Specialty Crop Block Grant Awards 2021

In 2021, the Washington State Department of Agriculture received approximately $4.6 million to help fund 20 projects:

Grant Recipient: **Washington State Fruit Commission**

Project Title: **Fresh Sweet Cherries Product Launch and Market Development in India**

Award: **$245,768**

Abstract: The Washington State Fruit Commission (WSFC) will establish an agreement with the Washington State Department of Agriculture to create trade and consumer demand and increase sales of fresh, sweet Northwest cherries in the India market through strategic Trade partnerships, influencer marketing, public relations, product education meetings and events, and research.

Grant Recipient: **Pear Bureau Northwest**

Project Title: **Word Pear Day Global Promotion In-Person Consumer Event Outreach and Social Media Promotion**

Award: **$100,000**

Abstract: PBNW will establish an agreement with the Washington State Department of Agriculture to target increased consumption and awareness of USA Pears in the key export markets of Mexico and Canada, with large-scale in-person consumer outreach events (mall events, road shows, restaurant take-over, etc.) to celebrate World Pear Day and conduct a coordinated social media outreach campaign to broaden the reach and impact of World Pear Day to all USA Pear export markets. World Pear Day is a global promotion initiated by PBNW to celebrate all things pears. PBNW will work with a Global Ad agency to conceptually develop, implement and evaluate all the activities described above. Planned activities at the in-person outreach events will include sampling USA Pears, blind taste tests for consumers to find their "perfect pear," recipe demonstrations, interactive educational activities for kids and adults. Due to ongoing concerns with Covid, the vaccine rollout, and the possibility there still may be Covid-related restrictions in place for large gatherings and on sampling activities in December 2021, PBNW will look to start this project in earnest in December 2022.

The global outreach promotion will generate an estimated $200,000 in earned media coverage in the US, Canada, and Mexico, PBNW expects the digital outreach promotion will be an important trending topic on social media during the lead up to World Pear Day, on the day itself and the weeks that follow. PBNW expects to reach an estimated 3,000 consumers with the in-person consumer outreach events and reach over 15 million impressions with the media coverage and social media outreach campaign. The activity will increase the trade's confidence in USA Pears in competitive markets.

Grant Recipient: **Washington State University — Kate Evans**

Project Title: **Establishing Rootstock and Production System Recommendations for New Washington Apple Selection WSU 'L'**

Award: **$220,045**

Abstract: A Washington State University research and extension team will establish an agreement with the Washington State Department of Agriculture to establish two orchards of the new potential apple release (WSU selection 'L') with four different rootstocks and two different production systems to develop recommendations for Washington growers. One orchard will have a research focus, with replicated blocks of each rootstock/system combination to enable appropriate statistical analysis of the growth and production data collected. The second orchard will have a demonstration focus and will be planted with full rows of each rootstock/system combination to better represent a commercial orchard. Trees have been propagated ready for planting in spring 2022 which will enable three growing seasons of data to be collected in the project period. Field visits to both orchards (in person and/or virtual), combined with recommendations based on the robust data from the research orchard, will enable Washington apple growers to make informed decisions on how to best establish and manage this new variety in their own orchards. In addition, grower-press articles and stakeholder meeting presentations will be used for dissemination. All information generated will be available on-line through the WSU Tree Fruit Extension website www.treefruit.wsu.edu.

Grant Recipient: **Washington State University — Tobin Northfield**

Project Title: **Sustainable Management of X-Disease by Removing Weedy Vector and Pathogen Hosts**

Award: **$244,750**

Abstract: The Washington State University will establish an agreement with the Washington State Department of Agriculture to evaluate environmentally sustainable weed management techniques to remove weedy hosts for the pathogen and the leafhopper vectors in a large-scale field trial in commercial orchards. The Washington stone fruit (cherry, peach, nectarine) industry is experiencing a devastating X-disease epidemic that makes fruit unmarketable and has no cure. Key timings for weed removal will be evaluated to break the cycle of disease transmission. These techniques will reduce the environmental impacts of repeated insecticide sprays and mitigate the spread of the disease to safeguard fruit production.

