

**University of California Cooperative Extension  
Merced County**

**ANNUAL REPORT  
2017 - 2018**



***Making a Difference for Merced County***

**University of California  
Agriculture and Natural Resources**



## **University of California**

### **Mission Statement**

The Division of Agriculture and Natural Resources (ANR) is a statewide network of University of California researchers and educators dedicated to the creation, development and application of knowledge in agricultural, natural and human resources.

-Glenda Humiston, Vice President

### **Merced County**

UC farm advisors, "... provide a significant asset to those who grow some of our main crops in the County – cotton, corn, alfalfa and wheat. This has been identified as an area of critical importance for our region as it would also provide valuable research and education into agricultural needs in the Central Valley."

- Hubert "Hub" Walsh, Jr. -- Chairman, Merced County Board of Supervisors, July 2016

### **Cooperative Extension**

#### **Cooperative Extension**

The University of California Cooperative Extension (UCCE) is the outreach arm of the University of California. UCCE has farm, 4-H, and nutrition, family and consumer sciences advisors based in more than 50 county offices. In addition, Cooperative Extension specialists are placed at UC Berkeley, UC Davis, UC Riverside, UC Merced and on Research and Extension Centers throughout the state. These specialists provide statewide leadership to teams of advisors and Agricultural Experiment Station (AES) faculty, and carry out outreach programs statewide and at the local level. As a land-grant institution, the Cooperative Extension mandate is to the welfare, development, and protection of California's people, agriculture, and natural resources.

#### **Mission**

The University of California Cooperative Extension mission is to develop and extend through educational means the use of research-based knowledge to improve specific practices and technologies in its area of expertise.

Cooperative Extension works in cooperation with county, state, and federal governments to provide local educational programs in the areas of agriculture and natural resources, youth development, family and consumer sciences, and community resource development.

The system was established at the Federal level by the Smith-Lever Act in 1914 and at the State and County levels by acts of the California Legislature in 1915. The cooperative effort with Merced County began with the opening of the Agricultural Extension (Cooperative Extension) office in 1917 with J.F. Grass as the first Farm Advisor in Merced County. The University of California provides the professional staff and Merced County provides funds for the clerical support, operation, and maintenance of the program.

*Cover:*

*Picnic in the Park, Aug 2017  
Celebrating 100 years of Service to Merced  
County*

# University of California Cooperative Extension

## Merced County

In 2017, UC Cooperative celebrated 100 years serving the citizens of Merced County. In 1917, the Merced County Board of Supervisors, at the request of the newly formed Farm Bureau, allocated \$2,000 to support a farm advisor from the University of California. J.F. Grass began as our first farm advisor that same year. Throughout 2017, numerous activities were held to mark the occasion, including co-participation at the annual Farm Bureau banquet in March, displays at the Los Banos May Fair and Merced District Fair, numerous 4-H events, and a display at the County Courthouse Museum. The main celebration, however, was a large picnic held in August at Courthouse Park, where over 400 people attended for food, fun, history, and seeing old acquaintances.

The past two years have been filled with numerous personnel changes for both the County and University. Both longtime county clerical staff employees Amelia Lopez and Cathy Marks retired and were replaced by Andrea Quintanilla and Malinda Farias. In 2018, we partnered with Merced County Human Services Agency to begin a 3-year pilot program to deliver 4-H programming to foster youth and hired Alexxis Rudich to support such activities. On the University side, viticulture advisor Lindsey Jordan left for private industry and was replaced by Karl Lund. Lynn Sosnoskie began as the new agronomy and weed science advisor for Merced and Madera Counties. Gabe Rudich, who had worked for UC as a lab assistant for about 6 years left to work for the Agriculture Commissioner. And in late 2018, Dave Doll resigned as our pomology advisor to work for a start up company in Portugal establishing an almond ranch. By the end of 2018, Cooperative Extension had 4 county employees, 3 advisors, 3 community educators, several student interns, and an active Master Gardener program with many volunteers.

Lynn Sosnoskie began as a new agronomy advisor in 2018, filling a position vacant since the retirement of Bill Weir in 2002. This would not have been possible without the strong support of the Merced County Board of Supervisors, Merced County Farm Bureau, growers, consultants, and many others who took the time to write letters to UC advocating for the position and the importance in this community. Lynn will be working with the many growers and allied industry of cotton, alfalfa, small grains, corn, and other agronomic crops, which are grown on more than 200,000 acres throughout the county.

The Latino Outreach initiative continued to show strong gains and positive impact in Santa Nella, Planada, Winton, Livingston, and other towns. The program began in 2016 with a mission of increasing Hispanic youth participation in 4-H. It is being lead by Russ Hill and Jose Campos. Other 4-H events and activities, such as camp and summer science camp, continue to grow as well.

UC Cooperative Extension remains active in Merced County, managing the 4-H youth development program, Master Gardener program, assisting with UC's Cal Naturalist program, and offering pest management courses each spring and fall. The advisors continue to serve the agriculture community by delivering research-based and practical advice for local growers, gardeners, families, and consultants. While the climate and challenges may be different, the role of the advisor is very much the same as it was when J.F. Grass first began so long ago. We look forward to the next 100 years.

Scott Stoddard  
County Director  
University of California  
Cooperative Extension  
Merced County

Merced County Directors: **J.F. Grass**– 1917-1922, **John Quail**– 1923-1930, **William H. Allison Jr.** -1931-1953, **Don Peterson**– 1954-1972, **Glen Voskuil**– 1973-1981, **Linda M. Manton**– 1982-1991, **Jim Farley**– 1992-2004, **Richard Mahacek**– 2005-2012, **Maxwell Norton**– 2012-2015, **Scott Stoddard**– 2015– Present

# Program Funding

## 2017 - 2018 Support for Operations and Programs

Cooperative Extension is a unique joint venture between the three levels of government. This partnership brings together the USDA at the federal level, The Land Grant University at the state level (University of California) and the County of Merced locally. While a small part is endowed each of the three partners have and play an important role in the overall functions of the Cooperative Extension office. This operations support is vital for organizing, preparing, and serving the clientele needs in our day to day functions. Clientele contacts take place in the office, on farm visits, by phone, via e-mail, by web, and general meetings.

