RESEARCH PROJECTS WITH A GREENHOUSE COMPONENT

Row Crop/Other

Project: **461 Specialty Crops Development and Variety Evaluation for the San Joaquin Valley**
Project Leader: *Manuel Jimenez, Farm Advisor, UC Cooperative Extension, Tulare County*
Objective: To provide research based information on new specialty crops for the small scale growers of the San Joaquin Valley.

Project: **856 Annual Specialty Vegetable Research**
Project Leader: *Richard Molinar, Farm Advisor, UC Cooperative Extension, Fresno County*
Objective: To identify new and/or improved annual specialty crops that will improve the economic returns to the small farmer, and to investigate technologies including pest management that the small farm operator can adopt.

Project: **857 Perennial Specialty Crop Research**
Project Leader: *Richard Molinar, Farm Advisor, UC Cooperative Extension, Fresno County*
Objective: To identify new and/or improved perennial specialty crops that will benefit the economic returns to the small farmer, and to investigate technologies including pest management that the small farm operator can adopt.

Project: **1002 Ozone Impact on Crops**
Project Leader: *David Grantz, Ph.D., Extension Specialist, Botany and Plant Sciences, UC Riverside, Kearney Agricultural Center*
Objective: 1) To quantify the impact of altered root system function on competition between weedy species (nightshade and nutsedge) and cotton and melon, in pots containing scintered clay. 2) To contrast aphid honeydew, phloem sap obtained from melon by surgical manipulation of the petiole, and sap obtained from cotton using severed aphid stylets. 3) To quantify the morphology, branching, surface area etc. of root systems of cotton and melon, using computerized image analysis. 4) To determine whether the internal anatomy (xylem area to cross sectional area) is altered by ozone exposure. 5) To screen modern cultivar of kiwifruit for effects of ozone on gas exchange, growth, and root proliferation. 6) We are planning a field study of mandarin and navel orange responses to ozone, using a natural gradient of ozone in several locations. We propose to undertake a preliminary screen of genotypes in the chambers to identify the nature of ozone symptoms of facilitate their identification in the field.

Project: **1010 IR4 Kearney Field Research Center**
Project Leader: *Fred H. Swanson, Field Research Center Project Leader, Kearney Research and Extension Center*
Objective: 1. To conduct annually 30-40 Magnitude of the Residue field trials in support of the IR4 program according to U.S. EPA Residue Chemistry Guidelines (Series 860.1500) and compliant with FIFRA Good Laboratory Practice standards to satisfy the registration data requirements of federal and state regulatory agencies. 2. To report efficacy and phytotoxicity results.

Project: **2005 Biology and Ecology of the Corn Leafhopper and Corn Stunt Spiroplasma in the Southern San Joaquin Valley**
Project Leader: *Charles G. Summers, Ph.D., Entomologist, Department of Entomology, UC Davis, Kearney Agricultural Center*

Objective: 1. To determine the biology and over-wintering capabilities of corn leafhopper and corn stunt spiroplasma in the San Joaquin Valley. 2. To determine the level of resistance to *D. maidis* or CSS in currently available silage corn cultivars.

Project: **0304 Study of Peelminer in Field and Vegetable Crops**
Project Leader: *Beth Grafton-Cardwell, Ph.D., IPM Specialist and Research Entomologist, Department of Entomology, UC Riverside, Kearney Agricultural Center*
Objective: 1) Test various vegetable and field plants to find the plant most suitable to field rear citrus peelminer. 2) Generate citrus peelminer larvae and adults for various research studies.

TREE CROPS

Project: **054 Aflatoxin Control in Figs: Biocontrol and New Resistant Cultivars**
Project Leader: *Themis Michailides, Ph.D., Plant Pathologist, Department of Plant Pathology, UC Davis, Kearney Agricultural Center*
Objective: Continue studies on the biocontrol of aflatoxin-producing fungi using an atoxigenic *A. flavus*. Evaluate new fig selections for resistance to aflatoxin contamination.

Project: **203 Fungal Diseases of Kerman Pistachios**
Project Leader: *Themis Michailides, Ph.D., Plant Pathologist, Department of Plant Pathology, UC Davis, Kearney Agricultural Center*
Objective: Follow the survival of atoxigenic strains previously applied in a pistachio orchard. Initiate an additional biocontrol experiment using the atoxigenic strain AF36 in another pistachio orchard irrigated by micro-sprinklers. Determine the incidence of the atoxigenic strain AF36 among isolates from commercial pistachio orchards.

Project: **312 Studies on Fruit and Nut Quality and Safety Affected by Postharvest Management**
Project Leader: *Carlos Crisosto, Ph.D., Pomologist, Department of Pomology, UC Davis, Kearney Agricultural Center*
Objective: 1. Better define components of quality (appearance, texture, organoleptic traits or FOTs, nutritive value) and their interrelationships for various fruits, nuts and vegetables destined for the fresh market or for processing. 2. Develop objective and non-destructive methods for determination of appearance and textural quality and optimum maturity of fruits, nuts and vegetables. 3. Evaluate the effects of preharvest factors (genetic, environmental, and cultural) and postharvest procedures on organoleptic traits, nutritional quality, and physiological disorders of fruits and nuts.

Project: **459 Short-term Field Evaluation of Procedures with the Potential to Kill Old Roots of Tree and Vine Crops**
Project Leader: *Michael McKenry, Ph.D., Nematologist, Department of Nematology, UC Riverside, Kearney Agricultural Center*
Objective: Quantify root kill after various treatments designed to kill old roots. Quantify plant growth for multiple years after treatment because data beyond two years are difficult to obtain. Quantify nematode rate of return.

