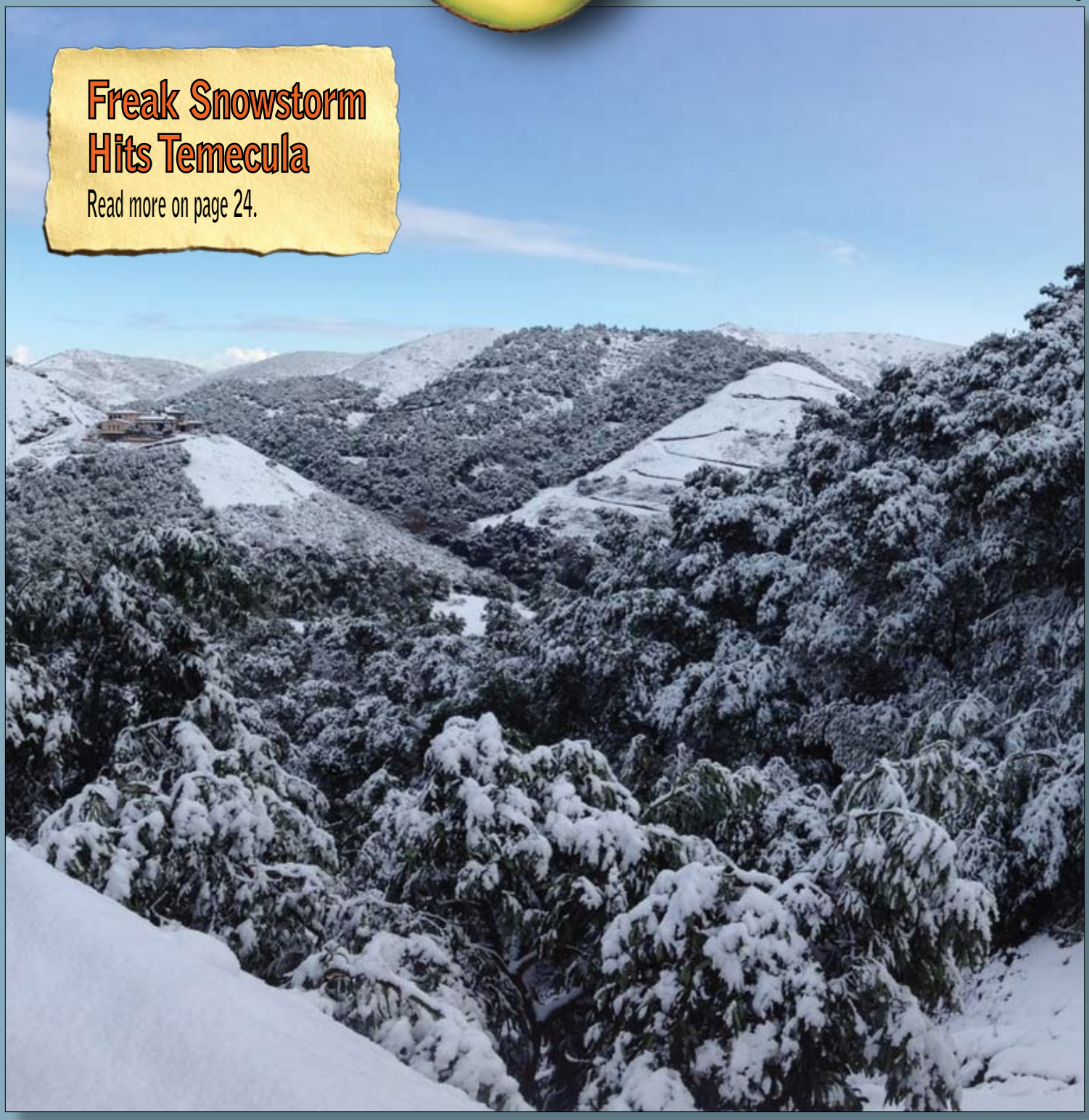
Spring 2015

From the Grove

The Latest News from the California Avocado Industry



Freak Snowstorm Hits Temecula

Read more on page 24.

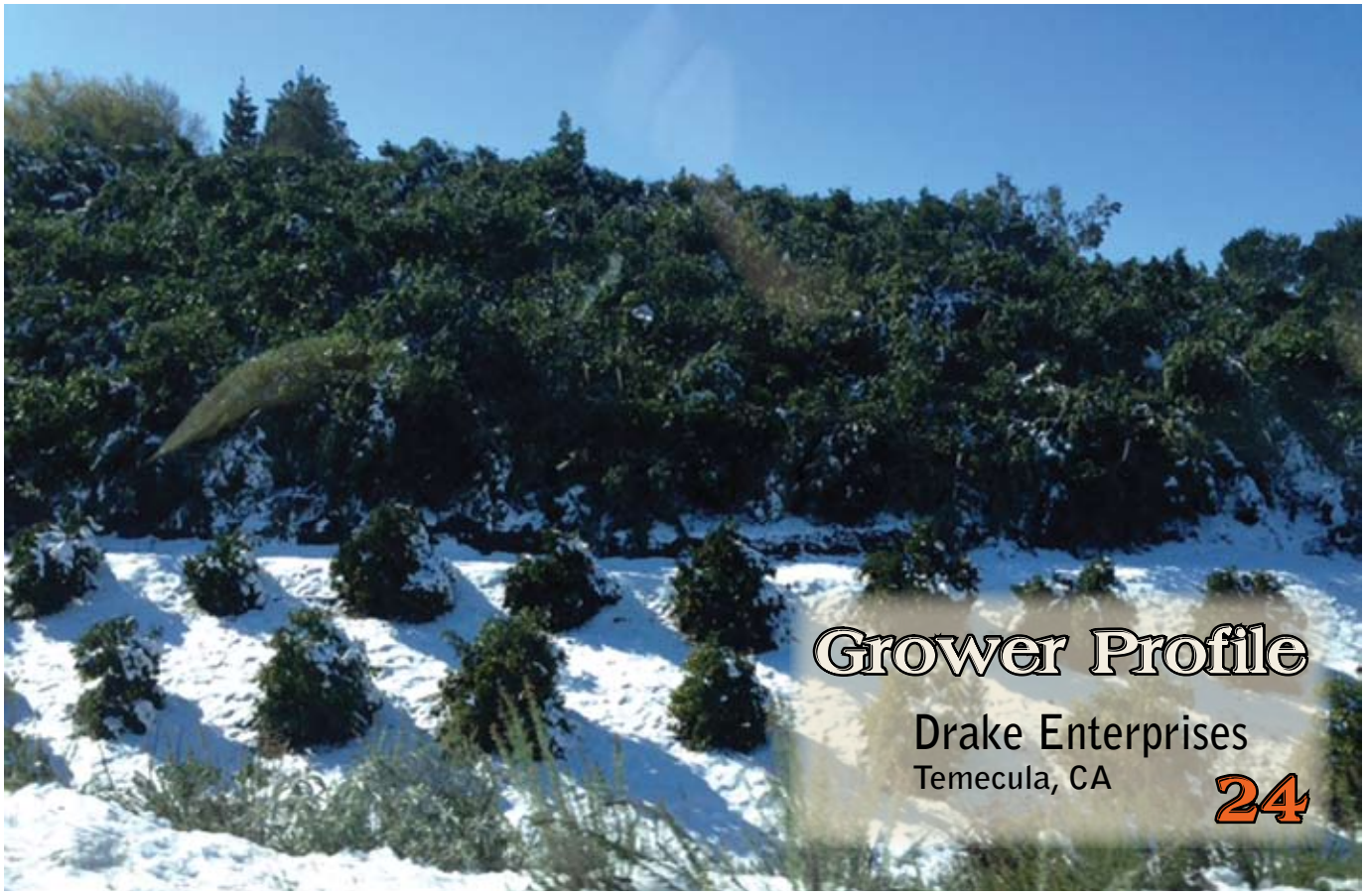
At Del Rey Avocado Company, we grow relationships

Getting to know their growers and investing in long term relationships, two of the many services that Del Rey Avocado field representatives provide to help bring delicious avocados into the market. Call them- they look forward to meeting you.

AVOCADO
Fallbrook's
DEL REY
California's
COMPANY

Bob Siemer *Jessica Hunter*
Wayne Brydon *Gerardo Huerta*

1260 Main Avenue, Fallbrook CA 92008
800-933-8325 :: ww.delreyavocado.com



From the Grove

Volume 5
Number 1

President
Tom Bellamore
CA Avocado Commission

Editor
Tim Linden
Champ Publishing
925.258.0892
tim.linden@ymail.com

Ad Sales
Tom Fielding
Office: 626-794-6823
Cell: 626-437-4619
tomfielding1@mac.com

Design/Layout
Heather Gray
User Friendly, Ink.
userfriendlyink@gmail.com

April Aymami
Industry Affairs Manager
949.754.0738
aaymami@avocado.org

California Avocado Commission
www.californiaavocadogrowers.com

Spring 2015

In This Issue

Departments

Volume 5, Number 1 SPRING 2015

FROM THE GROVE is published quarterly by California Avocado Commission; 12 Mauchly, Suite L; Irvine, CA 92618. POSTMASTER: Send address changes to California Avocado Commission; 12 Mauchly, Suite L; Irvine, CA 92618.

Message from the President

Tom Bellamore

A Long Road Tests A Horse's Strength 路遙知馬力

This proverb dating back to China's Yuan Dynasty draws a parallel between the literal idea of being tested over time and what it takes to reveal the nature of a person's true heart or character. In the simplest sense it describes the California avocado industry's plight to gain access to one of the largest consumer markets in the world, a protracted process that has dragged on for nearly a decade. Perhaps it also reveals something about the nature of China as a trading partner, and what lies in that country's true heart.

With a population approaching 1.4 billion, China is a marketer's dream. China's middle class—those with annual household earnings between U.S. $9,000 - $34,000—may already be 600 million strong, and a recent report by McKinsey & Company projects continued, fast-paced expansion. By 2022, according to the report, more than 75 percent of China's urban consumers will fall into that category.

The Chinese are already fruit and vegetable lovers, so opportunities for the fresh produce sector should be limitless. China produces half of the fresh vegetables grown worldwide and 30 percent of all fruit. Since 2004, it has ranked first as the single largest producer of fruits and vegetables in the world. In 2012, less than 3 percent of that production was exported, signaling quite an appetite for fresh produce in its home market. China sends apples, pears, citrus and garlic abroad, and the United States factors into its market development plans as exports rise.

Presently, China has no real commercial production of avocados. The fruit that is the mainstay of California cuisine is relatively new to the Chinese palate, but there is considerable interest in the product, which is increasing in popularity. In the early stages of market development, consumer education is critical. Nutritional benefits, ripening and handling tips, and usage ideas all play a key role in developing a taste for avocados where none existed previously.

It is not lack of familiarity, however, that is keeping California avocados from becoming the sweetheart of the fruit and vegetable world in China. It is the Chinese government—for reasons that are hard to pin down. The California Avocado Commission (CAC) first requested market access to China for California avocados in July 2005. Before that year had ended, the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) formally petitioned for access and provided a pest list for California avocados, the first step in the process. In 2006, access seemed promising as China's General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ), the counterpart to APHIS, indicated that work on a pest risk assessment (PRA) was underway. The Commission had also convinced a Chinese fruit and vegetable importer to request an import permit for California avocados and APHIS had made avocados one of only four commodities on its priority access list. Early in 2007, AQSIQ told APHIS that it was still working on the PRA, but no import permits were issued.

