

UCCE Small Farms Research, Technical Assistance and Staffing Update

Ramiro E Lobo, Advisor, Small Farms & Agricultural Economics
Ariana Reyes, Community Education Specialist
Jan Gonzales, Supervising Community Education Specialist
UC Cooperative Extension, San Diego County

Escondido, CA – November 10, 2022



University of California

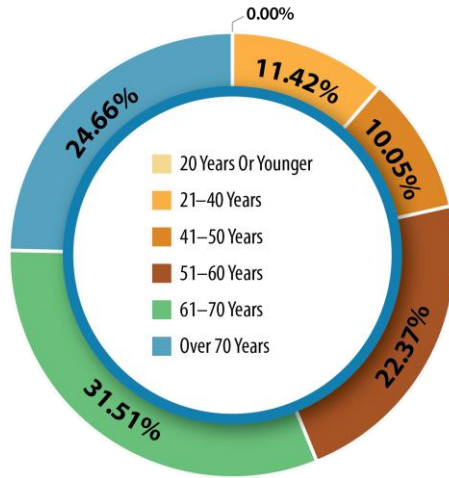
Agriculture and Natural Resources ■ *A Celebration of Science and Service*

Presentation Overview

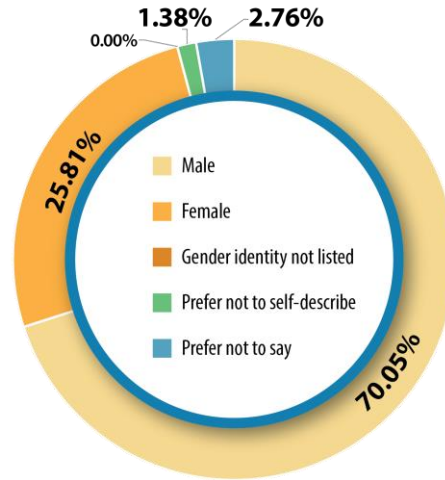
- Overview of San Diego County Agriculture and Farmers
- UCCE San Diego and the UC Small Farms Network
- Research and Technical Assistance Program Updates
 - Specialty Crops Research and Extension Update (Ramiro Lobo)
 - San Diego AgriTourism Story Map (Janis Gonzales)
 - Food Safety Technical Assistance Program (Ariana Reyes)
- Closing Comments, Q & A

Who are Our Farmers?

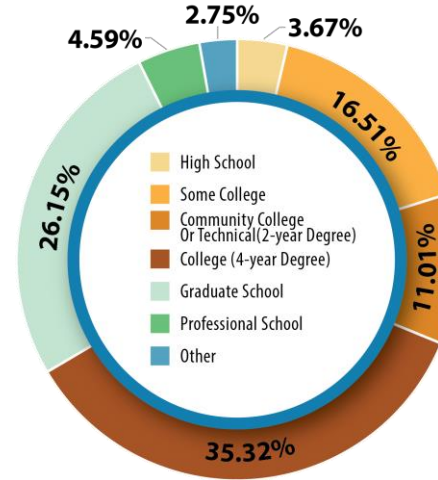
Age



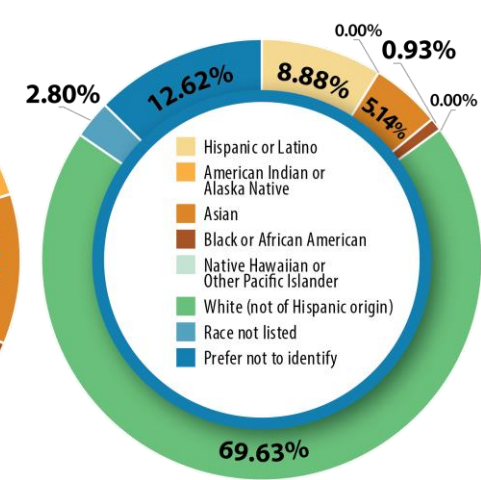
Gender



Education

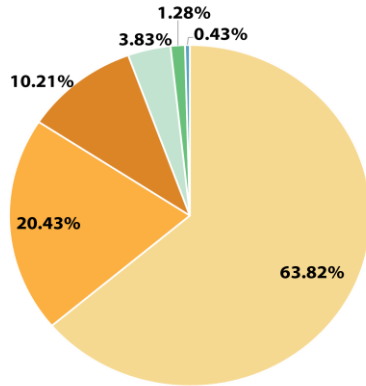


Ethnicity



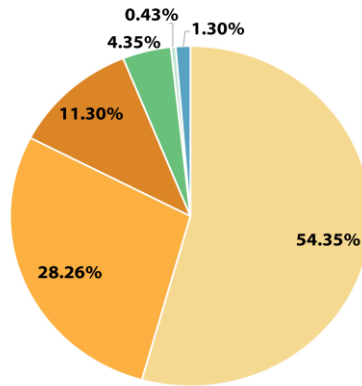
Who are our Farmers?

Acres Currently Farmed



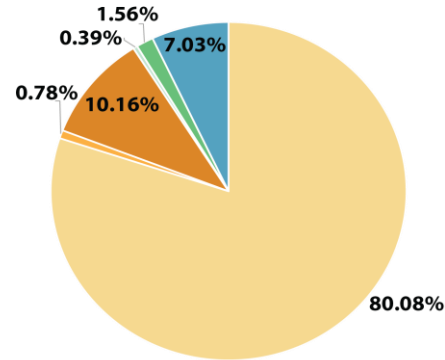
- 0 to 9 acres
- 10 to 49 acres
- 50 to 179 acres
- 180 to 499 acres
- 500 to 999 acres
- 1,000 acres or more

Acres Owned or Controlled



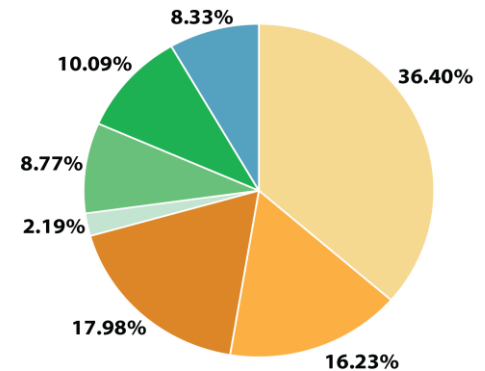
- 0 to 9 acres
- 10 to 49 acres
- 50 to 179 acres
- 180 to 499 acres
- 500 to 999 acres
- 1,000 acres or more

Primary Role



- Owner Operator
- Absentee Owner
- Farm/Grove Manager
- Agricultural Production
- Pest Control Adviser (PCA)
- Other:

