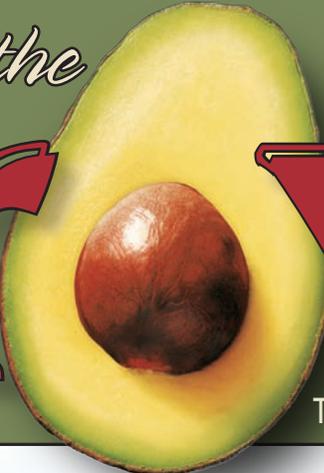
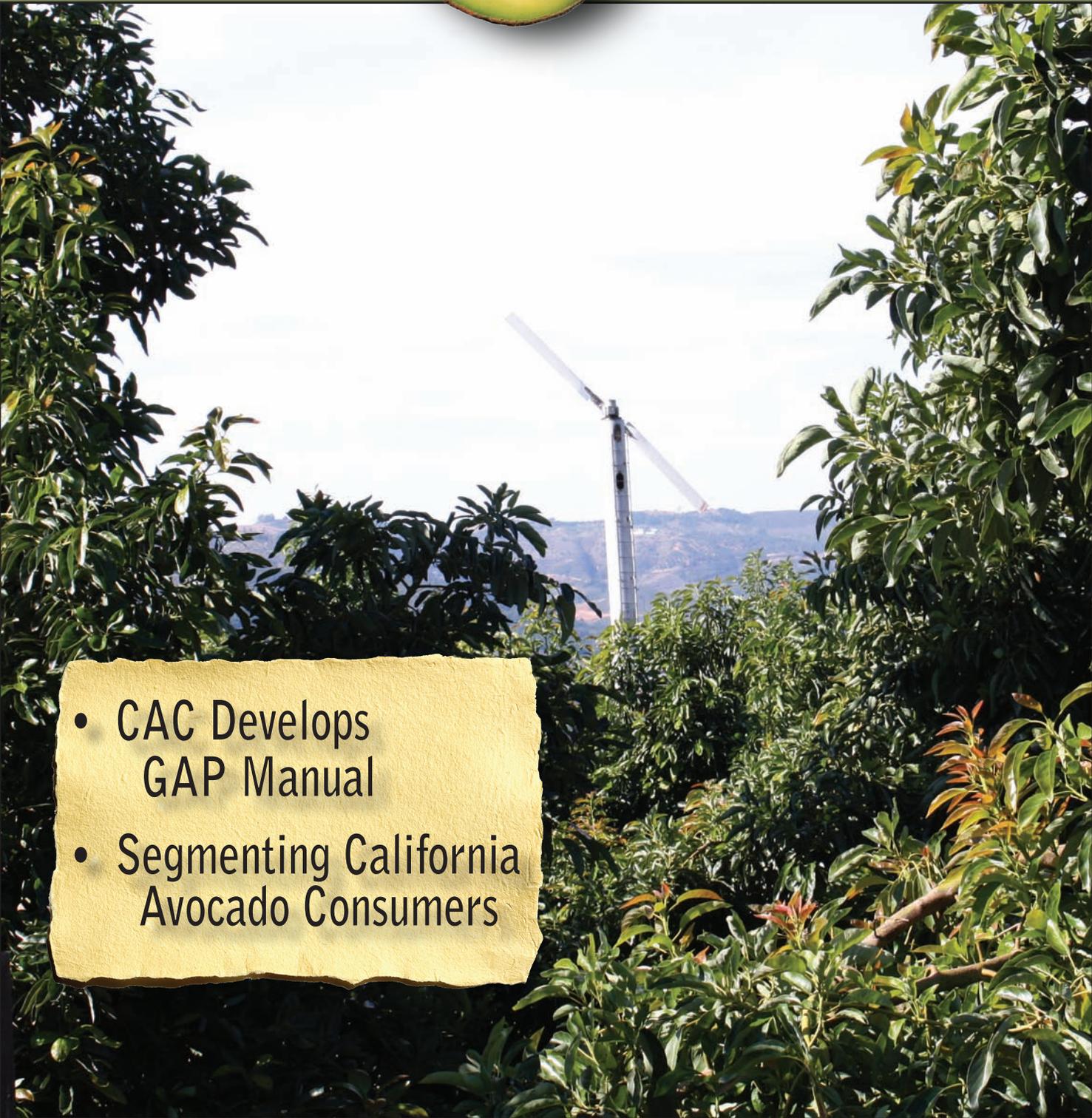


From the
Grove



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- 
- CAC Develops GAP Manual
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Grower Profile

John Cornell & Jim Brown
Temecula, CA

22

From the **Grove**

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Number 2

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Message from the President

The Time is Ripe for GAP

The tragic cantaloupe situation that has played out over these past several months proves once again that in the fruit and vegetable industry, you are only as strong as your weakest link. One cantaloupe grower-shipper in Colorado, who, according to the FDA investigation, did not employ good agricultural practices, has taken down an entire commodity, at least for the time being.

While the CAC board could not foresee this specific situation when deliberating what role the Commission should play in assisting the California avocado industry to become Good Agricultural Practices (GAP) certified, food safety concerns have been top of mind for some time. The board's decision to take a leadership position in the development of an avocado-specific GAP program turned on three overarching concerns: 1) food safety enhancement, and the growing list of retail customers who are demanding GAP-certified produce; 2) the reality that government regulations are coming down the pike; and 3) an analysis of what avocado suppliers in other regions are doing.

The possibility of a food safety incident is always before us, despite the avocado's inherently low risk compared with other produce. Developing good agricultural practices specifically for the California avocado grower is a proactive step to ensure that we ship safe, wholesome avocados to consumers. The voluntary standard CAC has developed has been accepted and approved by the USDA, which adds significant credibility to the CAC-GAP program. We encourage growers to adopt these practices and subject their operations to a "farm

review" audit by USDA inspectors to certify that they are in compliance.

Most avocado growers already take many of the steps described in the CAC-GAP manual. Documenting those practices through routine audits should help reduce risk while reassuring our customers that our product is safe. Again, we are only as strong as our weakest link, and while this is a voluntary program, we hope that every grower will take a look at their own procedures and compare them with the best practices. USDA inspectors, who are trained and certified to carefully audit against the GAP manual, can help any grower tighten up their operations if there are any areas that need improvement.

Thus far, California avocados have a good track record when it comes to food safety, which makes this a perfect time to get ahead of the curve and be prepared for what the future might hold. Earlier this year, Congress enacted the Food Safety Modernization Act, and USDA and FDA are currently working on specific regulations for the implementation of the Act within the fresh fruit and vegetable sector. CAC is hopeful that regulators will recognize our industry's own efforts to reduce food safety risks before considering whether mandatory measures are required.

We also know that some of our competitors in the U.S. market are well down the path of being GAP certified. The robust EuroGAP program is appealing to some customers, and if we are to remain the preferred avocado in the U.S. market, we must be willing to demonstrate that we have our customers' concerns in mind. Using food safety as a market-



Tom Bellamore

ing advantage is never a good idea, but we certainly don't want customers looking to imports for GAP-certified fruit, if we can meet demand for that same product right here in California.

We realize that implementing a GAP program adds yet another cost to a grower's operation, and that some growers are unwilling to take on additional expense without promise of a higher return at the packinghouse. To address this situation, the CAC board has set aside funds in the 2011-12 budget for a GAP incentive effort. Criteria for the program are still under development, but the basic premise is that on a first come, first served basis about 1,000 growers will be reimbursed up to \$300 for one-time audit costs. If the program is successful, consideration will be given to extending it, so stay tuned for further details.

Periodic food safety incidents involving produce virtually assure that good agricultural practices will become increasingly important in the future - to consumers, retailers, regulators and competitors. As an industry, we cannot rest on our past record to convince these stakeholders that our product is safe or better than the competition. We must be willing to demonstrate that fact, and doing so carries a cost. It is fast becoming a necessary cost of doing business if we are to maintain the premium image of California avocados. 🥑

Get to Know Our Commission

I am Ed McFadden, a California avocado grower. I manage and own groves in the Fillmore area of Ventura County. On the CAC Board I represent the newly-realigned District 3, which stretches from Riverside County through the avocado and citrus groves where I was raised in Orange County to where I now farm in Ventura County. I am a proud California avocado grower first and foremost and am honored to represent growers from my district and all of California on the CAC.

In the early '90s I started attending CAC meetings because I wanted to see how our assessment dollars were being spent and to get a better understanding of the U.S. avocado market. At the same time I began attending Production Research Committee meetings because I wanted to learn the latest production techniques. There is an incredible amount of avocado cultural and marketing information available to us through CAC. Have you been to one of Dr. Jonathan Dixon's seminars? Jonathan is the CAC Research Program Director and is working with the CAC Production Research Committee, chaired by Shane Tucker, the CAC Board and growers to make sure that our research meets the needs of California growers. Take the time to attend a seminar, I guarantee you will come away with new ways to improve your growing techniques.

Need to read up on the latest CAC funded Production Research? Check the CAC grower website, www.CaliforniaAvocadoGrowers.com, for a wealth of information and links. Click on the link to the Hofshi foundation's Avocadosource.com for the best collection of worldwide avo-

cado research information *anywhere*.

CAC has been funding cutting-edge avocado research for decades. It is ours to use to improve our groves.

I recommend that you get to know CAC President Tom Bellamore's team. Come to the annual meetings this year. You will be impressed. Tom has been spending a lot of time in the field "rubbing elbows" with growers. If you attended the meetings this year you heard reports from various members of his staff. A few years ago after taking over as head of staff, Tom reorganized CAC, making difficult cuts and reducing CAC employees from 18 to 13. As part of making CAC a lean, mean machine he moved the organization to the current offices, negotiating a lease that saved us growers big bucks. Thanks to Tom and his team, over 70 percent of the current CAC budget is used for marketing and production research.

Speaking of marketing – you really need to meet and listen to CAC VP of Marketing Jan DeLyster. Jan is recognized throughout the produce *world* as being the best at what she does. In October, at the PMA Fresh Summit Convention, Jan was presented *The Packer's* "Produce Marketer of the Year" award. CAC's innovative programs are recognized throughout the world as being cutting edge. As a grower, I feel pride every time I see one of CAC's "Hand Grown In California" emblems in an advertisement or read one of our new billboards, kiosk signs or print ads. All growers probably know at least one of the grower volunteers who participated in the many CAC radio or print ads promoting our product. I volunteered my voice for one of the early radio ads and was pleasantly



Ed McFadden

surprised by the exposure and attention those ads received.

Food safety is on everyone's mind these days. With strong industry support and input, CAC Director of Issues Management Ken Melban is bringing the CAC Good Agricultural Practices Manual to the field in meetings with growers, handlers and farm labor contractors. During this past year our manual was developed by a CAC committee of growers and handlers under the leadership of Chair Scott Bauwens. The day has arrived when the produce industry is beginning to require fruit sourced from GAP-certified groves. Early this year I had the groves I work with GAP-certified by a third party auditor. Many of the food safety concerns addressed by this type of audit reflect the problems associated with leafy greens, not a crop that has a peel and is harvested from a tree. If you are not already GAP-certified, I recommend that you go to the CAC website and download the CAC-GAP manual and Pre-Audit Grower Checklist. Talk to Ken, talk to your handler; every California grower needs to be responsible for reducing food safety risks for the industry and for our own groves.

The California Avocado Commission is *our* commission. Get to know our staff; take advantage of the wealth of knowledge and services such as the GAP manual that our assessment dollars fund for us to use. 🥑

CAC Develops GAP Manual

By Tim Linden

With improving food safety top of mind, the California Avocado Commission has developed a Good Agricultural Practices (GAP) manual for California avocado growers and is now moving into the outreach and education stage to get this manual in the hands of the grower community and launch the voluntary program.

The CAC-GAP manual, which was crafted through the collaboration of farmers and handlers, is intended to meet all the essential practices for growing a safe avocado without any excessive measures. "We wanted to make sure the manual was specific to California avocados and provided guidelines for maintaining our current high-level of safety without calling for any unnecessary requirements that don't provide any additional safety benefits," said Scott Bauwens, CAC-GAP Committee chair.

The CAC-GAP program is completely voluntary and intended to assist growers should they decide to pursue becoming GAP certified. Toward that end, CAC has allocated \$300,000 in its 2011-12 budget to help defray individual grower costs. Initially, up to 1,000 growers can qualify for reimbursement up to \$300, with the funds available to growers who have completed GAP certification on a first come, first served basis.

