

# SPECIALTY CROP BLOCK GRANT AWARDS 2019

In 2019, the Washington State Department of Agriculture received approximately \$4.7 million to help fund 22 projects:

**Grant Recipient:** 2nd Sight BioScience Inc.  
**Project Title:** Automation for Stringing Hops  
**Award:** \$250,000.00

**Abstract:** 2<sup>nd</sup> Sight BioScience, Inc. (“2nd Sight”) engineers will design and build a machine that will automatically tie biodegradable twine to trellis cables in a hop yard and automatically anchor that cord to the ground at the hop plant’s base so that the plant can grow up the cord. This automation will replace the manual labor required to perform the same task.

During Phase 1 of the project, 2nd Sight has gathered specifications from twelve growers representing over half of the hops acreage in WA State. Field and crop variables have been defined and the growers have agreed that a final machine cost in the \$200,000 range will be acceptable.

During Phase 2, 2nd Sight will produce engineering drawings of the machine and work with several growers to confirm that the machine meets defined requirements and fits within financial constraints.

During Phase 3, 2nd Sight will build and field test a prototype unit.

During the final phase, Phase 4, 2nd Sight BioScience will incorporate any needed design changes discovered during field testing and prepare for production unit build.

At 2nd Sight, our scientists and engineers have decades of experience designing and testing innovative new technologies and automation. 2nd Sight also has equivalent experience bringing those innovations that meet many customers’ needs to market.

**Grant Recipient:** Washington State University – Matthew Whiting  
**Project Title:** Reducing Cold Damage in Tree Fruit  
**Award:** \$188,165.00

**Abstract:** Washington State University – Matthew Whiting - Every year, tree fruit growers lose money from low temperatures damaging flowers or reproductive buds. The U.S. Food and Agriculture Organization reported that cold damage has caused more economic losses to crops in the U.S. than any other weather hazard. The potential losses from cold damage are devastating, and predicted to become more commonplace with increasingly variable spring weather.

Despite the significant perennial threat of cold damage, growers have no new reliable means for protecting developing buds, depending largely on wind machines that are ineffective against advective freeze events. This proposal by Washington State University faculty will build short- and long-term solutions for reducing cold damage to in sweet cherry. Our objectives are to 1) characterize the variability among cultivars and material in the cherry breeding program for its sensitivity to cold damage, 2) Identify candidate molecular markers related to cold tolerance (long-term strategy), and 3) evaluate the potential for plant-based dispersions for reducing cold damage (short-term strategy).

**Grant Recipient:** The Washington Hop Commission  
**Project Title:** Seeking Resolution of Non-Tariff Barriers against Hops in Korea  
**Award:** \$248,490.00

**Abstract:** The Washington Hop Commission – For the past three years, the US hop industry has worked to

establish pesticide MRLs in Korea, a key and growing export market, prior to their January 1, 2019 regulatory transition. We succeeded with 20 new MRLs in place. However, 38 additional hop MRLs are needed. On August 20, Korea announced it would provide a three year temporary extension on most of these MRLs, through 2021. This has started a three year clock to get as many of these hop MRLs established as possible by this deadline. If not established, the MRLs will fall to 0.01 ppm, rendering most products in this category as not usable for export to Korea. The Washington Hop Commission proposes to work over the next three years to establish all needed hop MRLs and keep the Korean market open for Washington hop growers and shippers. This will be difficult. The easy submissions are completed. Major registrants have made submissions on our behalf. We now need to convince smaller registrants to make submissions, and when that is not possible, to make the submissions ourselves. We will assess the needs, determine if data is missing, generate data if necessary, retain experts on the Korean transition and technical submission experts, draft applications, pay for reviews in Korea, and travel to Korea to meet with appropriate officials in support of this effort. We have a three year window to complete this task, and we need resources to be successful. Should we fail, the hop market will suffer.

**Grant Recipient:** WSDA – International Marketing

**Project Title:** Regaining Market Share in Japan for Washington Hybrid Storage Onions

**Award:** \$51,450.00

**Abstract:** The Washington State Department of Agriculture International Marketing Program will conduct two inbound buying missions, bringing buyers from Japan to Washington onion packing facilities and farms to conduct business-to-business meetings and to educate them on the latest technologies, Good Agricultural Practices, food safety, quality control, and environmental compliance issues. Japanese buyers will not only gain awareness of the competitive attributes of Washington hybrid onions, but will make purchases as a result of this project.