Fast forward to 2014, with the 10-year anniversary of the initial access request just around the corner. Although avocados were discussed at every annual bi-lateral meeting between APHIS and AQSIQ since 2005, a PRA had yet to materialize from China. Meanwhile, China has granted access to Mexico and Chile, and exports of avocados from those countries began to flow eastward. CAC worked with eight members of the California Congressional delegation to generate a letter to APHIS expressing frustration with the process, but still nothing changed. In fact, the Chinese government was trying the patience of other U.S. commodity groups as well, by opening and closing access to the Chinese market for apples and citrus based on phytosanitary decisions that to some, seemed questionable.

ECOFLOW™
Catalytic Water Conditioner

Save Water • Cleanse Soil • Improve Yield

The **ECOFLOW** *hydroceramic technology* (university and field tested for the last **FIVE** years) *has proved to have superior leaching capabilities, while simultaneously saving water.*

A few of our long-term satisfied customers:

USER SINCE	
2010	Matt Hand ~ So. CA Entomology & Grower
2011	Jaime Serrato ~ Serrato Grove Management
2011	Gene Bianchi ~ Grower
2011	Ralph Foster ~ Grower
2011	Ron Gates ~ Organic Grove Management
2011	Jon Martin ~ East Bros. Grove Service

Please feel free to call them! We will be happy to supply contact information to you upon request.

Also, check with **CHUCK BANDY**
of McMillan Farm Management
about 50% reduction of root zone chlorides
in a drought impacted grove, just last year.

Ask us how fast the ECOFLOW can pay for itself and the 50% MWD Subsidy

Currently 200+ Installed in Avocado Groves!

FOR MORE INFORMATION & HOW TO APPLY FOR THE MWD SUBSIDY

Contact Earl Coleman at 951.587.8375 or earlcoleman288@msn.com
Ventura & North Contact Joe Haslett at 805.748.4033 or joeh.ecoflow@gmail.com

www. ecoflow.co

Manufactured exclusively in the U.S.A. by Morrill Industries, Inc.

It has been a long road for California, and as a horseman, I know my trusty steed's strength would indeed have been tested on such a journey. Has China also revealed its true heart with respect to these developments? Perhaps. Despite California's claims that China lacks a legitimate phytosanitary reason for excluding access for our avocados, China adheres to its own timetable. The timetable is likely dictated by a variety of factors, including the country's own trade objectives and desire for *quid pro quo* when it comes to access and the interests of its fruit and vegetable sector. But the heart is a funny thing.

Late last year, APHIS informed the Commission that AQSIQ had a new Director General who was visionary in a way unlike his predecessors. Another China-U.S. bilateral meeting was scheduled for early 2015, and Director General Li accepted an APHIS-proffered invitation, at the request of CAC, to visit a California avocado grove. The grove visit took place on January 23, and the results were truly magical. So impressed by the majesty of the western transverse ranges in which the Ventura County grove was nestled, Director General Li declared that the grove was under the protection of the "Lion's Chair," with nothing short of a perfect, feng shui orientation. That the avocados from the grove were top quality went without saying, though the Director General acknowledged it all the same. His parting words when the three-hour tour (replete with an avocado-centric picnic lunch in the grove) ended, was that he looked forward to seeing Lion's Chair avocados in China one day. We will take that as an expression of his true heart.

California Avocado Commission

Board of Directors

District 1

Member/Carol Steed-**Secretary**
Alternate/Vacant Seat

Member/Jerome Stehly-**Vice Chair**
Alternate/Alex Gonzalez

District 2

Member/Charley Wolk
Alternate/Kellen Newhouse

Member/Leo McGuire
Alternate/Cristina Leon

District 3

Member/Ed McFadden
Alternate/Keith Reeder

Member/Doug O'Hara-**Chairman**
Alternate/Mario Martinez

District 4

Member/John Lamb
Alternate/Robert Grether

Member/Art Bliss-**Treasurer**
Alternate/Jason Cole

District 5

Member/Will Carleton
Alternate/Leo Murillo

Member/Rick Shade
Alternate/Jim Swoboda

Handlers

Member/John Dmytriw
Alternate/Gary Caloroso

Member/Steve Taft
Alternate/Donny Lucy

Member/Wayne Brydon
Alternate/Vacant Seat

Member/Gene Carbone
Alternate/Robb Bertels

Public Member
Leesa Eichberger

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

Chairman's Report

Doug O'Hara

Rain...where is it?

I was hoping that by the time I wrote this article I would be listening to the sound of raindrops outside my office window and be huddled next to my heater, but no such luck. We have all been anxiously awaiting the much-needed El Niño rain season and so far we have only received enough rain to turn off our irrigation systems for a few weeks in 2015. The forecast over the next several weeks is undetermined, but I am still hopeful. Let's all keep our fingers crossed and do whatever dance is needed so we make it through this year and help supplement our future supplies.

On to better news: the avocado market. Looking back at the records, prices are similar to last year for 48s and larger and slightly less for 60s and smaller. Many growers, including myself, are seeing a much better size curve than in the past and have started picking earlier than normal. This is great news if you have a large crop or if you need to start your pruning program. I am hoping that with a similar crop to last year and with Vice President of Marketing Jan DeLyser's early startup of the Commission's marketing programs, we will end up with a good year. The CAC marketing team will be implementing a more targeted approach, focusing on retailers that are consistently true to the California brand. This type of campaign will benefit all California growers and hopefully keep California avocados in the stores for a longer time. Keep in close contact with your field representative or packer, as we all know things can change fast in this business.

Before I discuss production research, I would like to welcome Tim Spann back to the CAC family. After a short sabbatical, he has decided that the avocado industry is his true calling. We, as an industry, are truly lucky to have him back and I am looking forward to his future with the Commission. With the help of Ken Melban, Tim has been catching up on all pressing issues, especially Shot Hole Borer. The latest updates are the placement of traps in many areas to assist in early detection, and the ongoing research at Pine Tree Ranch to help find products that can help us fight this pest. CAC staff will be sending updates frequently so please make sure they have your email, mailing address, fax, or any other contact information so you are sure to receive all information.

I think that is enough for now. The new year has just started to pick up and I am excited to see how the season progresses. Rest assured that Tom Bellamore and his staff are hard at work for all of us. I am confident that he is steering the boat in the right direction. Until next time, let's all wish for rain and good returns!

PSHB Activities Continue to Ramp Up

By Ken Melban
Director, Issues Management

With the confirmation last summer that the polyphagous shot hole borer (PSHB) and fusarium dieback (FD) had been discovered in a handful of California avocado groves, the California Avocado Commission immediately sprang into action and began field research in an infested commercial environment for the identification of possible treatment options.

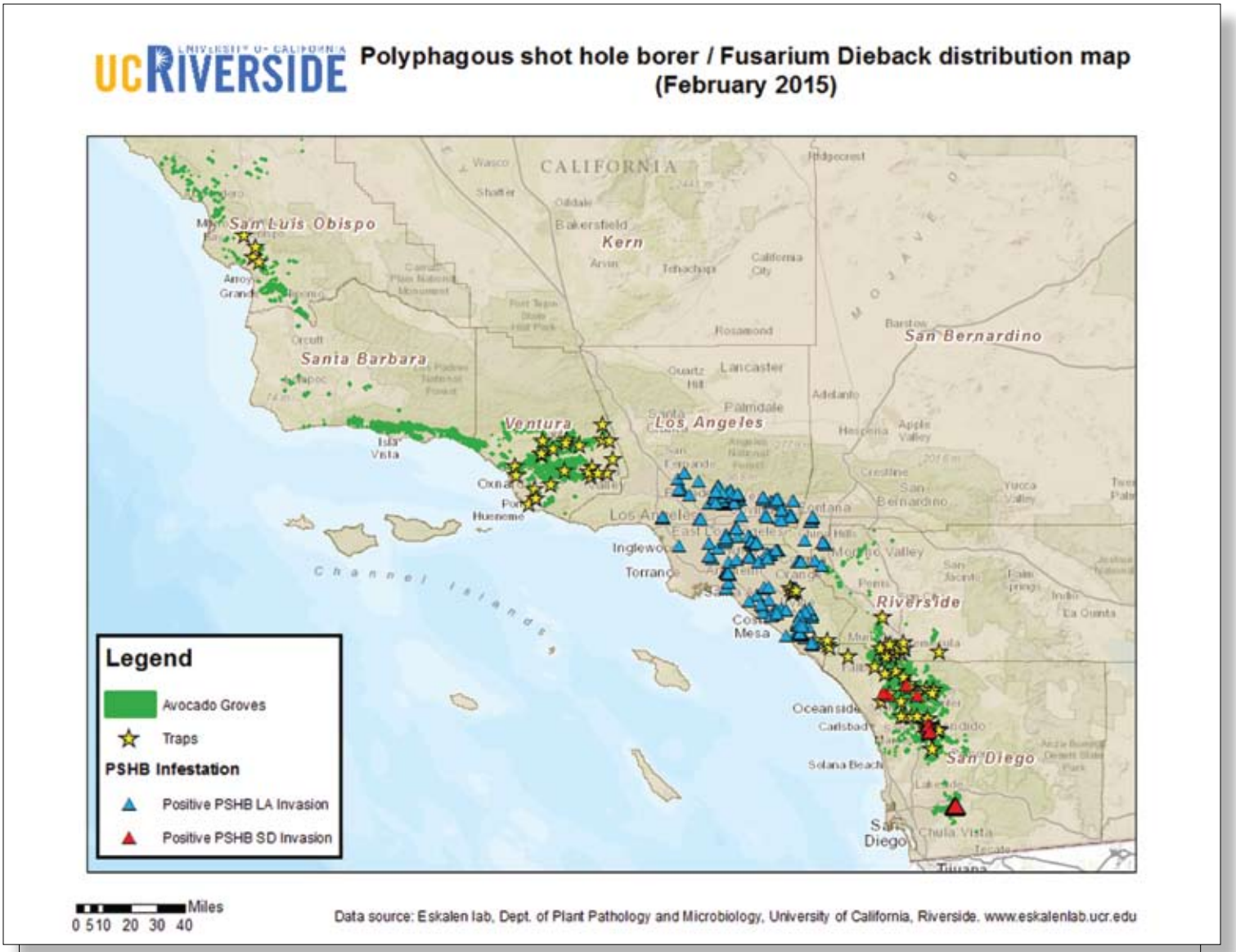
Bryan Vander Mey, University of California Cooperative Extension, San Diego County, examines PSHB specimens used in bioassays to assess pesticide efficacy.

Field Trials

The previous Commission-funded research provided a good platform to build on and we began the process of determining if any currently-registered materials for avocado may prove efficacious in the field. At the same time, field testing of non-registered materials began, with a goal of identifying possible pesticide and/or fungicide materials that may provide either curative or prophylactic benefit.

