining which industry issues need to be addressed, accountability standards, and measures of success should be the same as those used when making other business decisions. Since the objective of CAC's production research program is to increase California avocado growers' profitability, the impediments challenging the industry define the strategic technical imperatives. The imperatives defined in 2011 by the CAC Board — a grower driven research management system, effective grower education, increased average per-acre production, achieving and sustaining critical industry mass, and maintaining a premium quality product — have been a consistent reference point for the PRC when evaluating research proposals.

The process for technical investment was described in the Summer 2011 issue of *From the Grove*. Since then, experience using the system has resulted in modification where concept proposals have been removed as an unnecessary extra step and the requests for proposals have become more specific in identifying the high priority topics set by the PRC.

The focus of the research program is on information needed to ultimately improve yields and recognizes that it is important for the commission to support grower profitability. In the current fiscal year there are 21 research projects, all of which are designed to increase average per-acre production. The imperatives on quality, critical mass and education are addressed by one project. The research to increase average per-acre production can be further broken down to 11 projects seeking better pest and disease control, five projects for better management, three plant breeding projects and two salinity projects.

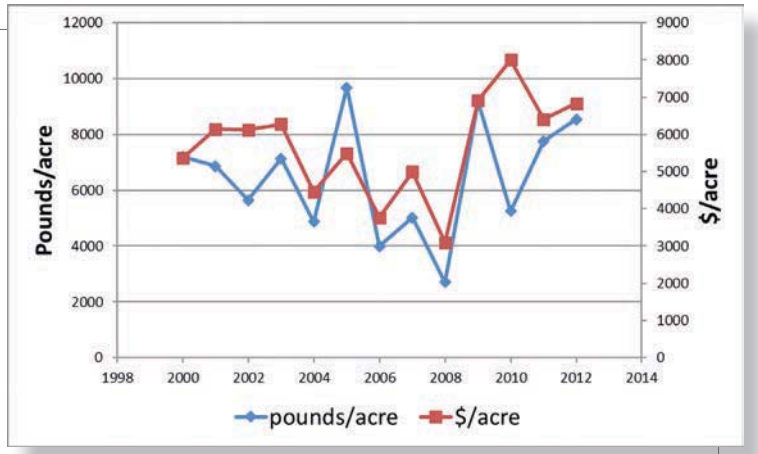
A challenge for any research program is to measure the impact of the research, specifically, whether the research is achieving the imperatives. Measuring the return on investment of research is not easy. Very often the changes to growing practices resulting in increased yields are not the result of the findings from recent research projects, but are the accumulation of findings from a number of research projects over time. This makes it very difficult to assign a return on investment against a single project. To measure the effect of production research on meeting the imperatives key performance indicators can be used to set the benchmarks for evaluating change. A key performance indicator for the imperative "increase average per-acre production" could be average industry yield over time. Another measure of success may be to evaluate changes in the costs of producing avocados. For example, costs for particular grove manage-

ment activities could go down or at least stay the same to indicate the research investment is meeting the imperative.

One approach to evaluate the research imperatives is to look at changes in industry statistics in the past few years and to look at how costs of producing avocados have changed over time through studies on the economics of growing avocados. While not ideal sources of information, they appear to be the best available.

Average per-acre production has increased in the period 2009-2012 to 7,682 pounds per-acre from 5,347 pounds per-acre in the preceding four years 2005-2008. It is possible that yields declined on average from 2005-2008 due to a drought in California. However, the 2009-2012 average yield is greater than the average yield for the four years 2001-2004 of 6,128 pounds per-acre. The average income per-acre also has increased in the four years 2009-2012 to $7,038 per-acre from $4,338 per-acre in 2005-2008 and $5,749 per-acre in 2001-2004. While there is still some way to go to reach an average production of 10,000 pounds per-acre, the trend is positive and appears to be somewhat sustained which may suggest the emphasis of production research on yield and increased outreach effort is having a positive effect.

In the Summer 2013 issue of *From the Grove*, Tim Spann and I reported that in the 2011 UC Davis avocado establishment and production cost study, the cost of pest control in 2011 averaged $169 per-acre less than in 2001 (the full reports are available on the CAC website under the yields/productivity tab of the research library section). For 55,000 acres this is a savings of $9.25 million in 2011 to California avocado growers compared to the spending on pest control research of about $4,000,000 from 2001 to 2011. The decrease in average pest control costs has come over a period of inflation and in the face continued introduction of new pests and therefore represents a good return on investment.



Average yields, pounds per-acre and income in dollars per-acre for California avocados.

There are a number of challenges facing California avocado growers, some of which require solutions in the short-term and others that are longer-term in nature. Over time the production research program will likely put increasing resources to the issues of salinity and root rot, new pest response and control, more efficient use of labor, and information to support branding and sustainability in the marketing program.

One way to do this is to implement systems that give up-to-date information on important markers like fruit size or maturity that will affect growers harvesting decisions and the perception of availability of fruit for the retail buyers of avocados. Utilizing "feedback systems" to provide information to help grower and handler decision making should be the next step in the continued development of a modern Californian avocado industry. These information systems are now feasible as new technology makes it possible to use the internet inexpensively and simply in the field.

The development of research findings into useful tools or systems is sometimes difficult to visualize. Bringing knowledge to the grower is where the most significant gains can be made in achieving real change in cultural management on the grove. Essentially, the principle the research program uses is, "Research is of no real value if growers don't have the opportunity to use the information."

This means that greater effort in education through outreach and the implementation of systems that increase production efficiency is needed. Integrating outreach into research projects has been a strongly desired goal of production research projects and is now an important part of proposal evaluation and assessment of project outcomes. For this reason research proposals now include a description of how the information generated from the research will be used and if the research will complement other research projects. An effective grower education system remains a work in progress at CAC but has improved through the quarterly publication of a grower magazine, news in The Greensheet, fact sheets, an updated website including online classes and support of the California Avocado Society seminars, field days and grower discussion groups. Yet to come are the decision support tools that will utilize specific grove information to monitor and predict grove profitability. A valuable way to get research projects to be more closely aligned with making a difference on avocado groves is to decide what tools growers need and then conduct the research to develop those tools. This places outreach needs first in the evaluation of research proposals and is where further development of the commission's investment in production research is needed.

Plant Breeding

Investing in the Future of the California Avocado Industry

By Jonathan Dixon
Research Program Director
& Tim Spann
Research Project Manager

Research projects on breeding, scion and rootstock evaluations, and genetics of avocado (hereafter, collectively referred to as plant breeding) have been a major part of the California Avocado Commission's production research program for more than 20 years.

Since 1991, the commission has spent about $7 million on plant breeding out of a total production research investment of about $17.6 million. Although plant breeding is very important, and can potentially solve critical industry issues, it is a long-term investment with significant risk. Given the limited production research budget, the Production Research Committee must always look at the opportunity costs of investing in plant breeding (and other long-term projects) instead of short-term projects that may have a more immediate benefit to the grower. For these reasons, it is important to periodically review the plant breeding program and make sure that it is on track to meet the industry's needs.