Grant Recipient: **Washington State University — Tianna DuPont**

Project Title: **Scouts and Thresholds: Implementing Biological Base Pear IPM**

Award: **$246,524**

Abstract: Through this project, Washington State University will establish and agreement with Washington State Department of Agriculture to build on previous work to establish strategies which consistently produce marketable fruit by testing natural enemy thresholds and establishing a scouting network. Washington is the nation's number one pear producer, growing one half of U.S. pears. Pear psylla and spider mites are a top priority for pear growers in production areas like the Wenatchee river valley. Low fruit prices and inconsistent returns combined with rising insect control costs are threatening profitability. High yields and quality fruit are needed to keep pear production competitive.

The project will test the use of natural enemy thresholds to make spray decisions in four IPM orchards. Insect incidence, fruit quality, and profitability will be compared to adjoining conventional and organic orchards.

Additionally, a pilot scouting network will provide a scalable model providing growers the information needed to make IPM decisions.

The project will create a WSU database and online App where individual scouts upload information which is automatically sent to growers and consultants. During the pilot, 2 scouts would be trained and mentored by the WSU entomologist (scientific assistant). Said scouts would scout 50 blocks, approximately 1,000 acres. The long-term goal would be to scale up to cover the acres which are actively transitioning to an IPM program. Use of natural enemy-based thresholds and trained insect scouts are predicted to eliminate two or three late season sprays per year resulting in lower spray costs and fewer environmental impacts.

Grant Recipient: **Washington State Dept. of Agriculture — Josh Milnes**

Project Title: **Survey for Parasitoids that Infest the Apple Maggot and Snoberry Fly (Diptera: Tephritidae) in Washington**

Award: **$102,312**

Abstract: The Washington State Department of Agriculture will conduct a survey for parasitoids that infect the apple maggot and snoberry fly in Washington. Sympatric speciation via host shifting contributes to insect diversification. An example of this process involves *Rhagoletis pomonella*, the apple maggot fly, a major quarantine pest that poses a serious economic threat to the apple industry in Washington State. A related fly species, *R. zephyria* (snowberry fly), is a native species that is often mistaken for *R. pomonella*. Within the fruit, eggs or larvae of both fly species are attacked by wasp parasitoids that themselves may be undergoing sympatric speciation in *R. pomonella* and *R. zephyria*. To minimize the impact that *R. pomonella* can have on the apple industry, Washington State Department of Agriculture (WSDA), in collaboration with the United States Department of Agriculture-Agricultural Research Service (USDA-ARS), plans to execute a project evaluating biological control options that include these sympatric wasps that attack both fly species. These options will complement current fly detection and control programs. WSDA's goal is to survey native parasitoids of the *R. pomonella* complex and to determine the frequency of "cross parasitism" by parasitoids of these fly species. Furthermore, we plan to map out the host distribution of parasitoids of this *Rhagoletis* complex to determine how to conserve the parasitoids and minimize the future impact of *R. pomonella* complex on Washington agriculture.

Grant Recipient: **Washington State University — Gabriel LaHue**

Project Title: **Regulated Deficit Irrigation for Improved Cider Apple Quality with Reduced Water Input**

Award: **$244,085**

Abstract: Washington State University (WSU) will establish an agreement with the Washington State Department of Agriculture to improve stewardship of water resources and the Washington state cider industry's competitiveness by measuring the response of cider apple yield and quality to regulated deficit irrigation and then disseminating research results through field days, videos, WSU Extension publications, and grower training on methods of irrigation scheduling that can also translate across perennial specialty crop systems.

