Topics in Subtropics Newsletter

University of California Cooperative Extension

Fresno, Kern, Madera, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, Tulare, & Ventura Counties

News from the Subtropical Tree Crop Farm Advisors in California

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TOPICS IN THIS ISSUE –

FARM ADVISORS AND SPECIALISTS

Ashraf El-Kereamy – Extension Citrus Specialist, UCR
Phone: 559-592-2408
Email: ashrafe@ucr.edu

Greg Douhan – Area Citrus Advisor, Tulare, Fresno, Madera
Phone: 559-684-3312
Email: gdouhan@ucanr.edu
Website: http://cetulare.ucanr.edu

Ben Faber – Subtropical Horticulture, Ventura/Santa Barbara
Phone: (805) 645-1462
Email: bafaber@ucdavis.edu
Website: http://ceventura.ucdavis.edu

Craig Kallsen – Subtropical Horticulture & Pistachio, Kern
Phone: (661) 868-6221
Email: cekallsen@ucdavis.edu
Website: http://cekern.ucdavis.edu

Peggy Mauk – Subtropical Horticulture Specialist
Phone: 951-827-4274
Email: peggy.mauk@ucr.edu
Website: http://www.plantbiology.ucr.edu/

Sonia Rios – Subtropical Horticulture, Riverside/San Diego
Phone: (951) 683-8718
Email: sirios@ucanr.edu
Website: http://cesandiego.ucanr.edu

Monique Rivera – Extension Entomologist of Subtropical Crops, Department of Entomology, Chapman Hall 12
Phone: (951) 827-9274

Philippe Rolshausen – Extension Specialist Subtropical Crops, UCR
Phone: (951) 827-6988
Email: philrols@ucr.edu
Website: http://ucanr.edu/sites/Rolshausen/

Eta Takele – Area Ag Economics Advisor
Phone: (951) 683-6491 ext 221 and 243
Email: ettakele@ucdavis.edu
Website: http://ceriverside.ucdavis.edu

In memoriam: George Goodall

Pam Kan-Rice, Assistant Director, News and Information Outreach, UCANR
Ben Faber, Farm Advisor, University of California Cooperative Extension, Soils, Water, and Subtropicals, Ventura and Santa Barbara counties

George Goodall, emeritus UCCE farm advisor, passed away in June at age 98.

A second-generation Southern Californian, Goodall grew up on a diversified farm in Canoga Park. After serving four years in the Army Corps of Engineers during World War II, he earned a degree in subtropical horticulture from UCLA in 1947. Goodall was hired as a UC Cooperative Extension subtropical fruit farm advisor for Ventura County, then in 1951 moved to serve Santa Barbara County as a farm advisor specializing in avocados, citrus, walnuts and wine grapes. He later became director of UCCE in Santa Barbara County.

"George was instrumental in the implementation of the Williamson Act in Santa Barbara County and in establishing the avocado industry amongst a lot of other things," said Ben Faber, UCCE subtropical crops advisor for Ventura and Santa Barbara counties.

In 1972, Goodall received the Award of Honor of the California Avocado Society. Among other industry honors, he received the Distinguished Service Award from the California Chapter of the Soil Conservation Society of America, the Commendation Award from the Soil Conservation Society of America, and a gold watch from Calavo Growers of California.

During his career, he authored nearly 30 papers on avocado production and many more papers on subtropical fruits. In 1986, Goodall wrote an irrigation article for California Grower, saying, "My conclusion is that tensiometers are the most useful instrument for avocado growers."

Conducting a meeting as a Farm Advisor, circa 1950. Photo: Steve Goodall

He was a member of the American Society for Horticulture Science, the American Agricultural Economics Association, the Soil Conservation Society of America, and was a past president of the California Chapter of the Soil Conservation Society of America. A member of the California Avocado Society since 1949, he also belonged to the Lemon Men's Club, The California Citrus Nurserymen's Society, and the Santa Barbara County Farm Bureau.

After retiring from UC, he did agricultural consulting in the Mediterranean, Latin America, and Africa. He continued his service in the Santa Barbara Rotary Club and his local genealogical society, tracing his ancestry to the origins of man and giving presentations on genealogy.