CAC undertook this assignment in direct response to the signing into law of the Food Safety Modernization Act (FSMA) by the President in January of 2011. The law gives the Food & Drug Administration (FDA) a mandate to improve the safety of the U.S. food supply. This responsibility for the oversight of America's food safety covers the entire supply chain - from growing to harvesting to handling and distribution. Ultimately FDA plans to create a paper trail for the product from the field to the retail or foodservice outlet where it is sold to consumers.

The FDA is still formulating the regulations governing this new law but eventually, under the FSMA, all farmers are expected to show that their operations are utilizing "safe" growing practices through some type of GAP audit certification. Add to that the already oft-heard request by many retailers and receivers that shippers provide GAP certified products, and it is obvious that moving in that direction is the prudent thing to do.

The food safety issue is not going away. The recent cantaloupe contamination problem where one Colorado shipper, who wasn't following good agricultural practices for that commodity, caused well over a hundred illnesses and close to 30 deaths underscores the need for an industry-

wide program. Avocados are considered a low risk commodity when it comes to food safety. The thick outer skin does offer some protection against contamination, but the industry is not immune. Under the wrong circumstances, a problem could surface.

By developing this manual ahead of the curve, CAC has attempted to get in front of the FSMA regulations and help shape the GAP standards as they relate to avocados. By utilizing this approach the Commission is hopeful that the California avocado industry will not be burdened with "ominous" standards that do not improve the safety of the fruit.

GAP from CAC

The CAC-GAP manual addresses the Farm Review (growing) aspect and is intended to provide farmers with guidelines that, when followed, will meet the USDA GAP standards. "The CAC-GAP manual has been developed by avocado farmers who are intent on doing all they can possibly do to maintain California avocados already high-level of safety," said Ken Melban, CAC director, issues management. "The reality is most California avocado farmers are already well down the road towards GAP certification with their current practices, and this manual provides a fairly simple, straightforward road map that allows them to document those practices," said Melban.

The CAC-GAP has been reviewed by many in the industry, including growers and handlers, and it has been very well received. This support among the handlers is essential as California's avocado industry moves forward in GAP certification. "Our hope is that a substantial portion of California's avocado acreage will be GAP certified by the end

of 2012," said Tom Bellamore, president of CAC. "I know this is ambitious, but I believe with the support we've received from the handlers and the user-friendly format of the manual, growers will take the necessary steps to become certified."

One grower sold on the concept is Dan Pinkerton. "I was the first grower to be certified under the Avocado Specific USDA/CDFA GAP Audit Program," he said. "I found the GAP Manual provided by the California Avocado Commission to be straight forward and practical. The fact that the manual was specific to avocados was important to me and I like the USDA Seal on my certificate."

Pinkerton is a firm believer of the weakest link theory and wants all growers to follow suit. "I encourage every California avocado grower to contact his packer/shipper or Ken Melban at the California Avocado Commission to get started towards achieving GAP Certification."

Ed McFadden, who manages 327 acres of avocados in Ventura County, is another backer of the concept. "We went through a third party audit this year because the CAC-GAP wasn't ready yet," he said. "When we recertify next year, we will use the CAC-GAP manual."

McFadden said this year's audit proved to him that the company was already doing most of what it should be, "but it helped us tighten up a few things. Mostly it forced us to put everything in one place. We already were complying with the paperwork requirements and doing what we need to do but this helped organize us a little better."

McFadden is looking forward to working with the CAC-GAP Manual next year because he says it is very specific to avocados. He indicated that his third party audit was more general in nature.

He also encouraged every grower to go through the auditing process as a way to help protect the industry against any type of food safety disaster. "If we do have a problem it will be much easier to trace it back if everyone has been audited."

In addition to the CAC-GAP manual, a Pre-Audit Grower Checklist has been created by the Commission that will provide growers with a step-by-step process to follow as they prepare for a GAP inspection. The Checklist will allow a grower to follow the USDA checklist question by question, and determine what records and documentation are necessary to complete the audit. Both the CAC-GAP manual and Pre-Audit Grower Checklist can be found on the CAC website at www.californiaavocadogrowers.com/gap.

In addition, a web-based self audit is also under development so that growers can evaluate their current level of compliance against the CAC-GAP Manual.

In early 2012, the Commission will facilitate grower workshops on the subject for both growers and their employees. These workshops will provide informational presentations as well as detailed training on the CAC-GAP manual and

address some of the common areas of concern, along with answering any questions. It is likely training will also be offered in Spanish.

Audit Process

Once a grower decides to pursue GAP certification, the Commission recommends contacting your handler. The major handlers have been provided with training on the CAC-GAP manual along with the audit process. There are options for certification including the USDA as well as private third party auditors. The Commission encourages growers to complete the Pre-Audit Grower Checklist to identify any areas where documentation and action are necessary. Questions can be directed to the handler or, if necessary, to CAC staff. 🥑

CAC-GAP Manual Sections

The Manual is divided into five areas. The following is a quick overview for each:

Section 1 - General Information: identifies ranch and grower information including previous land uses and gives the grower the ability to traceback the product to the grove.

Section 2 - Worker Health and Hygiene: this section addresses standard operating procedures for employees including hygiene, hand washing, toilet and hand washing facility use, and worker injury.

Section 3 - Agricultural Inputs: addresses crop protection materials, water quality tests, and compost and soil amendment usage.

Section 4 - Field Sanitation: discusses areas such as sewage treatment along with perimeter and water source monitoring for high concentrations of animals and wildlife.

Section 5 - Food Safety Training: provides growers with standard operating procedures and a simple training outline explaining the correlation of bacterial contamination and food-safety along with measures to reduce the risk of employee contamination.

Social Media: A Necessary Component of Marketing

By Zac Benedict

CAC Marketing Communications Specialist

The California Avocado Commission (CAC) embraces social media to maximize marketing program exposure and reach target consumers where they are spending their time online. CAC engages in social media to connect with consumers by creating community and fostering dialogue.

With an ever-increasing adoption rate, social media has become a key tool for making consumers aware of California avocados and CAC's marketing program. CAC utilizes social media channels to educate consumers about seasonality, nutrition, promotions, recipes and encourage them to insist on California avocados when available in supermarkets or at restaurants. It also provides instant feedback from consumers and the opportunity to create viral buzz (a digital word of mouth) through social sharing.

The term social media refers to the use of web-based and mobile technologies to turn communication into an interactive dialog. Social media effectively enables individuals to communicate with each other, groups or brands online for free through platforms like Facebook, Twitter, YouTube and Flickr. Social media and blog sites now account for 23 percent of the total time consumers spend online – making them top destinations for users over online games, news, email, instant messaging and even search engines.

According to Nielsen, a leader in consumer measurement and information, social media's popularity continues to grow, connecting people with just about everything they do and buy. For CAC, social media provides an excellent opportunity to create brand and product awareness through timely messages featuring recipes, nutrition, tips, grower stories, videos and more.

CAC launched social media efforts in 2010. A Facebook page and a Twitter account were created for general content sharing and communication updates. CAC also created an account on Flickr for photo sharing and YouTube for video sharing. After one California avocado season, CAC had more than 50,000 fans on Facebook and over 1,000 followers on Twitter. That growth has continued through the 2011 crop year, with more than 80,000 California avocado fans on Facebook and nearly 3,000 followers on Twitter.

Social media rounds out the Commission's integrated marketing program, allowing avocado consumers to con-



nect with CAC and share their love of California avocados with the people in their lives. Facebook, for example, allows users and brands to share status updates, photos, videos and more. Twitter offers similar features, but limits status updates to 140 characters and focuses on conversation topics.

Over the past two seasons, CAC's social media presence

has evolved from a two-way dialogue (CAC and consumer) into an engaged community consisting of consumers, bloggers, brands and other produce industry associations – all connecting with each other. Knowledgeable fans will often (and are encouraged to) answer other fans' questions. CAC staff stands ready to provide additional information or to respond as necessary.

Conversations around recipes are most lively. When CAC shares a recipe in a status update, fans will often leave comments with tips or inspirations of their own, serving suggestions, how to optimize in regards to nutrition or other recipes featuring California avocados. Fans are fully engaged and quick to share their own recipes, give advice and chat with each other about the California season, with many expressing their utmost thanks to the growers.

California avocados receive many benefits from these social media interactions, including:

- Content sharing. Sharing news, grower stories, recipes, nutrition information, contests, event updates and more on Facebook and Twitter extends the reach and visibility of not only the content, but the brand and the product
- Increased website traffic. Status updates with links (recipes tend to perform the best) can drive hundreds of "foodies" to the CAC website every day. In this way, the

CAC website serves as a repository for potential content to share, and is an excellent place for fans to find more information

- Increased email subscribers through Facebook contests. Contests are a win-win opportunity for CAC on social media because they provide the fans an opportunity to win something that connects them with the product, while increasing email subscribers through the contest registration and the brand's visibility when entrants "share" the contest with their friends

Consumers frequently trust the recommendations of their peers, making social media an ideal platform for influencers on CAC social networks to spread their ideas and purchasing power with their friends and other California avocado fans. As CAC connects more and more with consumers, it becomes increasingly important to encourage CAC fans to communicate the California avocado brand messages to their friends on and offline.

For this reason, CAC continually is building relationships with key food industry bloggers. Social media is populated with many "foodies" who have an impressive number of followers. CAC has proactively created outreach opportunities for these blogger partners facilitating grove tours and hosting dinners where the California avocado is the main



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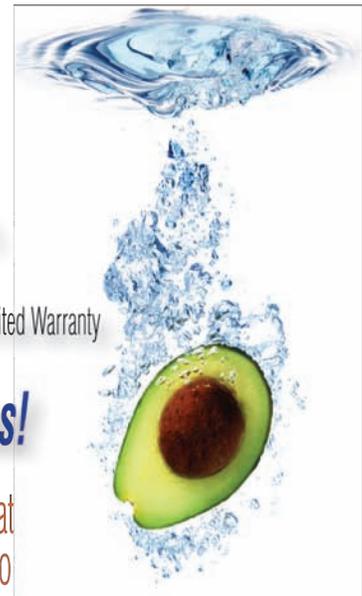
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topic of conversation. These bloggers then share their experiences with their readers, friends and followers.

Not all CAC fans online are California avocado aficionados or heavy users. Many fans have simple questions on topics like how to prepare their avocados, making the social media user base very diverse. For fans like these, linking to the CAC website or providing educational and easy-to-understand facts resonates well – like how to store, ripen and handle avocados. And these are some of the most frequently asked questions by California avocado consumers online.

Participation in social media also provides CAC the opportunity to connect with and promote retail, foodservice and trade partners. In fact, some of CAC's most popular posts have been in conjunction with foodservice partners unveiling a new California avocado-inspired dish and CAC will continue to leverage these partnerships for increased trade promotion visibility.

The Commission continues to evaluate its participation in social media to understand where consumers are online and what messages can be targeted to them. CAC is conducting a research study to better understand the target consumers' online habits, attitudes and behaviors. Findings are expected to be available in early 2012 and will be integrated as appropriate into CAC's marketing programs.

In the meantime, join CAC's social media conversations on Facebook at <http://www.Facebook.com/CaliforniaAvocados> or on Twitter at http://www.Twitter.com/CA_Avocados, fans love seeing growers share pictures or simple updates. See you there! 🥑

Best Practices

5 tips on using social media

1. Be Transparent - Gone are the days of hiding behind a pseudonym and an illustrated avatar as your online personality. Use your real name and photo.
2. Be Helpful - Like lending a cup of sugar to a neighbor, one of the quickest ways to establish rapport online is to be helpful. If somebody has a question that you know the answer to - answer it! Even if you don't know the answer, if you can point them toward a resource (or person who is an expert) they will remember you fondly, and be more likely to engage with you in the future.
3. Be Committed - Developing a social media following requires patience and time - not unlike growing an avocado tree from a seedling. If you can commit to spending fifteen minutes a day, every day, and then stick to that (or grow it) you can grow your own following.
4. Be Aware and Share - Social Media has changed the way news breaks. Often situations are revealed on Twitter before they show up on the evening news, or even on the radio. If you come across an article you think your social media community would be interested in, share it!
5. Be Kind - It's easy to transfer anger or attitude online, but it's never a good idea to badmouth someone or to lash out on social media. Consider this before you post: Would you want your grandmother to see what you are thinking about writing? Take a breath and come back to the situation when you have calmed down and can think rationally.

