



2022 - 2023

The Northwest Center for Small Fruits Research

2021 Research Priorities

Updated Annually at the NCSFR conference





Blueberry Research Priorities

Revised Nov. 15, 2022

1A)	Research to reduce labor costs (e.g. mechanical harvester, pruner, weed mat, genetics, fruit firmness, etc.)
B)	Management of <i>Botrytis</i> , mummyberry and other fruit rots
C)	Management of Spotted Wing Drosophila
D)	Organic production systems
E)	Management of viruses and their vectors
2A)	Pollination and fruit set, including weather effects
B)	Fertility and Biostimulant management
C)	Plant breeding/ varietal evaluation
D)	Vertebrate management
E)	Management/irrigation/chemigation, cooling, fertigation, water delivery, frost protection, frost and heat protection, and the impact on fruit quality
3A)	Food safety
B)	Biology and management of arthropod pests
C)	Biology and management of diseases
D)	Improve or extend fresh market, controlled atmosphere packaging, physical covers or chemicals, post-harvest handling and cultural inputs
E)	Control of insect pests while conserving natural enemy populations
F)	Weed management, including herbicide resistance

Numbered priorities are listed from most important to least important. Within each numbered priority, all lettered priorities hold the same weight (i.e. A-E).



Blackberry Research Priorities

Revised Nov. 15, 2022

1A)	Breed cultivars that are thornless, high-yielding, winter hardy, machine harvestable, disease resistant, and have superior fruit quality
B)	Water management with respect to climatic adaptation
C)	Evaluate new insecticides/management strategies (conventional and organic) for insect pests, including Spotted Wing Drosophila
D)	Biology and control of Botrytis and organic control of botrytis, rust, and cane blight.
E)	Trailing blackberry collapse as seen in Columbia Star
2A)	Development of micronutrient sufficiency-management programs
B)	Virus management
C)	Control/management of most challenging perennial weeds
D)	Improve viability of organic and conventional fresh market production
E)	New Technology for improving on-farm labor efficiency
3A)	Biology and management of emerging pests
B)	Interactions of soilborne pathogens
C)	Primocane management
D)	Improving the viability of fresh market production
E)	Freeze damage prevention in caneberries

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Cranberry Research Priorities

Revised Nov. 15, 2022

1A)	New herbicides for control of priority perennial weeds
B)	New insecticides for control of tipworm and scale which are effective using chemigation application methods
C)	Alternative fungicides for fruit and foliar disease management
D)	Market expansion through nutraceuticals/health or sustainable practices
E)	Irrigation system to optimize frost protection and pesticide applications
2A)	Pollination, fruit set and pollinator health
B)	Organic production systems, including pest control, nutrient management, soil health, weed control, and fresh fruit production.
C)	Soil borne pest control (cranberry girdler and root weevil)
D)	Production systems for new planting and renovations, including new varieties and nutrient management
E)	Evaluate wireless frost alert and soil moisture units for use on cranberry farms.
3A)	Vertebrate pest management.
B)	Sanding systems and alternatives for new and established plantings.

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New Specialty Crops Research Priorities

Revised Nov. 15, 2022

Lonicera (Haskap/Honeysuckle), Bilberry, Schisandra chinensis Baill, Gooseberry, Currants, Hardy Kiwifruit, Lingonberry, Huckleberry, Chokeberry (Aronia melanocarpa), Elderberry, Sea Buckthorn Berry (Hippophae), Buffalo Berry (Shepherdia), Gogi Berry,

1A)	Pest management including available tools (Pesticide tracking, registration and re-registration issues for new up-and-coming crops)
B)	Cultivar Development: Germplasm collection for superior and/or rare genotypes, yield/quality improvement, resistance and nutraceutical traits, adaptation for Pacific Northwest environment, and introduction.
C)	Develop and/or improve production systems for Elderberry and new specialty crops (how do we grow these crops?)
D)	Nutrition of new specialty crops (fertilization)
E)	Frost Protection of Hardy Kiwifruit
2A)	New product development/marketing: including nutraceuticals
B)	Fresh market and/or general post-harvest storage
C)	Improving fruit quality in new specialty crops
D)	Pollination/fruit set
E)	Foliar diseases in Ribes (ex. White Pine Blister Rust)
3A)	Investigation of mycorrhizal associations in Huckleberry
B)	Currant fruit fly (also called gooseberry maggot)
C)	Phytophthora in Hardy Kiwifruit
D)	SWD management in Elderberry
E)	Harvesting and sorting efficiency for Elderberry
F)	Systemic Pathogen Tolerance, especially to Viruses.