In general, plant breeding is a long-term commitment, and many plant breeders acknowledge that their successors will reap the benefits of their work. In annual crops, the time required to develop new varieties has been reduced by growing the crops in multiple locations around the United States or even in the northern and southern hemispheres. In so doing, breeders can produce two or three generations in one year, greatly reducing the time required to develop new varieties. Unfortunately, this is not possible for tree crops, and in general tree-fruit breeding remains a slow process. In light of this, it is crucial that the goals and objectives of a tree-fruit breeding program are well-defined and realistic.

It is easy to become excited about the potential for a

breeding program to develop a new fruit variety that will have some characteristic that consumers will love and create strong demand for; however, this rarely happens. This is largely due to the time required to bring a new variety to the consumer—usually at least 10 years, but often closer to 20 years for tree crops. In this time, consumer tastes change and what would have been a hit when a program started may be a flop because the consumer has moved on. The 'Gwen' avocado is a good example of how by the time a new variety is developed the market can shift, in this case from green skin to black skin fruit.

This is why many tree-fruits varieties are bred to extend the harvest season, but keep the product consistent over the season. Peaches are a perfect example of this—they are in the market virtually year-round, but the varieties are invisible to the consumer. Thus, most tree-fruit breeding programs are focused on more fundamental objectives (e.g., pest or disease resistance, cold tolerance) rather than creating wholly new varieties for which specific market development programs will be needed.

The Need for an Avocado Breeding Program

The California avocado industry has supported a plant breeding program for more than 50 years, and the original reasons for supporting a plant breeding program still apply in the 21st century. The development of new fruit varieties and rootstocks allows the industry to keep up with the changing avocado market across decades and adapt to pests, diseases and environmental stresses. The types or varieties of avocados grown determine the marketing needs and other industry activities. Therefore, changing the varietal mix can fundamentally change the nature of the industry, for example, by changing the timing of peak supply. Thus, breeding new fruit varieties can be a way to implement particular industry strategies. At the same time, breeding new rootstock varieties can allow growers to reduce input costs (e.g., through pest or disease resistance, or a dwarf tree to reduce harvesting costs) or grow their trees in new areas to expand the industry (e.g., through the development of cold tolerance).

Before the inception of a formal avocado breeding program, the California Avocado Society had a very active new varieties committee to evaluate the large number of seedlings being put forward as new avocado varieties. Many of the varieties discovered through this program are still available and in use today, most notably Hass. There is no question about the impact Hass has had on the world avocado market, and this variety is testament to the benefit that can come from a breeding and selection program.

Plant breeding as a tool can be an effective and worthwhile investment in the future of our industry, but it requires having a realistic vision of how the California avocado industry and market are going to change over the next 10 to 20 years, a challenge akin to choosing the winning lottery numbers. For example, before there were significant volumes of avocado imports, breeding was seen as a way to add varieties that could extend the avocado season, to develop the domestic avocado market and realize the opportunity of year round supply. It is unlikely that anyone would argue that this should still be the driving force for the current breeding program. More likely, long-term intractable problems such as salinity and Phytophthora should be a primary focus.

In deciding what the specific objectives of the plant breeding program should be it's helpful to determine the overall goal of the program. Three possibilities are:

Solve long-term problems through the development of new cultivars based on pest, disease and environmental stress resistance/tolerance, while maintaining the best characteristics of 'Hass', to reduce production costs, improve profitability and allow avocado production in new growing areas.

Anticipate and adapt to market changes by creating new cultivars based on improving 'Hass' to maintain current market position and develop a greater reputation for quality and reliability.

Create a new avocado market through the development of new cultivars based on taste, phytonutrient content or other characteristics believed desirable by the consumer.

Fruit Varieties or Rootstocks?

Commercial avocado groves are made up of grafted trees composed of two distinct cultivars: a rootstock with characteristics suitable to develop the root system and a scion to produce the fruit. Both components are necessary and considerable time has been spent discussing whether one should be emphasized over the other in the breeding program. Ultimately, the breeding program should result in the improvement of growers' financial well-being. Thus, the program's goal should focus on the trait(s) that would most improve profitability.

For rootstock varieties that are bred for tolerance to Phytophthora and salinity, it is relatively easy to calculate the financial impact on the industry. Some experts estimate that Phytophthora costs the California avocado industry as much as $30 million in lost production annually and $40 million is lost due to saline irrigation water. It is clear that investing in the development of a new rootstock that would halve the losses from just one of these factors would result in a significant financial gain for growers. And such a rootstock would require little marketing effort to get growers to test it and begin using it.

The financial benefit of developing a new fruit variety is not as easy to see as it is for rootstocks. This is partly because of the broader range of traits that are needed to make a fruit variety successful, and also because there are many

factors out of growers' control that determine the success or failure of a fruit variety. A new fruit variety would need to complement Hass so as not to compete with it (assuming the goal of the program is not to replace Hass), but rather to increase California's share of the avocado market. Enough growers would need to take the risk of planting the variety so that there would be adequate supply for it to gain a foothold in the market. A retailer or retailers would need to be willing to sell the fruit. And consumers would have to be willing to try the fruit.

In addition, there need to be agreements in place regarding the intellectual property of a new variety so that it is not made available to our competitors immediately, possibly defeating the purpose of having that new variety be a means of differentiation from imports. Of course this is an oversimplification of what would be needed to make a fruit variety successful, but it highlights the challenges involved. In addition, a new fruit variety may initially cost growers money if they plant it in lieu of 'Hass', which has a known market and earning potential.

A Refocus and New Direction

In 2011 a review of the CAC-sponsored plant breeding program found that only a small number of potentially commercially viable rootstock and fruit varieties have been developed in the program's more than 50 year history. The California-developed varieties being planted in the greatest numbers are 'Lamb Hass' and 'Toro Canyon'. The apparent lack of new varieties coming online illustrates the high risk nature of plant breeding.

The CAC Board and Production Research Committee have spent considerable time during their past few meetings trying to determine a path forward for plant breeding that takes into account grower needs, the future direction of the industry, and the risks and difficulties of developing new fruit and rootstock varieties. This has not been an easy task and the work will continue in the coming months; however, a path forward has been identified.

The plan that is taking shape has four primary areas of emphasis: rootstock breeding and selection; horticultural evaluation of new rootstocks and existing fruit varieties; preservation of existing germplasm; and development of genetic tools.

The first of these, rootstock breeding and selection, is relatively straight forward. This involves expanding the existing rootstock program to germinate and screen more seedlings each year for Phytophthora and salinity tolerance. The best selections may become viable rootstocks, but there also needs to be a plan in place to incorporate the best selections back into the blocks from which seeds are collected so that over time the population of seed source trees becomes more Phytophthora and salt tolerant. This will increase the chances of producing an ideal seedling to develop into the industry's new standard rootstock.

Horticultural evaluation of new rootstocks and existing fruit varieties is slightly more complex than rootstock selection. There needs to be a clearly defined point at which a rootstock moves from the initial screening process to more intensive field testing. Field testing would best be done in two phases. First is a high density, short-term planting in a Phytophthora infested soil that is irrigated with saline water. The purpose of this phase is to ensure that the tolerance observed during initial greenhouse screening tests holds up in the field. From here, the best selections should be propagated and moved on to more commercial-scale testing where traits such as tree growth, size, and yield can be evaluated, and the trees can be tested on different soil types and in different microclimates. In addition to rootstocks, existing fruit varieties and selections from within California and around the world should be evaluated for their potential to complement the 'Hass' market. These varieties should be planted under commercial conditions in a location where growers can periodically observe them and decide if they want to try some of them in their own grove.

