Transportation and Marketing

Specialty Crop Block Grant Program

Fiscal Year 2021 Description of Funded Projects – Farm Bill

Number of Grants Awarded: 56

Number of Sub-award Project: 666

Amount of Funds Awarded: $72,900,345.04

For more information, please visit the program's website: https://www.ams.usda.gov/scbpg

NOTE: The project descriptions below were provided by the grant recipients. (File updated December 7, 2021)

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Alabama Department of Agriculture and Industries	$526,114.26	1. Low Tunnel Plasticulture Use in Strawberry Production	Researchers at Auburn University Department of Horticulture and the Alabama Cooperative Extension Service will build a more resilient strawberry production system by incorporating the use of low tunnel olericulture and CO2-generating composting plant material for improved crop protection, early harvest, yield, and berry quality.	$38,796.00
Alabama Department of Agriculture and Industries	$526,114.26	2. Research and Extension Initiative Supporting Alabama Grown Garlic	Alabama A&M University with the assistance of Auburn University Extension will work towards the increased production of garlic in Alabama encouraging consumers to eat more vegetables by cooking with garlic. We propose to conduct a garlic variety trial (33 entries) across three Alabama locations to identify top performing garlic cultivars.	$21,893.12

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Alabama Department of Agriculture and Industries	$526,114.26	3. Varroa Mite Management in Honey Bee Colonies During Spring	The Varroa mite (Varroa destructor) is the most economically important pest of honey bees. To promote Integrated Pest Management (IPM) of Varroa during the spring in Alabama, Auburn University will investigate the effects of natural Varroa treatments (i.e. miticides based on naturally occurring compounds), combined with a cultural control method, on Varroa mites (Objective 1) and on honey bee colonies (Objective 2). Results of this work will be practical and broadly applicable to beekeepers in Alabama and the greater Southeast United States as they look to integrate cultural controls and natural treatments into an effective and sustainable IPM strategy against Varroa. Improved Varroa management is necessary to meet the long-term goal of reducing colony losses, increasing honey production, and promoting a sustainable supply of pollinating colonies for Alabama growers of specialty crops.	$41,523.98
Alabama Department of Agriculture and Industries	$526,114.26	4. Support Local: Developing an Alabama Hop Industry with Small Growers	Auburn University and Alabama Cooperative Extension Systems (ACES) will partner with the Alabama Brewers Guild and Sweet Grown Alabama to promote an Alabama Hop Industry. This project will create guidelines and provide support for small and beginner growers to adopt hop as an alternative crop in Alabama. We will use demonstration trials, workshops, and guidelines to certify the success of this industry. Furthermore, technical assistance with crop management, harvesting, and connections between growers and brewers will ensure a high-quality Alabama product.	$40,000.00

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Alabama Department of Agriculture and Industries	$526,114.26	5. Improving Chemigation Efficacy in Tomato and Strawberry Production in Alabama.	Researchers at the Alabama Cooperative Extension System will improve the efficacy of commercially available pesticides with the addition of soil surfactants to reduce the impact of soil borne pathogens in tomato and strawberry plasticulture systems. Soil borne pathogens cause severe reductions in crop yield and create significant economic losses for growers. Fungicides and nematicides applied via drip irrigation provide some control against soil borne pathogens, however, control is often poor due to insufficient coverage of the chemical around the plant root system. Improving the efficacy of these products will reduce the need for soil fumigation, which carries significant risks to workers and the environment. Soil surfactants can improve chemical distribution by breaking the surface tension and thoroughly distributing the product throughout the plant root zone. Field studies will be conducted and results distributed at conferences, workshops, webinars, and publications using a hybrid education model with proper health safety protocols. Results will culminate in the development of new or modified integrated pest management (IPM) recommendations for soil borne pathogens in tomato and strawberry plasticulture systems utilizing drip irrigation systems for chemical application.	$38,490.00
Alabama Department of Agriculture and Industries	$526,114.26	6. Reducing Costs for Pecan Growers in Alabama	Auburn University will partner with pecan growers to evaluate and demonstrate effective strategies to reduce costs for pecan growers in Alabama. By reducing cost of fertilizer and utilizing the most cost effective herbicides, this will increase the profitability for pecan producers. Pecan producers face many challenges with hurricanes and alternative bearing that is common with pecans	$40,000.00
Alabama Department of Agriculture and Industries	$526,114.26	7. Enhancing the Profitability of Alabama Christmas Tree Farms	Auburn University will partner with the Alabama Department of Agriculture to update production practices in order to reduce production times and decrease labor needs on Alabama Christmas tree farms. In doing so there is a potential to increase gross profits by $8,800 per acre, per year on some farms. Updated recommendations for fertility and weed management will improve the profitability for both new and existing growers.	$40,000.00
Alabama Department of Agriculture and Industries	$526,114.26	8. Blueberry Cultivars with Enhanced Quality for Alabama Family Farms	Auburn University will partner with the ADAI to enhance the competitiveness of blueberry production in Alabama through investigating the performance of improved large-fruited varieties and varieties with unique traits. Results will be disseminated to stakeholders through grower meetings, field days, printed materials and webinars offered through the ACES-developed Farming Basics Mobile app: https://www.aces.edu/blog/topics/ipm-farming/farming-basics-mobile-app/.	$40,000.00

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Alabama Department of Agriculture and Industries	$526,114.26	9. Expanding Blueberry Production with High Tunnels	Auburn University and Alabama Cooperative Extension Systems will partner with Alabama Department of Agriculture and Industries to evaluate the productivity and economic benefits of growing new blueberry cultivars under high tunnels (protected cultivation). High tunnels can potentially be used to have early production of the higher value southern highbush cultivars, perhaps in conjunction with field production of currently recommended rabbit eye cultivars. This project will involve growing southern highbush cultivars, predominantly grown in Florida and southern Georgia for early season production, inside high tunnels and in conjunction with field production in central Alabama. The outcome of this project will allow Alabama blueberry producers to better understand the effects of using this planting system to mitigate risk of cold damage, choose appropriate cultivars, and make management decisions to increase profitability.	$40,000.00
Alabama Department of Agriculture and Industries	$526,114.26	10. Specialty Crops Outreach and Training Program (SCOT)	The Alabama Urban Forestry Association (AUFA), a 501 c 3 charitable non-profit, will teach Specialty Crops Certification Program and other classes to high school agriculture (ag) teachers and potential and current green industry members; grow Specialty Crops using them in educational activities and planting on public lands and specified communities; and outreach to the public in tradeshows and other venues. The AUFA, through the Specialty Crop Outreach and Training Program (SCOT), proposes to increase consumer/participant consumption through: 1. Promoting the use of Specialty Crops through tradeshows, in-person classes, and recorded webinars for future independent use by ag teachers and industry members. 2. Growing many hundreds of ornamental trees with an educational component and requiring tree planting in designated areas. The trees will be used in training and educational classes and planted during and after the event.	$24,910.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Alabama Department of Agriculture and Industries	$526,114.26	11. From Small to Large Farms: Irrigation Management for Vegetable Crops	Auburn University and Alabama Cooperative Extension Systems (ACES) will partner to improve irrigation water management for vegetable production in small, medium, and large farms of Alabama by introducing scientifically-based tools for growers. This project will increase water savings, improve yield, and enhance profitability of vegetable crops through evaluation and demonstrations of using soil moisture sensors to schedule irrigation events. This project will involve research and on-farm demonstration trials with collaborator growers across the state. Results will be shared with the growers through demonstration field days, fact sheets, webinars, and on-farm activities. The ultimate goal is to promote sustainable intensification of vegetable production in Alabama.	$40,000.00
Alabama Department of Agriculture and Industries	$526,114.26	12. Supporting Beginning Growers with a Free Microbial Water Testing Program	The Alabama Cooperative Extension System (ACES) will partner with the Auburn School of Fisheries, Aquaculture, and Aquatic Sciences to expand access to microbial water testing to ensure that Alabama growers have the information they need to produce the safest possible product for Alabama consumers. This project will offer free microbial water testing and educational assistance to empower beginning and small fresh produce farmers in Alabama to make the best decisions related to agricultural water sources and farm food safety. Outcomes from this project will be used to guide in the development of educational materials to train farmers, regional extension agents, and agricultural professionals on how to adopt and develop good agricultural practices related to microbial water quality on the farm.	$40,000.00
Alabama Department of Agriculture and Industries	$526,114.26	13. Microwave Imaging Device for Non-invasive Inline Inspection of Watermelon	The University of Alabama will develop a non-invasive in-line inspection system and software (image processing computer program) based on microwave imaging technology for inspecting the ripeness and quality of watermelon, an important specialty crop of Alabama.	$40,000.00
Alaska Division of Agriculture	$253,139.00	1. Investigation of High-Pressure Processing (HPP) as a Viable Processing Method for Improved Microbial Food Safety and Product Quality in Ready-to-E	Alaska Seagrant will investigate high pressure processing (HPP) applications focused on the newly emerging Alaska mariculture industry for producing safe ready to eat products. Results will be shared with stakeholders including farmers and processors. This project will work closely with the experts in this field at the JTP Avure HPP testing lab in Erlander, Kentucky. Project will conduct at least three product shelf life and three challenge studies of Alaskan products that have been processed by HPP over a two-year period.	$49,633.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Alaska Division of Agriculture	$253,139.00	2. Sustainable Commercial Strawberry Varieties Trials	Highlands of Alaska Farms will use new strawberry varieties and sustainable growing practices to provide completive yields and best growing practices through weekly and daily data logging for gardeners and commercial growers and have this information available for the general public through farm tour or zoom presentations. This grant project will give the strawberry industry a sure foot in the market of Alaska. With the use of natural and biological additives to the soil, our farm will monitor health levels and nutrient levels in the strawberry plants and fruit. The project will give information on the plants that produce the best yield and have the best growing ability in the Interior of Alaska.	$28,000.00
Alaska Division of Agriculture	$253,139.00	3. Specialty Crop Grow Towers at Glennallen High School	Glennallen High School will implement Specialty Crop Grow Towers to increase awareness of specialty crops to high school students, families, and community members. Through this project students will be educated on Alaska specialty crops, demonstrate knowledge through pre and post assessments, and a curriculum will be designed to specifically address specialty crops in Alaska with the help of Fairbanks Soil and Water Conservation District. Students will be involved in all phases of implementation from the construction of the grow towers to the distribution of successful grown crops.	$2,200.00
Alaska Division of Agriculture	$253,139.00	4. The Charles Anway Berry Trials Project - Establishing the Potential for a SE Alaska Berry Industry	The Chilkat Valley Historical Society (CVHS) will conduct a field variety trial of blueberry and strawberry cultivars in Haines, Alaska in partnership with two local Haines growers. This project seeks to: identify specific, commercially suitable cultivars of strawberries and blueberries for both local and Southeast Alaska markets supplying our communities with fresh fruit and potentially plant-stock; run a randomized block design field trial to determine best performing cultivars (fruit yield, winter resilience, taste, flower production, number of runners, plant growth and vigor) in their respective zones; create a farm design that fosters field trials on berry species that are more speculative; support the educational focus of the organization aimed at increasing regional, no-till, specialty crop agriculture; conduct outreach to specialty crop stakeholders, including socially disadvantaged and beginning farmers to disseminate information about methods, results and cultivar acquisition.	$32,635.00

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Alaska Division of Agriculture	$253,139.00	5. Assessing Scalable Hatchery Techniques to Improve Access to Seed String in Rural, Alaskan Communities	Fisherman Fresh will develop an innovative, on-the-water, mobile hatchery for growing seeded line to support the state's burgeoning mariculture industry, increase access to seeded line within rural communities in Alaska, and provide a platform to educate and prepare farmers to participate in the mariculture industry. Fisherman Fresh will share this data with other aquatic farmers and producers through mariculture conferences and training programs, to increase knowledge of efficient hatchery and grow-out processes. Fisherman Fresh will be able to not only establish a mobile, on-water hatchery, but also refine hatchery techniques, provide a replicable hatchery model to be shared throughout the state, and educate other mariculture professionals about improved growing processes.	$57,000.00
Alaska Division of Agriculture	$253,139.00	6. Specialty Crop Improvements for Aging Farmers through Innovative Growing Modifications	The Homer Soil and Water Conservation District, in collaboration with Oceanside Farms and AgrAbility, will provide producers with plans and demonstrations on how to modify growing practices for strawberries by testing various versions of strawberry grow towers, analyzing farmer movements with an occupational therapist, and studying strawberry variety adaptability to the new methods.	$26,499.80
Alaska Division of Agriculture	$253,139.00	7. How to Accelerate Growth and Reduce Time to Harvest of Rhodiola Rosea Crops without Compromising Quality	The University of Alaska Fairbanks Cooperative Extension Service and Alaska Rhodiola Enterprises LLC will conduct research in the following areas 1.) Continue current field experiments started in 2019 which are designed to determine soil amendments and weed control methods in young plants and extend these experiments closer to plant maturity; and 2.) Investigate innovative methods to reduce time required from seed to harvest maturity of Rhodiola rosea crops.	$22,746.00
American Samoa Department of Agriculture	$268,786.53	American Samoa Essential Food Security Program - Specialty Crops Phase II: Specialty Crop Diversification	The American Samoa Government Department of Agriculture (ASG DOA) will strengthen the territory's food security position, and minimize impacts from COVID-19 supply chain disruptions, by promoting the improved diversification of specialty crops & growing techniques.	$268,511.95

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Arizona Department of Agriculture	$1,764,626.40	1. Aww Nuts! - Lettuce, Turnip, the Beet - Keep Calm, Carrot On!	The University of Arizona Cooperative Extension Agricultural Literacy & STEM Education program will create a specialty crop curriculum guide for Arizona 6-8th grade teachers to increase students' awareness and consumption of specialty crops. This project aims to connect the specialty crops to the school garden. The goal is to create a taskforce of teachers from across the state who will create the curriculum and pilot the lessons. After finalizing the guide, the taskforce will give workshop presentations to other teachers and receive a stipend for their contributions. Teacher grants will be awarded to selected workshop attendees to provide support for materials to use in the classroom. This taskforce will create lessons that specifically teach about pecans, pistachios, lettuce, turnips, beets, broccoli, Romaine lettuce, carrots, spinach, cauliflower, and cabbage with emphasis on STEM (Science, Technology, Engineering, Math). The new, hands-on lessons will use the latest 5E instructional model and will incorporate the 3-Dimensional Learning and Cross-Cutting Concepts that are used in the new Arizona science standards. This project aims to connect a standards-based curriculum to the school garden, while increasing students' awareness about specialty crops.	$32,888.00
Arizona Department of Agriculture	$1,764,626.40	2. Bee's AM-AZ-ING A to Z Ag-venture	The University of Arizona Cooperative Extension Agricultural Literacy & STEM Education program will produce a book, poster, and map for K-2nd teachers to use to increase students' awareness about Arizona's specialty crops.	$20,843.00
Arizona Department of Agriculture	$1,764,626.40	3. Educating & Marketing the Green Industry	Nursery industry workers require education tailored to the unique Arizona environment so they can produce healthier plants with the fewest chemical inputs and least water resources.	$65,020.00
Arizona Department of Agriculture	$1,764,626.40	4. Specialty Crops in the Classroom	The Arizona Farm Bureau will educate the public about Arizona Specialty Crops through the development of a standards-based curriculum package that includes the Spanish translation of many past grant resources, providing classroom cooking grants, and Specialty Crop lessons to be use in high school classrooms across the state.	$24,400.00
Arizona Department of Agriculture	$1,764,626.40	5. Weed Seedling Identification	The University of Arizona Cooperative Extension will collect images and identify distinctive characteristics of 50 common weeds found in Arizona.	$6,375.00

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Arizona Department of Agriculture	$1,764,626.40	6. Delivering IPM Education & Research to the Arizona Vegetable Industry	The University of Arizona Vegetable IPM Team, The University of Arizona, Yuma Ag Center will enhance the competitiveness Arizona vegetable growers by further developing and maintaining a robust Integrated Pest Management (IPM) education and research program that provide growers, PCAs and Agribusinesses with objective and unbiased information on new pest control technologies essential for economical and environmentally sound production of high value, vegetable crops in Arizona.	$97,938.00
Arizona Department of Agriculture	$1,764,626.40	7. Effects of Arizona Climate on Wine Grape Composition	The University of Arizona will advance climate resiliency in the expanding state viticulture industry by developing the first descriptive and predictive statistical models of effects of Arizona climate on wine grape composition, and by disseminating results to stakeholders through meetings, publications, and social media.	$19,777.00
Arizona Department of Agriculture	$1,764,626.40	8. Epidemiological Studies to Manage Impatiens Necrotic Spot Virus in Arizona	The University of Arizona-Yuma County Plant Pathology program will be conducting a research project on understanding the epidemiology of Impatiens necrotic spot virus (INSV) in the desert southwest.	$148,160.00
Arizona Department of Agriculture	$1,764,626.40	9. Epidemiology and Management of Phoma Blight on Pistachio	Phoma blight is an emerging but serious fungal disease of pistachio in Arizona. Growers need answers on how to best manage Phoma blight now.	$184,722.00
Arizona Department of Agriculture	$1,764,626.40	10. Impact of Harvest Practices on Food Safety	The University of Arizona will work with local produce growers in the Yuma and Maricopa, AZ growing regions to evaluate harvest machinery and the potential presence and persistence of bacteria on equipment and tools before, during, and after harvest. We will also assess the success of current cleaning and sanitizing practices for reducing microbial presence on machinery and tools.	$214,541.00
Arizona Department of Agriculture	$1,764,626.40	11. Incorporating Efficient Greenhouse-based Studies into Fusarium Wilt of Lettuce Research	The University of Arizona will conduct greenhouse- and lab-based studies to evaluate management strategies for controlling Fusarium wilt of lettuce, caused by the fungus Fusarium oxysporum f.sp. lactucae (FOL).	$132,202.00
Arizona Department of Agriculture	$1,764,626.40	12. Insect Pest Management During Guayule Stand Establishment	The University of Arizona will work with agro-industry, guayule industry and their scientists, growers, and Pest Control Advisors to develop best practices for insect management at stand establishment of direct-seeded guayule through experimental research.	$59,523.00

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Arizona Department of Agriculture	$1,764,626.40	13. Modeling Transport and Decay of Disinfectants in Sprinkler Irrigation Systems	The name of applicant organization is University of Arizona. The proposed project will develop and verify a physically based coupled flow and disinfectant transport-reaction model, capable of simulating the transport and decay of disinfectants in field-scale sprinkler irrigation hydraulic networks during agricultural irrigation water treatment events.	$184,820.00
Arizona Department of Agriculture	$1,764,626.40	14. Optimizing Cost Effective Insect Management for Arizona Winter Vegetables	The University of Arizona, Yuma Agricultural Center will enhance the competitiveness of winter vegetable growers in Arizona by developing a scientific knowledge base for cost-effectively controlling insect pests in leafy vegetables.	$106,572.00
Arizona Department of Agriculture	$1,764,626.40	15. Pesticide Data Impacts Registration Review Outcomes for Specialty Crops	The University of Arizona will work with the Arizona Department of Agriculture (ADA) to maintain ongoing access to verified and improved pesticide use data, for the benefit of Arizona specialty crop industries.	$129,912.00
Arizona Department of Agriculture	$1,764,626.40	16. Prevention and Management of Fusarium Wilt of Lettuce	The Yuma Center of Excellence for Desert Agriculture (YCEDA) will partner with various other entities to develop Fusarium wilt of lettuce management methods for the Arizona lettuce industry. Fusarium wilt of lettuce is severely impacting productivity and thus, the competitiveness of the Arizona lettuce industry.	$159,921.00
Arizona Department of Agriculture	$1,764,626.40	17. Water and Salt Management for Leaf and Boston Lettuce	The University of Arizona's Yuma Center of Excellence for Desert Agriculture (YCEDA) has teamed up with UA and USDA Researchers, Irrigation Districts, USDA, USBR, NASA, Arizona Commodity Councils, and others to measure water applied, evapotranspiration, and soil salinity levels in order to generate data that can be used to create management tools for most major desert cropping systems.	$105,244.00
Arkansas Agriculture Department	$359,323.37	1. Protecting our Pecans: Reducing Foodborne Pathogens on In-Shell Pecans and Proactive Food Safety Resources for Arkansas Pecan Producers	The University of Arkansas will conduct research that expands knowledge about how much cross-contamination can occur from manure or soil to in-shell pecans. The proposed research will quantify contamination of in-shell pecans through soil, investigate impacts of soil on washing and sanitizing interventions, and provide growers and processors with information about preventive controls for pecan safety.	$61,126.00
Arkansas Agriculture Department	$359,323.37	2. Using Underutilized Farm Produce to Develop Value-Added Foods for Commercial Markets	The University of Arkansas (UA) System Division of Agriculture will work with specialty crop farms to establish a model for using underutilized produce to develop value-added food products at a shared-use manufacturing facility to sale at commercial markets.	$68,590.00