Larry Yee, a retired CE Advisor and County Director reflected: I'll never forget his laugh and his stories. He, John Evans and Bud Lee were like the 3 musketeer county directors who were all excellent extension administrators and at the same time outstanding farm advisors. They truly marked the end of an era when extension was valued as much if not more so than research and education in the academy. Lastly, he loved his family as much as extension and he and his wife, Barbara, were a terrific couple who had a lot of fun together enjoying life to the fullest.

Some of the Greatest Generation of UC Citrus/Avocado Workers. From Left to Right: Marvin Miller who worked in LA County Agriculture Commissioner's Office and then Riverside County, Bob Platt, my predecessor, Bud Lee, Don Gustafson and George. Photo: Mary Lu Arpaia

From Dan Grant, avocado industry activist: I had the good fortune of meeting George Goodall when I was a teenager and my family, at the time, was growing avocados in the Goleta Valley going back to the early 1950s. I was impressed with how much he knew and understood about how to grow avocados, at a time when they were a very minor crop. He was always available to make grove visits, and presented his observations and recommendations clearly, and cordially to all. Sometimes he would stop by when in the area to see how things were going, and to make further recommendations that he thought necessary. I remember seeing his grove many times through the years. It always looked pristine even when root rot was devastating many areas back then. His grove was the 'standard' we used for gauging our success growing avocados. Much of what I learned as a young man consulting in the industry came directly from George Goodall. He was a polite, fine gentleman on top of everything else. I still follow his advice today, as good advice is never outdated.

Grower Cliff Sponsel and George Goodall at a root rot trial in Santa Barbara, 1977

“Not only was George a highly respected and regarded agricultural scientist in subtropical hort, but he was just a really good person. As important as his knowledge and experience, it was his manner, attitude, personality, sense of humor, etc. that made him an ideal Cooperative Extension Advisor. He was equally comfortable in the world of academia as he was in the real world of farming and people. George had a wonderful presence and one that commanded authority and respect. He was a leader. He enjoyed people. Service and community were deeply held values. And he loved good food, a good bottle of wine, and good company.”

April 20, 1922 - June 22, 2020

Promoting best practices for safe, economical and environmentally sound pesticide application with minimum environmental risks

Peter Ako Larbi, Ph.D.
Assistant Cooperative Extension Specialist in Agricultural Application Engineering
Kearney Agricultural Research and Extension Center, 9240 South Riverbend Avenue,
Parlier, CA palarbi@ucanr.edu

Spray application is an important process in tree crop production in the San Joaquin Valley and across California. According to the 2018 state agriculture overview, there were over 24,000,000 acres of farm in operation, over 69,000 farm operations, and 350 acres per farm operation in the valley. This covers all crops. The 2016 pesticide use report for the top 8 crops or commodities across all counties in the valley indicate that nearly 77 million pounds of pesticides were used with the highest use, the greatest number of applications, and the total acres all reported in almond. However, considering the amount used per acre, the highest was used in orange applications (see Figure 1). Also, looking at the total pesticide used per application, wine grape had the highest (see Figure 2). Were the entire number of applications and amount of pesticide used needed? Could these numbers have been less? Are there ways to reduce the use? Are there any practices that could increase efficiency thus reducing the need for repeated applications? These are all legitimate questions considering sustainability of crop production and the environment.

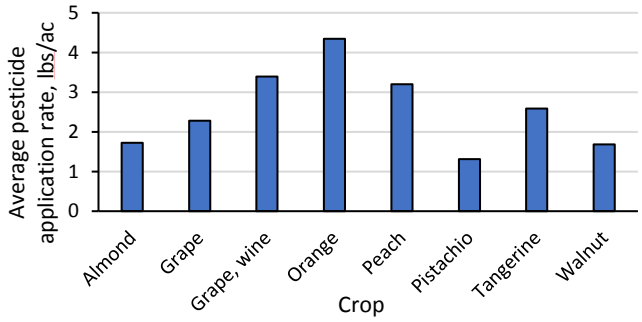

Fig. 1. Average pesticide application rate in the San Joaquin Valley based on 2016 Pesticide Use Report data.