The preservation of existing germplasm is important so that genetic diversity is not lost. Both fruit and rootstock varieties, as well as unnamed advanced selections should be planted in a location that is isolated from other avocados and is safe from development for the foreseeable future. Isolation is necessary to prevent the introduction of pests (e.g., shot hole borer) or diseases (e.g., sun blotch) that could cause this material to be lost. As molecular and genetic capabilities advance this germplasm may have traits that can be efficiently and quickly introduced into existing rootstock and fruit varieties.

The last part of a new program should be the development of genetic tools. Currently, it is not possible to genetically engineer the perfect avocado tree, and that is not what this part of the program is about. Rather, as our knowledge of the avocado genome increases it may become possible to identify the genes that are involved in certain desirable characteristics (e.g., Phytophthora and salinity tolerance). Continuing with this example, material in the germplasm preservation program could then be screened to identify which trees possess these traits. Those trees could then be propagated and planted in a block to allow for crosspollination, resulting in a better chance of finding a selection with both Phytophthora and salinity tolerance. In this way, genetic tools are used to focus the parental lines to more rapidly advance the program.

Conclusion

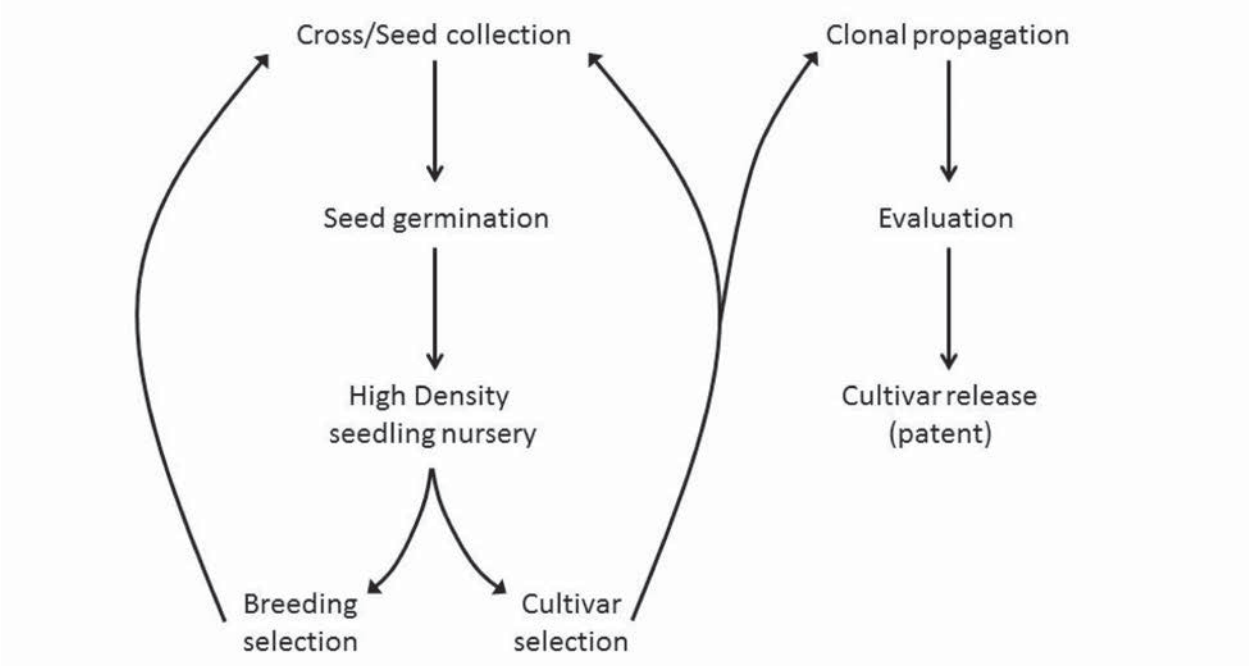
For a plant breeding program to be successful its goals and direction must be well-defined and be of a nature that is still pertinent in 10 or more years' time when the program starts to produce results. CAC has recognized that this stra-

tegic vision does not start with the plant breeding program, but rather with the challenges facing the marketing and maintenance of a credible presence in the overall U.S. avocado market. For this reason, the CAC Board of Directors, not without dissent, has defined their vision for the future as using plant breeding to address the long-term problems facing profitable avocado growing rather than to create a new avocado market based on new varieties.

Moving the California avocado industry away from a 'Hass' monoculture does have merit, but is viewed as a lesser priority in light of the challenges presented by salinity and high chloride water. In addition, there are a number of quality avocado varieties that, for whatever reason, have failed to attract the necessary interest to make them commercially viable. There currently exists an opportunity to use this backlog of varieties, some of which were once commercial varieties, to develop new niche markets for California avocados.

In summary, the recommendations of the Production Research Committee for a refocused plant breeding program are:

- To focus the program on developing rootstocks which are root rot resistant and salt/chloride tolerant
- To ramp down to a very low level of activity the breeding of new fruit types
- To collect information on the horticultural performance of existing fruit varieties and new rootstocks to allow California avocado growers to make rational investment decisions
- To commercially develop the existing backlog of fruit varieties already available to California avocado growers
- To continue to support the development of new genetic tools
- To preserve the existing avocado germplasm as the source of useful genetic diversity for future breeding efforts.



A schematic representation of how a breeding program flows. Seeds are collected, either from controlled or open crosses, and germinated to produce a seedling. The seedlings are planted into a high-density nursery for rapid screening of the desired trait(s) (e.g., salinity tolerance). This process takes from 1.5 to 3 years depending on the species. From here seedlings have three fates: discarded, have some positive traits worth keeping but not good enough to become a variety for release (breeding selection), have good potential to be a new cultivar and improve breeding stock (cultivar selection). Seedlings moving to cultivar selection are propagated (2 years) and then planted out for more detailed evaluation (may take 6 to 10 years). Those varieties making the final cut are patented, licensed for propagation and released to the industry. Depending on the species and the goals of the breeding program it may take from 2,500 to 10,000 seeds and 10 to 15 years to select one cultivar.

California Avocados Inspire Restaurant Relationships with Roots

With 25 chain restaurant promotions slated for 2013, the California Avocado Commission's foodservice program is on track to deliver record results. In a little more than 10 years, the commission foodservice program has made significant headway in raising awareness and demand for fresh California avocados on the menu. The 2012 Avocado Menu Trak study confirms avocado popularity is booming. Researchers tallied 851 menu items mentioning avocado in 2012, a whopping increase of 53 percent over 2009, and up 169 percent from 2005.

With 55 chain operations targeted as potential promotion partners in 2013, the CAC foodservice team keeps their eye on the prize as they contact and work with each chain. Sometimes it can be a challenge to identify and reach the menu decision-maker to provide concepts and support. Some chains require information about the quality, flavor and the customer appeal benefits of fresh California avocado compared to processed avocado. For operations without culinary staff, the commission provides fresh California avocado menu concepts designed to complement their current offerings. Finally, when a new fresh California avocado item is ready to launch, CAC supplies the Hand Grown in California logo art for use in promotional materials along with additional marketing support.