Late last year, the Commission, in collaboration with The Center for Applied Horticultural Research in Vista, set up a quarantine greenhouse for conducting the pesticide bioassays. Treated avocado branches were placed in beetle dorms along with live PSHB, and beetle mortality was observed to determine efficacy. Field studies like this can be difficult since you can't necessarily guarantee an adequate supply of healthy beetles at the right time. Nonetheless, efforts continue to ensure the necessary population levels exist through live field capture, extraction from infested wood and lab rearing. Recently, the Commission set-up a field lab in an infested grove to conduct the bioassays. By plac-

"Bug Dorm" used to house treated avocado wood for PSHB bioassays



ing a lab directly in an infested grove, the quarantine steps required for movement of the PSHB aren't required, helping to optimize efficiencies.

Based on our initial trial results, and coupled with research in both Florida on the Redbay Ambrosia Beetle and in Israel on the PSHB, there appear to be no easy answers to control this pest complex. Commission field studies are ongoing, and although a couple of materials have shown some promise, it is unlikely a "silver bullet" will be identified. If any materials show efficacy, the Commission stands ready to pursue a Section 18(s) (Emergency Registration) or Section 24(c) (Special Local Need Registration) with the Environmental Protection Agency and the California Department of Pesticide Regulation. Any possibility for control will likely include a suite of treatment options: chemical (sprayed and/or injected), chipping, solarization, biological, and cultural practices that mitigate the risk for the spread of the PSHB/FD. Ultimately, it will be up to individual growers to decide which control strategies make sense for their operation.

Trapping and Monitoring Grid

As you can see in the most recent distribution maps, 13 avocado groves in northern San Diego County are infested. Those groves represent a total of 1,000 acres, but not all of that acreage is impacted. In October, the Commission began deploying traps and lures to develop a monitoring and tracking grid. Within San Diego and Riverside counties, there are more than 100 traps in avocado groves. An additional 24 traps have been deployed in Ventura County and another 10 in Santa Barbara and San Luis Obispo Counties, with more traps coming online soon. These traps have been placed primarily in areas where it is likely PSHB will first be introduced. For example, due to the utilization of firewood, campgrounds have been selected based on the likelihood of campers from Los Angeles and San Diego Counties bringing in infested wood; nurseries and mulch operations that might import infested materials are also being targeted.

The purpose of these traps is three-fold: first, as sentinel traps for the early identification of PSHB in currently uninfested groves; second, growers will know if they are

A field trailer where PSHB research is being conducted

near an infestation and will become more vigilant in their PSHB scouting activities; and third, by gathering data University of California at Riverside (UCR) researchers will be able to develop life-cycle and beetle movement models. As an example, during January as UCR researchers monitored 15 traps, the average total number of beetles was around 100. But, in early February, when the temperature warmed, those same 15 traps had more than 1,000 combined beetles in one day. Although this data is preliminary and needs to be further developed, it indicates how quickly the beetle movement can increase and population numbers explode.

Collaboration and Pursuit of Outside Funding

To ensure the infrastructure necessary to support such a robust trapping and monitoring grid, the Commission has entered into agreements with multiple cooperators. In San Diego County, the University of California Cooperative Extension (UCCE) is responsible for the deployment and monitoring of traps, along with some of the field trial activities. In Ventura County, the agricultural commissioner is providing the personnel and expertise for the trap deployment and monitoring, with support from the UCCE. In San Luis Obispo and Santa Barbara counties, both the UCCE and Cal Fire are providing the necessary boots on the ground.

All of these increased activities come with a price tag as the Commission, with this year's funding, has committed more than $1.4 million to combat this pest complex since 2012. In an effort to help offset some of these increased costs, two grant proposals have been submitted. The first proposal was submitted to the U.S. Department of Agriculture Animal and Plant Health Inspection Service for funds made available through the Farm Bill, in the amount of $260,000. The submission occurred in December 2014 and the final awards won't be announced until this summer. In addition, CAC Research Program Director Tim Spann is working with the California Department of Food and Agriculture (CDFA) on an emergency funding request of $30,000.

Earlier this year, prior to the start of harvest, the Commission convened a meeting of handlers and worked to develop a set of protocols regarding the harvesting and movement of fruit to minimize the risk of PSHB/FD spread. And finally, the Commission remains an active member of the California Firewood Task Force, and continues to voice concerns with CDFA and county leaders of the dangers surrounding the movement of firewood, green waste, and nursery material.

The Commission board and staff continues to take the threat from PSHB to California's avocado industry very seriously. We are committed to leaving no stone unturned as we vigorously pursue solutions and will continue to provide updates as new information becomes available.

On the following two pages, in English and then Spanish, are the best practices protocols for harvesting avocados with regard to PSHB/FD spread.

GROWER-HARVESTER-HANDLER BEST PRACTICES PROTOCOL TO MINIMIZE SPREAD OF *EUWALLACEA* SP. SHOT HOLE BORERS

FOR GROWERS, HARVESTERS:

- Once bins are received, take measures to ensure that bins stay free of stems, twigs, debris and any other material that may harbor beetles
- Do not cover bins with branches, leaves or other plant material that may harbor beetles
- Be careful transporting bins into, around, and out of the grove. Avoid contact, where possible, with low-hanging branches to reduce the possibility of beetles falling into bins
- Inspect picking bags for possible beetle contamination
- Sterilize harvest clippers, pruning tools to prevent spread of fungi. Use Lysol® cleaning solution or household bleach solution with an active ingredient level of 5%
- Stage fruit outside of the grove for pick up
- Notify your packinghouse prior to fruit pick up if the beetle has been confirmed as being present in your grove
- Avoid movement of any plant material such as cut avocado branches, firewood, pruning debris and chipping
- Mark any infested trees in your grove for easy identification and for treatment

FOR HANDLERS:

- Take measures to ensure that harvest bins are clean when delivered to growers
- Place traps where bins arrive from the field, in the bin cooler, and by the bin dump
- Branches, twigs and other plant material coming in from the field should be collected and either: 1) double-bagged in plastic or 2) submerged in soapy water and then disposed of in a sealed container
- Pick up fruit from known, beetle-infested groves *last* when collecting fruit from multiple groves

California Avocado Commission
12 Mauchly, Suite L, Irvine, CA 92618 | (949) 341-1955

(Rev. 2/2015)

PROTOCOLO DE MEJORES PRÁCTICAS PARA PRODUCTORES, COSECHADORES Y EMPACADORES PARA MINIMIZAR LA PROPAGACIÓN DE *EUWALLACEA* SP. ESCARABAJOS BARRENADORES

PARA PRODUCTORES, COSECHADORES:

- Una vez se reciban las cajas, tome medidas para asegurarse de que las cajas se mantienen libres de tallos, ramitas, restos y cualquier otro material que pueda contener escarabajos
- No cubra las cajas con ramas, hojas o cualquier otro material vegetal que pueda contener escarabajos
- Tenga cuidado al transportar cajas, tanto en la entrada y salida del huerto, como dentro del mismo. Siempre que sea posible, evite el contacto con ramas bajas para reducir la posibilidad de que caigan escarabajos dentro de las cajas
- Revise las bolsas de recogida para detectar posible contaminación por escarabajos
- Esterilice las tijeras de cosecha y herramientas de poda para evitar la propagación de los hongos. Utilice la solución limpiadora Lysol® o una solución de lejía de hogar con una concentración de ingrediente activo del 5%
- Coloque el fruto fuera del huerto para su recogida
- Avise a su casa empacadora antes de la recogida del fruto si se ha confirmado que está presente el escarabajo en su huerto
- Evite el movimiento de cualquier materia vegetal, como ramas de aguacate cortadas, leña, restos de poda y astillas
- Marque cualquier árbol infestado en su huerto para identificarlo con facilidad y para su tratamiento

PARA EMPACADORES:

- Tome medidas para asegurarse de que las cajas para cosecha estén limpias cuando se entreguen a los productores
- Coloque trampas en el lugar de llegada de las cajas del campo, en la refrigeradora de las cajas, y junto al vertedero de cajas
- Las ramas, ramitas y demás materia vegetal procedente del campo deben recogerse, y bien: (1) introducirse en bolsas dobles de plástico, o (2) sumergirse en agua jabonosa y luego eliminarse en recipientes sellados
- Si recoge fruta de varios huertos, recoja la fruta de los huertos que sabe que están infestados por el escarabajo *en último lugar*

California Avocado Commission
12 Mauchly, Suite L, Irvine, CA 92618 | (949) 341-1955

(Rev. 2/2015)

Are You Involved in the Business of Producing or Selling California Avocados?

From The Grove Should Be Your Advertising Choice!

From The Grove begins its fourth year in 2015.

Our quarterly publication is distributed to more than 5,000 California avocado industry members.

The magazine contains information to help growers stay in touch with the marketing and promotional activities of CAC, as well as learn about technical or technological advances to help do a better job of producing the crop. *From The Grove* has topical stories, global reports from the field, technical and research perspectives, marketing stories, the top issues of the day and much more.

Don't miss out on the magazine your competitors are using to reach California Avocado Growers.

To advertise in *From the Grove* or to receive more information, please contact **Tom Fielding** at 626-437-4619 • tomfielding1@mac.com

Mollie Stone's "Big Game" California Avocado Display (Sausalito Store #1)

Early Season Retailer Promotions and Activities

The California avocado season got off to a strong start this year with select California retailer Big Game promotions. Beginning in January several retailers merchandised California avocados supported with feature ads and display activity. California Avocado Commission (CAC) sponsored Big Game sales and display contests, providing extra incentives to motivate in-store personnel to get behind the sale and promotion of California avocados.

In Northern California, family-owned retailer Mollie Stone's conducted a California avocado display contest among its nine San Francisco Bay area stores. The produce managers were enthusiastic about the program and built large displays featuring California avocado bins and point-of-sale material. Mollie Stone's promoted the fact that they were the first retailer in the area to carry California avocados, just in time for Big Game festivities.

Mollie Stone's reported that it increased its sales over last year by 14,000 avocados. Their contest winners were: first prize, Jimmy Puccetti — Store # 8 Tower Market; second prize, Palei Tu'ipulotu — Store # 7 San Mateo; and third prize, Brian Carter — Store # 4 Greenbrae.

Gelson's Markets, a fine foods retailer with 12 stores in the Los Angeles market, committed to carrying organic California avocados in time for Big Game promotions. They de-

veloped a sales contest, with supporting ads and displays. Gelson's also sent out a "Super Value" email to its fans, promoting guacamole, dip and game day recipes. As of press time, the results for the Gelson's sales contest, which ran through February 17, had not been released. However, sales were reported as excellent and well over last year's Big Game sales.

Bristol Farms in Southern California also kicked off the California season by carrying California organic avocados in their stores for the run-up to the Big Game.

CAC supported the early season promotions with California avocado display bins and signage, and sponsored the prizes for the account contests. Because many produce managers enjoy competing with one another, the contest provided incentives for them to sell more California avocados than other stores in the same chain. Produce managers built creative displays of California avocados by cross-merchandising with related items and using point-of-sale material. This resulted in incremental movement of fruit during the programs.

In addition, the Commission used tightly-targeted social media campaigns with geo-fencing to attract shoppers to

Mollie Stone's ad

Gelson's Dana Point

the retailers' Big Game California avocado displays. Geo-fencing uses global positioning systems (GPS) or radio frequency identification (RFID) of computer or smartphone locations to select geographical boundaries. For example, using geo-fencing, CAC identified consumers within a seven-mile radius of Mollie Stone's locations and targeted them with California avocado advertisements. The commission also geo-targeted Twitter advertisements to consumers in the Bay Area.

