

Cooperative Extension Position in Wine Grape Viticulture

Developed and proposed by: This position is proposed jointly by the UC Davis Department of Viticulture and Enology (V&E) and the Viticulture Program Team (VPT), including UCCE Specialists and Advisors serving North Coast, Central Coast, Napa, San Joaquin Valley, Sierra Foothill, and other California grape regions. UC Davis V&E will provide the academic home, research space, campus collaborations, trainee connections, and access to departmental vineyard, winery, analytical, business, and IT infrastructure. The Oakville Research Station, where this position will be centered, provides a highly visible site, vineyard, laboratory capacity, and extension venue. The VPT identified this position as the highest-priority statewide because California currently lacks CE Specialist capacity devoted to wine grape production systems, long-term vineyard trials, and coordination of farm advisor research priorities. VPT also identified regional grower needs and gaps that require statewide leadership and long-term research supported by graduate students and postdoctoral fellows. External input and support for this position is broad, with the position developed based on input from commodity, regional, and industry partners including the California Association of Winegrape Growers, Wine Institute, American Vineyard Foundation, California Grape Rootstock Improvement Commission, National Grape Research Alliance, Napa Valley Grapegrowers, Lodi Winegrape Commission, Sonoma County Winegrowers, wineries, vineyard management companies, and individual growers. Their engagement has occurred through regional meetings to discuss research-priorities and participation in field trials and extension events.

Position title: UCCE Specialist in Wine Grape Viticulture.

Headquarter location and coverage area: The headquarters will be the UC Davis Oakville Station in Napa County, with dedicated research, office, and laboratory space. Oakville is uniquely suited as the extension and applied research base: it is a 40-acre UC Davis research station in the center of the Napa Valley with the Harry E. Jacob Research Facility and Robert J. Barone Laboratory, a long history of trials in clones, rootstocks, vine spacing, pruning, irrigation, and vineyard redevelopment, and immediate access to a highly engaged commercial winegrowing community. Office and research space will also be provided on the UC Davis campus, which is essential for access to other V&E faculty, analytical facilities, research vineyards, winery, graduate students, postdoctoral scholars, and collaborators in plant, water, engineering, food, economics, and data sciences. The position will have statewide coverage for California wine grapes, with engagement in Napa, Sonoma, North Coast, Central Coast, Sacramento and San Joaquin valleys, Sierra Foothills, and Southern California, all in collaboration with other Advisors and Specialists across UCCE.

Position overview: The focus is applied viticulture for profitable, resilient, water-efficient, labor-responsive, and environmentally sustainable wine grape production. The Specialist will integrate vine physiology, plant material evaluation, irrigation and soil management, automation, precision viticulture, pest and disease risk, wildfire smoke response, and vineyard establishment or redevelopment. The position requires a Ph.D. in viticulture, horticulture, plant science, plant physiology, soil and water science, agricultural engineering, precision agriculture, plant pathology, entomology, or a closely related field, with demonstrated capacity or a strong interest in applied research and extension with perennial fruit or grape systems. The Specialist will be administratively responsible to UC ANR, academically housed with UC Davis V&E, and advised by the Department Chair, the VPT, and county-based UCCE members. The Specialist will develop collaborative projects, mentor trainees, participate in departmental and ANR service as appropriate, and use Oakville and Davis as complementary hubs for statewide research and extension.

Justification: California wine grapes remain a cornerstone specialty crop and a high-visibility agricultural sector, but the industry is in a period of rapid restructuring. USDA NASS/CDEFA estimated 540,000 acres of wine grapes in 2025, down 6.9% from 2024, with more than 21,000 acres of vine removals reflected in the acreage data. The 2025 final grape crush reported 2.626 million tons of wine-type grapes, down from 2.866 million tons in 2024, with continued pressure on average prices. At the same time, the broader California wine sector generates about \$84.5 billion in annual economic activity and supports nearly 394,000 jobs. Growers therefore need science-based guidance to maintain competitiveness while adapting to reduced margins, rising production costs, labor scarcity, changing consumer demand, water regulation, weather extremes, wildfire

