2026 UC ANR Cooperative Extension Position Proposal

Sustainable Management CE Nematology Specialist

Developed and proposed by: This proposal was developed by the UCR Department of Nematology and the Plant Pathology and Nematology Program Team, where it received the highest number of votes. The proposal development was informed by extensive historical engagement with the California Fresh Carrot Advisory Board and the California Tomato Research Institute, who rely heavily on UC Riverside for objective field-trial data.

Position title: Sustainable Management CE Nematology Specialist

Headquarter location and coverage area: UC Riverside, Department of Nematology. UCR is uniquely suited to host this position. As home to the nation's only standalone Department of Nematology, UCR offers unmatched research infrastructure, established extension networks, and direct access to the growers and cropping systems most affected by plant-parasitic nematodes in Southern California and beyond.

Position overview, briefly describe: Sustainable management of plant-parasitic nematodes, with a specific focus on resistance-breaking populations, invasive quarantine species, and non-chemical management strategies.
Educational and professional background: Ph.D. in Nematology, Plant Pathology, or a closely related discipline, with expertise in applied field research and disease management.
Reporting and interactions: The CE Specialist will report to the UCR Department of Nematology and establish collaborations with AES faculty in the UCR College of Natural and Agricultural Sciences (CNAS), UC CE Specialists and Advisors, and UC ANR Research and Extension Centers (RECs) to address issues related to nematode management in California Agriculture statewide.

Justification: California's nematode landscape is shifting in ways that require immediate attention. Native Root-Knot Nematode (RKN) (*Meloidogyne* spp.) populations are evolving to overcome the genetic resistance of established crop standards, particularly in Central Valley tomato production. At the same time, the emergence of invasive A-rated quarantine pests such as the Peach Root-Knot Nematode (*M. floridensis*) threatens vegetable and orchard production statewide. Compounding both pressures, the accelerating phase-out of toxic soil fumigants is closing off conventional options and driving urgent demand for viable organic and biological alternatives.

Needs: California faces a critical "knowledge cliff" due to the retirements of Dr. Becky Westerdahl, Dr. Ole Becker, and Dr. Antoon Ploeg. If new hires are not made, only one Nematology Specialist will remain in California by 2027. Nematodes cause over $4 billion in annual crop losses across the state, including $2.5 billion in fruits/nuts and $1.3 billion in vegetables. This gap in expertise will leave stakeholders without

essential diagnostic interpretation and management solutions.

Outcomes/Impact: This position will directly align with UC ANR's Strategic Vision 2040 by developing sustainable agriculture and resilient ecosystems in the face of chemical restrictions. In 20 years, success will look like a California agricultural sector that successfully relies on validated genetic resistance, nematode-suppressive soils, and biological controls rather than toxic fumigants.

Extension: The Specialist will collaborate with UCCE Farm Advisors to diagnose unseen nematode problems and establish disease population thresholds for stakeholders. Operating a statewide extension network, the Specialist will conduct critical on-site collaborative trials in foundational agricultural regions such as Kern County and the Coachella Valley, translating these local successes into statewide management protocols for UCCE Farm Advisors and growers. The Specialist will serve as an essential bridge between science and commercial application, extending critical knowledge to pest control advisers, growers, and industry partners statewide.

Research: Validating new genetic resistance in crop varieties via objective field-level testing. Pioneering work on nematode-suppressive soils, leveraging soil fungi and bacteria as biological controls. Optimizing crop rotation and cover cropping strategies for organic systems. Expected to publish extensively in technical refereed journal articles and widely distributed Extension publications. Over the next 20 years, the Specialist will lead transdisciplinary efforts integrating evolutionary systems biology, AI-driven diagnostic tools, and marker-assisted breeding to combat evolving nematode threats.

UC ANR network: This position acts as a turn-key investment for UCR, significantly augmenting the network by serving as the critical translational arm needed to maximize the impact of UCR's three newest faculty members: Dr. Simon "Niels" Groen, Dr. Jiue-in Yang, and Dr. Bao Lam Huynh. The Specialist will act as a force multiplier, taking their fundamental genomics, AI-driven diagnostics, and novel legume breeding lines out of the lab and directly into the fields. The primary acknowledged gap in the network is the imminent loss of over 60 years of combined institutional knowledge and the inability to safely research A-rated quarantine pests without a UCR-based Specialist utilizing the NIQF.

Network external to UC ANR: The Specialist will collaborate extensively with the USDA and CDFA to maintain the spotless record of the Nematode Isolation and Quarantine Facility (NIQF) while safely researching regulatory pests. The position will work alongside the federal EPA and California DPR to provide the objective field trial data necessary for the registration of newer, environmentally benign nematicides.

Support: The position will be housed within the UCR Department of Nematology, with dedicated office and laboratory space and full access to the on-campus USDA-certified

Nematode Isolation and Quarantine Facility (NIQF). Field research will be supported through established trial sites, including those maintained at the South Coast Research and Extension Center.

Other support: The position will be expected to pursue robust external funding. Historically, the retiring specialists successfully managed or collaborated on over $8 million in funding from federal, state, and commodity sources. Major commodity boards, including the California Fresh Carrot Advisory Board and the California Tomato Research Institute, have a vested interest in this program and serve as highly probable sources for sustained co-funding and research grants.