

Riverside County Cooperative Extension



Semi-Annual Report – January 1-June 30, 2022

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UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

■ UC Cooperative Extension



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Cooperative Extension

Riverside County

Cooperative Extension is an off-campus educational arm of the University of California, Division of Agriculture and Natural Resources. It came into existence when the Federal Smith-Lever Act of 1914 established the nationwide Cooperative Extension at land-grant universities. The mission of UC Cooperative Extension (UCCE) is to connect the power of UC research in agriculture, natural resources, nutrition and youth development with California counties to promote healthy people, healthy communities, healthy food systems, and healthy environments.

In Riverside, the University of California entered a Memorandum of Understanding with the County in 1917 to promote the vision of sharing UC research and science-based solutions to solve local issues and improve the lives of Riverside County residents by forming a strong partnership with Riverside County.

This report includes a summary of our programs with highlights, accomplishments and efforts from Jan to June, 2022. Thank you for reading!

Visit our offices in Moreno Valley, Indio and Blythe, and let us know how UC Cooperative Extension in Riverside County can be of help to you.

For information visit us on the web at:

<http://ceriverside.ucanr.edu>

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4-H Youth Development Program

Riverside County 4-H Youth Development program serves youth ages 5-19 and promotes hands-on, experiential learning for youth from all backgrounds and locations. Our clubs, camps, in-school, afterschool, and special interest programs encourage leadership and responsibility and teach life skills and community involvement while the youth try new experiences. The program is led by faculty, staff, and volunteers from the University of California Division of Agriculture and Natural Resources (UC ANR), a statewide network of the University of California. Our research-driven programming provides positive youth development opportunities that enable youth to reach their full potential as competent, confident, leaders of character who contribute and are connected to their communities.

Welcome

In January, the Riverside County 4-H program welcomed Leslie Rendon Castro to our team as the 4-H Program Representative/Volunteer Services Coordinator.



Activities

Life Skills

Archery projects kept busy this year with multiple events. Archery Leader Training prepared adult volunteers to lead a youth Archery project safely and to use best practices. Archery Field Day introduced members, their parents, and adult volunteers to the Archery project to increase interest in starting new archery projects. Participants learned how to use a bow using the 11 Steps and the Safety Rules. The County Archery Tournament allowed members to show their knowledge of archery and compete for best score in their age group.





4-H Youth Development Program

Camps

Summer Camp was back this year! Youth attended overnight camp for the first time since 2019. Teen Counselors planned a full week of games, arts & crafts, STEM activities, archery, hiking, and much more.



Archery



Games



Games



Day Camp programming at the Consulate of Mexico allowed youth to learn about the history and culture of Mexico starting with the Aztec and Mayan culture and ending with modern Mexican traditions and looking toward the future of Mexican culture. Youth participated in many hands-on activities such as building pyramids out of wooden sticks, creating Mexican party hats, making their own Mayan masks, reading short historical stories about the first societies that lived in Mexico, playing Mexican games, making corn tortillas from scratch, and planting five different kinds of bean seeds.



Playing Mexican games



Creating Mexican party hats



Building pyramids out of wooden sticks



Home Arts

project members participated in Home Arts Field Day where they entered photography and baked goods exhibits and participated in the cake decorating and quilted placemat workshops. Members could also compete in Fashion Revue where they sew or purchase an outfit to specific guidelines and are evaluated to a standard giving them the opportunity to move on to the statewide competition.

In June, members gathered to learn how to sew a Magic Pillowcase. This is a special way of sewing a pillowcase with a contrasting trim. Thanks to Valley Quilter's Guild for sharing their expertise.



Quilted placemat workshops



Baked goods



Sew Magic Pillowcases



4-H Youth Development Program

Small Animal Field Day was held at the Murrieta Tractor Supply in May. Youth participated in breed ID contests, Knowledge Bowl contest, Showmanship Clinic and Contest, and Chicken Agility. Used and unwanted crayons were collected at the event that were donated to The Crayon Initiative to be recycled into new crayons that are donated to children’s hospitals across the U.S.



Presentation Days

Youth had the opportunity to improve their Communication and Public Speaking skills through Club, County, Regional, and State level competitions from March through May. Youth chose from a wide range of categories -- Demonstrations, Illustrated Talks, Science or Engineering Presentations, Educational Display Talks, Informative or Persuasive Prepared Speeches, Impromptu Speeches, Interpretive Readings, Skits, and Cultural Arts. They also improved their career readiness by participating in the Interview Contest by preparing a written cover letter and resume and then interviewing for this job. Evaluation and feedback for all presentations are provided by adults who volunteer from the 4-H program and the community.



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Agricultural Economics/Farm Management

The Area Farm Management, Agricultural Economics program as a co-editor with the statewide subtropical horticulture farm advisors of Topics for Subtropics, disseminated two quarterly newsletters during the winter and spring of 2022. The topics provided 8 articles of new research results and information to educate clientele with improved production practices for the betterment of enterprise profits in Subtropical Crops.

Publication

Presentation to Vegetable crops producers in the Valley (Imperial and Riverside).