Grant Recipient: **Washington State University — Lynne Carpenter-Boggs**

Project Title: **Health Soils for Healthy Peas: Soil PH Management and Micronutrient Dynamics for Washington Peas**

Award: **$244,944**

Abstract: Washington State University will establish an agreement with the Washington State Department of Agriculture to evaluate genotype by environment by management interactions (G x E x M) of uptake efficiency and grain content of nutritionally important micronutrients in existing cultivars and advanced breeding lines of peas in acidic and remediated soil environments for improved production and marketability of Washington peas, and disseminate results to stakeholders through meetings and field days. Agricultural soil degradation in the Inland Northwest (INW) has led to both acidification and micronutrient depletion. These factors reduce the production, profitability, and nutritional quality of crops. Pulse crops are particularly challenged in low pH soils, often producing no yield where soil pH is below 5.3, which is now a relatively high pH in much of eastern Washington. Soil pH directly and indirectly affects micronutrient availability, which also determines pulse crop performance and quality. Low micronutrient content is beginning to threaten marketability and value of food quality peas from the INW. This project will develop information for both soil management and crop (genetic) improvement to increase micronutrient content, marketability, and overall profitability for food quality peas. On-farm trials in three eastern Washington environments will quantify the efficacy, interactions, and economics of soil amendments for ameliorating acidic soils and micronutrient deficiencies. The outcomes indicating pea cultivars with higher and lower capacity for micronutrient uptake and best management in the three environments will be presented at multiple grower conferences, field days, and workshops. Both soil and crop management are needed for higher production and improved quality and marketability of Washington-grown peas.

Grant Recipient: **Snohomish Conversation District**

Project Title: **Working Buffer Practices on Marginal Farmlands to Increase Income Potential and Address Natural Resource Concerns**

Award: **$244,275**

Abstract: The Snohomish Conservation District will establish an agreement with the Washington State Department of Agriculture to establish on-farm working buffer trials to increase income potential and address natural resource concerns. Agroforestry is a system of practices that utilizes perennial tree crops to increase farm income, resiliency, and ecosystem services. This project will focus on combining two temperate agroforestry practices, multi-story cropping and native riparian buffers, to create multifunctional "working" buffers. These provide financial return to the farmer while maintaining the ecological benefits of traditional riparian buffers. The utilization of this practice to protect critical water resources while mitigating losses for agricultural producers has garnered regional attention from natural resource agencies. However, there has been little producer adoption, likely due to a lack of region-specific technical information available regarding implementation and the market viability of specialty crops suitable to the practice.

Snohomish Conservation District (CD) will lead a partnership between Whidbey Island CD, Skagit CD, Washington State University (WSU), and WSU Extension. This team will leverage SCBG funds and existing CD and WSU networks to increase awareness and adoption of this practice among agricultural producers in the Puget Sound region. The project will result in the establishment of on-farm working buffer trials, development of region-specific templates and videos to aid in implementation, and coordination of educational workshops and farm tours. The working buffer trials will be designed and analyzed to determine the economic and agronomic viability of three specialty crops, planted with multiple native plant species that can capture broad appeal to different specialty crop producers. These efforts will demonstrate agroforestry as a multi-faceted solution to maintaining productivity in seasonally ponded and saturated fields while sustaining the principles of environmental stewardship.

Grant Recipient: **Kwiaht**

Project Title: **Old Wood Ciders: Evaluating Heritage Varieties for Specialty Cider**

Award: **$93,132**

Abstract: Kwiaht will establish an agreement with the Washington State Department of Agriculture to identify and evaluate heritage tree fruit of the San Juan Islands for producing specialty ciders. Through participatory research involving orchard owners, value-added product producers, and community volunteers, Kwiaht will evaluate heritage and locally adapted, apple, pear, and plum varieties from the San Juan archipelago for use in the production of specialty ciders. This will enhance the competitiveness of specialty crops by increasing the economic return on heritage fruit varieties per acre for at least 10 specialty producers. Additionally this project will result in the characterization and evaluation of at least 12 heritage fruit varieties that have not yet been evaluated for their use in ciders and, working with cider makers, facilitate the release of at least 3 new varietal cider products. Our sampling will focus on varieties growing in 100+ year- old heritage orchards, and include unique seedling varieties where practical. Fruit will be tested annually for sugar, acidity, malic acid, tannins, pectin, vitamin C, antioxidants, and flavor. Preliminary benchmarks for cider varieties will be based on the work of Dr. Carol Miles at WSU, and reviewed by participating value-added producers; varieties that meet these benchmarks will be provided to producers for in-product evaluation. To increase fruit value for orchards, Kwiaht will provide historical, nutritional, and ecological information on varieties for marketing purposes; and cuttings and grafted trees to increase production of the most marketable varieties. Where demand is sufficient, Kwiaht will work with new farmers to establish orchards with heritage cider varieties.