Online Lingo

Blog/blogger – a website on which an individual or group of users record opinions, information, etc. on a regular basis

Email subscribers – users who opt-in to email communications

Engaged/engagement – social media engagement requires interactions between people who share information, where all sides of a conversation have a voice

Facebook – A social networking website launched in February 2004 that is operated and privately owned by Facebook, Inc., with more than 800 million active users

Flickr – Flickr allows users to upload photos and organize them into photo albums for sharing online

Foodie – a person keenly interested in food, especially in eating or cooking

Search engines – a website designed specifically for the purpose of retrieving data, documents or other files from a database or network

Social media – a form of online communication, through which users create online communities to share information, ideas, personal messages and other content (photos, videos etc.)

Status update – publishing a message over a social network, often indicating what a user is doing at the moment or a question for friends

Twitter/tweet – a social networking service which enables users to quickly send and read other users' status updates, limited to 140 characters (letters)

Viral buzz – the rapid spread and sharing of information users find useful, interesting or important

YouTube – a video-sharing website on which users can upload, share and view videos online

Avocados Remain a Good Investment

I am an avocado grower and an advisor for institutional investors seeking to invest in agricultural assets. While there are many opportunities in various agricultural commodities for farm investors today, in my opinion, there are very few that are as interesting as avocados.

First, some background. There is increasing interest in the agricultural sector by institutional investors. These investors typically have a diverse portfolio with stocks, bonds and commercial real estate among their assets, but several of them are actively seeking investment opportunities in the ag sector. Their interest is driven somewhat by desire for diversification away from their traditional investment classes, but mostly by investment performance: investment returns in agriculture have significantly outperformed most of their primary asset classes in the past few years.

Within agriculture, the outlook for avocado prices is promising because domestic demand is outstripping domestic production for several reasons. First, domestic and international demand for avocados is increasing rapidly. The health benefits of avocado consumption, together with improved fruit quality and savvy marketing efforts by the California Avocado Commission (CAC), the Hass Avocado Board (HAB) and other country-specific associations, is driving significant annual demand increases. Next, increasing domestic



production is challenging because of significant barriers to entry. Avocados grow well in a very limited geographic area, and many other crops, such as lemons and berries, compete for land in climates in which avocados flourish. Additionally, and importantly, people generally like to live where avocados grow, creating additional competition for land. Finally, water availability, quality and costs are significantly limiting in some areas that would otherwise be suitable for avocado cultivation.

But what about imports? As avocados grown in Mexico, Chile and most recently Peru, have been allowed to enter the United States, the supply to the U.S. market has increased dramatically, but it has all been ab-

sorbed with relatively little problem. Supply shocks seem to rattle the market price-wise, but in general, average price has been increasing during this period while supplies have grown dramatically. To date, Chilean and Mexican fruit has largely been complementary to domestic production, because there can be separation in the harvest windows between the countries. Peru may offer the greatest challenge to date to the United States, but in my experience, increasing demand cures many supply side issues. It certainly has been the case with avocados to date.

Another positive point about imports is that with their increase came the creation of HAB, which has significantly grown the total market-

ing and advertising budget for avocados. Combined with increased availability in a broader distribution of markets and at different times of the year, our industry has created hundreds of thousands of new avocado consumers in the United States. The more avocados sent to the United States, the bigger the advertising budget, the greater the promotion and the better the sales. We continue to see high growth in demand for avocados from retail and food-service customers, which bodes well for any commodity.

And when you put the pencil to the paper, the investment can work out very well, depending on produc-

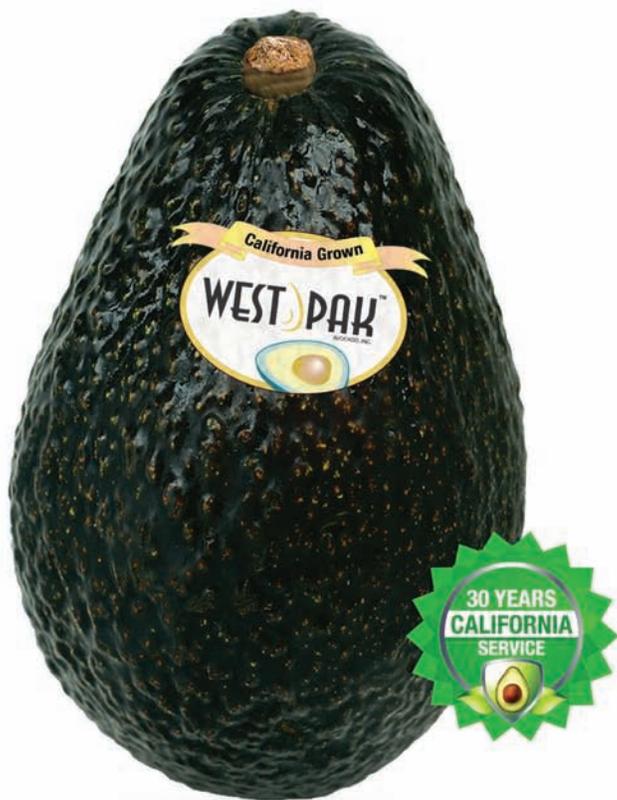
tion and the cost of production. Of course, the key is to get good land in the right climate where there is an ample, sustainable supply of good quality water...even better if the water is reasonably priced. For my investors, we prefer to develop new plantings in a high density design that is geared to high production and the lowest operating costs. For us, our evaluation of operating costs includes not only the cultural and irrigation costs, but also picking costs (for many groves, picking cost is the second highest cost activity, after water).

Ultimately, it is likely that production and water costs are the financial drivers that determine an investment's financial attractiveness. For example, a grove with production of 5,000 pounds per acre isn't very attractive if the water costs are \$500 or more per acre foot. However, a grove that averages 10,000 pounds can be interesting financially even if its water costs are \$1,000 per acre foot.

Toward the future, I expect many of the opportunities will be in the avocado growing areas north of Los Angeles, where water availability and costs seem more favorable. There may also be some opportunities in selected areas of the San Joaquin Valley, where the cost of water is minimal and the cost of land is also much less. In those situations, the production cost is much lower so production does not have to be as great to make the numbers work. I do expect that avocado production in non-traditional regions in California will be explored as our domestic industry attempts to expand.

The bottom line is that I believe that the investment thesis for avocados is a good one. The challenge is finding or creating the right situation so that production costs and returns are attractive. Some institutional investors are finding good opportunities to invest in avocado groves. It's good for the institutional investor, which makes it even better for the career grower who is looking to expand. 🥑

(In addition to owning an avocado grove, Shane Tucker provides advisory services to institutional investors seeking to invest in the agricultural sector under his own firm called Saturn Capital Partners. Before starting his own firm, he oversaw the agricultural lending and equity investment businesses for Prudential Agricultural Investments, a nationwide provider of debt and equity capital to the agricultural sector.)



California is our foundation

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Foodservice Programs

Mastering the Art of Chain Restaurant Promotion

Approximately 30 percent of California's annual avocado crop is sold into foodservice channels, and demand continues to grow. In fact, avocado menu mentions increased almost 76 percent between 2005 and 2009, far outpacing foodservice industry growth at 6 percent.

As part of its foodservice program, the California Avocado Commission has focused its attention on the menu decision-makers at multi-unit restaurants concentrating on those most likely to serve Fresh California avocados. The CAC staff endeavors to develop and communicate fresh avocado menu concepts that fit with each chain's service and menu profiles.

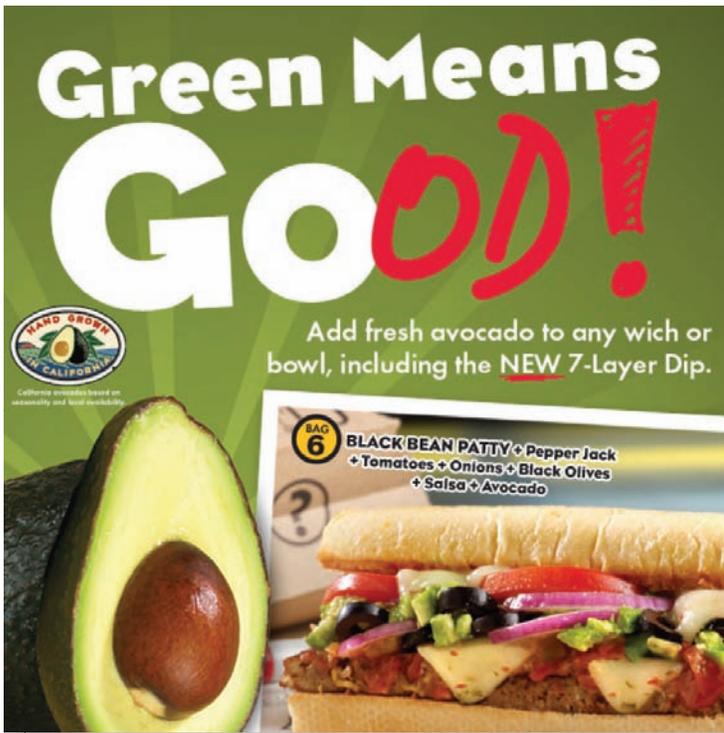
In the past five years, this approach has resulted in 13 chains adding Fresh California avocados to their menus, and 67 promotions conducted with 35 chains (11,125 locations) expanding the number of menu items featuring fresh California avocados by well over 100.

Spending the day with growers in a California avocado grove may not fit the standard definition of a tactic designed to engage chain restaurant marketing and food and beverage executives, but it is often a highlight of the education process for CAC foodservice initiatives. The hands-on demonstration of production standards and fruit quality can be an important step before the introduction of a fresh avocado menu item or the launch of a Fresh California avocado promotion.

It's a simple equation for success: engage operators currently utilizing or with the potential to utilize California avocados at carefully identified industry conferences, such as



Chain decision-makers tour an avocado grove during a day-long product education event.



the National Restaurant Association's Marketing Executives Group or the International Corporate Chefs Association. The next steps include assistance with developing customized recipes and negotiating a mutually beneficial promotion that showcases Fresh California avocados in season.

Examples of operator promotions demonstrating results from CAC's foodservice promotional program include:

- **Which Wich® Super Sandwiches:** Prior to planning a promotion with CAC, Which Wich® Superior Sandwiches, a quick casual sandwich chain with 140 locations nationwide, had been under-merchandising fresh avocado as a menu add-on. The first limited time offer promotion in 2010 bumped up the chain's avocado usage nearly 40 percent. Tim Schroder, the restaurant chain's vice president of marketing, said, "Actively promoting avocado as an add-on to our 'wiches' drove incremental sales growth... [and profitability] because avocado is an add-on to the base sandwich price."

Based on the success in 2010, Which Wich developed a different promotion for 2011, offering some of their popular sandwiches + *Avocado*.

- **Subway® restaurants of the greater Los Angeles area:** With more than 1,100 locations, Subway restaurants of the greater Los Angeles area has featured Fresh California avocados in a wildly popular summer promotion for three of the last four years. Starting with *Top It Off*, an "add avocado" promotion in 2008, the franchise followed that success in 2010 with a special *Turkey Avocado Sub* – "treat yourself well." In 2011, three sandwiches were featured, each one enhanced with "AAHvocado!"

- **Sodexo Corporate Services:** With 1,200 locations spread across the United States, Sodexo began running fresh California avocado promotions in 2005. A foodservice management firm that operates upscale food courts inside corporate environments, Sodexo takes great care to ensure their promotion point-of-purchase materials are as tasteful as the surroundings. Chuck Hatfield, director of product development for Sodexo Corporate, recognizes the role fresh California avocados play in a successful promotion: "Our consumers and clients expect us to offer healthy ingredients and menus on all the stations in our cafés. Offering fresh produce, like Fresh California avocados, is a simple way to add nutritious ingredients to items while adding great value to our recipes and menus...when you add an item like fresh avocados to a recipe, people really think they're getting something special or something extra."

Sodexo featured California avocados in popular regional menu items as part of a "Road Trip" promotion.

- **El Pollo Loco:** With its 400 locations and a familiar fixture on the California restaurant scene, El Pollo Loco has been on the CAC promotion target list for years. The chain first tested sliced California avocados on the menu during a promotion, and overwhelmingly positive response from their customers pushed Fresh California avocados onto the permanent menu in items like the *Poblano Burrito*.

Jon Rogan, El Pollo Loco's executive chef/director of culinary innovation, explained the process to *From the Grove*. "The decision to add Fresh California Hass avocados was driven primarily by food quality," he said. "El Pollo Loco differentiates itself in the fast food space through taste and food quality. Fresh avocado is clearly a product that resonates across all the users of the brand. It underscores our healthy halo, our commitment to fresh, high quality ingredients, and it brings delicious flavor to our dishes. The presence of Fresh California avocados on our menu elevates an already great brand to the next level."