Title: Economic Trends of Vegetable Crops Production in the Imperial Valley (3-10-22); COVID-19 impact and future perspectives future opportunities and challenges of Veg. Crops Production in the valley.

https://ucanr.edu/sites/Farm_Management/files/365116.pdf



Publication

Co-authored several 7000 series publications including Watermelon, Carrot, Cabbage, and Onion production in California and submitted for peer review. Published as lead editor, the winter edition of Topics of Subtropics newsletter and co-edited the Spring edition of Topics for subtropics:

https://ucanr.edu/sites/Farm_Management/files/365022.pdf and https://ucanr.edu/sites/Farm_Management/files/368799.pdf



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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Crop Production and Entomology

Program focus for the first six months of 2022 has been on developing new information on factors affecting local agricultural production, with these being primarily pests and fertilizers.

Six (6) alfalfa field trials were initiated that focused on stress mitigation, insects and weeds. A field day was organized and held in mid-March for growers, PCAs and other interested individuals to see the interactive effects of insecticides when applied at different alfalfa growth stages.

Four (4) field trials were initiated to evaluate a new commercially available bacterial product which obtain nitrogen from the atmosphere and ‘fix’ it in plant leaves, which is new and unique for agriculture. This is of high interest in light of record high prices for being received both for alfalfa, as well for purchases of nitrogen fertilizers. Crops targeted were garlic, teff seed, Bermuda grass hay, and alfalfa. If successful, this product could reduce nitrogen inputs while also helping to reduce the potential of soil applied nitrogen thereby, reducing risk of nitrate movement into groundwater and other bodies of water.

An alfalfa production workshop (two half days) was developed and offered for low desert alfalfa production in cooperation with UCCE-Imperial County.

Residual efforts related to previous field work involving biostimulants on onions has included invited talks at the California Soil and Water conference and the 2022 U.S. Biostimulant Summit (Florida), in addition to presentations for area growers and consultants and the 2022 California Garlic and Onion Symposium.

Research

Nitrogen Fixing Bacteria

Three (3) trials involving a new bacterial product that claims to fix nitrogen in leaves of plants were initiated on various local crops (large strip plots in growers’ fields of garlic, teff seed, bermudagrass hay). Harvest of some plots has begun (Fig. 1), but yield data are not yet available, thus the value of the product is still unknown. There is concern that hot, dry desert conditions are not conducive for bacterial survival on exposed surfaces, which were present during May applications. Small plot evaluation of the product on alfalfa with an insecticide indicated that some success was noted from late February-early March applications. These are thought to be the first trials with this product in California.

“CUTTING EDGE” RESEARCH

The ‘cutting edge’ research being conducted locally by UCCE -Riverside County is being recognized within California and across the U.S. This has led to invited presentations for the California 2022 Plant and Soil Conference, and the U.S. Biostimulant Summit in Florida. Additional presentations and information has been shared via various UCCE low desert meetings and newsletters. Additional invited presentations have included an alfalfa symposium at Pacific Branch Entomological Society of America meetings, and posters being developed and shared from 2021 research.



Combining teff seed in the Palo Verde Valley



Crop Production and Entomology

Alfalfa Pest Management/Production

- As alfalfa is now the most valuable crop in Riverside County, developing new information and keeping people informed has increased in importance. California low desert alfalfa production meetings were organized in cooperation with UCCE- Imperial County. These two half day meetings with different topics were held via Zoom, and over 40 people were in attendance each day. Topics for the ~6 hours of programming covered a wide range of alfalfa production aspects (*fertility, pest control, irrigation, etc.*)

-Six (6) replicated field trials were initiated: 2 insecticide trials for aphid control, 2 trials for alfalfa weevil control, 1 trial valuating pre-emergence herbicide efficacy for pigweed control, and 1 trial evaluating efficacy of heat mitigation products. Largest project was the alfalfa height (4 heights) x insecticide (7 insecticide treatments) to determine interaction and establish economic/treatment levels. An accompanying field day was organized with approximately 30 individuals making the effort to attend and see visible differences. Although samples are still being processed, initial data indicates that the high rate of Sivanto Prime, considered to be an insecticide for insects with piercing-sucking mouthparts, is providing greater than 50% control of alfalfa weevil larvae (an insect with chewing mouthparts), which has not been noted previously in California trials. Herbicide trial noted some large differences and damage to alfalfa from several products.

The flyer features logos for AR (University of California), UCCE (University of California Cooperative Extension), and UCCE (University of California Cooperative Extension). The main title is "ALFALFA INSECTICIDE EFFICACY x ALFALFA HEIGHT FIELD DAY". The text invites attendees to join on the Ides of March to see the effects from 3 insecticides, each at 2 rates, targeting blue alfalfa aphids applied at 4 different stages of alfalfa growth. A cartoon illustration shows a farmer in a red and white dress holding a green flag that says "Sivanto", with a speech bubble asking "Et tu, PCA?". Below the illustration, the event details are provided: "When: Tuesday, March 15th, 2022, anytime between 10:30 a.m. - 1:30 p.m." and "Where: Just north of Blythe, 1/4 mile west of intersection of C&D Blvd & 8th Avenue, south side of 8th Avenue". The flyer also mentions "Lunch provided by BASF" and "University of California, County of Riverside and U.S. Department of Agriculture Cooperative Serving Riverside County Residents Since 1917".