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Arkansas Agriculture Department	$359,323.37	3. Local Food System Supply Chain Infrastructure	The Arkansas Department of Agriculture's Local Food System Supply Chain Infrastructure project is designed to enhance the competitiveness of specialty crops through increased access, improving the efficiency of distributions systems by overcoming gaps in the local food system in Arkansas as a result of identifying and addressing the obstacles faced by our farmers in the supply chain process.	$71,757.49
Arkansas Agriculture Department	$359,323.37	4. Implementation and Enhancement of Molecular Methods to Support Diagnostics of Specialty Crops in Arkansas	Ornamental trees and shrubs comprise 50 percent of our sample load with fruits and nuts another 12 percent. Arkansas has hundreds of specialty crop growers across a range of crops including fruits, nuts, vegetables, and ornamentals. Additionally, Arkansas has many homeowners interested in small home orchards. The Plant Health Clinic provides trainings, publications, and diagnostic services to these growers.	$66,365.00
Arkansas Agriculture Department	$359,323.37	5. Growing Student's Taste Buds for Specialty Crops	The Arkansas Department of Agriculture's Farm to School and Early Childhood Education Program (Program) will facilitate the development of school gardens and taste tests at schools to increase the consumption of specialty crops in the classroom and cafeteria. School garden and taste test grants will be awarded to schools, the Program will provide technical assistance, develop resources, host events and trainings, and track the consumption of specialty crops.	$75,705.00
California Department of Food and Agriculture	$23,888,200.23	Project 01: Farming to Grow California's Black Specialty Crop Farmers	This grant describes an approach to supporting 5 percent of California's 300 African American farmers through customized technical assistance intended to increase the production of culturally relevant specialty crops. The overall goal of this project is to enhance the competitiveness of specialty crops grown by historically marginalized African American farmers in California. Building on a longstanding record of training and support, Farms to Grow (FTG) proposes building African American farmers' capacity to more fully access and participate in the specialty crop market. The primary outcome is to develop the capacity of the farmers to adopt sustainable practices of specialty crop production, including crop planning, irrigation techniques, and orchard production. A secondary outcome of the project is to support the development and growth of sustainable, diverse, and resilient specialty crop systems. The success of this project will be measured using multiple indicators devised by an external contract evaluator.	$101,665.00

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California Department of Food and Agriculture	$23,888,200.23	Project 02: Demonstration Trial for High Tunnel Grown Specialty Crops to Demonstrate Sustainable BMPs	Fresno County is home to the largest population of South-East Asian and South Asian specialty vegetable crop growers, a large majority of whom are farmers of Punjabi origin. Punjabi origin growers, most of who are Sikhs, have contributed to California agriculture for more than a century. South Asian crops are popular among ethnic communities, but their best management practices have not been established by mainstream research organizations like government agencies, farm advisors, or cooperative extension agents. Most growers rely on traditional farming practices and maintain this passage of knowledge. The proposed demonstration trial will display research-based information and best management practices on soil and water conservation to educate Punjabi American growers who have historically grown specialty crops with little technical support.	$104,313.00
California Department of Food and Agriculture	$23,888,200.23	Project 03: Increasing Access to Specialty Crops in Low-Income South Los Angeles Communities	Neighborhood Housing Services of Los Angeles County (NHS) will increase specialty crop access and specialty crop consumption in the city of Compton, a multiracial, multicultural community of approximately 100,000 residents located in the southeast portion of Los Angeles County. Compton has been designated a food desert by the USDA, and this project will serve low-income families who have limited access to healthy and affordable food. NHS will educate residents about specialty crops and offer hands-on training in gardening, cooking, and other agricultural practices that involve the use of specialty crops. Job training and community education will emphasize the importance of growing and consuming specialty crops and empower community members to pursue careers in agriculture. Project success will be measured through intake forms, sign-in sheets, resident interviews, and community surveys.	$110,773.00

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California Department of Food and Agriculture	$23,888,200.23	Project 04: La Central: An Intergenerational Food and Knowledge Sharing Learning Community specialty crop consumption in the city of Compton, a multi	The Community Agroecology Network (CAN) and Growing Justice (GJ) Youth, in collaboration with Tierras Milperas (TMil) (7 urban micro-farms), will facilitate a culturally appropriate education and training program that will increase production and consumption of culturally significant specialty crops and increase access for California's Pajaro Valley, Latinx farmworker families. GJ Youth will learn to grow and prepare nutrient-rich greens (epazote, papalo, pipicha, coriander, watercress), tomatoes, a variety of tomatillos, peppers, and cacti at River Park Community Urban Micro-Farm. They will form a learning community with socially disadvantaged urban micro-farmers and community elders to learn historical and cultural solutions for seed saving, soil and pest management, and processing crops into healthy meals. Project success will be measured by an increase in consumption of specialty crops, new skills and knowledge- gained by youth, and participating learning community members.	$108,046.00
California Department of Food and Agriculture	$23,888,200.23	Project 05: Sharing California Prune Health Benefits to Grow Sales Among United States Health Enthusiasts	Sunsweet Growers (SSG) will promote the functional and nutritional benefits of California prunes and prune juice (digestive and bone health) to this audience via a national public relations and media campaign to drive California prune product sales and shift more prunes to this high value use. This project will increase sales by $4.46 million, boosting grower returns. As a grower-owned cooperative, all SSG earnings flow directly to California growers. SSG will evaluate and measure success through syndicated IRI and internal sales data.	$450,000.00
California Department of Food and Agriculture	$23,888,200.23	Project 06: Growing Demand for California Processing Peaches and Pears by Sharing Nutritional Value and Positive Attributes with Influencers and Diet	Pacific Coast Producers (PCP), representing 280 California peach and 25 California pear growers, will launch a marketing campaign sharing the value and benefits of California processing peaches and pears with influencers and dietitians to boost consumer demand for this fruit ultimately. The project's goal is to achieve a one percent sales increase of California processing peaches and pears, measured by Nielsen data. As a grower-owned cooperative, all profits directly flow to California specialty crop growers.	$450,000.00