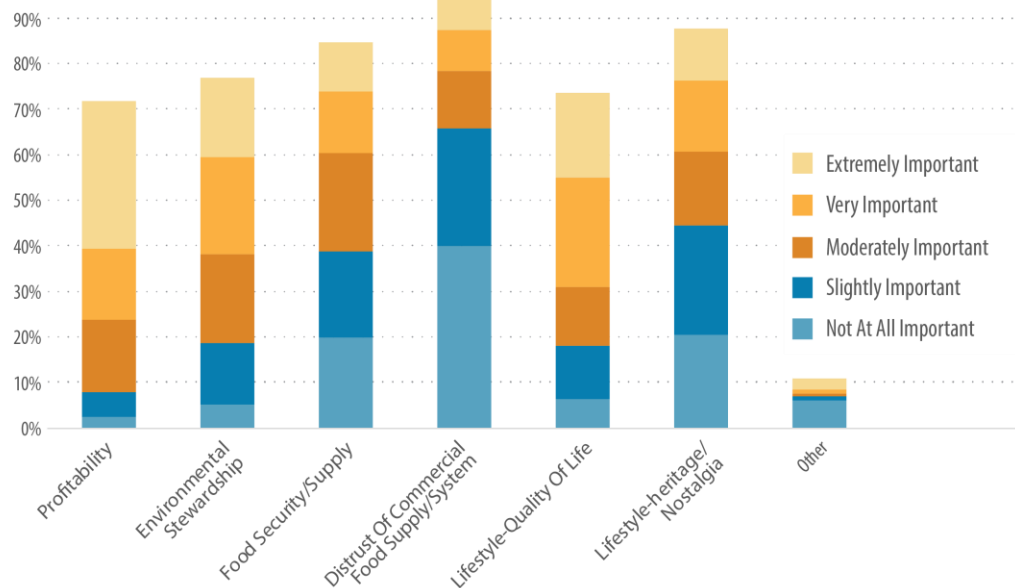
Production Systems Used



- Conventional Farming and not in transition to organic
- Certified Organic Farming
- Organic Farming, but not "certified"
- Transitional to organic (actively implementing farming practices towards achieving organic certification)
- Controlled Environment
- Mix (e.g. organic and conventional)
- Other:

Motivators and Challenges Faced?

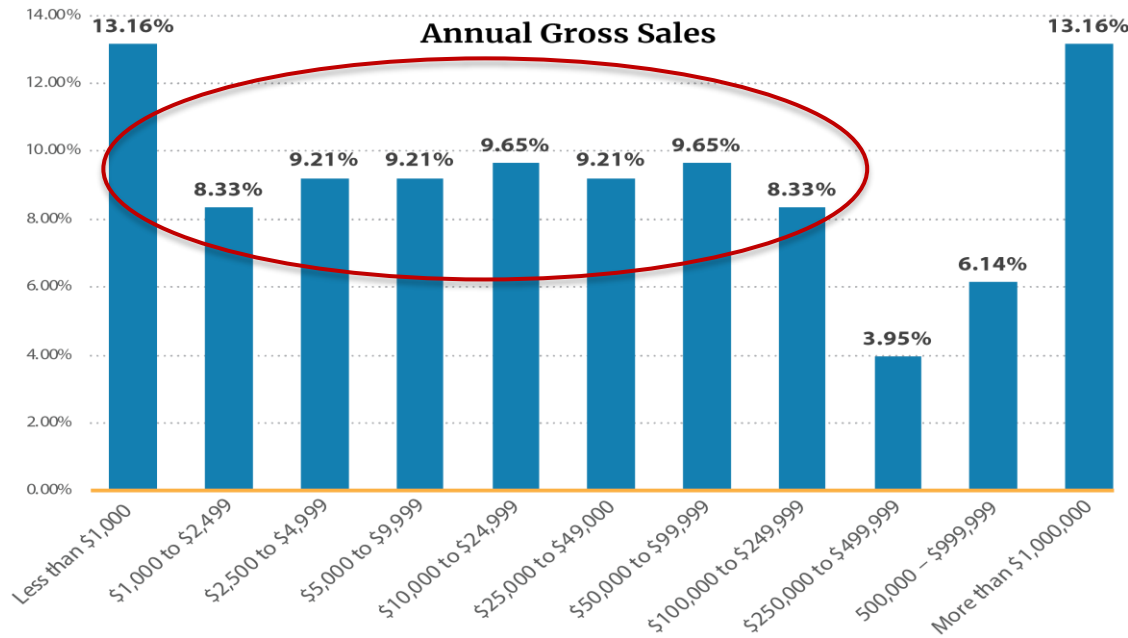
Motives Influencing Farming Decisions



Major Challenges Identified

- Land and Water availability and prices
- Imports/Foreign Competition
- Growth and Urbanization
- Aging farmers/Succession planning
- Laws and Regulations
- Exotic pest problems/quarantines
- Farm labor supply, regulations and costs
- Declining profits (low prices/high costs)

Who are our Farmers? Who is our Target?



All farmers (~5,700), farm managers and decision makers in the county with Special emphasis on Small-scale (~ 77 % of total) farmers as defined by the Census of Agriculture and the San Diego County Department of Agriculture.

UC Cooperative Extension (UCCE)

<https://ucanr.edu/About/Locations/>

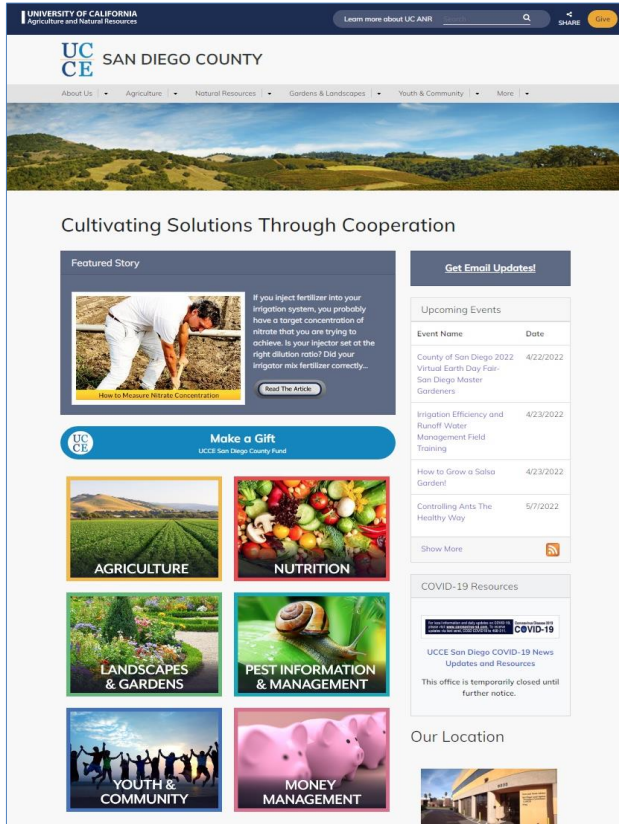
- Serve every County in California
- Advisors work with farmers to develop and implement solutions for local problems in Agriculture, Natural Resources and Nutrition Education
- Strong volunteer involvement through Master Gardeners, Master Food Preserver, California Naturalist and 4-H Youth Development Programs
- Strong collaboration with with federal, state and local government agencies and non-profit or community-based or organizations

Select a County



UCCE San Diego

<https://cesandiego.ucanr.edu/>



AGRICULTURAL RESOURCES

- ✓ Small Farms & Agricultural Economics
- ✓ Climate Smart Agriculture
- ✓ Floriculture and Nursery
- ✓ Integrated Pest Management
- ✓ Ag Water Quality Research & Education
- ✓ Subtropical Fruit Crops
- ✓ Viticulture
- ✓ Human Wildlife Interactions
- ✓ Farm Management