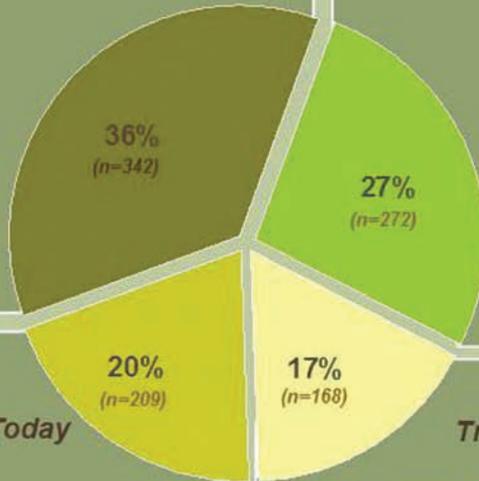
To support CAC operator promotions, the foodservice marketing program also advertises in leading trade publications and maintains an ongoing dialogue with foodservice editors and industry opinion leaders. In 2011, the advertising program generated 3,232,825 impressions and the public relations program achieved 103 placements, 5,523,805 impressions and a comparative ad value of approximately \$190,000.00. Both collateral efforts ensure that Fresh California avocados are first in the minds of foodservice operators, and that CAC is the leading resource for avocado product information, merchandising materials and recipes. 🥑

SEGMENT REPRESENTATION



Sophisticated Naturalists

Heavily focused on **natural, organic** and **local**. Actively involved in **sustainability** and **community**.



Optimistic Cooks

Very passionate about **cooking**. They like to **experiment** and **express themselves** through **cooking**.



Live for Today

Professionals who are focused on their **careers**. Extremely low concern for **community** and the **environment**.

20%
(n=209)

Traditionalist

Family-oriented. **Traditional** in their attitudes and **food**. **Least health** focused.



Segmenting California Avocado Consumers

By Mark Weinfeld

Director of Strategic Planning, DGWB

Anually evaluating the effectiveness of the California Avocado Commission's marketing efforts provides greater insight and a better understanding of the CAC target consumer.

For more than 20 years, CAC has conducted an annual Usage and Attitude Tracking Study that provides feedback on the effectiveness of the marketing campaign. Now funded by the Hass Avocado Board (HAB), the Tracking Study is fielded twice a year: in the spring (February/March) and again in fall (mid/late August).

In addition to the Tracking Study, CAC studies consumer trends through its consumer advertising agency's relationship with research and trend-watching specialist Iconocul-

ture. To augment the ongoing consumer research, CAC recently completed a Segmentation Study designed to identify the different types of avocado users as well as their attitudes and behaviors.

CAC commissioned its first Segmentation Study with CA Walker Research Solutions, a well-established market research firm based in Pasadena, Calif., in 2008. This study was extremely helpful in providing unique insights about the best customers for California avocados. It helped validate the size and scope of a new "Premium Avocado" target along with identifying opportunities such as retail marketing efforts, consumer messaging and media selection.

Why CAC Invests in Segmentation Studies

A segmentation study aims to isolate groups of consumers that can be defined according to demographics, lifestyle and purchasing behavior. A study of top marketing executives (shown to the right) shows that improving customer segmentation and targeting is the most important step they are taking to impact the value of their marketing in 2011. In fact, in that July 2011 study 64 percent noted “improving customer segmentation and targeting” as their most important action. In the case of CAC, the new segmentation study will be used to guide the marketing strategies for the 2011-12 crop.

Dramatic Consumer Changes Since 2008

There have been a number of changes in consumer values since the last segmentation that impact how segments are defined. Consumer values since 2008 have changed due to three years of recessionary economic conditions that have made consumers more skeptical, pragmatic and more patriotic when it comes to supporting job growth and local economies.

Additionally, there has been a much bigger focus on health as more Baby Boomers feel the effects of aging into their 50s and 60s. Healthiness has become a key food decision driver, but more importantly it is really the new face of affluence. According to a recent Opinion Research Corporation poll, 9 out of 10 consumers today would rather be seen as a person who is healthy than one that is wealthy.

It is also a very different avocado market, with a 29 percent increase in the mean number of avocados purchased annually by U.S. households – up from an average of 60 to 78 per year per household. More consumption means different buying behavior. There is also much more competitive advertising clutter in the market with imported avocados aggressively spending in the United States. And the phenomenal growth and influence of the internet creates a completely new media landscape that has resulted in clearly different media consumption habits as well.

Methodology for the Study

The new study that was done this past August by CA Walker Research Solutions started with an online survey. A nationally projectable sample of 1,000 respondents took the survey with a 70 percent/30 percent female/male split. Respondents needed to have the following requirements to qualify:

- Age 25-64
- Income of \$50k+
- Primary or shared decision-maker for grocery purchases
- Have purchased and eaten at least 1 avocado in the past 12 months
- Plan to purchase again in the next 3 months

Steps Marketing Executives Worldwide Are Taking to Maximize the Impact/Value of Marketing in 2011

% of respondents



Note: respondents were asked to choose their top 3
Source: CMO Council, "The 2011 State of Marketing" sponsored by Deloitte and Openet, July 17, 2011

130161

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Going a step further than the original segmentation, this study was rooted in human values. By not just focusing strictly on demographics or usage behavior, values allow CAC to understand motivational priorities for each segment. By using values as a key differentiator, the study uncovers more emotional differences between the segments that help to both separate them, and to understand how CAC can best communicate with them in future marketing efforts.

Two Primary Segments Account for 63 percent of CAC's Target Avocado Consumers

This 2011 segmentation study produced four distinct groups, two that fell into a highly engaged, more experimental group while the other two fell into a moderately engaged group that are less experimental when it comes to avocado usage.

The largest segment, the Sophisticated Naturalists, is 36 percent of the total. They are the most affluent and educated group with an average age of 42. They are heavily focused on natural, organic and local products in their consumption. Sophisticated Naturalists serve avocados several times a week, consider them a staple in their home and are more likely to eat avocados plain or as a spread. The stories about California growers hit home with this segment as

they make the Sophisticated Naturalists feel 'closer' to the grove. Another key element to stress is the 'local-ness' of California avocados, as this group is more highly motivated to support local farmers versus those from other countries.

The second largest segment, with 27 percent of the total, is the Optimistic Cooks. They are very passionate about cooking and use their prowess in the kitchen as a primary expression of their creativity. They have the highest concentration of females and are more likely to be homemakers. Their average age is identical to the Sophisticated Naturalists at 42. They have an unusually positive outlook on life, as they are genuinely happy and are youthful in their mindset and actions. They prepare most or all of the meals in the home and are likely to hunt out recipes and watch cooking shows on TV. They serve avocados at least several times a week and enjoy them because they believe that they improve and invigorate everyday dishes.

Traditionalists are the smallest segment (17 percent) and are most focused on the family. They are a male-skewed segment, with larger families and less education. They have the lowest mean income with a high concentration of them living in Texas and the Southwest. They are called Traditionalists due to their traditional attitudes towards food. They view avocados as something that they would eat in Mexican dishes at home or at restaurants. They typically buy avocados to add elegance to their meals and cost may be a barrier to more frequent purchases and consumption.

The other secondary target accounts for the final 20 percent of the total are called the Live for Todays. They are very self-focused and have little concern for their community or the environment. They are the heaviest male-skewed segment and the most professional and well-educated with the second highest average income. They eat out frequently and are least likely to prepare the meals in the home. They are the least experimental with food and are more of a 'meat and potatoes' type of consumer. They are the lightest buyers of avocados and view them as something only used for special occasions. Like the Traditionalists, convenience is a priority, yet they are more concerned with trying to eat a balanced diet and exercise in order to look good.

Going Forward

This segmentation study has helped CAC better define their primary target into two distinct groups, while also bringing

attention to secondary targets. This allows CAC to focus on key messaging that engages the target and breaks through the competitive clutter. It also suggests that CAC can spark secondary targets into more impulse purchases by featuring California avocados as a part of special occasions and summer holidays.

Now that the segments are defined and prioritized, a Persona Study is planned for the near future. This research will add richness, depth and a better sense of humanity to the segments profiles and provides an effective follow-up to focus on new media consumption. Research is an ongoing priority for CAC to ensure that the continuing investment in marketing is effective and efficient at driving results that increase California avocado grower crop value. 🥑

Mark Weinfeld, Director of Strategic Planning, DGWB, has been the brand strategist for California avocado since 2007. He has worked as a brand strategist in marketing for over 20 years with clients such as Hyundai, Nissan, Bridgestone Tires, Pacific Sunwear, Black & Decker, Dole, Thermador and Hilton. He is a four-time recipient of the American Marketing Association's Award for Marketing Effectiveness (Effie). In addition to his role as Director of Strategic Planning, Mark is also the Director of The Values Institute at DGWB. The institute is a research entity that explores the science of human values and the influential role they play in attracting and binding relationships – both personal and corporate.



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Valley Center
Term: 2010 – 2012



Alternate:
Jerome Stehly
Valley Center
Term: 2010 – 2012

District 1

Ben Holtz
Escondido
Term: 2011 - 2013



Alternate:
Carol Steed
Pauma Valley
Term: 2011 – 2013

District 2

Bob Schaar –Secretary
Fallbrook
Term: 2011 – 2012



Alternate:
Ohannes Karaoghlanian
Temecula
Term: 2011 – 2012

District 2

Charley Wolk
Fallbrook
Term: 2011 - 2013



Alternate:
Joanne Robles
Temecula
Term: 2011 – 2013

District 3

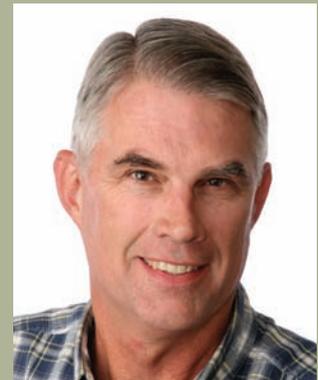
Doug O'Hara - Vice Chair
Moorpark
Term: 2011 - 2012



Alternate:
Steve Shehyn
Moorpark
Term: 2011 – 2012

District 3

Ed McFadden - Chairman
Fillmore
Term: 2011 – 2013



Alternate:
Keith Reeder
Moorpark
Term: 2011 – 2013

District 4



Art Bliss
Somis
Term: 2011 – 2012



Alternate:
Larry Rose
Santa Paula
Term: 2011 – 2012

District 4



John Lamb - Treasurer
Somis
Term: 2011– 2013



Alternate:
Robert Grether
Somis
Term: 2011 – 2013

District 5



Bradley Miles
Carpinteria
Term: 2010 – 2012



Alternate:
Jim Swoboda
Goleta
Term: 2010 – 2012

District 5



Gabe Filipe
Arroyo Grande
Term: 2011 – 2013



Alternate:
Geoffrey McFarland
Goleta
Term: 2011 – 2013

Handler Member

Egidio "Gene" Carbone
Calavo
Term: 2010 – 2012



Alternate:
Todd Elder
Index Fresh
Term: 2010 – 2012

Handler Member

Scott Bauwens
West Pak Avocado, Inc
Term 2010 – 2012



Alternate:
Ron Araiza
Mission Produce
Term: 2010 – 2012

Handler Member

Reuben Hofshi
Del Rey Avocados
Term: 2011 – 2013



Alternate:
Vacant Seat
Term: 2011 – 2013

Handler Member

Steve Taft
Eco Farms
Term: 2011 – 2013

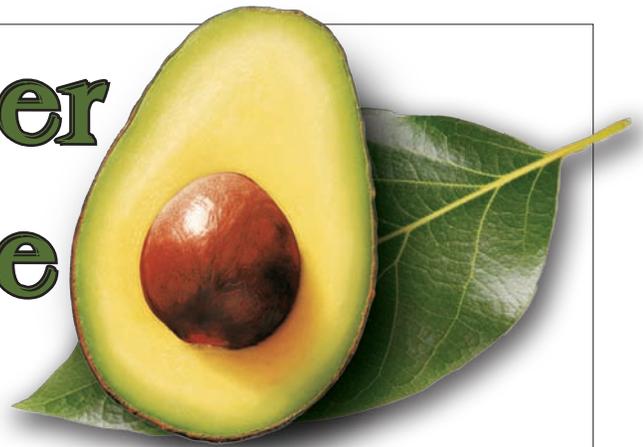


Public Member
Andria Pontello
Term: 2010 - 2012



Alternate:
Bob Witt
Cal Flavor, Inc.
Term: 2011 – 2013

Grower Profile



Temecula Growers

Bullish on Industry

By Tim Linden

John Cornell has been in the avocado business for 18 years. Jim Brown has a little bit more than four years of experience. But both Temecula growers are very bullish on the future of the California industry.