### Program Support

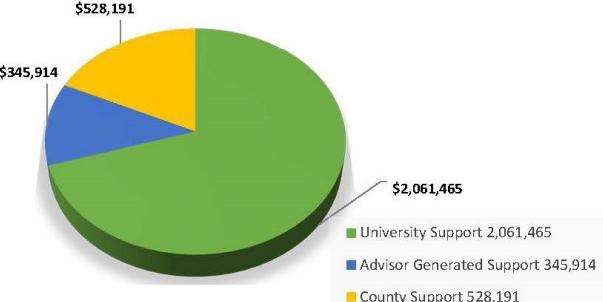
In addition to the general office support that provides an operational framework many specialized programs, studies, and research activities require additional support.

Our Advisors as UC academics have Principle Investigator (PI) status allowing them to lead and collaborate on research grants and projects.

**University of California**  
Agriculture and Natural Resources  
**Merced County**  
**Budget for Fiscal Year 2017-2018**

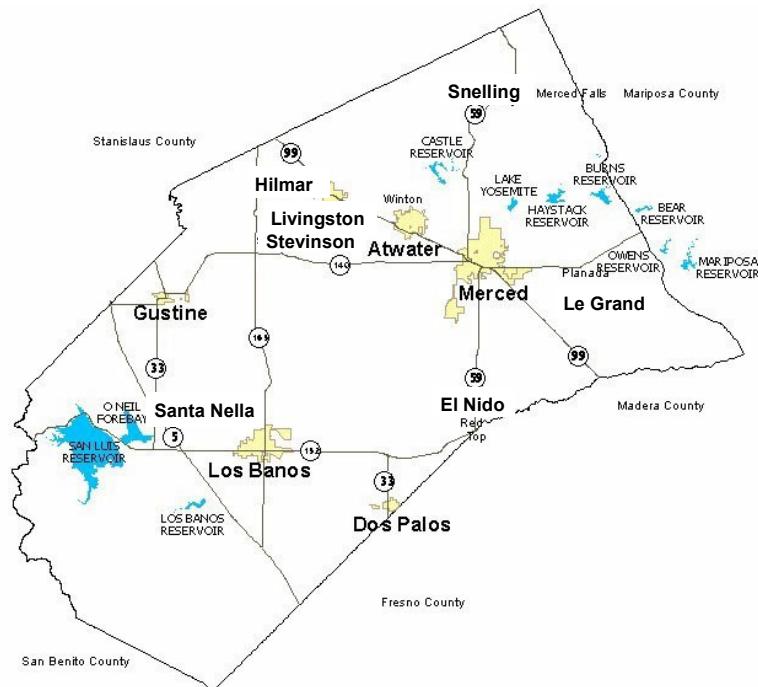
	\$	%
<b>1. University Support</b>		
a. ANR General Funds	415,803	14%
b. Endowment Funds	88,508	3%
c. Federal Funds	100,816	3%
d. Other Revenue	129,945	4%
e. Statewide Coop. Extension Support	1,326,393	45%
<b><i>subtotal:</i></b>	<b><i>2,061,465</i></b>	<b><i>70%</i></b>
<b>2. Advisor-Generated Support</b>		
a. Contracts & Grants	164,856	6%
b. Gift & Endowment Funds	116,747	4%
c. Other Revenue	64,311	2%
<b><i>subtotal:</i></b>	<b><i>345,914</i></b>	<b><i>12%</i></b>
<b>3. County Support</b>		
a. Direct Support	410,885	14%
b. Indirect Support	117,306	4%
<b><i>subtotal:</i></b>	<b><i>528,191</i></b>	<b><i>18%</i></b>
<b>TOTAL</b>	<b><i>\$2,935,570</i></b>	<b><i>100%</i></b>

### UCCE Merced County Budget for Fiscal Year 2017-2018



Additional 4-H program support is provided through donations, fundraising, and participant fees. These funds are used for youth conferences, camps, and events. These are also used for recognition and awards for members and volunteers.

# Service to the Community



## Services to the Farmers, Consumers, Youth, and Families of Merced County

### 2017 - 2018 Contacts:

- 10,499 Newsletters mailed
- 47,621 Newsletters emailed
- 114 Publications sold
- 3,205 Telephone calls received
- 1,401 Visitors to our office
- 17,056 Web site visitors

### 2017 - 2018 Formal Volunteers:

- 297 4-H Leaders
- 31 California Naturalists
- 52 Master Gardeners
- 15 Master Gardeners in training



**UC Cooperative Extension**  
A Celebration of Science and Service



**UCCE**  
University of California Cooperative Extension

# Merced County Cooperative Extension Staff

2017 - 2018

## County Director

**Scott Stoddard**

## Advisors

**David Doll**

Pomology

**Russell Hill**

4-H Youth Development

**Lynn Sosnoskie**

Agronomy and Weed Management

**Scott Stoddard**

Vegetables

## Cross-County Advisors

**Phoebe Gordon**

Orchard System Advisor

**Jennifer Heguy**

Dairy

**Karl Lund**

Viticulture

**Fadzayi Mashiri**

Livestock and Range Management

**Jhalendra Rijal**

Integrated Pest Management

## Emeritus Advisors

**Alejandro Castillo**

**Richard Mahacek**

**Maxwell Norton**

**Bill Weir**

## Program and Support Staff

**Larry Burrow**

Community Education Specialist I

**Jose Campos**

4-H Program Representative

**Anthony Cantu**

Agriculture Field Technician

**Malinda Farias**

Office Manager

**Darlene McIntyre**

4-H Program Representative

**Elizabeth Miranda**

Community Educator Specialist II

**Andrea Quintanilla**

Office Assistant II

**Alexxis Rudich**

Office Assistant III

**Gabriel Rudich**

Lab Assistant II

**Rosalinda Ruiz**

Community Education Specialist II

**Jaci Westbrook**

Community Educator Supervisor II

**Cameron Zuber**

Staff Research Associate II

# Support Staff

## Cathy Marks, *Office Manager (Retired)*

Being a part of the UC Cooperative team was, again, a pleasure. The research and education for the benefit of the people of our county is a rewarding occupation. Supporting these goals is my position in this team. In that position I provided administrative duties, (budget and financial, record keeping and reporting) as well as personnel and business functions.