March 15th 2022 Alfalfa Field Day Flyer



Alfalfa Field



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Environmental Horticulture

The primary responsibility of my position in Riverside County is to develop and extend research-based information on drought, heat and pest tolerant landscape plants to arborists, landscapers, and government agencies. Goals are to broaden the plant palette of suitable native and non-native trees, shrubs, and groundcovers and to reduce impacts of urban heat islands by enhancing tree canopies in underserved neighborhoods. I also manage the Riverside County Master Gardener program and provide guidance and support to Volunteer Services Coordinator Rosa Olaiz.

Training

Trees for Tomorrow Start Today Presentations. I provided training to over 1,100 public and private urban foresters, landscapers, landscape architects and other ‘green industry’ professionals. Topics included tree selection, placement and care; using reputable search engines to select climate-appropriate species; pest and disease prevention, identification, and management; and, impact of mulch and soil amendments on growth and development. Training stress the importance of proper species selection and long-term tree care to mitigate urban heat islands over the next several decades. Sadly, California currently has the lowest density of urban street trees in the USA with heavy losses due to invasive pests, and poor species selection and care.

UC Riverside Drought Resistant Landscape Field Day. I was the lead organizer of a virtual UC Riverside Field Day for Master Gardeners that was conducted by Drs Amir Haghverdi, Don Merhaut and me on May 24, 2022. The goal of the Field Day was to provide practical, research-based information to volunteer Master Gardeners, who, in turn, share the information with thousands of members of the gardening public each year. Our presentations focused on drought and heat resistant landscape trees, groundcovers, and turf. Specifically, my two presentations focused on how trees can cool urban heat islands and specific recommendations for drought, heat, and pest resistant trees that stand up to harsh urban conditions.

Statewide Service

UC Cooperative Extension Representative on the California Urban Forestry Advisory Council (CUFAC)

As representative on this important and active statewide committee, I update colleagues on the committee from other organizations and non-profit entities regarding my applied research and extension work supporting urban trees and enhancing their tree canopies in our cities to maximize ecosystem benefits. These proven benefits include cooling urban heat islands, enhancing habitat and pollinator populations, filtering pollutants from air and water, providing shade, providing sound and wind barriers, and absorbing and storing carbon dioxide. Other roles on the committee are to secure and disperse grant funding for urban greening projects and to recommend specific actions to further enhance urban greening to the statewide CalFire chief.



Environmental Horticulture

Research

UC Cooperative Extension (Janet Hartin, Jim Downer, Alison Berry) and US Forest Service (Greg McPherson, Natalie Doorn, et al.) scientists are partnering on a 20 year ‘climate-ready landscape trees’ project at UC Riverside to measure the drought, heat, and pest resistance and overall performance of 12 underplanted species of native and adapted non-native landscape trees. The project is entering its seventh year. To date, 11 of the 12 species are performing well under no supplemental irrigation since March 2020.

At another trial site that I am Principal Investigator of, Dr. John Bushoven (Dept. Chair, Horticulture, Cal State, Fresno) partnered with me to measure root system densities of four species from the larger ‘climate-Ready Landscape Trees’ study discussed above. In this study, trees were either mulched or left unmulched. Results using a non-destructive ground penetrating radar system found that trees in the mulch treatment had shallower, less dense root systems than roots in unmulched controls. This research provided data not previously available regarding the importance of deep, infrequent irrigation beneath the root zones of mulched maturing trees to maximize deep rooting necessary to physically support large growing shade trees. (Mulch treatments around trees are often recommended to reduce soil evaporation which is an important water-conservation method, especially during drought and water restrictions.)



Other UC committees I have leadership roles on directly impacting UC Cooperative Extension

Riverside County

- **Chair of UC Cooperative Extension Statewide Master Gardener Program 10-Year Review Committee.**
- **Chair of UC ANR Associate Editors.**
- **Chair of UC ANR Environmental Horticulture Program Team.**
- **Member of UC ANR Water Strategic Initiative**
- **Member of UC Statewide Master Gardener Advisory Committee.**



Environmental Horticulture

Consumer Publication

I served as lead author on a new UC ANR publication entitled “Benefits of Plants to Humans and Urban Ecosystems” that describes the many ecosystem benefits of landscape and garden plants and how gardening activities and being outdoors in park and green settings can improve one’s physical, cognitive, and emotional state.

Master Gardener Program

Academic Oversight

I provided general oversight for developing the syllabus, teaching several classes during the 18-week Zoom class, writing monthly newsletter articles, and authoring and grading the midterm and final exams.



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Master Gardener Program

Riverside County pioneered the establishment of a Master Gardener volunteer program and has become instrumental for the expansion of the program throughout the state. Since its inception in 1980, we have disseminated over 1,500 Master Gardener graduates into the community with knowledge to extend environmentally safe and economically efficient gardening and landscaping.