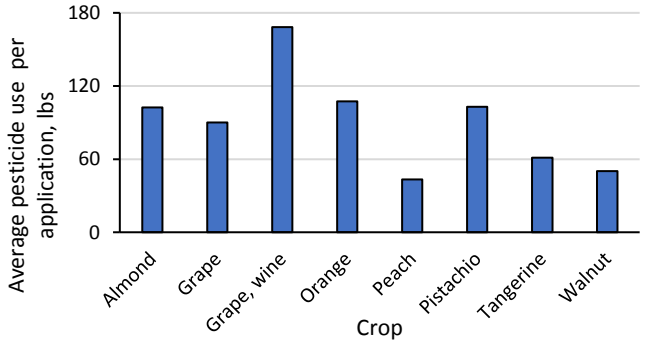

Fig. 2. Average pesticide use per application in the San Joaquin Valley based on 2016 Pesticide Use Report data.

It was partly against this backdrop that the University of California Agriculture and Natural Resources created the Agricultural Application Engineering (AgAppE) Program in 2018 to provide regional leadership in the area of agricultural engineering extension and applied research with a focus on spray application engineering. The primary goal is to improve agricultural productivity while reducing the impact of pesticides and other agricultural chemicals on the environment. This includes identifying technologies and techniques that maximize application efficiency in order to increase pest control effectiveness and reduce the need for repeat applications. One way is to research technologies that ensure precise and efficient application, which could imply developing new technologies or improving existing ones. Another way is identifying proven techniques that will potentially help growers and applicators to improve the effectiveness of their application, working with their existing spray rigs.

A little over two years running, the AgAppE Program has taken shape and is continuing to gain grounds in promoting best practices for safe, economical and environmentally sound pesticide application with minimum environmental risks. Collaborating with others across UCANR and external stakeholders, this is being accomplished by organizing and conducting timely and need-based training and technology transfer in pesticide spray application. This has included joining with Lynn Wunderlich (UCCE Farm Advisor, Central Sierra), Franz Niederholzer (UCCE Farm Advisor, Colusa/Sutter/Yuba Counties) and others in providing hands-on sprayer calibration trainings across the Sacramento Valley during 2019 and 2020, with support from the Department of Pesticide Regulation. Another has been a collaboration with Dr. Chris McDonald (Inland and Desert Natural Resources Advisor, County Co-Director, San Bernardino) and Dr. Cheryl Wilen (UC IPM Natural Resources Extension Coordinator, Interim County Director of San Diego) to provide hands-on sprayer calibration training to landscapers and wildland stewards in the San Diego and Riverside areas in 2019. In November 2019, the first San Joaquin Valley Spray Application Short Course (developed through an initial assessment of spray application needs in the valley) took place at the Kearney Agricultural Research and Extension Center in Parlier, CA. This was led by the AgAppE Program in collaboration with several others both internally and externally.

The AgAppE Laboratory conducts research focused on testing commercial spray application technologies, deploying spray application decision support systems, developing novel spray application technologies, and evaluating spray application techniques. Currently, the lab is being funded by the Almond Board of California, the Citrus Research Board, the California Table Grape Commission, the Washington State Wine Commission, and E & J Gallo Winery Company to create spray drift data in almond, citrus, and grape for validating a new spray drift model for the regulatory community. The studies which are part of a multistate collaborative effort are based on an Environmental Protection Agency approved protocol. Cooperating with the AgAppE Lab in these studies are UCCE farm advisors for the various crops: Dr. Mae Culumber (UCCE Nut Crops Farm Advisor, Fresno County) for almond; Dr. Greg Douhan (UCCE Area Citrus Advisor, Tulare County) for citrus; and Dr. George Zhuang (UCCE Viticulture Farm Advisor, Fresno County) for grape.