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California Department of Food and Agriculture	$23,888,200.23	Project 07: California Figs Fit in the Cart and in the Kit	To raise awareness and ultimately drive sales of California grown figs, the "California Figs Fit in the Cart and in the Kit" campaign will demonstrate how California figs meet the demands of consumers, and therefore, the needs of product developers in the fast-growing meal kit delivery segment. More than ever, consumers are looking for nutritious and delicious snacks and ingredients. California figs meet the demand and more. California figs are full of fiber, a critical nutrient most consumers lack in their diet, and they are an all-natural energy source containing potassium, calcium, iron, and more. California figs add natural sweetness and flavor without added sugar or salt, and this is important when dietary guidance around the world suggests that consumption of both be reduced. A digital media campaign will deliver these key messages to consumers. At the same time, the California fig industry will target key influencers in the manufacturing industry to showcase figs as a clean, flavorful solution for meal kit development.	$450,000.00
California Department of Food and Agriculture	$23,888,200.23	Project 08: Santa Barbara County Wine Expansion in Southern California	United States sales of California wine are growing. Yet, California wine trends downward in the state, with 4.3 million fewer bottles sold, a decrease of $52.4 million (California Wine Institute, Alcohol, and Tobacco Tax and Trade Bureau (TTB), Shanken's Impact Databank). Californians buy wines from Washington (up 9.6 percent), Oregon (up 4 percent), Italy (up 4.6 percent), France (up 4.5 percent), and Chile (up 13.5 percent) (Shanken's Impact Databank). Santa Barbara County is negatively impacted by this trend due to its reliance on Southern California, with a 4.9 percent decline in direct sales since 2016 (Santa Barbara County Sales Tax Data). Santa Barbara's grape growers and wineries, most family-owned and too small for a distributor's attention, are dependent on direct-to-consumer (DtC) sales for most of their sales (SVBank/Wine Business Monthly Insights, 2019). This project is the second of a powerful marketing campaign that extends the Los Angeles strategy south to Orange and San Diego counties to reach consumers, wine trade, and media. Using visitation data, sales records, and digital analytics, Santa Barbara County seeks to report increased DtC sales by 3.72 percent.	$362,575.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 09: Paso Robles Wine Targets Mid-Markets	The wine market in the United States is highly competitive, with strong wine sales from Europe, South America, and Australia and the growing hard-seltzer category. Paso Robles, a known still-emerging wine region with proven quality, critical acclaim, and increased distribution, is poised to build and strengthen California-grown wine sales. By influencing the influencer in targeted mid-tier markets, Paso Robles can continue to build its reputation and grow its sales of wine. Influencers today include wine, travel, and lifestyle media, bloggers, retailers, and sommeliers; they all wield influence on buying habits. Arizona, Colorado, and Texas all offer strong opportunities for California's wine producers based on their size, consumption behavior, the concentration of the target audience, and current population growth. This multifaceted program will reach influencers within media, retail, restaurants, and social media. By educating consumers and wine enthusiasts about Paso Robles, California grown wine sales will increase.	$300,038.00
California Department of Food and Agriculture	$23,888,200.23	Project 10: Signature Santa Lucia Highlands Pinot Noir to the People	Growers and producers of California Pinot Noir, including over 100 growers and wineries who produce grapes and wines from Santa Lucia Highlands (SLH) in Monterey County, face three direct threats to their livelihood: decreased sampling and sales from closed tasting rooms and reduced restaurant wine sales due to the pandemic, declining grape prices and crop losses from 2020 wildfires, and a hot market for out-of-state Pinot Noir. The SLH, one of the state's sought-after Pinot Noir growing regions, sells more than 50 percent of its pinot noir directly to consumers through tasting rooms and online, the most lucrative marketing channels. This project will increase direct sales and the consumer demand of California-grown Pinot Noir from SLH by 3 percent with 90 million targeted consumer impressions and tasting events in 4 direct-to-wine country flight markets: Los Angeles, San Diego, Denver, and Phoenix. Increased marketing will lift sales, bottle prices, and sagging grape prices for California SLH pinot noir.	$298,900.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 11: California Grown Promotions in Southeast Asia Featuring California Blueberries	The California Blueberry Commission (CBC) will conduct a series of California Grown retail promotions in the Philippines, Vietnam, Singapore, and Malaysia, featuring fresh California blueberries. As blueberry production in California continues to rise, the industry must increase its export volumes. By organizing large-scale collaborative promotions directly with retail outlets in these Southeast Asian markets, the CBC will boost consumer demand, demonstrating the profitability of high-quality California blueberries. By leveraging the California Grown identity, the CBC will highlight the availability of California blueberries as the first fresh imported fruit of the summer season. Sales data will be collected and discussed with importers, who will be surveyed on their perception of California blueberries and interest in purchasing volumes in future seasons.	$380,184.00
California Department of Food and Agriculture	$23,888,200.23	Project 12: Increasing Access to Soil Health Resources for Spanish Speaking Specialty Crop Farmers	The U.S. Census of Agriculture revealed a 13 percent increase in the number of producers who identify as Hispanic, Latinx, or of Spanish origin, even as the total number of farmers has decreased (2017). Resources for Spanish-speaking farmers are critical to establishing a new, more diverse generation of farmers. Farmers in California have identified a need for Spanish language education and outreach programs on organic soil health practices. Organic Farming Research Foundation's (OFRF) 2015 survey of organic farmers verified soil health as the top challenge facing California organic farmers; this challenge was partially addressed by introducing an online training program in English in 2020. OFRF, with its university and non-profit partners, will take the next step by translating and adapting this resource into Spanish to address the needs of the Hispanic farming community. The success of the project will be based on the number of course users.	$172,077.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 13: Supporting New Generation Socially Disadvantaged Specialty Crop Farmers Through Access, Training, and Economic Research	Technical assistance (TA) and financial assistance (FA) service access gaps exist for Latino, Southeast Asian women, and other socially disadvantaged specialty crop farmers so they can gain farm and business skills and adopt climate-smart practices. American Farmland Trust (AFT), Asian Business Institute & Resource Center (ABIRC), and Cachuma Resource Conservation District (RCD) will deliver case studies on economic benefits of adopting climate-smart practices, packaged with targeted education through Learning Circles, Community Resource Fairs, tailgates, Business Development Trainings, and radio and television broadcasts, addressing demographic service gaps and improving farm viability through increased participation in services, climate-smart agricultural practices, and sound business practices. Project partners will administer surveys to specialty crop producers six months after each Learning Circle, Fair, tailgate, and Business Development Training to measure project impacts.	$284,374.00
California Department of Food and Agriculture	$23,888,200.23	Project 14: Providing Sonoma Producers Needed Training on Sustainable Farming Practices to Mitigate Impacts of California Wildfires	Seven of California's ten most destructive fires occurred within the last five years; natural disasters are expected to worsen under changing climate conditions. Fires have significantly impacted California specialty crop farms, especially in Sonoma, where fires have burned 182,049 acres since 2017. Fire is still tragic for those not directly impacted by flames, with approximately 70 percent of Sonoma wine grape producers reporting 2020 wildfire losses. Education on and adoption of environmentally responsible farming practices can help producers adapt to climate change, mitigate wildfire losses, and realize other economic and environmental benefits. As such, California Land Stewardship Institute (CLSI), in partnership with Sonoma County Winegrowers (SCW), the California Department of Forestry and Fire Protection, and others, seek to provide 1,800 Sonoma specialty crop producers (mostly wine grape), as well as farmworkers, with needed training and education to drive adoption of responsible farming practices on 10,000 new acres and/or 120 farms by 2024. Project results will be evaluated and measured through surveys and a number of certifications.	$467,999.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 15: Educational and Training Workshops for On-Farm Water and Energy Automation	Major specialty crops in the San Joaquin Valley (SJV) rely on groundwater pumping, such as almonds, pistachios, and grapes. However, groundwater levels in the SJV are declining due to over drafting, and new regulations for groundwater pumping are anticipated under the Sustainable Groundwater Management Act (SGMA) starting in 2020. Growers need monitoring and automation systems to simplify farming operations, reduce water and energy use, and improve production efficiency. This project will conduct 15 workshops for almond, pistachio, and grape growers to demonstrate water and power monitoring, demonstrate automation systems, and train end-users. Growers will benefit from new tools to assist in SGMA and Irrigated Lands Regulatory Program compliance and with nitrogen management plans. The workshops will be conducted by the Center for Irrigation Technology (CIT) and the California State University, Fresno using CIT facilities and the University Agricultural Laboratory fields located at the California State University, Fresno.	$255,960.00
California Department of Food and Agriculture	$23,888,200.23	Project 16: A Multi-Year Approach to High-Skilled Job Training and Placement in California's Specialty Crop Industry	A U.S. Department of Agriculture-funded study by Purdue University (2020) predicts that agriculture will have 59,400 new skilled jobs to fill each year. Yet, employer demand for qualified college graduates will exceed the number of qualified graduates available. Since 1993, the Center for Land-Based Learning's Farming, Agriculture, and Resource Management for Sustainability (FARMS) Program has provided high school youth with opportunities to learn about the specialty crop industry. In 2015, tier 2 (FARMS Advanced) and tier 3 (paid internships and job shadows) were added to the FARMS Program, giving youth a chance to deepen their understanding of and experience in the field and allowing service to a broader age range (16-24 years). The current project is three-fold, 1) continue tiers 2 and 3 of the programs, increasing paid internships and job shadows in tier 3 from 25 to 50 total statewide; 2) hire a full-time Alumni and Internship Coordinator to engage current and past program participants; and 3) evaluate the success of the last five years of each tier of the program.	$479,222.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 17: Workplace Safety for Postharvest Tree Nut Hulling and Processing	Hundreds of agricultural workers operate stockpile yard equipment at nut hulling and processing facilities without comprehensive safety training because equipment-specific training material is unavailable. Western Agricultural Processors Association will create a safety training curriculum to address the unique equipment found at nut huller facilities and provide bilingual training sessions to supervisors. The train-the-trainer style sessions will equip supervisors with the tools and materials to conduct safety training at their operation. This project will go beyond the training to evaluate what happens after the training is provided. Field observations and individual interviews will be conducted to analyze the level of training effectiveness. Results will be compiled and used to make changes in the following year's training.	$110,572.00
California Department of Food and Agriculture	$23,888,200.23	Project 18: Sustainable Pest Management in Culturally Relevant Crops Grown by Small Scale, Diversified, and Socially Disadvantaged Farmers	Small-scale, socially disadvantaged farmers from Tulare to Santa Clara counties grow over 80 different types of culturally relevant vegetables in an open field and protected agricultural systems. While the University of California (UC), Integrated Pest Management (IPM) guidelines may exist for many individual pests, IPM guidelines for these pests and their management in small-acreage, culturally important crops, and small-scale, diversified cropping systems are either currently unavailable or need expanded guidelines on organically approved methods. Cultural, biological, and mechanical pest control practices are alternative pest control options for these cropping systems, given the minimal availability of chemical control options and new opportunities to access markets for organic produce. This project will develop IPM guidelines for culturally relevant crops and provide agricultural education to socially disadvantaged farmers using a whole-farm IPM approach through on-farm demonstrations and peer-to-peer training to assist farmers in adopting nonchemical pest management methods.	$478,732.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 19: Science, Technology, Engineering, and Mathematics (STEM) is Girls Representing and Entering Agriculture Today (GREAT) Initiative	The Science, Technology, Engineering, and Mathematics (STEM) is Girls Representing and Entering Agriculture Today (GREAT) initiative aims to provide opportunities for young women of color from underrepresented races (Black/African American, American Indian, Hispanic, and Asian ethnic groups) to engage in the areas of science, technology, engineering, and mathematics, as they relate to agriculture. Through a four-part seminar series, local high school students will gain a piece of foundational knowledge in agronomy, twenty-first-century technology, sustainable engineering solutions, and the economic and business-driven world of agriculture. Students will meet with local female professionals in the field, touring the varied operations of local specialty crop producers while developing professional skills that they will carry with them as they work to become the next generation of agricultural professionals.	$103,058.00
California Department of Food and Agriculture	$23,888,200.23	Project 20: Eating, Learning, Growing: A Culturally-Responsive Model for Transforming California Specialty Crop Education	Culture is powerful. Yet, there are few formalized efforts to reflect the culture and diversity of California students in Farm to School education. The “Eating, Learning, Growing” project advances a culturally responsive strategy to increase student knowledge and consumption of California specialty crops, especially among the 4.8 million non-white students who are the majority of consumers in California’s $2.8 billion school food industry. This project 1) develops and pilots a culturally responsive educational framework for virtual workshops with 150 educators; 2) creates 28 vibrant school environments that celebrate healthy specialty crops, and 3) disseminates the framework, workshop recording, and a turnkey resource on transforming school environments to 12,078 adults. As a result, 19,631 middle school students may increase their awareness and knowledge of and/or intention to eat more specialty crops. Success will be measured through student and educator surveys and digital analytics.	$356,484.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 21: Promoting Pollinator Plant Awareness, Access, and Habitat Expansion to Benefit California's Nursery Industry	Bee pollinators are essential to California's specialty crops, but bee health declines from lack of adequate, healthy forage. In addition to creating on-farm habitat, a solution is using bee forage plants in developed landscapes. For this to be successful, the ornamental horticulture industry needs knowledge of best practices to use bee-compatible inputs to grow appropriate plants and educate consumers on their use. The project goals are to deliver educational programs on bee plants to the horticulture industry and consumers and to deliver grower-useable systems to assess pollinator attractiveness as new plants enter the market. The project team expects an informed horticulture industry to expand access to these plants to provide vital pollinator habitat in California. The project's success was measured by changes in plant awareness and access among stakeholders, increased pollinator habitat planted by consumers, and a number of educational and consumer resources created.	$334,779.00
California Department of Food and Agriculture	$23,888,200.23	Project 22: California's Specialty Crops Showcased in a Ten-Episode Series on Award-Winning Public Television Show "America's Heartland"	Many consumers are unaware of the abundant variety of California specialty crops. What do they look like? What do they taste like? How can they be incorporated into a healthy diet? KVIE Public Television will provide entertaining and educational specialty crop episodes through its nationally broadcast series America's Heartland. These episodes will showcase farmers' stories, specialty crop health benefits, and a regular cooking segment titled Farm to Fork featuring KVIE's own celebrity chef demonstrating innovative ways to incorporate specialty crops into daily life. The programs will air on 350 Public Broadcasting Service (PBS) stations and the nationwide Rural Free Delivery Television (RFD-TV) cable/satellite channel influencing viewers to demand and consume more specialty crops. KVIE will capture program reach, viewership, and demographics and conduct a survey to quantify consumers' awareness of specialty crops and their plans to incorporate them into their diets after viewing the segments.	$470,927.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 23: Getting Youth Excited About Vegetables: Paid Internship and Community Nutrition Education for Low-Income and Underserved Youth	The Ceres Community Project (Ceres) will launch a new paid internship program for youth offering experiential learning in an urban farm and commercial kitchen and training on how to educate other youth in the community on cooking and nutrition with California specialty crops. This project builds on nine years of a successful youth volunteer program. Interns will be recruited from underserved and low-income communities in Sonoma County through partnerships with other organizations and schools with a high percentage of reduced-cost lunch participants. By providing a paid work experience, the program will be more accessible for youth who need to work to support themselves and their families. After completing a summer training curriculum, interns will lead classes for 3,000 additional youth on cooking and nutrition with California specialty crops at community locations such as libraries and schools. Interns will also learn and teach about how to find California specialty crops locally.	$188,740.00
California Department of Food and Agriculture	$23,888,200.23	Project 24: Effects of Processing on the Nutritional, Functional, and Sensory Properties of Almond Milk and Fouling of Industrial Equipment	Almond milk consumption has increased as an alternative to dairy milk. However, its low nutrient density and use of emulsifiers in the milk have cast a negative light on almond milk. The project goal is to develop an extraction process to produce a more functional, nutrient-dense, and well-accepted almond milk and to identify heating strategies to reduce the fouling of industrial equipment; an economic problem faced by almond processors. Project success will be measured by chemical and sensory characterization of the milk produced (protein content, solubility, digestibility, sensory perception, and consumer's acceptance) to establish the best practices to produce more nutritional milk and, by the willingness of almond processors, to adopt the new methods developed. Higher acceptance of almond milk by consumers searching for higher nutritional quality, especially those suffering from digestive/allergic problems, and longer processing times without equipment cleaning are expected.	$439,801.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 25: Student Nutrition Advocate Crew: Youth-Led Community Education to Celebrate the California Harvest	San Francisco Unified School District's (SFUSD) project will empower the Student Nutrition Advocates (SNAs) to increase knowledge and consumption of California Specialty crops in their communities through peer education. SNAs at eight low-income schools will receive training in 1) personal resource management and specialty crop acquisition through Farmers' Market visits, 2) specialty crop production in school gardens, 3) incorporating specialty crops into a healthy diet through cooking activities. SNAs will use their training and peer influence to create virtual and in-person specialty crop curricula to reach students and families through specialty crop celebrations, Family Nutrition Nights, health education lessons, and a student champion poster campaign. A total of 6,750 students, 145 family members, and 40 staff members reached at the eight schools will complete pre- and post-surveys to measure increased knowledge of and increased intention to eat more California specialty crops, with students also reporting on consumption.	$410,607.00
California Department of Food and Agriculture	$23,888,200.23	Project 26: Growing Farms and Minds: Nutrition Education, Farm Direct Purchasing, and Hands on Learning for California Kids	This project will enhance the competitiveness of California specialty crops by advancing Sierra Harvest (SH)'s existing Farm to School (FTS) program, which serves 97 percent of kindergarten through eighth-grade students in Western Nevada County. FTS currently offers tastings of specialty crops through Harvest of the Month (HOM) education, field trips to farms, cooking classes, and nutrition education using specialty crops to improve access to fruits and vegetables at school. Building on the success of the existing FTS program, this project will allow growth in three ways: 1) by reaching the underserved eastern portion of Nevada County; 2) an expansion of proven programs like "Tasting Week Chefs" that spotlights available specialty crops and farmers, and 3) including new program elements such as school garden education to increase the impact on California's specialty crop industry.	$429,343.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 27: Increasing Access and Consumption of Specialty Crops through Improved Science-Based Preservation and Preservation	This project will enhance access and consumption of locally grown specialty crops by promoting safe food preparation and preservation knowledge. The project team will utilize Mariposa, Merced, and Tuolumne Counties locations to educate communities and outreach to surrounding counties. Leveraging the Master Food Preserver (MFP) model, this project will extend science-based preparation, storage, and preservation practices, building a network of volunteer educators to help disseminate innovative research, recipes, and safe preparation and preservation methods to promote awareness and consumption of specialty crops. With input from the University of California (UC) small farm advisor, and collaboration with local food distribution programs and small-scale producers, the project team will introduce new specialty crops, demonstrate proper preservation techniques, and distribute educational materials to underserved populations. A specialty crop website will be created to upload demonstration videos and recipes and share local distributor information to increase access.	$229,035.00
California Department of Food and Agriculture	$23,888,200.23	Project 28: Transforming School Gardens into Specialty Crop Farms	This project seeks to grow specialty crops in 4 target school districts at 12 Title 1 elementary schools by integrating agricultural/garden education with nutrition, cooking demonstrations, and access to specialty crop fruits and vegetables for children, their families, and communities. School gardens, which have suffered from closures during the pandemic, are being reframed as outdoor classrooms and productive, urban specialty crop farms to address the learning, food insecurity, health disparities, access, and equity. This project will elevate the knowledge and use of culturally relevant specialty crops in the daily lives and diets of underserved and historically disadvantaged neighborhoods. Classes, workdays, festivals, and promotions will create new links between the school farms and families, neighbors, businesses, food entrepreneurs, and local growers, cultivating resilient communities and benefitting the specialty crop industry. Project success will be measured using pre and post, tests from students and parents to compare knowledge and consumption of specialty crops. Stakeholder interviews will be conducted with farmers and local businesses to measure increase demand and benefits to the specialty crop industry.	$471,960.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 29: Increasing Specialty Crop Awareness and Consumption among Pajaro Valley School Children	This project will increase specialty crop awareness and consumption among Pajaro Valley students through districtwide farm-to-school procurement improvements and garden, nutrition, and cooking programs at a school site with a special new instructional kitchen and garden classroom. Students will understand where specific California fruits and vegetables come from and demonstrate a high willingness to try diverse California specialty crops and enjoy them, building healthy eating habits to last a lifetime. Districtwide gains will directly impact over 18,000 students, and 600-plus students at Starlight Elementary will benefit from programs at the new integrated programs site. Pajaro Valley Unified School District (PVUSD) and Life Lab Science Program's (Life Lab) six-year partnership has been a demonstrative success.	$454,781.00
California Department of Food and Agriculture	$23,888,200.23	Project 30: Fresno Unified Specialty Crop Farmers Market Project	Through educational experiences, this project will: 1) increase the healthy eating habits of the targeted population, emphasizing locally sourced specialty crops, 2) increase awareness, access, and consumption of the regions specialty crops, 3) increase marketing events, partnering with local specialty crop growers prioritizing minority farmers, 4) develop menu items utilizing locally sourced specialty crops for the district's cafeterias, 5) secure procurement contracts with local specialty crop growers to meet the growing district needs.	$136,500.00
California Department of Food and Agriculture	$23,888,200.23	Project 31: Developing High-Throughput Genetic Screening Tools for Drought Tolerance in Grape Rootstocks	This project will generate new breeding tools and irrigation management strategies to increase water-use efficiency and mitigate the impacts of climate change on grape growers. Improving rootstock drought tolerance is a crucial strategy to reduce irrigation use and adapt to climate change, but a lack of high throughput has limited breeding efforts screening tools. The project will genotype and phenotype root drought tolerance traits across a population generated from drought tolerant/sensitive rootstock cross (110R/101-14) to identify new genetic markers for rootstock drought tolerance. The project will also use root traits to define rootstock-specific soil moisture thresholds for irrigation and work with growers to evaluate whether incorporating these guidelines and automated soil-moisture sensing into irrigation management increases the water- and cost-savings from drought-tolerant rootstocks. These innovations are crucial for grape growers to mitigate climate change and increase sustainability.	$339,451.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 32: Life Cycle Assessment of Environmental Impacts and Tradeoffs for Certified Organic Practices in Key Specialty Crops	This project builds on prior work supporting the development of a scalable, process-based, agronomically responsive cropping system life cycle assessment (SPARCS-LCA) model, producing a comprehensive life cycle impact assessment (LCIA) and analyzing environmental tradeoffs for specific management practices, crops, and regions. Here, the SPARCS-LCA model will be used to assess key specialty crops prioritized by the University of California Organic Agriculture Institute to determine tradeoffs associated with organic practices in these crops, quantify environmental impacts/ benefits, and define them with respect to a "sustainability continuum." This project will benefit specialty crop growers by informing their decisions on adopting management practices for positive environmental impact and informing policy and commodity board priorities to incentivize such practices. Outreach success will be quantified via event attendance records and before-and-after knowledge surveys.	$327,513.00
California Department of Food and Agriculture	$23,888,200.23	Project 33: Multi-Generational Adaptation of Blue Orchard Bees (Osmia Lignaria) in Response to Climate Change in Orchard Crops	Blue orchard bees (BOBs) are increasingly being used to pollinate California fruit and nut crops. Still, they are often trapped annually in the wildlands of Utah, Washington, and California rather than propagated where they are used as pollinators. This makes it critical to understand the adaptability of populations to new and warming environments because BOBs are currently moved to areas with temperatures warmer than within natal ranges. Local climate adaptation may be seen in future generations when the bees remain in crops locally. Compared to first-generation bees whose parents were newly imported, second and third generations may have higher survival and developmental phenology that better aligns with the timing of crop bloom. However, the potential negative impact of warming temperatures on local and transported BOB populations could be decreased bee fitness and pollination efficacy. The main objective of this project is to determine if BOBs from different regions adapt to new warming conditions after multiple generations.	$264,841.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 34: Co-Managing Deficit Irrigation-Disease Interactions to Optimize Water Conservation and Productivity in Processing Tomatoes	Irrigation management is pivotal to the environmental and economic sustainability of California processing tomatoes. As water scarcity increases under climate change and cyclical droughts, deficit irrigation (DI) is a common strategy to conserve water. Recent studies indicate an interplay between DI and decreased yields due to late-season biotic and abiotic diseases. As specific disease risks remain ambiguous, growers have no tools to mitigate impacts, putting DI fields at risk of severe losses. To reduce disease risks and enable water savings, this project proposes to 1) define DI interactions with biotic and abiotic diseases, 2) define economic thresholds over which disease-driven losses exceed water cost savings, 3) adapt information systems, and 4) adapt genetic-based strategies for disease-irrigation co-management. Adoption will be enabled through outreach, and success will be evaluated based on the workshop, field day, meeting attendance, website access; download metrics; and tool adoption data.	$467,445.00
California Department of Food and Agriculture	$23,888,200.23	Project 35: Evapotranspiration Monitoring of Three Major Salinas Valley Specialty Crops	The project broadly addresses sustainability indicators identified by the state of California in response to declining groundwater levels and degraded water quality. Ground-based and satellite-based (OpenET) measurements of consumptive water use will be made in Central Coast lettuce, broccoli, and wine grape fields. The field trials will characterize OpenET accuracy for those three crops and demonstrate the potential for applied water savings by linkage with ET-based recommendations of the Crop Manage specialty crop decision-support application. Project benefits include the improved definition of relationships between applied water and consumptive use, development of linked technologies to evaluate crop water requirement and nitrogen discharge and facilitated grower compliance with legislative provisions of the Irrigated Lands Regulatory Program (ILRP) Agricultural Order 4.0 and the Sustainable Groundwater Management Act (SGMA).	$464,223.00
California Department of Food and Agriculture	$23,888,200.23	Project 36: Long Term Saline Irrigation Strategies for Pistachios on Integerrima Rootstock	This cooperative project aims to determine if long-term, salt-damaged ‘Kerman’ pistachios on PGI rootstock and a six- to 10-foot water table can be reclaimed and managed with in-season leaching with the addition of in-season leaching saline and good quality water. The outcome will be a new method of salinity management and an extension education program on salinity management. Success will be evaluated by how well in-season leaching reclaims salt-damaged trees and maintains pistachio production and by the number of growers reporting new knowledge adoption.	$198,820.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 37: Breeding Lettuce to Improve Nitrogen and Water Use Efficiency by Enhancing Root Biomass	Lettuce growers are faced with producing their crops with less water and nitrogen (N) fertilizer. The project team previously developed advanced lettuce breeding lines whose N uptake and assimilation (NUA) is 22 percent higher than commercial cultivars but discovered these lines have low root biomass. In this project, three new recombinant inbred lines segregating for root biomass and NUA will be screened to identify genetic lines that combine NUA and root biomass and to quantify root biomass, leaf biomass, and NUA. Carbon and N isotope discrimination will be used to determine water use efficiency and N metabolism, respectively. Each population will be subjected to genotyping by sequencing, and loci associated with these traits will be mapped. Markers for breeders will be developed and breeding lines will be released. Outreach to growers and industry will include presentations at grower's and breeder's meetings and through reports sent directly to the industry and made available on a website.	$419,178.00
California Department of Food and Agriculture	$23,888,200.23	Project 38: Improving Avocado Resource-Use Efficiency Through Updated Crop Water Use Information and Irrigation Management Strategies	Avocado is primarily grown in Southern and Central California. These regions face uncertain water supplies, mandatory reductions of water use, and the rising cost of water, while efficient use of irrigation water is one of the highest conservation priorities. Data on water use by avocado orchards and optimal irrigation strategies is limited, and the lack of information hinders the achievement of efficient water and fertilizer management. This project intends to acquire relevant information on crop water consumption and crop coefficients, optimal irrigation water management, and to assist growers in employing adaptive tools that support profitable and sustainable avocado production. A combination of field experiments, case studies, and a robust outreach program will be used to develop and disseminate information and tools to growers and stakeholders. Project success will be quantified as the number of deliveries and growers who gained knowledge and/or adopted the tools and practice.	$450,891.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 39: Management Strategies for Mitigating Water Infiltration Problems in Almond and Pistachio Orchards in the Central Valley	Almond and pistachio are major crops in the Central Valley of California and are irrigated mainly by drip irrigation. While water infiltration problems in the Valley are typically associated with flood irrigated orchards, an increasing number of growers with drip irrigation have difficulties filling the soil profile during the summer months to meet the crop water demand due to infiltration problems and standing water. Low water permeability is typically associated with certain soil textures but could also be exacerbated by soil compaction and soil crusting. This project will work with commercial almond and pistachio growers in the Central Valley and conduct an applied research program to develop and test management strategies to improve water infiltration rates and alleviate the rootzone saturation problems that increase root diseases such as Phytophthora. The project will develop educational materials and conduct traditional University of California Cooperative Extension (UCCE) activities such as field days and workshops.	$470,265.00