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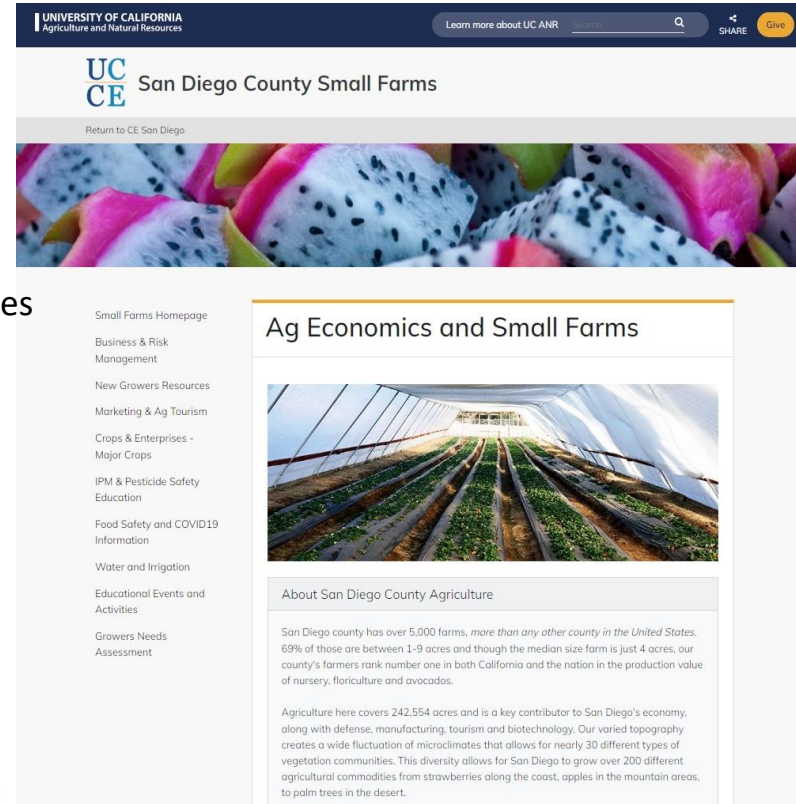
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UCCE San Diego - Small Farms

<https://ucanr.edu/sites/sdsmallfarms/>

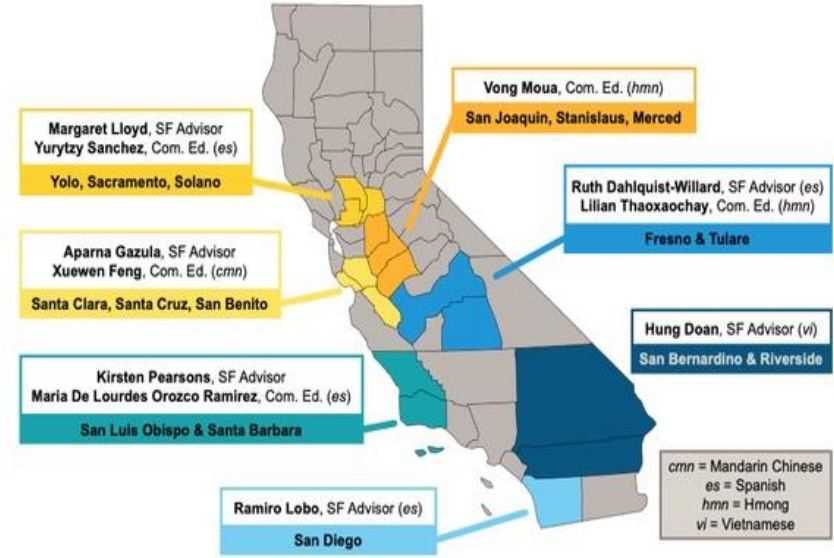
PROGRAM AREAS:

- ✓ Business and Risk Mgt Education
 - Ag in Uncertain Times Online Education Program
- ✓ **Agritourism and Direct Marketing**
 - Agritourism Story Map & Agritourism intensive short-courses
- ✓ **New Crops or Enterprises**
 - Pitahaya, blueberry, coffee, other specialty crop research
- ✓ New Entry Grower Support & Education
 - Online Ag Business Resource Directory, Urban Agriculture,
- ✓ IPM and Pesticide Safety Education
 - IPM for Professional Landscapers Workshops
- ✓ **Food Safety Education**
 - CDFA Food Safety Technical Assistance Program



The UC Small Farm Program Advisors

<https://sfp.ucanr.edu/>



“Founded in 1979, the Small Farm Program seeks to enhance the viability of small & moderate-scale farms with the latest research-based information and extension education in production systems, marketing, and farm management.”

Research and Extension Update

- ◆ Specialty Crops Research and Extension
 - ❖ Pitahaya or Dragon Fruit IPM Field Survey
 - ❖ Coffee Production Research and Extension
- ◆ Food Safety Technical Assistance Program (Ariana Reyes)
- ◆ UCCE Online Agricultural Resources (Jan Gonzales)



Heidi Holmquist, Staff Research Associate
Ramiro E Lobo, Advisor, Small Farms & Agricultural Economics
UC Cooperative Extension, San Diego County





Cactus Virus X (CVX)

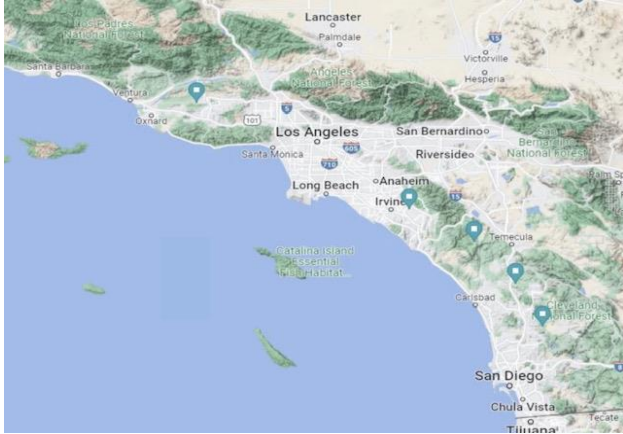
- Common plant pathogenic virus that attacks many species in the *Cactaceae* family
- Found worldwide, First reported in Taiwan in 2003
- Found alongside other topomoviruses and potexviruses in some cacti species
- Reported and confirmed in California at South Coast REC in 2011, 85% percent of approximately 200 samples analyzed were positive for Cactus Virus X (CVX)