Anatomy of a Fresh California Avocado Promotion

1. Target chains currently using or likely to use fresh California avocado. Develop working relationships through grove tours and industry events.
2. Assist with product education and/or sourcing. Provide menu consultation and concepts (e.g., *Avocado Ranch Dressing*).
3. Provide the Hand Grown in California logo and support Limited-Time-Offering (LTO) marketing outreach (Free Standing Inserts, Point-Of-Purchase, social media and e-blasts)
4. Follow up with chains to reinforce partnership and maintain momentum for ongoing promotions and future seasons.

One example of CAC's foodservice promotion success is Denny's, a program that began in 2012. Denny's regional marketing manager, Brian Tademy, was looking to upgrade the quality of Denny's menus. He approached the commission regarding the opportunity to add fresh California avocado to their summer "Tour of America" promotion. With assistance from CAC, Tademy succeeded in adding two new fresh California avocado items (*Huevos Rancheros* and *Malibu Fish Tacos*) to the Denny's California menu, and the Hand Grown in California logo to the marketing materials. The commission foodservice team also helped Denny's optimize avocado overstocks in slower units by developing a proprietary *Avocado Ranch Dressing* to offer with existing salads.

As a result of the promotion's success, Denny's changed its avocado spec to fresh, and Denny's national jumped on the California avocado promotion bandwagon for 2013. This year, Denny's customers have been able to enjoy "hand grown California flavor" in a *Bacon Avocado Burrito* and *Cali Jack Turkey Burger*, as well as having the option to add avocado to any Denny's menu item for only $1! The Denny's promotion serves as an example of a strong operator-supplier relationship allowing other chains to see the company featured in the latest CAC foodservice ad campaign.

"Having California avocado foodservice promotions introduce and reinforce usage ideas at the restaurant level creates an invaluable boost to the Commission's marketing efforts," according to Jan DeLyser, CAC vice president of marketing. "Restaurant customers who enjoy a fresh California avocado item while dining out will look to repeat the experience at other restaurants and at home."

A 2013 Line Up of Outstanding Operator Promotions

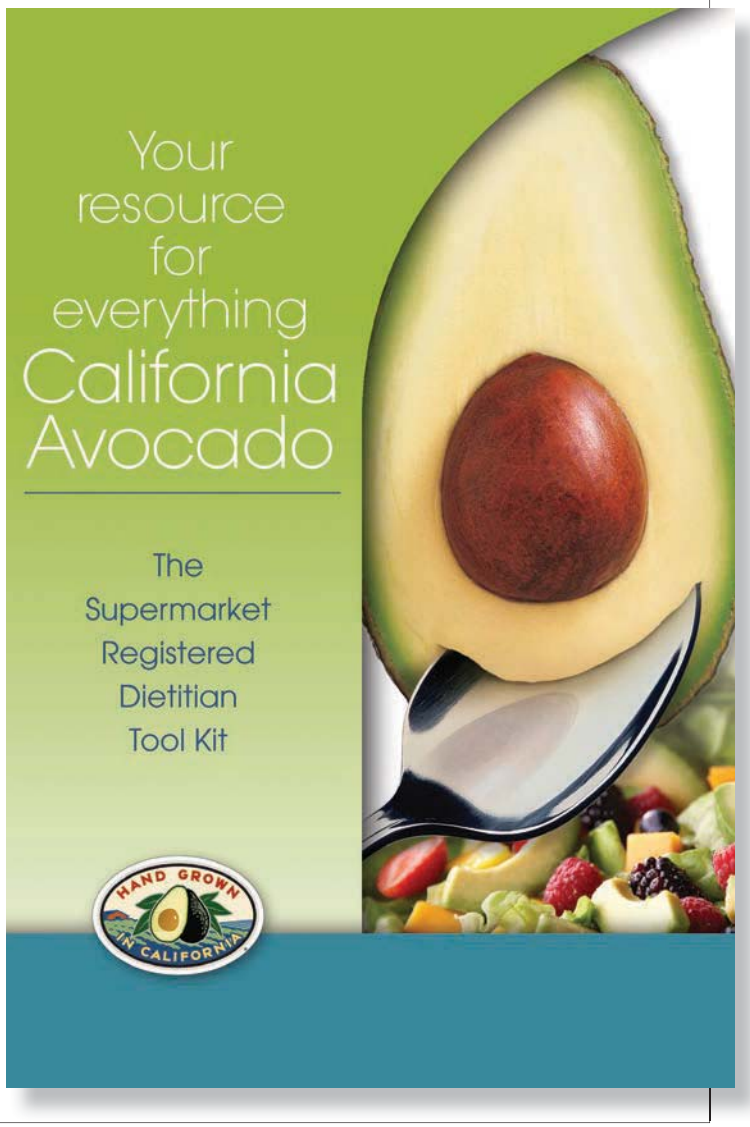
Applebee's	Fresh Flavors of the Season Items: *Margarita Queso Chicken & Shrimp Salad*
El Pollo Loco	New Signature Avocado Burrito! Item: *Bacon Avocado and Chicken Burrito*
Which Wich	Are You an Avocado Aficionado? Item: *Tomato & Avocado Wich* or add California Avocado to any Wich
Shari's	Fresh California Avocados at Breakfast, Lunch and Dinner Items: *Volcano Burger, Strawberry Chicken Salad*
zpizza	Fresh Summer Flavor Item: *Avocado Arugula Salad*
Habit Burger	Santa Barbara Style Item: *Santa Barbara Style Charburger*

Nutrition Tool Kits Build In-Store Ambassadors for California Avocados

Supermarket Registered Dietitians (SRDs) are recognized as the newest power player in food retailing. In the January 2013 issue of *Produce Business,* Phil Lempert, food-trend observer and chief executive officer of the newly formed Retail Dietitians Business Alliance, estimated the number of registered dietitians in supermarkets currently ranges from 500 to 600 and predicted it will more than double by the end of 2014. An article exploring the value of SRDs at retail in *Ad Age* (April 2013) attributed the trend as "…another sign that consumers are demanding more from their food providers."

With customers increasingly turning to their SRD for shopping guidance, these in-store health and nutrition professionals are a ripe resource for information about California avocados, their nutritional benefits and new usage ideas. This year, the California Avocado Commission developed "*The Supermarket Registered Dietitian Tool Kit – Your Resource for Everything California Avocado*" to provide SRDs everything they needed to become in-store ambassadors for California avocados.

The SRDs have real value to consumers and their role is also of great value to growers. Annette Maggi, chair of the 400-plus member supermarket subgroup of the Academy of Nutrition and Dietetics' food and culinary professionals practice group, was also quoted in *Produce Business*, "Supermarkets provide an ideal location for nutrition education and health promotion for a variety of reasons. Perhaps most important is the fact that the grocery store is where consumers make decisions about foods such as fresh produce that meet their health needs."



Jen Haugen SRD Hy-Vee

CAC is one of the first industry organizations to recognize the potential of the SRDs and holds a leadership position in working with them to communicate to consumers. CAC's SRD Tool Kit was created in response to input from last year's program survey. Content in the kit included key California avocado messaging and initiatives such as, "Wake up to Breakfast with California Avocados" and "American Summer Holidays." SRDs typically plan their content and activities well in advance, so the tool kit was distributed just before the start of the California season.