Activities

The UC Master Gardener Program focused on providing education on edible gardening, drought tolerant landscaping, native plants and citrus during the last six months of this fiscal year. As the pandemic subsided Master Gardeners were invited to participate in outdoor events. There were 120 events held in Riverside County. Master Gardeners volunteered 12,194 hours. More than 11,700 Riverside County residents received research-based information. 319 UCCE Master Gardeners volunteered at educational presentations, home gardening classes, school and youth garden, information tables at the farmers markets and home and garden shows.



Children participated in hands-on gardening activities.



Master Gardener Joyce Allen presented information on Monarch Butterflies at the Murrieta Library



Master Gardeners were busy at the Splash into Summer event providing participants with gardening information.





Master Gardener Program

Master Gardeners continued to participate in their own horticulture education. The Master Gardener Program offered 13 Continuing Education workshops and including a Field Day presented by UCANR advisors and UCR researchers. These activities allowed the Master Gardeners to increase their knowledge and share with the community.

In addition to local opportunities, Master Gardeners took advantage of virtual educational workshops offered by other California Master Gardener Programs, Master Gardeners logged 2,522 Continuing Education Hours.



Information Display Table of Native Plants in the Coachella Valley

Graduation Class of 2022

Early June, Master Gardeners celebrated the graduation of 30 Master Gardener. They completed the 18 training classes and are working to complete the 50 volunteer hours required to be appointed as a Master Gardener. The graduates logged 2,309 volunteer hours during the training.



Class of 2022



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Nutrition, Family and Consumer Sciences

The CalFresh Healthy Living, University of California Cooperative Extension (CFHL, UCCE) program provides research-based education in the areas of nutrition, food safety and consumer economics. CFHL is working on two UC ANR Strategic Vision 2025 Initiatives: **1) Healthy Families and Communities:** promoting healthy behaviors for childhood obesity prevention; helping consumers make informed decision regarding food choices, nutrition and health; and improving consumers' food management skills, and **2) Ensure Safe and Secure Food Supplies:** educating community organizations and consumers on safe food handling practices. CFHL, UCCE is one of four local implementing agencies for the CalFresh Healthy Living Program (CFHL) also known as SNAP-Education, funded by USDA through the California Department of Social Services. CFHL's mission is to inspire and empower under-served Californians to improve their health by promoting awareness, education, and community change through diverse partnerships, resulting in healthy eating and active living.

Riverside Faith Temple Community Garden Mural

We have partnered with Riverside Faith Temple since 2019. They were interested in starting a community garden similar to the Community Settlement Association's. We helped them apply and win funds from the City of Riverside's Small Sparks Grant, this helped us enhance and reinvigorate the thriving community garden. We are currently painting a community garden mural and unveiling it the Celebration Event on June 30th in partnership with Councilmember Clarissa Cervantes and local artist Ron Del Cid. During the pandemic, we transitioned to providing virtual Garden Club meetings in partnership with the UC Master Gardener program. We have been reaching 30 volunteers at Riverside Faith Temple with garden-based education and PSE activities.



Nutrition, Family and Consumer Sciences

Activities

During the 2022 fiscal year, the CFHL, UCCE Program, continued to focus on the school setting (pre-K and K-12). We were able to provide direct education to 2,035 youth, and 246 adults countywide. We worked in 33 locations of various locations and settings including 17 schools, 5 school districts, 12 Head Start/Early Child Education sites, 1 SNAP office, 1 community-based organization, 1 faith-based organization and 1 Indian reservation. We provided Policy Systems and Environmental (PSE) changes at 23 sites. We reached 10,181 participants with indirect program activities that include social media reach, nutrition education reinforcement items, hard copy and electronic materials and sustained 38 partners.

CONGRATULATIONS!

Team STAR Award

The CalFresh Healthy Living, UCCE Riverside County Team was awarded the UC ANR STAR Award for their exemplary service to the program and people of Riverside County. Each staff member has gone above and beyond to provide policy, systems, and environmental change initiatives impacting low-resource and priority populations. This includes work in schools, community-based organizations, and co-capacity building activities with the Torres Martinez Desert Cahuilla Indian Tribal Community.

Examples of some this work include: a Youth Participatory Action Research Project with middle school students, updating the Coachella Valley Unified School District’s Wellness Policy to incorporate nutrition education and the Smarter Lunchrooms Movement district-wide and supporting 11 school and community gardens with a small team of 4 staff. In addition, this team underwent a successful SNAP-Ed Management Evaluation. Positive annual management evaluations are instrumental to our program receiving the level of support and recognition for quality and integrity in programming. The extraordinary level of effort exhibited by the CFHL, UCCE Riverside Team in preparing and successfully delivering presentations were well received.



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The Small Farms and Specialty Crops Program

My extension and research program focuses on the challenges and issues affecting small scale and specialty crop producers in the Inland Empire. My program aims to provide culturally and linguistically appropriate outreach in order to enhance the skills and abilities of socially disadvantaged, small scale, limited-resource, and specialty crop producers to make important management decision such as crop selection, variety development, sustainability, weed control, pest and disease management, irrigation practices, postharvest handling and storage, food safety, pesticide safety, marketing strategies, agritourism, financial and risk management, and more. The program fosters field research trials, educational programs, technical assistance, and publications that support and encourage the sustainability of diverse, thriving small farms. In addition, my program intends to strengthen connections between small scale and specialty crop producers and local and government agencies (USDA, CDFA) and programs to facilitate increased access to resources and program participation. I want to support farmers in all phases of their farming business development to improve their farming operations.