California Department of Food and Agriculture	$23,888,200.23	Project 40: Can Biodegradable Plastic Mulch Increase Long-Term Soil Carbon Storage: Integrating Soil Responses With Grower Values	California strawberry production and floriculture rely heavily on plastic films to increase crop health and yield. However, agricultural plastic mulches also cause deleterious effects on soil and aquatic systems through their breakdown and mismanagement. While biodegradable plastic mulches (BPM) may be more sustainable, a paucity of knowledge about the impacts of BPM on soils is a barrier to adoption by farmers. In addition, negative plasticulture externalities are also poorly quantified. Thus, this project will study the utility and consequences of BPM as an alternative technology in California plasticulture systems by investigating 1) basal plastic pollution levels in agricultural soils and its consequences, 2) the effects of BPM versus conventional plastic on soil health, and 3) the perceptions of these technologies among key stakeholders in strawberry and floriculture production. This research will be used to inform grower decision-making in choosing to adopt BPM as an alternative technology.	$471,359.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 41: Investigation of the Risk of Smoke Exposure: Volatile Phenol Absorption and Translocation	The California wine industry is worth $43.6 billion with 635,000 acres of wine grapes and 5,900 growers. An economic analysis estimated a $3.7 billion loss in wholesale revenue due to 2020 wildfires. Experts agree wildfires will occur with greater frequency and intensity, posing risks for all wine grape growing regions in California. Exposure to smoke compromises the quality and value of wine grapes and adversely affects grapevines. During wildfires, a substantial number of volatile phenols (VP) are released into the air from burning wood. These compounds are absorbed through the berry skin and can result in tainted wine. There is no successful vineyard mitigation strategy to prevent smoke exposure impact, and the understanding of VP absorption rates and translocation within grapevines is limited. Knowledge gained through this project will aid in the development of mitigation strategies for California vineyards' response to wildfire practices and procedures.	$364,461.00
California Department of Food and Agriculture	$23,888,200.23	Project 42: Nitrogen Management Guidelines for Olive Growers to Improve Soil Health and Sustain Production	The rapid expansion of newly developed high- or super-high-density (SHD) olive orchards in California, critical nitrogen (N) inputs required for olive production, and renewed interest in soil health are leading to rising demand for developing best management practices (BMPs) for N use in olives. The goal of this project is to assess N recommendations and improve N management guidelines for California olive growers to manage SHD orchards. This will be done by providing information on how soil health parameters, crop N uptake, yield, and fruit quality respond to the use of different N rates and organic amendments in olive orchards. This project will: 1) determine N uptake dynamics of trees under different N fertilization rates and organic amendments to estimate N use efficiency; 2) evaluate olive production and quality; 3) investigate soil carbon © sequestration potential and greenhouse gas emissions; and 4) refine N recommendations and improve N management guidelines. Extension and education activities will inform stakeholders.	$472,048.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 43: Addressing Groundwater Challenges for Small-Scale Diversified Vegetable Farms in the San Joaquin Valley	This project will train small-scale, socially disadvantaged farmers on improved irrigation practices for diversified vegetable farms. It will also evaluate groundwater monitoring and the potential for groundwater recharge on these farms. A group of 57 farmers have implemented drip irrigation, moisture sensors, variable frequency drives, and pump repairs, presenting an opportunity to optimize their systems and demonstrate best practices to similar farmers to reduce groundwater and energy use. Water and energy use data from these farms will be analyzed to determine tailored recommendations for irrigation scheduling and evaluate groundwater monitoring methods for small-scale, diversified farms. On-farm trials of cover crop use to mitigate environmental impacts during flooding will evaluate the potential for managed aquifer recharge on small-scale, diversified vegetable farms with winter fallow periods. These efforts will contribute to reducing groundwater use and increasing groundwater supplies.	$475,239.00
California Department of Food and Agriculture	$23,888,200.23	Project 44: Walking the Pipe: Reducing Use of Irrigation Pipes as “Super-Highways” by Argentine Ant in Citrus Orchards	In citrus, an Argentine ant (AA) is a significant pest because it harvests honeydew from sap-sucking pests (SSPs) and protects them from natural enemies. AA uses irrigation pipes to move rapidly from subterranean nests to trees infested with SSPs. Pipes are smooth, which enhances AA mobility. Surfaces with uneven topography slow AA. Small trials suggest that organic mulch laid over pipes may reduce ants ascending trees to tend SSPs. Another approach is to change the surface topography of pipes. Disruptive topography designed using AA body dimensions has been demonstrated to impede movement. 3D-printed pipes with disruptive topography can be field-tested for impacts on ant movement to trees. Ultra-low dose nanogram (ng) concentration residues of insecticide kill AA colonies through physical transfer to nest mates. Applications to small sections (less than 1m) of pipe need evaluation. This project will demonstrate that mulches, disruptive pipe topography, and insecticide barriers reduce pipe use and suppress AA in activity citrus.	$424,421.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 45: Enhancing Diagnostics of Regulated Plant Parasitic Nematodes in Specialty Crops	This project aims at developing and applying recombinase polymerase amplification (RPA) technology as a novel molecular tool for diagnostics of regulatory plant-parasitic nematodes (Ditylenchus dipsaci [D. dipsaci], Aphelenchoides fragariae [A. fragariae], Rotylenchulus reniformis [R. reniformis], and Radopholus similis [R. similis]) in California. The RPA technique has some clear advantages over polymerase chain reaction (PCR): (i) does not require any Deoxyribonucleic acid (DNA) purification steps; (ii) does not require thermal cycling; (iii) amplification products may be detected at the endpoint or in real-time for 15-30 minutes. The field application of RPA methods will also be validated with plant and soil samples infected by target nematodes. Molecular diagnostic protocols will be available to the U.S. Department of Agriculture, state and private laboratories. The method will represent substantial improvements regarding time and costs over existing diagnostics based on a PCR approach. The tools developed will enhance significant accuracy and early detection of regulatory nematodes in specialty crops of California.	$89,552.00
California Department of Food and Agriculture	$23,888,200.23	Project 46: Integrated Pest Management of Diamondback Moth on Cole Crops	Diamondback moth (DBM) is an invasive insect pest in California. In the last two decades, DBM has generated significant crop losses and remains an economic threat to California's $1.3 billion Cole crop industry which includes broccoli, cauliflower, cabbage, Brussels sprouts, and various other specialty crops. Annual economic losses of up to $6 million have been attributed to DBM in California. Current DBM pest control challenges stem from the development of suspected insecticide resistance, lack of pest monitoring, and the absence of co-evolved natural enemies that can significantly suppress DBM populations. This comprehensive project aims to strengthen California's DBM integrated pest management program by validating the utility of seasonal DBM monitoring, clarifying DBM insecticide resistance issues, and developing a classical biological control strategy for natural, long-term DBM control.	$408,536.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 47: Recycled Olive Waste as a New Tool to Control Nematodes and Weeds in Perennial Crops	Olive pomace, comprised of olive meat, seed, and skin, has unique natural antimicrobial properties, which distinguish it from other agricultural byproducts. Preliminary data indicate that pomace can safely decrease pest nematodes and prevent weed germination. biosolarization, a process which combines solar heating and microbial activity, likely intensifies these effects, creating fermentation products which act as natural fumigants. This project will characterize the pest control potential of olive pomace. Objectives are to 1) Determine which rates of pomace best suppress nematodes and weeds, 2) Determine pomace's mode of action with and without biosolarization, 3) Validate biosolarization with pomace as a pre-plant disinfestation method, 4) Characterize the efficacy of pomace applied as a post-plant strategy, 5) Perform a techno-economic analysis of feasibility, and 6) Extend results through field days, online publications, presentations and outreach to stakeholders.	$373,871.00
California Department of Food and Agriculture	$23,888,200.23	Project 48: Investigate and Improve Detection Methods for Spotted Wing Drosophila Pyrethroid Resistance in California	The introduction of spotted wing drosophila (SWD) has confounded insect management in California berry and cherry crops. Growers who relied on integrated pest management prior to SWD invasion must now apply insecticides specifically for SWD to avoid crop loss. Although growers strive to practice resistance management, the lack of alternative control strategies, low damage tolerance in high-value crops, and fast generation time of SWD suggest resistance development is inevitable. The project team has found SWD populations with tolerance to various insecticide chemistries in California berry crops. This project will investigate pyrethroid resistance mechanisms in SWD populations by combining insecticide bioassays and high throughput DNA and RNA sequencing. Identification of genetic mechanisms underlying resistance will enable the development of diagnostic assays to enable early detection and efficient screening of resistant SWD, optimize spray programs and minimize economic loss.	$372,784.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 49: Classical Biological Control of Brown Marmorated Stink Bug Using Trissolcus Japonicus, the Samurai Wasp	This project will provide sustainable, cost-effective management of the Brown Marmorated Stink Bug (BMSB), an invasive agricultural pest in California and many other states. BMSB is highly polyphagous and is presently established in at least 16 counties, including several in the San Joaquin Valley. The primary goal of this project is to establish populations of the samurai wasp (Trissolcus japonicus) in California's key agricultural production areas at risk of economic harm by BMSB. The California Department of Food and Agriculture's (CDFA) Biological Control Program will purposefully rear and redistribute this parasitoid to agricultural regions in critical need of BMSB control. Self-sustaining populations of samurai wasps are expected to spread naturally, reducing BMSB populations. The success of this project will be evaluated based on the development of a viable samurai wasp mass rearing program, the number of growers informed about this new biological control agent, and the number and distribution of locations of successful wasp release and establishment.	$363,580.00
California Department of Food and Agriculture	$23,888,200.23	Project 50: A Metagenomics Marker System for Identification of All Fusarium Oxysporum Taxa in Field Soils	Fusarium oxysporum (F. oxysporum) is a widespread soil fungus that includes saprophytes as well as host-specific vascular wilt pathogens capable of infecting scores of specialty crops. One of the biggest challenges of working with this taxon is the lack of molecular tools for accurate identification and diagnostics. Techniques for positive and negative identification of some specific pathogens have been developed, but the ability to assess all strains, including saprophytes, has not been developed. The objective is to establish further a metagenomics marker system that enables the identification of all strains of F. oxysporum present in a sample by amplification of specific regions of the genome and sequencing by Illumina. This work is made possible by assembling a large and expanding database of F. oxysporum pathogens and saprophytes. The ability to do this will provide growers with information on risk of disease and impact of management practices on populations of all F. oxysporum pathogens in the field.	$444,551.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 51: Managing Citrus Huanglongbing disease using a model-driven approach	Citrus Huanglongbing (HLB) disease has caused annual losses of over one billion dollars and approximately 7,900 jobs in Florida. As HLB spreads in the United States, similar losses are expected in California unless new and more effective management strategies are developed. This project will use a model-driven approach to analyze Survivor Trees (ST) in Florida. ST display a slow rate of decline even though they are in orchards where most of the trees exhibit the rapid HLB decline. After four years of research, the project team has identified trees that have only declined by 0.5 in a 0 – 5 disease rating system. The project will identify the molecules and molecular targets in citrus ST, which will be used to create effective new strategies to manage HLB.	$444,032.00
California Department of Food and Agriculture	$23,888,200.23	Project 52: Dissecting Genetic Control of Tolerance/Resistance to Huanglongbing in Citrus Using the Host Transcriptional Response	The most immediate threat to California citrus is the bacterial disease Huanglongbing (HLB). Commercial citrus in California has been protected from disease through a combination of measures, including monitoring of both the insect vector and host and management in cases where HLB infection is detected. These strategies have safeguarded commercial orchards from HLB for nearly a decade. Still, the continued success of citrus in the state depends on stable, long-term solutions, including the development of HLB-resistant cultivars. Despite intensive efforts, there are still major gaps in the understanding of the genetic control of resistance to HLB. This project proposes to survey the genome-wide response to HLB infection across a genetically diverse collection of citruses. Gene expression is highly amenable to genetic mapping compared to complex traits like the disease status of mature trees, alleviating some challenges that have delayed progress in understanding the genetic basis of tolerance/resistance.	$447,132.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 53: Development, Validation and Application of Fungicide Resistance Monitoring Tools for Botrytis Spp. of Specialty Crops	Botrytis is one of the most important fungal diseases of specialty crops. Over the past decade, numerous studies have shown fungicide resistance levels continue to rise. Despite rotating products, few synthetic fungicides remain that can control Botrytis effectively. This project builds upon previous Botrytis projects to develop molecular markers for detecting fungicide resistance. Markers have been developed for Fungicide Resistance Action Committee (FRAC) groups 17 and 11, but there is considerable variation in genetic loci for FRAC 7, 9, and 2. This project focuses on validating and deploying previously developed molecular markers using field samples, designing new markers for FRAC 7, 9, and 2, and testing the efficacy of new FRAC 7 products for cross-resistance to older FRAC 7 products (e.g., fluopyram and boscalid). Furthermore, project staff will identify the genetic basis and molecular targets for FRAC 12 resistance, the last major effective synthetic compound for reliable Botrytis disease control.	$368,999.00
California Department of Food and Agriculture	$23,888,200.23	Project 54: An Integrated Approach to Combatting Tomato-Spotted-Wilt Virus in Pepper	Processed peppers drove a $1.4 billion salsa industry and a $1.6 billion hot sauce market in the United States in 2019. California produces over one-third of peppers in the United States. Tomato-Spotted-Wilt Virus (TSWV) consistently produces economic losses for farmers. The team recently verified three new resistance-breaking strains (RB-TSWV) in California, threatening the industry. The project proposes an integrated approach that combines rapid assays to detect and monitor RB-TSWV and resistance, locally adapted breeding germplasm and breeding tools. Outcomes are monitoring of disease for farmers to make decisions on control and variety selection, tools, and germplasm for efficient breeding of resistance into the pepper. Success will be monitored by assessing sensitivity and use of assays by growers, California's extension, adoption of DNA markers and germplasm directly as varieties, and licenses to industry for the production of hybrids peppers. The long-term outcome will be a reduction of economic losses, yield, and quality due to TSWV in pepper and related species.	$469,889.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 55: Twelve Citrus Leaves Are Not Enough	Citrus laboratories in California test thousands of 12 leaf samples per tree every year, yet huanglongbing (HLB) infected trees still go undetected. Twelve leaf sampling was developed because hand sample processing was the only viable process. The Citrus Clonal Protection Program (CCPP) and Technology Evolving Solutions (TES) have developed a new leaf tissue extractor instrument to replace hand leaf chopping in citrus diagnostics. The machine shreds petioles, and the tissues are made ready for downstream nucleic acid extraction and pathogen detection. The goal of this project will be to develop new protocols for larger sample sizes and evolve the shredding machine to accommodate those sizes. If the project team can double the sample size at the current California low infection rates, the probability of finding HLB could be doubled. The most cost-effective sample size must be determined. Then validation of the instrument and protocol will look at sensitivity, specificity, reproducibility and determine the cost per leaf tested.	$418,830.00
California Department of Food and Agriculture	$23,888,200.23	Project 56: Towards the Enhancement of PCR Detection of Pathogens in Specialty Crops	Early detection is critical to controlling and managing pathogens in agriculture. This project aims to extend to specialty crop pathogens the discovery that a simple additive to established protocols for viroid detection in citrus plants improves their detection limits by tenfold. The project will focus on the detection of pathogens, such as the grapevine red blotch associated virus (GRBaV), Erwinia amylovora (E. amylovora), the causative agent of fire blight in apples and pears, and Candidatus Liberibacter asiaticus (CLas), the agent associated to the current Huanglongbing (HLB) citrus crisis. As the additive affects the central step of ribonucleic acid (RNA) and deoxyribonucleic acid (DNA) detection, fundamental to many established detection protocols, the project team also aims to develop a reliable protocol that allows specialty crops diagnostic laboratories to enhance their detection protocols. To establish the reliability of this protocol, the team have enlisted the help of the University of California (UC), Davis Foundation Plant Services (FPS), and the UC Riverside Citrus Clonal Protection Program (CCPP).	$249,666.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 57: Enhanced Production of Disease-Free Citrus Varieties Using Sustainable Next Generation Indoor Farming Systems	The Citrus Clonal Protection Program (CCPP), a National Clean Plant Network (NCPN) center, ensures that citrus propagative materials are disease-free and available for citrus productions in California. This project will lead to an operational modular plant growth unit (MPGU)-freight container tailored to citrus. The goal is to adopt, adapt, and validate the MPGU to increase CCPP's plant production capacity (a minimum of 8,700 containerized trees will be needed in the next three years) and optimize disease symptom expression for citrus diagnostics (research on graft-transmissible diseases bioindexing). Project success will be determined by 1) increased volume of citrus plants for CCPP disease testing, therapy, and budwood sources and materials for Huanglongbing (HLB) research, 2) reduce the production of disease-free citrus varieties by 18 months; and 3) creation of automated and sustainable citrus nursery technologies with less plant space, energy, greenhouse gas (GHG) emissions, fertilizer, and water.	$439,511.00
California Department of Food and Agriculture	$23,888,200.23	Project 58: Microbial Characterization of Irrigation Waters using Rapid, Inexpensive and Portable Next Generation Sequencing Technologies	New microbial detection approaches utilizing whole genome sequencing are being increasingly applied for tracing microbial contaminants entering the food chain. The produce industry can directly benefit from powerful new methods such as shotgun metagenomics, which allows for the rapid identification of all the bacterial, viral, fungal, and protozoan pathogens in irrigation water, soil, or food samples in a single test. The goal of this project is to investigate two technologies that offer slightly different approaches for pathogen detection, to identify the benefits and limitations of each, verify the results, and validate their applications by the produce industry for use in rapid pathogen detection in agricultural waters. The results of this study will provide recommendations, protocols, and guidelines to the produce industry regarding the proper implementation of these technologies for pathogen surveillance.	$347,678.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 59: Towards a Holistic Assessment of the Food-Safety Risks Imposed by Wild Birds	Birds introduce complex food-safety risks, as they carry multiple pathogens, are difficult to exclude from farms, and regularly defecate on crops. Yet very few wild bird species have been studied, and those that have form a minority of farm bird communities. Moreover, existing studies stop at examining pathogen prevalence in birds and do not holistically assess food safety risk. For a species to pose a significant risk, it must carry pathogens, visit fields, defecate on crops, and produce feces that support pathogen survival. The project team proposes first to identify species that carry pathogenic Escherichia coli (E. coli), Salmonella, and Campylobacter by coupling existing studies with assays of field-collected feces. Second, the team will survey birds and collect feces on 15-20 farms near rangeland, natural habitats or produce farms to determine which species enter farms and defecate on crops and in which contexts. Third, the team will compare E. coli survival between feces placed on different substrates (crops, organic/conventional soils, plastic mulch) and between feces from different species. Finally, the team will compile holistic risk assessments for over 50 species into a photographic guide to help growers identify and manage birds. Ultimately, the team hopes to help growers implement practices that bolster beneficial species without compromising food safety.	$390,491.00
California Department of Food and Agriculture	$23,888,200.23	Project 60: Quantifying Risk Associated with Changes in EHEC Physiology During Post-Harvest Pre-Processing Stages of Leafy Green Production	The goal of this project is to determine if the time between harvest and end-use of romaine lettuce impacts Escherichia coli (E. coli) O157:H7 pathogenicity and detectability, resulting in increased health risk. Laboratory scale experiments with inoculated lettuce undergoing simulated harvest and cooling will be used to measure changes in E. coli O157:H7 stress tolerance and virulence. Input from industry partners, including temperature data from commercial romaine harvesting and cooling, and details on supply chain logistics, will be combined with the laboratory scale experimental data and used to model risk associated with specific harvest and handling practices. The resulting quantitative tool will be publicly available and allow for growers and producers to determine any practices that should be implemented to reduce the potential for O157 transmission on romaine lettuce.	$348,502.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 61: Assessing Romaine Lettuce “Forward Processing” for Potential Impacts on EHEC Growth, Antimicrobial Susceptibility, and Infectivity	Consumption of romaine lettuce has been linked to multiple foodborne illness outbreaks due to contamination by pathogenic Escherichia coli (E. coli) strains. Recently, these outbreaks have occurred in the United States every year since 2016, causing significant damage to consumer health and the economic wellbeing of the fresh produce industry. The project team proposes to work closely with the leafy green industry to comprehensively assess the forward processing for its effects on the integrity and safety of the raw commodity and the packaged products. In addition, the forward processing conditions will be simulated in the laboratory with the pathogenic E. coli strains. Emphases will be on how these conditions would affect the physiology of the pathogenic strains as well as other microorganisms on the raw commodity and packaged products. The findings in the research could provide important information that can be used by the leafy green industry for improving the forward processing practice and reducing the risks for fresh produce such as romaine lettuce.	$420,878.00
California Department of Food and Agriculture	$23,888,200.23	Project 62: Cross-Contamination Risks in Dry Environments	The Center for Produce Safety (CPS) will partner with University of California, Davis (UC Davis) to develop a comprehensive understanding of cross-contamination risk factors during dry postharvest handling. Cross-contamination during the handling and processing of fresh produce is one of the key factors that can lead to a major food safety outbreak. Despite significant progress in understanding cross-contamination risks during wet handling and processing of fresh produce, there are significant knowledge gaps about cross-contamination risks in dry environments. The goals of this project are to, 1) quantify transfer coefficients of bacteria from inoculated dry food-contact surfaces (plastics and stainless steel, new and used) to fresh model produce (i.e., onions and stone fruits), with and without the presence of organic and soil contaminants, and 2) develop quantitative risk models for cross-contamination in dry environments for the onion and stone fruit industries. Results of this study will be summarized in project reports and presented at the annual CPS Research Symposium. Outcomes of the project will enable the produce industry to identify high-risk surfaces and conditions that promote cross-contamination in dry operations.	$222,921.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
California Department of Food and Agriculture	$23,888,200.23	Project 63: Assessing the Potential for Production Practices to Impact Dry Bulb Onion Safety	The Center for Produce Safety (CPS) will partner with Oregon State University to determine contamination risks in dry bulb onion production practices. In 2020, the dry bulb onion industry faced its first significant outbreak of foodborne illness when red onions grown in California were epidemiologically linked to greater than 1,000 cases of salmonellosis. The primary goal is to collect evidence demonstrating the risks of these practices and to communicate the findings to relevant stakeholders to reduce the potential for an outbreak like this from recurring in the future. Findings will be shared via a broad outreach strategy that communicates with the industry throughout the two-year study. Results also will be summarized in project reports, presented at the annual CPS Research Symposium, and published in peer-reviewed journals. Outreach activities will culminate with developments and delivery of a workshop and best practices guide that enables bulb onion growers to better understand risks and implement changes to minimize the likelihood of crop contamination.	$411,215.00
California Department of Food and Agriculture	$23,888,200.23	Project 64: Cyclospora Cayetanensis Monitoring in Agricultural Water	The Center for Produce Safety will partner with Purdue University to design low-cost, portable, paper-based colorimetric tests for rapid detection of Cyclospora cayetanensis (C. cayetanensis). C. cayetanensis is an important emerging foodborne pathogen, causing gastrointestinal illness in people who consume fresh produce infected with the parasite's oocysts. Results of this study will be summarized in project reports, presented at the annual Center for Produce Safety Research Symposium, and published in peer-reviewed journals. The µPADs, if successful, will provide the produce industry with rapid monitoring capabilities for detection of C. cayetanensis in agricultural water.	$170,694.00
California Department of Food and Agriculture	$23,888,200.23	Project 65: Practical Application of Superheated Steam to Harvesting, Processing, and Produce Packing Tools and Equipment	The Center for Produce Safety will partner with Cornell University to assess implementation of superheated steam as a dry sanitation strategy for the produce industry. Superheated steam, or "dry steam," does not leave moisture or condensation on surfaces, making it a viable option for sanitizing "dry" handling and packing equipment and facilities. Effective sanitation is critical to mitigating the risk of cross-contamination of produce from surfaces in produce handling operations or from harvest equipment. The outcomes of this project will include data-driven resources that support industry decision-making about superheated steam implementation in dry operations. These resources will help improve the design of sanitation programs in dry operations and enhance control over pathogen cross-contamination.	$419,617.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Colorado Department of Agriculture	$817,558.36	1. Colorado Literacy Project Featuring Maxine "The Peach Queen"	The Colorado Foundation for Agriculture will increase the knowledge and consumption of Colorado peaches through its 2022 Colorado Literacy Project, an annual agricultural and reading literacy program for elementary schools across Colorado.	$19,536.00
Colorado Department of Agriculture	$817,558.36	2. Studying the Mechanical Impact on Potato Tubers During Harvest and Postharvest Processes	The Colorado State University (San Luis Valley Research Center) on behalf of the Colorado Potato Administrative Committee will conduct studies on grower farms and warehouses to improve tuber quality and to reduce rejections by vendors.	$28,846.80
Colorado Department of Agriculture	$817,558.36	3. Systematic Evaluation and Development of New Potato Varieties	The Colorado Potato Administrative Committee will create a grower evaluation program in partnership with the Colorado State University potato breeding program and Colorado certified potato seed growers. This program will test and evaluate new potato varieties in research trials with actual potato farmers.	$32,800.00
Colorado Department of Agriculture	$817,558.36	4. Developing IPM Strategies for Alfalfa Mosaic Virus and Aphid Vector Control in Peppers	The Colorado State University will mitigate the economic impact of a new, aphid-transmitted viral disease of chili peppers – alfalfa mosaic virus (AMV) – by developing research-based management tactics that can be easily implemented by pepper growers.	$66,229.00
Colorado Department of Agriculture	$817,558.36	5. Developing Accurate Non-Destructive Technology Using Vis-NIRS to Assess Peach Fruit Maturity, Quality, and Storage-Related Disorders	Colorado State University through a multi-faceted approach will provide growers with knowledge and technology to improve peach fruit pre-harvest decision-making, quality, and postharvest management. This project seeks to develop new technology for rapid peach fruit quality and maturity assessment, in a single scan, across a broad range of popular Colorado grown cultivars.	$59,758.00
Colorado Department of Agriculture	$817,558.36	6. Increasing Regular Consumption of Colorado Dry Bean: Advancing Grower Profitability and Public Well-Being	Dr. Henry Thompson and his team at Colorado State University will promote increased regular consumption of Colorado dry bean by: 1.) developing a menu and recipe defined Bean Cuisine for human consumption that incorporates about 1.5 cups beans/day; 2.) performing co-translational preclinical studies that establish that the Bean Cuisine, fed to mice as the cuisine that will be consumed by humans, actually induces a healthy pattern of microbiota in the intestine (gut health) prior to initiating the citizen science component of the project; 3.) engaging the Colorado public in citizen science centered around the Bean Cuisine; and 4.) conducting statewide outreach efforts through Extension and other networks.	$78,044.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Colorado Department of Agriculture	$817,558.36	7. Evaluating the Effect Different strains of Potato Virus Y has on Potato Yield and Quality	The Colorado Potato Certification Service (CPCS), Colorado State University, will evaluate the effect different strains of Potato Virus Y (PVY) has on potato yield and quality and will work with local stakeholders to disseminate information through grower meetings and field days.	$22,014.00
Colorado Department of Agriculture	$817,558.36	8. Molecular tools for early detection and high-throughput screening for resistance to potato tuber necrotic viruses	Colorado State University and the San Luis Valley Research Center will develop tools to mitigate the economic impact of two tuber necrotic viruses, Potato virus Y (PVY) and Potato Mop Top Virus (PMTV). To accomplish this, we will develop molecular tools to enable the high-throughput screening for resistance in Potato germplasm.	$52,300.00
Colorado Department of Agriculture	$817,558.36	9. Corn Earworm Spray Trial in Organic and Conventionally Grown Sweet Corn in Western Colorado	Colorado State University Extension Tri-River Area, in partnership with the Colorado Department of Agriculture and local sweet corn growers will conduct a spray trial evaluating the efficacy of chemicals against corn earworm in conventionally and organically grown sweet corn in Western Colorado.	$32,519.00
Colorado Department of Agriculture	$817,558.36	10. Stock Plant Management Techniques to Optimize Vegetative Cutting Production	Colorado State University's Department of Horticulture and Landscape Architecture will investigate effects of lighting treatments on stock plants to optimize vegetative cutting production of herbaceous ornamental plant taxa in the Plant Select® program.	$38,566.84
Colorado Department of Agriculture	$817,558.36	11. Establishing Cowpeas in Northeast Colorado	Colorado State University will improve production methods of cowpea in northeast Colorado by matching maturity ratings to appropriate row widths.	$37,843.00
Colorado Department of Agriculture	$817,558.36	12. Specialty Crop Production Research, Technical Support, and Coordination for Colorado Growers: 2022	The Colorado State University (CSU) Specialty Crops Program (SCP) will enhance the competitiveness of specialty crops in the state by conducting applied research that will enhance growers' capacity to apply sustainable practices to their production systems.	$81,752.00
Colorado Department of Agriculture	$817,558.36	13. Develop Educational Modules for High Desert Farmers	Fort Lewis College- Old Fort at Hesperus will coordinate the development of 20 modules related to Specialty Crops that will be utilized in educational opportunities offered to new and beginning farmers.	$18,878.80
Colorado Department of Agriculture	$817,558.36	14. Guidestone Colorado Demonstrates Shifting Small-Scale Market Garden to Low-Till Practices	Guidestone Colorado will model and teach small-scale low-till methods through trials of drought-tolerant cover crops suited for high altitude; use of a small walk-behind tractor for cover crop management and bed preparation; silage tarps and flame weeder for no-till weed control; productive perennial production systems; and deep mulch application.	$36,457.64

