

Hansen: Going for stable and sustainable

Washington Wine's research program forging ahead with record-breaking funding.

September 2020 Issue

Melissa Hansen // September 1, 2020

The Washington wine industry's viticulture and enology research program is stronger than ever. The Washington State Wine Commission allocated a record amount of nearly \$1.2 million for research this fiscal year (July 2020 to June 2021), up nearly 15 percent compared to last year. The increase is a direct result of more financial support from the Auction of Washington Wines for viticulture and enology research at Washington State University and new research grant programs funded by the Wine Commission. With stable and sustainable research funding in place, researchers are able to tackle many of the industry's research priorities.

Program stability brings continuity to research projects, the ability to support multiyear studies, and supports "outside-the-box" concepts that have some risk but big payoff for growers and winemakers, if successful. Some of the most important priorities are new and continuing pest challenges, including phylloxera and grapevine viruses; the development of labor-saving tools for growers; dialing in irrigation strategies in a changing climate; and addressing winemaking challenges from smoke and freeze exposure.

Of the 25 projects currently underway, the majority are focused on vineyard challenges. However, plenty of research is happening on the winemaking side as well, or on projects that mix the two. About 40 percent of the funds target winery topics: microbial spoilage, tannin management, and more. About 60 percent target vineyard topics: microclimate, irrigation, and addressing winemaking challenges from smoke and freeze exposure.

For the first time, three short-term trials comparing fermentation vessels, wine clarification techniques and a native habitat teaching garden were approved at Yakima Valley College and Walla Walla Community College as part of the Washington wine industry's new research grant program. Unfortunately, acceptance of two grant awards had to be declined due to the pandemic and the uncertainty with student enrollment and teaching procedures this fall.

Washington State Grape and Wine Research Program: July 2020 to June 2021 Projects				
WSU Principal Investigator	Project Title	Completion	Funded Amount	
Cheoke, Tanya	Effect of Mycorrhizal Inoculants on Grapevine Growth and Nutrient	2021	\$12,848	
Collins, Tom	Assessment of Smoke Taint Risk and Mitigation of Smoke Affected Wines	2022	\$69,260	
Collins, Tom	Smoke Exposure Effects on Grape Berry Development and Metabolism	2022	\$21,500	
Edwards, Charles	Microbiology and Chemistry of WA Wines	2021	\$25,999	
Harbertson, Jim	Evaluation of Freeze Taint in Cabernet Sauvignon	2022	\$87,780	
Harbertson, Jim	Management of Phenolic Compounds in Vineyard and Winery: Investigation of Mechanical Pruning, Grape Maturity, Raman Spectroscopy	2021	\$152,930	
Harbertson, Jim	Research Winemaking	2022	\$74,080	
Jacoby, Pete	Use of DRZ Subsurface Irrigation to Enhance Establishment of Replacement Vines	2023	\$25,000	
James, David	Grape Leafrollers: Determining Economic Impact Levels and Action Thresholds	2023	\$14,400	
Keller, Markus	Dissecting the Relative Importance of Grape Variety vs. Environment for Irrigation Management	2022	\$8,000	
Keller, Markus	Grape Ripening Under a Double Whammy of Heat Stress and Water Deficit	2022	\$73,915	
Keller, Markus	Influence of Cultivar, Environment and Management on Grape Yield Components and Quality	2021	\$96,313	
Keller, Markus	Optimizing Sampling Protocols for Efficient Vineyard Nutrient Management	2023	\$87,819	
Keller, Markus	Support for Vineyard Maintenance for Wine Grape Research	2022	\$5,000	
Moyer, Michelle	Alternative Preplant Strategies for Nematode Management in Washington Wine Grape Vineyards	2023	\$67,736	
Moyer, Michelle	Fungicide Resistance Monitoring and Alternative Management Strategies for Grape Powdery Mildew	2023	\$30,126	
Piao, Hailan	Impact of Yeast and Malolactic Bacteria on Wine Flavor Precursors	2023	\$57,332	
Rayapati, Naidu	Innovative Strategies for Management of Grapevine Leafroll Disease	2023	\$125,999	
Walsh, Doug	Monitoring Mealybugs for Potential Imidacloprid Resistance, Buffalo Treehoppers for Imidacloprid	2021	\$28,462	
Walsh, Doug	Monitoring and Managing Grape Phylloxera in Washington State Vineyards	2023	\$57,997	
Washington State Grape and Wine Research Funding Total			\$1,122,496	

Washington State Wine Commission Research Grant Programs: July 2020 to June 2021 Projects				
Principal Investigator	Project Title	Completion	Funded Amount	
Donahue, Tim (Walla Walla CC)	Effects of Nitrogen vs Oxygen during White Juice Flotation compared to Cold Settling on Washington Riesling	2021	\$2,500	
Rogue Detection	Pilot Study: Canine Detection of Grape Leafroll Virus	2021	\$4,460	
Rogue Detection	Pilot Study: Canine Detection of Grape Phylloxera	2021	\$4,460	
Beightol, Will - Collab Wine	Crop Estimation through Remote Sensing and Artificial Intelligence	2021	\$15,850	
Larbi, Peter (UC-Davis)	Spray Drift Study in Grapes to Support Orchard and Vineyard Airblast Drift Modeling Effort	2021	\$30,000	
Washington State Wine Commission Research Grant Program Funding Total			\$57,270	
Total Washington Wine Industry Research Projects			\$1,179,766	

Washington wine industry research projects, July 2020 to June 2021.