Grant Recipient: **Washington Wine Industry Foundation**

Project Title: **Stop the Spread: Building Pest Management Plans to Comply with New Grape Quarantine Rules**

Award: **$237,703**

Abstract: The Washington Wine Industry Foundation (WWIF) will establish an agreement with the Washington State Department of Agriculture to establish and implement a Pest Management Plan (PMP) before moving plant material, labor or equipment out of a pest-infested vineyard. This project responds to a recent update to the state grape quarantine rule requiring grape growers to establish and implement a Pest Management Plan (PMP).

With this hands-on, time-intensive project, the Washington Wine Industry Foundation (WWIF) will facilitate and execute planning, development, writing, communicating, outreach, and presentation of educational sessions and materials for growers, vintners, and nurseries utilizing expertise of WSU extension specialists, WSU researchers, State Department of Ag regulators, and key expert viticulturists.

Funding will allow WWIF to:

- Work with regulator (State Department of Ag) to inform requirements of a Pest Management Plan
- Work with subject matter experts—WSU extensionists and researchers—to design Pest Management Plans for each major quarantine pest
- Facilitate education for growers and nurseries to create and implement individualized Pest Management Plans.
- Create multi-channel outreach campaign to "stop the spread" of quarantine pests from infected sites—targeting a broad audience including grapegrowers and their staff, winemakers/vintners and their staff, nurseries and their staff, crop consultants, and, service and supplier companies.

Grant Recipient: **WSDA, International Marketing**

Project Title: **Raising Awareness of Washington's Specialty Crops Locally and Internationally**

Award: **$250,000**

Abstract: The Washington State Department of Agriculture will develop and distribute videos to raise awareness of Washington specialty crops to domestic and international consumers and increase specialty crop export sales in foreign markets. Videos relevant for an international audience will be subtitled or dubbed in selected foreign markets where WSDA has in-market representation. All videos will be posted on YouTube and social media domestically and internationally to promote Washington specialty crops.

Grant Recipient: **Washington State University — Tianna DuPont**

Project Title: **Tree Removal for X-disease and Little Cherry Disease Infected Orchards**

Award: **$249,200**

Abstract: Washington State University in partnership with local conservation districts and pest boards will provide cost share stipends for the removal of trees infected with X-disease and Little cherry disease in order to slow the spread of these devastating pathogens which have already caused the loss of 974 acres of cherries in Washington and Oregon.

Financial constraints and lack of awareness mean many small and marginally profitable growers are not removing trees infected with X-disease and Little Cherry Disease, leaving a reservoir of disease. X- disease phytoplasma and Little cherry virus are systemic in the plant. Tree removal is the only option to slow the spread of the disease. Tree removal costs $1,500 to $3,000 per acre which many small growers may not be able to afford. Washington State University in partnership with local conservation districts and pest boards will provide cost share stipends for tree removal and testing related to X-disease and Little cherry disease. This cost share stipend would not be tied to replanting which is currently not advisable in many areas due to high infection rates and lack of established protection measures. Tree removal cost share of up to $750 per acre for ten ten-acre parcels per year for three years could result in the removal of 300 acres of infected trees over the course of the grant, significantly reducing the reservoir for disease and infection of neighboring orchards.