Needs Assessment

To maximize the effective of our outreach programs, we are conducting a needs assessment of growers in the Inland Empire. The needs assessment includes questions related to agricultural workforce, drought impact, and general growers' needs. This assessment is funded by the Riverside Food Systems Alliance and is a collaboration between Chandra Richard (UCANR), Etaferahu Takele (UCANR), Kevin Grell (Pitzer College). In collaboration with the Inland Empire Resource Conservation District (Nancy Noriega and Lucy Ceja) and the Redland Natural Resources Conservation (Tomas Aguilar Campos), we conducted an in-person needs assessment workshop in Spanish for our small scale producers.



The Small Farms and Specialty Crops Program

Workshops

We participated in four workshops. We hosted two needs assessment workshops that was attended by over 20 peoples. In addition, we hosted a workshop on the urban management of exotic plants which was attended by 27 participants. We also presented on the Cost-Effective Hot Water Seed Treatment for the Management of Fusarium Wilt and Other Soilborne Fungal Diseases for Organic Growers hosted by Margaret Lloyd (UCANR). This event was attended by over 85 participants.

Extension and Outreach

We provided support to over 30 farmers in the riverside county. Our extension and outreach aim to provide technical support the socially disadvantaged producers. In addition, we also assisted these producers in grants applications to support their operation. Aside from producers, we are helping to restore the Louis Robidoux Parkland and Pecan Grove Site with the IERCD (Mandy Parkes, Adrian Poloni, Alex Chacon) and Urban Forest Consultants (Nancy Sappington)



Helping farmers on tribal lands with Advisor Philip Waisen



Pecan tree assessment with the IERCD at restore the Louis Robidoux Parkland and Pecan Grove Site



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Subtropical Horticulture

This program provides educational and applied research programs related to subtropical horticulture crop production and is primarily focused on citrus, avocados and dates. However, other minor subtropical and deciduous fruits and nut crops such as pomegranates, guavas, figs, mangos and macadamia nuts are also regarded. Research and extension programs are based on the results of needs assessments that are conducted on an ongoing basis. These need assessments are from direct contact with clientele on farm calls, meetings, seminars, and/or workshops. The program is organized under two themes: 1) Sustainable Subtropical Horticulture and 2) Pest Management. These themes focus on many aspects of two University of California (UC) Initiatives: The *Sustainable Food Systems Initiative* and the *Endemic and Invasive Pests and Diseases Initiative*. The program goal is to improve grove systems to increase yield, fruit quality, and improve economic returns.

Research

New Long-term Study Initiated: Avocado Pruning Trial

Many commercial avocados are now routinely prune to keep the trees short, so that harvesting costs and other tree maintenance expenses are reduced. The process may take three to four years to see any type of results. A trial was started and will attempt to achieve a project that has never been completed in California. Rios expects the study to continue for approximately eight years. If completed, this will be the first successful avocado pruning trial in the nation and will be able to help growers decide which pruning method would be the most effective.



Avocado and Mango Thrip Research Trials

Since this initial discovery in 1997, the thrips population has increased rapidly causing significant damage to foliage and fruit in all avocado production in the state. Mangos which are also grown in Riverside County are also at risk to thrips damage, especially the groves that are organic certified. There are not many options for certified organic insecticides that would be cost effective and show the type of control of a conventional insecticide. Two trials were initiated, one in mangos and one in avocado, to determine the efficacy of organic insecticides on thrip populations. Results will assist in getting an old chemistry, with a new name and label re-registered for use on thrips in trees in California.





Subtropical Horticulture

Workshops & Seminars

Co-hosted International Citrus Irrigation Workshop

The Subtropical Horticulture advisor traveled over the border with a group of other UC ANR, UC Davis and UC Riverside researchers to host a citrus irrigation workshop at Centro de Capacitación, Investigación e Innovación Agropecuaria y Agroalimentaria (CCIAA) in Baja, Mexico. The institute in Baja is a first of its kind and have become a resource to growers in the area. In Mexico, they do not have a Cooperative Extension agency and growers are forced to deal with many commodity issues on their own. Even though both countries are geographically close, the disparities between them are incredibly large in terms of population, income, and education. The irrigation workshop hosted approximately 65 growers. The participants were taught how to grow high value citrus produce with water-saving, high-yield techniques that will help their area create a stronger industry to help growers save water, with the goal of higher yields. The group and Rios will return to the institute in Baja, MX in the upcoming months to continue working and volunteering their time to help growers.



Citrus Irrigation Workshops

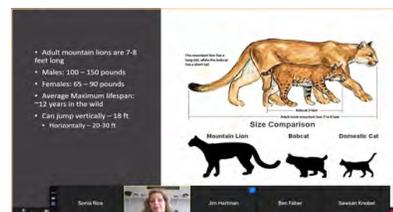
Rios collaborated in hosting two citrus irrigation workshops in Southern California. On June 22nd a workshop was held at the Coachella Water Irrigation District in Palm Desert. Twenty-four growers attended the full-day workshop. Participants included land managers, growers, Certified Crop Advisors, and private consultants. The objective of the workshop was to teach participants about the most current science-based irrigation techniques for citrus.