**Grant Recipient:** Washington State Blueberry Commission

**Project Title:** Washington Blueberry Promotions in the Philippines

**Award:** \$80,000.00

**Abstract:** The Washington Blueberry Commission - This project is designed to take advantage of the pending opening of the Philippines market to fresh Washington blueberries. A market access agreement is expected to be finalized by mid-2019 that will permit the entry of fresh blueberries from Washington for the first time. The Washington Blueberry Commission intends to use this advancement to make a strong push for Washington fresh, frozen and dried blueberries at a time when the products should already receive some interest from the Philippine trade.

Specifically, the Washington Blueberry Commission will implement a robust promotional campaign to inform distributors, retailers, consumers and food manufacturers of the quality of Washington blueberries, their availability, and suppliers from the state.

The promotional strategy will include retail promotions with point of sale materials, advertising, and retail demos that promote the Washington origin of fresh, frozen and dried blueberries among trade partners that carry these products. Promotions will also be extended to cover processed products in the market that incorporate Washington blueberry ingredients.

**Grant Recipient:** Northwest Cider Association

**Project Title:** Washington Hard Cider Market Development and Symposium

**Award:** \$100,290.00

**Abstract:** NW Cider Association - The Northwest Cider Association's (NWCA) members have a \$690 million economic impact on our region and a \$300 million impact on the state of Washington specifically. Hard cider sales have increased rapidly across the nation and Washington apple growers have benefitted

from processors selling apple juice to cidermakers. Hard cider sales in Washington have slowed this year, so NWCA proposes developing an all-encompassing Cider Symposium to address this need. The symposium will be part conference, part buyer event and will encourage industry coordination to maintain strong growth and be as relevant as the beer and wine sectors. Kicking off year one in Tacoma, the symposium will enhance the Washington economy as a result of the growth in the hard cider market.

Project objectives are:

1. Increase sales and market share of Washington hard cider through a buyer and influencer (media) event.
2. Enhance the competitiveness of Washington apples by creating a symposium which coordinates apple growers and cidermakers, teaching them how to conserve resources in marketing and growing by working together. The symposium will provide best practices to the industry to ensure they are utilizing efficient, sustainable practices with the highest economic return.

This symposium will offer information and marketing tracks for orchard-based cider production, as well as modern cider styles made with the six main varieties of apples most commonly grown in Washington. It will provide a tailored marketing track to support sharing resources around distribution as well as a track for growers.

**Grant Recipient:** National Association of State Departments of Agriculture Foundation

**Project Title:** The Farm to Food Accelerator for Washington Specialty Crop Women Producers

**Award:** \$249,921.00

**Abstract:** The National Association of State Departments of Agriculture (NASDA) Foundation is partnering with the Washington State Department of Agriculture (WSDA), Oregon Department of Agriculture (ODA), Oregon State University Food Innovation Center (FIC) and Union Kitchen to develop a multi-state project to equip female specialty crop producers to grow their value-added businesses. NASDA Foundation and its partners will develop the Women's Farm to Food Accelerator. The goal of the accelerator is to empower Washington and Oregon female specialty crop producers with food and beverage products to enter into new state and regional markets. The 90-day accelerator will provide training in product development, food safety, marketing and business development. The accelerator will include online modules, peer-to-peer learning, a women's mentor network, and one-on-one consultation with experts. We will target female producers whose products contain at least 50 percent Washington-grown and Oregon-grown specialty crops. We will also target female producers with small operations (i.e., less than \$500,000 annual gross sales, less than 20 employees). Through this project, NASDA Foundation and its partners will train a total of 75 female specialty crop producers (45 from Washington, 30 from Oregon). After completing the accelerator, we anticipate the following outcomes: 100 percent of participating producers will increase their awareness of new markets for specialty crop products, 95 percent of participating producers will increase efficiency within their businesses as measured by the number of products reaching new markets or reduced costs, and 80 percent of participating producers will increase their sales of Washington specialty crop value-added products.