Along with my duties I continued to assist with 4-H program duties in the absence of a 4-H Secretary. I watch the growth of our staff, volunteers, 4-H members, and services to the community and I feel honored to be a part of this team.



## Malinda Farias, *Office Manager*

Malinda Farias, Office Manager as of March 2018.

I enjoy being a part of the University of California, Agriculture and Natural Resources, Cooperative Extension, Merced County team. In my position, I support the office staff with my management / administrative duties. Which include personnel, business office functions, budget, financial, record keeping and reporting duties to Merced County and University of California, Davis.

I am happy to be in my position surrounded by research, education, and the opportunity to work with our Merced County Citizens.



## Alexxis Rudich, *Office Assistant III*

Being able to bring back this position after 10 years has been wonderful. I started the year in December as the Office Assistant II and transitioned into the 4-H Secretary role in April. A large part of the position is building a relationship with Human Services Agency and the foster youth program. I've been handling 4-H Online enrollments, mailings, event preparations and organization of 4-H related documents.

I have also been organizing activities for the 4-H program to put on for foster youth. We were able to take a handful of foster youth to 4-H camp and they had a blast. We also had youth join us for three weeks for Summer Science Academy where they learned about robots. I helped train Andrea for her Office Assistant role, ordered and organized office supplies, and updated the front office.



## Andrea Quintanilla, *Office Assistant II*

I started as the new Office Assistant II for UC Cooperative Extension in June 2018. I am very excited to have joined an outstanding team. I have already learned so much about the University of California Agriculture and Natural Sciences with Merced County. I cannot wait to continue growing and learning with UCCE.

My duties include greeting and assisting both Spanish and English-speaking clients either through phone, email, or in person. I direct them to the appropriate support, and I also provide clerical assistance for the office. I handle our classroom and library reservations. Also I make sure to keep up with our office maintenance, including stocking items, ordering publications, reorganizing our library, opening and closing the office.



# Support Staff

## **Larry Burrow, *Community Education Specialist I***

In my position as Community Education Specialist I focus on organizing meetings to provide continuing education (CE) for local growers and pest control professionals. In this position I arrange speakers, oversee topic selection, complete applications for Department of Pesticide approval of units and report attendance for a bi-annual series of CE classes in pest management. Local farmers and other licensed pesticide applicators rely on these classes to renew the certificates and licenses that allow them to apply chemical treatments to crops. These CE classes have, over the past year provided 500 continuing education hours provided to our ag community. In addition to these classes I arranged our 2<sup>nd</sup> Annual Drone Field Day in June 2018 with presentations and demonstrations by both industry and research professionals. In addition to my duties as a Community Education Specialist I provided support for our office computer network and safety program, as well as advise and assistance to our office, Master Gardener's and field personnel.



Larry A. Burrow

Community Education Specialist 1



## **Anthony Cantu, *Ag Field Technician***

The Agricultural Field Technician is responsible for providing support to the research and outreach activities of all Merced County Cooperative Extension employees. In 2017/2018 this included planting, spraying, and harvesting tomatoes, sweet potatoes, and melons; taking soil samples from various project locations.; recording stem water potential for almonds and walnuts; posting research results and county advisor meetings to the Merced County Cooperative Extension website. Other activities include reorganizing our offices pesticide storage room, occasionally handling front office duties such as taking phone calls, and answering questions, and doing a monthly backup of our offices computer data. The Agricultural Field Technician is also responsible for hauling supplies to and from camp for the 4H program.



# Agronomy and Weed Science

Lynn Sosnoskie, *Farm Advisor*  
(Merced & Madera)



## Research:

Although I am a new advisor (Onboard since March 2018), I have been involved in several research projects. These include trials to: evaluate the timing and intensity of defoliation on slender rush (*Juncus effusus*) regrowth in an irrigated pasture, describe the growth and development of Palmer amaranth (*Amaranthus palmeri*) in response to salinity and moisture stress, and evaluate late-season herbicide applications for the management of field bindweed (*Convolvulus arvensis*) and alkaliweed (*Cressa truxillensis*). I have also been mapping and screening waterhemp (*Amaranthus rudis*) populations for herbicide resistance; a population of this species in the Mid-west has been confirmed with multiple resistance to six different herbicide modes of action. Additionally, I have been writing research grants and preparing for 2019 trials, which will include: small grain and cotton variety trials, nutrient management research, and weed control projects in both cotton and alfalfa.

## Extension, outreach, and service:

I have developed an agronomy and weed science website (<https://ucanr.edu/sites/AgronomyWeedScience/>) for Merced County and have initiated my own blog (<https://ucanr.edu/blogs/SJVAgrologyWeedScienceBlog/index.cfm>). I also contribute, regularly, to the UC Weed Science Blog (<https://ucanr.edu/blogs/UCDWeedScience/index.cfm>). In total, my blog posts (March 2018 – September 2018) have been accessed more than 9,000 times. Since starting, I have presented at multiple UC ANR supported cooperative extension events. Topics included: the importance of proper weed identification for effective weed control, factors influencing weed control success, and the biology and ecology of field bindweed. My extension efforts can also be observed on Twitter (@agronomyweedsci) and Instagram (agronomyweedscience).