Avocado Grower Seminars

The UC ANR Renewable Resources Extension Act grant, which Rios serves as the main lead investigator, sponsored a vertebrate pest themed avocado grower webinar on March 16th. There were approximately 38 growers logged on to the 2-hour webinar that taught growers how to coexist with mountain lions and how to manage squirrels and gophers in their grove.

Growers also attended the first grower webinar of the year in January with 68 growers in attendance. Then another seminar with 48 in attendance that took place in May. There will be one more webinar to take place in August.





Subtropical Horticulture

Riverside County Represented at California Weed Science Society

On January 19, 2022, Rio presented a scientific poster titled “Safety and Efficacy of Herbicides in Bearing Avocado Groves in Southern California “at the California Weed Science Society in Sacramento, CA.

Riverside Subtropical Horticulture Program is Acknowledged at the National Level:

The National Association of County Agricultural Agents (NACAA) is a national organization of professional extension educator’s organization is geared toward extension educators and other professionals who work in agriculture, horticulture, forestry and natural resources, 4-H youth development, community development, administration, aquaculture and Sea Grant, and related disciplines. Active Members in good standing are eligible to apply for NACAA Awards and Recognition programs. The Subtropical Horticulture program once again placed at the state, Regional and held a national finalist spot.



Photo Communication Award

Photo used in several UC ANR outreach and extension publicity and articles. Recognized as state and regional Winner and has been recognized as a national finalist. (*winning photo below*)



Promotional Packet Communication Award

The UCANR Date Palm Webinar Series. Recognized as state and western region winner.

Feature Story Communication Award

An article that was written on invasive pests found in avocados that was published in an industry magazine. Recognized as state and Western Region winner.



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Sustainable Agricultural Lands Conservation Program (SALC)

This program focuses on the conservation of agricultural lands statewide and preservation of their economic viability and sustainability across urban and rural communities by protecting lands at risk for conversion to non-agricultural uses, while reducing greenhouse gas emissions. A long-term community vision is needed to support agricultural communities, leverage existing programs, projects, and policies, and reinforce collaborative action to counteract trends. SALC is a statewide program offering planning, acquisition, and capacity grants to a diversity of applicants across city, county, and other local governments, California Native American Tribes, municipal planning organizations, and agricultural non-profits.

Dr. Chandra Richards continued her role at UC ANR as the Agricultural Land Acquisitions Academic Coordinator II (AC) to support the mission of the Sustainable Agricultural Land Conservation Program (SALC) across San Bernardino, Riverside, and San Diego Counties. The SALC Program guidelines for Round 8 were adopted in April by the Strategic Growth Council and now the application period is open for planning, acquisition, and capacity grants. Planning and acquisition grants are due on September 9 and capacity grants are due on August 8. Awards will be announced at the Strategic Growth Council meeting in December 2022.

Research and Education:

In the third semi-annual period of her contract, Chandra continued connecting and advancing research, education, and outreach efforts throughout southern California. She continued building her connections and network of sustainability planners and conservation managers toward Round 8 of the SALC program. This includes speaking with several leaders throughout the Inland Empire about agricultural land conservation efforts supporting their initiatives. This includes the City of Riverside, Riverside Food Systems Alliance (RFSA), Inland Empire Resource Conservation District (IERCD), Temecula-Elsinore-Anza-Murrieta RCD (TEAM RCD), Riverside Farm Bureau, Western Riverside County – Regional Conservation Authority (WR-RCA), Western Riverside Council of Governments (WRCOG), Southern California Association of Governments (SCAG), Rivers & Lands Conservancy, Oswit Land Trust, and Pitzer College. She also worked to develop connections with local cities in Riverside, including Perris, Temecula, Beaumont, Hemet, and Murrieta. The majority of leaders, planners, and grant writers of these eligible applicant groups expressed additional technical assistance support and interest in the SALC program in some form. As such, outreach was an integral piece of this period to continue educating eligible entities, highlight past and ongoing project successes, expand engagement, and improve support for disadvantaged communities and underrepresented groups. She continued researching the status of former agricultural lands into development (housing, warehouses, offices) and lost potentials of these lands, specifically relating to soil, water quality, food systems, and economic benefits. She is also working to learn more about easement opportunities for small and urban farms at the urban-rural fringe.



Sustainable Agricultural Lands Conservation Program (SALC)

She and Cristina also developed a survey to learn more about the interest and capacity for planning grants in Round 8 (2022) and Round 9 (2023) of the SALC program. The survey portion is ongoing but preliminarily highlights a little interest in the program this round because of limited capacity, staff availability, eligibility requirements, and uncertainty of project types. Chandra is also working with UCCE colleagues, City of Riverside, and Riverside Food Systems Alliance to disseminate an agricultural workforce needs assessment for the Inland Empire region to better understand the community, barriers, and needs that have developed and are ongoing in recent years.