CAC communicated these Big Game promotions with an email blast to the Commission's 200,000 subscribers and targeted messaging to social media fans.

Overall, contests and promotions encouraged retailers to transition into California fruit early with an eye to staying with California avocados throughout the season.

Produce Manager Shawn Ashley (Gelson's Newport Beach) with CAC Retail Marketing Director Connie Stukenberg

We Out-Hustle the Competition

Extra Effort Makes the Difference

Mission Field Representatives are hands-on when it comes to grower relations and we do it, because it does make a difference. We'll walk your grove to assess crop estimates evaluating your yield to maximize returns for the year. We offer cultural advice on soil nutrients, orchard maintenance and specific methods for how to best nurture your trees for maximum production.

As a global packer, we're able to provide extensive information on fruit sourcing and its impact on the domestic market. Mission's expertise is key in knowing when and what size to harvest for the best returns.

If you're not getting the attention you deserve from your packer, give our Field Department a call. See first hand how Mission out-hustles the competition.

Mission® Avocados

Mission Produce Inc. ⋄ Oxnard, California ⋄ www.missionpro.com ⋄ 800-882-6659

By Tim Spann
Research Program Director

Spring Avocado Management Considerations

For much of California's avocado growing region, it has been a very mild winter and spring. Summer-like conditions are already upon us. That means that before we know it trees will be in bloom and we'll be having to consider pest control and harvesting strategies.

Now is a great time to walk your grove and assess the condition of your trees with particular attention to the upcoming bloom. Bloom occurs primarily on last year's summer flush growth. Inflorescence buds at this time of year are round and swollen, and easily distinguished from the smaller, angular vegetative buds.

If your trees are carrying a heavy crop of fruit, they may not

A 1-year-old shoot showing strong inflorescence bud development.

Recovering from Snow Damage

The end of 2014 dealt a significant blow to some growers in Riverside and San Diego Counties in the form of a rare heavy, wet snow fall. The snow resulted in major limb breakage on a lot of trees in the affected area. If you had trees affected by the snow, you should have already removed the broken limbs and cleaned up the wounds by making smooth pruning cuts to promote healing. If you have not already done this, you need to clean up those wounds as soon as possible.

Although it's been a relatively dry winter, we have had some rain events in the weeks since the snow. That rain could have helped to spread fungal spores that cause branch canker (formerly known as Dothiorella canker). The wounds created by broken limbs, if not cleaned up, are perfect entry points for those fungal spores.

As spring continues to move forward, new growth will start to develop from below where limbs broke. Once this new growth begins to emerge, you should do a follow up pruning to remove any dead wood above the new growth. If you do not remove this dead wood, it too can serve as an entry point for branch canker pathogens. Best management guidelines for preventing branch canker can be found at www.californiaavocadogrowers.com/documents/pruning-practices-help-control-branch-canker-and-stem-end-rot.

Depending on the severity of limb breakage experienced, you may need to apply some whitewash to newly exposed branches, as you would after stumping, to prevent sunburn.

Although snow is not something avocado trees experience often, with proper follow up care, the trees will recover and be back into production in just a couple of years.

have produced a strong growth flush last summer, and as a result, you may experience a relatively weak bloom this spring. But all is not lost since a very small percentage of avocado flowers actually set fruit, regardless of bloom strength. However, fewer flowers to begin with does mean lower fruiting potential, so you will want to give some consideration to harvest strategy.

The current mature crop on a tree is still consuming resources (carbohydrates) as bloom and fruit set are occurring. Therefore, the tree must allocate the resources it has available between those mature fruit and the potential fruit for next year.

Dr. Iñaki Hormaza, a researcher at the Instituto de Hortofruticultura Subtropical y Mediterránea in Spain, presented data last year at a California Avocado Society seminar showing that strong flowers (those with higher starch content) set and retain a higher percentage of fruit. It is logical that if the tree is carrying a large crop of fruit and has a weak bloom, many of the individual flowers may also be weak (i.e., low starch content). Thus, some early size-picking to remove the largest fruit may be beneficial to fruit set by freeing up resources and improving flower strength. Removing a portion of the crop early will also help to ensure a strong summer flush, which will provide greater bloom potential next spring.

The warm winter also means that pest populations may build earlier than usual and require earlier treatment than normal. Growers should be working closely with their pest control advisors (PCAs) to monitor persea mite and avocado thrips populations, particularly if your grove has a history of these pests being problematic. And be prepared to take action if populations warrant it.

Persea mite populations are generally lowest in March and start to build as new flush develops; however, the mild winter may not have reduced the population as much as normal and populations can still be high in some groves. When temperatures are 63°F to 77°F, as they have been in many areas recently, persea mites can go from egg to adult in two to three weeks. If early flush is present, their numbers can build quickly.

Persea mites damage avocado trees by removing chlorophyll from the leaves when feeding. As a result, once about 10 percent of the leaf surface is damaged, the leaves begin to drop. Because healthy leaves are critical to a healthy avocado tree and crop, persea mite damage can affect avocado growers' profitability.

Dr. Mark Hoddle, University of California, Riverside entomologist, developed an effective, rapid method

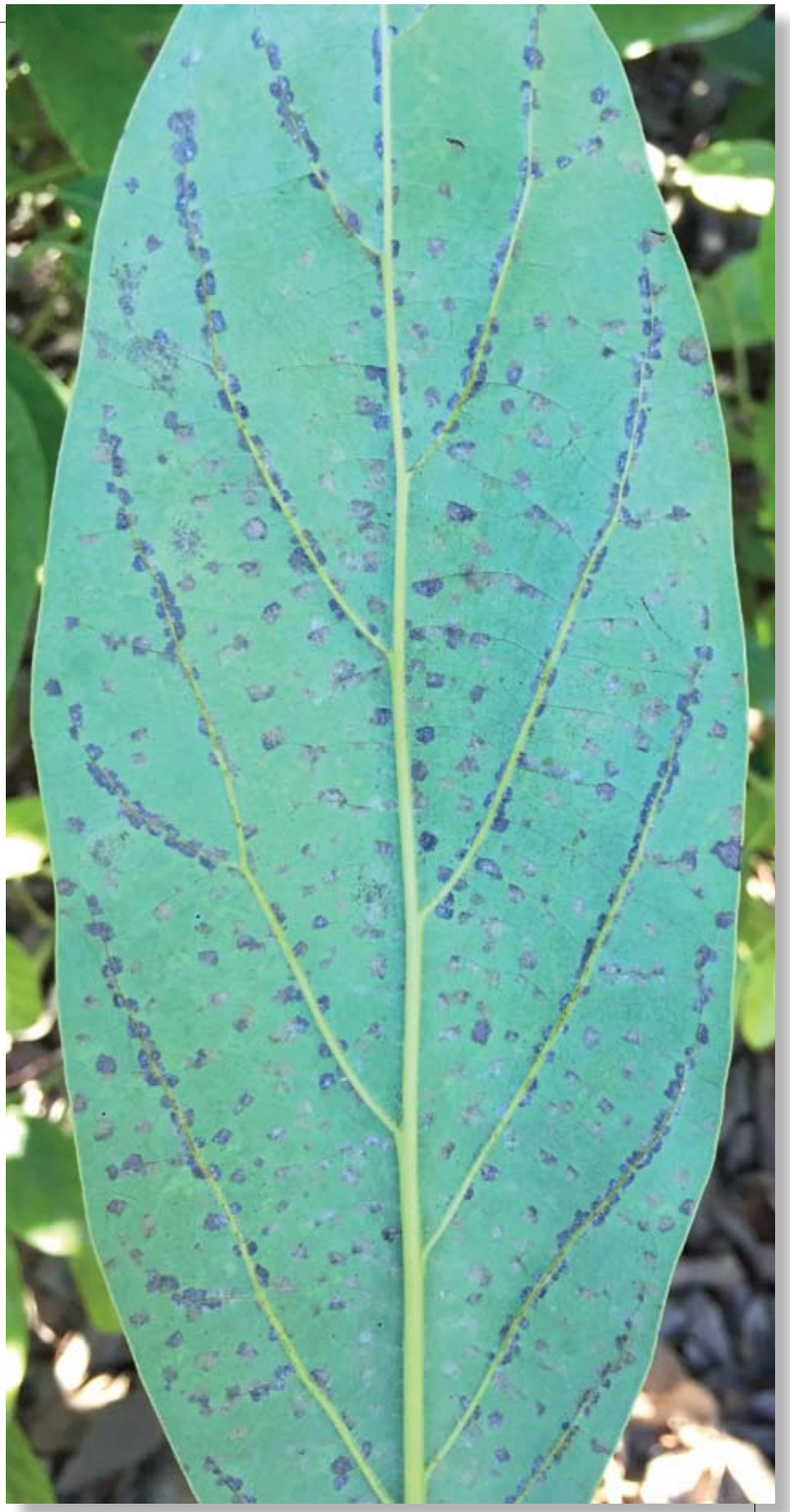
for assessing persea mite populations, which can be found at www.californiaavocadogrowers.com/documents/persea-mite-sampling-handout. Treatment recommendations for persea mite can be found at www.ipm.ucdavis.edu/.

Unlike persea mites, avocado thrips populations build over the fall through spring on young leaves since this pest prefers cooler temperatures. If new flush is available and temperatures are within 68°F to 76°F, thrips populations can build quickly, especially if natural enemy populations are low.

Female thrips lay eggs on young fruit, and the feeding of the larvae damages the fruit, causing scarring that can leave the fruit unmarketable. Field data indicate that Hass fruit are most susceptible when 0.2 to 0.6 inches in length. Data collected by Drs. Mark Hoddle and Joe Morse in Ventura County showed that when thrips populations are 3-5 per leaf at 97, 75 and 36 days before bloom, feeding damage will cause 26-38 percent, 18-28 percent and 6-15 percent economic damage, respectively.

Thus in a year such as this, when temperatures are favorable for thrips development, growers should be vigilant to monitor populations closely and be prepared to take necessary action to avoid excessive fruit damage. General information about avocado thrips can be found at www.californiaavocadogrowers.com/documents/avocado-thrips-fact-sheet, and specific control recommendations can be found on the UC IPM website (www.ipm.ucdavis.edu/).

Careful attention to conditions this spring can help to ensure that current season fruit are harvested at peak quality, and that maximum set of clean fruit is achieved for next year.



A leaf showing heavy persea mite damage (spots along the leaf veins) on the underside of the leaf.

Delegate® WG
INSECTICIDE

Delegate® Insecticide. The innovative mode of action of Delegate is broad-spectrum enough to control multiple pests, yet it maintains populations of most beneficials. Mites aren't flared, and secondary pests stay...secondary. You also get favorable pre-harvest and re-entry intervals, plus minimal personal protective equipment requirements. To learn more, talk to your PCA or visit www.dowagro.com.

DOW® Dow AgroSciences

Solutions for the Growing World

Fruit Logistica Provides Unique Opportunity for Connections

Prominent Presence of Avocados at the International Trade Fair

By Jan DeLyser
Vice President, Marketing

The Fruit Logistica International Trade Fair for Fruit and Vegetable Marketing is the world's largest produce gathering, held each year in February in Berlin, Germany. This year's event, which was held February 4-6, featured more than 2,600 exhibitors from 70 countries with approximately 62,000 produce industry representatives from around the world.

