

Position Title: Area IPM Entomology Advisor– Tulare, Kings, Fresno, Madera Counties (San Joaquin Valley)

Position: The Area IPM Entomology Advisor for field, row and vegetable crops is part of the UC IPM statewide program under the programmatic leadership of the UC IPM director. The advisor will conduct a multi-county applied research and extension program that addresses the needs of growers and industry in insect/mite pest management, including insect-vectored diseases, for field, row, and vegetable crops in Tulare, Kings, Fresno and Madera counties in the San Joaquin Valley (SJV). A minimum of a master's degree is required, though other advanced degrees are encouraged in entomology, pest management, or another closely related field. A broad understanding of integrated pest management principles including knowledge of crop production, insect-vectored diseases, biocontrol, and pesticide use is required. This position will support and be supported by the UC IPM statewide program and a network of county-based CE Advisors and campus-based and local CE Specialists and AES scientists. The position will be headquartered at the Tulare County CE office and office space and resources will also be available at the West Side Research and Extension Center.

Justification: In accordance with UC ANR's Strategic Plan, this position will develop and deliver regional programs to benefit Californians with a more secure, healthy, nutritious food and fiber supply while protecting human health and the environment.

- The four counties covered by this position are among the top ten agricultural counties in the state. Field, row, and vegetable crops are some of the most valuable crops produced in CA and are widely produced in the San Joaquin Valley. These include alfalfa, wheat, field corn and various other silage crops, cotton, dry beans, processing tomatoes, onions, garlic, leafy vegetables, melons, broccoli, and bell peppers. The value of these crops in Tulare, Kings, Fresno, and Madera counties exceeded \$3 billion dollars in 2019. Some of these crops are vital in providing feed for the dairy industry, which is critical in California's agricultural economy. California leads the nation in processing tomato production, along with many other vegetables such as melons, peppers, lettuce, onions, and garlic, with Fresno County as the lead producer of processing tomatoes, cantaloupe, garlic and onions.
- Field, row, and vegetable cropping systems vary from annual to perennial plantings and are important for food, feed and fiber production in California, the nation, and the world. The Area IPM Advisor will develop and deliver areawide pest management tactics and systems-level IPM programs in this region of highly diverse rotational cropping systems. This includes addressing new pests or pest-disease complexes, shifts in endemic pest damage, and opportunities to conserve beneficial insects.
- IPM programs for field, row, and vegetable crops in the San Joaquin Valley need to be continually updated to address shifts caused by climate change, invasive pests, pesticide regulatory changes, pesticide resistance, labor availability and cost, land-use changes, and evolving production practices. Maintaining economical pest management, while protecting human health and the environment, is vital to support agricultural productivity and rural economies in this historically economically-challenged region of California.

Extension:

- Provide regional leadership in UC IPM programs to develop, extend and evaluate IPM practices in SJV field, row, and vegetable crops.
- Develop, maintain, and coordinate a regional team to identify opportunities for adopting economically-sound IPM practices for protecting public health and the environment.
- Deliver IPM practices using various educational approaches to learning styles (lectures, social media, field days, webinars, experiential and individual consultations).
- Publish in outlets appropriate to the audience and situation (newsletters, blogs, peer-reviewed publications).
- Provide IPM leadership and expertise to local CE Advisors, industry, and pest control advisers to enhance IPM systems and address developing concerns in crop production.
- Key stakeholders would include members of the CA Tomato Research Institute, CA Cotton Growers and Ginners Association, CA Garlic and Onion Research Advisory Board, CA Alfalfa and Forage Association, CA Safflower Growers Association, California Specialty Crop Council, CA Melon Research Board, CA Association of Pest Control Advisors, Association of Applied IPM Ecologists, and allied personnel working in the crop protection industry.