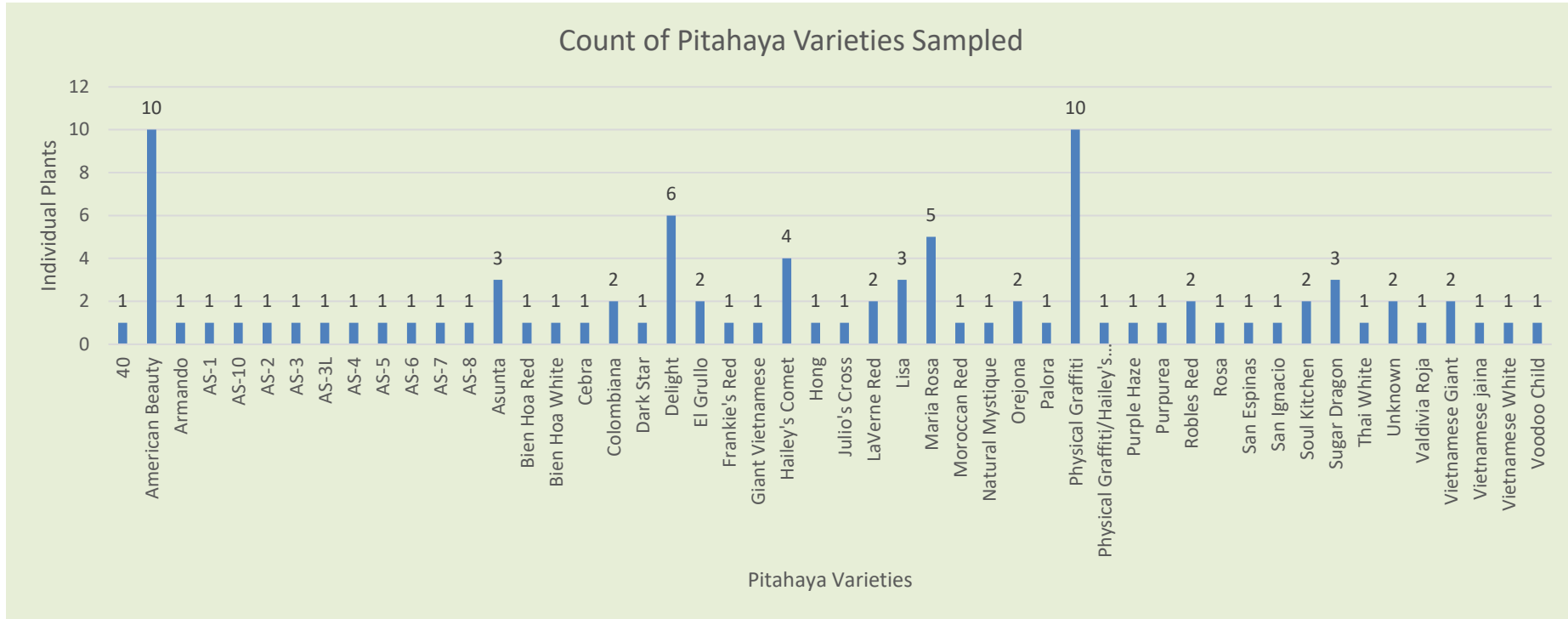
Materials and Methods

- ◆ **94 total samples** were collected from seven locations including research plots at UC-South Coast REC, one backyard grower and five commercial growers in Southern California
- ◆ Sample included **young and old/mature tissue** from symptomatic and asymptomatic plants
- ◆ **Duplicate samples** were collected, packed and shipped according to lab specification for virus and disease diagnosis
- ◆ Virus screening and sequencing was done by **Agdia** and pathogen/disease diagnosis was done by **Dr. Johana del Castillo** at UC Davis

Cactus Virus X(CVX) Samples and Symptoms

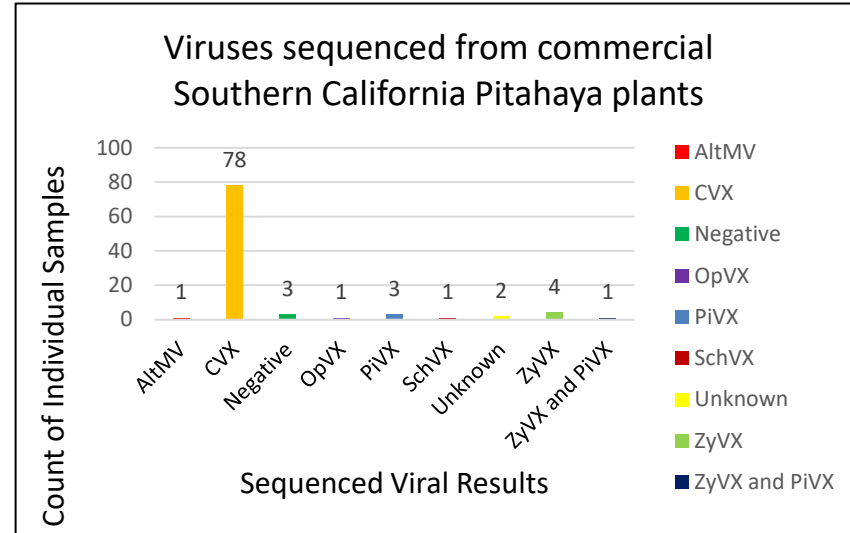


Varieties Screened for Cactus Virus X (CVX)



Cactus Virus X (CVX) Screening Results

Ninety one (91/94) or 96.8 % of the samples screened tested positive for CVX and only three (3/94) or 3.2 % of the samples were negative.



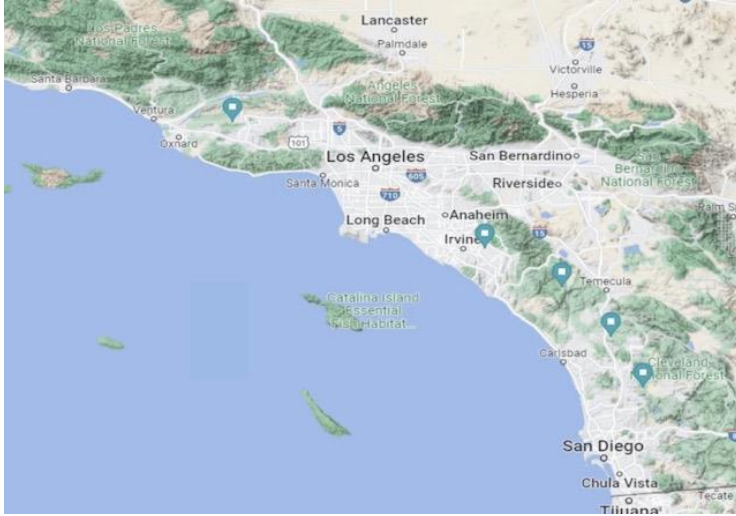
Cactus Virus X (CVX) Management

- Scouting for and eliminating symptomatic/host plants
- Regular testing, Isolating especially susceptible varieties
- Sanitation practices to avoid mechanical transmission
- Between each cut, decontaminating tools and surfaces with bleach or another disinfectant solution
- Removing all pruned plant material from growing area



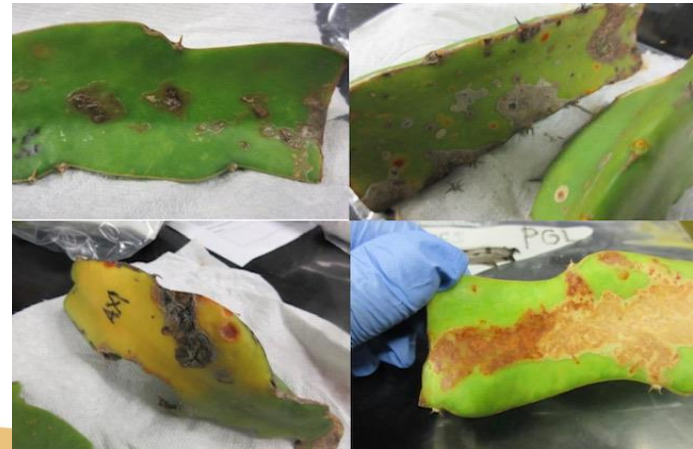
Pitahaya Disease Diagnostics

Diagnostic work performed by Dr. Johanna Del Castillo and Dimitri Arndt-Truong at the University of California, Davis



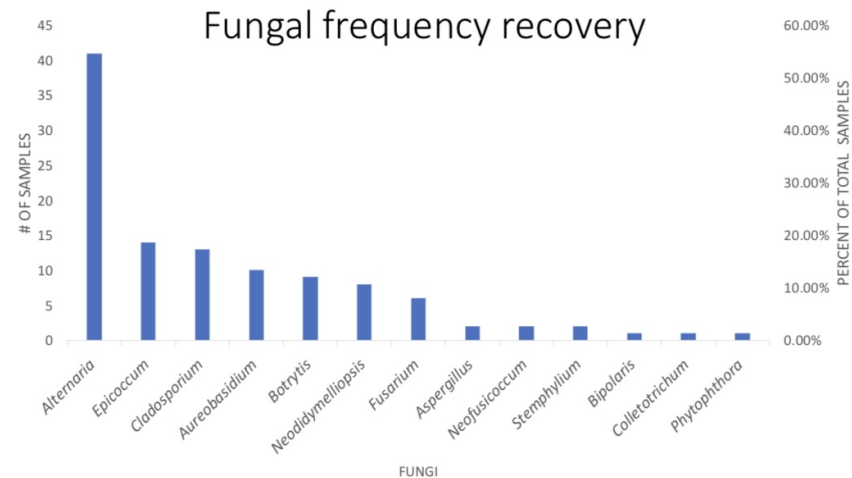
79 Samples were collected in Spring and Summer 2022 from seven locations in Southern California

Sample composition included 76 stems, 2 fruits and 1 root sample.



