



### Bob Martin, Research Plant Pathologist; Subject Area (Virology) and Research Leader

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Bob's research focus is on the characterization, detection and control of virus diseases of small fruit crops. Areas of emphasis are the characterization and identification of unknown viruses, development of detection methods to improve certification programs, the study of their epidemiology or how they get around in the field, and development of control strategies. Controls strategies include production of virus-free nuclear stock materials, identification of non-crop plants that may serve as a virus reservoir and management of vectors.

1. Graft union necrosis of Pinot noir grafted onto rootstock 3309C caused by infection of the rootstock with Tomato ringspot virus. The virus induces causes the necrosis and does not move across the graft union.

2. Grapevines infected with Grapevine leafroll associated virus – 2 red leaves in August, compare with healthy vines.



### Jack Pinkerton, Research Plant Pathologist; Subject Area: Biology and management of plant-parasitic nematodes in small fruit and nursery crops

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Jack's research program is focused on the development of economic thresholds and management strategies for plant-parasitic nematodes and soilborne plant pathogens affecting grape, strawberry, raspberry, and *Vaccinium* species. Management strategies being investigated include modified cultural practices (crop rotation, green manures and soil amendments, and soil solarization), the use of biological control organisms and compounds, and the identification of genotypes with host plant resistance.

Pot in pot study to examine the effect of ring nematode on yield, mycorrhizal colonization, and water and nutrient use.

Also, use of cover crops to reduce virus vectoring nematodes.



### Paul Schreiner, Research Plant Physiologist; Subject Area: Below-Ground Physiology of grapevines and small fruit crops;

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Paul's research focus is on the nutritional requirements of grapevines and the factors that control root and mycorrhizae function (growth, nutrient and water uptake, nutrient storage) in small fruit production systems. An improved understanding of the nutrient requirements needed to produce high quality fruit, and the factors that affect the ability of roots to supply those needs will lead to more sustainable production systems.

Pot in pot study to establish nutrient guidelines to optimize quality, also to examine interactions between mycorrhizae and plant parasitic nematodes.



### Krista Shellie, Research Horticulturist; Subject Area: Viticulture (Wine Grapes);

Contact: (208) 722-6701; [kshellie@uidaho.edu](mailto:kshellie@uidaho.edu)

Krista is located in Parma, Idaho. The goal of Krista's research is to investigate the influence of irrigation in cool, semi-arid production regions on wine grape quality and to promote sustainable production of high quality wine grapes. She is investigating the influence of cultural practices and cultivar selection on vine health and components of grape quality.

The use of clay to reduce water stress and cultivar evaluation for cool, arid climates.



### Julie Tarara, Research Horticulturist; Subject Area: Microclimate, viticulture and vineyard production systems;

Contact: (509) 786-9392; [jtara@wsu.edu](mailto:jtara@wsu.edu)

Julie's research focuses on grapevines (juice and wine grapes) and their response to the abiotic environment (temperature, radiation, humidity, wind). As in many horticultural crops, microclimate modification results from routine cultural practices continually pursued by growers to achieve the highest quality fruit, rather than the highest yields per se. By collaborating with vine physiologists, Julie's goal is to extend our understanding of the effect of the physical environment on vine biology directly in the field, then to transfer this knowledge to more effective and efficient farming practices.



Grapevine leafroll associated viruses 1 and 3 were most prevalent in OR while, GLRAV 2, 3, and 4 were most common in WA. Research vineyard has been established to examine the impact of GLRAVs in combination with Rupestris stem pitting associated virus on yield and quality of self-rooted and grafted vines.

Various rootstocks and self-rooted Pinot noir are being tested for their reaction to Tomato ringspot virus. If Pinot noir is resistant, then planting self-rooted vines may be a simple solution to this problem if Phylloxera is not present in the vineyard.

In collaboration with:

Dr. Jungmin Lee, USDA-ARS (Food technologist), ID  
Dr. Naidu Rayapati at WSU (Virologist), WA  
Dr. Ken Eastwell at WSU (Virologist), WA  
Dr. David James, WSU (Entomologist), WA  
Dr. Vaughn Walton, OSU (Entomologist), OR  
Dr. Jack Pinkerton, USDA-ARS (Nematologist), OR

<i>Mesocriconema xenoplax</i>	61%	30%	10%	3%
ring nematode				
<i>Xiphinema</i> spp.	78%	8%	75%	55%
dagger nematodes				
<i>Meloidogyne hapla</i>	8%	< 1%	66%	37%
root-knot nematode				
<i>Pratylenchus</i> spp.	67%	?	63%	?
root-lesion nematode				

In collaboration with:

Paul Schreiner, USDA-ARS (Plant Physiologist), OR  
Bob Martin, USDA-ARS (Virologist), OR  
Katarina Riga, WSU (Nematologist), WA  
Tom Forge, AAFC – Canada (Nematologist), BC

Characterization of mycorrhizae present in vineyards in the Pacific Northwest using morphological/microscopic differences and molecular markers. Evaluating differences in ability to supply nutrients to grapevines in different soil types.

In collaboration with:

Jack Pinkerton, USDA-ARS (Nematologist), OR  
Julie Tarara, USDA-ARS (Viticulturist), WA  
Jungmin Lee, USDA-ARS (Food Technologist), ID  
Carolyn Scagel, USDA-ARS (Plant Physiologist), OR  
David Bryla, USDA-ARS (Plant Physiologist), OR  
Michael Qian, OSU, (Food Science), OR  
Jim Kennedy, OSU, (Food Science), OR

Water stress leads to increase damage due to sunscalding. Surround (clay particles) is being investigated as a means to reduce water loss and sunscalding. The impact on fruit quality is also being investigated.

In collaboration with:

Michael Glenn, USDA-ARS, WV  
Virginia Gillerman, Boise State University, ID  
Markus Keller, Washington State University, WA  
Michael Qian, Oregon State University, OR  
David Wilkins, Boise State University, ID  
Ron Bitner, Bitner Vineyards, ID  
Jungmin Lee, USDA-ARS, ID

Evaluating the impact of temperature on: flower bud initiation, bud burst, shoot growth, flowering, fruit set and maturation and sunscalding. Development of automated monitoring of vine growth, crop development and yield estimates.

In collaboration with:

Kerri Steenwerth, USDA-ARS, CA  
Markus Keller, Washington State University, WA  
Bernadine Strik, Oregon State University, OR  
Nick Dokoozian, E&J Gallo Winery, CA  
Jungmin Lee, USDA-ARS, ID