**Grant Recipient:** Organic Farm School

**Project Title:** Comparing and Teaching Small and Micro Farming Scales for Beginning Farmers

**Award:** \$174,991.00

**Abstract:** Organic Farm School - Aspiring farmers face numerous challenges in starting a new business including finding access to farmland and capital for investments. Farming is an expensive business to enter with the cost of land, infrastructure and equipment all very high. With the average age of farmers at 59 driving our need to recruit and train a new generation of farmers, these barriers must be addressed quickly. Recently, several high-profile small market farms have promoted intensive farming methods of specialty crops using only hand labor and two-wheeled tractors and claiming to be profitable and sustainable on under 2 acres of production. Often called micro-farming, this model is very appealing to new farmers who see it as an opportunity to enter farming with significantly reduced land and equipment investments. However, these farms are not fully transparent with their finances or labor needs, making it difficult to assess the viability or replicability of these methods. This project seeks to 1) research these farming methods, 2) teach the students at the Organic Farm School (OFS) these methods as one alternative, 3) implement a trial of these methods

with specialty crops at both the OFS student farm and Oxbow farm, 4) collect data on the cost and profitability of these methods, 5) conduct an evaluation of these methods in comparison to more traditional small-scale tractor-based farming practices with specialty crops and 6) present the results of this project through workshops, conferences and a publication.

The project results will offer important information regarding the viability of two differing small-acreage, specialty crop farming methods, helping aspiring market farmers better plan their farm business and enhancing their competitiveness in the domestic specialty crop market.

**Grant Recipient:** LINC Foods

**Project Title:** Supporting Small Farms: Optimizing a Regional Value-based Short Food Chain

**Award:** \$101,186.00

**Abstract:** LINC Foods LLC. - The goal of this project is to increase specialty crop sales to LINC Foods' three largest customer segments (restaurants, institutional dining services, and regional grocery retail). We will work with professionals from each segment to address barriers and seize opportunities characteristic of their portion of industry. We will introduce an Artificial Intelligence application built to enhance customer ordering experience while freeing up staff time for customer relationship development. We will implement a promotional campaign that responds to the requests of our mission-driven institutional and grocery retail partners and presents regional specialty crops to large numbers of end-consumers.

The Artificial Intelligence website/web based application and mobile app will be undertaken in partnership with a developer and include design input from industry partners and customers. The application will provide streamlined sms text and email communication with customers, improving the customer experience and leading to increased specialty crop purchases.

**Grant Recipient:** University of Washington

**Project Title:** A Pesticide Application Risk Management Tool: The PestiSeguro/PestSafe App

**Award:** \$250,000.00

**Abstract:** The University of Washington's Pacific Northwest Agricultural Safety and Health Center (PNASH) will lead and execute the specialty crop project, A Pesticide Application Risk Management Tool, The PestiSeguro/PestiSafe App (App), Kit Galvin, Project Manager. The purpose of this three-year training and education project is to minimize the human health, environmental, and financial risks to specialty crop producers/growers and employees from improper handling of agricultural pesticides used in production. The project goal is to provide a technological solution that addresses a long-standing problem: pesticide labels are in English, but most farmworkers employed in specialty crop production are Latino and Spanish is their primary language. Adoption of the App that contains the label safety information in English and Spanish will "enhance the competitiveness of specialty crops through greater capacity of sustainable practices..." This will be demonstrated by the number of growers/producers adopting this technology.

The project objectives are to 1) scale-up the current App for the Washington State tree fruit industry to include at least six state specialty crops, 2) engage stakeholders through the Technical Advisor Panel (TAP) and Early Adopter Program (EAP), 3) disseminate the PestiSeguro/PestiSafe to the Washington specialty crop industry, 4) evaluate distribution; and 5) plan for the App's financial and technical sustainability. Tasks include: scaling-up the technology, translating labels, establishing the TAP and EAP to engage producers/growers, promoting and disseminating the App annual crop meetings/conventions, collecting and analyzing data to assess App use and uptake, and reporting results and outcomes to funders and stakeholders.