Results

- Alternaria spp. was the most common pathogen genus recovered (52%), followed by Epicoccum sp. (18%) and Aureobasidium sp. (13%)
- Pathogens Colletotrichum sp. B. cactivora, and Phytophthora cryptogea had low recovery rates
- Despite being frequent worldwide, Neoscytalidium was not recovered



Disease Management

- Pruning/canopy management program:
 - ✓ Sanitation pruning/remove inoculum source - Symptomatic stems/cladodes, fruits, flowers
 - ✓ Production pruning/canopy management - Increases air flow, light and fungicide penetration
- In general, fungal diseases are favored by humid conditions:
 - ✓ Irrigation management - avoid overwatering, limit canopy wetness
 - ✓ Irrigation changes according to season
- Sanitation practices: Surface disinfect clippers, any tools used and clean gloves
- Use of copper preventatively → When is a good time to apply?
- Fungicides registered in Florida (limited to 4 applications/year):
 - ✓ Azoxystrobin (FRAC group 11)
 - ✓ Cyprodinil + fludioxonil (FRAC group 9 +12)

Conclusions

- Cactus Virus X (CVX) is endemic to pitahaya/dragon fruit plants in Southern California, yet impact of the virus on productivity and plant health unknown
- *Alternaria* spp. was the most common pathogen genus recovered (52%), followed by *Epicoccum* sp. (18%) and *Aureobasidium* sp. (13%)
- Some fungal species recovered are “new” pathogens of pitahaya in California (*Alternaria* spp., *Aureobasidium pullulans*, *Epicoccum nigrum*, *Neodidymelliopsis* spp.)

Conclusions

- It is possible that multiple pathogens are causing symptoms observed or making the plants more susceptible to CVX
- There may be primary pathogens that make pitahaya crops more susceptible to saprophytes or secondary pathogens (*Botrytis* sp.)
- More research needed to:
 - ✓ determine real impact of CVX on Dragon Fruit and to develop protocols to clean produce virus free propagative material
 - ✓ characterize pathogen-host association/interaction in California to develop more specific management practices of known pathogens

Coffee (*Coffea arabica*) Research and Extension

Ramiro E Lobo, Advisor, Small Farms & Agricultural Economics
UC Cooperative Extension, San Diego County

Collaborators:

Duncan McKee, Cal Poly Pomona
Valerie Mellano, Cal Poly Pomona
Scott Murray, Murray Family Farms
Ben Faber, UCCE Ventura
The Flower Fields



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Climatic Requirements

- Coffee usually grows under partial shade as an understory crop, but adapts well to full sun
- Optimum temperatures range from 59 to 75 F (15-24 C), do not tolerate freezing temperatures
- Coffee plants like high humidity with well defined rainy and dry seasons
- Arabica Coffee grows better at altitudes between 3000-5200 feet; whereas Robusta grows from sea level to 3000 feet in tropical environments



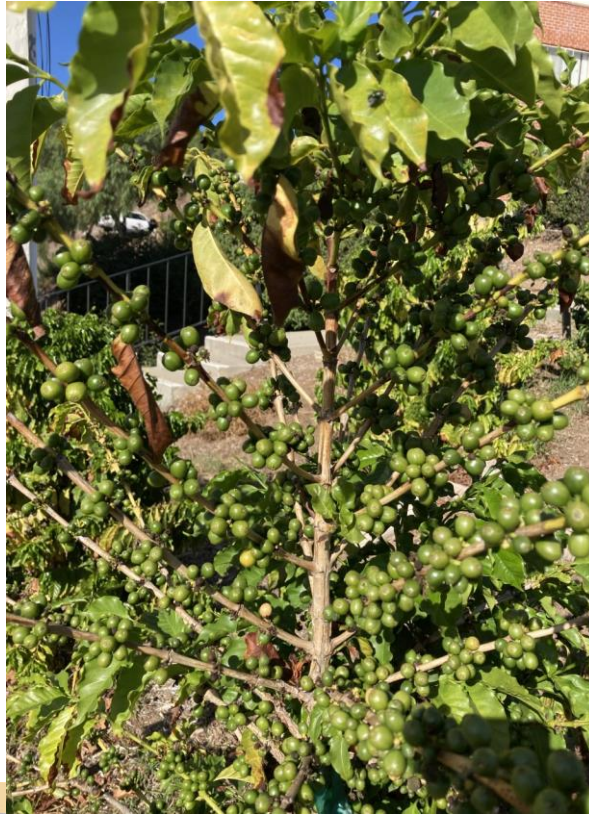
Propagation Research



Field Research Activities

- Done in collaboration with growers and institutions:
 - ✓ Variety evaluation trial at Cal Poly Pomona (2 trials, 15 varieties)
 - ✓ Variety trial at the Flower Fields in Carlsbad (15 varieties)
 - ✓ Provided plants for Coffee Carbon Extraction Research at Whittier College/Scott Murray)
 - ✓ Variety trials at UC South Coast REC in Irvine (15 varieties, companion crop to chirimoya, container grown)
 - ✓ Shade house trial at UC South
- Citizen science research with local organizations/groups:
 - ✓ California Rare Fruit Growers (CRFG, various chapters)
 - ✓ UCCE Master Gardeners
 - ✓ Individual growers

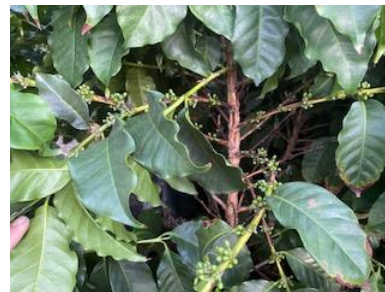
Results to Date: Cal Poly & Whittier College



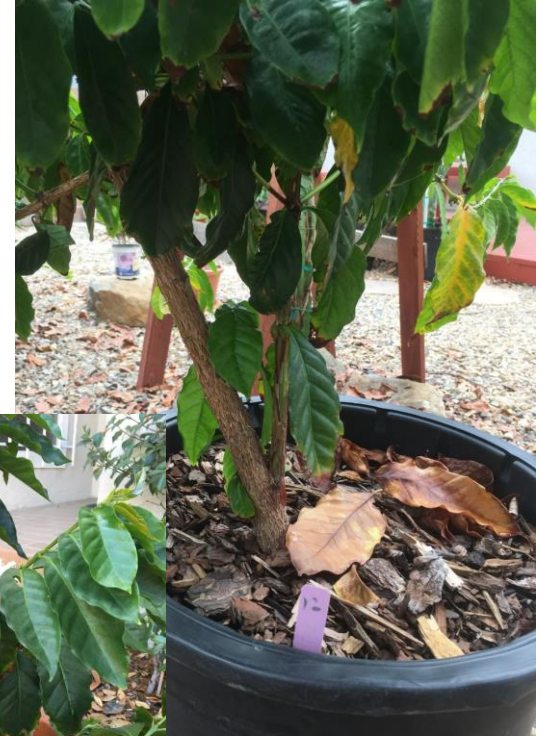
Results to Date: The Flower Fields



Results to Date: South Coast REC



Results to Date: Citizen Science



What Have We Learned?