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Colorado Department of Agriculture	$817,558.36	15. Guidestone Colorado Shares Best Practices for Selling Specialty Crops to Institutional Buyers	Guidestone Colorado will leverage existing relationships with school and hospital buyers to refine and widely share best practices for distributing specialty crops to institutional buyers, including through trainings, conferences, and webinars.	$31,367.56
Colorado Department of Agriculture	$817,558.36	16. Turf and Arid Climates – Benefits and Responsibilities	The Rocky Mountain Sod Growers will conduct an educational campaign on the importance of water conservation and the benefits of sod. We will create an advertising campaign designed to highlight environmental benefits of sod, the water needs of turf, and the role of turf in urban environments.	$25,000.00
Colorado Department of Agriculture	$817,558.36	17. A Distributed, Owner Operated, Four Season Growing System for Leafy Greens and Herbs.	Rowse Corp. DBA Buffalo Pass Farms will create a containerized controlled environment agriculture system to grow leafy greens and herbs. Once established at Buffalo Pass Farms, the system will be replicated with farmers and growers as a method to empower themselves economically through increased revenue.	$63,371.42

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Connecticut Department of Agriculture	$397,377.31	1. Digital Marketing and Market Access of Connecticut Specialty Crops	The Brass City Regional Food Hub will utilize compelling digital marketing and mainstream media technologies to expand the brand identity and to increase market share for Connecticut Grown specialty food crops among various consumer demographics and non-traditional wholesale buyers in the for-and-non-profit sector such as congregant housing, rehab centers, dietary nutrition programs, soup kitchens, small private schools, etc. Enhanced market share will be a multiplier for increased wholesale and consumer-based retail access to specialty crop food products that will benefit Connecticut specialty crop farmers. Targeted marketing utilizing digital and broadcast technologies will enable the Brass City Regional Food Hub to increase access to specialty food crops as well as enhanced market share of new audiences including non-profit organizations, congregant sites, and vulnerable populations of elderly and disabled who may have limited access to specialty crops. Once implemented, these technologies will assist us in building a more inclusive and stronger food system in Connecticut. One of the components of this proposal will be the creation of targeted social media and broadcast quality videography in the form of a 30 second commercial that will highlight a montage of Connecticut Grown specialty food crops through four seasons to reach the intended consumer and institutional or non-traditional wholesale audiences. This 30 second commercial will also be suitable for trade presentations as we conduct outreach to increase access to specialty food crop products to new markets. The commercial will contain funding attribute to the USDA and the Connecticut Department of Agriculture and will contain a link and a QR code to be scanned on the television screen that will take smartphone users to the CT Grown website. The QR code will enable consumers to locate nearby farmers' markets or farm stands where they can procure specialty crops for consumption. The impacts to be derived from this broadcast videography and digital marketing are to: 1) increase Connecticut specialty crop brand awareness, 2) increase consumption of specialty food crops by consumers including those consumers considered vulnerable populations, and 3) increase market share of Connecticut specialty crops by utilizing some of the same technologies employed by large corporations that market non-domestic specialty crops to Connecticut consumers and wholesale buyers.	$68,500.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Connecticut Department of Agriculture	$397,377.31	2. Applications Used in Plant Disease Control on Pollinator Health. Impact of Antibiotic	The Connecticut Agricultural Experiment Station (CAES) will evaluate the impact of the application of antibiotics used in plant disease control on the health of pollinators. Applications of antibiotics are routinely performed during bloom to control various economically important diseases such as fire blight on apple and citrus greening on citrus. Yet its impact to the pollinator health has never been evaluated. In this research, we will first determine the residual level of streptomycin on pollen grain collected by honeybees from CT apple orchards when streptomycin was sprayed during bloom. Next, we will evaluate the impact of streptomycin to microbiome on pollen grain. Finally, a microcolony experiment will be performed to compare the life span of bees feeding on pollens treated and not treated with streptomycin. Findings from this research will be disseminated to stakeholders through the CAES annual Plant Science Day exhibition, apple grower and beekeeper meetings, as well through webinar presentations. We will partner with the CT pomological society (see letter of support), and the CT beekeepers (through the collaboration with the CT bee inspector Mr. Mark Creighton, Co-PI of this grant) to coordinate sample collection, experiment implementation, and information dissemination aspects of this project. Knowledge generated from this project will benefit the CT beekeepers as it aims to identify measures to promote bee health. Currently, the bee population in North America, including Connecticut, is going through a decline. The decline is seen in both the abundance as well as diversity of bee pollinators. Many commercial beekeepers in CT generate a significant part of their revenues by bringing beehives to apple orchards during bloom to enhance pollination, yet there is always a concern whether the exposure of bees to pesticides in the orchard would cause negative impact to bee health. Knowledge gained from this project will also benefit the CT apple growers, as the apple growers rely on efficient pollination to generate a desirable crop load, and many of them maintain their own beehives on site at the apple orchards.	$75,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Connecticut Department of Agriculture	$397,377.31	3. Developing Community-Informed Pathways to Specialty Crop Access in New Haven	The City of New Haven's Food System Policy Division (FSPD) will bolster awareness of, access to, and competitiveness of locally-grown specialty crops via three interrelated programmatic pathways: 1) hosting hands-on educational workshops in urban agriculture, 2) connecting local culinary professionals to urban specialty crop farmers, and 3) establishing the first network of community-led, publicly-accessible seed libraries throughout New Haven, all with a specific focus on culturally-relevant seeds and crops. The FSPD will identify barriers to accessing specialty crops in New Haven and mitigate these challenges by increasing seed access and education for specialty crops grown in New Haven. The FSPD will host workshops across a variety of topics focused on the urban cultivation of specialty crops - from all the way from flowers to mushrooms. Concurrently, the FSPD will be assessing the market demand and readiness for hyperlocal-sourcing of specialty crops among culinary professionals. The FSPD will develop and further strengthen these connections between culinary professionals and local specialty crop producers to create new local market opportunities. Lastly, the FSPD will support and train neighborhoods across New Haven to establish their very own seed libraries that contain culturally-relevant seeds, especially in Black, Brown, and low-income neighborhoods. Ultimately, New Haven's demographics, geography, and economy present both strengths and weaknesses to developing and advancing an equitable and just food system. Therefore, the FSPD aims to remove barriers to engaging in New Haven's urban agricultural growth and to ensure that urban agriculture's economic, social, environmental, and health benefits are equitable and inclusive of all.	$64,900.00
Connecticut Department of Agriculture	$397,377.31	4. Improvement of Indoor Vegetable Productivity and Nutritional Quality Using Optical Strategies	The Connecticut Agricultural Experiment Station will evaluate if the yield and zinc nutritional profile of lettuce crops can be controlled with light by exposure to different wavelengths using full spectrum light emitting diode lamps in a Controlled Environment Agriculture setting.	$124,959.00
University of the District of Columbia	$243,001.17	1. Diversifying Home Gardens and Urban Farms with Mushrooms to Improve Nutrition and Neighborhood Economy in DC.	Sharondale Mushroom Farm will partner with University of District Columbia to work with Washington, DC residents and community gardens to establish neighborhood expertise in specialty gourmet and medicinal mushroom growing as a means of diversifying urban garden and farm cash crops and improving access to an important source of dietary nutrition.	$49,998.80

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
University of the District of Columbia	$243,001.17	2. Food-Energy-Water (FEW) Nexus: Next Generation Urban Farming Practices to Integrate Specialty Crop Production with Rainwater Harvesting and Solar E	In this proposal, a multidisciplinary team specializing in agriculture, stormwater management, and renewable energy will quantify the efficacy of this novel system at Firebird Farm to better inform local urban farmers. High value specialty crops will be tested in protected micro-climates using solar energy to pump water for drip irrigation.	$45,112.00
University of the District of Columbia	$243,001.17	3. Expanding Access to Specialty Crops in Southeast Washington, DC	Building Bridges Across the River (Building Bridges) will increase competitiveness of specialty crops by growing and harvesting them in partnership with our network of urban farms, known collectively as Building Bridges Farms.	$49,994.00
University of the District of Columbia	$243,001.17	4. Sovereign EarthWorks: A Covered Trailer and Portable Green/Hoop Houses to Farm Heirloom Crops Closer to our Communities	Sovereign EarthWorks is a decentralized mobile cooperative of farmers within Washington, DC tending to heirloom Afro-Indigenous crops at multiple urban growing spaces. We have committed to engaging under resourced marginalized communities, especially in-terms of food sovereignty.	$50,000.00
University of the District of Columbia	$243,001.17	5. Urban Agriculture as A Solution: Using Commercial Urban Mushroom Farming to Combat Food Deserts	EightFold Farms DC LLC will use the increase demand of specialty mushrooms to directly fight the causes of food deserts by operating a mushroom farm in Ward 8 that will create new jobs and increase access to a nutritionally dense food.	$22,025.30
Delaware Department of Agriculture	$350,407.89	1. Increasing Knowledge and Consumption of Delaware Lavender	Brittingham Farms in Millsboro, DE will collaborate with all lavender growers in the state and create a “Delaware Lavender Trail” that promotes all aspects of education, agri-tourism and health benefits of lavender. Through bulk marketing for current and future Delaware Lavender Growers, “The Delaware Lavender Trail” will increase sales and awareness, increase consumption of lavender goods and show our regions’ ability to produce quality lavender products locally grown for Delaware residents. Delaware residents will participate in educational events held at each farm and will receive resources to more clearly understand all the different uses of Lavender. With very specific media promotion and an educational push of lavender our goal is to increase overall awareness and consumption of lavender, but to also encourage other farmers to add lavender to their farms to diversify their farm offerings.	$44,573.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Delaware Department of Agriculture	$350,407.89	2. Lettuce Move You: Advancing Efficient Production and Consumption of Greens in Wilmington	Conscious Connections Inc. will increase production and child and adult nutrition knowledge and consumption of leafy greens through increased hydroponic production, farm tours, and a music- oriented healthy greens curriculum. Results will be disseminated through an online best practice toolkit.	$44,573.00
Delaware Department of Agriculture	$350,407.89	3. Promoting Delaware Specialty Crops through Location-Based Targeting Technology	The Delaware Farm Bureau, in relationship with the Delaware Department of Agriculture, will promote specialty crops, and local farm and produce stands, through iHeartMedia's new location-based targeting technology. This campaign will introduce consumers to 24 specialty crops grown in Delaware, over a two-year period, via location-based marketing strategies that target consumers based on their location and behaviors, along with social media and web banners. Delaware specialty crop growers continue to diversify the crops they grow, and this grant allows the Delaware Farm Bureau to highlight these crops.	$44,492.02
Delaware Department of Agriculture	$350,407.89	4. Watermelon Virtual Farm Tour and Field Trip	The Mar-Del Watermelon Association will build an online platform to host a virtual watermelon farm tour. The virtual farm tour will consist of on farm videos of the germination process of a watermelon seed, preparation for the watermelon season, planting of the watermelon plants, watermelon management and harvesting of watermelons. Lesson plans will be given through the online platform for teachers of students to implement the farm tour in their classrooms. Recipes using watermelon will be demonstrated by our Watermelon Ambassador and video will be posted at the conclusion of the farm tour. Informational video of the health benefits of watermelon, how to select a watermelon in the grocery store and where to purchase a local Delaware watermelon will be included on the virtual farm tour platform.	$35,199.00
Delaware Department of Agriculture	$350,407.89	5. School Nutrition AgriCulture	The School Nutrition AgriCulture (SNAC) Program will increase direct education and access to specialty food crops, nutrition and mindfulness programming, and direct horticulture and ecological education to students, parents, and teachers (roughly 2,000 students and 4,150 parents and teachers) in two schools in the Indian River School District with a high level of students on federal reduced or free lunch. Educational programming will be provided on-site to both schools on a regular basis with the SNAC curriculum using permaculture gardens which integrate native horticulture, vegetable gardening, and fruit trees, providing 16 hours of educational lessons for each student every year.	$38,851.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Delaware Department of Agriculture	$350,407.89	6. Breeding and Management Approaches to Mitigate Lima Bean Yield Losses to Root-knot Nematode	The University of Delaware project team will utilize integrated approaches of field screening, chemical control, and assessment of lima bean germplasm to develop and improve management options for root knot nematode. Current commercial lima bean varieties do not have resistance to root knot nematode, resulting in severely galled root systems with reduced yield. Across the region, elevated nematode populations often result in growers having to abandon vegetable production land. This project seeks to combine host resistance and currently available chemical management options to develop integrated approaches to combat RKN. In addition, we will screen the lima bean diversity panel to identify novel sources of RKN resistance, which could be used to develop new RKN resistant varieties.	$39,031.00
Delaware Department of Agriculture	$350,407.89	7. Corn Earworm Pyrethroid Susceptibility Testing	This University of Delaware research project will conduct research on corn earworm susceptibility to pyrethroid insecticides. Corn earworm is the most important pest of both fresh market and processing sweet corn grown on Delmarva. There are only a few insecticide modes of action available for CEW management, the most used of which are the pyrethroids. We propose to develop an adult vial test based on currently used pyrethroid active ingredients, like vial tests currently in use (albeit with a non-agriculturally used pyrethroid active ingredient). Pyrethroid susceptibility in Delaware earworm populations will be compared to field efficacy trials to help determine if there is a relationship between the two tests during 2022.	$24,538.00
Delaware Department of Agriculture	$350,407.89	8. Identifying White Mold Resistant Lima Bean Germplasm and Continued Lima Bean Variety Improvement	This University of Delaware project continues past efforts to make stress and disease resistant lima bean varieties available to Delaware farmers. As a part of this project, the team will identify sources of white mold resistance from among a collection of diverse lima bean lines using a greenhouse inoculation and screening method. Resistant lines will be used to produce white mold resistant breeding populations. Existing experimental varieties will be screened for white mold tolerance in inoculated field trials. Selection and yield trials of new experimental varieties from the breeding program will continue as a part of this project with a focus on breeding and selecting heat tolerant, large-seeded lima types.	$49,556.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Florida Department of Agriculture and Consumer Services	$3,814,268.78	1. Development of Potassium Recommendations to Improve Nitrogen Use Efficiency, Yield, and Quality of Potatoes in Florida	The University of Florida - IFAS will develop a potassium (K) recommendation to improve nitrogen (N) use efficiency (NUE) yield and quality of potatoes for Florida growers, which will result in improved farm income and water quality. This study aims to develop K recommendations with different combinations of N rates on multiple sites to find the best combination for optimum yield. Crop yield and quality; soil moisture; weather; tissue potassium, N, and phosphorus uptake; and soil physical, chemical, and biological data will be used for this study. An economic optimum N rate (EONR) and maximum return to N rate (MRTN) will be compared for the K recommendation. A multispectral sensor will monitor plant health and help develop yield prediction models. This study's significant outcomes include an independent K recommendation for fresh market and processing potatoes, an optimum N recommendation rate in conjunction with K application.	$229,816.98
Florida Department of Agriculture and Consumer Services	$3,814,268.78	2. Mitigating Impacts of Salinity and Diseases for Sustainable Vegetable Production Under Climate Change	The University of Florida will investigate the effects of soil salinity on diseases of vegetable crops and mitigate their impacts by chemical and biological inducers that can simultaneously improve disease resistance and salinity tolerance in vegetable crops. Under climate change, multiple stresses are likely to adversely impact vegetable production in Florida. Soil salinity and plant diseases now commonly coexist in the field and cause abiotic and biotic stress interactions that severely affect agricultural production and threaten food quality and safety. In Florida, bacterial spot of tomato and powdery mildew of squash are economically important diseases that threaten vegetable production. Vegetable production in Florida is also impacted by soil salinity due to sea level rise and storm surges, overfertilization, irrigation with low quality and saline water, and poor irrigation management.	$220,647.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Florida Department of Agriculture and Consumer Services	$3,814,268.78	3. Development of Integrated Management Strategies for Dragon Fruit Canker Caused by Neoscytalidium Dimidiatum in Florida	The University of Florida will work to develop integrated management strategies for dragon fruit canker, a devastating disease caused by Neoscytalidium dimidiatum in Florida. Dragon fruit production in Florida started in the early 2000s and more than 720 acres are currently planted. The acreage is still rapidly increasing because growers are seeking alternatives to avocado, citrus, and lychee, which is seriously affected by laurel wilt, citrus greening, and low production, respectively. The following are the objectives of this study: (1) Investigate potential disease resistance of dragon fruit varieties; (2) Determine the role of cultural practices including pruning and sanitation in canker disease control; (3) Evaluate conventional and organic fungicide programs for effective canker control; and (4) Educate growers on management of dragon fruit canker through workshops, seminars, field days, publications, and social media. Completion of this project will provide growers, particularly for organic growers, with practical strategies for effectively managing this economically important disease on dragon fruit in Florida.	$173,822.00
Florida Department of Agriculture and Consumer Services	$3,814,268.78	4. Evaluation of Phosphorus Recommendations and Management Strategies for Tomato Production in South Florida	The University of Florida will evaluate Florida's phosphorus fertilizer BMP with an innovative compact bed technology for tomato production and disseminate the results to stakeholders. Adoption of phosphorus (P) fertilizer rates based on the Mehlich 3 (M-3) test, considered an important BMP, has been limited due to industry reports of yield responses on alkaline soils with high Ca in South Florida (SFL) despite high M-3P values (>45 mg kg-1) at which no P fertilizer is recommended. Our preliminary analyses showed unusual trends; virtually all (~98%) of the total P present was captured via M-3 extraction whereas very little of the total P was water-extractable. We hypothesize that M-3P may not accurately reflect bioavailable P due to high Ca and pH.	$294,434.00
Florida Department of Agriculture and Consumer Services	$3,814,268.78	5. Removing Obstacles to Expand the Ginger and Turmeric Industry in Florida	Ginger and turmeric are popular "superfoods" that can be commercialized to diverse target markets. Because these crops are typically produced overseas in tropical and subtropical environments, they are promising potential new crops for Florida growers. However, local production is currently limited and small-scale. The University of Florida has the goal to help stakeholders diversify their crop options by developing recommendations to produce, process, and market ginger and turmeric products. Results derived from this work have significant potential to provide an economic benefit to Florida's specialty crop industry, as they will enable growers to produce ginger and turmeric products that can cater to different local markets.	$185,670.49