Project: **554 Research and Demonstration Trees for Citrus IPM**
Project Leader: *Beth Grafton-Cardwell, Ph.D., CE Specialist and Research Entomologist, Department of Entomology, UC Riverside, Kearney Agricultural Center*
Objective: To provide untreated citrus fruit, leaves, and twigs for rearing insects and for various laboratory experiments.

Project: **752 Insect Pests of Pistachio**
Project Leader: *Kent Daane, Ph.D., CE Assistant Specialist, Division of Insect Biology, UC Berkeley, Kearney Agricultural Center*
Objective: To follow the population dynamics of the obliquebanded leafroller (OBLR) and its natural enemies in pistachio orchards, with particular reference to crop damage throughout the season. To determine the effectiveness of orchard sanitation methods, including nut removal on the berms.

Project: **953 Nutrient Deficiency of Peaches and Nectarines**
Project Leader: *R. Scott Johnson, Ph.D., Extension Pomologist, Department of Pomology, UC Davis, Kearney Agricultural Center*
Objective: To test the feasibility of measuring boron, zinc and nitrogen (and other nutrients if possible) in stone fruit trees during the dormant season or early spring and relate those nutrient levels to the various components of yield and fruit quality. To develop deficiency threshold values for these nutrients that can be used to guide fertilization decisions early in the season. To test the usefulness of these threshold values in commercial orchards.

Project: **0310 Insecticide Evaluation--Peach and Nectarine**
Project Leader: *Walter J. Bentley, IPM Entomologist, UC Kearney Agricultural Center*
Objective: To gain pest control efficacy data on three key pests of peaches. These include Oriental fruit moth, peach twig borer, and western flower thrips. In addition to efficacy, I will evaluate these as to increasing spider mite problems. Residual activity of these materials will also be tested.

Project: **0401 Chemical and Cultural Control of Band Canker of Almond Caused by Botryosphaeria dothidea**
Project Leader: *Themis Michailides, Ph.D., Plant Pathologist, Department of Plant Pathology, UC Davis, Kearney Agricultural Center*
Objective: 1) Compare various fungicide treatments by injecting them in trees in A) a lath house, B) greenhouse, and C) in the field. 2) Compare ways of irrigation in controlling band canker of almond. 3) Compare tree seals with or without fungicides in controlling band canker.

Vine Crops

Project: **102A Wine Grape Cultural Practices**
Project Leader*:* *Matthew Fidelibus, Ph.D., Viticulture Specialist, Department of Viticulture and Enology, UC Davis****, Kearney Agricultural Center***
Objective*:* 1. Compare the yield, fruit quality, canopy characteristics and fruit zone microclimate of Chardonnay grapevines grown under six modern wine grape trellis/training systems used in California. 2. Determine the effects of in-row spacing on the yield, fruit quality, canopy characteristics and fruit zone microclimate of Syrah grapevines. Examine potential interactions among in-row spacing, training systems and balanced pruning levels on vine performance and production efficiency.

Project: **115 Arthropod Management in Vines and Cover Crops**
Project Leader: *Walt Bentley, IPM Entomologist, DANR Central Valley Region, Kearney Agricultural Center*
Objective: 1. Determine the impact of a rye/vetch cover crop and vine nitrogen on the biology and abundance of leafhoppers and spiders, and on the interaction between ants, cover crops, and grape mealybug. 2. Continue to determine the long term impact of using a rye/vetch cover crop as dry mulch for weed suppression in vine rows; soil nitrate, soil microbial biomass and vine-nutrient status; water use and vine-water status; and grape yield and quality.

Project: **425 Alternatives to Pre-plant Soil Fumigation for Tree and Vine Crops**

Project Leader: *Michael McKenry, Ph.D., Nematologist, Department of Nematology, UC Riverside, Kearney Agricultural Center*

Objective: 1) Conduct preliminary examinations of a wide variety of potential nematicidal agents or rootstocks. 2) Conduct intensive evaluations on products or organisms that have been found to be interesting or having nematicidal potential in commercial settings.

Project: **808A Table Grape Cultural Practices**

Project Leader: *Matthew Fidelibus, Ph.D., Viticulture Specialist, Department of Viticulture and Enology, UC Davis, Kearney Agricultural Center*

Objective: Compare the productivity, fruit quality and canopy characteristics of Thompson Seedless table grapes trellised to the open gable and traditional "T" trellis systems. Determine the effects of canopy separation on the productivity of Thompson Seedless table grapes trellised to the open gable system. Determine the interaction between in-row spacing and vine training method on the yield and fruit quality of Crimson Seedless table grapes.

Project: **955 Control of Vineyard Pests**

Project Leader: *Kent Daane, Ph.D., CE Assistant Specialist, Division of Insect Biology, UC Berkeley, Kearney Agricultural Center*

Objective: BLACK WIDOWS - 1. Evaluate chemical control tactics for the black widow. 2. Determine black widow life-history traits in the San Joaquin Valley. MEALYBUGS - 1. Study vine mealybug mating behavior and adult male biology. 2. Study mealybug biology.

Project: **0306 Raisin Research**

Project Leader: *Matthew Fidelibus, Ph.D., Viticulture Specialist, Department of Viticulture and Enology, UC Davis, Kearney Agricultural Center*

Objective: Evaluate new raisin selections for early maturity and DOV performance. Determine the best vine training and trellising systems for potential DOV cultivars. Develop complete DOV systems that integrate cultivar, trellis and equipment. Determine the effect of DOV practices on vine physiology, including canopy leaf area and photosynthesis.