# Dairy Science

**Jennifer Heguy, Farm Advisor**  
(Stanislaus, San Joaquin, & Merced)



## Applied Research



I am leading a team of advisors and specialists to look at the viability of sorghum silage in California. Given its drought tolerance, sorghum silage could potentially have a place in California feeding systems when water allocations are reduced. The project is looking at the viability (agronomic, nutritional, nutrient balance, etc.) of sorghum silage in the California dairy system. We've previously sampled sorghum for nutritional quality and surveyed producers on their management practices. This summer, we are looking into sorghum chop length's affect on sorghum berry processing and subsequent starch availability, and will conclude the study with a commercial feeding study next year.

I am on a research team looking at maximum inclusion rates of almond hulls into lactating cow diets, without compromising animal performance and health. It's no secret that California produces a lot of almonds, and almond hulls as a byproduct. There will continue to be a dramatic increase in the tonnage of almond hulls produced in the next ten years in California, creating the need for this work.

I am also working with a team of UC Davis scientists on a project funded by the California Air Resources Board to characterize physical and chemical properties of manure in California dairy systems to improve greenhouse gas (GHG) emission estimates. This is a timely project as California dairies move toward GHG reduction targets identified in the Senate Bill 1383 legislation.

## Extension Activities

I am the editor of the UCCE California Dairy Newsletter and lead the organizing committee for the UC Golden State Dairy Management Conference. I write numerous newsletter articles per year, disseminating research results from various projects. I also participate on the steering committee for the California Animal Nutrition Conference.

As a member of the UC component of the California Dairy Quality Assurance Program, we were awarded with the 2018 Distinguished Service Award for Outstanding Team for our contributions to assisting the dairy industry with regulatory compliance.



# Integrated Pest Management

Jalendra Rijal, *Farm Advisor*

(Stanislaus, San Joaquin, Merced)



## Applied Research Activities:

I developed IPM-focused applied research program focusing on arthropod pests of tree fruit, tree nuts and other crops in the northern San Joaquin Valley. During 2017-18, I executed 11 collaborative research projects with funding supports gathered from various sources, US Department of Agriculture-NIFA (1), Department of Pesticide Regulation (1), Commodity Boards (6) and other industry allies (3).

### Example Project 1. Brown marmorated stink bug (BMSB) invasion California crops.

Brown marmorated stink bug (BMSB) is an invasive insect that attacks more than 200 plant species. In addition to being an agricultural pest, BMSB can be a serious nuisance problem by migrating *en masse* to warm places (houses, buildings, barns) during the winter. In 2013, a large BMSB population was detected in downtown Sacramento. Between 2015-2018, BMSB has established in agricultural production areas of Stanislaus and Merced counties and currently starts causing economic damage to peach and almonds. I reported the first evidence of BMSB infestation in commercial orchards in California, and continue to involve in research that is geared toward finding better monitoring and management strategies to control this pest in crops in California.



I recommended that growers and pest control advisers (PCAs) monitor BMSB using sticky panel traps baited with BMSB lure in detecting potential BMSB infestation in the orchard.



### Example Project 2. Adoption of non-insecticidal method of insect control.

I conducted a collaborative demonstration project which improved the adoption of mating disruption (i.e., non-insecticidal method) to control navel orangeworm, the most damaging pest of nut crops. My research also contributed to the registration of the new and only the organic-approved mating disruption product for navel orangeworm control.



## Extension and Outreach Activities:

In 2017-18, I co-organized 8 IPM Breakfast meetings (March-June) and organized 2 IPM Field meetings. Published two peer-reviewed journal articles, and more than 20 extension articles, blog posts, interviews in several extension outlets; Delivered 39 extension and professional presentations. I also participated dozens of farm calls and orchard visits; provided public services by identifying crop and urban insect pests for residents, updated public on quarantine boundaries on Asian citrus psyllid and Huanglongbing disease and providing expert service to the Ag Commissioner's Offices.

# Livestock and Range Management

**Fadzayi Mashiri, Ph. D** *County Director (Mariposa)*  
*Farm Advisor (Mariposa and Merced)*



## Medusahead control:

After 3 seasons of data collection on two sites that were part of a research project evaluating fall and spring application of Milestone® (aminopyralid) herbicide as the control agent on medusahead [*Taeniatherum caput-medusae* (L.) Nevski], we wrapped up the study. The results were published in the Invasive Plant Science and Management journal, article titles “Timing Aminopyralid to Prevent Seed Production Controls Medusahead (*Taeniatherum caput-medusae*) and Increases Forage Grasses”. Based on these results, spring application will make more economic and ecological sense for ranchers and land managers to adopt at 3oz/acre because it is more affordable and will result in less environmental impact, compared to prior recommended rates of 7-14oz/acre fall application.



## Forage production and Residual Dry Matter monitoring:

Forage production data is critical for landowners to decide on stocking rates and making necessary adjustment where necessary. I was invited by UC Merced to be part of a team that was tasked to review the grazing management system on the reserve and come up with recommendations that will help them better meet the multiple objectives. The reserve objectives include creating an environment that was conducive for research, educational programs (e.g. university class, K-12 classes, public field trips), while maintaining ecological integrity. In response to our recommendations, UC Merced is moving towards introducing beef cows to graze on the MVPGR, to replace some of the dairy herd.

## Clover trials:

A project to evaluated different clover varieties for the Merced area. At the Merced trial site on Cunningham ranch, there are two varieties that are doing very well with average plant cover of more than 40%, seven with cover between 20 and 39% and two that have less than 20% cover. This trial provides an opportunity to come up with a few varieties that we can recommend for use in the central valley.