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Florida Department of Agriculture and Consumer Services	$3,814,268.78	6. Pruning Strategies that Optimize Fruit Size and Crop Load while Reducing Labor Costs in Low-chill Peaches	Typical fruit development periods for low-chill peaches grown in Florida are half that of peaches grown in temperate regions. Therefore, extensive thinning is critical to achieve marketable fruit size. Florida's subtropical climate and irregular chill units also cause abnormal growth in trees, resulting in nonuniform flowering and fruiting, which means growers need to spend even more time and labor for harvesting fruit. This proposal is aimed at developing a pruning strategy to adjust crop loads in low-chill peaches in order to reduce labor cost, and at the same time improve fruit size and quality. The parameters for analysis will be pruning time, thinning time, crop load, fruit size, and yield of marketable fruit for the fresh market.	$118,639.06
Florida Department of Agriculture and Consumer Services	$3,814,268.78	7. Developing NPK Fertilizer Application Rate Guidelines for Low-chill Peaches Grown in Florida	Current nitrogen, phosphorus and potassium (NPK) fertilizer recommendations for almost all of the low-chill peach trees grown in Florida have been adopted from research conducted on high-chill peaches from other production areas such as Georgia and South Carolina. Florida growers are following these practices without consideration for differences in vegetative growth and fruit growth cycles, geographic locations, soil types, tree management, and varietal and environmental factors. As a result, it is very possible that the application practices for NPK fertilizers being used for low-chill peaches in Florida are not appropriate, and the result could be over or under fertilization. This proposal is aimed at developing guidelines to adjust NPK application type and rate in low-chill peaches. The results of this study will significantly contribute to the improvement of best management practices for environmental sustainability while optimizing tree growth, fruit quality, and fruit yield. This information is essential to industry expansion and profitability leading to a strong Florida peach brand.	$124,581.59
Florida Department of Agriculture and Consumer Services	$3,814,268.78	8. The Hibiscus Bud Weevil: Management, Ecology and Economics	The University of Florida will mitigate the spread of HBW and avoid further economic damage to the hibiscus industry by providing hibiscus growers with cost-effective, environmentally friendly tools to manage this pest and ultimately enhance Florida's hibiscus growers and nurseries' competitiveness. Research efforts will focus on biological control, sanitation practices, and cost-effective pest management strategies. Furthermore, the potential of HBW to plague okra, another specialty crop of the same botanical family as hibiscus (Malvaceae), will be explored.	$196,568.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Florida Department of Agriculture and Consumer Services	$3,814,268.78	9. Incorporation of Engineered Biochars Into Potting Media for Reducing Nitrogen and Phosphorus Leaching During Container Ornamental Plant Pro	This University of Florida project will demonstrate that potting media incorporated with engineered biochars can hold more water, retain N and P, and produce high-quality plants, thus reducing production costs and protecting surface and ground water resources from N and P contamination. Tens of thousands of potted plants can be produced per acre. Frequent fertilization and irrigation of potting media with limited water and nutrient-holding capacities can lead to leaching of significant amounts of nitrogen (N) and phosphorus (P) into Florida's surface and ground water. Improving water and nutrient-holding capacities of media is a critical step for minimizing N and P leaching. This project is designed to produce engineered biochars, characterize their physical and chemical properties including the adsorption of N and P, incorporate selected biochars into potting media for producing deciduous shrubs Hibiscus and Viburnum and foliage plants Dieffenbachia and Ficus.	$155,913.16
Florida Department of Agriculture and Consumer Services	$3,814,268.78	10. Development of a Smartphone App to Identify Weeds in Florida Specialty Crops	Successful weed management by herbicide spraying in Florida specialty crops relies on correct timing of sprays to coincide with the recommended early growth stages of weeds, and recognition of any so-called "problem" weeds that may be resistant to herbicides or need special treatments. Many such weed identification models already exist and are available on smartphone apps. However, the existing apps aim for comprehensive taxonomy of hundreds of weeds, and don't focus on accurate identification of the most economically important problem species at the critical seedling growth stages. The University of Florida will develop a decision-support smartphone app to provide the user with 1) the average number of leaves (growth stage) on seedling grass, broadleaf and sedge weed groups detected in smartphone camera views, 2) the identity and frequency of any problem weeds encountered in those views, and 3) advice on spraying herbicide for managing the specific weed situations encountered. The completed app will be available to all Florida specialty crop growers to improve in-field decision making for weed management.	$170,308.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Florida Department of Agriculture and Consumer Services	$3,814,268.78	11. Weed Management Alternatives for Cucurbit Production	The Weed Science team at the Gulf Coast Research and Education Center (GCREC) believes that effective weed management in cucurbit crops will only be possible with the integration of multiple management tools. We have identified alternative preemergence herbicides that may be safe for use on select cucurbit crops and previously developed a precision applicator that applies herbicides only in the transplant hole where weeds emerge and therefore decreases overall herbicide load and potential for crop damage. Preliminary observations also suggest that changes in the type of plastic mulch as well as changes in the type of hole punched in the plastic mulch for transplanting can further reduce weed density. We propose to evaluate these technologies and develop new integrated weed management programs for cucurbit crops in the state of Florida. Effective management plans will reduce weed density, significantly reduce the need for hand-weeding, improve crop yield and quality, and reduce labor associated with plastic removal.	$103,609.00
Florida Department of Agriculture and Consumer Services	$3,814,268.78	12. Rapid Detection and Monitoring of Emerging Neopestalotiopsis Populations in Strawberry Production Fields	A new disease has recently emerged on Florida strawberry fields and is threatening the state production. Although being considered as secondary pathogens in most crops, the emerging pathogen population on strawberry identified as Neopestalotiopsis sp. has spread to other U.S. and Canadian nurseries within one year from a single nursery source. Lack of knowledge of this emerging disease has seriously impeded the application of effective management programs. The overall goal of this project is to provide rapid and accurate diagnostic tests for effective management of important and emerging diseases of strawberry and establish a baseline dataset of Neopestalotiopsis communities associated with strawberry. The specific objectives of this project are to: (1) develop molecular diagnostic tools for rapid and accurate detection of Neopestalotiopsis species and (2) other common strawberry leaf diseases; and (3) monitor the establishment and survival of emerging Neopestalotiopsis populations in strawberry production fields in Florida. This project is expected to incorporate new molecular tools into the toolkit of the UF-GCREC plant diagnostic clinic as a routine diagnostic service for growers.	$151,255.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Florida Department of Agriculture and Consumer Services	$3,814,268.78	13. Monitoring Resistance to Novel Insecticides Among Field Populations of Bemisia Tabaci, The Silverleaf Whitefly	The whitefly, Bemisia tabaci MEAM1, attacks many important specialty crops in Florida's multibillion-dollar vegetable and ornamental industries, causing significant losses annually through mechanical damage and by transmitting viruses, including the tomato yellow leaf curl virus (TYLCV) to tomato. This project proposes screening twenty field-collected populations of B. tabaci from south Florida to insecticides representing five groups using a serial dilution bioassay to determine the frequency of insecticide tolerance. This will provide baseline information on susceptibility to both established and recently commercialized insecticides, will identify the risk of field resistance to key insecticide groups, and will contribute to the development of whitefly management plans by determining the optimal placement of key insecticides in a season-long rotation. In addition, we will biotype all whitefly populations as part of ongoing efforts to track the spread of B. tabaci MED (the Q biotype) in Florida.	$72,625.00
Florida Department of Agriculture and Consumer Services	$3,814,268.78	14. The Effect of a $15 Minimum Wage on the Florida Tomato and Strawberry Industries and Adaptation Strategies	Florida's minimum wage will increase to $15 per hour after a ballot amendment passed in November 2020. The large increase constitutes a major labor market shock and will have serious implications for the labor-intensive fruit and vegetable industry as labor is the largest cost item in crop budget. The higher minimum wage will squeeze growers' profit margins and threaten the future of the industry. Growers' concerns over the state-mandated wage hikes are made worse as the industry is struggling with competition from low-cost Mexican produce. Given the serious situation, growers and policy makers need a thorough understanding of the impact of the minimum wage hikes and identify adaptation strategies to overcome the state's minimum wage hikes. The research will focus on two major crops in Florida, strawberry and tomato, both of which are labor-intensive and are experiencing significant challenges from record-high influx of imports from Mexico. In this project the University of Florida researchers will 1) analyze the economic impact of the wage hike on the industry to inform policy and business strategic planning and 2) analyze growers' welfare changes under different adaptation scenarios, including mechanization and other business adaptations and innovation, to assess the effects of potential solutions.	$164,769.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Florida Department of Agriculture and Consumer Services	$3,814,268.78	15. Development of Integrated Precision Irrigation and Nitrogen Management Strategies for Potatoes.	Potato is one of the most important crops in Florida, with approximately 30,000 acres which are vital to the state's economy. Most of these acres managed under sandy soils with a shallow water table and sub-surface (seepage) irrigation systems. With increasing pressure on water resources and declining water quality, precision irrigation management practices such as sprinkler irrigation are being promoted to reduce the adverse environmental impacts and maintain crop productivity. Therefore, in this project, the University of Florida aims to identify and develop irrigation and nitrogen management strategies and techniques for potatoes under sprinkler irrigation systems that will increase crop water and nitrogen use efficiency (CWUE) while minimizing nitrate leaching without impacting crop yield. We will compare three irrigation and five fertilizer strategies, including control release fertilizer treatment. The outcomes of this research will provide data and information that will help farmers to make better on-farm management decisions and provide opportunities for the researchers to develop collaboration to advance the sensor-based irrigation and nitrogen management studies and help government agencies to develop irrigation and nutrient management policies based on scientific research.	$216,619.00
Florida Department of Agriculture and Consumer Services	$3,814,268.78	16. Improving Management of Insect Pests on Florida Squash by Testing and Registering a New Pest Control Product	University of Florida and the IR-4 pesticide registration program will evaluate the efficacy of a new pest control product, Spidoxamat, to better manage insects in squash. Squash growers face growing difficulties to control insects, especially aphids and whiteflies. This project is important and timely because squash pests have become resistant to several conventional pesticides, including neonicotinoids, which can also have detrimental effects on pollinators essential for squash production. The proposed project will determine the efficacy and residue of this novel insecticide that has demonstrated the potential to effectively control insect pests on other crops. The goal is to register Spidoxamat as an EPA-approved pesticide for squash growers as a more effective pest control approach. This research will be carried out by researchers at the IR-4 southern region program who have facilitated the registration of new pest control products for specialty crop growers since 1963. The finding from this research will enable the use of Spidoxamat to better control pests and have minimal negative impact on beneficial organisms. Outcomes of this research will enhance the sustainable production and profitability of squash in Florida.	$133,774.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Florida Department of Agriculture and Consumer Services	$3,814,268.78	17. Screening and Development of Superior Potato Varieties Adapted to Florida Unique Conditions	Potato is the sixth most valued crop in Florida, with a production value of $150 million annually. However, current breeding efforts do not focus on selecting varieties specifically adapted to Florida's unique environment, as evidenced by the fact that the main varieties grown in the state were developed more than 40 years ago. With the recent increase in production and marketing costs, potato growers in the state face significant challenges to maintain profitability. There is an urgent demand and opportunity to screen and develop varieties adapted to Florida's challenging production system with improved yields and tolerant to abiotic stresses. The goal of this project is to screen a broad number of commercial and pre-commercial potato varieties that show superior traits regarding yield, N and P uptake efficiency, and heat tolerance. The product of this research conducted by the University of Florida will be the identification of cultivars and future parents that can be used towards our medium-term goal to establish a Florida-based plant breeding program to support development of high-yielding varieties specifically adapted to Florida's growing condition.	$192,411.04
Florida Department of Agriculture and Consumer Services	$3,814,268.78	18. Managing Pepper Weevil in Florida Peppers Using Metadiamide Insecticide as an Alternative to Chlorpyrifos	Pepper weevil is a destructive pest of Florida peppers with maximum yield losses of 80% reported by some farms. Few insecticides are available to growers that effectively manage pepper weevil. Chlorpyrifos is a widely used insecticide currently being used to manage pepper weevil with limited efficacy. However, this product is currently under review by the current administration, and it is likely that EPA will limit its use or de-list this product due to safety concerns. Therefore, finding an alternative product to control pepper weevil is timely and important. The proposed project will evaluate broflanilide as a better alternative to control pepper weevil. Broflanilide is the first meta-diamide insecticide and has a new mode of insecticidal action. It has demonstrated efficacy against pepper weevil. Researchers at the University of Florida and IR-4 pesticide registration program will conduct research to evaluate broflanilide on pepper weevil in field and greenhouse pepper production. The findings from this research will aid in the registration of broflanilide as an EPA-approved pesticide for fruiting vegetable crop growers. Broflanilide would be a low-risk alternative to chlorpyrifos and other conventional chemistries, minimizing health and safety concerns, negative effects on pollinators and ultimately enhancing consumption of specialty crops.	$132,522.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Florida Department of Agriculture and Consumer Services	$3,814,268.78	19. Optimizing Nitrogen Fertilization Rates for Evergreen Blueberry	The University of Florida will reduce blueberry production costs and prevent excess fertilization by developing nitrogen fertilization rate recommendations for evergreen blueberry production. Researchers will test the impact of different nitrogen fertilization rates on plant growth, fruit yield, and fruit quality in an experimental field and in two commercial farms. Results will be disseminated through grower meetings, field days, and written articles.	$167,724.43
Florida Department of Agriculture and Consumer Services	$3,814,268.78	20. Evaluation of Begonia Germplasm for Stress Resilient Cultivar Development	Begonia is among the top five bedding ornamentals with the majority of production occurring in Florida. However, the frequent temperature extremes such as heat waves and drought have hindered the begonia production and its utilization in the southeast region of United States because of begonia's failure to withstand the long summers with intense heat and high humidity. In coordination with the USDA National Ornamental Plant Germplasm Center, the University of Florida Mid-Florida Research & Education Center (MREC) houses one of the largest begonia germplasm repositories in the country. However, the cytogenetic background and stress responses of these germplasm stocks have not been fully characterized and are largely unknown. This knowledge is essential for successful crossing between and within species for developing stress-resilient begonia cultivars that can be adapted to climates in the Gulf Coastal region. Results from this study will facilitate successful hybridization breeding to develop stress resilient begonia by selecting the appropriate parents with compatible genomic interaction, which may significantly reduce use of fungicide and water for begonia production, thus minimizing environmental pollution and maximizing growers' profit.	$184,790.82
Florida Department of Agriculture and Consumer Services	$3,814,268.78	21. Increasing Florida Sweet Corn Sales	This Florida Specialty Crop Foundation project aims to increase sales of Sunshine Sweet Corn grown in Florida. Florida sweet corn growers have experienced a steady decrease in sales in their main spring marketing window (March-May) due to a number of factors including adverse weather conditions in the Northeast and general lack of consumer demand. The goal of increasing sales will be achieved by cooperating with major retailers to keep corn in displays and on promotion throughout April and May. The use of Social Media Influencers will also be a key component to show consumers alternative preparation and consumption methods for sweet corn. The Sunshine Sweet Corn Farmers of Florida agree that promotions that increase the reach of Florida sweet corn to new consumers and demonstrate new methods of cooking corn are vital to combating the trend of decreasing corn sales from Florida.	$86,691.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Florida Department of Agriculture and Consumer Services	$3,814,268.78	22. Extend the Shelf Life of Florida Strawberries by Designing and Implementing New Post-harvest Technologies	The University of Florida and the Florida Strawberry Growers Association will design and implement postharvest technologies to extend the shelf life of strawberries. Florida grows 9,400 acres of strawberries valued at $307.2 million annually. Strawberries are highly perishable and have a 5-7-day shelf life. As a result, about 25% of berries are discarded at the distribution and retail level. Additionally, some consumers avoid strawberries due to the high pesticide residue. Florida farmers urgently need new technologies to extend shelf life of strawberries and reduce pesticide residues. This project will have a direct impact on the Florida strawberry industry and the optimized technologies will be immediately transferred to commercial practices.	$170,748.00
Florida Department of Agriculture and Consumer Services	$3,814,268.78	23. AFECCT: Assessing Filtration Efficacy for Cyclospora Control	The Center for Produce Safety will partner with U.S. Department of Agriculture to determine how effectively filtration can remove parasites, such as Cyclospora cayetanensis, from irrigation water. Foodborne illness outbreaks in the United States have been associated with domestically grown fresh produce contaminated with C. cayetanensis. Filtration with zero-valent iron (ZVI) and sand have been demonstrated to improve the microbial quality of agricultural water. This project will establish how effectively ZVI-sand filters remove and/or harm parasites that can contaminate irrigation water. The outcomes of this research will directly benefit growers seeking tools to mitigate risk, and validate a needed surrogate system for studying other interventions against Cyclospora cayetanensis.	$245,338.00
Georgia Department of Agriculture	$1,420,820.65	1. Marketing Georgia Grown Products to National Retailers (2021 PMA)	Georgia Fruit and Vegetable Growers Association (GFVGA), will work in cooperation with Georgia specialty crop growers, specialty crop commodity organizations and agribusiness companies that handle products and serve Georgia specialty crop growers to develop a Georgia Grown exhibition and pavilion at the 2021 PMA Fresh Summit in New Orleans, LA. Fresh Summit will have more than 21,000 produce industry leaders, including retail store and food service buyers looking for new specialty crop suppliers showcasing new products and investigating new technologies.	$78,471.00
Georgia Department of Agriculture	$1,420,820.65	2. Hybrid Educational Access to Increase Specialty Crop Producers Profitability	Georgia Fruit and Vegetable Growers Association (GFVGA) will plan and coordinate the 2022 Southeast Regional Fruit and Vegetable Conference. It will be planned to continue with the in-person format of a four-day educational conference and trade show. However, with the expectation COVID-19 will continue to be a variable for attendance and Conference logistics, Conference organizers are planning to offer some educational conferences virtually giving the ability to pilot the interest and applicability of online educational content with attendees.	$100,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Georgia Department of Agriculture	$1,420,820.65	3. Increasing Profitability of Ornamental Horticultural Crops Through Educational Opportunities	Georgia Green Industry Association (GGIA) seeks to meet the needs of ornamental horticulture growers and the landscape professionals that plant and maintain those crops through a three-day educational conference and trade show, WINTERGREEN. The educational sessions and trade show will address improved crop production and maintenance techniques, refined methodology and plant selection, and enhanced technology and mechanization. We expect the conference will yield greater economic returns, better environmental stewardship, and a higher level of professionalism for Georgia's Green Industry growers and professionals.	$35,000.00
Georgia Department of Agriculture	$1,420,820.65	4. Pecan Farm Tour to Promote Georgia Pecans	Georgia Pecan Growers Association (GPGA) will develop and execute buyers' workshop and trade event to be known as The Georgia Pecan Tour. This interactive annual tour will include pecan farm tours to highlight the safety and health of pecan products, as well as product tastings and cooking demonstrations in order to demonstrate the superior flavor and versatility of Georgia Pecans. Educational workshops and breakout sessions will emphasize pecan health benefits and product availability, while sales-focused networking sessions will facilitate increased sales by linking growers directly with buyers.	$90,000.00
Georgia Department of Agriculture	$1,420,820.65	5. Automated Planting Technologies for Efficient Tissue Culture Production in Biodegradable Pots	Georgia Tech Research Corporation (GTRC), led by Dr. Cyrus Aidun (PI), will design, build and implement technology for one of the most labor-intensive and sensitive processes of tissue culture (TC) in vitro plant production, namely rooting and planting of the TC propagules. The overall purpose of the proposed project is to improve the availability of disease-free higher quality specialty crop plants for GA nurseries and farmers.	$99,875.00
Georgia Department of Agriculture	$1,420,820.65	6. Piloting Sustainable Controlled Environment Mushroom Cultivation for Georgia Growers	Kennesaw State University Research and Service Foundation (KSURSF) will partner with three mushroom growers in Georgia to transition a modular, controlled environmental, cultivation technology solution for a wide diversity of culinary mushrooms not readily available in Georgia markets as a pilot study of the potential of this approach to expanding the productivity and profitability of this specialty crop.	$96,740.00
Georgia Department of Agriculture	$1,420,820.65	7. Plant Vaccine-Induced Resistance Against Viruses on Tomato and Squash	There is growing concern over the impact of chemical pesticides on health and the environment. As an alternative, the plant virology lab at The University of Georgia Research Foundation (UGARF), led by Dr. Sudeep Bag (PI), proposes to develop a novel, biological spray, triggering the plant's defenses against insect-transmitted viruses on tomato and squash. Topical application of dsRNA molecules targeting specific regions of the genome activates RNA silencing mechanism.	$95,000.00

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Georgia Department of Agriculture	$1,420,820.65	8. Determining the Threat of Xylella Leaf Scorch in Georgia Pecans	Dr. Brenneman (PI) and the University of Georgia Research Foundation (UGARF) will lead this project. The Pecan industry is facing significant challenges due to the spread of exotic pests and pathogens. Growers need to elevate their overall production efficiency considerably to remain profitable and sustainable, which includes development and/or improvement of the management of diseases such as those caused by Xylella fastidiosa subsp. Multiplex (Xfm). In this project, we propose to conduct an extensive survey for monitoring of Xfm in pecan orchards and pecan nurseries. In addition to the survey, we will evaluate the potential risk of seed transmission of Xfm. Such information is required to ensure that newly planted pecan orchards are free of Xfm. The impact of this research will help contribute to developing an appropriate and coherent disease management strategy for Xfm for the pecan industry in GA.	$93,000.00
Georgia Department of Agriculture	$1,420,820.65	9. Reducing Fresh Peach Contamination caused by Overhead Spray Washers/ Waxers	The University of Georgia Department of Food Science and Technology and UGARF, led by Dr. Jinru Chen (PI), in continued collaboration with the Georgia Peach Council (GPC) is proposing to mitigate, through research funding from Georgia Department of Agriculture's (GDA) Specialty Crop Block Grant Program (SCBG), the risk of microbial contamination of fresh peaches caused by the brush rollers inside the overhead spray washers/ waxers systems (WWS). The overall goals of the research are a) to develop effective interventions that peach packers could easily adopt to improve the hygiene status of the brusher rollers inside the WWS, b) to reduce the cross-contamination of fresh peaches caused by the brush rollers, c) to ensure the microbial safety of peaches detained for the fresh market, and d) to enhance the sustainability of fresh peach industry in Georgia.	$90,000.00
Georgia Department of Agriculture	$1,420,820.65	10. Improving the Hygiene Conditions of Specialty Crop Migrant Worker Living Environments	The University of Georgia Research Foundation (UGARF), through the University of Georgia Department of Food Science and Technology and Center for Food Safety, with Dr. Jinru Chen (PI) as lead, in collaboration with Georgia Fruit and Vegetable Growers Association (GFVGA), propose to assess the feasibility of using hybrid antimicrobial coating polymers to improve the hygiene conditions of migrant worker living environments to provide a stable workforce for Georgia's specialty crop produce industry. The overall goals of the research are to ensure the safety, health, and wellbeing of essential agricultural specialty crop workers, sustain a more reliable labor force for Georgia's specialty crop fresh produce industry and greatly improve the microbial safety and quality of specialty fruits.	$50,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Georgia Department of Agriculture	$1,420,820.65	11. Sustainable Grafting Technology to Enhance the Competitiveness of Watermelon	The University of Georgia Research Foundation (UGARF), led by Dr. Bhabesh Dutta (PI), will develop a sustainable grafting technology to enhance competitiveness of watermelon in Georgia. This proposal will optimize and facilitate adoption of watermelon graft technology using the "Carolina strong-back (CSB)" rootstock for the management of Fusarium wilt of watermelon in Georgia.	$95,000.00
Georgia Department of Agriculture	$1,420,820.65	12. Applications of Nanobubble Technology to Enhance Sustainability of Turfgrass	The University of Georgia Research Foundation (UGARF), led by Dr. Habteselassie (PI), will evaluate the potential applications of nanobubble technology to control pathogens and to improve plant growth, water use efficiency and soil biological health in turfgrass system. The technology is based on generation of oxygenated nanobubbles that are introduced to the turfgrass root system via irrigation water. The benefits of the technology arise from its ability to improve aeration, to produce reactive oxygen species and to change surface tension. We will design and execute laboratory, greenhouse and field studies to prove the outcome that the technology enhances the competitiveness of the turfgrass industry through more sustainable, diverse, and resilient system.	$85,000.00
Georgia Department of Agriculture	$1,420,820.65	13. Anaerobic Soil Disinfestation and Soil Amendments for Blueberry Disease Control	The University of Georgia Research Foundation (UGARF), led by Dr. Jonathan Oliver (PI) will conduct this research. Blueberry replant disease threatens continued blueberry production in Georgia. Replanting blueberries into sites infested with soilborne diseases and pests, especially ring nematodes, results in poor growth and eventual death of young plants. Through this project, the University of Georgia will assess whether anaerobic soil disinfestation (ASD) can be implemented as a practice in Georgia blueberry production systems to successfully reduce issues with soilborne diseases in young blueberry plantings.	$95,000.00

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Georgia Department of Agriculture	$1,420,820.65	14. Saving the Rose: Using Genetics to Battle Rosette Virus	Rose rosette virus (RRV) is a destructive rose pathogen that poses a significant threat to the commercial rose industry in many U.S. states, including Georgia. The University of Georgia Research Foundation (UGARF), led by Dr. Dayton Wilde (PI), will develop a novel method for providing roses with resistance to RRV. This approach takes advantage of a plant defense mechanism that recognizes RRV and cleaves it into small pieces called siRNA (small, interfering RNA). The siRNAs then guide the cleavage of more RRVs by an enzyme called Argonaute. We will isolate siRNAs than can confer RRV resistance by: 1. Characterization of the siRNAs produced in vivo by RRV-infected rose leaves 2. Development of an in vitro system for producing siRNAs using rose cell lysates 3. Isolation and in vitro testing of Argonaute-bound siRNAs for RRV cleavage activity 4. Analysis of RRV resistance conferred to rose leaves in vivo by siRN	$90,000.00
Guam Department of Agriculture	$245,554.27	Improving hot pepper production for increasing value-added products in Guam	The University of Guam (UOG) and the Guam Department of Agriculture (GDAg) will work in collaboration to support vegetable growers and emerging businesses making value-added products using locally grown hot peppers (Capsicum spp.). The project goal is to increase hot pepper production for the development of local favorite hot sauce products. The expected outcomes of the project will be (a) an increase in the knowledge of plant characteristics of hot peppers suitable for processing; (b) an increase in the number of hot pepper cultivars suitable for processing; © an increase in the number of farms who grow hot peppers for processing; and (d) an increase in the volume of hot peppers from local farms to produce value-added products by local enterprises in Guam. At UOG, open-pollinated Capsicum accessions will be evaluated for yield, pest tolerance, and fruit quality for processing. Selected Capsicum lines will be maintained and released as local cultivars at UOG and seeds of superior lines will be made available through GDAg to growers. The harvested fruits from growers will be sold to food processing enterprises to make value-added products in Guam. UOG and GDAg will jointly offer a workshop and disseminate findings of the project to individuals of agricultural and business community including new farmers.	$245,540.24

