HEALTHY FOOD SYSTEMS | HEALTHY ENVIRONMENTS | HEALTHY COMMUNITIES | HEALTHY CALIFORNIANS

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


Farm and Home Advisors

Practical - Trusted - Connected

# Serving Kern County

Since 1914

From the County Director:

As we enter our second century of service to Kern County, we still educate through the most effective delivery method: personal connection. Our scope of work has greatly increased but our mission remains the same: Lead the way with innovative researched-based answers. Advisors and their staff, housed in the County of Kern Farm and Home Advisors 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.

It is impossible to fully convey the hard work and the myriad of projects of our highly dedicated and talented advisors and staff and their impact on individuals and communities.

This is but a snapshot of the extensive work performed by UCCE—Kern County. Our research and education programs develop and promote

*Healthy* Food Systems,

*Healthy* Environments,

*Healthy* Communities and

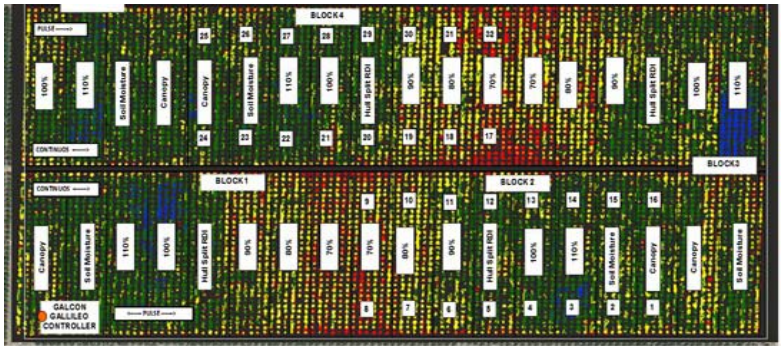
*Healthy* Californians.

While these four phrases describe the areas in which we work, they do not stand alone but are unified, codependent and interconnected, describing the holistic manner in which we address issues.

Dr. Brian Marsh

# Water Conservation


**Irrigation scheduling adjustments based on remote sensing reduce water consumption and maintain optimum yield.**




Aerial reconnaissance of almonds by CERES Imaging.
Yellow represents a stressed area.

## Research Results

- Adequate irrigation of almonds requires 50-56 inches of water.
- Almond yields 10-20% lower with a 30% reduction in water.
- Deficit irrigation reduces nut size and attractiveness.
- Deficit irrigation increases salt accumulation and foliar burn.
- Long-term impact of deficit irrigation on orchard life is uncertain.
- To avoid wasting water, irrigation schedules can be adjusted based on remote sensing.

## Impacts

- Results presented to more than 2,000 people in last 3 years.
- Almond water use efficiency (pounds of nuts/in of water) has increased 20-40% in the last 20 years.

HEALTHY FOOD SYSTEMS

# Plant Pathology

80% of the nation's fresh carrot production comes from Kern County. Producing carrots that are disease-free is important for yield and consumer satisfaction.

Cavity spot is a serious disease of carrot. Currently, carrot fields are treated with one to five fungicide applications. Because the organism that causes cavity spot cannot be measured in the soil, every carrot field must receive at least one fungicide application to prevent this devastating soil-borne disease. Even with fungicide treatments, significant crop loss occurs each year due to cavity spot.

The use of carrot varieties that are resistant or tolerant to cavity spot is a better long term solution and is more sustainable than relying on fungicides.

Carrot Variety Trial

40+ varieties evaluated for susceptibility to cavity spot infection.

# Pistachios

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

Variety Evaluation Criteria:

- Fewer chilling hours in response to climate differences.
- Earlier maturing to reduce peak harvest equipment requirements.

## Invasive Disease

*Rhodococcus fascians*

UC Farm Advisors in the southern San Joaquin Valley were instrumental in alerting the industry to a new disease of pistachio. A bacterium, *Rhodococcus fascians*, has been shown to cause the malformation, poor growth, and death of pistachio trees. This disease can cost the industry millions in loss of trees and crop production. As a result of this local, national and international cooperative research effort infected trees are no longer being sold, and the pistachio industry is further along in understanding this organism and how to control and avoid it.