# Nutrition, Family, and Consumer Science

**Jaci Westbrook, Community Educator Supervisor II**  
(Stanislaus, Merced)



In Merced County the UC CalFresh Nutrition Education Program is part of a two-county program that includes partnering with Stanislaus County. Staff assigned to work in Merced County collaborate with school districts to provide a comprehensive nutrition education program that may include classroom Nutrition Education, Garden Enhanced Nutrition Education, Smarter Lunchrooms Movement, School Wellness Policy support and physical activity integration using Coordinated Approach to Child Health (CATCH). UC CalFresh provides technical support for Farm to School, retail and several community projects that will contribute to the health and well-being of Merced County residents.

In 2017-2018, the UC CalFresh team had the following accomplishments:

We collaborated with the Merced County Department of Public Health and Area Agency on Aging as part of the Supplemental Nutrition Assistance Program (SNAP-Ed) funding.

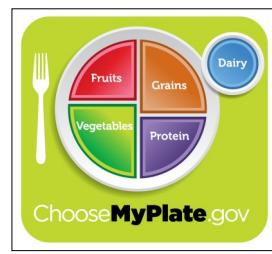
We contributed recommendations and support to two School Wellness Policy Committees.

We delivered nutrition education classes to over 1400 Merced County youth and adults.

Over 60% of youth said they would be willing to ask for the foods they tasted again at home.

79% of adults, after completing a series of classes, now know easy ways to save money on food. "I check over our food list and try to incorporate more healthy ingredients. I also organize my shopping more." –class participant

The CalFresh Program, federally known as the Supplemental Nutrition Assistance Program (SNAP), can add to your food budget to put healthy and nutritious food on the table. The program issues monthly electronic benefits that can be used to buy most foods at many markets and food stores. The CalFresh Program helps to improve the health and well-being of qualified households and individuals by providing them a means to meet their nutritional needs.



# Orchard Systems Advisor

**Phoebe Gordon, OS Advisor**  
(Madera, Merced)



## Almond Variety Trial

I manage one of the three locations of the Regional Almond Variety Trial. This statewide project is examining 30 almond varieties, most of which are new to the market or have not yet been released. These varieties are from commercial nurseries as well as the almond breeding programs at both UC Davis and the USDA. The project looks at bloom dates, an important characteristic as most almonds are not self fertile and need several varieties to pollinate each other; hullsplit dates, which are important for pest control; and yield. Some of these varieties are partially or completely self fertile.



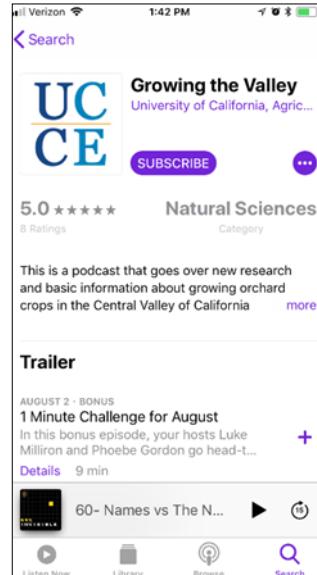
## Fig Insect Survey



Figs are a traditional California crop, production of which is centered in Madera and Merced counties. I identified insect damage as a major cause for concern for fig growers during my 2017 needs assessment. I have teamed up with UC Riverside entomology specialist Houston Wilson in order to establish a baseline level of damage done by Dried Fruit Beetle, Navel Orangeworm (NOW), and vinegar flies. The previous assessment was done more than 10 years ago. During that time almond and pistachio crops have increased in acreage, possibly increasing NOW pressure.

## Media

I have a newsletter, Dispatches from the Orchard, to provide growers with articles explaining issues seen in Madera and Merced counties, and my first issue went out at the end of 2017. As an additional part of my outreach program, I have created a Twitter account, @PhoebeG\_Orchard, to engage with growers, industry professionals, other academics, and the media. I have also started a podcast, Growing the Valley, with Butte county orchard farm advisor Luke Milliron. This is a brand new method of outreach for UCANR. You can find more at our website, [www.growingthevalleypodcast.com](http://www.growingthevalleypodcast.com).



# Pomology

**David Doll, Farm Advisor**

*(Merced)*



## Fumigant projects within soil types common to Merced County

Seven research trials were continued for the fiscal year. Six of the plots provided yield data showing the effectiveness of the pre-plant soil fumigation treatments. Consistently, fumigant treatments have out yielded the un-fumigated plots. Trial work has also tested tree spot fumigation, the use of fumigant films to reduce emissions, and non-fumigant alternatives. The trials are also testing new fumigant alternatives, rootstock tolerance to the various replant problems, and deep shank injection.



*Walnut trees at site in June 2018*



*David Doll measuring out hull and shell to be applied at the trial site*

### Walnut rootstock and density trial

A walnut plot testing VX211 and RX1 to seedling paradox rootstock was continued this fiscal year. This trial will determine if there are any interactions between walnut spacing that are specific to the rootstocks. The trial is performing well and it will be one to two more years before the first harvest data is collected.

### Almond hull and shell application

A trial testing the efficacy of applying almond hulls and shells back to an almond orchard was established. Previous research has shown that hull and shell may be a good source of some nutrients important in almond production. This trial is measuring the affects of returning different amounts of hull and shell to an almond orchard as an alternative or augmentation to fertilizers applications, as well as, the affects of this practice to soil health.

### Cover crop trial

A trial testing the affects of two different cover crop mixes in an almond orchard was established towards the end of 2017. The trial will monitor the affects on soil health, nutrients, tree health and yield, pollinators, frost, water infiltration and usage, and other factors. Of the two cover crop mixes used in this trial, one has plants with more advantages for pollinators and the other has plants that may help with sustaining or developing healthier soils.



