

**UC** | University of California  
**CE** | Agriculture and Natural Resources | Cooperative Extension

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**3 Annual Report**



Farm and Home Advisors

# Serving Kern County

Since 1914

From the County Director

Cooperative Extension is an off-campus research and educational arm of the University of California (UCCE). Advisors with their staff, housed in the County of Kern Farm and Home Department, are a Practical, Connected and Trusted resource for science-based information in agriculture, natural resources, community resource management, nutrition, family and consumer science, and 4-H youth development.



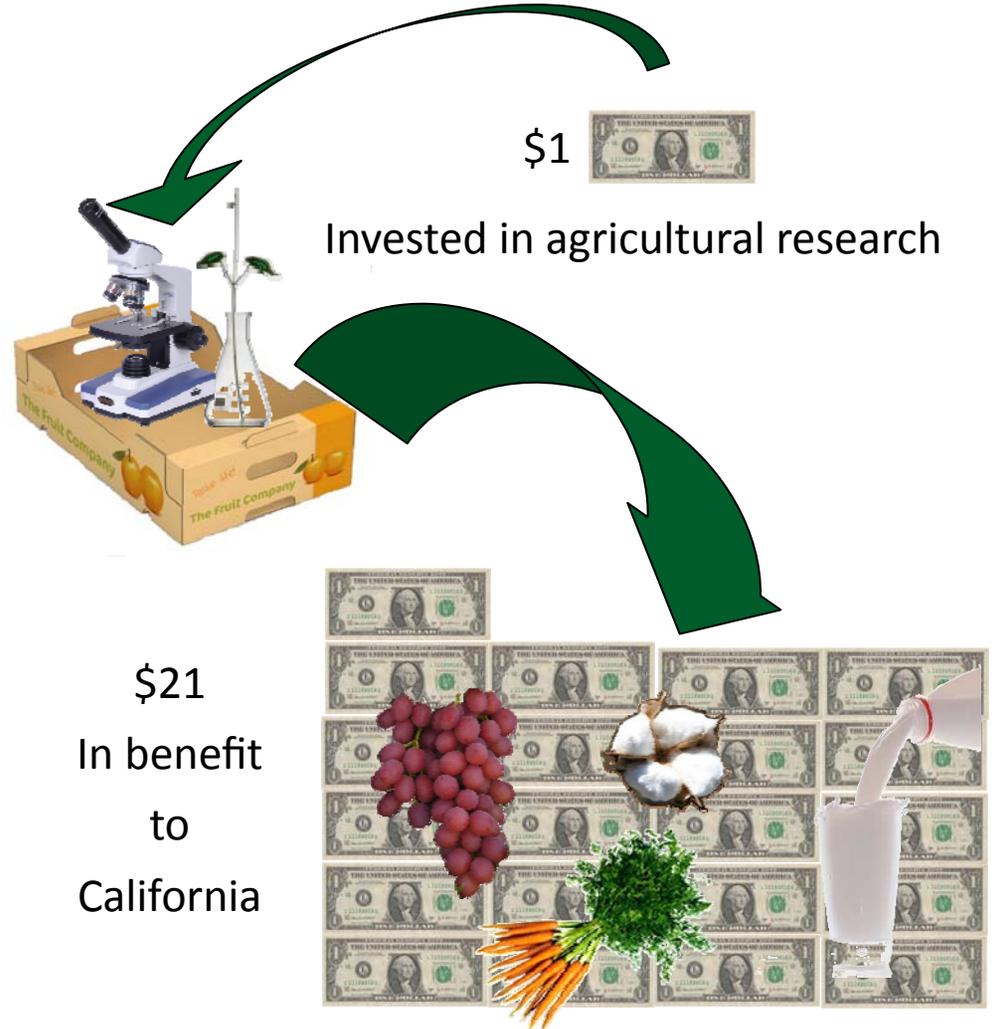
### Advisor Activities

- ◆ 17,200+ people served through direct contact
- ◆ 196 presentations given
- ◆ 123 publications produced
- ◆ 64 research projects conducted
- ◆ 820 4-H youth enrolled
- ◆ 235 4-H adult volunteers

It is impossible to fully convey the hard work of our highly dedicated and talented staff and their impact on individuals and communities. This is but a snapshot of the extensive work performed by UCCE—Kern County. Visit our websites (see back cover) for additional information on the many issues facing Californians and UCCE’s contribution toward *Healthy Food Systems, Healthy Environments, Healthy Communities and Healthy Californians*. The vital combination of support from the County of Kern, University of California and US Department of Agriculture makes this all possible.

Dr. Brian Marsh

# Growing the Economy



2012 Kern County  
Farm Revenue  
\$6.2 Billion



Sources: Investing in California;  
2012 Kern County Agricultural  
Crop Report

# P

## lant Pathology

### Cucumber Mosaic Virus

- ◆ CMV has affected peppers in Kern County for 5 years.
- ◆ Causes stunted plant growth and mosaic pattern on leaves and fruit.
- ◆ Infestations more severe in the Mettler area.
- ◆ More damage when infected earlier in the season.
- ◆ Transmitted by aphids.
- ◆ Chemical control not effective.
- ◆ Effective CMV control is preventing aphids from landing and feeding on plants.