smoke risk, and pests and diseases. The top issues requiring statewide Specialist leadership are: 1) climate, water, fire, and soil resilience for vineyard systems that must produce high-quality fruit with less risk and fewer inputs; 2) vineyard profitability and workforce resilience through mechanization, electrification, automation, sensor-based management, and practical decision-support tools; and 3) plant health and redevelopment strategies that address pest, disease, rootstock, scion, canopy, and site-selection. These issues were repeatedly identified by regional groups, farm advisors, and industry partners, which emphasizes the need for a statewide scientific leader who connects research, researchers, and trainees to the grape and wine industry.

Outcomes/Impact: The position will advance UC ANR priorities by increasing agricultural efficiency and profitability, improving water-use efficiency and vineyard resilience, protecting working landscapes and natural resources, strengthening pest and disease preparedness, and developing a qualified and inclusive agricultural workforce. Success in 20 years will look like a California wine grape sector that has regionally tested plant materials and production systems; widely adopted irrigation, soil-health, and decision-support practices; vineyard technologies that improve worker safety and reduce costs without excluding small and medium growers; rapid response networks for new pest, disease, wildfire smoke, and regulatory challenges; and a new generation of viticulture professionals trained through UC ANR and UC Davis. This directly supports UC ANR Strategic Vision 2040 priorities: building resilience, driving and harnessing innovation, guiding regulations, policy and compliance with science-based information, strengthening agriculture and food systems, protecting working landscapes, and cultivating thriving people and communities.

Extension: The Specialist will provide statewide leadership in extension programming for wine grape production. Clientele will include wine grape growers of all scales, vineyard managers, pest control advisors, certified crop advisors, irrigation and water managers, winery grower-relations staff, vineyard labor supervisors, ag-technology and equipment providers, regional winegrape commissions, commodity boards, regulatory agencies, and other UCCE members. Extension activities will include Oakville field days, regional Grape Days, UC Davis short courses, on and off campus extension programs, advisor trainings, grower listening sessions, webinars, videos, Spanish-language materials, and field demonstrations that compare practices under commercial conditions. Priority topics will include vineyard establishment and redevelopment; rootstock/scion/canopy choices for heat, drought, salinity, smoke, and pest pressure; irrigation scheduling and soil-water monitoring; mechanization and automation of pruning, canopy management, crop estimation, pest monitoring, harvest, and under vine management; electrification and equipment transitions; decision tools for precision viticulture; wildfire and smoke response; and economically viable sustainable practices. Extension products will include UC ANR publications, cost and decision tools developed with advisors and economists, web-based management guides, field protocols, newsletters, videos, and stakeholder briefings. The program will use annual needs assessments and event evaluations to keep priorities aligned with stakeholders.

Research: The research program will address applied questions that require long-term vineyard trials and rapid response to emerging issues. Core areas include: 1) performance of rootstocks, clones, cultivars, trellis systems, canopy architectures, pruning systems, and crop-load strategies under heat, drought, salinity, smoke, and weather extremes; 2) water, soil, and resilience using irrigation, soil moisture sensing, evapotranspiration tools, soil health, cover crops, groundwater recharge opportunities, and practices that maintain yield and fruit quality while meeting SGMA, water quality, and conservation goals; 3) mechanization, electrification, automation, and precision viticulture via evaluation of labor-saving equipment, autonomous platforms, remote sensing, AI-assisted yield and water-stress estimation, data standards, adoption barriers, costs, and grower decision rules; 4) vineyard redevelopment and establishment protocols matching plant material, site, weather, disease risk, economics, and future market needs; and 5) pest, disease, and abiotic threats by integrating strategies for existing and emerging problems such as Pierce's disease vectors, grapevine red blotch, trunk diseases, mealybugs, nematodes, invasive pests, herbicide drift, heat injury, and wildfire/smoke impacts. The work will be multi- and transdisciplinary, involving viticulture, plant physiology, plant pathology, entomology, weed science, irrigation engineering, soil science, economics, data science, enology, social science, labor and safety, and environmental policy. Expected outlets include American Journal of Enology and Viticulture, California Agriculture, HortScience, Irrigation Science, Precision Agriculture, Plant Disease, Applied Engineering in Agriculture, UC ANR peer-reviewed publications, and industry research reports.