*Bee on a flower from one of the cover crop mixes*

### Winter flood recharge project

A trial measuring the effects of applying approximately 24 inches of winter water to an almond orchard for recharge purposes was continued. The trial was established in December of 2015 and collected information on tree health, tree yield, root development, ground water recharge, and other variables. This plot was established to determine the possibility of using almond orchards as a location of groundwater recharge during the winter months.



*Portion of the trial site as it is being flooded in January 2018*

# Vegetable Crops

Scott Stoddard, *Farm Advisor*

(Merced, Madera)



The winter of 2017 – 18 was shaping up to be one of the driest on record until March, when finally a couple of large storms rolled in and brought significant rain and snow. Better late than never, however, Merced still received only about 7" of precipitation, about 4" less than average. Poor prices plagued 2017 – 18 vegetable crops in general, though 2018 was far more severe. Record low prices occurred in fresh market tomatoes and melons, and sweetpotatoes were overall very low. The very low price for fresh market tomatoes combined with continuous increased production from Mexico and tight labor supplies have dimmed the outlook for this crop. It is possible that fresh market tomatoes will no longer be grown commercially in California within 5 years. Processing tomatoes, however, remain strong: Merced County produced more than 1 million tons in 2018.

## Tomatoes

Fusarium wilt race 3 continues to be the main issue facing both fresh market and processing tomatoes. The disease causes plants to turn yellow and collapse, resulting in significant yield loss. The only UC guidelines for control are variety resistance and crop rotation. I evaluated variety resistance and fungicide efficacy in commercial fields with a history of this disease. Resistance worked very well, however, fungicides provided little to no suppression. Results from these trials were presented in June 2018 at the World Processing Tomato Congress in Athens, Greece.



## Melons

On-farm and research station trials were conducted to evaluate weed control and crop safety for various herbicide programs in both direct seeded and transplanted melons. There are few herbicides registered for melons (cantaloupes, honeydews, and watermelon), and the method of application is important to maximize effectiveness. Untimely applications can also cause crop injury. Results on transplants showed good weed control when properly incorporated.



## Sweetpotatoes

Variety screening and nematode management continue to be the main emphasis of my research and education program. A new red skinned variety is needed for the California markets. Unfortunately, a promising new variety from LSU, L-13-81, did poorly in 4 of 5 locations this year because of poor nematode resistance. Regulatory issues make the use of soil fumigation more onerous each year, and growers can no longer rely on soil fumigants to make up for lack of variety resistance.



# Viticulture

**Karl Lund , Viticulture Advisor**  
(Madera, Mariposa, Merced)



Trial 1. I am testing out 6 rootstocks bred by Dr. Peter Cousins (formerly of Cornell and the USDA, now leading the breeding effort at Gallo) for root-knot nematode resistance. I will be checking them for a wide range of qualities to see if they will make a good rootstock. They will be field grafted next year, and major data collection will begin in the 2020 growing season.



Trial 2. I am currently testing 5 new commercially available rootstock (RS3, RS9, GRN2, GRN3, GRN4) with advanced nematode resistance, along with 1103 P as a control. While these new rootstocks have been shown to have strong nematode resistances, little is known about their vinicultural characteristics when used as rootstocks. This is a large-scale planting with each replicate being a full row of 388 plants and each rootstock having 4 randomized rows. 40 vines in each row have been marked as data collection vines and from these vines we will be collecting data on phenology, vigor, nutrient uptake, juice chemistry, as well as yield data from the full row.

Genotype	<i>M. incognita</i> Race 3	<i>M. javanica</i>	<i>M. pathotypes</i> Harmony A&C	<i>M. chitwoodi</i>	<i>X. index</i>	<i>M. xenoplax</i>	<i>P. vulnus</i>	<i>T. semipenetrans</i>	<i>Para. hamatus</i>
Nematode Type	Root-knot Nematode	Root-knot Nematode	Root-knot Nematode	Root-knot Nematode	Dagger Nematode	Ring Nematode	Lesion Nematode	Citrus Nematode	Pin Nematode
1103 Paulsen			S		S	S	MS		S
Ramsey (Salt Creek)	R	R	S	S	MR	S	MS	MS	S
Freedom	R	R	S	S	R	MS	MS	S	MR
RS-3	R	R	MR	MR	S	S	MR		S
RS-9	R	R	R	R	S	S	MS		S
UCD GRN1	R		R		R	R	MR	R	MR
UCD GRN2	R		R		R	MS	MR	MS	MR
UCD GRN3	R		R		R	MR	MR	MR	MR
UCD GRN4	R		R		R	MR	MR	MR	MS
UCD GRN5	R		R		R	R	MR	MR	MR

# 4-H Youth Development

**Russell Hill, 4-H Youth Development Advisor**  
(Merced, Madera, Mariposa)



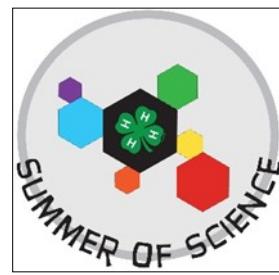
During the 2017-2018 program year the Merced County 4-H program grew by more than 185% to serve 3,574 youth or 5.2% of Merced County's youth age 5-18. Much of this growth is due to an intentional outreach effort to underserved audiences in communities and at school sites.

In addition to 4-H at school sites, programs were delivered over 3 weeks at our Summer Science Academy day camp, at Science and Adventure residential Camp, and attended leadership conferences.

Through a collaboration with the Merced County Human Service Agency, Children Services - Foster Care we began direct delivery of program to foster youth. Programs such as our Summer Science Academy, 4-H Science and Adventure Camp and hosting Friday Night Fun activities. Through this collaboration we continue to seek to serve some of the most vulnerable in our community.