**Grant Recipient:** Washington State Tree Fruit Association

**Project Title:** Enhancing the Recruitment Process in the WA Tree Fruit Industry

**Award:** \$84,104.00

**Abstract:** Washington State Tree Fruit Association - Attracting skilled workers is a necessity to maintain the competitiveness of Washington's agriculture. Labor shortages are a big issue and have been hurting

Washington's tree fruit industry for several years, forcing farmers to leave their crops on the trees or harvest late with a resulting loss of storage life.

Adding to this problem, recruiting in the agricultural sector in today's job market is challenging and costly to producers. The Washington State Tree Fruit Association (WSTFA) will develop visual tools to increase the efficiency of the skilled workforce recruitment process in the Washington tree fruit industry. WSTFA will produce 2 bilingual pre-hire videos (English and Spanish), that will help attract and retain local and seasonal workers. Providing candidates with a general overview of the working environment, job demands, and physical expectations in farms or packinghouses will help reduce no-shows after interviews. These informative videos will also decrease recruitment costs and time spent by Human Resources in the hiring process. Additional onboarding videos for over 80 packinghouses will provide a more detailed description of the main job positions in a warehouse and explain what is expected from workers. Finally, WSTFA will produce a bilingual "Role Model" video, with interviews of hardworking people that have grown professionally with their companies. These last videos will help the industry retain skilled workers. A total of eight videos will be available on WSTFA's website and distributed to over 1,500 tree fruit producers at no cost. USB drives with the videos will be offered as well.

**Grant Recipient:** Washington State University – Tom Collins

**Project Title:** Assessment of Smoke Taint Risk in Vineyards Exposed to Smoke from Wildfires

**Award:** \$243,279.00

**Abstract:** Washington State University – Tom Collins will addresses the grape and wine industry's need for methods for assessing the risk to grape and wine quality associated with vineyard exposure to smoke from wildfires. During a vineyard smoke exposure, smoke aroma compounds are adsorbed into skin cells of the grape berries and later extracted from the skins into the wine during the fermentation process, resulting in wines with characteristic smoke related aromas and flavors. Smoke exposure events in several recent vintages have exposed the inadequacy of existing methods for analysis of grapes and wines for the presence of smoke related marker compounds in grapes and wines and for the evaluation of the risk to quality this markers signify. This interdisciplinary project will apply a top-down, systems-level metabolic network model using analytical tools and machine learning techniques developed in Dr. Ficklin's research program that will account for wine variety, smoke composition, and fermentation time to existing and new datasets created in Dr. Collins' ongoing project in risk assessment for smoke taint funded by the Washington State Grape and Wine Research Program. The purpose is to identify appropriate chemical markers and sensory techniques for the assessment of smoke taint risk associated with smoke exposed grapes.

**Grant Recipient:** Washington State University – Markus Keller

**Project Title:** Optimizing vineyard irrigation management by grape variety

**Award:** \$245,324.00

**Abstract:** This project will be executed at Washington State University. Dozens of wine grape varieties are grown in Washington, making available a wide spectrum of wine flavors and styles. However, vineyard irrigation management strategies have not evolved in parallel with varietal diversification. The main strategy is a regulated deficit irrigation program customized to fit either red or white varieties. Yet growers have reported that many varieties show peculiar responses making irrigation management ambiguous and resulting in over irrigation of some varieties and under irrigation of others. This project will provide a detailed evaluation of the responses to imposed water deficit of 30 wine grape varieties grown in the same vineyard. This approach will allow us to develop a variety-specific decision support tool with respect to thresholds of soil- or plant-based measures of water status at which water is to be applied. It will also allow us to determine how environmental variation, such as a heat wave, impacts irrigation decisions, and to develop recommendations for possible mitigation practices. Results from this research will allow growers to optimize water use efficiency and water stress monitoring by variety. Moreover, the results will help identify the most suitable varieties to be planted as new vineyards continue to be developed in Washington.



Finally, this project will give the industry valuable insight on compromises between plant stress, productivity, and longevity when multiple varieties are planted, especially in the context of climate change and the scenarios of drought and heat that it entails.

