**Position Title:** Orchard Systems Specialist (Northern San Joaquin and Sacramento Valleys)

**Position:** California is the largest producer of fruit and nut crops in the western world and is almost the sole US producer (>90%) of crops such as plums, prunes, nectarines, clingstone processing peaches, apricots, figs, pomegranates, persimmons, almonds, walnuts and pistachios. California fruit and nut industries face increasing production costs due to land, labor, fertilizer and fuel. Similarly, there are increasing environmental challenges associated with energy, water, fertilizer and pesticide use as well as water, air and soil quality concerns with current management practices. Public awareness of orchard production practices is playing an increasingly important role in marketing. Recently there has been increasing pressure on farmers to address all of these challenges simultaneously with increasing attention being paid to maintaining or enhancing environmental quality as well as economically producing and marketing the crop. This requires a systems approach. The complexity and multidimensional characteristics of orchard systems makes the fruit and nut industries more dependent on engaging the help of research and extension professionals. This CE Specialist will help growers and industries assess the impact of current production practices on land, labor, energy and water use as well as overall environmental quality, and focus on the development of more sustainable production systems. The candidate is expected to have Ph.D. in horticulture, agronomy, pomology, physiology, ecology, or related disciplines, and experience in field research.

**Justification:** Orchard production systems employ thousands of Californians, generate billions of dollars in revenue, enhance consumer health and quality of life, and occupy vast acreages of high quality farm land across our state. Optimizing orchard production systems to enhance economic viability, fruit and nut safety and quality, and environmental sustainability is essential. UCCE has a major opportunity to continue, and expand, our leadership in the area. There is a burgeoning need for: 1) increased need for use of integrated systems for enhancing water use efficiency and nutrient management in fruit crop production; 2) improving labor use efficiency and safety; 3) innovation of robotic machine vision and precision guided equipment for thinning, harvesting and pruning of fruit crops; and 4) reduction of the “carbon footprint” and increased energy efficiency of orchard commodity production. The various UCCE pomology, fruit, and nut workgroups have been very active and effective at coordinating research and extension activities in the past. However, there are currently are only two orchard systems specialists working with deciduous fruits and nuts in California and one of those will retire in the near future. Currently there is no specialists working on crops such as such as fresh plums, cherries, freestone and clingstone peaches, nectarines, apricots, apples, pears, pomegranates, persimmons or kiwifruit although a CE Specialist position to be located in Parlier will provide support for some of the Southern San Joaquin Valley crops such as pistachios, apricots, plums, freestone peaches and nectarines. Furthermore, nut crop acreage in the state has exploded in the state and nearly 1.6 million acres of almonds and walnuts are covered by one specialist. Although crop assignments would be expected to be flexible, depending on crop needs and specialist expertise it is expected that this position will focus on the needs of the tree crop industries based mainly in the Northern San Joaquin and Sacramento Valleys such as prunes, cherries, pears, apples and canning peaches. This position is critical for supporting recent reinvestments in county advisor positions covering fruit and nut crops in the Northern San Joaquin and Sacramento Valleys. This position proposal has strong support by the fruit crop commodity boards, with excellent opportunities for board funding for applied research and extension.

**Extension:** The position will have key extension responsibilities. Not only will the person extend information to growers and industry groups, but will also be a critical link in the network among county-based advisors and campus-based researchers. It is also expected that this person will play a significant role in ensuring the continued success of the Fruit and Nut Research and Information Center housed in the Department of Plant Sciences and supported by ANR as well as the Department. The person will also be in an ideal location to maintain close contact with various government and regulatory agencies dealing with sustainability issues.

**Research:** There are many different areas of research related to orchard sustainability that have been increasing in importance in recent years. A few possibilities include 1) use of integrated systems for enhancing water use efficiency and nutrient management in fruit crop production; 2) improving labor use efficiency and safety; 3) new technology and opportunities for use of robotic machine vision and precision guided equipment for thinning, harvesting and pruning of fruit crops; and 4) assessment of and improvement in the carbon footprint/energy efficiency of fruit crop production and marketing practices.

**ANR Network:** The CE Specialist will contribute to UC ANR’s public values in the areas of rural economic viability, safe and healthy food and environments, and agricultural resilience to climate change. This will require working closely with commodity groups, state and government agencies; collaborate with, coordinate and assist county advisors working on fruit and nut crops; and collaborate with faculty in plant nutrition, irrigation, soil science, physiology, horticulture, agricultural engineering, economics, plant pathology, entomology and nematology. There is a continuing need for statewide leadership in the area of orchard cropping systems, nutrient management, and sustainable production. There are also a number of faculty within the Department and College that work on a variety of aspects related to fruit and nut production. A specialist in this position will have numerous opportunities for collaboration among other faculty and assist in moving research to end users.

**Network External to ANR**: The CE Specialist will network with California fruit and nut commodity groups and grower associations; various agencies concerned with agricultural sustainability and environmental quality issues such as CDFA, the Water Resources Board, the Air Resources Board and local governmental agencies that deal with similar issues. The person in this position would also be expected to network with researchers and extension specialists in other states who work fruit and nut crops through USDA sponsored regional projects or professional societies.

**Support:** The Department of Plant Sciences will provide office and lab space, administrative support, telephone access, computing support and internet access, and a limited travel budget. Most research and extension costs will be funded from outside sources.

**Other support:** There are many funding agencies that would welcome this type of research focus. Some possibilities include:1) fruit crop commodity boards interested in funding of applied research; 2) funding sources for water quality and air quality projects; 3) state agencies interested in nutrient management (FREP) and water conservation (DWR); 4) federal programs interested in cooperative projects involving many different disciplines such as the Specialty Crop Research Initiative (SCRI); and 5) opportunities for funding by the Sustainable Agriculture Research and Education Program (SAREP), Western Regional SARE and the National SARE program.

**Location:** UC Davis, Department of Plant Sciences. This location is central to the orchard-based industries in the Northern San Joaquin and Sacramento Valleys and would facilitate interactions with campus faculty from many different disciplines who are focused on applied problems.

**Developed and proposed by**: This position proposal was developed by the UC Davis Department of Plant Sciences in consultation and collaboration with the Pomology Extension Continuing Conference and the Pomology Research Advisory Committee.