With support from the California Department of Pesticide Regulation, the AgAppE Laboratory has collaborated with Dr. Greg Douhan and Dr. Elizabeth Grafton-Cardwell (Emeritus Entomology Cooperative Extension Specialist) to disseminate an existing spray application expert system to gather feedback from end users. The expert system (*CitrusSprayEx*, a Windows based software application) which was developed based on an air-carrier spray deposition model is intended to provide decision support for planning and evaluating spray applications in citrus

and other tree crops. Included in this effort is the further development of the expert system that will lead to a web-based mobile-friendly application with increased accessibility. The expected outcome is the potential adoption by growers and spray applicators across California to enhance their decision making for effective spray application and potential reduction in pesticide use. The impending application is intended to extend focus on other tree crops and allow for more customized decision support for spray application planning and evaluation, enhancing decision making of growers and spray applicators for more effective application.

The AgAppE Lab is conducting a survey for evaluating a spray expert system. We invite all stakeholders, especially growers and applicators, to participate in the ongoing survey. We value your input and in appreciation for your time, the first 100 respondents will receive a $10 Amazon gift card. The survey will close on November 30, 2020. Please scan the QR code to go to the survey.

South American Palm Weevil: Update

Sonia Rios, Subtropical Horticulture Farm Advisor, Riverside/San Diego Co.

Photo: Mark Hoddle, UCR

The South American Palm Weevils (SAPW) have made their way north from Mexico and are having a destructive impact on canary island palms in the San Diego region – a multi-million dollar industry in Southern California's landscape. As of 2019, this pest has been killing palms at a faster rate than ever before and moving northward. The SAPW threatens the iconic aesthetics of public and private properties and will be a costly management expense for public authorities as well as private home and business owners due to the difficulty of removing dead and dying palm trees (Hoddle 2017).

COVID-19 has placed a lot of things to the back burner, we have been distracted with many other serious issues. However, just because we are in quarantine doesn't mean we must not forget that invasive pests are still out and about. As California starts opening up again slowly, we must turn our focus back onto the issues that were important pre-pandemic, one of those the SAPW. The beetle inflicts serious physical damage to the fronds, crown, and hearts of palm trees, as well as weakening palms immune system to leave them susceptible to other fungal and wilt diseases. An untreated palm infested by palm weevils will ultimately die, while serving as a nesting site to spread the beetle to other palms in the area (Figure 1 & 2). Fast detection and removal of SAPW infestations is key, because even moderately infested palms act as nurseries for weevil larvae and help spread damage.

Figure 1. Dropped Canary Island date palm crown that has collapsed in San Diego. (Photo: Sonia Rios)

Figure 2: Basal sheath frond detached from base of a Canary Islands date palm frond showing characteristic holes caused by SAPW larval feeding (Photo: Sonia Rios)