In fact, they expect consumption of the avocado to continue to increase and they continue to invest in their groves as they see a great future for the fruit, especially in their particular growing region.

"We are somewhat blessed on a couple of fronts," said Cornell. "We have both ground water and imported water so our water costs are much less than some growers just five or 10 miles from us. And our land values have remained reasonable."

"It all boils down to yields," said Brown. "If you are only getting 4,000 to 5,000 pounds per acre, it might be difficult to make it no matter where you are. But if you are getting 10,000 to 12,000 pounds, this is a good business."

John Cornell grew up in the Chicago area, but even when he was a little kid agriculture fascinated him and he wanted to get into the business. But life has a way of interrupting plans and so when he graduated from college in the late 1970s, he went in another direction. Soon though, he was living in Mission Viejo in Southern California and owned a water treatment business. Business was good and by 1991, Cornell had some money to invest and so he rekindled his childhood interest in agriculture. "I bought my first five acre avocado grove in 1991," he said.

Over the years, he invested in some other groves both by himself and with partners and, at one point, had as many as 70 acres under his control. Today he owns 34 acres of avocados. For most of the past 20 years, his livelihood was the water treatment business but he sold that business several years ago, and today being an avocado grower is his primary occupation.

Brown took a little different route to the business. He grew up in the San Fernando Valley and moved to the Temecula area in 1989 with his contractor's license in hand to start a business in the construction industry. He did just that and ran a successful company until just a few years ago. He and Cornell met each other on the school yard as their kids went to the same school.

About five years ago, Brown bought his first parcel of land with the intention of building his dream house. However, the land had an avocado grove on it and the downturn in the economy caused the contractor to put his building plans on hold. Conversations with Cornell ensued and Brown soon found himself deeply immersed in the business of managing his avocado grove.

One thing led to another and he eventually gave up his contractor's business to become a full time grove manager. He grew his own avocado holdings to 16 acres and added Cornell and a few other growers as customers. "I just loved what I was doing with the avocado grove," he explained.

Though he says he still has a lot to learn, today Jim Brown

is an avocado grove manager, managing more than 50 acres of groves along with his own ranches. "One of my clients is a doctor who just doesn't have time to manage his own grove and another grower saw my yields and said he wanted me to take over the management of his grove and get the same results."

Cornell believes the entire key to success in the avocado industry is careful management of your groves, both by you and your grove manager. So he puts a lot of stock in his relationship with Brown. "There's no substitute for taking an active part in your grove's management. If you don't check on your grove frequently, you're probably not going to be successful," he said.

He added that finding the right manager is the most important decision you will make in determining your success or failure. "Develop a partnership type relationship with your manager and get involved with how your grove is managed," he said. "A good manager will take the time to work with you. If he won't, find another manager."

Both Brown and Cornell believe investment in your grove is another very important factor that determines success. Brown discussed various philosophies such as careful attention to both water and light management. Each requires investment that may not pay off today but will pay off in the future. For example, the two men have added water tensiometers to their groves so that they get the exact amount of water at exactly the right time. Brown said overwatering, which causes root rot, is a major cause of underperforming trees.

He said it takes more time, but it is better for the tree to monitor water use on a regular basis and only water when necessary. And if one part of the grove doesn't need it, only water the areas that are dry. That extra monitoring effort and cost is easily offset by the use of less water and the development of healthier trees.

Light management, he said is another long range strategy that promotes healthy trees and increases yields but is not an instant payback. Cornell said you have to be content with spending the money today and knowing your returns will come down the road with increased yields. In a nutshell, that is Cornell's philosophy as an avocado grower. You have to "be willing to make an investment in your grove's future for bigger dividends in the coming years. If you're not willing to make these investments, growing avocados is probably not for you."



John Cornell and Jim Brown

The two growers also advocate frequent fertilization in small amounts. Brown frowns upon the practice of what he called "speed injection," which is the practice of putting a lot of fertilizer on in a very short amount of time. He said the practice of speed injection is wasteful, inefficient and results in nutrients being unavailable to the tree for long stretches of time.

Cornell and Brown are also advocates of high density planting. Cornell has a one acre test plot that is performing very well on a 10 by 10 foot schematic. Over the next several years, the duo expect to replace their current planting schemes with high density groves. Cornell said they are currently debating two schools of thought: one that would rip out the old trees and start fresh; and the other would stump and graft the current trees while interplanting new trees in the higher density pattern. He said the second route would allow for a quicker return on the investment as the old trees should produce some avocados within a season or two.

In general Cornell summed up the philosophy of the two men: "Treat each tree as an individual. When looking at an individual tree ask yourself 'How does this tree look? Do I need to prune it to improve light penetration? Are the leaves a healthy color? Does it look under stress?' If there's something wrong with that tree, it's likely that other trees are facing the same problems and it's time to act."

The two men also view the industry as a collaborative effort and are very happy to share their successes and failures and learn from others. As a relative newcomer, Brown said he is continually learning and is grateful for the advice he has received. 🥑

Better Decision Making By California Avocado Growers

An important goal of California avocado growers is to turn a profit and this is reflected in the California Avocado Commission's (CAC's) mission statement, which speaks of maximizing grower returns from year to year. For the highest yields avocado growers need to actively manage their trees with the best production techniques available. Understanding how to apply the best production methods requires utilizing the best information available at the correct time. In doing so, the grower is faced with several challenges: collection of the most relevant information; assimilation and interpretation of the information to fit the grower's circumstances; and effective application of the information at the appropriate time. At a research strategy meeting in January 2011, the CAC Board identified "Effective Grower Education" as a strategic imperative and important need for the California avocado industry. Subsequently, the Production Research Committee determined that all research projects should have an outreach component, to ensure that the grower education imperative is achieved.

The Commission has generally looked to the University of California's Cooperative Extension Service (UCCE) to transfer knowledge gained from research into techniques growers can apply in their groves. Over time, the role of UCCE farm advisors

has changed, as extension personnel assume the responsibility of covering an increasing number of crops over a wider geographic territory. While farm advisors are doing their best within a system that demands they do research as well as give advice, the reality is that additional channels for delivering outreach are needed.

All of the major research projects funded by CAC that are currently underway or proposed have an overt or implicit outreach component. This was not always the case. As a result, much good research has languished as under-utilized for many years highlighting a significant "extension gap" between research and its development. For example, there have been a lot of very good research projects on entomology that could form the basis of a state-wide real-time pest population monitoring system for avocados. Such a system would allow California avocado growers to plan their pest management strategies in a very sustainable way, controlling pests according to need. Although much of the information needed to put a pest monitoring system in place already exists and regional monitoring has been previously contemplated, the tool remains undeveloped.

Clearly, more investment in outreach projects is needed. CAC's new research process requires that outreach be a component of every new project. Researchers must ex-

plain how their research will be used by growers. Will there be grower tools or systems to be developed as part of their projects? Will there be ongoing costs for outreach or maintaining a system for growers once the research is completed? By considering these questions at the beginning of a research project, the benefits and costs of the research proposal to the industry can be properly assessed before funding commitments are made.

With an increased emphasis on outreach as a means to realize the full potential of research findings, there has also been a lot of thinking about how to do outreach so that the information reaches most growers and is readily understood. The success measures of any research program should be the real changes that occur within the industry or on the grove. For growers, real substantial change is that which improves profitability, by increasing yields and reducing costs. One way of measuring change within the industry would be to look at average per acre production.

The traditional methods of outreach are based on the methods used for education over many years. The methods have involved seminars, research papers, fact sheets, field meetings and so on. Such methods of relating information are relatively cheap and simple but very often are only reaching a small audience. In addition, it is incumbent upon the

audience to absorb and understand the technical information presented, and deduce how that information can be applied in their grove. Very often application of the information is not always obvious to growers. To improve information transfer, CAC is considering a number of innovative ways to present information growers can use.

By their nature farmers are usually practical and pragmatic, so it stands to reason that one of the best methods of bringing information to growers is through hands-on demonstration. Under consideration is the use of one or more, Commission-operated demonstration groves where growers could meet in the field and be shown, in a hands-on way, best practice cultural management techniques. For more experienced growers, in-depth discussions could take place on what has been done on the grove and how changes to management could work on their grove. Demonstration groves require considerable control over grove management and groves should be located close to the main growing areas for easy access by growers. To set up and run a demonstration grove, the Commission may need to lease a property or have an agreement with a land owner that allows for use of trees over a defined period of time.

Another idea being looked at is the establishment of groups of like-minded growers who, through informal meetings and discussion forums could, exchange information and ideas they could take back to their groves. Grower groups often work best when they are small in size, between 6-8 growers, and in a collegial, supportive atmosphere. Discovering your neighbor has the same issue, or has already tried the idea you have, can be very helpful when thinking about what you should do about a problem.

Currently, information presented to California avocado grow-

ers about what is happening in their groves is limited in scope and may even be outdated. Successfully growing avocados is complex and requires the integration of a number of activities; from financial planning and horticultural management through to the marketing of the fruit. In order to collect and disseminate information useful to California avocado growers, projects that turn research findings into “tools” are needed. The aim should be to assist growers with “on the grove” decisions with the aid of decision support tools. The development of decision support tools for growers is proposed to be a key CAC activity over the next few years.

For 2011 and beyond, a number of outreach projects have been proposed which seek to provide growers with tools to make better decisions in the following areas: costs of production for conventional and organic growing; protection from pests and diseases; when to apply certain cultural management techniques; accessing existing information; and post-harvest management of the fruit.

Here is a list of ideas of outreach projects or activities currently underway or being considered:

Continued support of the California Avocado Society seminar series in 2011-12, including creation of media files that can serve as a permanent record growers can access. Production of Fact Sheets related to meeting topics and ensuring that all relevant material is on the CAC grower website as well as available in print form.

Grower focus groups where small numbers of growers meet regularly to discuss their own approaches to grove activities and important grove management questions. The groups would be voluntary and managed by the growers participating in these periodic meetings. Each meet-



ing could be held on one of the grower's groves, allowing the group to focus on questions of interest to the grower hosting the meeting. Topics of discussion for meetings could include the following:

Meeting 1: Defining the grove decision tree to establish the basics of grove activity focusing on yield and quality. The components of a decision tree are: Pest/Disease, application method and chemical choice; Root health, monitoring for disease, mulching, treatments, soil, drainage, biology; Pruning, light management, spacing, height, timing, shape and structure, response of the tree to pruning; Nutrition, leaf and soil test, fertilizer, soil type, reading the tree; Orchard site, aspect, soil type, climate; Flowering, pollination, bee management, pollenizer trees, flower and shoot management, timing; Water/Salinity, soil type, measurement, use pattern, climate, technology, mulching.

Meeting 2: When to pick?

Meeting 3: When and how much to water?

Meeting 4: What to do when pruning



and meetings where growers and researchers can sit down together to discuss their interests could occur. Growers could include field meetings to discuss their ideas.

Electronic and print communications support a dynamic CAC grower website that has timely and updated information. Work to ensure that the website contains grower relevant information in a format that is easy to access.

Continue to produce printed publications for physical rather than purely electronic communications. Give access to timely industry information through the Greensheet (e-mail, hard copy, website), additional outreach material from field meetings, seminars, and so on (e-mail, hard copy, website) and to reach all known commercial California avocado growers through the Industry Magazine (e-mail, hard copy, website).

Successfully communicating useful information to farmers so the information is used on the grove has historically been a great challenge. The best way to transfer new knowledge to growers remains elusive. This is the reason for the many different approaches for outreach proposed in the list above. The projects and ideas presented here do not exhaust the possibilities of outreach methods. Other ideas for outreach and thoughts on the proposed projects above are welcome from growers and other California avocado industry stakeholders. Comments or ideas can be sent to Dr. Jonathan Dixon at CAC via e-mail addressed to jdixon@avocado.org 

Meeting 5: How much to spend on the grove

Meeting 6: Future investment in the grove

Meeting 7: Information for better decisions

Demonstration groves in each of the growing areas where best practice cultural management methods are applied and compared with what is considered to be typical grower practice. These would form a central focus point for educating growers on grove management in a hands-on way.