Research:

- Improve monitoring, assessment, and integrated management of invertebrate pests which can cause major economic losses. For example: lygus bug and stink bug (cotton, tomato, pepper, beans, alfalfa seed); whitefly and aphid potential to cause degraded fiber quality in cotton; sugar cane aphid in sorghum; mites in corn; pest impacts on economic yields and quality in seed production in multiple field and vegetable crops; leafhopper and thrips vectors

of serious virus diseases (including resistance-breaking strains) in tomato, alfalfa, melons, and peppers (opportunities for cooperative research with UC and CE Pathologists and Advisors); armyworm and other lepidopteran pests causing yield loss and quality degradation (cotton, alfalfa, tomatoes); and soilborne insects in tomatoes, melons, and leafy greens.

- Respond to endemic and invasive threats by developing immediate and long-term programs (endemic brown stink bug, invasive brown marmorated stink bug, and *Bagrada* bugs), which represent significant economic threats to multiple crops.
- Due to increasing issues with long-term land retirements or shorter-term fallow fields, evaluate issues with regional insect management as impacted by non-crop land and weedy plants near land still in crop production (opportunities to initiate cooperative projects with weed scientists to address some of these issues).
- Demonstration research to showcase new chemical, non-chemical, cultural, and integrated control approaches.
- Collaborate with existing research/extension teams for specific commodities, and/or develop new ones.

ANR Network:

- Currently, there are 3 Advisors addressing field and row crop entomology (Luis Espino at Butte, Rachael Long at Capitol Corridor MCP, and Michael Rethwisch at Riverside) and 4 Advisors addressing vegetable crop entomology (Amber Vinchesi-Vahl at Colusa/Sutter-Yuba, Surendra Dara at San Luis Obispo/Santa Barbara, Jaspreet Sidhu at Kern, and Apurba Barman at Imperial) in California. Ian Grettenberger, CE Specialist in Field, Row, and Vegetable Crops Entomology at UC Davis is another resource and collaborator. This leaves an enormous gap in IPM/entomology for field, row, and vegetable crops in the San Joaquin Valley, and excellent opportunities for collaborative work with plant scientists and other researchers in the area. The Statewide IPM Program has a professional staff of writers, editors, and web developers, Area IPM Advisors and Affiliate Advisors in other regions, and can provide programmatic support funds.
- Arthropod Pest Management network not mentioned above: UCB – Daane; SJV – Haviland, Rijal (these Advisors are focused mainly on perennial crops).
- Field, Row and Vegetable Crops Production or Plant Pathology: UCD – Hutmacher, Swett; SJV – Aegerter, Munk, Turini, Dahlquist-Willard, Clark, Stapleton, Stoddard; UCR – Putman.

Network External to ANR:

- UCD: Kaffka, Gilbertson, McRoberts; UCR: Trumble, Millar; Industry: CA Tomato Research Institute, CA Melon Research Board, CA Cotton Growers and Ginners Association, CA Alfalfa and Forage Association, California Specialty Crop Council, CA Association of Pest Control Advisors, Association of Applied IPM Ecologists, Crop Protection Industry, CA Garlic and Onion Research Advisory Board; Public: County Ag Commissioners, CA Department of Pesticide Regulation, CA Department of Food and Agriculture, USDA- ARS Parlier, USDA NRCS Hanford and other offices.

Support: UC IPM Program support for operations, collaborations, travel; County for office, phone, internet, clerical support, vehicle; West Side Research and Extension Center (WSREC) for laboratory, field and office space as needed. Kearney Agricultural Research and Extension Center (KARE) for field and laboratory space as needed. Both the Agronomy and Vegetable Crops Program Teams support this position.

Other support: Commodity and industry grants, CDPR Pest Management Alliance/IPM program, CDFA Specialty Block Grant, Western IPM and Western SARE grant opportunities. Current problems with lack of adequate personnel for coverage of research and extension needs for field, row and vegetable crops in this region should result in significant opportunities for support from individuals who can develop a program and conduct field research.

Headquarters and Coverage Area: Tulare County CE office (primary office); Access to workspace as needed at Kings County, Fresno County, and Madera County CE offices; Office, laboratory, and field space at WSREC and potential laboratory, field and greenhouse space at KARE.

Developed and proposed by: Co-sponsored by the Pest Management Program Team and the West Side Research and Extension Center with input and support from UC IPM Director and Fresno MCP Director.