**Position Title:** Trade BarrierPathogens Specialist

**Description:** The Specialist will conduct extension and research on plant and food-borne human pathogens that affect trade of crop and horticultural commodities produced in California. The Specialist’s extension program will provide educational support for growers and organizations involved in export of commodities, such as fruits, vegetables and horticultural crops. Areas of research may include field production, harvesting practices, postharvest handling, and preventing disease development in transit for agricultural crops exported to other states and internationally. The candidate will cooperate in a regional and statewide disease diagnosis program with other campus and system-wide specialists. A Ph.D. in Plant Pathology or Microbiology with postdoctoral experience and the proven ability to conduct innovative research are required. Expertise in molecular biology, detection of pathogens using modern approaches, and knowledge of crop production and marketing systems are preferred.

**Justification:** Countries or other states may abruptly halt import of crop commodities upon detection of quarantined or other plant or human pathogens of significance. Such action is particularly costly to California due to the range and value of crop commodities that are exported. According to the 2016-17 California Agricultural Statistics Review, over half of the value of crop commodities ($35 billion) was exported. The standards imposed on imported crop commodities are often quite stringent and can be aggressively enforced, and meeting these standards remains a difficult challenge for successful production systems. For example, new strains of *Fusarium* spp. have been described on crops including lettuce, cotton, and woody landscape ornamentals. Additionally, water- and soil-borne pathogens such as *Phytophthora* spp. are major problems for commodities such as citrus, as well as nursery production. Other diseases currently of export significance include angular leaf spot of strawberry, brown rot of citrus, brown rot of stone fruit, sweet orange scab, and Septoria spot of citrus. Addressing these problems requires a multifaceted approach that integrates management of pathogens, plants, vectors, and the environment. In addition to the stringent requirements, issues related to trade barrier pathogens, such as regulations and market conditions, can develop suddenly and change rapidly. A Specialist is needed to be responsive to these changing needs, and to provide leadership for longstanding export issues. An improved understanding of the ecology of causal pathogens and knowledge of food production and marketing are critical components for a successful and sustainable disease management program of economically important crops.

The Specialist addresses several ANR 2025 Strategic Vision Program Priorities, including “Enhance Competitive, Sustainable Food Systems”, “Managing Endemic and Invasive Pests and Diseases,” “Ensure Safe and Secure Food Supplies”. Finally, the position supports the AES mission at UC Riverside and aligns with the “From Genomics to Harvest” goal in the UC Riverside 2020 Strategic Plan.

**Extension:** The primary stakeholders for the Specialist are CE Advisors, pest control advisors, growers, shippers and processors, commodity organizations, seed companies, and other industry entities. The Specialist will engage with stakeholders to identify trade barrier pathogens, and then ensure that stakeholder needs regarding the identification and management of these pathogens are being met. Activities will focus on endemic and quarantine plant pathogens, as well as food-borne human pathogens that restrict or have historically closed markets for crop commodities due to improper handling pre- or post-harvest, including postharvest contamination. Specific interactions include samples testing for diagnosis of suspected diseases, working with state and federal plant inspection services, development of workshops and training for stakeholders, oral presentation of information to growers, and preparation of written best management practices for pathogens of interest.

**Research:** Expected areas of research on plant or human trade barrier pathogens include: disease diagnosis and pathogen detection, identifying sources of inoculum, managing disease, and mitigating inoculum on the exported commodity. Possible outlets for publication of research include *Applied and Environmental Microbiology*, *Phytopathology*, *Phytobiomes*, *Plant Disease*, *California Agriculture*.

**ANR Network:** The issues associated with trade barrier pathogens are nuanced and not typically the purview of CE Specialists in plant pathology with generic crop responsibilities. There is a pressing need for a CE Specialist to specialize on trade barrier pathogens and to support Advisors and other Specialists throughout the state working with any crop commodity. The Specialist will interact with AES and non-AES scientists at UC Riverside in the Departments of Microbiology and Plant Pathology, Botany and Plant Sciences, Nematology, Entomology, and Environmental Sciences. The Specialist will also interact with AES and non-AES scientists in the fields of plant pathology, plant science, microbiology, nematology, entomology, and environmental science at UC Davis or other UC campuses. Program Teams (PT) and Workgroups (WG) that would benefit from this position include: Plant Pathology, Nematology, and Integrated Management of Soilborne Pests WGs (Pest Management PT), Pomology PT, Vegetable Crops PT, Viticulture PT, Agronomic Crops PT, and Floriculture and Nursery WG (Environmental Horticulture PT).

**Network External to ANR:** The Specialist will interact with CDFA, USDA-APHIS, and county agricultural commissioners on issues related to export and on methods of disease detection and diagnosis. The Specialist will interact with USDA-ARS both at the San Joaquin Valley Agricultural Sciences Center in Parlier and the U.S. Salinity Laboratory and the National Clonal Germplasm Repository for Citrus & Dates in Riverside by collaborating on disease management projects and extending research to stakeholders.

**Support:** This position will be located at the Kearney Agricultural Research and Extension (KARE) Center in Parlier, CA, but also supported by the UC Riverside campus. The Department of Microbiology and Plant Pathology at UC Riverside will supply office and laboratory space, selected equipment, and administrative support. KARE will provide laboratory and administrative support. The College of Natural and Agricultural Sciences at UC Riverside will supply a portion of the start-up funds and money for travel.

**Other Support:** This position will compete for funding from any crop commodity, as well as statewide (CDFA), regional, and national funding (USDA).

**Location:** As mentioned above, the Specialist will be stationed at KARE, but will also have access to facilities and equipment in the Department of Microbiology and Plant Pathology at UC Riverside. Both facilities have extensive resources to support and complement the Specialist. With the goal of developing a team approach, this position will complement a proposed Trade Barrier Pests CE Specialist position that will also be located at KARE, but affiliated with the Department of Entomology at UC Riverside. Many synergies and collaborations are expected between these two positions and existing personnel at KARE and in the two departments at UC Riverside. The KARE and UC Riverside locations have proximity to numerous agricultural and nursery crops, and to ports in Southern California that are currently underserved.

**Developed and Proposed by:** The faculty of the Department of Microbiology and Plant Pathology at UC Riverside developed and voted to approve this position, in cooperation with the Department of Entomology at UC Riverside.