**Grant Recipient:** Washington State University – Lisa DeVetter

**Project Title:** Novel strawberry production and disease management systems

**Award:** \$249,963.00

**Abstract:** This project led by Washington State University will generate needed information to support the expansion of the fresh-market strawberry industry by investigating new systems of production that utilize biodegradable and non-degradable plastic mulches and double-cropping with lettuce, a compatible high-value crop. Gray mold, caused by *Botrytis cinerea*, is one of the most significant foliar and fruit diseases of strawberry in Washington. Mulching and double-cropping can influence disease development, epidemiology, population structure, and management. Of particular importance is mulch impact on rain and irrigation droplet dispersal and subsequent risk of *B. cinerea* spore dispersal, especially into the soil where it may cause subsequent infection. Plastic mulches alone or in combination with fungicides or biological control organisms may help to prevent or delay germination of sclerotia or mycelia in the soil, thereby reducing the need for foliar fungicide applications. The objective of this project is to characterize the impacts mulch and double-cropping have on: 1) Crop growth, production, quality, and profitability; 2) The epidemiology of *B. cinerea*; 3) The population structure of *B. cinerea* to determine if there is overlap in the genetic structure of isolates colonizing strawberry and lettuce; and 4) Splash dispersal and *B. cinerea* infection risks based on mulch type. Management options for the soilborne phase of this disease will also be investigated. Completion of this project will support growers' successful transition to and management of day-neutral strawberry production, while also supporting production of lettuce, a second high-value crop that can be integrated into the same production system.

**Grant Recipient:** USDA-ARS – Kylie Swisher Grimm

**Project Title:** Managing Potato Purple Top Disease: Leafhopper and BLTVA Landscape Ecology

**Award:** \$244,979.00

**Abstract:** USDA-ARS – Kylie Swisher Grimm - Purple top disease has been a persistent problem in Columbia Basin potato production for over 15 years. It is caused by a phytoplasma pathogen known as beet leafhopper transmitted virescence agent (BLTVA), and causes leaf purpling, aerial tuber formation, and plant decline. These foliar symptoms correlate with reduced tuber yield and quality and reduced economic returns. The beet leafhopper, *Circulifer tenellus*, is the vector of BLTVA. Current purple top management strategies target the vector with insecticides that are costly and often lead to outbreaks of other pests. Gaps in our understanding of the pathogen and vector, and their interactions, inhibit alternative disease management strategies. A primary objective of this project is to identify non-crop reproductive host plants of leafhoppers and to determine which of the leafhopper's host plants are susceptible to BLTVA. In a second objective, we will use molecular gut content analyses of leafhoppers to identify the plant sources of leafhoppers arriving in potato. In a final objective, we will develop new molecular tools to address three incompletely understood processes, including vectoring capabilities of leafhoppers, how to get consistent detection of the pathogen in infected plants, and BLTVA movement through the potato plant and its relationship with symptomology. Results will lead to the development of predictive models to forecast leafhopper and BLTVA risk based upon populations occurring in weeds prior to their arrival in potato. This multi-disciplinary project will be led by researchers at the USDA-ARS in collaboration with researchers at Washington State University.

**Grant Recipient:** Washington State University – Cynthia Gleason

**Project Title:** Novel diagnostic tools for Columbia root knot nematode isolates on potato

**Award:** \$245,746.00

**Abstract:** Washington State University – Cynthia Gleason - Root-knot nematodes (*Meloidogyne* spp.) are devastating root pathogens with a broad host range. The Gleason lab at Washington State University studies

the Columbia root-knot nematode *Meloidogyne chitwoodi*, which can infect many high value crop plants, including potatoes. *M. chitwoodi* is particularly problematic on potatoes because it infects both roots and tubers, causing tuber defects that can significantly diminish the value of the crop. The four major isolates of *M. chitwoodi* in Washington differ in their host range and distribution throughout the state. It is impossible to distinguish these isolates by sight, but the isolates differ genetically. In this proposal, our objective is to compare gene expression profiles of *M. chitwoodi* isolates and identify specific genetic differences between isolates. We will use these polymorphisms to develop PCR-based diagnostic tools that can distinguish the specific nematode isolates. With this information, growers can make informed management decisions depending on the isolate(s) present in a given field. In addition, data about the genetic variability underpinning virulence amongst isolates will help with resistance breeding screens, ultimately assisting in breeding more durable potato resistance. Overall, establishing tools to differentiate *M. chitwoodi* isolates will have important consequences on nematode management and resistance breeding programs. The results from this research will help reduce the reliance on chemical controls for nematodes by allowing for better crop rotation planning, and it will ensure that nematode resistant potatoes (when released) are used appropriately on fields where they will be effective.

