

## **ANR Soils/Irrigation Advisor Kern County**

**Position Title:** Soils/Irrigation Advisor

The focus is soil and water factors affecting crop production and irrigation management.

**Position:** (1) General disciplinary focuses are soil/plant/water interaction, irrigation and nutrient management and soil health. (2) Master's degree or above in soils, agronomy, water science or closely related field is preferred. The candidate should be able to develop and integrate all aspects of crop production to promote sustainability, profitability, food safety, and environmental stewardship. (3) Reports to Kern County Director.

**Justification:** This position primarily addresses the high priority initiatives to *Improve Water Quality, Quantity, and Security; Enhance Competitive, Sustainable Food Systems* and *Enhance the Health of Californians and California's Agricultural Economy*. Agricultural production in Kern County exceeds \$7.2 billion annually, highest county in dollar value. Grapes, almonds, citrus and pistachios are the top four highest dollar-value crops. Projects for determining optimal water and fertilizer use efficiency for multiple crops are underway which will also benefit air and groundwater quality. The Sustainable Groundwater Management Act, San Joaquin River Restoration Project, and Irrigated Lands Regulatory Program have significant impacts on water quality and quantity for use in irrigation in Kern County. Extensive groundwater banking is practiced in Kern County and continued on-farm research regarding crop water use, irrigation efficiency and nutrient uptake is a critical component for growers and policy makers. This position also addresses the application of soil amendments, composted materials and/or other waste products and their impact on plant uptake and production, soil health and potential contamination of surface and groundwater. It is important to have a local advisor to continue and expand this research. Advisor can provide support for commodity advisors in adjacent counties.

**Extension:** The advisor will work with local agencies to provide outreach and information on critical issues associated with their responsibilities. Key clientele groups include local irrigation and water storage districts, Kern River Watershed Coalition Authority, USDA-Natural Resources Conservation Service, Northwest Kern Resource Conservation District and California Department of Water Resources. Working with agencies associated with surface and groundwater quality and quantity, such as Groundwater Sustainability Agencies and Irrigated Land Regulatory Program coalitions, is particularly important.

**Research:** Water quality and availability are critical issues which impact crop production and soil health. Continued planting of permanent crops in areas that have not previously had fruit and nut crops because of soil or water salinity issues necessitates additional research to address these issues. Current research projects include fertilizer management in nut crops, interaction of water and nutrient management in almonds, salinity tolerance in pistachio and automated remote sensed systems for irrigation control and improving water use efficiency. Use of produced water (from oil extraction) as irrigation water is coming under more scrutiny. Additional research is needed to answer some of the unknowns especially in regard to contaminants, including hydrocarbons, and their potential for bioaccumulation. The results of these experiments must be assessed by a soils/irrigation advisor to determine their impact on commercial production.

**ANR Network:** The Soils/Irrigation Advisor is expected to work collaboratively with specialists, AES researchers and farm advisors through various workgroups. UCCE – Kern County has the needs and resources to maximize the productivity of such an advisor for statewide as well as local benefit. There is strong support from the local industry that will allow the new advisor to address high profile issues such as irrigation management, water quantity and quality, and fertilizer management concerns that are facing additional regulation in coming years but are key to advancing profitability. Results of past and present research done in Kern County is providing statewide benefit in areas of irrigation management (regulated deficit irrigation, irrigation scheduling and monitoring), salt impacts on crop production, and fertilizer use efficiency. Placement of an advisor in Kern is geographically advantageous for covering the southern San Joaquin Valley and can work closely with specialists from KARE and campuses.

#### **Network External to ANR:**

California Department of Water Resources –research collaboration to confirm and renew Crop Coefficients, provide information contained in water use models, water use efficiency, and collaborate on weekly ET<sub>C</sub> reports.

USDA-NRCS & RCD – provide information for policy and program implementation.

County of Kern Chief Deputy Administrative Officer for water resources – provide input for developing water policies.

Kern River Watershed Coalition Authority & the statewide Technical Advisory Workgroup assisting the State Water Resources Control Board Irrigated Land Regulatory Program – provide information on water use efficiency and movement of potential groundwater contaminants beyond root zone for policy implementation.

CSU Bakersfield Department of Geology – research collaboration on produced water.

CSU Fresno Center for Irrigation Technology – research collaboration on pistachio yield and salinity, as well as educational events.

#### **Support (County):**

- Office space, laboratory, administrative support, transportation
- Field equipment and support staff for field research
- County owned property under UCCE control for field experiments

#### **Other Support**

- Funding from the Almond Board, Pistachio Board, CDFA-FREP, Specialty Crops Initiative
- Progressive, large-scale growers have the resources (land, labor and crop) and interest to allow critical field work that could be cost prohibitive to growers in other counties.

**Location:** Kern County.

**Developed and Proposed by:** UCCE Kern County Director, Tulare/Kings Counties Director, UC ANR California Institute for Water Resources Director, Kern County Watermaster & Shafter-Wasco Irrigation District General Manager, CA DWR SCRO (Chief, Water Conservation, Land and Water Use Section), Agronomic Crops Program Team, Almond workgroup, Kern County Farm Bureau.