Decision support tools that allow growers to utilize information for the best results on their grove and improve their risk management. A number of initiatives are being contemplated that seek to improve industry systems to help growers be more profitable. These include:

- Real-time pest population monitoring system so that pests can be managed sustainably
- Disease monitoring to minimize economic damage for growers

- Water conservation and salinity management to maximize yields against water use and cost
- Maximize yields with proactive tree management through monitoring tree growth patterns
- Bringing knowledge to the grower

Grower forums through establishing a website discussion group on the CAC website. Although such discussion groups are generally not as useful as demonstration groves or focus groups where growers can meet in person, they may be useful for growers who cannot easily attend meetings or those who wish to field their question out to a wider audience.

Innovative growers' forum for growers conducting experiments on their groves and who would like to have interaction or discuss their experiments with experts. Such a forum linking growers with experts is intended to provide in-depth discussions on subjects of interest for very knowledgeable growers. Workshops

Peru Enters the U.S. Market

Peru was first granted access to the U.S. market on February 3, 2010, but it was not until July 22, 2011, that treatment requirements were removed as a risk mitigation measure for Mediterranean fruit fly. So Peru is now a supplier to our market and is emerging as a player in the world avocado deal. In fact, at the 2011 World Avocado Congress (WAC) in Australia, Peru was chosen as the host country for the 2015 WAC.

To properly understand the rapid growth of Hass avocado farming in Peru over the past 15 years, what occurred in the decades prior must first be reviewed. In 1968, there was a military coup which resulted in all farmland ownership being taken away from the owners and given to the farmworkers. This “land reform” also left a void in the university research system as agricultural researchers and engineers left the country. With the new “land reform” system in place, the farm workers were now in charge and many lacked the knowledge of how to farm successfully. In addition, because the farmworkers had been given this land, there was an overall lack of appreciation of the true value since it hadn’t been earned through hard work.

In general this “land reform” created an agriculture sector in Peru that lacked both farming and business understanding, leading to financial losses. In the 1980s, these owners began to sell off the farm land to investors, many of whom were previously farmers, and grower associations began to form for the purpose

of sharing cultural information.

During the 1990s, agriculture became commercially viable, and in 1999, the Peruvian Hass Avocado Producer’s Association (ProHass) was formed for the purpose of opening new export markets for Peruvian grown Hass avocados. ProHass membership is voluntary and funding comes from a self-tax. Currently, ProHass represents more than 90 percent of Peru’s Hass avocado industry, totaling around 8,500 hectares (21,000 acres), with projected new planting at a rate of 1,000 hectares a year (2,470 acres).

In 2011, ProHass exported approximately 130 million pounds, of which 19.6 million pounds entered the U.S. market. For the past 10 years, Peru has exported almost entirely (95%) to Europe, with the remaining 5 percent going to Canada.

For 2012, Peru plans to export to the United States one-half of the estimated production of 154–177 million pounds, with the other half expected to go to the European market. This could result in approximately 77–88 million pounds shipped to the United States.

“We want a stronger (U.S.) market with more consumption and agree that all countries involved in this market need to support that growth,” said James Bosworth, ProHass president. “We are open to finding the best ways to maintain a good relationship with U.S. avocado growers. We also don’t want to depend on one or two markets,” adding that ProHass is looking to develop additional markets in Chile, Mexico,

Japan, China, and Argentina.

In Peru, Hass harvest for export runs from May through August. ProHass plans to start the season exporting to Europe and when the supply begins to peak start shipping into the United States. ProHass avocados exported into the U.S. must meet U.S. phytosanitary standard certification ensuring no chemical residues or pests such as fruit-flies exist. In addition, maturity standards must be met and all fruit is GAP certified through a SGS Group audit against a EuroGAP protocol.

Primary ports of entry are expected to include New York, Philadelphia, Miami, and Houston, with some possible entry into Long Beach. According to Bosworth the levels of fruit volume in the different regions will depend on ProHass’ success in promotional programs and subsequent determinations of how to keep the market strong through an appropriate supply flow. “We are going to work to further develop the East Coast market for avocados,” said Bosworth.

Peru consumes 180 million pounds per year, making the per-capita consumption of avocados high at 6.61 pounds, but the Peruvian palate is for the Fuerte avocado. “The Hass was only introduced into Peru 15 years ago and the preference is for the Fuerte variety,” said Bosworth. “ProHass does have funds to conduct domestic promotion of the Hass and we intend to develop Hass consumption internally,” he said. 🥑

Production Research Paying Dividends

Production research is an important part of the California Avocado Commission (CAC) strategy to support California avocado growers in their efforts to make a profit.

For many years there has been a Production Research Committee (PRC) that advises the CAC Board on production research projects and other matters associated with technical issues. Over the years the PRC has changed in the number of members and the activity of the committee. In its latest incarnation the committee now consists of six members who all have been working very hard to work within a new research process that was described in the previous issue of *From the Grove*. The PRC has been charged with taking the Technical Imperatives to develop more specific research and technical activities. The Technical Imperatives have been discussed as Strategic Technical Requirements that define the objectives and deliverables for a subject area.

The PRC has met five times this year and spent considerable time and effort in debating what should be the Strategic Technical Requirements the Commission funds that will address the Technical Imperatives set by the CAC Board. The Strategic Technical Requirements were presented to and approved by the CAC Board and the full list can be accessed on the grower website: [\[search-program/\]\(http://www.californiaavocadogrowers.com/cac-production-re-\).](http://www.californiaavocadogrowers.com/cac-production-re-</p></div><div data-bbox=)

The Strategic Technical Requirements formed the basis of a call for Concept Proposals to researchers. In the past few months the PRC has been vigorously discussing with researchers their ideas to achieve the Technical Imperatives. This process is intense at times and PRC members deserve considerable thanks for their time and input, which is entirely voluntary, to a process that we are confident is going to produce high quality projects that help California avocado growers. The Committee members are: Shane Tucker, Chairman (Commissioner District #1), Reuben Hofshi (Commission Handler member), John Lamb (Commissioner District #4), Tom Royden (Grower in San Diego County), John Burr (Grower in San Diego County) and Dr. Lou Santiago (UC Riverside, Department of Botany and Plant Sciences).

Current research activity

At the October CAC Board meeting, the business plan and budget for the fiscal year 2011-2012 was approved. Within the budget was a recommendation to fund a number of continuing research projects into their final year. The following are some highlights from these research projects, as reported to the Commission in progress reports. Most of the projects have been running for between three to five years. For more information on a project visit the

Commission grower website: www.californiaavocadogrowers.com.

Plant Breeding - researchers: Mary Lu Arpaia, Harley Smith and Greg Douhan

Avocado plant breeding is a very long standing program at the University of California, Riverside (UCR). While cultivar breeding occurs at the Riverside campus, most of the evaluation of new cultivars is done in Irvine at the South Coast Research and Extension Center. When the Center was first set-up the whole area was considered to be very rural but is now in a built-up area.

Over the past few years the costs involved with plant breeding have been rising due to the increased expense of water and University of California budget challenges. The researchers have been doing their best to keep costs down, however, it is inevitable that maintaining the new cultivar selections is going to cost more. The breeding program is very active with a large number of new fruiting selections from California and around the world under evaluation. Since the 1980s there have been seven new fruiting cultivars released: GWEN, Whitsell, Esther, Sir Prize, Lamb Hass, Harvest and GEM. The plant breeding program is constantly changing as new technology is used to keep the program up-to-date with modern techniques.

As part of staying current with new technology, training of staff is underway on a technique known as marker assisted selection for seedlings with high nutrient traits, e.g. vitamins and bioactive compounds. Marker assisted selection speeds up the process of weeding out seedlings that do not have the traits of interest shortly after they have germinated instead of having to wait several years until the trees bear fruit.

The rootstock breeding program has also been very active in seeking root rot resistant rootstocks. and the University is in the process of releasing the root rot tolerant rootstocks Zentmyer, Uzi and Steddom to California avocado growers. A further three rootstocks in the program have promise and more South African rootstocks are being tested.

Entomology - researchers: Joe Morse, Richard Stouthamer, Jocelyn Millar, Frank Byrne, Robert Krieger and Mark Hoddle

The Commission has been strongly involved in funding entomology research, particularly on scale insects, developing pheromone traps, registering pesticides and methods for monitoring pests in the grove. In the case of scale insects there is good news in that the populations of the four most common scale species (Lantania scale, Greedy scale, California Red scale and Oleander scale) in California avocado groves are low, suggesting good biological control.

Fortunately, to date none of the seven species of exotic Mexican armored scales have been found to be established in California avocado groves despite the large numbers of fruit imported into California from Mexico. In California avocado groves scale parasitoids appear to be exerting biological control. There are four common species, four rare and four that show up on DNA tests but re-



main unidentified.

It is not enough to know what insects could be present in avocado groves but also to be able to detect any pests. To do this, the Commission has been funding research that identifies and synthesizes the chemicals that make up mating pheromones for pest insects. The pheromones are then used to make traps that are specific to the males of the pest in question. This has been a very successful research program with traps for a number of insects manufactured.

In addition, to traps, research is continuing on the best way monitor pest populations with a project currently underway on a binomial sampling method for persea mite that will be more accurate and faster than current methods for determining persea mite populations on groves.

Insecticides are valuable tools for California avocado growers to manage insect pests when the normal biological controls are not working. For many avocado groves insecticides cannot be applied as the land is too steep. As an alternative to foliar insecticides, systemic insecticides are being evaluated that could be applied

through the irrigation water. Insects can build up resistance to specific insecticides if they are the only means of controlling a pest. The ideal situation is to have available different insecticides that have a range of modes of action for controlling insect pests. Through rotation of the different types of insecticides, resistance build up by pest insects can be minimized.

A significant success story of the entomology research has been the registration of a number of new pesticides with different chemical modes of action for use on California avocados. These new pesticides have been targeted for use on controlling avocado thrips and persea mite. The pesticides: Danitol, registered February 2010, Envirdor, registered June 2010, Zeal, due to be registered late 2011, Fujimite, to be registered in 2012 and Movento is in the registration process. With such a selection of control options and advice to not overuse one type of pesticide, California avocado growers should be able to achieve good control of insect pests while maintaining the efficacy of the insecticide for a long time.

Disease - researcher: Akif Eskalen

The presence of diseases in avocado groves is constantly being assessed and in recent years branch canker has been recognized as being present on California avocado trees. To control branch canker five fungicides are being evaluated.

Postharvest - researchers: Mary Lu Arpaia and David Obenland

California 'Hass' avocado fruit is recognized for its good eating characteristics especially on taste and texture. There is little really known about what defines the sensory attributes of 'Hass' fruit. By having a better understanding of what makes up the taste of California avocados the influence of minimum and maximum maturity levels and postharvest practices can be determined on fruit quality. The improved understanding of the quality of California avocados can also be used to help in the development of new varieties in the plant breeding program.

Production - researchers: Mary Lu Arpaia, David Crowley and Carol Lovatt

Increasing yields and lowering costs of production are important aspects of the Commission research program. A research project that is near completion has been developing a model that can be used to predict the effect of chloride content and salinity on yields. There are many potential factors that can be involved in the trees responses to salinity. In an innovative approach, neural network models are being used to isolate what are the most important factors against the type of rootstock and the rootstock response to salinity. So far the neural network model has been able to indicate that Mexican rootstocks and clonal Thomas rootstocks are most the sensitive to salinity. Bet-

ter rootstocks are Duke 7, Dusa and Toro Canyon.

Other research on yields and alternate bearing is also indicating that a possible alternate bearing mechanism is that the fruit in the ON crop inhibit return bloom and consequently the following crop. Plant growth regulator treatments are being investigated that increase summer and fall shoot growth and increase flower bud break to mitigate the effect of heavy fruit loads on trees reducing yields in the following year.

The Future

The PRC has been debating and evaluating Concept Proposals for new research over the past several months. A key goal of the production research program is to help California avocado growers keep their orchard profitability rising. In the past two years, the industry average dollars per acre has risen after five consecutive years of decline. To keep moving forward on profitability, California avocado growers need to have the opportunity to raise incomes by increasing yields and lowering costs. It is essential that the research to help increase yields and lower costs is well planned so the limited Commission funds available are spent in the best way to achieve real changes on the grove. Considerable effort is going into discussing and evaluating research proposals before they are brought to the CAC Board for approval. In new research projects, the Commission is looking for greater collaboration between researchers with multi-disciplinary research teams.