**Grant Recipient:** Washington State University – Gary Chastagner

**Project Title:** Effect of *Trichoderma* on disease control and growth improvement in nursery

**Award:** \$118,402.00

**Abstract:** Washington State University will address the 2019 "control pests and diseases" WSDA SCBG funding priority by evaluating *Trichoderma* products for efficacy in controlling soilborne *Phytophthora* diseases on a variety of specialty crops. Individual objectives are 1) in-vitro studies of the interactions between *Trichoderma* spp. and *Phytophthora* spp. and their survival over a range of temperatures; 2) efficacy of *Trichoderma* as a potting mix amendment to prevent infection by *Phytophthora*, stimulate growth, and improve outplanting performance on several plant hosts; 3) use of *Trichoderma* as a post-steaming treatment for disease prevention. As a result of this research, we will provide growers with management recommendations that will reduce the impact of *Phytophthora* root disease on several specialty crops. These crops include ornamental, native plant, and conifer nursery stock.

**Grant Recipient:** Washington State University – Pete Jacoby

**Project Title:** Increasing Soil Nutrient Retention in Vineyards via Subsurface Irrigation

**Award:** \$247,484.00

**Abstract:** Washington State University and Pete Jacoby will determine whether DRZ (Direct Root Zone) subsurface irrigation can reduce the amount of nitrogen required to meet desired fruit quality and yield goals. The hypothesis is: application of reduced volumes of water directly into the lower root zone will retain nutrients within the primary root zone within the top two feet of the soil profile; thus reducing both (1) amount of nitrogen needed, and (2) reducing leaching of nitrates into groundwater. Glass collection tubes will permit soil water samples to be withdrawn periodically from a series of depths to six feet. Soil cores will also be taken to the same depths by a hydraulic coring machine. This study will document differential effects of surface drip and deep subsurface drip irrigation on nitrogen requirements and nitrate movement within the soil profile. Grapes from replicated treatments will be analyzed by commercial testing laboratories for components related to high quality premium wines, including BRIX, tannins, anthocyanin and acidity. Vine health will be determined through standard methods used to quantify plant water stress, growth, and fruit production in the vineyards during each growing season. Results will be presented at grower and professional meetings and assessment of potential adoption of improved practices will be determined from survey methods guided by an extension logic model developed for this project. Findings should be applicable to management of all irrigated perennial specialty crops, including small fruit, tree fruit, and hops.

**Grant Recipient:** Oregon State University – Ray Qin

**Project Title:** Developing Dry beans in irrigated fields of Columbia Basin

**Award:** \$195,844.00

**Abstract:** Oregon State University-Hermiston Agricultural Research and Extension Center (OSU-HAREC) will evaluate the production of dry beans by developing scientifically based practical measures in Columbia Basin and disseminating results to stakeholders through grower meetings and field days. In the region, growers can suffer from low profitability during the production of wheat and corn, which are planted for 2-3 years as the main rotational crops to potatoes or onions, the high-value crops. The limited rotational crops may also result in accumulated pest pressure with time. Therefore, there is a need to introduce additional crop species into the current cropping system to increase crop diversities and potentially increase growers' profits. Dry adzuki beans are believed to be a possible rotational crop because of rising demand in domestic and export markets. The inclusion of the dry beans will also benefit the current cropping system by fixing biological nitrogen, conserving water (reduced irrigation requirement), improving soil health, and suppressing pests and diseases. However, agronomic management practices need to be studied and developed for the crop. Through greenhouse studies and field trials, we aim to evaluate the adapted varieties and develop the optimum nutrient, water, and pest management practices. The research findings on the best agronomic practices for the new crops will be introduced to growers and field consultants through various extension activities. The execution of this project will benefit growers of the Columbia Basin by increased crop sustainability and new market development.