Bagging rachises for experimental treatments

HEALTHY FOOD SYSTEMS

# Grapes

| #1 crop in Kern County | 106,200 acres | $1.72 Billion |
|---|---|---|

**UCCE Advisors conduct research on:**

- **growth regulators & girdling**
- **canopy & cluster management**
- **pest & disease resistant rootstocks**
- **irrigation management**
- **pruning**
- **plant nutrition**

Pruning is one of the main practices that determine grape yield and quality.

Pruning systems are being evaluated for the new table grape varieties, such as 'Autumn King', 'Scarlet Royal' and 'Valley Pearl'.

Pierce's Disease (PD) caused by the bacterium *Xylella fastidiosa* is transmitted from diseased vines to healthy vines by the glassy-winged sharpshooter (GWSS).

There is no cure for PD, which can kill grapevines within 1-5 years.

An ongoing survey is monitoring the spread of PD in southern Kern County and assisting grape growers in disease identification and management.

# Entomology

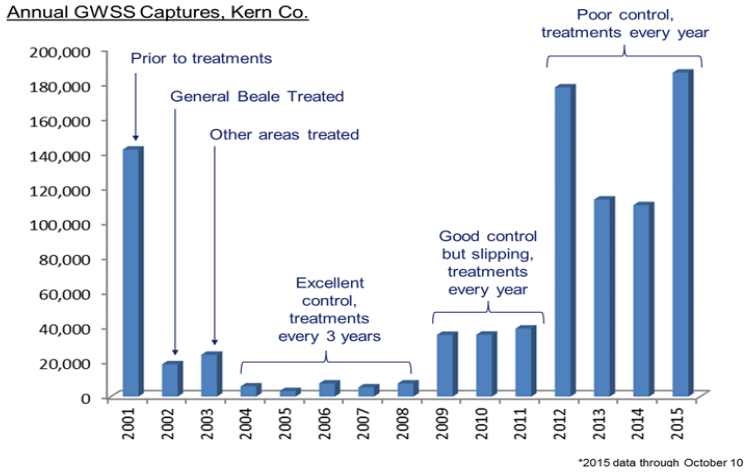
## Exotic & Invasive Pests

Programs are in place to control glassy-winged sharpshooter (GWSS) populations outside of vineyards, particularly in overwintering sites such as citrus.

Area-wide treatment programs for GWSS, coupled with monitoring and roguing programs to remove diseased vines, have been able to mitigate the PD threat for nearly a decade. In most areas, these programs continue to be highly successful. During the past five years, the effectiveness of GWSS area-wide treatment programs has declined, and a major resurgence of the vector and disease has occurred in the General Beale region.

UCCE research is developing an overall management program for control of GWSS and PD that includes:

- efficacy of synthetic & biological pesticides
- timing of application with pest development
- integrated biological control
- mating disruption
- other cultural practices



HEALTHY COMMUNITIES

# Family, Home and Consumer Science

## Improving California's Health Through UC CalFresh Nutrition Education

UC CalFresh helps families and individuals manage their resources and stretch food dollars by teaching goal setting, planning and shopping skills; thereby improving their ability to purchase healthy food.

### Serving the Community

- Kern County 2013 median family income was 32% lower than state median.
- In 2013, over 72,000 children under age 18 living in Kern County households experienced limited or uncertain access to adequate food.
- Obesity in Kern County adults is over 65%.

### Education Programs

- *Making Every Dollar Count* classes teach participants:
  - Goal setting and how to make sound choices.
  - How to stretch personal and community resources.
  - Strategies to save money on food.
- *Plan, Shop, Save & Cook* classes teach participants:
  - Meal planning using MyPlate guidelines.
  - Techniques to save money on food.
  - How to understand food labels.


### Serving Individuals

- 900 adults reached through direct education.
- 205 adults reached through health and resource fairs.
- 400 adults graduated from the program.

### Impacting Lives

- Making Every Dollar Count
  - 63% of participants report managing their food supply so it lasts until they have money to buy more.
  - 45% of participants report saving money as a result of the classes
- Plan, Shop, Save, Cook
  - 36% of participants report not running out of food as often as a result of the classes.
  - Evaluation data show a marked improvement in the use of MyPlate to make food choices.

### Participant comments:

"...using MyPlate to make food choices and using a grocery list more."

"I look at food labels more than I used to."