CEO of Australia's Perfection Fresh Michael Simonetta sported a California avocado bag at the international trade fair

Heather Shavey, assistant general merchandising manager of Costco Wholesale, with CAC's Jan DeLyser

I attended the show this year to experience new products and packaging innovation on display, learn about international produce trends, attend the Avocado Marketing and Promotion (AMAP) meeting with avocado stakeholders from around the world, and to meet with California avocado industry representatives and key retailers in attendance.

CAC has a strong tradition of supporting and participating in produce trade shows in the United States with the Produce Marketing Association's Fresh Summit, the United Fresh Produce Association exposition and numerous regional produce expositions with our target accounts.

Greg Reinauer, president of Tom Lange Co.; Jan DeLyser, vice president of marketing for CAC; Ross Wileman, senior vice president of sales and marketing for Mission Produce Inc.; and Julie Koch, vice president, member relations of the Produce Marketing Association

I had always heard that Fruit Logistica is a 'must do experience' because of its size and scope and that it is a real "eye opener" when it comes to fresh produce marketing innovation. It definitely lived up to its billing.

The layout of the exposition covers 106,600 square meters throughout numerous exposition halls across three floors of the center owned by Messe Berlin. The show floor is organized by country with a large area for equipment and machinery.

Fruit Logistica stands out from other produce expositions because of the quality of the displays as well as the brisk pace with pre-set meetings resulting in program and sales commitments. The Holland exhibitors did a wonderful job of creatively incorporating their products in hanging displays throughout the booths. Additionally, apples, blueberries and avocados ranked high on the list of prominence throughout the show.

On Thursday, February 5, avocado representatives from 16 countries, including Brazil, Chile, Colombia, France, Germany, Israel, Kenya, Mexico, Peru, South Africa, Spain, the United States and the United Kingdom, attended the AMAP meeting. Each country reported on estimated production of Hass and other varieties, in-country bearing and non-bearing acreage, projected growth and percent of volume they plan to ship domestically, to the United States and to Europe. Derek Donkin, South African Subtropical Growers' Association, served as chair of the AMAP meeting.

James Bosworth Crovetto, president, ProHass, presented a proposal in support of the formation of a European Association, similar to the U.S.-based Hass Avocado Board, with assessments paid by the main avocado suppliers to Europe to be used for marketing to build avocado consumption in Europe. The proposal calls for the establishment of a volunteer, non-profit corporation with each member assessed based on the volume of avocados marketed in Europe. According to the presentation, members from a specific country or origin can request that membership dues or contributions be spent on specific origin promotions as long as the assessments collected per origin are sufficient.

Following the presentation, Donkin asked the attendees who ship volume to Europe to evaluate the opportunity and respond regarding their interest in committing to the new organization by March 31, 2015. The next meeting of AMAP will be held in conjunction with the World Avocado Congress in Peru in September, 2015.

Grower Profile

Freak Snowstorm Hits Temecula

By Tim Linden

In the 40-plus years that Ben Drake of Drake Enterprises Inc. in Temecula has been growing avocados and other crops, a light snow dusting has been a rare sight. Consequently, he and son-in-law J.D. Harkey were more than shocked when a foot of snow landed on their trees in the higher elevations of the De Luz area and surrounding region of San Diego and Riverside counties in late December.

"It's the worst cold weather we've ever had," said Harkey. "And we've never seen a snowfall like that. We had 12 inches of snow in some places. Branches were loaded."

Ben Drake is the fifth generation of his family to grow crops in this particular corridor of Riverside and San Diego counties. After graduating from Fresno State University, Drake headed back to Riverside County where he worked for the County Agricultural Commissioner's office. Eventually, he got a job with an agricultural development company that was putting in avocados. That led to the purchase of his own land and the development of his own groves.

Today Drake Enterprises owns or manages 400 acres of avocados as well as some wine grapes and citrus groves.

J.D. Harkey, Drake's son-in-law, is the director of operations and currently runs the business on a day-to-day basis. He grew up in an avocado family in Fallbrook as both his parents and his grandparents had avocado trees on their land.

Dr. Andy Walker from University of California, Davis and Ben Drake

J.D. is well acquainted with the area, which led to his absolute shock in late December when the snow started to fall and didn't stop. Nor did it melt. "We had so much snow

on the trees, it was unbelievable. It did significant damage to a number of trees."

In the first place, the accumulation of snow snapped many limbs and branches. The cold and snow also damaged a significant amount of fruit. Harkey and his crews tried to salvage what they could, but he said it was very slim pickings. Very little of the fruit could be saved. Over the next several weeks, some fruit on the trees turned brown or bronze indicating that it was also unmarketable.

Harkey estimated that Drake Enterprises lost about 15-20 percent of its 2015 crop. "In some groves we lost 80-90 percent and in others we lost nothing."

They didn't go down without a fight, though. "We ran water for about four days," he said.

When the temperatures dipped below freezing, running water throughout the grove is one strategy available to try to increase the temperature of the grove and save the fruit. Harkey believes this action did save some fruit but it couldn't save everything. He noted that as serious as the snow was, the cold temperatures actually did more damage to the fruit itself. Seemingly for hours on end, the coldest spots were sitting at 28-29°F, which is cold enough to damage the fruit and even the trees themselves.

The De Luz area near Temecula was hardest hit in the higher elevations. "There wasn't much damage in Fallbrook. The storm blew in from the East. First there was rain, then sleet, then snow. All the way up the hill you could see the snow getting deeper and deeper."

Because of inconsistent weather patterns, Harkey said some growers received significant damage, while many others no doubt feel fortunate that they dodged a bullet. "You could stand up on top of the hill and see the snow pattern. Some places got a foot – mostly closer to town – and other places didn't get much snow at all."

Talking to *From the Grove* in late February, Harkey said the damage had been assessed and he doesn't expect to encounter any surprises as he picks this year's crop. "We can see the fruit that is damaged. We know we lost a significant percentage but the fruit that is still on the trees will be fine."

He added that another drawback from the storm was the excess water that had to be used to try to warm the groves. "That will just make it more difficult this year" with regard to costs.

If there is a silver lining, it would be that the fruit that fell off the trees will help next year's set. But in late February, Harkey said it was too early to judge that. The trees were just beginning to bud with 80 degree February weather. That is a bit early for Harkey, and he would like to see more rain and less sun, but anything is better than looking out and seeing a foot of snow in your grove.

J.D. Harkey

CaliforniaAvocado.com, CAC's Consumer Website, Re-Launched

By Zac Benedict
Online Marketing Manager

The California Avocado Commission's (CAC's) consumer website (CaliforniaAvocado.com) is scheduled to re-launch in late March 2015, utilizing the latest web technology and content standards to more fully align the website with the needs of California avocado consumers as well as CAC's marketing strategies.

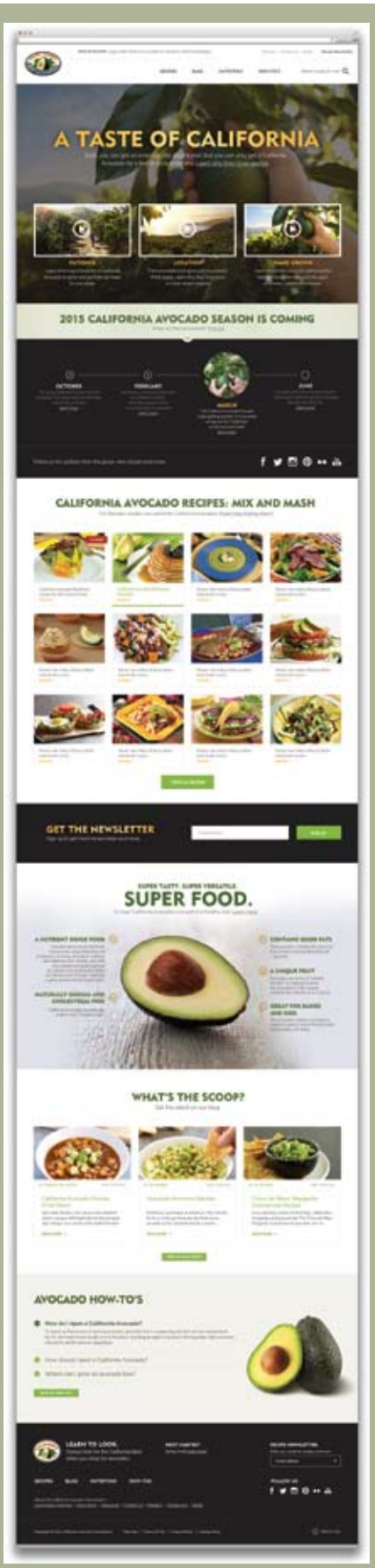
To engage with consumers, the new site has been designed to make visitors feel right at home — with easy-to-find and easy-to-share content they can view using a computer or mobile device. The search functionality is more intuitive, helping visitors easily locate the information they are looking for. And to increase appeal and inspire consumption, images of food and beautiful California avocados are now much bigger.

These key factors are important because they make the site more user-friendly for our target consumer, help CAC effectively communicate premium messaging and information concerning the availability of California avocados, and provide functionality that encourages site visitors to share the content, photos and recipes with their online peers.

A lot has changed since 2010 when the earlier version of CaliforniaAvocado.com was launched. The iPad was released, smartphones became much smarter and Facebook grew from 500 million active members in 2010 to a whopping 1.39 billion active users (as of January 2015).

With the uptick in the number of people using mobile devices and social networks, online marketing also has become increasingly competitive. Brands, bloggers and online communities are all creating and sharing content, making it more difficult for branded communication like CAC's to stand out — and resonate — with our target consumer.

Launched in March 2014, CAC's blog – The Scoop – has grown substantially in



The new Home page for California Avocado.com provides easy access to content consumers are seeking.

The story of what makes California avocados special is a key part of the website.

The redesigned recipe section of the website features easy navigation and lots of appetite appeal.

its first year, and is tightly integrated into the new website to more effectively give consumers the content they are looking for. Clear call outs have been added to the new website in order to better communicate California avocado availability through CAC's blog – down to the store level.

In January 2015, the blog received more than 55,000 visits, affirming the importance of integrating blog content into the website. The blog posts help differentiate California avocados from other sources of supply and reinforce the premium position of the California avocado.

The Retail, Foodservice and Media sections of CaliforniaAvocado.com also have been re-designed to better serve our partners and trade audiences.

Visit the new CaliforniaAvocado.com website to check out the new design! There are some exciting initiatives set for 2015, so check the website often for updates.

California chefs Mary Sue Milliken and Susan Feniger entertained FPFC luncheon attendees with their demonstration of California avocado recipes.

CAC & FPFC: 50 Years of Collaboration

By Tim Linden

Early in 1965 a group of Southern California produce industry professionals met on the campus of Cal Poly Pomona to discuss their industry and how to get consumers to eat more fruits and vegetables. Harland Heath, a retailer at the time and currently a lifetime member of the Fresh Produce & Floral Council (FPFC), as well as the group's historian, remembers the day well. "People call me the 'father of the Fresh Produce Council', but it was Ralph Pinkerton." Heath remembers that during an open discussion period, Pinkerton, of the California Avocado Advisory Board, which became the California Avocado Commission (CAC) in 1978, brought up the idea of a local association. "Ralph said there was a Southern California grocery council and a Southern California deli council but nothing specifically for fresh produce." Pinkerton thought there should be a Fresh Produce Council of Southern California to promote the consumption of fruits and vegetables. Within a few months, the council was launched.