**Grant Recipient:** Center for Produce Safety

**Project Title:** Factors Affecting Persistence of *Listeria monocytogenes* need to be Identified for Evaluation and Prioritization of Interventions

**Award:** \$186,953.00

**Abstract:** The Center for Produce Safety will partner with Cornell University to identify strategies that more effectively control *Listeria* persistence in produce packing and fresh-cut facilities. The foodborne pathogen *Listeria monocytogenes* can survive over time in food processing environments. These “resident” *Listeria* strains increase the likelihood for finished product contamination, recalls, and outbreaks. Advances in sequencing allow for enhanced discrimination between *Listeria* strains, such as those that may be unique to a specific facility. This results in improved traceback from listeriosis patients to the facility where the implicated food was prepared. However, sequencing advances have also enabled us to better understand how a unique *Listeria* strain may survive and spread in a facility over time. To date, there is little peer-reviewed research on how to prevent, eliminate, or manage a resident *Listeria* strain in a facility, particularly for the produce industry. This project will review published and unpublished data to identify factors that may contribute to a *Listeria* strain persisting in a facility, and to validate potential interventions suitable for produce facilities using experiments in commercial facilities as well as computer modeling. This project will provide industry with tools to (i) help identify what characteristics of their facilities may allow a *Listeria* strain to persist, and (ii) select and justify interventions that are used to prevent, eliminate, or manage *Listeria* persistence.

**Grant Recipient:** WSDA – Natural Resource Assessment Section

**Project Title:** Assessing the soil health of Eastern Washington specialty crops: hops, onions, potatoes, pulses, sweet corn, tree fruit, and wine grapes

**Award:** \$500,000.00

**Abstract:** WSDA – NRAS - Soil health is gaining prevalence as a lens through which to examine sustainable agricultural production. Interest and debate around management practices, impacts, and assessment of soil health are often specific to region or cropping system. A baseline assessment of soil health across specialty cropping systems has yet to be completed in Washington. This project is designed to assess the soil health of specialty crops in Eastern Washington. Target cropping systems include hops, onions, potatoes, pulses, sweet corn, tree fruit, and wine grapes. The Natural Resources Assessment Section (NRAS) of the Washington State Department of Agriculture (WSDA) in collaboration with faculty at Washington State University (WSU) will



assess baseline soil health on commercial specialty crop farms. Project partners will select participants with commercial production sites. Grower-determined “best” and “worst” soils will be sampled in early and late seasons and soil health indicators will be measured. Penetration resistance will be assessed in the field. Soil samples will be collected and analyzed for bulk density, pH, texture, extractable nutrients, total carbon, Permanganate Oxidizable Carbon (POXC), Mineralizable Carbon respiration- 4-day incubation (MinC), Autoclaved Citrate Extracted (ACE) protein, and Potentially Mineralizable Nitrogen (PMN). Results will be summarized and interpreted in individual soil health reports shared with participants. WSDA and WSU will analyze and summarize the information in reports and publications. This project will provide an initial assessment of soil health in Washington to build a collaborative state-wide effort that improves soil health management through development of a regional index.

**Grant Recipient:** Kittitas County

**Project Title:** The Eradication of Apple Maggot

**Award:** \$150,000.00

**Abstract:** Kittitas County has a new and currently rapidly expanding specialty crop production area. The north facing slopes on the southern hills of the Kittitas Valley is an ideal location for growing apples like Honeycrisp, Cosmic Crisp and other large growing multi-colored apples in the Honeycrisp family. The climate in this new production area that is rapidly expanding has summertime temperatures that are seven to ten degrees cooler than other production areas and it grows a high quality apple with reduced size and increased quality and storability. This project will help to promote and encourage the introduction of these new varieties into an area that is naturally suited for growing them. The area has the perfect climate for growing these types of apples but is a high risk area for the due to the risk posed by nearby apple maggot populations. There are documented apple maggot populations to the north and west of the location where the expansion is occurring. This program will help the county have control methods in place that will help keep the area in the vicinity of these orchards an apple maggot pest free area. This specialty crop block grant will provide a pathway forward for the county to manage the pest in such a way that the pest risk is significantly reduced for the specialty crop producers and processors in our county. The program will help manage the risk of apple maggot as the area continues to develop.