Grant Recipient: **USDA, Agricultural Research Service — William Walker**

Project Title: **Genetic Insights into Leafhopper/Phytoplasma Interactions and Gene-Based Immunization for Plant Disease Control**

Award: **$233,807**

Abstract: This project's overall focus is on biological mechanisms underlying X-disease and involves a collaboration between researchers at the United States Department of Agriculture and Washington State University. X- Disease is caused by a phytoplasma bacteria transmitted to stone fruit trees by leafhopper vectors and is fatal to the fruit trees. Currently there are no direct treatments to control X-disease, so growers rely upon the removal of infected trees and prophylactic insecticide applications to suppress vector populations. Very little is known about the genetics of the leafhoppers and the X-disease phytoplasma. Our project will investigate genetic interactions between phytoplasma and its leafhopper vectors. Specific attention will be given to immune system genes of the leafhoppers and bacterial genes, known as effectors, that allow the bacterium to infect host plants and insect vectors. The genomes of the primary leafhopper vectors of X- disease phytoplasma will be sequenced. Catalogues will be developed of all genes expressed by leafhoppers and phytoplasma

during infection of leafhoppers and these catalogues will be analyzed to identify the genes that putatively mediate X-disease phytoplasma interactions with their leafhopper host. The genomic resources developed from this project will be used to integrate X-disease research with ongoing research on similar pathosystems for which extensive genomic resources are already available, namely citrus greening and zebra chip diseases. Specifically, this project will allow researchers to eventually adapt novel gene-based therapies and delivery mechanisms that are being developed for citrus greening and potato zebra chip diseases to immunize cherry trees against the X-disease phytoplasma.

Grant Recipient: **The Center for Produce Safety**

Project Title: **Validation Study for the Tree-Fruit Industry: Effective Strategies to Sanitize Harvest Bins and Picking Bags**

Award: **$250,000**

Abstract: The Center for Produce Safety will partner with Kansas State University to develop science- based recommendations to help improve cleaning and sanitation practices for tree fruit harvesting operations. The reduction of foodborne illnesses associated with fresh produce can be better achieved by controlling potential food safety risk points during harvesting, processing, and distribution. Harvesting tools, bins, and containers have been recognized as microbial reservoirs and contamination sources in several outbreaks and recalls. Undefined recommendations for cleaning and sanitation of harvest bins and picking bags have created challenges for tree fruit producers and handlers. The overall goal of the project is to validate, through lab and field testing, several strategies for cleaning and sanitizing harvest bins and bags in collaboration with growers and packinghouse stakeholders. This project will first evaluate the effectiveness of commercially available sanitizers (chlorine, chlorine dioxide, peracetic acid, steam, and silver dihydrogen citrate) in controlling Listeria monocytogenes, Salmonella, and Escherichia coli on representative food contact surfaces encountered in the apple industry during harvesting. The results obtained will guide the selection of treatments for the subsequent validation studies at commercial facilities, located at primary sites of small-scale (Kansas, Missouri, and Iowa) and large-scale (Washington) apple production areas in the United States. The data generated from this project will improve the competitiveness of tree fruit crops by increasing the number of available strategies that can be implemented by growers and packers of many sizes and scales, while managing food safety risks tied to sanitation of harvest bins and picking bags.

Grant Recipient: **Washington State University — Joseph Zagrodnik**

Project Title: **Utilizing Machine Learning for Site-Specific Washington State Perennial Crop Weather Forecasting**

Award: **$243,459**

Abstract: The Washington State University (WSU) AgWeatherNet (AWN) program, in collaboration with the University of Washington Department of Atmospheric Sciences, will utilize machine-learning techniques applied to AWN station data to develop new site-specific air temperature and relative humidity forecast products to aid Washington State specialty crop grower decision-making. These forecasts and forecast- dependent decision support tools will be made available to Washington growers for free on the new AgWeatherNet AWNfarm web- and mobile-platform, as well as via other WSU platforms.