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Red/Black Raspberry Research Priorities

Revised Nov. 15, 2022

1A)	Develop cultivars that are summer-bearing, high-yielding, winter hardy, machine-harvestable, disease resistant, virus resistant, and have superior fresh and processed fruit quality
B)	Management options for control of Spotted Wing Drosophila (including targeting systemic action on larvae)
C)	Mite management- New tools and MRLs
D)	Labor saving practices – pruning, AY, public/private technology partnerships, public/private partnerships, and harvesting automation
E)	Foliar and cane diseases – ex. Spur blight, yellow rust, cane blight, powdery mildew, etc.
2A)	Fruit rot, including pre-harvest, post-harvest, and for shelf life
B)	Understanding soil ecology (including biology, nutrient balance) and soil-borne pathogens and their effects on plant health and crop yield
C)	Root weevils
D)	Cutworm, leafroller management
E)	Soil fumigation techniques and alternatives to control soil pathogens, nematodes, and weeds
3A)	Maximum residue limits (MRLs) – residue decline curves, harmonization
B)	Nutrient management – revise OSU specs, consider timing, varieties, application techniques, calcium, nutrient balance
C)	Irrigation management – application techniques including pulsing
D)	Viruses/crumbly fruit, pollination
E)	Cane management, including suppression
F)	Alternative Management Systems – reduce cost of production
G)	Pest management as it affects pollinators
H)	Weed management focusing on horsetail, poison hemlock, wild buckwheat, nightshade, Canada thistle, watergrass
I)	Management options for control of Brown Marmorated Stink Bug
J)	Effects of Fungicide and fertility programs on brix
K)	Season extension- improving viability of fresh market production
L)	Root Weevils

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Strawberry Research Priorities

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1A)	Develop cultivars with processed and fresh market potential, including earlier and later ripening
B)	Greenhouse substrate production, including nutrient and disease management.
C)	Pre and post harvest weed control, including new chemistry to reduce resistance
D)	Management of Day Neutral July production lull
E)	Biology and management of botrytis
2A)	Biology and management of powdery mildew
B)	Soil Fertility and fertigation
C)	Alternate production systems for economic efficiency, increased yield and cultivar management, including reducing harvest costs for conventional and organic production
D)	Irrigation management
E)	The use of plastic culture in strawberry production in Day Neutral and June bearing strawberry crops
3A)	Mite management
B)	Post-harvest management of fruit
C)	Vertebrate pest management
D)	Management of root weevil
E)	Management of Spotted Wing Drosophila
F)	Cultural management practices to improve soil health.

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Table Grape Viticulture Research Priorities
Revised Nov. 15, 2022

1A)	Evaluation of varieties to increase berry and cluster quality.
B)	Study canopy design to maximize berry quality and yield at harvest and after storage.
C)	Study of impact of varieties and canopy design on fruit set and yield components.
D)	Nutritional management for different varieties and canopies.
E)	Variety and canopy effects on water management.
2A)	Photosynthesis and carbon positioning under different canopy systems and varieties.
B)	Disease resistance in different vine architectural systems, e.g., powdery mildew and botrytis.
C)	Density of canopy affecting insect populations.
D)	Comparison of flavor components in different regions.
E)	Studying culture of galls in table grapes.
3A)	Develop web tools for sustainable site development.
B)	Evaluation of rootstock on cultivar vigor, nutrition status, yield, and quality
C)	Effect of nematodes on vine growth.

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Wine Processing Research Priorities

Revised Nov. 15, 2022

1A)	Incidence and measurement of wine components and their individual and combined impact on color, flavor, aroma and texture.
B)	Develop winemaking protocols to mitigate impact of climate change and environmental risk on wine quality (e.g. smoke, feedlot, hemp, freeze, heat effects, flavor and pH impact).
C)	Managing fruit from virus affected vines in the winery.
D)	Impact, identification and application of native, novel yeast and bacteria (e.g. ML) for fermentation management
E)	Incidence and control of <i>Brettanomyces</i> , <i>Pediococcus</i> , and <i>Lactobacillus</i> and other spoilage microbes.
2A)	Preventing sulfide and reduction compounds, minimizing stuck and sluggish fermentations including nutrient management.
B)	Winery mechanization and automation technologies for large- and small-scale operations.
C)	Effect of <i>Botrytis</i> and <i>laccase</i> on wine quality.
D)	Develop and evaluate organic and sustainable winemaking practices, e.g. wine processing, winery management, and utilization of value added by-products.
E)	Winemaking techniques, (e.g. pre-fermentation handling, cold soak, extended maceration, optical sorting).
3A)	Alternative methods to evaluate temperature stability and wine stabilization methods.
B)	Impact of alcohol on wine (e.g. flavor, sensory, alcohol reduction, etc.).

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Wine & Juice Grape Viticulture Research Priorities

Revised Nov. 15, 2022

1A)	Water, nutrient, and soil health management to optimize grape production and wine quality.
B)	Incidence, impact, vectors and management of leaf roll and red blotch.
C)	Climate change (e.g. environmental stresses such as cold, heat, smoke, and drought stress) as it pertains to grape, juice, and wine production.
D)	Biology and management of botrytis and powdery mildew.
E)	Development and evaluation of precision mechanization tools and technology that reduce reliance on hand labor within the vineyard and processing facilities (e.g, canopy management, weed and pest management, crop management, sorting, MOG removal).
2A)	Evaluation of rootstock suitability for PNW production.
B)	Development and evaluation of organic, sustainable, regenerative farming systems.
C)	Biology and management of vineyard weeds.
D)	Biology and management of new or invasive insect pests.
E)	Biology and management of soil-borne pests.
3A)	Biology and management of trunk diseases.
B)	Grapevine physiology related to yield, ripening, and quality.

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