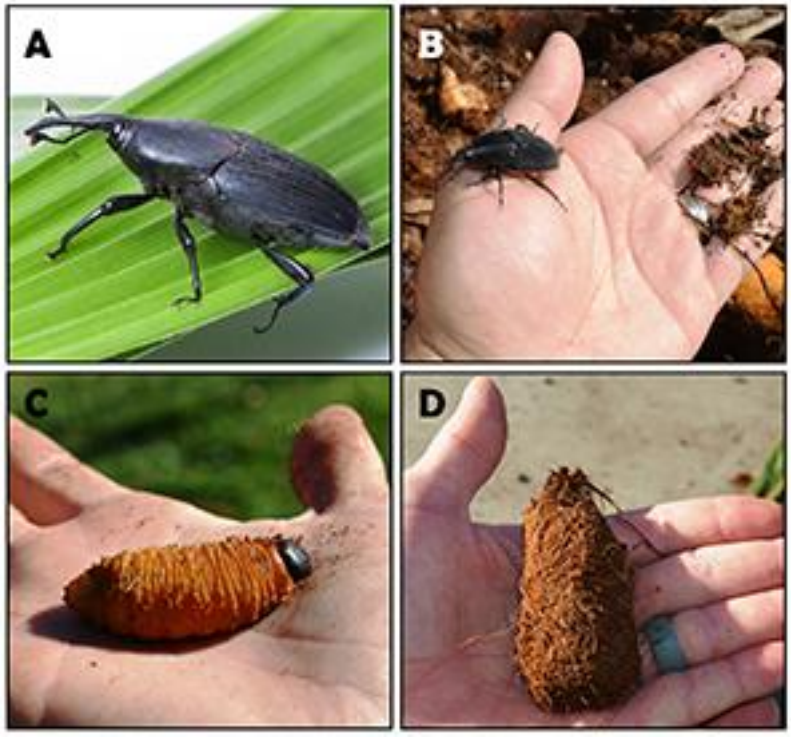

Figure 3: (A) and (B) adult SAPW.
(C) Mature SAPW larva.
(D) SAPW cocoon.

Photo credits: (A) Mike Lewis, Center for Invasive Species Research, UC Riverside, (B), (C), and (D), Ricardo Aguilar, Aguilar Plant Care.

Current Status

Currently, to control the pests, applicators are applying systemic insecticides, which causes the insecticide to move up the palm from a soil application or drench. This kills the larva from the inside of the palm. Contact insecticides are also being used to kill the adults as it leaves behind a residual trail that effect the adult beetles. Some hopeful news, Mark Hoddle, UCR Entomologist

has records of canary island palms that have fully recovered and are currently recovering after a beetle attack if there is some meristematic tissue left after the attack.

His current research also suggests that growers and industry workers who would like to start monitoring for SAPW, should consider using the Picusan trap versus the traditional bucket trap. As the Picusan has the ability to catch more weevils. In addition, to also use bread yeast as a lure for your traps. The traps should also be placed at least ½ a mile from the closest palm, never place a trap directly onto a palm.

Recent data has shown that the SAPW has now shown up in northern County San Diego are in San Marcos. In addition, the edible date industry in Coachella Valley is worth about $68 million, produces approximately 47,000 tons of fruit, employs around 6,000 people, and is grown on about 10,000 acres. The industry is on high alert and are keeping an eye out for this invasive pest. We cannot let this pest into the date industry, with everyone's help, we can keep an eye out to protect our agriculture.

What can you do to help?

According to Mark Hoddle's Center for Invasive Species website, the SAPW is spreading through urban areas in southern California and Canary Islands date palms appear to be a highly preferred host which are very susceptible to attack. To track the spread of SAPW we need the help of community scientists, interested and concerned members of the public, who are willing to take time to report SAPW infestations via the web. To report palms that may be infested with SAPW please visit this site and fill in the online document and submit it.

Other Resources

UCCE San Diego: 2020 Invasive Pests webinar https://youtu.be/sn7r4UsrvzQ (10/2020)

County of San Diego: https://youtu.be/A_FvrpKobfc

The Center for Invasive Species Research Blog: https://cisr.ucr.edu/center-invasive-species-research-blog

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Lemon Establishment and Productions Costs and Profitability Analysis in Ventura County, 2020

Etaferahu Takele, Farm Management Economist/Area Farm Advisor, University of California Cooperative Extension, Southern California
Ben Faber, Farm Advisor, University of California Cooperative Extension, Soils, Water, and Subtropicals, Ventura and Santa Barbara counties
Donald Stewart, SRA, University of California Agricultural Issues Center and the Department of Agricultural and Resource Economics, Davis
Daniel A. Sumner, Director, Agricultural Issues Center and Frank H. Buck Jr. Distinguished Professor, Department of Agricultural and Resource Economics, UC Davis