(Courtesy Washington Wine Commission)

Dogs, UVC light and the Flash

One of the more interesting studies this year is a pilot project to learn if rescue dogs can be trained to sniff and detect grapevine viruses and phylloxera. Similar work is being done in Washington's tree fruit industry to detect little cherry disease and by the U.S. Department of Agriculture to detect citrus greening disease. In the citrus research, dogs detected the virus in citrus trees months before detection by lab analysis. Additionally, dogs may be able to alert growers of phylloxera presence and help them better target root digging for confirmation of the root-feeding insect.

Another innovative project is a nighttime gizmo to zap grapevines with ultraviolet light. Preliminary work by WSU's Michelle Moyer last fall showed that the UVC light "sprayer," developed by Cornell University, has potential application for Washington grape growers because of our low powdery mildew pressure. Applying the treatment at night kills the single-cell fungal pathogens without damaging the grapevine. Support from the industry's research program will help Moyer further study the sprayer to evaluate its effectiveness as a tool to manage fungicide resistance, which could be a game-changer to reduce the use of fungicide sprays.

Several projects aim to bring precision tools to viticulture. Markus Keller, WSU viticulturist, heads research to optimize vine nutrient sampling protocols, an important step in the quest to develop nondestructive, real-time measurement of the nutrient status of grapevines. Data collected this summer from Washington vineyards will help further study crop estimation through remote sensing using technology and artificial intelligence called the Flash. Bloomfield Robotics is working to commercialize the remote sensing system originally developed by Carnegie Mellon University. A related project is in its final months this summer as WSU engineer Manoj Karkee works to develop a smartphone app for crop estimation.

Hoe and grow

Traditional vineyard research projects are also underway. Examples of such projects include:

Soil health — determining the effect of mycorrhizal inoculants on grapevine growth and nutrient uptake; evaluating rootstock and preplant fumigation to manage nematode decline; and using a trap crop and fallow period as management strategies.

Pest management — monitoring and managing grape phylloxera; understanding insecticide resistance of grape mealybug; determining economic impact levels and action thresholds for a new grape leafroller found in Washington; monitoring fungicide resistance and alternative strategies for grape powdery mildew; and developing innovative management strategies for grapevine leafroll disease.

Irrigation — understanding variety versus environment for irrigation management; developing new strategies to mitigate the impact of high temperatures on grape and wine quality; optimizing irrigation strategies for high-quality white wine grape production; and using deep rootzone subsurface irrigation to enhance replacement vine growth and reduce competition for water when planted in an already established vineyard.

One of a kind

Washington's viticulture and enology research program is unlike any other wine research program in the United States. It's supported by all wine grape growers and wineries, and staff (me!) is dedicated to research. We work closely with WSU, the industry's research partner, to bring research results to you through newsletters, trade publications like the *Good Fruit Grower*, presentations at WAVE (Washington Advancements in Viticulture and Enology) seminars and webinars, and by making research reports and articles accessible on the industry's website.

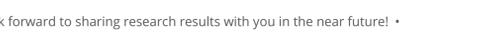
The following unique components ensure that the research program remains effective and relevant to industry needs:

- Industry driven: Research priorities are established by growers and wineries.
- Industry guided: Research funding recommendations are approved by industry.
- Accessible to all: Regardless of size, all growers and wineries have access to research results.
- Strategically planned: The program follows an industry-developed strategic research plan.
- Unique funding: Support comes from public, private and industry sources, including: Washington State University, Washington State Wine Commission, Auction of Washington Wines, and state litter taxes collected on all wine sold. About 25 percent of the Washington Wine Commission's budget is allocated to research.

We look forward to sharing research results with you in the near future! •

—by *Melissa Hansen*

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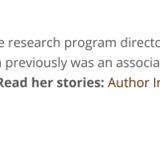
About the Author: Melissa Hansen

Melissa Hansen is the research program director for the Washington Wine Commission. Hansen previously was an associate editor at Good Fruit Grower from 1996 through 2015. **Read her stories:** [Author Index](#)

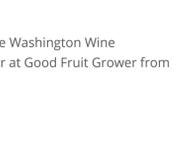
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2 Comments

Deborah Parker Wong September 3, 2020 at 11:30 am - Reply

After our attempt to expand the Slow Wine Guide to Washington this year, we found that the pervasive use of synthetic herbicides resulted in only a handful of producers being listed in the 2021 guide. I see that there is some research focused on soil health but reducing or eliminating the use synthetic herbicides does not appear to be a priority.

Melissa Hansen September 9, 2020 at 7:42 am - Reply

Integrated and sustainable pest management is on the industry's research priority list. We funded a weed management project a few years ago, but unfortunately, the scientist moved to another state and we've not had another researcher pick it up. It's definitely an area needing further study as hoeing requires labor and mechanical weeders use more fossil fuels because of multiple passes required.

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March 24 @ 10:00 am PDT
Processed Pear Committee processor position nominations

March 29 @ 9:00 am - 3:00 pm PDT
IPM Practices of Tree Fruit in Yakima Valley (webinar)

April 21 @ 10:00 am - 11:30 am PDT
Heritage Orchard Conference webinar: Perennial Fruit Plants of the Northern Sierra Gold Rush Era

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