*What is most exciting about partnering with the Dignity Health Homemaker Care program is the knowledge that the information provided to the participants not only provides an opportunity for improvement in their lives, but also in the lives of those to whom they will provide service – the elderly and disabled adults in our community.*

**Building Partnerships**

Bakersfield Adult School
Community Action Partnership of Kern Head Start
Dignity Health Homemaker Care Program
Bakersfield City School District

HEALTHY ENVIRONMENTS

# Natural Resources

**Wild pigs** in California are a growing problem. They are capable of causing significant direct damage to crops and rangeland, as well as being implicated as a potential cause of the 2006 *E. coli* outbreak in spinach in Monterey County. Wild pigs are smart, adaptable animals with high fecundity rates.


UC Pest Note describes the life cycle, behavior, impact, management and control methods.

Damage from wild pig feeding

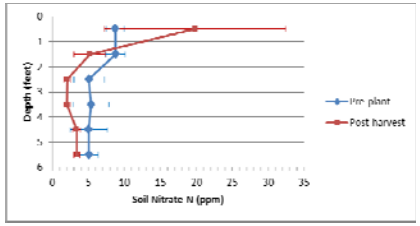
**Wild pigs** use their snouts to root up the ground in search of food, including roots, fungi, and other items. As omnivores, they also consume garden and landscape plants and agricultural crops.

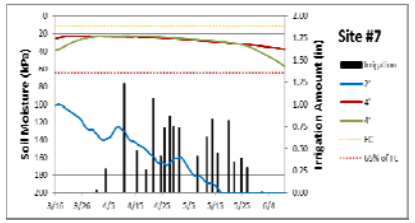
# Nitrogen Management

Nitrogen fertilizer is essential to optimum plant growth and productivity. However, excessive nitrogen fertilization can contribute to nitrate pollution of groundwater.

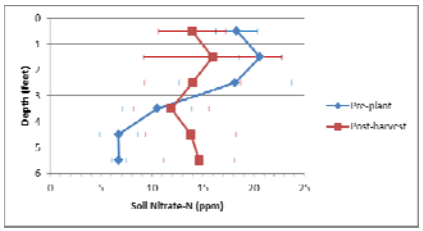
## Potato Production Research

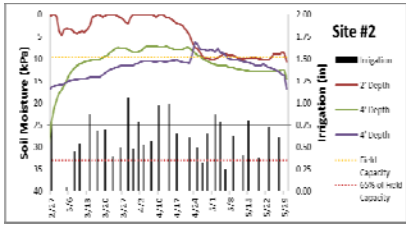
Using pre-plant soil tests and in-season petiole sampling for nitrogen, fertilizer applications can be adjusted for optimum efficiency and yield. Eight potato fields were monitored for nitrogen status, plant uptake and removal. Nitrogen use efficiency was very good at 81%. Soil nitrate increased 14% from pre-plant to post-harvest. Generally, the nitrate was located in the soil profile where typical rotation crops with deeper root growth would be able to take up the nitrogen.




Soil nitrate remained in the rooting zone when proper soil moisture was maintained, as shown above. When fields are over irrigated, soil nitrate can be moved below the rooting zone, as shown below.




Scheduling irrigation for the proper amount and timing is essential for optimum potato quality and yield, and limiting nitrate movement from the rooting zone.

HEALTHY CALIFORNIANS

# 4-H Youth Development

My Head To clearer thinking | My Heart To greater loyalty | My Hands To larger service | My Health To better living

4-H is a nationwide youth development organization administered through land-grant universities that promotes:

Leadership
Citizenship
Life skills.

4-H empowers young people to reach their full potential.

4-H enables youth to emerge as leaders by learning through hands-on, research-based projects with adult mentors, in order to give back to their local communities.

Kern County hosts over thirty clubs, both traditional and special interest, with hundreds of volunteers serving more than one thousand youth.

4-H is open to youth ages five through nineteen.

4-H programs are available to both urban and rural youth.

Additional services and older age limits are available for special needs youth.

## Science, Engineering and Technology (SET)

**4-H SET** is a national movement to expand the involvement of youth in science, engineering, and technology projects. SET activities combine non-formal education with hands-on, inquiry-based learning in a positive youth development setting.

### Impacts

Three hundred youth and adults participated in:

* *Junk Drawer Robotics* in Lamont, Weed Patch, and East Bakersfield
  Participants learn basics of robotics through learn-by-doing activities.

* *Rockets to the Rescue* with Boys and Girls Clubs of America
  Participants develop, design, and build compressed air rockets and test them for accuracy and distance to safely deliver a payload of food.