The tool kit features nutrition education and usage materials including an illustrated avocado in-store demo information page showing the Cut, Nick & Peel Method, cooking class and demo instructions as well as new recipe booklets.

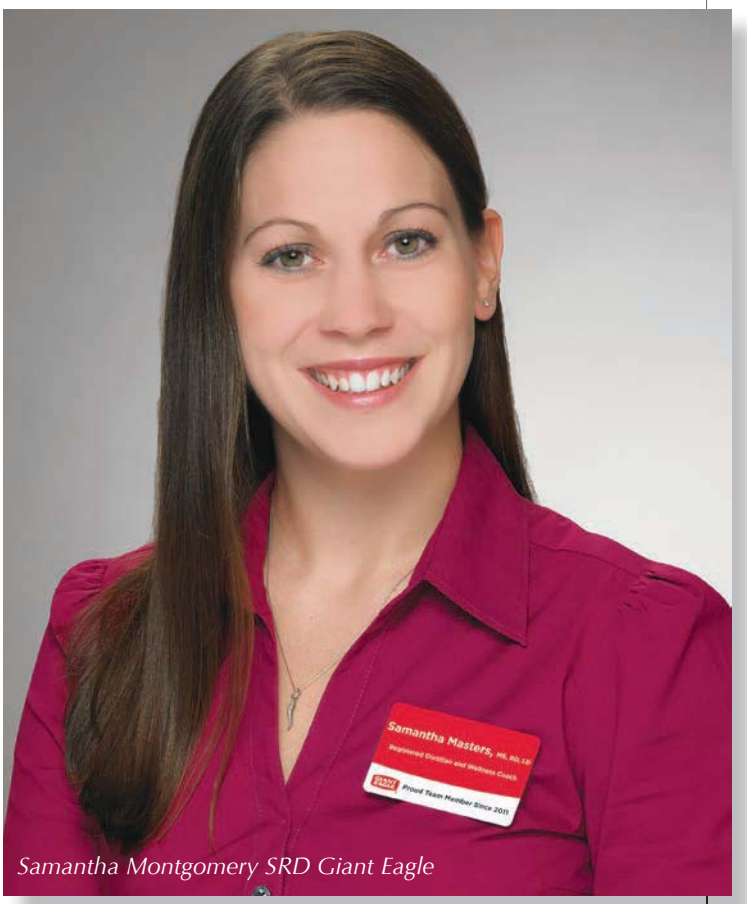
Newly developed breakfast recipes were popular with the SRDs this year, who were eager to share morning usage ideas with their customers. Samantha Montgomery of Giant Eagle, a grocery store with more than 200 locations in the Northeast, wrote to CAC after receiving her tool kit: "Thank you for the AMAZING avocado kit you put together for the retail dietitians! I wanted to ask you if it was possible to send me 50 copies or so of the California Avocado Toast with Fried Egg recipe for me to sample and pass out during an in-store demonstration."

While their mission is to assist shoppers, SRDs are active on social media and frequently appear as regular contributors to local newspapers or as guests on local radio and TV shows. To help the SRDs secure interviews, CAC included pitch letters proposing segment ideas that feature California avocados for them to personalize and send to producers. The commission also provided them with social media posts to share with their followers as well as in-store announcements.

Jen Haugen, a registered dietitian of Hy-Vee, a grocery store with more than 230 stores in the Midwest, sent the following to CAC: "I wanted to express my sincere appreciation of the supermarket RD tool kit I recently received highlighting California avocados. Thank you for making my job easier and more fun! I plan to use it for a weekly television spot I hold as well as newspaper columns and blog posts. And of course an in store demo/display. Thank you for putting this together – it is a tremendous resource!"

True to her word, Haugen included California avocados in her Cinco de Mayo column in the Austin Daily Herald and in her health and nutrition segment seen on Austin's KAAL-TV (ABC) morning news.

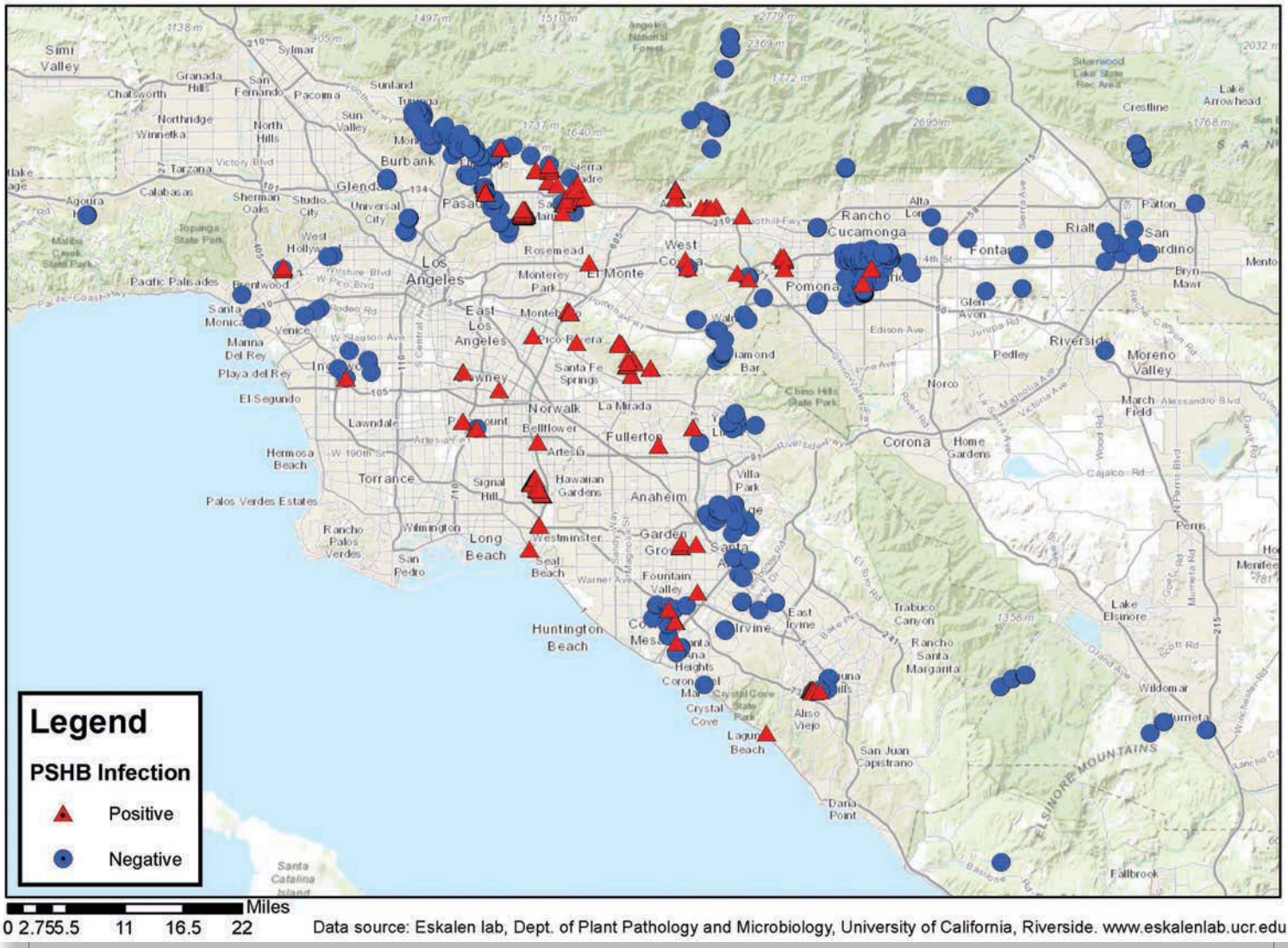
"CAC's SRD Tool Kit creates opportunities for our retail customers to sync up their nutrition communications with their produce promotions to benefit the California avocado industry," said Jan DeLyser, CAC's vice president of marketing. "The kit provides a wealth of information and ideas in an easy to use format so that SRDs can provide consumers with the latest nutrition information and plenty of usage ideas."