Grant Recipient: **Washington State University — Matthew Whiting**

Project Title: **Mechanically-Assisted Harvest Technologies for Reducing Labor Requirements in Tree Fruit**

Award: **$234,453**

Abstract: Currently, every piece of high-value tree fruit grown in Washington is harvested by hand, at great annual risk to those harvesting the fruit, and singular expense for orchardists raising the fruit. This research and extension proposal led by Washington State University faculty, in partnership with the agricultural engineering firm DeKleine Machine Co., seeks to improve production efficiency and reduce labor requirements for harvest of tree fruit crops. We propose to further develop mechanically-assisted harvest systems comprised of small, handheld shakers combined with lightweight catching frames (i.e., shake- and-catch). Our previous research has demonstrated potential for remarkable improvements in harvest efficiency using prototype shake-and-catch systems in sweet cherry and apple. We propose here to refine the systems and work with commercial growers in their development, evaluation, and commercialization. We propose to work specifically in sweet cherries, first with stem-free fruit harvested for cannery or freezing, as well as stem-free fruit for fresh market. In addition, we propose to evaluate the system for cider apple harvesting, a process that shows potential to be mechanized, with little concern over minor bruising or cosmetic damage. At this project's completion, we will have developed and evaluated a novel handheld shake and catch harvest system for sweet cherries, and cider apples that may be further evaluated for fresh market apples, and other crops in the future. This project will help ensure the sustainability of Washington's high value fruit crops through the development and deployment of innovative harvest systems.

Grant Recipient: **WSDA, Organic Program**

Project Title: **SOrganic Online: Creating Tools and Resources to Support Organic Specialty Crop Farmers and Handlers**

Award: **$242,764**

Abstract: Statistics support specialty crop businesses in planning for growth, responding to trends, and securing funding. WSDA Organic Program will facilitate the use of this vital data by compiling and maintaining statistics on Washington organic agriculture.

USDA organic regulations have specific restrictions on the use of input materials on organic farms and in processed organic products. WSDA Organic Program reviews and registers inputs used in organic production. To help organic specialty crop businesses navigate input material requirements, WSDA Organic Program will develop a searchable online database of compliant products to make materials easy to source and select for the proper use.

When organic specialty crop farmers, processors, and handlers choose to certify their businesses, they commit to following organic practices from soil to sale. They must follow USDA organic requirements, including an annual certification application and update, maintenance of extensive recordkeeping, and consent to inspections. Organic certification can be complex and time consuming. To improve service to existing clients and ease certification for new clients, WSDA Organic Program will respond to requests to modernize the certification process for specialty crop farmers, processors, and handlers.

To meet these objectives, WSDA Organic Program will:

1. Develop an online searchable database of certified organic specialty crop production statistics in Washington State, including current and historical data
2. Develop an online searchable database of input materials approved for organic production
3. Develop an online account center where certified organic businesses may review and update their certification information in real time, and directly respond to requests for information

Grant Recipient: **Washington State University — Laura Lewis**

Project Title: **Building an Aggregation Network and Marketing Support for BIPOC Specialty Crop Farmers in Western WA**

Award: **$249,178**

Abstract: Washington State University (WSU) in partnership with International Rescue Committee (IRC) and Culinary Breeding Network (CBN) will create a BIPOC specialty crop aggregation association for the Food Access Aggregation Community Team (FAACT) of South King County, that will engage in branding, marketing, and events to build direct-to-consumer, retail, and wholesale markets for BIPOC specialty crop producers in Western WA.

Grant Recipient: **Washington State University — Laura Lewis**

Project Title: **Gorge Grown Mobile Farmers Market: Increasing Markets for Smaller-Scale Specialty Crop Producers**

Award: **$54,972**

Abstract: Gorge Grown Food Network will increase sales of specialty crops and the number of access points for specialty crops in Klickitat and Skamania counties by increasing marketing/promotion, connecting smaller-scale farmers to new accounts/markets, hosting educational events, and increasing the number of communities served through the Gorge Grown Mobile Market.