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Hawaii Department of Agriculture	$479,015.46	1. Understanding Traditional Hawaiian Agricultural Knowledge to Improve Taro Production and Resilience in Crop Systems: Phase II	In Phase II of the project, E kupaku ka aina, a 501(c)(3) nonprofit, in collaboration with Joshyboy's Farm, with extension support from the University of Hawaii Molokai Branch of the College of Tropical Agriculture Extension Service (CES), will track and evaluate taro growth, yields, quality, and costs; lunar planting effects on harvest/distribution schedules, sales and product reach; and create a video short as a training tool.	$48,104.22
Hawaii Department of Agriculture	$479,015.46	2. The Value and Accessibility of Hawaiian Floriculture: Educating the Wedding Industry	The Hawaii Floriculture and Nursery Association (HFNA) will host the Wedding Celebration 2022 program that will be offered as both as a live, in-person demonstration and as a virtual demonstration that will be streamed live to a global audience to educate the wedding industry on the benefits of using Hawaii flowers and foliage in wedding designs. These formats will enable participants to talk with the growers to discern how to obtain their flowers and foliage.	$38,850.00
Hawaii Department of Agriculture	$479,015.46	3. Understanding and Mitigating Coffee Leaf Rust with Coffee Berry Borer control in Hawaii	The USDA Agricultural Research Service Daniel K. Inouye Pacific Basin Agricultural Research Center (ARS DKI PBARC), in collaboration with the Synergistic Hawaii Agriculture Council, will develop scientific knowledge on the Coffee Leaf Rust (CLR) disease cycle in Hawaii and determine the most effective control methods for the dual management of CLR and Coffee Berry Borer (CBB). CLR incidence, severity, and spread will be documented. The relationship with microclimate variables will be estimated to determine the most important factors involved in disease expression under Hawaii's unique environmental conditions.	$40,000.00
Hawaii Department of Agriculture	$479,015.46	4. Protecting Hawaii's Chinese Cabbage, Mustard Greens, and Brassica Industry from New Soilborne Bacterial, Fungal, and Viral Diseas	Farmers of Chinese cabbage, mustard greens, and other Brassica crops recently suffered from three new plant diseases, Pectobacterium brasiliense, and two novel viruses transmitted via the soilborne fungus Olpidium spp. The University of Hawaii (UH) will develop management practices and recommendations to protect and build capacity in these leafy green industries. UH will evaluate both conventional and organic commercial fungicides/bactericides, as well as soil pH manipulation, for their efficacy in controlling the diseases. UH will also develop rapid tests for the unnamed viruses utilizing DNA-based and enzyme-linked immunosorbent assay (ELISA) techniques, which will allow farmers to identify and distinguish these soil-vectored viruses from insect-vectored ones.	$38,386.00

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Hawaii Department of Agriculture	$479,015.46	5. Propagation of Ti, Cordyline Fruticosa, to Support the Food/Flower/ and Ornamentals Industries	Hawaii Agriculture Research Center (HARC) will propagate to plants desired by growers. Green ti plants are infected with 6 or 7 viruses that can cause blemishes, yellowing, small leaf size, and yield reduction leading to decreased sales. “Clean” plants from the University of Hawaii showed an estimated 25% growth increase and larger, nearly blemish-free leaves compared to traditional plants. Demand is high for ornamental ti plants important in floriculture and landscaping, and they cannot be propagated quickly enough by cuttings. HARC will tissue culture ti plants, increase plant numbers by micropropagation, and as rooted cuttings for largescale propagation. Plants will be made available with information on propagation in seminars and workshops at HARC.	$39,700.00
Hawaii Department of Agriculture	$479,015.46	6. Safely Preserving Locally Grown Specialty Produce through Hawaii Master Food Preservers Online Training	The Hawaii Master Food Preservers (HMFP) will develop seven online training “how-to” videos. All videos explain DOH, US Food and Drug Administration, and USDA regulations for safe processing of Hawaii produce and specialty crop proteins such as unusual legumes like adzuki beans and pigeon peas. They are gaining popularity with the local consumers. The videos will be offered publicly and as a bundle which would include real-time Zoom Q&A for those registering for the online class.	$40,887.00
Hawaii Department of Agriculture	$479,015.46	7. Improving the Growth and Yield of Tomato through new Integrated Pest Management Strategies	The University of Hawaii at Manoa will conduct trials aiming to improve the growth and yield of tomato crop by developing and implementing new Integrated Pest Management Strategies (IPMs) with an overarching goal to reduce the impact of whiteflies populations under both conventional and organic farming practices. The project results are expected to improve the yield of locally produced tomato by reducing the impact of whiteflies and increase marketable fruits harvested from each operation. It will also lead to increase net farmers’ profitability by increasing the yield and reducing the production cost (less chemical application).	$40,000.00
Hawaii Department of Agriculture	$479,015.46	8. Expanding Availability of High Yielding Mamaki Varieties for Better Selection by Hawaii’s Growers	The University of Hawaii will evaluate the yield and quality of Mamaki varieties statewide to develop recommendations regarding variety selection and expected yield/quality statewide. Also, seeds of the Mamaki varieties will be collected and distributed among the interested farmers to ensure successful adoption. The project team will conduct statewide workshops to disseminate the project findings and provide educational activities about Mamaki seeds collection and propagation to ensure a higher percentage of sustainable self-sufficiency, while distributing startup Mamaki seeds statewide.	$55,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Hawaii Department of Agriculture	$479,015.46	9. Enhancing Cacao Production by Improving Producers' Evaluation of, Access to, and Installation of Grafted Varieties	Oahu Resource Conservation and Development Council (O'ahu RC&D) will enhance cacao production and profitability by improving producer access to improved clonal varieties, accompanied by training on how to evaluate and install clonal varieties to improve seedling orchards. This will be achieved by (1) replicating an on-farm variety trial of 20 promising clones to serve growers statewide and (2) the production of three field days (two in-person, one virtual) to deliver training and demonstration of best practices for grafting and approaches to improve seedling orchards statewide.	$49,805.32
Hawaii Department of Agriculture	$479,015.46	10. Improving the Sustainable Production of Hawaii's Ornamental Industry through Precision Nutrient Management	The University of Hawaii at Manoa aims to increase the sustainable production of Hawaii floriculture and nursery crops by reducing its reliance on pesticides and targeting plant nutrition. Using sustainable Integrated Pest Management (IPM) tactics, this project can increase plant health, quality, and yield, which would increase the competitiveness of Hawaii ornamentals while protecting the environment. Current research at the Waiakea Experiment Station on Hawaii Island demonstrated the positive effects of soluble silicon fertilizer on the yield and quality in anthuriums and dendrobiums.	$39,884.88
Hawaii Department of Agriculture	$479,015.46	11. Enhancing the competitiveness of Hawaiian Honey and/or Honeybees	Hawaii Department of Agriculture (HDOA) will issue a Request for Proposals (RFP) for this project and will partner with the entities that are eligible and will award the project under the procurement rules governing project partner selection/s. The project seeks to select a proposal for an award that will have Outcomes and Indicators that enhance the competitiveness of Hawaiian Honey and/or Honeybees.	$10,000.00
Idaho State Department of Agriculture	$2,085,220.90	1. Impact of Smoke on Potato Growth, Storage and Profitability	Boise State University, the University of Idaho, and McCain Foods USA, Inc., have partnered to study the impact of smoke on the growth, storage, and profitability for three common varieties of russet potato, Alpine, Burbank, and Clearwater. The climate trend in the Pacific Northwest has been hotter and drier than historic precedent, leading to deleterious growth conditions for agricultural products with sensitivity to smoke originating from forest and/or rangeland fires.	$125,000.00

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Idaho State Department of Agriculture	$2,085,220.90	2. Improving Grape Extraction with PEF to Make Wine Better	Boise State University will demonstrate the attributes of pulsed electric field technology to improve the quality of wine produced from grapes grown in Idaho. The implementation of pulsed electric field technology following grape harvest and prior to wine production has been demonstrated to amplify the quality of the wine product by enhancing the extraction efficiency of desirable polyphenols, anthocyanins, tannins and color pigments from the red wine grapes. In the case of white wine, the PEF treatment occurs after fermentation to eliminate the need for bentonite and filtration, while providing a clear wine product. We propose to introduce this technology to grape growers in order to improve crop marketability and profitability in the production of higher quality white and red wines.	$164,783.00
Idaho State Department of Agriculture	$2,085,220.90	3. New Fruit Wall Architectures in 'Fuji' Apple for High Productivity and Quality in Idaho	The Idaho Apple Commission will establish an agreement with the University of Idaho. The University of Idaho Pomology Program will study the impact of fruit wall and tree training configurations on tree growth, yield efficiency, quality attributes, light penetration efficiency, leaf nutrients, bloom and maturity dates, chlorophyl index and fruit quality attributes in fully mature 'Aztec Fuji' apples between Oct. 1, 2021 and Sept. 30, 2023.	$175,000.00
Idaho State Department of Agriculture	$2,085,220.90	4. Advanced Detection and Surveillance Methods to Safeguard Bean Health in Idaho	The Idaho Bean Commission through the University of Idaho will develop advanced diagnostic and detection methods. These can be used as part of disease surveillance programs for bean pathogens within the state ensuring the continued disease-free status of Idaho beans. Analysis of the material from both insect and water traps will evaluate their potential use as part of an early warning system for predicting risk of disease development as well as providing vital epidemiological information on their relative importance as an inoculum source. Test validation will be to internationally recognized standards. Cutting edge, robust tests and disease surveillance are essential to maintain Idaho's reputation for high quality bean seed.	$133,466.00
Idaho State Department of Agriculture	$2,085,220.90	5. Investigating the Emergence of Onion Leaf and Bulb Rot Pathogens in the Treasure Valley.	The Treasure Valley of Idaho and Eastern Oregon produces up to 30% of US dry onion bulb production. Production costs can be significant ($5,000/acre) making stakeholder losses to onion pathogens during the growing season and storage costly. Two recently emerging diseases- Stemphylium leaf blight (SLB), caused by the fungus Stemphylium vesicarium, and a bacterial bulb rot caused by Rahnella spp. are potential threats to yield and profit for onion producers.	$140,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Idaho State Department of Agriculture	$2,085,220.90	6. Detection and Epidemiology of Airborne Pathogens of Hops in Idaho	The Idaho Hop Commission through the University of Idaho, will validate real-time PCR diagnostic tests for four key diseases that affect hop foliage, determine the status of an emerging hop pathogen in Idaho and gain preliminary data on the use of spore traps for disease prediction. Several diseases are present in Idaho which can limit hop yield and quality.	$30,000.00
Idaho State Department of Agriculture	$2,085,220.90	7. Micropropagation of Astragalus species for Nursery, Conservation or Medicinal Uses	Astragalus are economically and ecologically important plants grown for medicinal properties, animal forage, habitat restoration and landscaping. Traditional seed propagation is complicated by low seed set and extensive scarification or stratification requirements. Micropropagation of endemic Astragalus will benefit Idaho nurseries, conservationists and ethnobotanists.	$91,351.00
Idaho State Department of Agriculture	$2,085,220.90	8. Idaho Potato Commission Continuing Export Enhancement Program in Taiwan	The Idaho Potato Commission will continue a marketing program in Taiwan utilizing SCBG funds to give Idaho farmers a competitive advantage. Marketing activities will consist of developing awareness programs for Importers, Retailers, and Foodservice operators.	$100,000.00
Idaho State Department of Agriculture	$2,085,220.90	9. Idaho Preferred Live.Eat. Local Campaign Promoting Idaho Specialty Crops	Idaho Preferred®, a program within the Market Development Division of the Idaho State Department of Agriculture, will promote Idaho specialty crops to consumers through a multi-faceted integrated strategy. Consumer interest in purchasing local products has been very strong and the COVID pandemic accelerated the local trend even more.	$221,938.52
Idaho State Department of Agriculture	$2,085,220.90	10. Embracing Change, Growth and Collaboration in Idaho	The Idaho Grape Growers and Wine Producers Commission (IWC) is committed to helping growers and winemakers in the state of Idaho produce the best quality wine in the region. The IWC will focus on developing new ways to engage a wide variety of journalists and influencers. This will be done via highly curated digital experiences, implement robust social media and email marketing strategies, and the Idaho Wine Month Campaign Amplification. Through these targeted efforts, the IWC hopes to strengthen consumer and media knowledge of the Idaho wine industry and expand sales and production within the region.	$88,970.00
Idaho State Department of Agriculture	$2,085,220.90	11. Improving Weather-Data-Driven Decision Tools for Idaho Wine Grape Vineyards	The proposed project will improve data quality provided through projects funded through prior Boise State University SCBG grants completed by Dr. David Wilkins, and apply those improved data to develop and provide tools that enhance and support decision making efforts for disease control as well as improving irrigation efficiency.	$124,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Idaho State Department of Agriculture	$2,085,220.90	12. Development of an App for Mobile Devices for Early Fruit Yield Estimation	The Robotics Vision Lab of Northwest Nazarene University (NNU) will develop an application (app) for mobile devices to estimate early fruit yields in orchards. In this project, the algorithm will be implemented in a farmer-friendly app for mobile devices, which have an integrated camera and computer in one unit. Apps for both iOS and Android devices will be developed. The goal is to equip fruit growers with a tool that can support orchard management in a simple but functional app. The results of this research project will be reported online, through local agricultural field days, tours to different commercial orchards, presentation at conferences, and publications in scientific journals.	$67,523.00
Idaho State Department of Agriculture	$2,085,220.90	13. Development and Adoption of Direct Tuber Testing to Enhance Marketing Potential of Idaho Seed Potato	To effectively manage the threat of potato viruses, and maintain high market value of Idaho seed potato, a new tool is being developed, direct tuber testing, allowing drastic shortening of the period of decision making for sales of seed potato lots. The proposer intends to develop direct tuber testing methodology to conduct the post-harvest test in dormant tubers almost immediately after harvest. This new methodology will be able to replace the winter grow-out test, providing comparable or better sensitivity, reliability, and convenience. These direct tuber testing tools will be transferred to the Idaho Crop Improvement Association, individual growers, and other Idaho stakeholders.	$129,478.00
Idaho State Department of Agriculture	$2,085,220.90	14. Establishing a Center of Excellence for Specialty Crop Seed Health in Idaho	The University of Idaho will develop a specialty crop seed health center of excellence which will provide a world leading resource of growers and other seed organizations in Idaho and the US. The project will develop two cutting edge diagnostic methods, real-time polymerase chain reaction (PCR) and high throughput sequencing (HTS) for front line diagnostic testing for specialty crop seed.	$120,000.00
Idaho State Department of Agriculture	$2,085,220.90	15. Sustainability and Quality of Mature Almonds and Walnuts as a New Nut Industry in Idaho	The University of Idaho Pomology Program will study sustainability, production, growth, quality, bloom and maturity dates, cold tolerance, chlorophyll index and oil profile of fully mature almonds and walnuts trees. Both almonds and walnuts are becoming increasingly popular, mainly because of their health benefits.	$135,000.00
Illinois Department of Agriculture	$590,827.98	1. Helping People in Need Where They are for Improved Engagement, Access and Consumption of Healthy Produce and Nutrition Knowledge	Sola Gratia Farm will expand access to and demand for healthy produce and nutrition knowledge in low-income/limited access (LI/LA) populations in Champaign-Urbana where social services are currently lacking.	$30,678.10

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Illinois Department of Agriculture	$590,828.98	2. Increasing Knowledge and Production of Fruits and Nuts through Community College Farm Expansion	McHenry County College will provide hands-on educational opportunities in fruit and nut production through the expansion of the MCC Student Farm, reaching degree-seeking students in our Entrepreneurial Agriculture program, as well as new farmers across northern Illinois through MCC's Center for Agrarian Learning, K-12 school groups, Future Farmers of America clubs, and others who visit the MCC Student Farm.	$17,801.00
Illinois Department of Agriculture	$590,829.98	3. Gardeneers' Growing Food + Equitable Justice	Gardeneers partners with a network of partner schools, primarily on the West and South slides of Chicago, in low-income, under-resourced communities of color that face barriers to fresh, healthy food access. Our school farm and garden programs contribute positively to the more extensive food system by building students' awareness, knowledge, and skills to address food inequality directly and become leaders who care for themselves, their communities, and their environment.	$54,933.00
Illinois Department of Agriculture	$590,830.98	4. Variety Trial for Ginger (Zingiber officinale) and Best Practices for Illinois Farmers	Specialty crop growers in the United States have begun to consider ginger root (Zingiber officinale) in their crop rotation due to client demand and as a way to break disease cycles. As a tropical plant, ginger cannot tolerate temperature extremes common in Illinois. To better assess its production potential for Illinois specialty growers, University of Illinois Extension educators from Macomb, Jacksonville, Quincy, and Murphysboro, will collaborate with project partners, including faculty of Western Illinois University (Macomb) and Galesburg specialty crop farmers Spurgeon Veggies and Tina's Botanicals. The team will select varieties to test and will grow these varieties of ginger utilizing different growing methods suitable for Illinois, including high tunnels and caterpillar tunnels. Illinois Extension and project partners will collect data, including plant growth and health and yield data, to determine the best varieties and protected culture methods, with the goal of producing a ginger crop profile for Illinois growers.	$47,615.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Illinois Department of Agriculture	$590,831.98	5. Catalyzing Local Food System Connections: Collaborative Change Through Technology, Technical Assistance, Outreach and Education	In the next stage of post-pandemic life, The Land Connection has focused our energy on the biggest lesson learned for us this past year: intentional partnerships and information sharing to solve complex problems is critical to achieving the change we want in our local food and farming systems. To accomplish this goal, we designed a project that brings the collective voices of Illinois organizations advocating for a just and equitable local food system together to build a project centered on increasing the consumption of Illinois specialty crops by connecting producers, consumers, and food entrepreneurs.	$69,722.09
Illinois Department of Agriculture	$590,832.98	6. Expansion of Year-Round Learning Opportunities for Communities in Northern Illinois	The purpose of this project is to expand the Learning Center's educational opportunities to include a year-round cooking program, reinvigorate our outdoor cooking opportunities, build a library of cooking and demonstration videos to reach a wider audience, and create the opportunity for interactive streaming classes that allow for supplemental learning. The audience will be a mix of families from across northern Illinois, urban youth in Rockford, and school-age children from the area that attend field trips to our farm. Using a combination of in-person and virtual resources, we can maximize the reach and provide multiple touchpoints for a diverse group of people to interact with specialty crops, which will increase consumption and nutritional knowledge.	$53,514.00
Illinois Department of Agriculture	$590,833.98	7. Novel Cover Crop Management for Improving Resiliency and Profitability of Sweet Corn Production in Illinois	Sweet corn is one of the main specialty crops in Illinois. There is a growing interest in improving soil carbon while reducing environmental footprints in sweet corn production. Integrating winter cereal cover crops (WCCCs) such as winter cereal rye (WCR) can deliver both goals, but despite these benefits, cover crop adoption is slow. This study will evaluate cover crop species such as winter cereal rye, crimson clover, and their mixture in two different planting methods (normal planting vs. precision planting) in comparison to a no-cover crop control to identify the best method of cover cropping for sweet corn growers in Southern Illinois. We will team up with Illinois Farm Bureau to reach out to as many growers as possible through their extensive network of connections. Our comprehensive outreach approach will include writing fact sheets to deliver and promote precision cover cropping, presenting results in Illinois specialty crop conferences and local and national meetings.	$66,238.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Illinois Department of Agriculture	$590,834.98	8. Enhance Microbial Food Safety and Growth Outcomes of Hydroponically Grown Microgreens	The University of Illinois at Urbana-Champaign will enhance the microbial food safety of hydroponically grown microgreens by developing practical and scientifically based seed and tool sanitation techniques for application in controlled environment agriculture systems (CEAs) in Illinois and by disseminating the results to stakeholders through workshops and conferences.	$38,132.60
Illinois Department of Agriculture	$590,835.98	9. Evaluation of Day-Neutral Strawberry Production for Northern Illinois Specialty Growers	Day-neutral (DN) strawberry production could provide an opportunity for both you-pick operations (YPO) and diversified specialty growers in northern Illinois. While some strawberry production of June-bearing (JB) currently occurs, the short harvest season of this crop leads to many growers either removing or recognizing its limitations for YPO and direct markets while being unable to address market demand. DN strawberries then may be able to address a grower's needs as these are grown as an annual with weekly harvests from the end of June to October.	$40,424.23
Illinois Department of Agriculture	$590,836.98	10. Horseradish Germplasm Evaluation and Utilization for New Variety Development	This project will be directed by Dr. Alan Walters, Vegetable Crop Specialist at Southern Illinois University-Carbondale, and will identify superior clones from a genetically diverse germplasm collection for the improvement and development of new horseradish varieties for the Illinois industry. Superior germplasm clones will be identified (based on root quality characters) and hybridized with adapted commercial cultivars. Results of the project will be disseminated to stakeholders through presentations and personal contact at the annual Horseradish School in Collinsville, Illinois, in January 2023 and 2024.	$49,948.00
Illinois Department of Agriculture	$590,837.98	11. Specialty Crop Education & Consumer Awareness through Illinois Agriculture in the Classroom: Farmers Market Ag Mag & Companion Poster	Illinois Agriculture in the Classroom (IAITC) has a proven track record as a trusted source for educational materials teachers can use to incorporate agriculture into daily classroom lessons. Producing an Ag Mag educational resource highlighting farmer's markets provides a positive introduction to agriculture, specialty crops, and the farmers who grow them by using a subject matter with increasing popularity and one that captures student interest and meets learning standards for teachers. Farmers markets throughout Illinois that engage consumers can also benefit from access to a farmers market poster that will complement this free educational resource. IAITC has identified these new resources as a successful vehicle to cover a wide range of specialty crops one might find at their local farmers market and that are grown in Illinois.	$13,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Illinois Department of Agriculture	$590,838.98	12. Specialty Crop Market Readiness for Under-Served Farmers and Markets	The program will specifically target resourcing and training towards BIPOC, Latinx, and women farmers of specialty crops, as an affirmative, effort to address these under-served farming populations in Illinois.	$63,151.00
Indiana State Department of Agriculture	$485,215.51	1. Improve Drip Irrigation Management for Vegetable and Melon Production in Indiana	Purdue University will improve Indiana vegetable and melon farmers' ability to implement precise drip irrigation, which will improve crop water use efficiency, and minimize negative environmental impacts that can result from over-irrigation. Our team will achieve the targeted goal by developing a watermelon specific irrigation threshold and delivering comprehensive drip irrigation management education to Indiana farmers who grow many kinds of vegetables.	$139,384.69
Indiana State Department of Agriculture	$485,215.51	2. Determining the Suitability of Materials for Use as a Postharvest Food Contact Surface	Purdue Extension will conduct applied produce food safety research to determine the suitability of various materials for use in postharvest settings. As part of the Food Safety Modernization Act, the Produce Safety Rule (21 CFR 112) (PSR) sets minimum standards for equipment and vehicles used in the harvest and transport of produce. This project will study the suitability of materials for use as food contact surfaces on equipment and transport vehicles. This project will determine best practice for management of food contact surfaces, as well as assist growers in complying with the Produce Safety Rule and will be conducted primarily at the Purdue Extension Food Safety Training Hub, located near Vincennes, IN.	$57,437.95