Workshop

Chandra and her counterpart, Cristina Murillo-Barrick, who is the San Joaquin Valley Agricultural Land Acquisitions Academic Coordinator, co-hosted another SALC workshop entitled “Exploring Regional Opportunities in the Sustainable Agricultural Lands Conservation Program.” The event highlighted regional successes in the program, explored regional opportunities toward SALC planning grants, and assessed barriers to applying this round and was attended by 30 participants. They also co-hosted a joint workshop on the Affordable Housing and Sustainable Communities (AHSC) and SALC Programs in March 2022 alongside AHSC technical assistance providers to highlight programmatic 101s on each program, guideline updates, and case studies in our regions. The workshop was attended by 53 individuals, most of whom were from Southern California, San Joaquin Valley, and the Bay Area & Central Coast. Lastly, she presented a workshop on “Programmatic 101 on the SALC Program for Tribes” at an event hosted by the Intertribal Agricultural Council (IAC) to introduce SALC to tribal members throughout the state. The workshop had an integral discussion period allowing participants to share their input on community needs, interest in the program, and relationship-building amongst groups. The workshop was attended by 20 tribal members, technical assistance providers, and stakeholders.

Activities

Similar to her usual land conservation activities, Chandra also co-hosted a Voluntary Conservation and Land Management Assistance workshop in January 2022 highlighting a number of programs available to private landowners and non-profit organizations in southern California. She also presented on the SALC program and conservation easement opportunities for private landowners at a Forest Stewardship workshop later in January 2022. This workshop addressed management and protection of private forest land and included a portion on SALC-funded conservation easement and potential planning efforts; it was attended by 20 landowners and educators.



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Vegetable Crops

We are strategically located in Coachella Valley, locally known as the ‘Salad Bowl’ of Riverside County, where most vegetable crops (lettuce, cole crops, artichoke, carrots, melons, peppers, tomatoes, and okra among others) are grown. Our research and extension efforts are directed at addressing low desert vegetable crop production challenges including but not limited to pests and diseases, weeds, water, fertility (nutritional disorders), and environmental extremes (frost and heat). For the past 6 months, since we started our program, our efforts have been primarily devoted to conducting needs assessments and developing research and extension programs. We have reached out to and/or interacted with more than 10 UCCE farm advisors and 4 UC Riverside researchers, at least 8 pest control advisors (PCAs), 4 farm crews at Desert Research and Education Center and Coachella Valley Agricultural Research Station, 2 native American tribe members, 5 agricultural industry representatives (Bayer, Corteva, FMC, Syngenta, and AgBiome), and several vegetable growers, eliciting information on the challenges of vegetable crop production in the low desert growing conditions. We have also attended and/or presented at 5 stakeholder meetings to introduce our research and extension program. In addition, 2 newsletters have been published and 6 in-person informal meetings were held with okra and pepper growers to update monthly progress reports on nematode and weed surveys. One nematicide field trial has been completed and two other trials are underway. Our program is currently capacitated with a mini-nematology laboratory to support our research arm and so far benefited 4 growers.



Program Awareness: Since our program started in January 2022, our first goal was to reach out to as many stakeholders as possible. In doing so, we attended various stakeholder meetings to introduce our program and establish networks for future collaborations. We attended 2 Farm Bureau monthly meetings (Imperial and Riverside Counties held in February and March, respectively), a CropManage Hands-On Workshop in February by Dr. Montazar, a Growing Coachella Valley monthly meeting, and an Alfalfa Field Day in March organized by Mr. Rethwisch.



Philip Waisen (UCCE), Alex Putman (UCR), and Sergio Cabrera (PCA) at a lettuce field in Coachella Valley.



Vegetable Crops

Challenges of Vegetable Crop Production: So far, we have observed first-hand the following vegetable production challenges in the low desert growing conditions: 1) crop diseases include root-knot nematodes (on peppers, melons, carrots and okra), Botrytis gray mold and Sclerotinia white mold (on lettuce), lettuce dieback due to Lettuce necrotic stunt virus (LNSV; on romaine lettuce), Rhizoctonia root rot (on okra), and Fusarium dieback (on dill and parsley); 2) insect pests include leafminer (on peppers), aphids and thrips (on dehydrator onion and garlic); 3) environmental extremes and disorders include blossom end-rot (on peppers) and tipburn (on lettuce) due to calcium deficiency, sunscald (on pepper fruits) due to heat and frost damage (on lettuce), and apparently water stress on vegetable crops in the desert; and 4) noxious weeds include sedges, purslane and lamb’s quarters not only noxious but serving as alternate hosts for pests and pathogens.



a) Roo-knot nematode (RKN) infected okra plants exhibiting yellowing and stunting; b) RKN infected plant root; c) RKN induced galls.

Botrytis gray mold on Romaine lettuce; LNSV-induced dieback on lettuce; and tipburn on Napa lettuce due to calcium deficiency.

Lamb’s quarter (*Chenopodium spp.*) hosting root-knot nematodes; sedges outcompeting okra; and *Rhizoctonia* root rot on okra.