Samantha Montgomery SRD Giant Eagle

UC RIVERSIDE UNIVERSITY OF CALIFORNIA

Polyphagous Shot Hole Borer/Fusarium Dieback Distribution Map in Southern California (August 27, 2013)



Polyphagous Shot Hole Borer/ Fusarium Dieback Update

By Tim Spann
Research Project Manager

Drs. Akif Eskalen and Richard Stouthamer, UC Riverside, are continuing to survey for the polyphagous shot hole borer (PSHB) and monitor its spread. They are utilizing city and county street tree maps to identify where the beetle's preferred hosts are planted so they can efficiently track it through Southern California's urban areas. Their most recent map of survey results from August 27, 2013 shows that there has been movement to the south and northwest. To the south, infested trees are now found through Orange, Santa Ana and Costa Mesa, and there have been a number of finds between Aliso Viejo and Laguna Hills. These latter two locations represent a significant move to the southeast and put the known infestation boundary very close to commercial groves. The beetle has also moved on the northwest front, moving north of Glendale towards Burbank, and in the area immediately north of Brentwood.

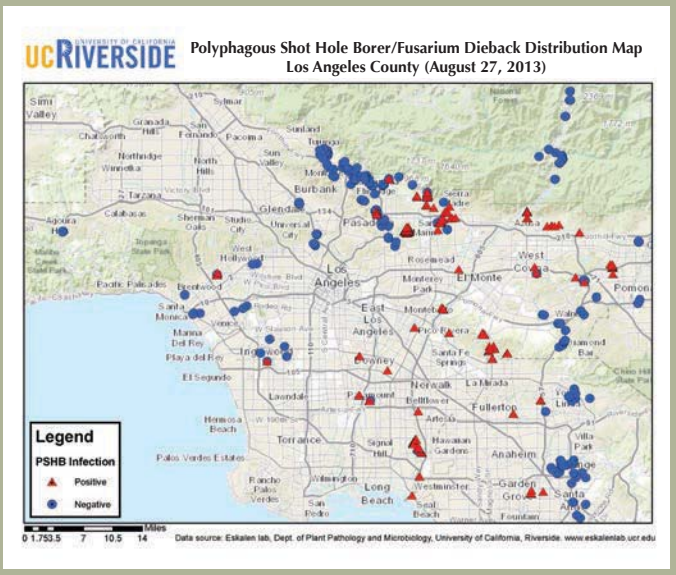
As mentioned in previous articles, there are three fungi now known to be associated with PSHB: *Fusarium euwallacea*, *Graphium* sp., and *Sarocladium* sp. (formerly *Acremonium* sp.). Dr. Eskalen's team is continuously learning more about these fungi and their detailed relationship with PSHB. For example, his team now knows that the primary food source for the adult beetles is the *Fusarium* and for the larvae it is the *Graphium*. In addition, it's believed that the *Sarocladium* is antagonistic to other fungal species and helps to keep the galleries free of invading fungi. Most recently, Dr. Eskalen has questioned why there is no fungal growth in the gallery immediately surrounding the beetle eggs. He believes that there may be a bacteria involved, which keeps the fungi from consuming the eggs. By understanding this unique and delicately balanced ecosystem it may be possible to find the system's Achilles heel and use that in controlling this important pest.

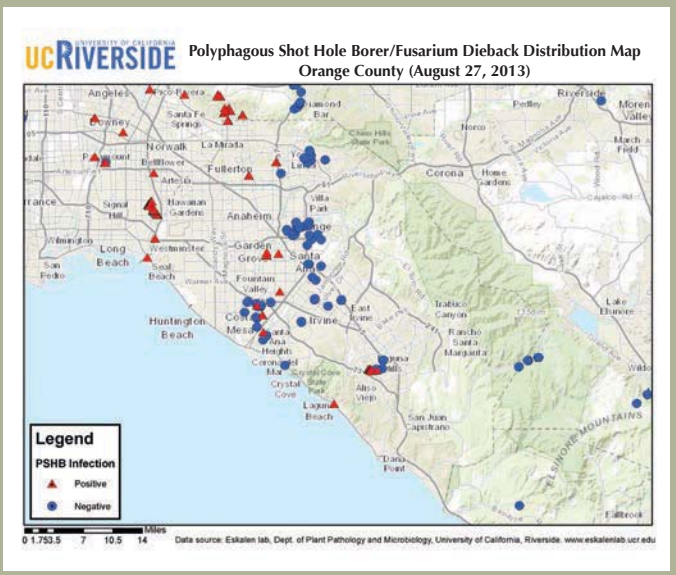
Dr. Tim Paine, UC Riverside, and his team have been actively working to understand the PSHB life history and have been investigating control methods. For control they have been testing solarization and pesticides. In solarization studies with infested logs they found that clear plastic helped to reduce beetle numbers more quickly than black plastic, but after 12 weeks the reduction in beetle activity was similar for the two types of plastic. Although both types of plastic substantially reduced beetle populations, neither completely eliminated the beetle after 12 weeks.

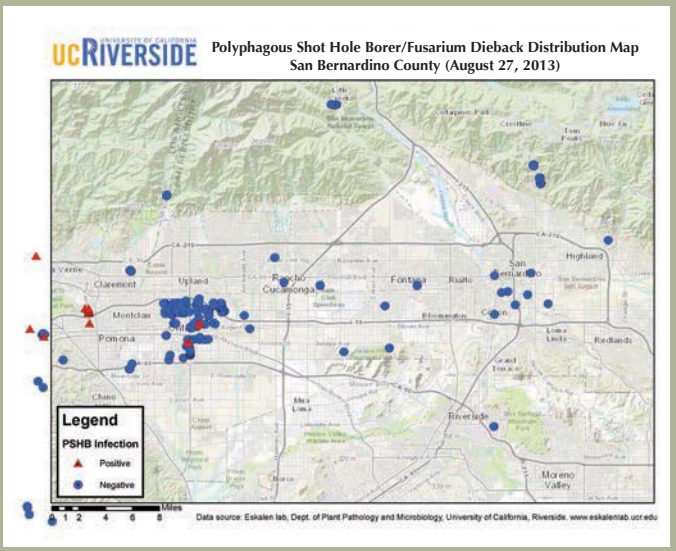
In pesticide trials, Dr. Paine's team has been surface treating 1 foot logs of uninfested castor bean with Safari 20 SG (dinotefuran), Onyx (bifenthrin) and Danitol (fenpropathrin). The treated logs are then placed in buckets with sections of infested castor bean as a beetle source. The treated logs are checked for attacks at two week intervals for eight weeks. In these studies, Onyx performed the best, allowing the fewest beetle attacks for six weeks; however, none of the pesticides were effective at preventing beetle attack at eight weeks.