A lot has changed over the past 50 years, but the FPFC and CAC have worked closely together ever since that fateful day in the spring of 1965. This year, the California Avocado Commission will help the Fresh Produce & Floral Council celebrate its Golden Anniversary and take part in each celebratory event. As we honor the FPFC's half century, we look back at the collaborative partnership between FPFC and CAC.

Since its inception, the California avocado industry and CAC have provided many board members and officers to the Southern California-based organization. Pinkerton served as a founding member of the council, was on its first board and served as chairman of the board in 1972. Members of Giumarra, Henry Avocado, Mission, West Pak, Del Rey, Calavo and Shanley Farms, to name a few, have all been involved in the FPFC over the years, attending events and serving on committees and the board.

In prior years, former CAC staff members Avi Crane, Rob-

At one FPFC luncheon meeting, Ralph Pinkerton (second from the right) brought avocado industry spokesperson and celebrity Angie Dickinson to mingle with the crowd. She was a huge hit.

ert Verloop and Dave Howald were frequent contributors to the FPFC. CAC retail marketing director Connie Stukenberg currently serves as FPFC secretary/treasurer. She is slated to be chairman of the board two years down the road.

And then there is Jan DeLyser, whose career is synonymous with both organizations. She joined the FPFC as public relations director in 1979. Two years later she was named executive vice president and served as head of staff for the next 12 years.

DeLyser is credited with greatly enhancing the reputation and visibility of the organization. Her first task upon being hired was to boost the respectability and profitability of the FPFC's magazine. She did both.

But DeLyser did much more over the years. While leading the FPFC, she helped develop the current committee structure that increased industry participation; launched the Expo format; created the Floral Expo; increased industry involvement in the Produce Marketing Association, the United Fresh Produce Association and the Produce for Better Health 5-A-Day effort; involved the FPFC more actively in the City of Hope; and served as the spokesperson for the Southern California produce industry in countless media interviews and consumer presentations.

Throughout the history of the FPFC, CAC has been a frequent sponsor of FPFC events. After leaving the Council, Jan remained active in the FPFC and when she joined the CAC staff became the Commission's spokesperson and representative at FPFC events.

Since joining CAC, DeLyser has served on the FPFC board, on numerous committees and as chairman of the board in 1999. She was also a member of the selection committee responsible for hiring the last two executives that have steered FPFC's progress over the past 20 years.

The FPFC has served as an excellent resource for CAC staff to network with retailers and colleagues in the industry. DeLyser, CAC's vice president of marketing, notes, "As the first regional trade association in the produce industry, the FPFC provides a unique opportunity to network with retailers and foodservice operators at events and work alongside CAC's customers in the two top markets for our fruit."

In fact, CAC's presence at FPFC events is a bit legendary. At one luncheon, CAC sponsored the University of Southern California marching band. At another, actress and avocado spokesperson Angie Dickinson was a surprise and celebrated guest. A couple of years ago renowned California chefs Mary Sue Milliken and Susan Feniger demonstrated California avocado recipes at an FPFC luncheon and kept the crowd highly entertained.

And no one will ever forget the time DeLyser, an athlete in her own right, impressed the crowd by throwing perfect spirals of small California avocado branded footballs throughout the room. The idea was such a hit that it has been imitated many times over the years — but never duplicated.

Current FPFC President Carissa Mace said the council is very appreciative of the avocado industry's involvement in the association. "CAC and FPFC obviously have an extremely long and rich history together," she said. "The collaboration between the two organizations has been mutually beneficial. The Commission truly understands the value of being actively involved in the council and we look forward to a continuation of our long-standing relationship."

Last year's CAC-sponsored FPFC luncheon featured the "Eat Brighter!" program and the launch of the California avocado snacking campaign. Here Gelson's Mark Carroll and CAC's Connie Stukenberg pose with Big Bird at the event.

EGAP Holds the Line, Avoids Ag Water Rate Increases

By Ken Melban
Director, Issues Management

The Escondido Growers for Agricultural Preservation (EGAP) were pleased when the Escondido City Council unanimously voted in February against increasing rates for agricultural water customers. The approved agricultural rates will remain at the same level.

Significant credit for the Council's decision rests squarely with EGAP and its advocacy efforts. Led by avocado farmers and businessmen Eddie Grangetto and Phil Henry, this effort demonstrates how organized stakeholders, with a story to tell and a possible solution to offer, can wage a successful campaign.

"We were encouraged that the city, in their recent action, continued to hold agricultural water pricing at current levels in preparation for bringing the new recycled water system on line," said Grangetto.

In 2011, the city was facing a very costly construction project to increase the capacity of its wastewater line running from Escondido 14 miles out to the ocean. As the preliminary planning and projected price tag became public knowledge, another idea began to surface, and EGAP was formed.

"We thought it made sense to develop an improved recycled water system and thereby avoid the increasing volume of outflow to the ocean," said Henry. "Plus, this new supply of recycled water would provide a high quality sustainable water source for the local avocado industry and maintain a $240 million economic contribution for the city."

This $240 million economic contribution Henry refers to is based on a study the California Avocado Commission funded to support EGAP's effort. "There was a critical need for EGAP to define and develop a factual justification of the avocado industry's economic contribution to the city in the form of jobs, farm gate value of $40 million, and how that money multiplied as it flowed through to become part of the makeup of the city's gross economic product in purchases of farm chemicals, fertilizer, insurance, banking, etc.," said John Burr, Escondido avocado grower and EGAP member. "Charley Wolk and Ken Melban organized a third party independent team of agricultural economists to conduct a study that was highly successful in accomplishing EGAP's need for the economic analysis."

The study, "Agriculture in Escondido- Contributions, Challenges and Opportunities," was led by Dr. Mechel Paggi, director of the Center for Agricultural Business, California State University, Fresno. In addition to quantifying agriculture's economic contributions, the report included other factors like agriculture's role in the preservation of open and green space, in serving as a buffer against wildfire, and the carbon sequestration associated with tree crop production such as avocado.

"Support of EGAP's effort by the Commission is a prime example of how they are supporting avocado growers, at the local level, to meet one of the Commission's overarching strategic objectives of maintaining a California avocado industry with critical mass," said Grangetto.

Within the City of Escondido service area, there are approximately 400 avocado growers who produce on just over 3,300 acres. From 2005 to 2011, the Escondido area experienced a 40 percent reduction in avocado acreage, primarily due to the escalating cost of water. It was industry concern over this downward trend and visionary leadership that was the genesis for EGAP and its success. EGAP recognized and convinced the city leaders that losing agriculture would not benefit the community of Escondido nor its citizens.

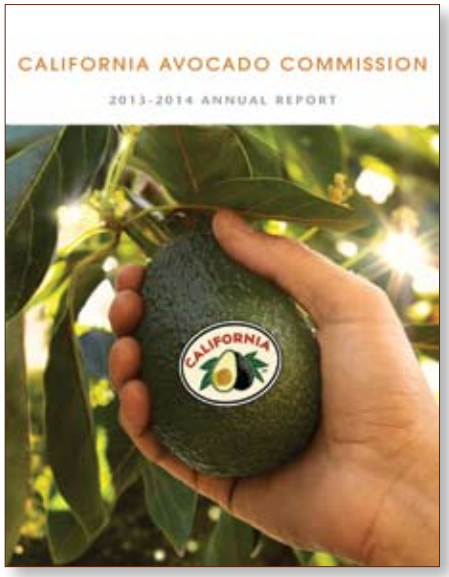
The new recycled water system will be introduced in phases, with Phase I delivering water to approximately one thousand acres of avocados, followed by Phase II to a comparable amount of acreage. The system is comprised of a main line that delivers tertiary-treated water to a membrane plant, where the water will be passed through reverse osmosis to remove additional salts, generating water that will meet the quality specifications necessary for avocado production. From there, it passes through a distribution network to the avocado groves. This system is expected to be online by 2016 and will likely be the primary supply for the local avocado industry. Pricing is expected to be in a range that maintains a viable, competitive and sustainable avocado industry into the future.

By April Aymami
Industry Affairs Manager

The 2013-14 California Avocado Commission Annual Report Is Now Available Online

In an effort to maximize efficiencies, in 2014 the California Avocado Commission (CAC) moved to producing its Annual Report as a strictly digital publication. CAC is pleased to announce that the *2013-14 Annual Report* has been completed and is now available to the industry through the California avocado grower website, www.CaliforniaAvocadoGrowers.com.

The CAC *2013-14 Annual Report* covers a wide array of Commission-funded activities as well as industry statistics and financials. Below is just a highlight of what this year's report contains:



- Audited Financial Statements (2013-14)
- A high-level summary of the Commission's California avocado labeling initiative
- A review of CAC's collaborative advocacy efforts concerning water availability and pricing, as well as research initiatives to address the drought's long-term effects
- Advances in CAC-funded polyphagous shot hole borer (PSHB) and fusarium dieback (FD) research, including key relationships with global PSHB experts and government officials
- Highlights of independent research studies tracking avocado consumption and CAC's integrated marketing program successes
- Synopses of the Commission's consumer, retail and foodservice outreach and marketing efforts
- A sampling of CAC's industry awards and recognition
- A look at the past year's Field Day sessions held at Pine Tree Ranch Demonstration Grove
- Ten-year Industry Statistical Data

The *2013-14 Annual Report* can be viewed online as a digital flipbook or downloaded as a pdf at: http://californiaavocadogrowers.com/commission/accountability-reports/annual-report.

If you would like to receive a printed version, the Commission will print a copy in-house and mail it to you. A hard copy of the *2013-14 Annual Report* can be requested via email, phone, fax or regular mail or by returning the tear away postcard included in this issue.

Email: cac.iaf@avocado.org
Phone: (949) 341-1955
Fax: (949) 341-1970
Mail: California Avocado Commission, 12 Mauchly, Suite L, Irvine, CA 92618

PSHB Research Update

By Tim Spann
Research Program Director

Currently, the California Avocado Commission (CAC) is funding six research projects related to the polyphagous shot hole borer (PSHB) and its fungal symbionts. The projects have been designed to develop critical knowledge about the basic biology of the beetle and fungi, and evaluate potential control methods, which will be summarized in this article. Additional research is being conducted to monitor the infestation in commercial avocado groves, which is covered in another article on page 8 in this issue of *From the Grove*.

In late 2014, an effective lure was found for attracting PSHB. The lure contains a mixture of four different compounds from a group known as para-menthenols, one of which is a compound called quercivorol. These compounds are not pheromones, but rather are known as kairomones – chemicals produced by the host tree or maybe the symbiotic fungi. Regardless, being able to effectively attract and trap PSHB has opened many new research doors.

Dr. Richard Stouthamer, University of California, Riverside (UCR) entomologist, is focusing his efforts on trap optimization with two primary goals: 1) developing attract and kill technology, and 2) understanding daily and seasonal flight and dispersal habits. To optimize the traps, his group is looking at factors such as trap height, placement relative to trees or open space, trap color, trap type and lure placement on the trap. At the same time, they are testing the effective distance at which the traps attract beetles.