- Coffee nursery plants can be grown at a reasonable cost
- Coffee grows well and produces fruit in various micro-climates throughout Southern California
- When grown in full sun, coffee plants show abnormal growing habits and erratic behavior (multiple trunks, too much foliage, seasonality of bloom not well defined)
- Cherry production can be high but larger than normal percentage of floats, empty or hollow beans
- Pest incidence very low, primarily ants and mealy bugs, spiders

Future Research?

- Future research should concentrate on improving the cherry to green coffee ratio. Need to look at:
 - ✓ Irrigation requirements and timing of irrigation
 - ✓ Fertilizer requirements and timing/type of fertilizer
- Production systems research – companion crop to avocados, full sun, semi-controlled environments?
- Processing/fermentation methods – washed, honeys or naturals?
- Marketing strategies? Will not compete with Colombia or Brazil but can be successful if tied to agritourism or other direct marketing strategy

Focus on Quality!!





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Ariana Reyes,
Community Education Specialist.

aireyes@ucanr.edu

UCCE San Diego, Small Farms Program

Food Safety Technical Assistance Program

Supervisor: Ramiro Lobo, Small Farms Advisor



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Background

San Jose State University
B.S Environmental Studies
Minor in Conservation & Resource
Management
Compost Education Program
Food Safety Technical Assistance
Program.



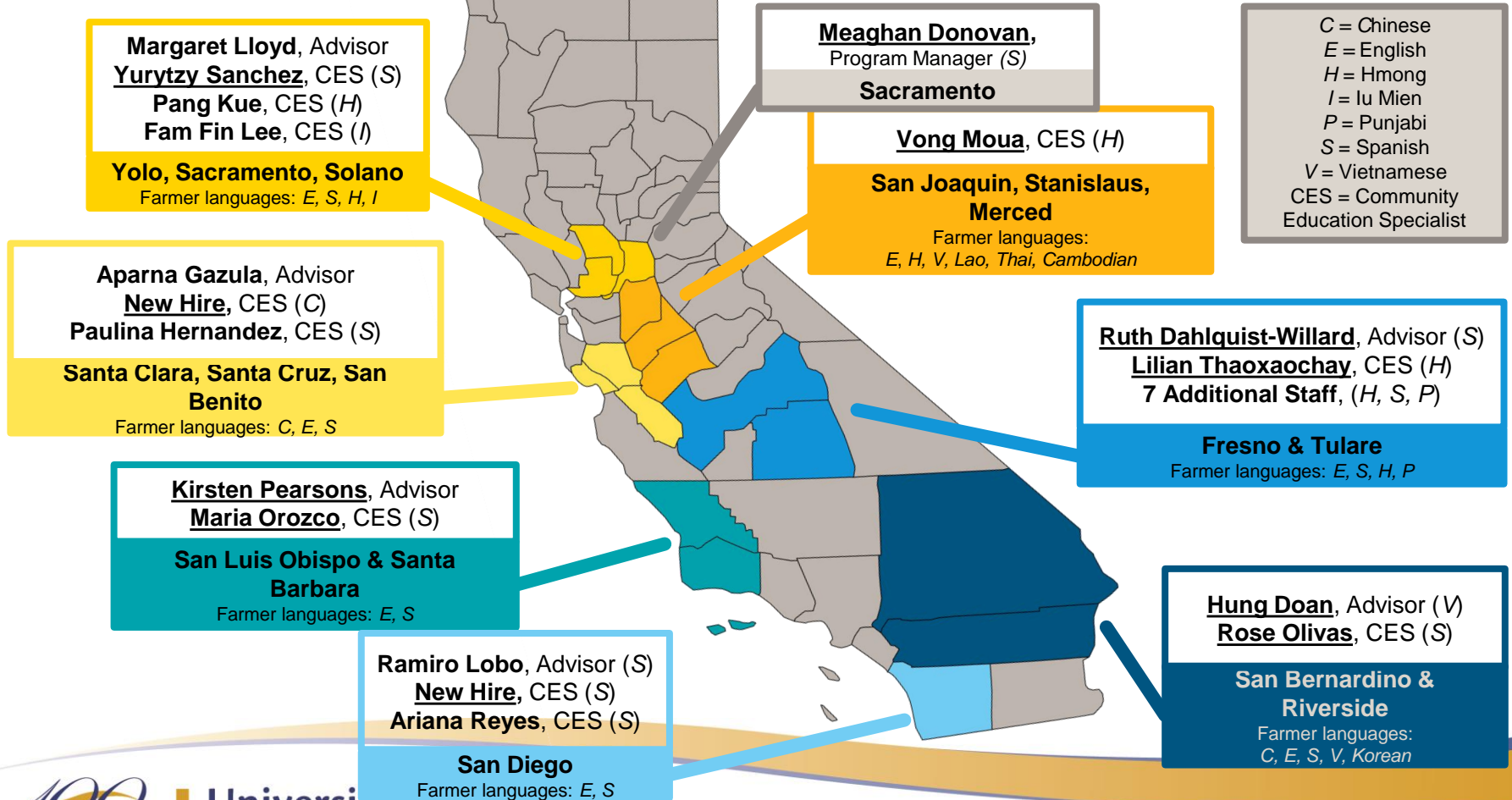
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Food Safety Technical Assistance Program

Project Overview



Food Safety Technical Assistance Program

Project Overview (CONT.)



- There are over 70,000 farms in California.
- There are 7 Regional Produce Safety Inspectors in California.
- Challenges.



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Produce Safety
ALLIANCE



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The Food Safety Modernization Act

- FSMA was signed into law in 2011 by President Obama. Its focus is prevention of food safety issues. There are 7 primary rules that make up FSMA.
- Worker Training, health, and hygiene.
- Agricultural Water
- Biological Soil Amendments of animal origin
- Domesticated and wild animals
- Equipment, tools, and buildings

Not Covered

- Farm is not subject to any regulations of the Produce Safety Rule.
- Keep sales records to demonstrate status.

Qualified Exempt

- Farm is not subject to most of the regulations of the Produce Safety Rule.
- Must follow modified labeling requirements.
- Keep sales records to demonstrate status.

Fully Covered

- Farm is subject to all regulations of the PSR.
- Farm Supervisor or responsible party must attend a Produce Safety Rule Grower Training course by FDA.



Grower
Questionnaire



Training on the
FSMA Produce
Safety Rule
(required for
covered farms)



On-Farm
Readiness
Review
(optional)



Produce Safety
Rule Inspection
(required for
covered farms)