In their studies of host preference, Dr. Paine's team found that in field collection of 20 species seven stood out as having the highest attack rates and gallery densities: red willow, box elder, Japanese maple, castor bean, coast live oak, camellia and palo verde. In bucket studies where clean logs were exposed to attack, California sycamore, avocado and liquidambar had the highest attack rates. It's worth noting that in their studies 'Zutano' has been the main avocado variety examined. They are continuing to collect samples of other avocado varieties to see if there are any differences in preference.

The researchers working on this important pest are making advancements at a rapid pace. For the latest information and survey maps you are encouraged to visit Eskalen Lab's PSHB website at http://eskalenlab.ucr.edu/avocado.html.







By Tim Linden

South Africa:
Up Close and Personal

In her role as the 2012/13 Produce Marketing Association (PMA) chairman of the board, CAC Vice President of Marketing Jan DeLyser recently had the opportunity to tour agricultural production areas and meet with representatives in the South African produce industry.

"I was very impressed with the innovation, the use of technology and the hospitality of everyone I met," she said after her mid-August visit. "The vertical integration of the companies we had the opportunity to meet with is noteworthy. Many of the organizations have nurseries, growing operations, packing facilities and even processing capabilities."

DeLyser was in South Africa representing PMA at a Fresh Connections conference and also was a speaker at the produce industry event with more than 300 in attendance. Her presentation highlighted the industry's success in expanding demand for California avocados in an increasingly competitive market while achieving grower value. She addressed U.S. trends and consumer interest in local production with an interest in knowing who, how and where the food they eat is produced. Though South Africa has a mature avocado industry, per capita consumption within the country is low. In fact, South Africa has the lowest consumption rate of any of the top 15 avocado exporting nations in the world. The country exports about 60 percent of their avocado production as its per capita consumption is less than 1 kg annually.

"Their consumption is very different from the U.S. where the Hass variety represents more than 95 percent of consumption. In South Africa the preferred varieties are the green skin varieties and the industry acknowledges it has a tremendous education opportunity/challenge when it comes to the Hass variety with their domestic consumer," DeLyser said. "They export the great majority of their Hass production around the world."

South Africa has filed for access to ship Hass avocados to the U.S. marketplace. DeLyser said grower representatives are working with their government officials as well as the U.S. Department of Agriculture to establish protocols under which the fruit can be exported to the United States. If and when that happens, South Africa's season pretty much mirrors California's season.

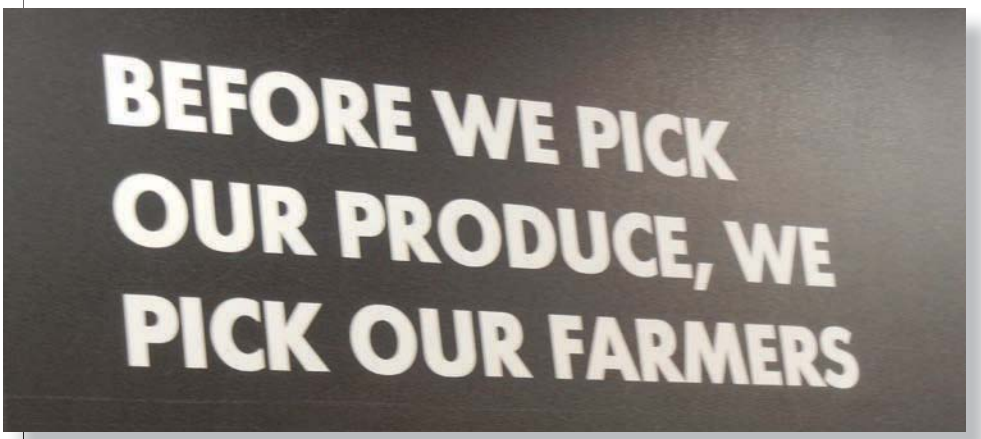
During her visit, DeLyser met with South African avocado association leaders and had the opportunity to tour the facilities of several different avocado companies including Westfalia, ZZ2 and AFRUPRO. "In December Westfalia built and opened a value-added packing and ripen-

ing facility in Johannesburg for the purpose of enhancing their service level to one of their key retail accounts while looking to expand their business in the area. Westfalia also produces avocado oil as well as frozen and fresh guacamole under their brand name," she said. "I met with their marketing team in Johannesburg, toured the new facility and they presented their consumer and trade marketing programs. The following day we were in Tzaneen and had the opportunity to meet with their operations and research folks at their headquarters."

These firms are committed to finding innovative uses for avocados and in developing byproducts for use in South Africa and around the world. DeLyser said that based on her meetings she felt the companies have well thought out global strategies to increase their participation in the world market.

DeLyser and the PMA team also had the opportunity to visit a number of retail stores, a retail warehouse and the Cape Town Wholesale Market. She said it was interesting to see how South African retailers promote and sell green skin varieties. DeLyser said it was timely as CAC begins exploration of the possibilities to extend California's availability in the U.S. market with some of the heritage avocado varieties. She noted the different packaging and number of SKU's many retailers offered; from a poly bag sold by weight, to bulks displays with mixed varieties as well as overwrapped tray-packed avocados with one, two, three or four count options. Another unique aspect of the South African retail industry is the "walker markets". These alternative markets have grown to third in volume delivery of fruits and vegetables to consumers in the country and demonstrate resourcefulness and entrepreneurial spirit. These markets literally take the product to the street corners and are popping up throughout South Africa.

"The trip was a great opportunity to learn about their industry and discuss opportunities for possible cooperation in production research moving forward with cultivars and root stocks to maximize investment through trials," according to DeLyser." The South African plant researchers are doing extensive tests on root rot and salinity resistant rootstocks and there appears to be ample opportunity for collaboration as growers around the world try to solve various cultural problems." The CAC marketing executive also saw several new varieties being tested that show promise and witnessed some experiments with high density plantings.



This photo was taken in a South Africa retail produce department.

By Tim Linden

2013: Better Than Expected
2014: Back to Normal

A survey of several different marketers of California avocados on both the current season and the next one, revealed some common themes: 2013 was better than most expected and the 2014 crop is going to be significantly smaller.

A Look Ahead

"It looks like next year we just may be back to normal," said industry veteran Dave Culpeper of West Pak Avocados Inc., Temecula, CA. "We've had back-to-back big crops, which is very unusual. It looks like the trees are going to take a break in 2014. "

Culpeper, who made his prediction in early September, cautioned that it was too early to be extremely accurate on tonnage, but he still took a guess. "We think it (tonnage) is going to be down quite a bit. It looks like in the 350 (million pound) range right now."

He said trees naturally shed some of their crop in the August/September time frame, so several weeks down the road estimators will have a much better idea. He said that the trees were currently not shedding much fruit which is another indicator of a light crop.