Collaborating with MCOE, Merced City Schools, Merced High School District, Livingston and Delhi schools, we successfully reached well over 100 Latino youth and their families in a program called Juntos. Juntos 4-H is a program that helps Latino youth (grades 8 – 12) and their families gain the knowledge and skills they need to bridge the gap between high school and higher education. UC Merced was also home to the first statewide Juntos Academy hosting 60 youth from throughout California.

4-H projects, events, and activities are developed to help youth explore, grow and improve skills in citizenship, leadership, science literacy, and healthy living. Our 4-H youth are learning leadership and goal-setting skills and how to become community-minded adults through youth / adult partnerships. Through experiential learning and leading together with adult mentors, youth focus their energy into their passions while also giving back to the community.



# 4-H Youth Development

continued

**Darlene McIntyre, 4-H Program Representative**



In 2017-2018 Merced County 4-H eighteen clubs represent 1220 youth and 280 adult volunteers. Our 4-H youth are learning leadership and goal setting skills and how to become community minded adults through youth adult partnerships.

Youth leaders, club officers, County Ambassadors and club leaders participated in an Officer Retreat at UC Merced in Merced. Junior High and High School youth participated Central Youth Summit, CAL Focus, and State Leadership Conferences. Youth spent 2-3 days attending leadership workshops and meeting 4-H youth from other counties.

The eighteenth 4-H club was charted in Winton, Out of the Box 4-H in February.

Achievement Day where 4-H youth received awards for record books and other honors was held the first Sunday of October , the beginning of National 4-H Week in Gustine.

Mechanical Skills day was held in May at Merced College. 120 youth and adults participated in a variety of workshops dealing with various types of mechanical technology from 3 D printing to learning about drones.

We held a summer Science Academy for 3 weeks in July. 25 youth participated in science activities dealing with bicycle repairs, Makers Lab, and the 4-H National Science Experiments.

The Science and Adventure Camp held in June focused on Survival where 33 high school staff, 21 Adult chaperones, and 124 campers in 4<sup>th</sup>-8<sup>th</sup> grades worked together for 5 days and 4 nights at Camp Sylvester in Pinecrest CA.

In the fall we recognized the work and help of our adult volunteers at our Leaders Appreciation Night at Playhouse Merced .They enjoyed the play, A Christmas Story. In addition, the Clover awards of leadership were presented by 4H, city, county, state, and national representatives to the volunteers.



Central Youth Summit 2018



Achievement Day 2017



Summer Science Academy 2017



Camp Sylvester's 2018

# 4-H Youth Development continued

**Jose Campos, 4-H Program Representative Latino Initiative**



I network with communities and agencies by bringing awareness of 4-H program to underrepresented youth, families, and communities. Merced Cooperative Extension became a member of Merced Hispanic Chamber of Commerce in 2017.

In Fall 2017, I engaged 4<sup>th</sup> graders at Joe Stefani Elementary School in a pilot project titled "Descubre Outside/ Discover Afuera", which allowed students to explore outdoor biodiversity. For six weeks, Merced 4-H and the after-school program conducted hands-on activities with 36 youth learning how to be aware of all life in their community.

Shaffer Elementary School in Atwater invited me to their Ag Day kickoff event where the students in 1<sup>st</sup> thru 4<sup>th</sup> grades learned about Old Macdonald's Farm animals. Teachers were impressed how students were having fun while learning about farm animals.

In January, I began a series of six weekly Juntos workshops at Buhach Colony for families and students focusing on higher education being a family goal. Eight families completed the series. This project also offered a Summer Academy which was held at UC Merced with 48 8<sup>th</sup>-12<sup>th</sup> grade Latino 4-Hers from throughout the state experience college life over three days living on campus.



From June 21-26, I had the privilege of taking 16 Merced 4-H Latino Youth to California Focus Conference in Sacramento. Besides attending workshops learning about campaign strategies and the election process, a highlight of the trip was meeting State Senator Anthony Cannella and Assemblyman Adam Gray. This delegation has grown from three delegates in 2016-17 due to the collaboration with Merced County Office of Education Migrant Education this year.

Our outreach efforts are working: in 2018, Latino youth involved in 4H in Merced County had increased 35% since 2016.





# California Naturalist Program

Monique Kolster, *Director* (UC Merced Vernal Pools and Grassland Reserve)  
Scott Stoddard, *County Director and Farm Advisor* (UCCE Merced)



## California Naturalist program

The UC California Naturalist Program is designed to introduce Californians to the wonders of our unique ecology and engage the public in study and stewardship of California's natural communities. The California Naturalist program uses a science curriculum, hands-on learning, problem-solving, citizen science, and community service to instill a deep appreciation for the natural communities of the state and to inspire individuals to become stewards of their local resources.

The mission of the California Naturalist Program is to foster a diverse community of naturalists and promote stewardship of California's natural resources through education and service.

The California Naturalist Program promotes environmental literacy and stewardship through discovery and action. Many other states have similar naturalist programs, but this is the first statewide program in California. (1)

Monique Kolster, Scott Stoddard, and UCCE Merced County staff along with the Upper Merced River Watershed Council delivered the third UC California Naturalist Certification Program in Spring 2018 on the UC Merced campus. The Watershed Council provided 10 partial scholarships to interested community members. Monique Kolster, Scott Stoddard, Fadzayi Mashiri (County Director of UCCE Mariposa County and Livestock and Natural Resources Advisor of UCCE Mariposa and Merced) as well as UC Merced faculty and other regional experts provided science instruction, field trips, and project-based learning about the unique ecology and natural history of the San Joaquin Valley and central Sierra Nevada foothills region. Twenty-six students completed the training and received their California Naturalist certificate.