Can mulches be an effective aphid repellent?

- ◆ Black, Green & Red mulches were equally effective in repelling aphids compared to the untreated control.
- ◆ Healthier plants in the Green > Red > Black mulch.

This is an effective non-pesticide methodology for CMV management.



# E

## xotic Pests



Kern County Table Grapes are a \$2.5 billion crop. Glassy Winged Sharpshooter (the transmitter of Pierce's Disease) and Vine Mealybug are two invasive species that attack grapes.

### Pierce's Disease and Sharpshooter Management

- ◆ Surveyed 60,000 vines from 30+ vineyards.
- ◆ Documented regional increase and distribution of Pierce's Disease.
- ◆ Documented benefits of monitoring and roguing programs.
- ◆ Evaluated reduced-risk management strategies for sharpshooter control.
- ◆ Provided educational materials and workshops on pest/disease management.

Program Partners:

Kern County Ag Commissioner

CA Dept. of Food and Agriculture

Table Grape Pest Control District

US Department of Agriculture

### Vine Mealybug Management in Nurseries



Research by Kern County Farm Advisors developed a hot-water treatment protocol to remove vine mealybug from vines in grape nurseries. These plants can now be transported to any location free of this invasive pest without the use of pesticides. All major grape nurseries in Kern County now use this program.

# HEALTHY FOOD SYSTEMS

## Progress in a Nutshell

### Pistachio Breeding Program



Kern County Farm Advisors have been breeding pistachio trees for many years and maintain a germplasm collection. 2,000 crosses are being evaluated for potential release.



Recently released varieties:

|              |   |                                    |
|--------------|---|------------------------------------|
| Golden Hills | } | 2 million trees<br>on 15,500 acres |
| Lost Hills   |   |                                    |

These varieties bloom and mature earlier. This adds biodiversity to pistachio production and gives growers additional flexibility in harvest and processing.



### Kern County Almond Research

- ◆ Field trial nut yield as high as 4,900 pounds per acre
- ◆ 95% Water use efficiency
- ◆ 85% Nitrogen use efficiency

High tech monitoring and delivery systems for irrigation and fertilization developed by UCCE Advisors demonstrate improved yields with higher water use efficiency and a lower potential for surface and groundwater contamination.



40 year ago:  
1,400 pounds per acre



Today:  
2,670 pounds per acre



\$821 Million  
Value of 2012  
Kern County  
Crop

*“The University of California has been a wonderful partner in improving our farming practices; the whole system is not only more efficient, but more sustainable.”*

—Joe MacIrvine, President  
Paramount Farming Company

# Air Quality

What role do agricultural crops play in regional air quality?

Ozone is the principal gas-phase air pollutant in the San Joaquin Valley.

Ozone was removed from the atmosphere by citrus trees through:

- ◆ Plant uptake through the stomata
- ◆ Surface reaction
- ◆ Gas-phase chemical reactions

Ozone was removed throughout the year,  $7 \text{ g m}^{-2}$  in this grove.

Ozone removal was about the same as an equivalent acreage of Sierra forest.

Citrus emits much less isoprene than oak trees. Isoprene is a highly reactive volatile organic compound (VOC) and is the dominant VOC emitted by plants.

Additional research is to be conducted to determine total net effects of agricultural crops.



# Natural Resources

## Drought Assessment



Vegetation assessment data is valuable to determine actual forage production and loss due to drought. It is an important scientific measurement that can be correlated with other commonly collected vegetation measurements.

This information supports the Non-insured Crop Disaster Assistance Program through the USDA Farm Services Agency and assists ranchers and decision makers in managing stocking rates, risk assessment and preserving the long-term health of range and pasture ground.



The 18 sites located in 6 unique eco-regions throughout Kern County contribute to the annual statewide assessment.

# HEALTHY COMMUNITIES Horticulture

Many Kern County residents practice horticulture at home or as part of their business to improve the environment, improve aesthetic qualities of their neighborhood and produce food.

## Horticulture Classes 2013

- ◆ 16-week courses in Bakersfield
  - ◆ Horticulture I 49 students
  - ◆ Horticulture IV 32 students
- ◆ 9-week course in Tehachapi in 2012 with 62 students
- ◆ Tree Pruning

2,000+ publications distributed annually to home gardeners and landscape professionals.



## Topics discussed included:

- ◆ Soil properties and their modification
- ◆ Plant selection and placement
- ◆ Tree planting and staking
- ◆ Pruning of shade trees and fruit trees
- ◆ Small-scale fruit, citrus, and vegetable production
- ◆ Irrigation and water conservation
- ◆ Non-chemical pest management
- ◆ Plant selection

# School and Community Gardens

## “Creating and Sustaining Your School Garden”

- ◆ Workshops were conducted throughout the year training 100 teachers (pre K to Jr. High).
- ◆ Assisted in establishing and developing school and community gardens.