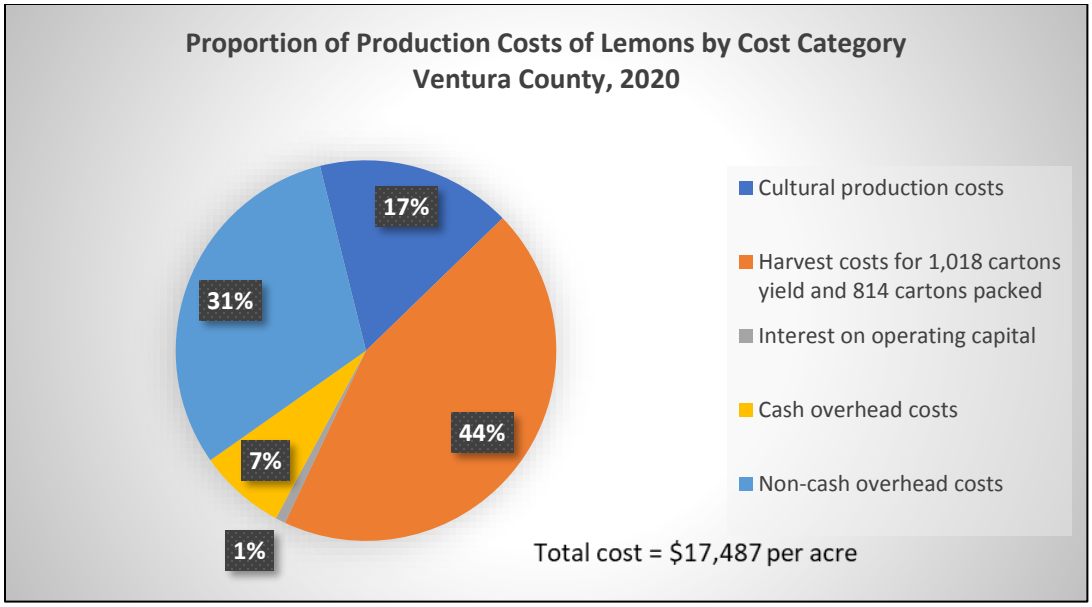
California lemon acreage was at ~47,000 acres in 2018-19 of which Ventura County accounts for 31%. Acreage in Ventura County was at 14,407 in 2019. There have been some increases in acreage since 2018 and according to the University of California Cooperative Extension (UCCE) Farm Advisor, Ben Faber, growers are planting in previous lemon ground and even in what used to be vegetable and strawberry crops grounds.

Since the last cost study was developed in 1997, we developed this study for growers, prospective growers, agricultural lenders, and all who are involved or have interest with the establishment /reestablishment and production of lemons in Ventura County in 2020. We present estimates of per acre financial requirements for establishment a lemon orchard and production. Also, we analyzed enterprise profitability. The production practices are considered typical for lemon production and obtained from local growers in Ventura and Farm Advisor Ben Faber, UCCE in 2019-20. Costs for labor, materials, equipment, and custom services were provided by growers and allied industries in 2019-20.

This study is published in the Department of Agricultural and Resource Economics website; https://coststudies.ucdavis.edu/en/ . For additional information or an explanation of the calculations used in the study, please call the UCCE, Riverside County, (951) 683-6491, ext. 243 or email at ettakele@ucanr.edu.

Summary of Costs and Returns

Our estimates of total establishment cost based on the assumptions we stated in the study for a typical lemon grove in Ventura County is $ 36,669 per acre. Establishment is a cumulative of the first 6 years costs and returns. We amortized the establishment cost over the life of the grove and included in the annual production cost to reflect the replacement cost of the investment.
The annual production cost estimate according to our assumptions is $ 17,487 as presented in tables 3 and 4 in the study. Table 3 shows costs by type of activity and table 4 shows costs by type of input. The pie graphs that follows shows the proportion of costs by category. Most of the cultural production cost is accounted for by frost protection, pest control and irrigation. The use of well water than municipal water has helped to lower the irrigation water cost in Ventura County as compared to other subtropical crops producing regions such as San Diego that are dependent on municipal water use. Lemon harvesting is labor intensive; hence it accounts for almost half of the total lemon production cost.



Land lease or the opportunity cost of using land in lemon production accounts for a major part of non-cash costs. Based on $80,000 per acre land value, which reflects the current price growers are paying for land in Ventura County, the lemon enterprise is charged $4,400 per acre for land use. Land lease accounts for 25% of the total cost.

Profitability Analysis

1. Gross margin: Gross margin (or returns above cash costs) is what growers often refer to as profit if there is no debt on the farming operation. It approximates the returns to management and investment. If you deduct depreciation, it also approximates taxable income. Gross margin is calculated as gross returns (price times yield) minus cash costs of production. Based on our estimate, the enterprise shows a gross margin of $4,620 per acre.