**Total California Naturalists:**  
60

**Total Volunteer Hours Provided:** 1,346

California Naturalists Graduation 2018

[http://calnat.ucanr.edu/about\\_the\\_program/](http://calnat.ucanr.edu/about_the_program/)

University of California Cooperative Extension Merced County



# Master Gardener Program

David Doll, *Farm Advisor*



The Master Gardener Program is a volunteer-based program tasked with providing research-based information on gardening to the general public. During the fiscal year, the Master Garden Program in Merced County had six graduates in the spring from our joint training program with Mariposa County. We continue our outreach with our social media with a newsletter, Facebook page, and website.

Several projects highlight the fiscal year. This includes offering free or small-cost workshops for the public on a variety of gardening topics. Approximately 12 workshops are held every year and cover a variety of topics including rose and tree pruning, practices to properly start growing plants, water management, developing a garden to help pollinators and attract local wildlife, composting, and much more.

The helpline at the UC Cooperative Extension office continues. The helpline provides a resource for the public to speak with a Master Gardener who may help solve problems or answer questions. The Master Gardener Program also continues to host a booth at farmer's markets in Merced County to have a public presence outside of the office, as well as, answer questions to the public about gardening.

The Master Gardeners made presentations to groups in Merced County and attended over 30 community events. Our presence at the Merced County Fair is always strong with informational booth and display, as well as, entries in the competition gardens and educational display.



Photos of Master Gardeners, as well as, their booths and demonstrations at various community events



Photos of Master Gardeners Program's participation in the Merced County Fair

**Community Events Attended: 31**

**Direct Contacts with the Public: 1,682**

**Presentations Made: 15**

**Trainees from 2018 Training: 6**

**Volunteer Hours Provided: 4,018**

# Emeritus

## ***Richard Mahacek, 4-H Youth Development Advisor Emeritus***



During this time, I worked mainly on 4-H STEM programs. I coached and mentored three teens in the planning and conducting of the 4-H Mechanical Skills Day held at the Merced College Career Technical area. This included various sessions from welding to rocketry, from woodworking to CAD and 3D printing. Over 175 participants attended and we had help from UC Merced engineering students. During the summer, I consulted and assisted in the 3rd annual 4-H Summer Science Academy. This included three weeks of sessions for youth 7-8 years old and for youth 9-12 years old. I have been assisting in getting the 4-H Maker Lab set up for 4-H leaders and member to use for their projects. We have also been connecting with the UCM ASME engineering group to collaborate on our Maker Lab and STEM programming.

I worked with a task force to develop and plan for the 100 year celebration for Cooperative Extension and 4-H. We had a kickoff event with the MAC and Arts Council in August. We published a book on 4-H club and volunteer histories, which is available at the 4-H office.

## ***Maxwell Norton, Tree and Vine Farm Advisor Emeritus***



Mr. Norton continues to participate in research projects in figs, conduct pruning workshops for the Master Gardeners, and is a member of the County Groundwater Stakeholder Committee.

## ***Bill Weir, Vegetables Farm Advisor Emeritus***



Dr. Weir continues to participate in the regional cotton variety trials.

## ***Alejandro Castillo, Dairy Science Farm Advisor Emeritus***



Dr. Castillo continues to work with the dairy industry on production and waste management issues in Merced County, and published 3 papers in 2018 in the Journal of Animal Sciences and the Journal of Dairy Science.

# Student Support

## ***MacKena Dean, 4H Student Intern – Merced College***

### ***Giovanni Marquez, Student Intern – CSU Fresno***

### ***Allen Vizcarra, Grad Student Intern – CSU Fresno***

### ***Hailey Ward, 4H Student Intern – CSU Stanislaus***

### ***Kristen Anderson, 4H Student Intern – CSU Stanislaus***

# 2017–2018 Activities Summary



In cooperation with the University of California, the County of Merced, and the Merced County Farm Bureau, Merced County's UC Cooperative Extension office was created and manned in March 1917. UC Cooperative Extension researchers and educators work in Merced County to solve economic, agricultural, natural resource, youth development, and nutrition issues.



## Celebrating 100 Years

*Extending Knowledge    Improving Lives*



### Summary & Celebration Activities:

Merced County Farm Bureau Banquet - March 17, 2017

Merced County Courthouse Museum Display- July 2017– Jan. 2018

Reception on opening night- Nov. 30, 2017 & Nov. 29, 2018

Merced County 100th Anniversary 4-H Picnic–Aug. 20, 2017

Los Banos Spring Fair Display–May 2017 & May 2018

Merced County Fair Display– June 2017 & June 2018

Merced County 4-H Dinner and Auction– Oct. 21, 2017 & Oct. 20, 2018

**Cooperating with and serving Merced County since 1917**

**Farm Advisors ...**

... work to enhance California agricultural productivity and competitiveness. Together with farmers, pest control advisors, and industry representatives, they identify current and emerging agricultural opportunities and problems. The advisors collaborate with campus-based Cooperative Extension Specialists and Agricultural Experiment Station scientists to research, adapt, and field-test agricultural improvements or solutions and promote the use of research findings.

**Nutrition, Family and Consumer Sciences Advisors ...**

... focus on nutrition, food safety, food preparation, food preservation, and finance management. Collaborative partnerships with government and private agencies extend the reach of UC advisors. Workshops, public meetings, newsletters, the mass media, and other communications tools bring information to the community.

**4-H Youth Development Advisors ...**

... provide meaningful, learn-by-doing educational activities to children in 4-H clubs, camps, school enrichment and after-school programs. They also provide information and resources for youth development to the community.

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## **University of California - Cooperative Extension - Merced County**

2145 Wardrobe Avenue ♦ Merced, California 95341-6445 ♦ (209) 385-7403

<http://cemerced.ucdavis.edu> ♦ <http://merced4h.ucdavis.edu>

email: [cemerced@ucdavis.edu](mailto:cemerced@ucdavis.edu)

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*This report is also available on our website.*

**University of California**  
Agriculture and Natural Resources



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cal fresh Nutrition Education



University of California, United States Department of Agriculture, and Merced County Cooperating

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