The Commission also recognizes that high quality research projects take a number of years and a commitment of funds for the duration of the project. Accordingly, there is the potential to invest large amounts of assessment dollars necessitating the return on investment of the research to be considered. In

this sense, the research program will become more business oriented over time. To increase the accountability for the research, there is a new research agreement between CAC and the University of California allowing research projects to be reimbursed against milestones.

Overall the greatest change in the CAC research program is a greater emphasis on achieving change in the grove. This will require a lot more connection between research and outreach. The outcome should be that California avocado growers can expect more outreach sponsored by the Commission.

From the Concept Proposals received, the PRC has focused, initially, on those proposals with an outreach and production emphasis, and a proposal on avocado diseases. These proposals could be seen to have some degree of interconnection. Proposals were also received on the subject areas of plant breeding and entomology. Plant breeding and entomology are subject areas that are very important for the future of the California avocado industry. Plant breeding, in particular, is an activity where there has been considerable technological advances in the science of genetics in the past few years with a great deal more advances to come. To best identify the future needs of plant breeding activities that may be supported by growers assessment dollars, an informal round table discussion between PRC members and researchers from several scientific disciplines is planned. Similarly, there is planned an informal round table discussion on the goals of entomology research.

There were five Concept Proposals recommended by the PRC for approval by the CAC Board at the November 17, 2011, Board meeting. The following are very brief descriptions of each proposal.

Professor David Crowley of UCR has proposed to develop a decision support tool for growers that will help determine leaf nutrient targets when assessing how to maximize yield for different rootstocks and salinity conditions. This is a project with exciting potential to add more modules on diseases, fruit quality and other cultural practices. The key to the decision support tool is the model Crowley and his team will develop using neural network analysis. This project is proposed to go for six years and to collaborate with other research projects.

Dr. Akif Eskalen of UCR has proposed a detailed survey of California avocado groves for diseases. This is the first step in establishing information on what diseases are most commonly present and how severe the diseases are. This information is vital for understanding the economic damage disease is causing avocado growers and what are the most important diseases to be controlling and educating growers on. The proposal seeks to have some collaboration with Professor Crowley and to investigate the possible use of satellite imagery to detect diseased avocado groves.

Dr. Mary Bianchi of the UC Cooperative Extension (UCCE) service in San Luis Obispo County has proposed to determine the difference in the timing of phenology in counties from the north to the south using remote monitoring with game animal cameras. At the same time, Dr. Bianchi is proposing to look at using nutrient analysis of flowers rather than leaves for determining nutrient requirements for the trees and the timing of fertilizer applications. This proposal also seeks to collaborate with Professor Crowley.

Dr. Gary Bender of the UCCE service in San Diego County has proposed developing a high density

demonstration grove starting with land preparation and planting of trees. Alongside developing a grove Dr. Bender plans to conduct pruning trials on high density and to conduct avocado classes for new growers in San Diego County. For interested avocado growers in other counties Dr. Bender has proposed to produce online classes for growing avocados in which California avocado growers from anywhere can participate.

Dr. Jaime Salvo of INIA in Chile has proposed to survey California avocado groves as to the different shoot type ratios (sylleptic vs proleptic) and their association with yields. This project would build on Dr. Salvo's Ph.D research in California and research he has been conducting in Chile over the past few years. The knowledge gained from this pro-

posal would then be used to design pruning methods that preserve the most productive fruiting wood. Dr. Salvo and Dr. Bender have agreed to collaborate and share ideas between their proposals.

Next Steps

The Production Research Committee met on November 2 to further discuss Concept Proposals revised to address comments by the PRC when the proposals were first discussed. At the meeting the PRC voted to recommend to the CAC Board the above Concept Proposals be approved for development into full proposals. The CAC Board approved the Concept Proposals to be developed into full proposals for consideration of final approval at the January 2012 CAC Board meeting. 🥑

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by Ken Melban
CAC Director, Issues Management

2012 Promises to be Busy Year

As the California Avocado Commission (CAC) enters into the 2012 season various issues remain in the forefront, impacting California's avocado growers. From legislative efforts that threaten the viability of a reliable labor supply to increasing water costs, the Commission staff is committed to ongoing advocacy on behalf of California's avocado growers. Following is a brief update on some of the Commission staff activities.

Labor

One of the biggest concerns facing California avocado farmers is the potential loss of hard working, skilled laborers. The existing agricultural workforce is jeopardized by a failed immigration policy that doesn't appropriately address the important role undocumented workers play in America's agricultural sector. To make matters worse, several states—Georgia, Alabama, and Arizona—have adopted tough anti-immigration laws causing farm workers to flee to neighboring regions, crops to go without harvest, and local economies to stagger. Georgia's E-verify law, which obliges employers to check the legal status of prospective workers against a federal database, is one such example.

As the Georgia farm economy went into a tail spin, House Judiciary Chairman Lamar Smith of Texas

introduced the Legal Workforce Act (HR 2885), that would make E-Verify mandatory nationwide. The E-Verify Bill has passed out of the House Committee on the Judiciary and is expected to be heard soon before the full House. Whether or not the Legal Workforce Act passes out of the House, it is evident that this issue must be addressed and a solution developed that acknowledges the importance of securing our borders while also providing a path for migrant farm workers to work here legally.

The Commission has joined with the Agriculture Coalition for Immigration Reform, a grassroots organization made up of over 300 agricultural industry groups across the U.S., to urge Congress to craft a guest worker program that keeps agriculture in business. In the balance is the economic engine fueled by American farms, which literally contributes billions to the gross domestic product. Commission staff has been meeting with key congressional members and delivering the urgent message that immigration reform is necessary and must include a solution for a viable agricultural workforce.

In addition, CAC has provided industry members with opportunities to voice their concerns to elected officials through electronic alerts. Although there is still much work to be done, based on the increased

national awareness of agriculture's plight and the economic consequences of doing nothing, the prospects for a guest worker program seem a little brighter.

Water Supply Costs

Water represents the highest input cost for most California avocado growers and those costs continue to rise. In Ramona, Calif., for example, the municipal water district recently approved a staggering 41 percent increase in the agricultural water rate. Avocado growers in the southern regions are presently paying as much as \$1,200 an acre foot. The local water districts say they are simply passing on the costs the wholesalers charge. The reality is there are limited local water supplies in most avocado growing areas, which means much of the water is "imported" via either the State Water Project or the Colorado River Aqueduct, and San Diego and Riverside are among the furthest delivery points. Many local water districts are exploring water reclaim options such as ground-water recharge and recycled water, which could provide some control of costs long-term.

On January 1, 2013, the Metropolitan Water District (MWD) will phase out the Interim Agricultural Water Program (IAWP) which was first put in place, with Commission

involvement in 1994. Over the years, that program has delivered millions of dollars in value to California avocado growers, in the form of a rate differential. The San Diego County Water Authority (CWA) has its own program—the Special Agricultural Water Rate (SAWR)—which is supposed to be passed on to growers via local water agencies. In Ramona, that didn't happen, and discussions are presently underway to effect a change, if possible. Both the IAWP and SAWR provide a rate differential in exchange for a water management benefit, such as interruptibility.

A further challenge to the situation is Proposition 218, the "Right to Vote on Taxes Act," passed in 1996, which expanded restrictions on local government revenue-raising. Recently some local water districts have decided the act limits their ability to provide lower rates to specific user classes, such as agriculture. This interpretation makes it even more difficult for agricultural users to secure favorable water rates. To date, litigation over Proposition 218 has been limited, and the prospects of prevailing on a water-related cause of action remain unclear. Nonetheless, the Commission and the California Farm Bureau Federation have been cooperating to identify opportunities to alter water agency perceptions about Proposition 218 and its requirements.

The Metropolitan Water District of Southern California offers incentives for agricultural system capital improvements to improve water use efficiency. Rebates provide up to 50 percent for the purchase of certain equipment for agricultural customers who pay at full service rates. Thus far, this program has been underutilized by farmers, primarily because of political constraints between MWD and its member agencies. The Commission is currently engaged with MWD on exploring options that might result in higher

grower participation.

Lastly, the Commission is aware of ongoing concerns over salinity levels in the water supply, especially with respect to water sourced from the Colorado River. Although more ample State Water Project supplies, which are blended with Colorado River water, have mitigated these concerns somewhat for the time being, a long term solution is needed. One element of such a solution may be salt tolerant rootstocks. The Commission took a bold step in October to increase the amount of budwood material available for testing and semi-commercial evaluation. With a little luck, salt tolerant rootstock varieties will begin making their way into commercial production in the near future, with the promise of possibly increasing tree vigor and reducing the amount of water needed for soil leaching. Meanwhile, the Commission will stay engaged at the local and state level and remain focused on seeking solutions to improve the affordability and quality of our precious water supplies.

2012 Farm Bill

Congress is in the process of reviewing the 2012 Farm Bill. Commission staff has met with congressional members and key staff to communicate the importance of maintaining critical funding that benefits specialty crops, such as avocados. Commission staff is focusing on Farm Bill components including the Specialty Crop Block Grants, measures to combat the entry of pests that pose a phytosanitary threat to agriculture, and modifications in the USDA conservation programs that will allow increased benefits to specialty crop producers.

In addition, an effort is underway through the leadership of the Commission to reform the tax system and allow for permanent crops, such as avocados, to be eligible for an Accelerated Tax Depreciation upon

planting. According to the current system, "placed in service" for an avocado tree doesn't occur until the first harvest. The Commission believes that by enhancing the depreciation provisions for avocado growers, investment in new plantings and replanting may be stimulated, making for a stronger industry.

6-BA Registration

In September the Commission was successful in securing a residue study project with the IR-4 (Inter-regional Research Project No. 4) on 6-BA (6-benzyladenine). The IR-4 program aims to facilitate the regulatory approval of crop protection chemicals for use on minor crops. 6-BA is a plant growth regulator that was part of a Commission-funded study conducted by Dr. Carol Lovatt of UC Riverside. Dr. Lovatt's research results demonstrated that 6-BA, when applied at full bloom, resulted in a net increase in three-year cumulative yield of larger fruit. The IR-4 will be conducting residue studies of 6-BA on avocados in 2012 that are necessary to have the 6-BA USEPA label expanded to include avocados.

Uniconazole Registration

In October Commission staff met with the United States Environmental Protection Agency (USEPA) to discuss the possibility of submitting a registration application on Uniconazole (Sunny), a plant growth regulator used in other avocado producing countries to help control canopy size. Based on the meeting with USEPA, the Commission is working to identify what studies exist from registrations in Australia and New Zealand, and if those studies can be used to support a USEPA registration. Once this information is gathered, the Commission will then be able to make a determination of potential costs in moving forward with a USEPA registration application. 

BRAINSTORMING & the World Avocado Congress

By Jonathan Dixon

CAC Research Program Director

Every four years two important international meetings on avocados occur. The first is the World Avocado Congress with growers, researchers and industry people from all the major avocado growing areas of the world meeting for a week to discuss all things to do with avocados.

The World Avocado Congress started in South Africa in 1987 and has been held in the United States (1991), Israel (1995), Mexico (1999), Spain (2003), Chile (2007) and now Australia this year. There were participants from 24 countries in Australia for the seventh event. The second important international meeting is Avocado Brainstorming which started as an effort to connect California growers and international researchers in 1999 at the University of California, Riverside. The Brainstorming meeting does not compete with the World Avocado Congress and has developed into a complimentary meeting either before or after the World Congress for researchers.

Tropical Cairns in the northern part of Queensland, Aus-

tralia, was the venue for the seventh World Avocado Congress. Cairns was chosen for its great location next to the Great Barrier Reef, tropical rain forest and avocado groves. The Congress was attended by close to 800 participants and support industry booths were strongly in evidence. Each day there were four concurrent sessions covering the main subject areas of: Pests & Diseases, Cultural Management, Post Harvest/Processing, Genetic Resources and Marketing. There were 136 lectures, so many that it was impossible for any one person to hear everything. In addition there were more than 30 scientific posters available to view. All of the presentations were available in English and Spanish.

The main themes developed included: pruning to keep the size of trees down and allow better management of high density plantings, management of Phytophthora root rot and associated plant breeding activities to get a truly resistant rootstock, alternate bearing, improving pollination success, water management and management of insect pests. The most innovative research appeared to be that of Dr. Neena

Mitter from Australia who is using ribonucleic acid (RNA) silencing techniques to engineer a resistant rather than tolerant rootstock to *Phytophthora* root rot. In her research Dr. Mitter has also been developing and improving recovering avocado trees from somatic embryos and reported a 40 percent recovery rate. Should this research progress well and the recovery rate be doubled, there is then the possibility of tissue culture production of avocado trees.