FSMA
Food Safety
Modernization
Act

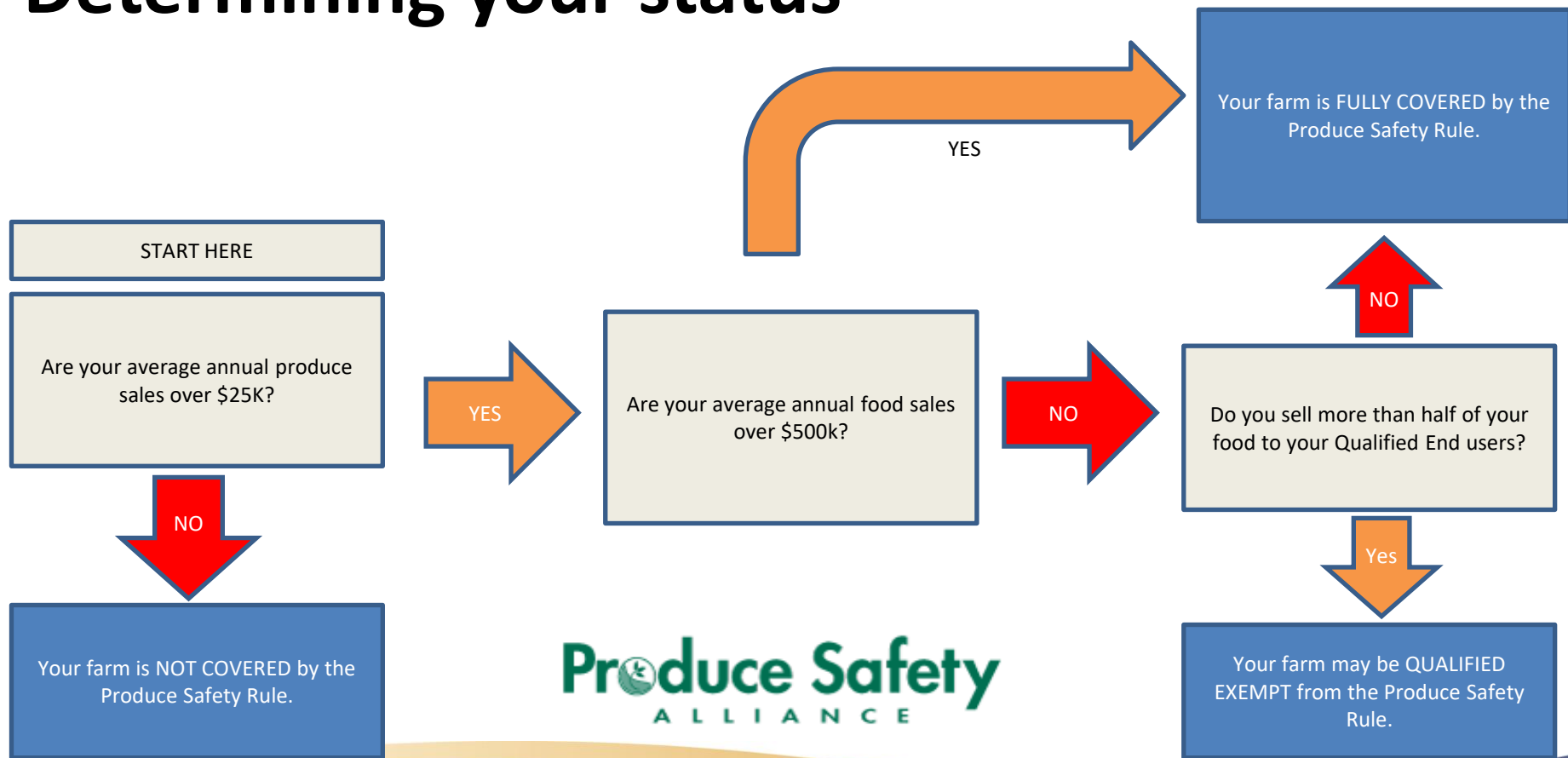
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CE



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Determining your status



Produce Safety
ALLIANCE

Affordable Handwashing Station



Images from webrestaurantstore



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Thank You!

[Produce Safety Alliance | CALS \(cornell.edu\)](#)

[University of Minnesota Twin Cities \(umn.edu\)](#)

[Food Safety Modernization Act \(FSMA\) | FDA](#)

[San Diego County Small Farms \(ucanr.edu\)](#)



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Online Agricultural Resources:

- Agribusiness Guidelines
- Agribusiness Resource Directory
- Agritourism Map Directory

2022 Farm & Nursery Expo
San Diego County Farm Bureau
November 10, 2022 • Escondido, CA

Jan Gonzales, Community Education Supervisor
UC Cooperative Extension, San Diego



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<https://ucanr.edu/sites/OAR/>

- New online (desktop) tools intended to assist local growers in the San Diego region in their efforts to remain competitive by providing useful guidelines and resources
- Resources for beginning and/or diversifying agribusiness
- Public interfacing, interactive map to promote local agritourism



Welcome

This website is intended to assist local growers in the San Diego region in their efforts to remain competitive by providing useful guidelines and resources. This site provides information to help new and existing growers with their efforts to start new agricultural enterprises or to diversify existing farm businesses. Two additional resources featured: (1) the agricultural resource directory provides a variety of contacts, organizations and publications that may provide answers and assistance related to specific agribusiness and production topics, and (2) the agritourism resource page provides information specific to starting and marketing an agriculture tourism business.



Guide to AgriBusiness



Resource Directory



AgriTourism

Guide to AgriBusiness & Resource Directory

Use left navigation pane to view information and links on topics for agricultural

- Business
- Production
- Marketing

About

Agribusiness Guide

Business

Production

Crop Selection

Water Use &
Conservation

Permits & Regulations

Pest & Disease
Management

Organics

Grading & Packing

Harvest Calendar

Marketing

Resource Directory



The process of selecting a crop for your agribusiness is an entrepreneurial decision and requires situational consideration.

Crop Selection Factors

Specific location of the farm or property being considered

Land availability

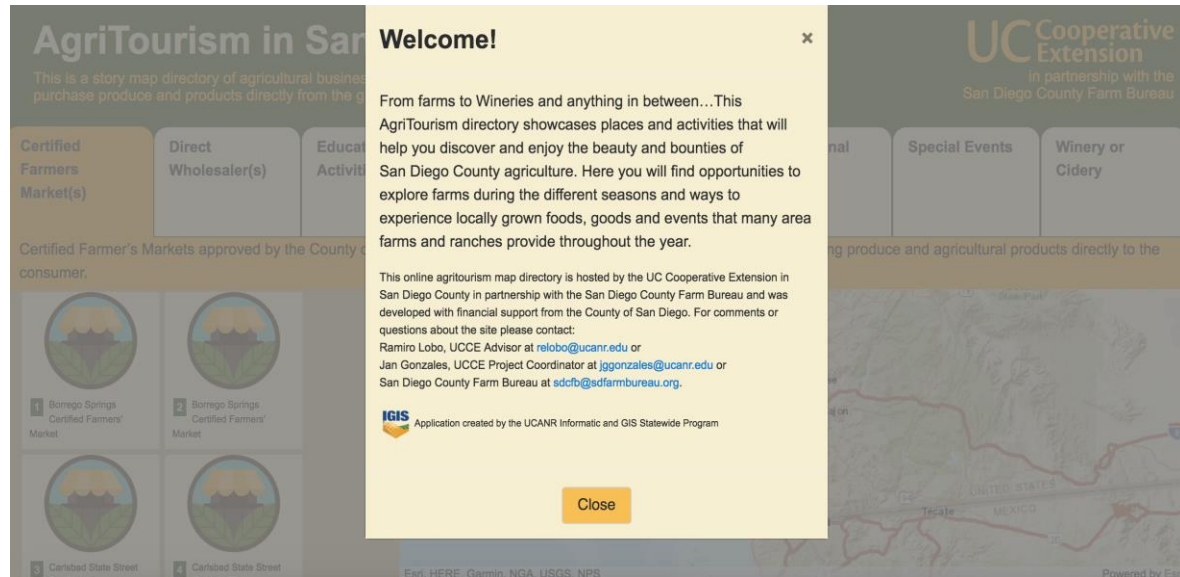
Soil type

Climate

AgriTourism Map Directory

www.AgToursSD.org

- Interactive
- Multiple Categories
- Grower self-defined Business Profiles
- Printable profile sheets
- Maintained in partnership with San Diego County Farm Bureau



Categories of Types of Activities Offered

- Certified Farmers Markets
- Direct Wholesaler(s)
- Educational Activities
- Farm Stands, U-Pick, Garden Centers and Nurseries
- Farm Visits
- Recreational Activities
- Special Events
- Winery or Cidery

AgriTourism in San Diego

This is a story map directory of agricultural businesses in the San Diego County region, which are open to the public to purchase produce and products directly from the grower and/or participate in agritourism opportunities.
[More Information](#)

UC Cooperative Extension
in partnership with the
San Diego County Farm Bureau

Certified Farmers Market(s)	Direct Wholesaler(s)	Educational Activities	Farm Stands, U-Pick, Garden Centers or Nurseries	Farm Visits	Recreational Activities	Special Events	Winery or Cidery

Agricultural enterprises open to the public for visits or tours of their agricultural operation.