### 4-H/Military Partnership

A collaborative effort with America's communities to support children and youth impacted by deployment. Activities in consumer and family sciences, health, communication and expressive arts, and plant science were conducted at Edwards Air Force Base.

HEALTHY CALIFORNIANS

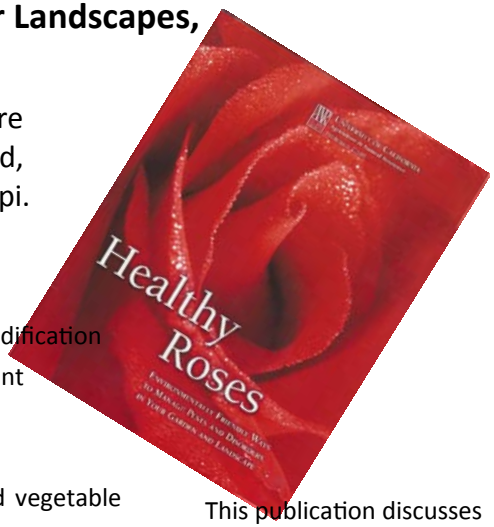
# Horticulture Education

## Horticulture Classes for Landscapes, Orchards, and Gardens

Horticulture classes were conducted in Bakersfield, Ridgecrest and Tehachapi.

Topics discussed included:

- Soil properties and their modification
- Plant selection and placement
- Tree planting and staking
- Pruning practices
- Small-scale fruit, citrus, and vegetable production
- Irrigation and water conservation
- Non-chemical pest management
- Plants and air quality




This publication discusses the culture of outdoor roses, including plant nutrition, pruning, and pest management using non-chemical methods for weed, disease, and insect control.

## The Art and Science of Pruning

The climate of Kern County allows for a large assortment of home fruit trees. To maintain yield and prolong tree life, pruning is necessary for deciduous fruit trees. It is difficult to teach or to learn pruning in a classroom or from photographs or books. We conduct free demonstrations annually for interested Kern County residents.

UC Cooperative Extension

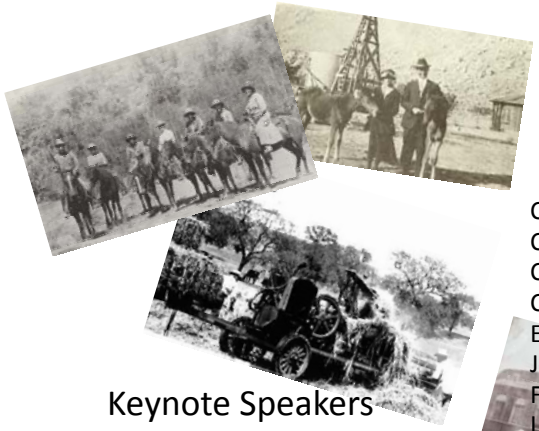
# Centennial Celebration

We turned 100 and celebrated this milestone.

We recognized farm and ranch families that have been in Kern County for more than 100 years.

Proclamations
from
County of Kern
California Legislature
and
US House of Representatives

4-H members served dinner



100 Year Families

| | |
|---|---|
| Carver Bowen | Olds Palmbach |
| Cattani | Porter |
| Coffee | Record Johnson |
| Creighton | Rankin |
| Etcheverry | Sill |
| Joughin | Tracy |
| Fry | Trotter |
| Lavers | |

Keynote Speakers

Leticia Perez
Kern County Supervisor

Helene Dillard
UC Davis Dean

## UCCE Kern County Advisors

John Borba, M.S.; 4-H Youth Development

Ashraf El-Kereamy, Ph.D.; Viticulture

Julie Finzel, M.S.; Livestock & Natural Resources

David Haviland, M.S.; Entomology

Margaret Johns, M.S., R.D.; Family, Home & Consumer Science

Craig Kallsen, M.S.; Citrus & Pistachio

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

Brian Marsh, Ph.D.; County Director & Agronomy

Joe Nunez, M.S.; Vegetable Crops & Plant Pathology

Blake Sanden, M.S.; Irrigation & Soils

Mohammad Yaghmour, Ph.D.; Orchard Systems

## Emeritus Advisors

Don Luvisi, M.S.; Viticulture

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

Mario Viveros, M.S.; Nut Crops

UC CE
University of California
Agriculture and Natural Resources
Cooperative Extension

**ucanr.edu**

**cekern.ucanr.edu**

**661-868-6200**