Research on pruning still seems to be very much in a “spray and pray” mode with lots of ideas being tried but without associated research on the deeper understanding of how the trees develop branches and flowers. The essential principles being applied were to have small trees with a shape of little or no canopy “dead-zone” areas. As the canopy is usually only about three feet in depth, trees much taller are considered to be “wasting” the space available. To limit tree size there was a claim that root restriction, where the trees were grown on shallow soils, is needed but is only really possible where root rot is not a problem. The pruning practice described is to try and produce trees with large numbers of sylleptic shoots with removal of the proleptic shoots. Such trees are expected to flower very heavily despite being small as there are always branches with lots of growing tips to become flowers. By keeping the trees small there was the expectation of water savings, especially when combined with the use of plant growth regulators to restrict canopy size.

Flowering and fruit set continues to be of interest to researchers outside the United States. While not specifically reported at the Congress, during discussions with researchers in session breaks, research aimed at understanding flowering at the gene level has been underway in recent years and is building momentum in a number of countries. In future Congresses, there may be reports on some of the basic mechanisms on flowering. Pollination still remains a subject of considerable interest with Dr. Gadi Ish-Am from Israel presenting convincing evidence that for Hass avocados wind plays no role in pollination. From this authors perspective, Dr. Gadi Ish-Am explained well what has been observed by many researchers, avocado growers and grove managers that bees are necessary for a good crop and a grower needs to put in as many beehives as possible.

There were also reports on research to understand why avocado fertilization success is so poor and fruit set is very low in relation to the number of flowers on the trees. Even a slight increase in the percentage of flowers that set fruit would greatly increase yield for what would appear to be a reasonably small effort. Other research presented at the Congress suggested that increasing yield relies more simply on there being an increase in flower numbers and increasing the percentage fruit set does not easily happen. Finding which is most important, the percentage fruit set or flower number, will allow avocado growers to determine the best



cultural management techniques to improve yields. By the next World Congress there should be more results on this area of research.

The California Avocado Society and the California Avocado Commission put in a bid to have the 2015 World Avocado Congress in California to celebrate the 100 year anniversary of the California Avocado Society. Colombia and Peru also bid for the next World Congress. There was a friendly rivalry between each of the bidders during the Congress with a vote from participants at the Congress in the final session. The resulting vote was very strongly in favor of the next World Avocado Congress to be held in Peru.

Avocado Brainstorming was first held in 1999 after the World Avocado Congress in Mexico. Brainstorming was a follow up meeting to that Congress where there was a greater opportunity for California avocado growers to interact with international avocado researchers. There was a second Brainstorming meeting in 2003 in Ventura following the World Congress in Spain that also involved California growers and researchers. Both Brainstorming meetings were successful events but appeared to start to clash with the World Congress, which increasingly successful at connecting growers and researchers. There was still a gap open for a meeting that took avocado researchers into a setting of peer-to-peer interactions for unfettered debates about avocado research topics. The result has been an innovative format for the past two Brainstorming meetings in Chile, 2007 and New Zealand, 2011. The format is similar to that used for very successful scientific meetings called the ‘Gordon Research Conferences’ that have been held since 1931. At the Avocado Brainstorming meeting, participants are not limited to just avocado researchers, and young researchers are specifically invited to the meeting to encourage and de-



velop the next generation of avocado scientists.

One other important feature of the format is that no proceedings are published of the meeting as this encourages open discussion of the very latest research results and ideas without the researcher fearing their ideas will be stolen. The outcome of such a meeting is greater collaboration and new ideas both of which are highly valuable.

There were 56 participants from nine countries who spent an intensive three days discussing: What is new on the avocado frontier -- alternate bearing, breeding and genetics, fruit quality, and health and nutrition. During the sessions I noted key points expressed in the discussion and any new ideas that occurred to me for reference once back in California.

In the first session there was an update on the Avocado Genome Project nearing completion in Mexico. Once the genome sequencing has been completed, is checked and finalized there should be a resource for scientists to look at many different aspects of avocado trees at a deeply fundamental level. As useful and interesting as the avocado genome will no doubt prove to be, based on the experience of other genome projects, it will be a number of years before growers see direct benefits of a better understanding of avocado trees on the grove. The first research activity to benefit will probably be avocado plant breeding, which by its nature tends to be long term.

One day was spent discussing alternate bearing examining the internal tree factors, external factors and genetic factors. The basic idea discussed was that changes in the trees are the result of changes in gene expression that are turned on by other developments in the tree and the environment. There are two avenues of investigation: changes in the energy available within the tree and the effect of the fruit on the rest of the tree. These were discussed in the context of alternate bearing theories and the discussion reflected the leading research on alternate bearing in the very recent past. There was a good description and discussion on "crazy bloom" in Mexico to help understand the flowering fate of shoots. I concluded that for best yields avocado trees should have two vegetative flushes per cycle, retain overwintered leaves at the time of flowering, maintain good root activity and ensure there are shoot flushes and aim for a moderate bloom intensity.

In the breeding and genetic session, Dr. Mitter talked about her research on Phytophthora resistant rootstocks which was described above. There was also valuable discussion around avocado breeding and the possible increased use of biotechnology. What was clear from the discussion was the need to have a clear idea what the breeding is to achieve through a good definition of what the breeder is being asked to deliver. This is so the most important traits are consistently selected for and scarce resources are used wisely.

For the fruit quality session there was a discussion on the skin of the avocado fruit and the possible importance of changes in the skin for avocados after harvest. In some avocado producing countries, the fruit has to be shipped long distances to reach market. The avocado fruit transported long distances have a different postharvest characteristics than avocado fruit harvested close to the market. The difference could be in characteristics of the skin possibly resulting from the growing region or conditions the fruit are shipped in. While no conclusions were drawn, understanding the fruit skin may be a useful area of future research for better maintaining the quality of the fruit after harvest.

The final session was on some of the effects avocados have on helping people to live longer and feeling full after eating. This was an interesting session and considerably different than the other sessions. After the discussion it was clear that avocados really should be classed as a super food and eaten by everybody.

Overall the Brainstorming was a good meeting that helped to bring many of the researchers together before the World Congress. Both meetings were enhanced by each other and the CAC sponsorship at both meetings was money well spent to keep abreast of the latest avocado research from around the world and foster closer ties between researchers. 🥑

Growers Advocate For Lamb Hass

By Tim Linden

A couple of growers who have had considerable experience with the Lamb Hass variety avocado for more than a dozen years are convinced that it offers some great advantages and could well be planted in larger numbers.

"It's about price per pound and production per acre," said Chris Ambuul of S&S Grove Management Services, Escondido, Calif. "Even though it sells at about a 10 percent discount from the regular Hass, the extra pounds per acre and size curve more than make up the difference."

Ambuul and another grower, Chuck Wehrheim, discussed a half dozen positive attributes of the variety in separate interviews with *From the Grove*. Each grower started planting the variety in 1998 so each has much experience to draw upon.

Wehrheim said the advantages begin in the grove itself as the Lamb Hass's growth pattern allows for higher density planting. "We've settled on a 6 by 14 spacing schematic which is twice as efficient as the 12 by 14 spacing we use for the regular Hass," he said. "That gives us double the trees per acre."

Ambuul has used a number of different plant configurations that he says work well with the upright growth pattern of the trees. Each configuration allows for the planting of more trees per acre compared to the regular Hass.

The growth pattern of the trees also helps protect the fruit in wind prone areas. Ambuul said that because the tree grows upright, the fruit tends to hang within the branches of the tree, which creates a barrier from heavy winds. "And also the tree just seems to hold the fruit better. We've gone into (Lamb Hass) groves after heavy winds and even though many of the leaves were stripped on the windy side, the fruit is still attached."

He said this makes the Lamb Hass a particularly good choice for areas where wind can be a consistent problem.

Wehrheim agrees. "I've gone into Lamb Hass groves after a very heavy wind where you would expect lots of damage and we've found only one or two pieces of fruit in the whole block on the ground."

But both growers say it is the size of the fruit itself that makes the Lamb Hass an economically viable variety. "We



get an increase of at least one or two sizes," said Ambuul. "The size profile of a Lamb Hass on average is perhaps 8.5 ounces. That compares very favorably to a regular Hass, which typically weighs about seven ounces."

Wehrheim said that size advantage equals money in the pocket to growers. He said when you crunch all the numbers, a Lamb Hass will return more dollars per acre than a regular Hass because of the increased tonnage.

Ambuul said that while the jury is in on the advantages of the Lamb Hass, he said growers are just now getting to the point where the size and price differential are more easily charted. He explained that it takes an avocado tree about a dozen years to reach full maturity and produce at its peak volume. Even the earliest Lamb Hass trees planted back in 1998 are just now reaching their peak years of production so the story is just getting better and better. "On a block planted in 2001, we just harvested 26,000 pounds per acre," which he added was very significant. "Even given its alternate bearing characteristic that's more than your typi-

cal regular Hass.”

Wehrheim said the Lamb Hass does tend to have a higher propensity than the regular Hass to alternately bear fruit but the total volume in a two year period is still significantly higher.

“The size difference is so much greater it makes up for these other factors,” he said.

Still another advantage of the variety is that it produces its crop later in the season. From a grove management standpoint, Ambuul said it is great to have some fruit that is for late season harvesting. “We manage about 25 percent of the Lamb Hass production in California,” he said. “This allows us to extend the harvesting season and helps us keep a more constant labor force. We can harvest the regular Hass through June and then switch to the Lamb Hass from July into October.”

From a marketing standpoint, this creates a longer presence of quality California fruit in the market.

Ambuul said the groves he manages are increasing their plantings of Lamb Hass and he expects that to continue for the foreseeable future.

Wehrheim is also very bullish on the Lamb Hass but does have one caveat. He said for the variety to continue to expand its marketshare, the marketers in the industry have to do a more consistent job promoting it. He said most avocado shippers don’t push it enough.

Ambuul believes that his primary handlers have done an excellent job promoting the fruit through steady, sustained programs that give buyers a reliable supply. He liked seeing the Lamb Hass promoted as a “Jumbo Hass” and believes that increased plantings will only help solidify its place in the market. 🥑

Jan DeLyser

Named 2011 Marketer of the Year

Jan DeLyser, vice president of marketing for the California Avocado Commission (CAC), received the prestigious 2011 Marketer of the Year award from *The Packer* at the annual Produce Marketing Association convention in October.

The award was presented by *The Packer* Editor Greg Johnson who called DeLyser the “consummate marketer” whose style was “subtle but effective.”

The Packer takes nominations from the industry before it presents the award every year and Johnson said that DeLyser’s name was mentioned on many different ballots. He took the audience through her career which began at *The Packer* after she graduated from college with a journalism degree in 1975. DeLyser also was at the Fresh Produce & Floral Council for 13 years and spent time in marketing and sales for both Sun World International and Westlake Produce Company. Since 1998 she has served the avocado industry as a member of the CAC staff.

Johnson noted that above all her “integrity and innovative thinking” stood out above the crowd.

DeLyser, who was surprised by the award which is always presented without advance notice to the recipient, praised the avocado industry and the other members of the CAC staff. She said, “it is an honor and a privilege to get to do what I do.”

She said it is a joy to work in the avocado industry and said the product itself makes it much easier to be successful. “I have to thank the growers,” she said after the event. “They give us such a good product to sell.”

Johnson discussed the phenomenal growth in sales of avocados over the last dozen years and said DeLyser certainly played an important role in that growth. 🥑



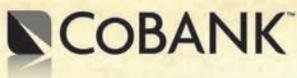
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CULTIVATING GROWERS

Kelly Haeseke, avocado grower in Montecito—

"My grandfather grew citrus with pride and care, and I loved the groves as a child. I ventured into the avocado business three years ago after acquisition of an 84-acre avocado ranch. The forty-year-old orchard was in a weakened state due to many years of neglect and mismanagement. Having no formal ag training, I welcomed the expertise of my Index Fresh field man as we began the process of rescuing the trees and increasing production. With determination, cutting edge science, and hard work, we witnessed a transformation nothing short of a miracle.

About eight months ago, another avocado grower had heard about the turn-around of our ranch and shared her experiences with me, about a different large packer that was handling her crops.

She felt she wasn't getting sufficient attention or service from them and that their prices weren't competitive. I told her, "You really should try Index Fresh."



KELLY HAESEKER
Avocado Grower

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