Newsletters

Two newsletters have been published in Imperial Agricultural Briefs in June 2022 (Vol. 25, Issue 6; available here [link](#)); one entitled ‘Vegetable Planting and Harvesting Guide for the Coachella Valley’ and the other entitled ‘Root-knot nematode (*Meloidogyne* spp.) distribution in weedy fallow and in-season okra fields’. The latter was worked in collaboration with UCCE Riverside Crop Production and Entomology advisor, Mr. Rethwisch. In addition, we are finalizing survey results of plant-parasitic nematodes associated with various field and vegetable crops in Riverside and Imperial counties. Findings are expected to be published in upcoming newsletters.



Imperial County

Agricultural Briefs

UC UNIVERSITY OF CALIFORNIA
CE Agriculture and Natural Resources

Features from your Advisors

June 2022 (Volume 25 Issue 6)

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Imperial Agricultural Briefs June 2022 (Vol. 25, Issue 6) where we published two newsletters.

June 2022 Newsletter



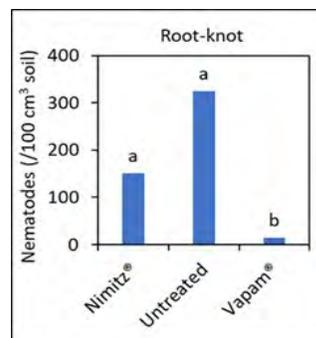
Vegetable Crops

Presentation and Meeting

We delivered a 10-minute presentation at the ‘Vegetable Crops and IPM Webinar’ held in April. This presentation was made available to stakeholders through Imperial County Agricultural Briefs in April 2002 (Vol. 25, Issue 4). In addition, six in-person informal meetings were held in pepper and okra growers to share progress reports on rook-knot nematode and weed surveys.

Research

Field trials: A field trial was conducted to determine the effects of pre-termination nematicide treatments of Vapam (metam sodium) and Nimitz (fluensulfone) against root-knot nematodes. The nematicides were delivered through drip lines (chemigation) at recommended rates one week prior to disking of crop residues. One week after the chemigation, Vapam suppressed root-knot nematode population density significantly compared to the untreated water control.



Results of a pre-termination (end-of-of season) nematicide field trial; bell pepper uprooted and observed for root-knot nematode (RKN) infection; RKN juvenile exiting egg cell (bottom and RKN egg (top).



Laboratory setup showing sieves, Baermann trays, pipettes, and an

Mini-nematology laboratory: As soon as we learned that plant-parasitic nematodes, especially the root-knot nematodes, are among the major challenges faced by vegetable growers producing peppers, melons, carrots, tomatoes, okra, and eggplant among others, we swiftly established a mini-nematology laboratory at UCCE Indio Office. With this establishment, our program is now better capacitated at least in supporting research and extension efforts to combat this challenge.



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Viticulture

In 2022 the viticulture program is conducting research projects of issues affecting production and fruit quality. In table grapes the project is evaluating the performance of an herbicide with properties as a brake dormancy agent, and in wine grapes the development of a control program of a skeletonizer moth.



Grapevines required to be exposed to chilling temperatures in the winter to grow. The lack of chilling causes reduced and erratic budbreak in the spring resulting in uneven maturity of the crop.

Table grape growers in the Coachella Valley apply hydrogen cyanamide, a growth plant regulator after pruning to overcome reduced and erratic budbreak caused by low chilling. Hydrogen cyanamide is highly toxic and requires extensive worker training, the use of safety equipment and monitoring.

In 2022, Sunergist, a non-toxic plant regulator material trial showed no differences in crop readiness at harvest when compared with hydrogen cyanamide. Preliminary results of this dormancy break dormancy agent seems promising and could offer an effective alternative to the Coachella Valley table grape growers.



Dormancy brake trial on Flame seedless grapes



Viticulture

In the area of pest management, identification, monitoring and development of control measures of invasive pests is a priority. The western grapeleaf skeletonizer, a metallic moth has been found in multiple vineyards in the Temecula Valley. This is a voracious pest capable of producing extensive defoliation to grapevines. A pilot program using traps with an optic sensor is documenting the presence of this insect to develop a monitoring program in the area.



Western grapeleaf skeletonizer adult moth



Damaged caused by Western grapeleaf skeletonizer larvae



Voracious Western grapeleaf skeletonizer larvae

In addition, the trapping program of the glassy-winged sharpshooter in vineyards and citrus has continued in collaboration with the California Department of Food and Agriculture. This sharpshooter is the vector of *Xylella fastidiosa*, a deadly bacterium causing Pierce's disease to grapevines. In 2022 there are no records of the presence of the sharpshooter in the Coachella Valley.

Extension Highlights

Cultural practices and monitoring and pest identification have been discussed in a series of monthly meetings with wine growers in Temecula Valley. This program includes presentations in Spanish to educate farm workers on the most important pests and diseases affecting wine grapes.



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CONGRATULATIONS!



**The 2022 Award winners for NACAA (National Association of County
Agricultural Agents) members with Riverside County Connections**

National Finalists

Sonia Rios - Published Photo

Michael Rethwisch - Poster - Applied Research

Western Regional Winners

Sonia Rios - Poster - Extension Education (Rethwisch and Barman as junior authors)

Sonia Rios - Event Promotional Package

Sonia Rios - Feature Story

Apurba Barman - Fact Sheet (Rethwisch a junior author)

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April 2021

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