

Washington State Viticulture and Enology

Research Priorities

July 1, 2021 – June 30, 2022

Enology

- **Winery Sustainability** – Reduce winery energy usage. Develop methods for large and small wineries to recycle, reuse, reduce, repurpose harvest biomass, winery wastewater and winery waste, including glass wine bottles.
- **Fermentation Management** – Yeast and bacteria impacts on fermentation, sensory properties; control of microbiological spoilage; nutrient management practices; management at winery of diseased/disordered fruit; fermentation monitoring practices (cap extraction, process control, real-time monitoring methods), phenolic management, rapid analysis of juice, must, wine chemistries.
- **Wine Aroma and Flavor Compounds** – Optimize sensory compounds in wine; management of environmental issues impacting wine quality (smoke exposure, frost exposure); management of vineyard derived sulfur off aromas.
- **Wine Maturation and Stabilization** – Improve protein and cold stabilization to minimize flavor scalping, color loss and reduce energy usage; microbial stabilization, impact of filtration options on wine sensory qualities, fining methods, calcium instability, sulfur dioxide minimalization and management.

Viticulture

- **Vineyard Sustainability** - Improved vineyard floor management practices; soil fertility and carbon sequestration in vineyard soils, nutrient management, biochar for optimal vine and soil health; grafting and rootstock management and selection.
- **Vineyard Production, Efficiency and Profitability** – Improve water use efficiency/water savings and water quality to optimize wine quality; canopy management for mechanization; management of berry/sour shrivel
- **Pest Management** – Detect and manage grapevine viruses and vectors; sustainable management strategies for all pests of economic importance (grape mealybug, spider mites, phylloxera, fungal diseases, nematodes, crown gall, weeds, vertebrate); management of trunk diseases.
- **Climate Impacts on Site/Viticulture** – Develop optimum guidelines for light and heat exposure on fruit; understand impact of climate variability on viticulture (phenology, ripening, pest and diseases); winter trunk injury and secondary infections (crown gall); develop decision support system for inversion, frost protection.
- **Mechanization/Precision** – Develop, evaluate mechanized/precision tools that reduce reliance on hand labor in vineyard or winery (crop estimation tool, canopy and crop management, pest management, sorting, MOG removal, cellar tasks).

Emerging Issues

- Unforeseen viticulture and enology threats, problems or research opportunities
- Industry education needs (extension bulletins, etc.)
- Comparative analysis of Washington State viticulture practices to other regions (e.g. sustainable pest and disease management systems)