UC ANR network: This position would substantially augment, not merely add to, the UC ANR network by rebuilding statewide Specialist leadership for wine grape production and by making Oakville a visible hub where campus science, field trials, and extension meet. The Specialist will translate AES research into regionally relevant practices, coordinate multi-site trials with advisors, mentor early-career advisors and trainees, and provide a single point of contact for industry and agencies seeking UC expertise on wine grape production. The expertise complements but is distinct from county viticulture advisors, who address local needs; UC Davis faculty, who focus on fundamental aspects of production; pest-management specialists; plant breeders; and irrigation, engineering, or soil scientists whose work spans crops. This position addresses a clear gap in statewide capacity to integrate these groups around wine grape production systems and to maintain long-term Oakville-based and statewide trials. Expected UC collaborators include UC Davis V&E, Plant Sciences, Biological and Agricultural Engineering, Land, Air and Water Resources, Food Science and Technology, Entomology and Nematology, Plant Pathology, Agricultural and Resource Economics, the Teaching and Research Winery, Foundation Plant Services, and UC IPM; UCCE viticulture, pest management, water, climate, and agricultural technology advisors across the state; UC Riverside, UC Merced, UC Berkeley, the Kearney Agricultural Research and Extension Center, and other RECs. Early contributions could include Oakville redevelopment trials, rootstock and clone evaluations, smoke and wildfire response work, mechanization and sensor demonstrations, irrigation and soil-water trials, and multi-county pest and disease monitoring projects.

Network external to UC ANR: External collaborators will include USDA ARS, USDA NRCS, CDFA, DPR, DWR, CARB, regional water boards, Groundwater Sustainability Agencies, Resource Conservation Districts, California Association of Winegrape Growers, Wine Institute, American Vineyard Foundation, National Grape Research Alliance, California Grape Rootstock Improvement Commission, Napa Valley Grapegrowers, Lodi Winegrape Commission, Sonoma County Winegrowers, regional grower and vintner associations, major and small wineries, vineyard management firms, pest control and crop consultant organizations, equipment manufacturers, ag-technology companies, community colleges, CSU partners, and grower cooperators. Collaboration will include research priority setting, on-farm trials, co-sponsored extension events, workforce training, regulatory translation, grant partnerships, and demonstration of practices and technologies under commercial conditions.

Support: Supporting units will provide the Specialist with office and laboratory space at Oakville Station and research space on the UC Davis campus. Oakville will provide access to vineyard blocks, the Harry E. Jacob Research Facility, Robert J. Barone Laboratory, meeting and field-day space, irrigation and vineyard infrastructure, and coordination with station staff for vineyard operations. UC Davis V&E will provide campus office/laboratory access, analytical and shared equipment access, departmental administrative, business, communications, and IT support, and access to the teaching and research vineyards and winery. Transportation support will include use of UC vehicles when available and/or mileage reimbursement for statewide extension travel consistent with ANR and campus policies. Initial supplies, shared equipment, and vineyard management support will be provided through the department/Oakville infrastructure; program-specific research costs will be supported through start-up, internal funds, and extramural grants.

Other support: The Specialist will be expected to pursue funding from the American Vineyard Foundation, California Grape Rootstock Improvement Commission, USDA NIFA SCRI and AFRI, USDA NRCS, CDFA Specialty Crop Block Grant and SWEEP programs, CDFA and DPR pest and climate programs, DWR and water-related programs, UC ANR competitive grants, UC Davis campus initiatives, commodity groups, regional commissions, foundations, and cooperative agreements with industry or ag-technology partners. Non-UC ANR partners with potential interest in co-funding projects or position-related program activities include statewide and regional winegrape organizations, grower commissions, large and small wineries, vineyard management companies, equipment and technology firms, and water or climate resilience programs.