AgriTourism in San Diego

UC Cooperative Extension

in partnership with the
San Diego County Farm Bureau

This is a story map directory of agricultural businesses in the San Diego County region, which are open to the public to purchase produce and products directly from the grower and/or participate in agritourism opportunities.

[More Information](#)

**Certified
Farmers
Market(s)**

**Direct
Wholesaler(s)**

**Educational
Activities**

**Farm Stands,
U-Pick,
Garden
Centers or
Nurseries**

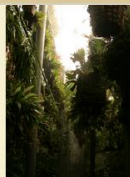
Farm Visits

**Recreational
Activities**

**Special
Events**

**Winery or
Cidery**

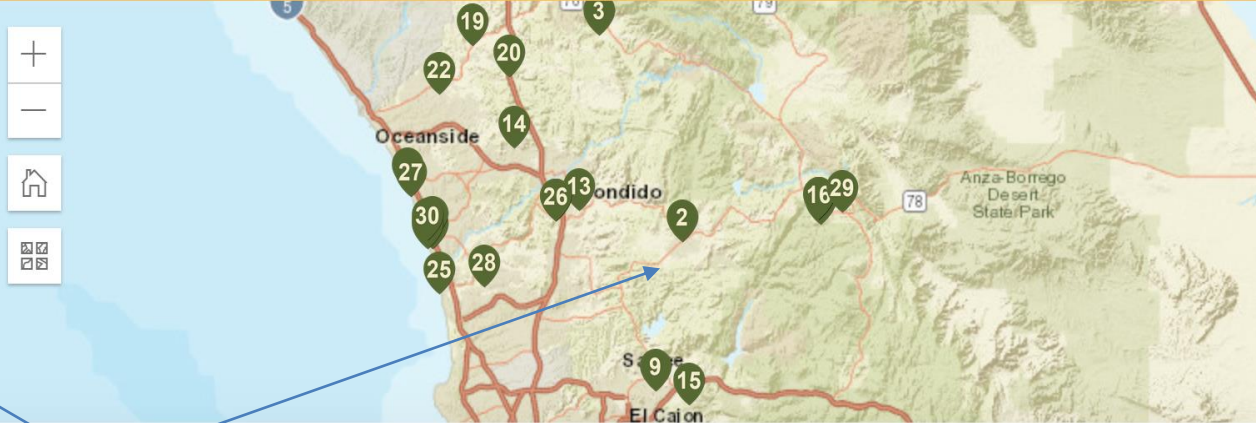
Commercial agricultural businesses, which offer opportunities for the public to purchase produce, nursery or other agricultural products directly from the business either from farm stands, U-pick activities, garden centers or nurseries.



1 Andy's Orchids



2 Backcountry Gardens



Business profiles are accessed on left navigation or by correlating clickable number on map.



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Profile Page

- Users able to download and print Agritourism Business Profiles
- Includes:
 - map location
 - business details
 - crops, services, activities offered

AgriTourism in San Diego

UC Cooperative Extension

Julian Farm And Orchard



Hours: 10:00am-4:00pm, By Appointment, , Daffodil Season (Mar 19-May 1): Open Sat and Sun, 10am-4pm Berry Season (Jun-Aug) (Strawberries, Raspberries and Blackberries): Open Sat and Sun, 10am-4pm Apple and Pumpkin Season (Mid-Sep-Oct 31): Open Sat and Sun, 10am-4pm Other seasonal hours by appt.

Address: 4381 Julian Highway, Santa Ysabel, CA 92070

Website: www.JulianFarmAndOrchard.com

Phone: 760-765-5494

Customer Service: Josh Rasmussen

Owner/Farm Manager: Jim Madaffer

Products & Services

- U-Pick
- Farm Tours-Guided
- Petting Zoo
- Seasonal/Holiday Events
- Farm Stand/Shop
- Farm Visits
- Workshops/Classes/Demonstrations
- Venue for Private Events
- Venue for Weddings

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ucanr.edu/sites/OAR/

Find more details about the Agritourism Directory Map
at

<https://ucanr.edu/sites/OAR/AgriTourism/>

•

To add your Agritourism business to the map directory,
upload your Agritourism Profile information on this
online **Survey**
(<https://arccg.is/1W9fiH0>)

Thank You!

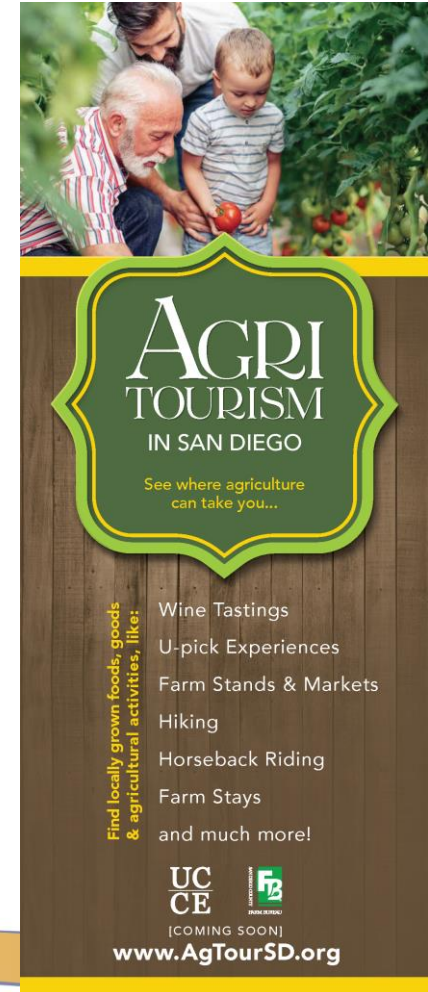
Questions?

Contact Ramiro Lobo, relobo@ucanr.edu
or Jan Gonzales, jgonzales@ucanr.edu



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The banner features a photograph of a man, a woman, and a child in a tomato field. Below the photo is a green shield-shaped logo with the text "AGRI TOURISM IN SAN DIEGO" and the tagline "See where agriculture can take you...". To the right of the logo is a list of activities: Wine Tastings, U-pick Experiences, Farm Stands & Markets, Hiking, Horseback Riding, Farm Stays, and "and much more!". To the left of the list is vertical text: "Find locally grown foods, goods & agricultural activities, like:". At the bottom right are the UC CE logos, the text "[COMING SOON]", and the website "www.AgTourSD.org".

AGRI TOURISM
IN SAN DIEGO

See where agriculture can take you...

Find locally grown foods, goods & agricultural activities, like:

- Wine Tastings
- U-pick Experiences
- Farm Stands & Markets
- Hiking
- Horseback Riding
- Farm Stays
- and much more!

UC CE [COMING SOON] 
www.AgTourSD.org

Questions/Comments?

Ramiro E. Lobo

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San Diego, CA 92123

Phone: 858.246.1860

Cell: 858.243.4608

E-mail: relobo@ucanr.edu

<http://cesandiego.ucdavis.edu>

<https://ucanr.edu/sites/sdsmallfarms/>



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