Following trap optimization, Dr. Stouthamer's lab will work on developing effective trap and kill strategies. This could be as simple as deploying sufficient numbers of traps throughout a given area to catch most of the beetles flying in that area. However, even if what are perceived to be very large numbers of beetles are trapped, this may not be sufficient to reduce the population. To make the trap and kill strategy more effective, they will be exploring the possibility of inoculating the traps with entomopathogenic fungi or bacteria. The trapped beetles would become infected with the entomopathogens and could be released to spread these pathogens throughout the beetle colonies. This attract and kill by epidemic strategy may reduce beetle populations to a larger extent than traditional trap and kill.

Being able to trap the beetles effectively will also allow for studies of the beetles' flight activity on both a daily and seasonal basis. By collecting data on environmental conditions – air and bark temperature, humidity, and wind speed – we can begin to understand emergence patterns, flight distances, dispersal habits and other factors that will greatly improve any beetle management strategy developed.

The application of pesticide trunk infusion treatments for polyphagous shot hole borer control being applied to a tree at the Commission's Pine Tree Ranch demonstration grove. (Photo courtesy of Dr. Akif Eskalen, UC Riverside)

Since the lure was discovered late in 2014, these trials have just been established this spring. However, the team working on these trials is top notch and we are optimistic they will result in valuable information by later this year.

Drs. Joe Morse, Frank Byrne (UCR entomologists) and Akif Eskalen (UCR plant pathologist), are actively working to find a chemical solution – pesticide and/or fungicide – for PSHB and its fungal symbionts. Their group initiated field trials of registered and unregistered materials last October. These trials have been conducted in commercial groves (registered materials) and on the UCR campus and CAC's Pine Tree Ranch demonstration grove (unregistered materials). In the first trials initiated last October, materials were applied as trunk sprays. Although trunk sprays are not necessarily a viable method for many growers to use, and they have short periods of residual activity, they do provide data quickly about which chemicals have efficacy against this pest.

A second round of trials was applied in early January using trunk injection and infusion technologies. Again, this is a technique that is not easy for many growers to execute; however, it provides the potential for long-term (up to 18 months) efficacy. And this is a critical situation for

our industry so no technology can be overlooked. The first samples were collected from the trunk injections in mid-February for bioassays. Core samples are removed from the trees at different heights above the injection site. The cores are then exposed to the fungi and beetle to determine if the material is effective, and how quickly it is moving throughout the tree. The team is hopeful they can obtain sufficient efficacy data by late spring for CAC to submit a Section 18 Emergency Exemption application in the hopes of having at least one product available to growers by later in 2015.

The researchers and CAC also realize the importance of not just pursuing chemical control strategies for this pest-disease complex. To that end, Drs. Eskalen and Stouthamer will be returning to Southeast Asia (Taiwan, Vietnam and China) at the end of April to continue the work they began last spring to look for biocontrol agents. Last year's trip resulted in the discovery of a fly species that may be a natural enemy of PSHB. Trials are being conducted by cooperators in Vietnam to assess the fly's efficacy and determine if it is a candidate to be brought to the United States. On this year's trip, the researchers will have the advantage of the new lure. This will allow them to trap a much larger sample of PSHB and, consequently, increase their chances of finding more candidate biocontrol agents.

Harvesting a trunk core sample one month after trunk infusion treatments for laboratory bioassays to test chemical efficacy. (Photo courtesy of Dr. Akif Eskalen, UC Riverside)

In addition to the work in Southeast Asia, Dr. Eskalen has been investigating the population of endemic fungi and bacteria on avocado and other host tree species here in California. He has identified a couple of species of *Bacillus* bacteria that naturally live on the bark of avocado trees and, in lab tests, show some antagonism toward PSHB. If these findings prove out, these bacterium could be deployed by the trap and kill by epidemic or other methods, and would be a tool for organic growers since the bacteria are endemic to avocado trees.

By Tim Spann
Research Program Director

Advances in Salinity Tolerance and Phytophthora Detection

For many years, the California Avocado Commission's (CAC's) avocado rootstock breeding, run through the University of California, Riverside (UCR), focused exclusively on finding Phytophthora tolerant rootstocks. However, as time has passed, salinity has become an increasing problem for our industry, perhaps even surpassing Phytophthora in importance.

To address this growing problem, the Commission funded a four-year project with Dr. Peggy Mauk, subtropical horticulture specialist at UCR, and cooperators Drs. Mary Lu Arpaia, David Crowley and Donald Suarez (U.S. Department of Agriculture (USDA) Salinity Lab, Riverside), starting in the 2012-2013 fiscal year to evaluate the salinity tolerance of a number of University of California and South African rootstocks.

The trees in the trial were planted in April 2011 and were originally intended to be used for a Phytophthora trial that never came to fruition. Given the large variety of rootstocks in the block and the industry's need, it was repurposed for a salinity trial. The rootstocks in the block are PP4, PP14, PP24, PP40, PP45 and Thomas (UCR selections), R0.05, R0.06, R0.07, R0.16, R0.17, and R0.18 (South African selections), and Dusa as the industry standard control. All are grafted with Hass scions.

Example trees of the UCR rootstock selection PP40 after 10 months of treatment with saline (left) or fresh (right) water. The rootstock shows good tolerance to salinity with only mild leaf burn symptoms. Photo credit: Peggy Mauk, UCR.

During 2013, the block's irrigation system was modified to accommodate fresh and saline water treatments and salinity treatments began in November 2013. The saline treatment was increased slowly over about a three-month period to avoid shock, reaching the final saline treatment level of EC 1.5 dS/m total salts with 175 ppm chloride in January 2014. Control fresh water has an EC of about 0.67 dS/m total salts and a chloride content of about 40 ppm.

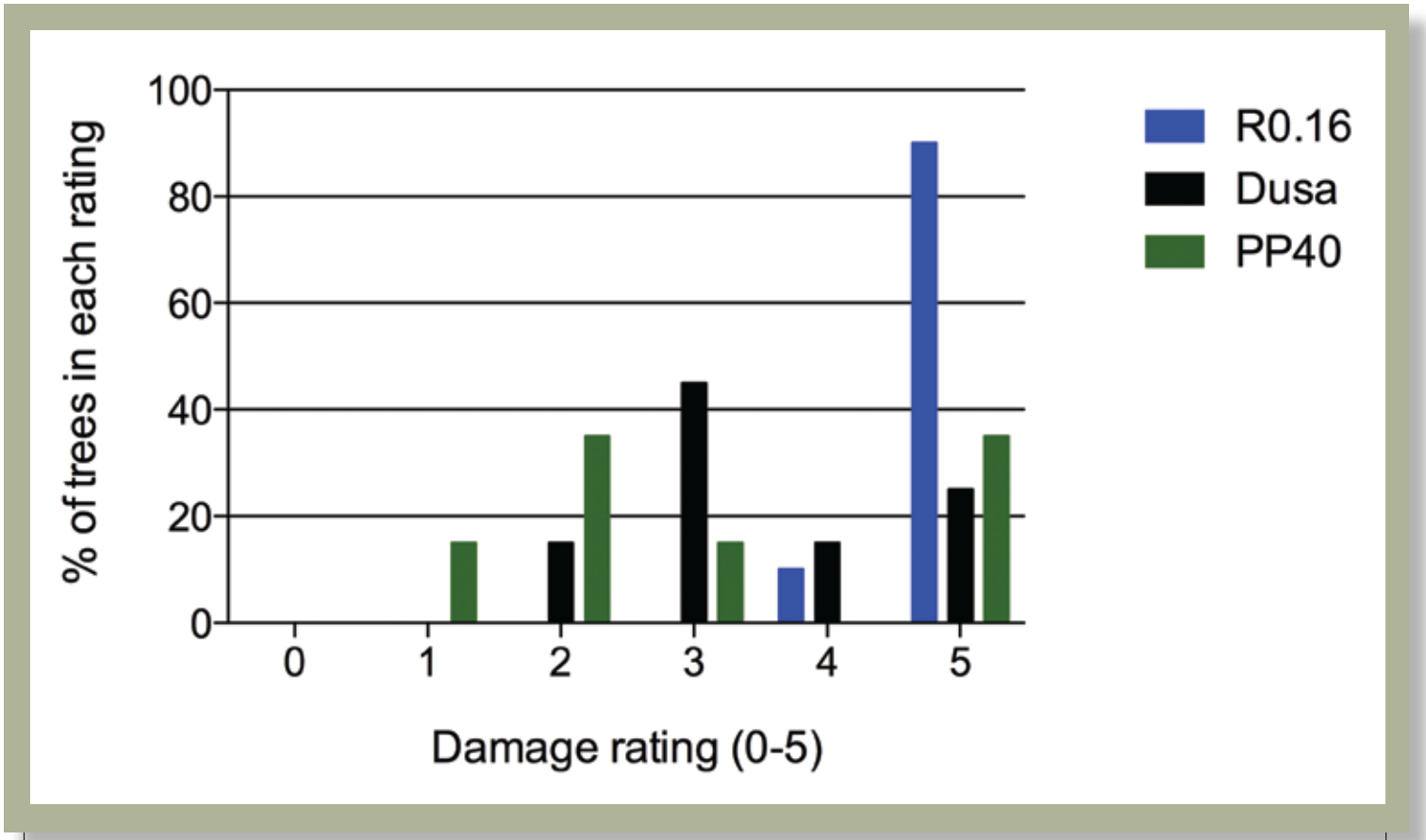
Throughout 2014, the trees were evaluated by measuring rootstock trunk diameter, canopy volume, leaf burn, yield and flowering, as well as physiological parameters of photosynthesis, transpiration rate and stomatal conductance. In addition, leaf, soil and water analyses were performed.

Since the fruit harvested in 2014 was set and developed prior to the application of the salinity treatments, there were no differences in yield between control and salinity treatments.

Leaf tissue analyses prior to salinization showed that there was a range of leaf chloride concentrations among the rootstocks (from 77 to 227 mmol/kg dry weight). This indicates that some of the rootstocks are chloride excluders (low leaf chloride concentration) and others are chloride accumulators (high leaf chloride concentration). Leaf burn was evaluated in February and October 2014 by rating each tree on a scale of 0 (no burn) to 5 (tree defoliated). In February (six weeks after full salinization), there were no ratings above 3 and there was no difference between salinized and control trees. However, by October there were significant differences among rootstocks in the salinized treatment, with rootstocks from both UCR and South Africa performing well and poorly. A sample of these data are shown in the accompanying figure on page 32.

After just one year of saline treatment, this trial is yielding very valuable data, and it appears that there are some rootstocks in the development pipeline with considerably better salt tolerance than is currently available. Larger scale trials will need to be conducted to make sure these tolerant rootstocks yield well, are otherwise horticulturally "good," and perform well under a variety of conditions, but there is reason to be optimistic.

As mentioned above, Phytophthora, along with salinity, is one of the top issues faced by our industry. Many growers know they have Phytophthora in their grove, but few, if any, have committed the time and money to conduct an extensive soil sampling to know the full extent of



Salinity damage ratings for Hass trees grafted on three different rootstocks 10 months after the initiation of salinity treatments. The South African rootstock R0.16 showed poor salinity tolerance with 95percent of trees showing defoliation, whereas Dusa and the UCR selection PP40 showed considerably better salinity tolerance with most trees having only mild leaf burn.

the disease in their grove. That's because traditional Phytophthora analysis requires the collection of a soil sample, which is then sent to a lab for analysis by Polymerase Chain Reaction (PCR). That analysis requires a high level of technical expertise to extract DNA from the soil sample and expensive lab equipment, resulting in a cost of about $50 per sample. Thus, many growers base their Phytophthora treatment on the recognition of visual symptoms, but visual symptoms are not exclusive to Phytophthora and treatments may be applied unnecessarily.