2. Economic profit (or returns above total cost) is a very useful measure of how attractive the enterprise is for potential investors and entrants into the business. Economic profit can be positive or zero. A zero economic profit should not be alarming if all costs, including the owners' labor and management fees are included in the production cost. In this study, returns to management is negative by $779 per acre. The returns to management should be evaluated in perspective of the land value. In this study, the current trend of planting has caused the land value to reach $80,000 per acre, hence the opportunity cost or land lease accounted for 25% of the total cost. We suggest that growers evaluate their returns to management based on their specific land value appraisals.

3. Break-even and Range Analyses: Given our yield assumption of 1,018 cartons per acre, the break-even price needed for gross margin is $11.88 per carton. However, the break-even price needed for the total cost of production is $17.18 per carton; $0.76 less than the market price ($16.42 per carton) we used in this study. In order to accommodate yield and price variations that may exist in the County, we provided a range analyses of gross margin and returns to management at various yield and price combinations (table 6). Growers can identify their gross margin and returns to management based on their yield and prices received.

Brief update on ACP/HLB in California with emphasis on the San Joaquin Valley

Greg W. Douhan, University of California Cooperative Extension, citrus advisor for Tulare, Fresno, and Madera counties
Sylvie Robillard, Fresno and Madera County Grower Liaison
Judy Zaninovich, Kern County Grower Liaison
Teri Blaser, Northern Tulare County Grower Liaison
Jessica Leslie, Southern Tulare County Grower Liaison

To date in 2020, there have been no new Asian Citrus Psyllid (ACP) detections in Madera or Fresno counties and it has been over two years since there has been a find in commercial citrus. Tulare has had one find in the summer. However, in Kern county there has been a total of 83 ACP detections found thus far in 2020. Of these detections in Kern, 49 were found in residential properties and 34 were located in commercial citrus. The rise in findings in Kern are of a concern because in the last few years the numbers have been low except for the high amounts of detections in 2015-16. Support from the California Department of Food and Agriculture (CDFA), homeowners, Pest Control Advisors, and growers have helped to reduce these detections through ACP management strategies to reduce ACP numbers. All finds have been in the southern half of the county in both commercial groves and residential properties. Most of these finds may be due to the fact of being closest in the San Joaquin Valley (SJV) to hot spots of ACP in Southern California Additionally, breeding populations of ACP nymphs and adults have been found in a few residential properties in or near Arvin and Mettler. The psyllids were collected by CDFA staff and sent to the lab to be tested for HLB. These residential ACP breeding population find sites and any adjacent properties with host plants have been treated.

The best method we have to stop the spread of HLB is to suppress ACP numbers. Select ACP effective materials whenever possible when applying insecticides to citrus. Follow all label instructions when applying pesticides. Additional information can be found at the following UCANR website: https://ucanr.edu/sites/acp/

Thus far, over 2,100 HLB positive trees and 315 HLB positive ACP have been detected in the Los Angeles Basin. Los Angeles county has 482 positive trees, Orange county1582 positive trees, Riverside county 31positive trees and San Bernardino county has 15 HLB positive trees. Over 1,400 square miles in these 4 counties are under quarantine for HLB to help control this disease.

CDFA continues to perform their normal sampling and monitoring protocols including tree removal of positive trees. During the time of COVID-19 they are following safe practices to protect both themselves and homeowners. All meetings are held via webinar until further notice.

To date, no HLB positive trees have been detected in a commercial grove while one HLB positive psyllid was collected in a commercial grove in Riverside County. The best way to make sure the SJV is not impacted by HLB is to keep ACP suppressed down to the lowest level possible. Using Best Management Practices such as making sure all equipment arriving and leaving the ranch is free from citrus stems and leaves, growers can greatly help to keep ACP from establishing in their citrus orchards.

Cooperative Extension
University of California
4437B S Laspina St
Tulare, CA 93274

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US Postage Paid
Visalia, CA 93277
Permit No. 240

Topics in Subtropics

Greg Douhan, Farm Advisor