Ron Araiza, director of sales for Mission Produce Inc., Oxnard, CA, used the same number when guessing the 2014 crop. "There's a lot less fruit out there. We think it looks like it's right around 350 million pounds."

He said Mother Nature will still have a lot to say about the final volume when the numbers are tallied in late 2014, but he was pretty confident with the 350 million pound figure. "Our estimators are usually pretty darn close."

Grower Mike Mobley of Rancho La Paz in Ventura County, who is profiled in this issue, said a survey of his groves shows some trees with a very, very small crop. In general, he had excellent yields this year and expects 2014 to be not so good. He said some trees were carrying as few as 25 percent of the volume that they had this year.

A Look at 2013

This year's pre-season expectation has most growers and handlers looking back at their season with much rosier glasses than they thought they'd ever be wearing.

"It is a much better season than we expected," said Araiza of Mission in late August. "The small fruit gave us problems at the beginning of the season but we've had a very good run in July and August."

It is no secret that a preponderance of small sizes kept the f.o.b. and grove price for that fruit very low during late spring and early summer. Some growers just had to pull that fruit off their trees and had to settle for low prices. The silver lining for those growers may be that they helped their trees set a bigger crop for 2014, where it appears reduced volume may create a favorable price profile.

A tremendous amount of volume was moved through the retail pipeline in early July – including almost 100 million pounds around the 4th of July – which created a much better marketing program for the rest of the season. In August, larger conventional fruit was returning in the neighborhood of $1.20 per pound to growers with little let up in sight as the season winds down. And even small fruit was garnering a return far greater than what was realized early in the season.

On September 9, Culpeper of West Pak said rain was continuing to fall in Mexico hampering production and giving growers with fruit a "demand exceeds supply" situation. He estimated that California was down to the last 15-20 percent of its crop and prices would remain good. "The growers with fruit left are wondering if they should strip their groves or hold out a little bit longer in the expectation that the market would rise again."

Araiza estimated that when all the shipping is done, the 2013 crop will yield right around 500 million pounds for an unprecedented two years in a row. In fact, a check of historical data shows that the total volume for the past two-year cycle is the largest ever for the California avocado industry.

As always it was a season dominated by expectations with those at the end of the year far exceeding those at the beginning.

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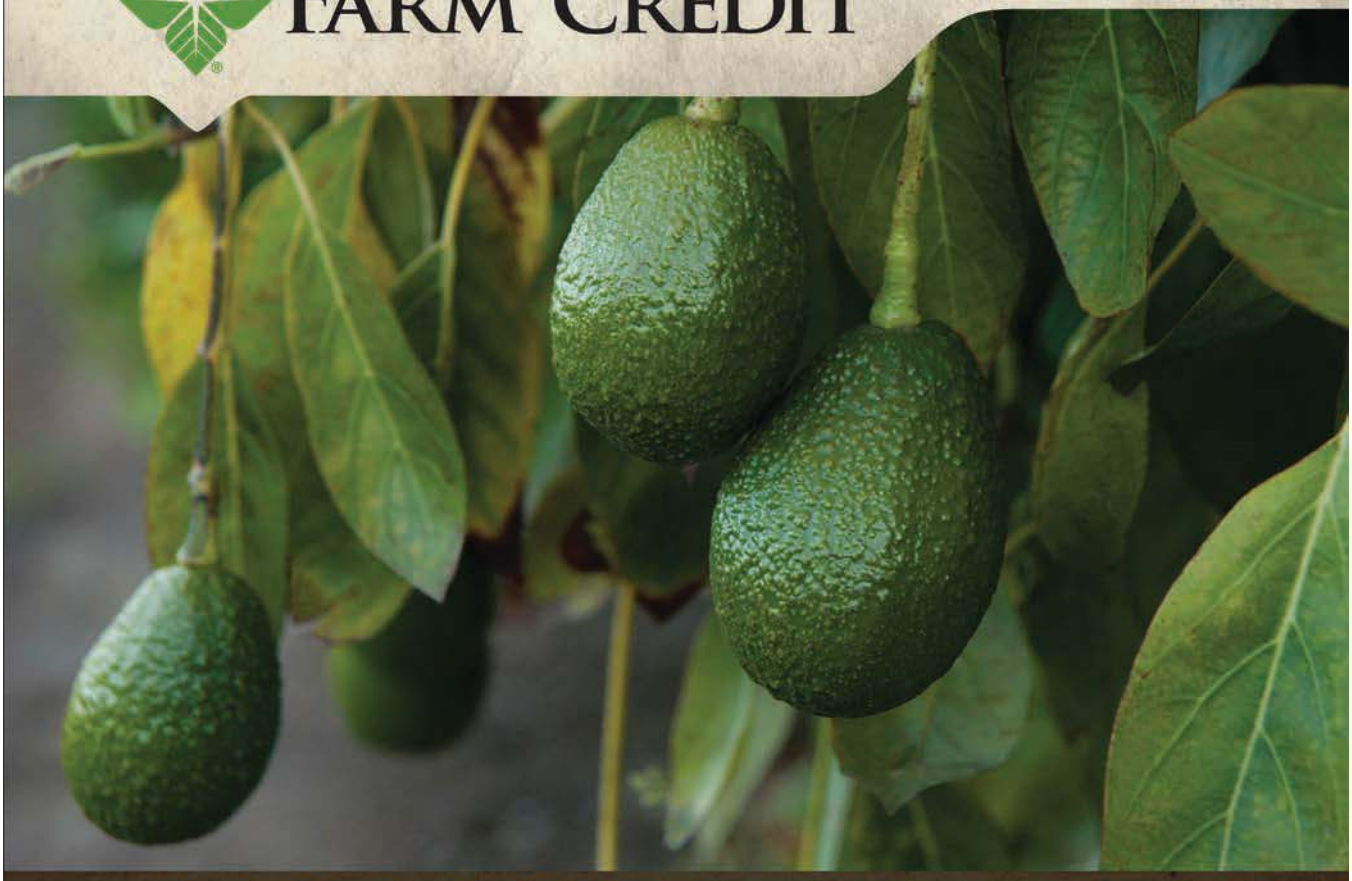

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CULTIVATING GROWERS

When Joe Spychaj's longtime friend and neighbor, Bob Obole, persuaded him to buy the grove across from his, he found old wooden Index boxes in the shed showing many years of use. He also had an old Index field sign from the 1950's, on the wall of the shed. So when his neighbor Bob, suggested Joe use Index Fresh for packing it was a natural.

"Sure, at first I checked prices with the other guys but Index Fresh was always on the dime or a little better. Now, I watch my son's avocado prices (from another packing house), and I almost always beat him," Joe says. "Index's returns are so consistently better, I don't even worry about prices now."

JOE SPYCHAJ
Avocado Grower

"Index Fresh taught me how to farm, and I increased my yield, so I guess I grew my place right along with Index over the years," says Joe. "If it wasn't for the Index Fresh people, I probably wouldn't be in business now with all the cost increases over the years. The new Index Fresh Grower Seminars have been really helpful too."

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Santa Barbara & San Luis Obispo Counties:
Giuseppe Bonfiglio (805) 341-3059

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