

California Department of Food and Agriculture
2021 Specialty Crop Multi-State Program
Project Abstracts

Enhancement of Specialty Crop Seed Germination, Seeding Vigor, and Pest Management Using Cold Plasma Technology \$915,263

- The University of California, Davis
- Cornell University
- University of Minnesota
- University of Maryland

The project team proposes to demonstrate and disseminate solutions to enhancement of seedling plug productions and of pest and disease management through optimized cold plasma treatments of specialty crops seeds. Systems to perform cold plasma treatments of large samples of seeds are commercially available and cost-effective, so outcomes from this project can be readily adopted by specialty crop producers. In this project, integration of optical sensing is proposed as a highly innovative approach to real-time and cost-effective quality control of cold plasma treatments. To maximize project impact, a stakeholder advisory board is included and consulted throughout the project period. Due to the broad relevance of seed germination and seedling vigor, project outcomes have direct relevance to producers of a wide range of annual specialty crops.

Optimization of Habitat to Support Pollinators and Reduce Pests: Removing Barriers to Habitat Adoption in Highbush Blueberry \$554,663

- Pollinator Partnership
- Oregon State University
- Washington State University
- Michigan State University
- University of Vermont

The project team proposes to conduct a review of non-blueberry plants that support key pests in blueberry using literature and stakeholder interviews, conduct novel research to further inform key pest alternate host plants in five primary blueberry growing states, create a web-based tool to identify ideal pollinator supporting plants and plants to avoid or eliminate in pollinator-supporting habitat near blueberry, conduct an assessment of barriers, and provide extension to growers on pollinator habitat value, alternate host plants, habitat optimization, and cost-share and recognition programs. This comprehensive program will help growers create and manage habitat that they are confident is increasing their production without creating pest problems, resulting in greater crop yield, and more sustainable and competitive blueberry production in the United States.

Understanding and Improving Nitrogen Use Efficiency in Spinach \$795,194

- The University of California, Davis
- Texas A&M University

The project team proposes to identify the biochemical, physiological, and genetic reasons that some plants have that can produce and remain darker green at lower nitrogen fertilization rates. New germplasm and tools (for example drone-mounted imaging tools) better suited to lower

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fertilization management will be developed, benefitting growers and consumers, as well as limiting pollution.

Climate Ready Vines for The Western United States

\$878,971

- The University of California, Davis
- University of California, Agriculture & Natural Resources
- University of Washington
- Utah State University
- University of Arizona

The project team proposes to evaluate and monitor potential energy saving, water use, ecological, and horticultural characteristics of vine plants across different climates and latitudes. Participating institutions with five study sites located in the western U.S. states of Arizona, California (2 sites), Utah, and Washington will capitalize on an existing network of multi-state research infrastructure. Based on standardized experimental protocols, the project will generate data, knowledge, and information needed to develop a robust database of vine plants suitable for different climates. This will inform best-management practices and the assessment of the associated ecosystem services to achieve multi-functional vine selection and management across the western states.

2022 Investigate Remediation of Smoke Impacted Grape Juice and Wine through the Development of Unique Phenol Glycosidases and Resins for Volatile Phenol Removal

\$871,052

- The University of California, Davis
- Oregon Wine Board
- Treasury Wine Estates

The project team proposes the development of a novel treatment option in grape juice and wine that will selectively remove the smoke impact compounds without impacting the overall quality of wine. Designer enzymes in combination with optimized resins will be employed and treatment guidelines based on juice and wine matrix specifics will be developed in partnership with grape and wine entities in California, Oregon, and Washington State. The development of affordable treatment options for smoke impacted grape juice and wine, will result in significant savings in the grape and wine industry. Having a cost-effective treatment option, will impact picking and winemaking decision as well as strengthen market/consumer confidence. An additional benefit will be the development of more cost-effective, robust analytical techniques for smoke impact assessment.