A cheaper, faster method of Phytophthora detection would be a tremendous benefit to avocado growers, and in 2012 Dr. Frank Martin, plant pathologist, USDA Salinas, proposed just that. Dr. Martin had been involved in developing detection methodology for *Phytophthora ramorum*, the cause of sudden oak death, and proposed to extend that knowledge to help with Phytophthora detection in avocado.

Prior to working specifically on avocado Phytophthora, Dr. Martin's lab had worked to develop species specific molecular primers and probes for the detection of all 96 described species of Phytophtora by PCR. In his work on avocado, Dr. Martin worked with a technology known as Twist Dx, which does not require DNA extraction. The equipment needed is portable and the assay can be completed in as little as 20 minutes, which makes Phytophthora detection faster, cheaper and easier for avocado growers.

Dr. Martin has successfully translated the PCR technology for *Phytophthora cinnamomi* and *P. mengei* diagnosis to the Twist Dx technology. The unit that his lab has worked with costs about $4,500, but there are other companies entering the market and other units are available for as little as $2,500. Given the simplicity of sample processing, the short time required and the availability of low cost equipment, this diagnostic technology now has the potential to be used directly in the field by pest control advisors, extension personnel and other diagnosticians. And each and every grower has the potential to know the full extent of Phytophthora infection in their grove to improve tree health management.

The Commission is actively working to determine the best path forward to transfer this technology to the field to help the avocado industry. Dr. Martin's technology will be demonstrated at the upcoming Pine Tree Field day on March 25, 2015 at 10 a.m.

By Tim Linden

Size Picking Helps Season Get Off to Good Start

Some nice warm, humid days late last summer helped this year's crop achieve some heft, and in the early going the 2015 California avocado crop appears to have a much better size profile than the 2014 version.

Wayne Brydon, a California Avocado Commission handler member, who spends a lot of time in the field as a representative for Del Rey Avocados, Fallbrook, told *From the Grove* in late February that "the fruit is sizing much better than it has the last couple of years. Growers who are size picking are finding a good amount of fruit 8 ounces and better (48s) on the trees."

He added that there is even a fair amount of fruit making 40 size, which was commanding a nice premium in the marketplace in February. "Even though we didn't have much rain last year, we did have a humid summer, and avocados love that," he said.

Brydon said it is the younger groves that appear to be sizing the best but he is anticipating a season with a size bell curve skewing more toward the larger end of the spectrum. He echoed the estimate issued by the Commission of a 327 million pound crop, with about 315 million pounds of that being the standard Hass variety.

"It looks like the southern growing district has a crop very similar to last year while Ventura could be up about 20 percent," he said. "Some of the groves up there had a very light crop last year and are doing much better this year."

The Del Rey representative said in April the pre-season estimate will be recalculated through a more detailed report, but he expects the early estimate to be very close to accurate when all is said and done. He said April should also bring with it some stripping of groves rather than size picking. By then the crop will have matured to the point that stripping makes good economic sense.

Brydon does expect more of a sense of urgency this year in picking and marketing the California crop. Peru's entry into the market last summer with a significant volume increase resulted in two-tier pricing and downward pressure on the price California growers received for their fruit. "The Commission has started its promotions earlier this year in recognition of the fact that we need to get an early jump on the season," he noted.

He said many growers want to be out of the deal before Peru has a chance to negatively impact the market price.

Phil Henry of Henry Avocado Corp., Escondido, CA, had a very similar report as to the early activity this season. As of late February, his firm was size picking 8 ounce and larger fruit. He agreed the size profile is larger this year and said as a company "we have a little bit bigger crop than last year, which I think is the same as the entire industry."

He said the larger crop and a very good pricing situation led to the earlier start than last year. He expects Henry Avocado's California volume to continue to climb until it reaches peak shipping levels in June and July. If all goes as planned, California shipments will start to taper off in August.

Adding California's early volume to the steady and heavy supplies from Mexico, the longtime industry veteran was very happy with the price profile at the time of this discussion. He said the market was pushing $40 for 48s with even small-sized fruit selling from the mid-$20s to the mid-$30s. He expressed optimism that the strong market would remain that way throughout the spring.

By Tim Linden

Jalisco Could Soon Be Shipping to the U.S.

With the U.S. Department of Agriculture publishing a proposed rule that would allow all Mexican growing regions the opportunity to ship avocados to theUnited States, growers and packers in the state of Jalisco would appear to be the first benefactors of this expansion.

The USDA noted that fact in the background information accompanying the February 18 posting of the Proposed Rule in the Federal Register. The proposal includes a 60-day comment period with the record being left open until at least April 20, 2015. It is not uncommon for the comment period to be extended depending upon the complexity of the issues in question. After the comment period does close, the USDA has an unspecified amount of time to consider the comments before either amending its proposal or posting a Final Rule. In any event, most observers believe it is highly unlikely a Final Rule will be posted in time to allow significant shipments in 2015.

Mexico first gained access to the U.S. market in 1997 in a limited way. In that first USDA rule, growers and packers from Michoacán who passed certification were allowed to ship Hass avocados to 19 Northeastern U.S. states during a four-month window during the winter. The USDA determined that this protocol would protect U.S. production in California and Florida. Over time, the rule was amended and expanded. Today Michoacán growers and packing houses that qualify have access to the entire U.S. market, including Hawaii and Puerto Rico, all 12 months of the year. In 2015, Mexico is expected to export about 1.4 billion pounds of Hass avocados to the United States. That represents about 70 percent of the total consumption expected in the United States this year.

While not downplaying this new proposal, Emiliano Escobedo, executive director of the Hass Avocado Board (HAB), based in Irvine, CA, said it needs to be examined with some perspective. He noted that more than 80 percent of Mexico's avocado production is produced in Michoacán. According to Escobedo, that state accounts for about 2.6 billion pounds of the country's 3.2 billion pounds of production, which includes all varieties. About 80-85 percent of the Michoacán Hass production has passed the U.S. protocols and can be shipped into the United States...but not all of it is.

Jalisco, on the other hand, accounts for only about 5 percent of Mexico's total production. Almost all of the Jalisco fruit is either the Hass or Mendez variety, which Escobedo says qualifies as Hass. Total Jalisco production is around 190 million pounds according to the HAB executive. Currently that product is consumed domestically as well as sold to some export markets including Canada and Asia. Escobedo said Jalisco growers are more technologically advanced and have larger groves and many have upgraded packing sheds. For example, he said most of the hectares of avocados in Jalisco are irrigated. That is not the case in Michoacán.

Escobedo said the better growers and packing sheds will most likely qualify for shipments to the United States relatively quickly after they are allowed to do so. He said those growers should be expected to send top notch fruit to the U.S. market, just as they have sent high quality fruit to other markets.

Escobedo said, depending upon the elevation of the grove, Jalisco avocados are typically marketed from about March until October. While this timing is of concern to California growers, as it fairly closely resembles California's growing season, Escobedo said the potential for increased exports from Michoacán packing sheds that are not certified is much greater than all the fruit from Jalisco. And there is no thought that Jalisco shippers will abandon the markets they have already established.

In any event, Escobedo believes the United States can absorb the extra volume if it is marketed in an orderly fashion...and he believes it will be. He said the extra fruit will result in extra promotion dollars and the U.S. market has been growing significantly each year. "We are seeing 35 million pounds of fruit week after week with no drop in price."

When you factor in the 120.2 million pounds of avocados consumed around the Super Bowl, about 183.5 million pounds of avocados were sold in January according to Escobedo, making it the highest volume month ever recorded for avocados. Projections for February were that 150 million pounds would be shipped. That brings the January/February total to more than 333 million pounds, making it the second largest two-month period in history. Only June and July of 2014 topped that volume with total shipments of almost 350 million pounds.

We are the Farm Credit System—a nationwide network of customer-owned lending institutions focused exclusively on agriculture.

FARM CREDIT

We've been around since 1916 and we're not going anywhere–except forward. When you need financial services for your farm or ranch, come to us. Because this system works. For you.

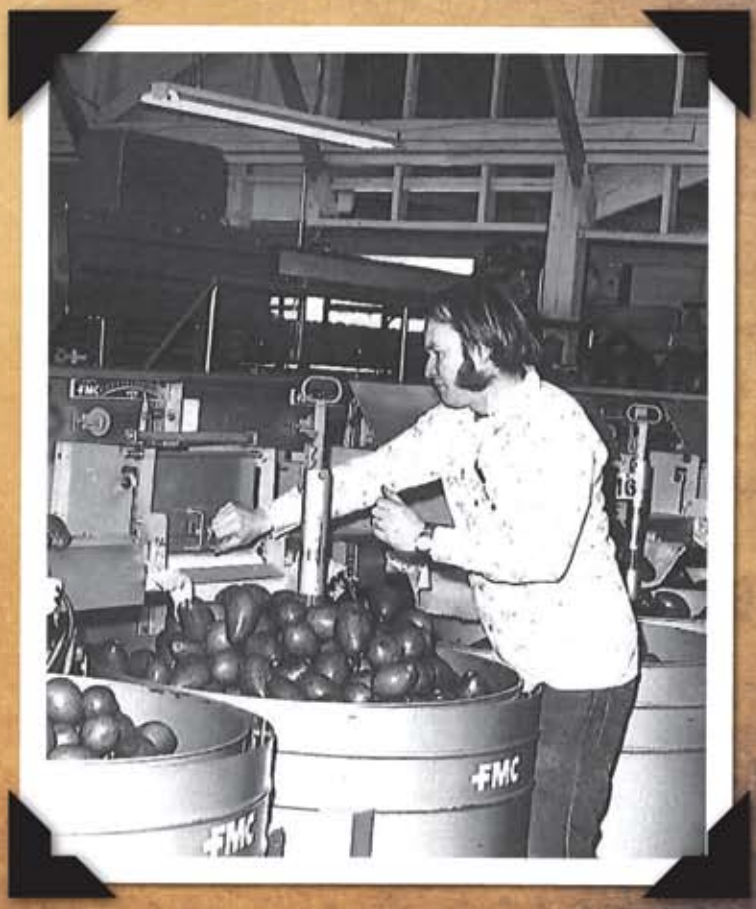
Find the Farm Credit member location near you.
FarmCreditAlliance.com (855) 611-4110 toll-free

American AgCredit | CoBank | Farm Credit West

100 YEARS OF SERVING GROWERS

TOGETHER THE WINFREYS, FATHER AND SON, HAVE MANAGED PRODUCTION FOR 80 YEARS.

DON WINFREY (MIDDLE), 1940'S.



MIKE WINFREY, 1970'S.

FOR 100 YEARS, we have served California growers as a packer and marketer. We work with domestic and international customers to build premium programs that deliver excellent value for Index growers. Proud of our heritage and excited about the future, we are looking forward to our next century. For 100 years, we have been packing with pride and delivering on our promises.

A CENTURY OF 100 Years PERFORMANCE

AVOTERRA™ INDEX FRESH INC.

909.877.1577 • www.AvoTerra.com • 3880 Lemon St. Suite 210 • Riverside, CA 92501