## Program Partners:

Sterling Road Head Start, Pete Parra Head Start, Voorhies Elementary, Bakersfield Adult School Child Care Center, Rockhill Farms, Valley Achievement Center, Standard School District Afterschool Program

*“No occupation is so delightful to me as the culture of the earth, and no culture comparable to that of the garden.”* Thomas Jefferson

- ◆ Assisted schools, youth organizations and clubs in obtaining grants for gardens and nutritional programs.
- ◆ Conducted summer cooking classes that reached 9,850 students. Friendship House, Shafter Youth Center, Descanso and Eucalyptus Housing Projects
- ◆ Presentations on gardening and healthy eating were given at venues that targeted at-risk children.
- ◆ 2,000 children, parents, teachers and caregivers attended.

*“Great session and [I am] enthusiastic about starting our garden!”*



# HEALTHY COMMUNITIES

## Financial Literacy

### Making Every Dollar Count

5 lessons include:

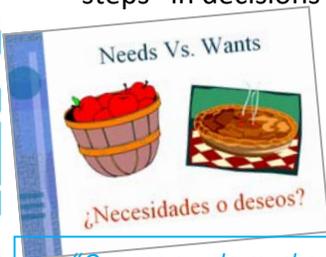
- ◆ Goal setting
- ◆ Making good choices
- ◆ Stretching your dollars with community resources
- ◆ Saving money on food
- ◆ Effects of food advertising on your purchases



### Behavioral Changes of Graduates

68% have, 27% plan to set a goal

76% have, 16% plan to use the "choice-making steps" in decisions



*"Que me ayudo mucho a economisar."*

*"I recommend that every family should try this program out, it has helped me a lot in saving and managing money more easily."*

UCCE staff conducted  
24 4-hour classes  
574 participants  
276 graduates  
Classes in English and Spanish

Program Partner: Head Start  
60 family service workers at  
35 centers trained as trainers  
359 parents participated  
293 graduated



# 4-H Youth Development

Leadership, Citizenship, Life Skills

4-H Science, Engineering, and Technology (SET) projects engage youth in hands-on learning in a positive development context. This program involves youth in out-of-school time science programming that is inquiry driven, experientially based, and supports the Next Generation Science Standards.

### Expected outcomes :

- ◆ Help youth improve their knowledge and skills around science, engineering, and technology.
- ◆ Connect learning with real-world situations where youth can use new and emerging science methods and technology to solve problems.
- ◆ Increase the number and diversity of youth pursuing higher education and careers in science, engineering and technology.

### Training Modules:

*Junk Drawer Robotics*  
*The Power of Wind*  
*Aerospace Adventures*



### Program Partners:

County of Kern Housing Authority  
- Kern Adelante and Little Village complexes  
Arvin and Delano Afterschool Programs  
California City Parks and Recreation Department  
Naval Air Station Lemoore Youth Activities

# HEALTHY CALIFORNIANS **N**utritional Know-How

Helping families make healthy food choices.

## UC's Cal Fresh

*Food Stamp Nutrition Education*

- ◆ A family-centered strategy to promote long-term changes in behavior.
- ◆ 990 Kern County participants received 4 hours of training.



## Adult EFNEP

*Extended Food and Nutrition Education Program*

- ◆ 612 Kern County participants received 8 hours of training.
- ◆ 2,865 people in program families.

## Certified Extender Training

- ◆ 27 Extenders graduated
- ◆ 140 Participants trained by Extenders

## Program Partners:

CAPK—Head Start & Home Base  
 Bakersfield City School District Migrant Education  
 Owens Valley Career Development Center

Serving, supporting, educating and impacting the lives of our clientele ...

*Jamie was an extremely shy and introverted little girl. Her parents signed her up in a Kern County 4-H club in hope that it would help her develop social skills. Through her interactions with the youth in the club and caring adult volunteer leaders, Jamie began to come out of her shell and blossom. Through the years she found her niche in 4-H and life. She was able to discover things she was good at and it gave her the confidence to try new things. She became a proficient public speaker which helped her get her first job. She is now a special education teacher. Jamie's mother confidently proclaims, "4-H saved her life."*



... and reaching out to

with more programs,



more communities,

more delivery methods



to more Kern County residents.

*"We couldn't have gotten this far without your help."*

Fernando Jara, Rockhill Farms Director



### UCCE Kern County Advisors

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John Borba; 4-H Youth Development

Julie Finzel; Livestock & Natural Resources

David Haviland; Entomology

Margaret Johns; Family, Home & Consumer Science

Craig Kallsen; Citrus & Sub-tropical Crops

John Karlik, Ph.D.; Environmental Horticulture & Science

Brian Marsh, Ph.D.; County Director & Field Crops

Joe Nunez; Vegetable Crops & Plant Pathology

Blake Sanden; Irrigation & Soils

Alex Souza, DVM, Ph.D.; Dairy

### Emeritus Advisors

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Darlene Liesch; County Director & Youth Development

Don Luvisi; Viticulture

Ralph Phillips, Ph.D.; Livestock & Natural Resources

Mario Viveros; Nut Crops



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