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Indiana State Department of Agriculture	$485,215.51	3. Conservation of Indiana Specialty Crop Pollinators	Purdue University entomologists will partner with growers across the state to evaluate pollination services provided by native pollinators to Indiana's leading specialty crops. Over 50% of the state's specialty crop economy is dependent on pollinators to secure high marketable yields. While many specialty growers supplement their crops with honeybees, Indiana is home to more than 400 species of native bees which can supply free and superior pollination services. However, little is known about which pollinator species contribute to securing high marketable yields in Indiana's specialty crops. Thus, the value of these services is poorly understood and underutilized. The overarching goal of this proposal is to identify and help conserve pollinators for specialty crop production in Indiana. Supporting this goal are two objectives, the first is to conduct a series of surveys across major Indiana specialty crops (watermelon, tomato, apple, and blueberry). These surveys will determine significant pollinator species and the relative economic worth of native pollinators to each crop. Secondly, we will develop extension resources for growers to identify and assess pollination services in watermelon, tomato, apple, and blueberry. In achieving these objectives, we will target meaningful conservation practices that protect these significant pollinator species and sustain high marketable yields in Indiana's specialty crops.	$119,653.04

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Indiana State Department of Agriculture	$485,215.51	4. Increasing Productivity & Consumer Accessibility of Hydroponically Grown Organic Lettuce in Indiana	Many hydroponic growers in Indiana are converting to organic farming, expecting higher profits. Organic production is characterized by low productivity and variable crop yields due to decreased and variable nitrogen availability to crops. In addition, a select group of consumers have access to organically grown produce due to premium prices. These inequitable factors increase risk and negatively affect sustained profits in organic hydroponics industry. Crop productivity and yield stability should improve for sustained profits in organic hydroponics industry. This will further lower price of organically grown produce and make it more affordable to all consumers. Increased sales and diverse consumer base are key to sustained profits. Purdue University will develop technologies that will aid in increasing nitrogen availability to crops to improve crop productivity and yield stability in organic hydroponics industry. In addition, Extension will provide multiple workshops for the community, including educational programs geared towards educating Indiana growers with developed technology, introducing local school children to hydroponics with a focus on nutrition, and providing home hydroponics education and equipment to low-income families. The hydroponics technology will be displayed at 16 Tech Innovation District (Indianapolis) for maximum visibility. Workshop programming will include getting started with home hydroponics, the environmental benefits associated with hydroponics, the promotion of the nutritional value of leafy green consumption in the diet, cooking and storage of leafy greens, and promotion of the health benefits of organically grown produce with a focus on serving underappreciated communities facing food insecurity.	$143,391.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Iowa Department of Agriculture and Land Stewardship	$353,519.35	1. Expanding Production & Markets for Iowa Melon Industry through Introduction & Evaluation of Specialty Melons	Iowa is renowned for its sweet-tasting watermelons and muskmelons. Melons are widely popular and are a staple crop for many Iowa growers, however, their markets have essentially plateaued due to several challenges, namely production (insects, diseases, etc.), lack of new cultivars/varieties, and shelf-life issues of the produce. In order to expand production and markets growers need information on advanced varieties, types and innovative production practices. The goal of this two-year study is to identify, introduce, and evaluate new and novel specialty melon cultivars under Iowa growing conditions. Iowa State University will conduct research on several specialty melon cultivars/varieties and answer the following questions: 1) What are some high performing specialty melon types/ varieties, 2) Does maturity indices differ among varieties, 3) How does irrigation scheduling affect fruit yield and quality, 4) Are there differences in shelf-life, and 5) what is the economic feasibility of these crops? Data will be collected on air and soil temperatures, several crop growth parameters such as establishment, vine length, leaf number and area, crop yield, and fruit quality indices.	$23,968.00
Iowa Department of Agriculture and Land Stewardship	$353,519.35	2. Development of Best Production Practices for Improving Quality of Cold-Hardy Red Wines Over Time	The Department of Food Science and Human Nutrition at Iowa State University will evaluate the quality of red wines produced over the past 5 years in Iowa to develop and deliver to the Iowa grape and wine industry best practices for the preservation of cold-hardy red wine quality during aging. In this project, red wines aged from 1 to 5 years will be collected by visiting Iowa wineries and collecting details about the chemistry of wines at bottling and about the storage conditions. These data, along with the chemical characterization of those wines, will be used to 1) identify the evolution of red wine quality over time, 2) develop workshops to the wine industry which will provide knowledge and sensory evaluation of aged wines to Iowa wine producers, and 3) disseminate the results and provide recommendations and best practices to preserve cold-hardy red wine quality during aging, to the wine industry through presentations at the Iowa Specialty Crop Producers annual conference, and through an open-access extension publication.	$11,577.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Iowa Department of Agriculture and Land Stewardship	$353,519.35	3. Develop Infrared Radiation Processing Technology to Produce High Quality & Safe Hazelnuts	Iowa State University (ISU) will partner with the Iowa Nut Growers Association (INGA) to develop and optimize an infrared (IR) radiation drying technology to dry the in-shell hazelnuts and evaluate its benefits in terms of improved quality, microbial safety and mycotoxin control. For this project, we aim to develop a low-cost infrared dryer which will be used by the small scale hazelnut growers in Iowa and Midwest to achieve simultaneous drying, and inactivation of microbes and aflatoxins to produce high quality, microbiologically safe hazelnuts free from allergens. The project findings will benefit the hazelnut producers, processors, and consumers from Iowa by processing the hazelnuts in a more rapid and energy efficient drying system to produce high quality and microbiologically safe hazelnuts while mitigating aflatoxin contamination and allergenicity.	$21,882.00
Iowa Department of Agriculture and Land Stewardship	$353,519.35	4. Specialty Producers Conference	In 2019 the Iowa Wine Growers Association and the Iowa Fruit and Vegetable Association created a partnership and began working with representatives of the Iowa Department of Agriculture and Land Stewardship to plan a combined specialty producers conference. For the past two years the conference has brought together specialty producers from across the state to network with each other and engage in education. Both conferences have been very well received by our association's members and the specialty crop industry. We would like to continue to build from the success we started with the Iowa Specialty Producers Conference in 2022.	$24,000.00
Iowa Department of Agriculture and Land Stewardship	$353,519.35	5. Farmer-Led Research & Outreach on Honeyberry (HASAP): A New Specialty Crop Opportunity for Iowa	Practical Farmers of Iowa and our members have a 30-year history of farmer-to-farmer knowledge sharing, including over 1,000 farmer-led on-farm research trials through our Cooperators' Program. Many specialty crop farmers in Practical Farmers' membership are seeking additions to perennial polyculture systems that produce a marketable, fresh-eating berry and extend their production season. The central objectives of this grant are to run a farmer-led, randomized and replicated research trial on honeyberry varieties and shade-tolerance during establishment in Iowa, and to share the results of this farmer-led research through farmer-to-farmer education events, publications and media.	$24,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Iowa Department of Agriculture and Land Stewardship	$353,519.35	6. Local For Lunch 365: Connecting Iowa Students to Local Produce Year Round	Local for Lunch 365 is a new project by Field to Family to increase sales of local specialty crops to east central Iowa schools by filling in seasonal gaps. Field to Family has worked with local farmers to procure local products for school lunch menus since 2011. Most school specialty crop sales occur between late August and early November, even though local fruit and vegetables are available and abundant year-round. Our goal is to develop and implement a comprehensive marketing and education program for food service directors and chefs highlighting local produce available year-round from Field to Family and local farmers. At the end of 2022, we will compile our successes, lessons learned, and resources developed into a "Local for Lunch 365" handbook to be shared with Farm to School professionals statewide.	$24,000.00
Iowa Department of Agriculture and Land Stewardship	$353,519.35	7. Perennial Native Seed Production for Rural Resilience	Golden Hills RC&D will work with local partners in western Iowa to train growers to develop seed plots of native plant species. The project coordinator will identify lands that are feasible for seed production of local ecotype prairie, savanna, wetland and woodland species in the Loess Hills, Missouri River floodplain, and Nishnabotna watershed region. We will expand our current Native Seed Harvest project to train people how to properly and ethically harvest native seed from remnant natural areas, store that seed, and then grow it. Seed will be used for local restoration projects primarily by local conservation organizations.	$23,987.00
Iowa Department of Agriculture and Land Stewardship	$353,519.35	8. Addressing Product Development & Food Safety Needs for Value-Added Producers in Iowa	This project includes adopting a lecture-style short course which outlines product development and food safety practices to produce specialty crop products from the University of Massachusetts (UMass), which conveys food product development and food safety messages. The Iowa State University (ISU) team will develop a supplemental interactive curriculum to help participants apply the lectures' knowledge. Specific outcomes from this project will consist of developing supplemental interactive curriculum to support the lecture-style short course from UMass, which outlines product development and food safety practices to produce specialty crop products. The lecture-style short course from UMass and supplemental curriculum will be disseminated throughout the state of Iowa.	$24,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Iowa Department of Agriculture and Land Stewardship	$353,519.35	9. Assist Iowa Schools and Childcare Centers with Local Food Procurement Plans	The NE Iowa Food and Fitness Initiative successfully modified a planning process recommended by the USDA Farm to School program to help schools set procurement goals and create a procurement plan. That process was successfully replicated with seven other school districts across the state in 2018. The ISU Extension Farm, Food and Enterprise Development Team has created a train-the-trainer program that will result in more people becoming certified Farm to School/Early Care coaches. Coaches are experts in the local food system and have the skills to help school's complete robust procurement plans.	$24,000.00
Iowa Department of Agriculture and Land Stewardship	$353,519.35	10. Visually Based & Virtual Education Resources for New American Specialty Crop Farmers	Many refugee groups arriving in Iowa have spent the majority of their lives farming and have a strong desire to farm in Iowa as well. Since 2011, Lutheran Services in Iowa (LSI) has been working with members of various ethnic groups to create the Global Greens program which provides opportunities for growers to be re-connected to the land. Through the project, Visually Based and Virtual Education Resources for Beginning New American Specialty Crop Farmers, LSI will transform key components of its production, marketing and record keeping training for refugee farmers into virtual formats in a variety of languages so that they are more accessible and available to English Language Learners (ELL) working in the industry. In addition, LSI will create supplemental visual, picture based crop planning and pest management resource guides.	$24,000.00
Iowa Department of Agriculture and Land Stewardship	$353,519.35	11. Teaching about Christmas Trees	The Iowa Agriculture Literacy Foundation will increase awareness and understanding of Christmas trees as a specialty crop in Iowa through the development of lesson plans, hands-on activities, and virtual field trips for educators and students. The lessons and activities will include Christmas tree production, supporting local businesses, selecting Christmas trees, and caring for Christmas trees after being cut. The lessons will be used by Agriculture in the Classroom educators across the state and other formal and informal educators. The virtual tours will be made available throughout the month of December when teachers are actively teaching holiday and seasonal lessons. This project will inspire more students and their families to purchase a locally grown Christmas tree to decorate their homes during the holiday season.	$9,499.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Iowa Department of Agriculture and Land Stewardship	$353,519.35	12. Des Moines Public School Agriscience Orchard & Apiary	The Des Moines Agriscience program will establish a formal fruit orchard that will also include other plants conducive to pollinators. We will also establish a 10-hive apiary. The orchard and apiary will aid in the education of students in Des Moines Public Schools, supply local food banks, and be opened to various community groups that wish to utilize it for education purposes.	$24,000.00
Iowa Department of Agriculture and Land Stewardship	$353,519.35	13. Expanding grow.eat.play awareness campaign for Cedar Valley Regional Food & Farm Network & North Iowa Specialty Crop Farmers	The University of Northern Iowa (UNI) will increase demand for and consumption of specialty crop products and promote local farmers by expanding on the Grow.Eat.Play campaign created by Healthy Harvest of North Iowa. This awareness campaign was crafted by a collective effort of farmers and consumer advocates. Through market research, consultation with a marketing expert, and cooperation with a group of key partners, Healthy Harvest of North Iowa developed a core message about the value, availability, and use of specialty crops. The campaign developed visually rich social media campaigns, newsletters, and website content amplifying the values of specialty crop products through and with the stories of participating farmers and consumer contact partners. This campaign will expand on those efforts in the Cedar Valley and North Iowa regions with a collaboration between the UNI Local Food Program and Healthy Harvest of North Iowa.	$24,000.00
Iowa Department of Agriculture and Land Stewardship	$353,519.35	14. Farm to Summer Campaign	The importance of local food crops has never been more apparent than during the Covid-19 pandemic. Delays in shipping and scarcity at grocery stores exemplified the need to source local foods. The goal of this project is to increase the support of our specialty crop industry by increasing equitable access to and the demand for Iowa's specialty crops during the summer months. The Iowa Department of Agriculture and Land Stewardship (IDALS) proposes continuing and strengthening partnerships with the Iowa Department of Education (IDOE), FoodCorps, and Iowa State Universality Farm and Food Enterprise Development (FFED) to launch an enhanced Iowa Farm to Summer Campaign. IDALS will work with these partners to create a three-year campaign in which we offer funding, technical assistance for local procurement, consultation for hands on food education and promotional material to Iowa summer meal sites with added emphasis on one fruit or vegetable each summer.	$34,894.94

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Kansas Department of Agriculture	$338,614.23	1. New Roots Specialty Crop Expansion and Viability Enhancement Project	Catholic Charities of Northeast Kansas, Inc. proposes to accomplish several important outcomes through our New Roots Specialty Crop Expansion and Viability Enhancement Project. Proposed outcomes include increasing specialty crop sales for 68 Beginning AND Socially Disadvantaged farmers by 8%, introducing 60 new specialty crops to consumers including exotic offerings from Asia and Africa, increasing access and awareness by reaching 27 wholesale buyers, and doubling the number of access points in our "Dedicated Markets" initiative which brings smaller farmers' markets to dedicated sites. Tasks include developing new access points, developing marketing materials and processes for new specialty crops, educating farmers on best practices in both farming, food safety and transportation and marketing and customer service, and reaching more wholesale markets through existing methods, and helping all farmers and farms we work with become more competitive in their specialty crop sales.	$27,005.00
Kansas Department of Agriculture	$338,614.23	2. Increasing Resiliency and Competitiveness of Beginning Specialty Crop Farmers in South Central Kansas	The Extension Education Foundation, Inc will increase the sustainability, competitiveness and access to specialty crops in south central Kansas while increasing the number of farmers and businesses to enhance the economy. This will be accomplished through providing education to new and beginning farmers through the Growing Growers Learning Network. The project will continue to improve on the existing program and add new content and learning opportunities based on the needs of local farmers. All program activities will occur in collaboration with county Extension agents, K-State Research & Extension specialists, local non-profits, and other community partners.	$69,186.58
Kansas Department of Agriculture	$338,614.23	3. Expanding Food-Safety Training, Certification and Record Keeping Software for Specialty Crop Producers and Aggregation Centers	The Kansas Farmers Union will establish an agreement with Advancing Rural Prosperity, Inc. a Kansas team of local food system specialists and Fresh Systems, LLC dba 4-Corners GroupGAP to expand a multi-state USDA GroupGAP into Western Kansas. This will provide the High Plains Food Cooperative's (HPFC) aggregation center, and small to medium area sized producers a tiered FSMA training, USDA GAP certification, and introduction to the HeavyConnect software platform, that electronically captures and manages farm food safety records.	$44,960.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Kansas Department of Agriculture	$338,614.23	4. Identifying Best Management Practices for Upright Dry Bean Production in Northwest Kansas	Dry edible beans have been a long-standing specialty crop in Northwest Kansas. They are a unique cropping option in this region as they are a high value specialty crop destined for human consumption. They are an economically viable legume pulse crop in a region whose cropping rotations are typically dominated by grass species, specifically irrigated corn. Research regarding production practices has not been conducted in decades. In recent years, producers have shifted their production systems towards growing upright type varieties instead of vine types. This shift in production practice has reduced or eliminated some of the barriers to entry for new growers. Optimal management practices have likely changed with this transition from vine-type to upright dry edible beans. Research by Kansas State University will establish best management practices for upright dry edible beans. In addition, this project will evaluate several other management questions developed from producer interviews. Extension activities will communicate findings to current and potential future dry bean growers.	$46,551.24
Kansas Department of Agriculture	$338,614.23	5. Safety for Produce Growers: Worker Protection Standard Training Certification and GAP Certification Funding and Outreach	Kansas State Research and Extension (KSRE) will assist at least 10 Kansas (KS) specialty crop producers to receive training and certification as a US Environmental Protection Agency (EPA)-recognized Worker Protection Standard (WPS) pesticide safety train-the-trainer (TTT) so that they can train the workers on their farm. In addition, we will assist at least 7 Kansas fruit and vegetable producers earn Good Agricultural Practices (GAPs) certification during the project, which will help growers access new markets which require that certification. This will help improve worker safety, produce safety, and profitability of KS specialty crop producers.	$56,094.12
Kansas Department of Agriculture	$338,614.23	6. Improving Safety, Nutritional Quality and Consumer Acceptability of Lettuce Growing with Movable High Tunnels in Kansas	Kansas State Research and Extension (KRSE) will evaluate productivity, safety and quality of lettuce grown using a movable high tunnel production system in Kansas. Specifically, replicated field trials at the K-State Olathe Research and Extension Center will investigate the effect of deferent exposure times to open field conditions (full-spectrum natural light) prior to harvest on lettuce yield, microbial safety and nutritional quality, grown in a movable high tunnel. The open field exposure effect will be evaluated in terms of total and marketable yield, physical, microbial and nutritional characteristics. Moreover, descriptive sensory analysis will evaluate the sensory profile of the produced lettuce and a consumer study will examine the consumer acceptability. The overall goal of the proposed project is to increase the safe production of lettuce with enhanced nutritional quality and fulfill consumer demand.	$74,495.16

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Kentucky Department of Agriculture	$255,673.30	1. Winter Squash- a Low-Hanging Fruit?	Increasing the consumption of Kentucky-grown specialty crops in school meals is challenging for a number of reasons. This project aims to provide a model for small and medium-sized school districts to connect with small and medium-sized commercial growers in the state by focusing on a crop that can be available through the school year, is in demand because of the school meal pattern requirement for red/orange vegetables, stores well, and fits the production systems already in place on many Kentucky farms.	$26,964.52
Kentucky Department of Agriculture	$255,673.30	2. Evaluating the Inter-season Rotation of Tomato with Fresh-cut Flowers in a High Tunnel System for Improved Pest, Disease, and Soil Management	The University of Kentucky seeks to improve the economic value of high tunnels by evaluating the potential inter-season rotation of tomatoes and fresh-cut flowers. Both are high value crops. Tomatoes would be grown from spring through summer. Flowers would then be grown in late summer into the fall. Data on disease, pest pressure, soil fertility, and economic viability will be collected, analyzed, and shared with county agents and high tunnel growers via field days, workshops, and webinars. Optimal planting dates for various flower species and cultivars will also be evaluated.	$48,664.00
Kentucky Department of Agriculture	$255,673.30	3. Increasing Consumer Demand for Kentucky Specialty Crops and Inspiring Beginning Farmers through Extension-Supported Gardening Programs at Substance	This project brings together University of Kentucky Extension professionals across Horticulture (Bethany Pratt, Co-PI), Nutrition Education (Jann Knappage, Co-PI), Substance Use Prevention and Recovery (Alex Elswick, Co-PI), and Community and Leadership Development (Nicole Breazeale, PI) to expand Extension-supported gardening programs at Substance Use Recovery Centers around the state. The project builds on a successful pilot project spearheaded by the Nutrition Education Program; programs have been established in eight counties over the last three years and evaluation results indicate that participants increased their fresh vegetable consumption (an average of 67% percent change at program exit). Furthermore, by exposing socially disadvantaged individuals to specialty crop production, the program motivates those in recovery to consider establishing a future career in agriculture.	$55,809.00
Kentucky Department of Agriculture	$255,673.30	4. Establishing Recommendations for Greenhouse Soilless Culture Cucumber Production in Kentucky	The University of Kentucky seeks to evaluate varietal performance and yield of cucumbers grown under soilless culture greenhouse conditions; to establish and optimize nutritional requirements thereby mitigating drain-to-water fertilizer pollution; and to disseminate technical information to stakeholders through web-based and printed technical information, grower meetings, on-site farm and research greenhouse demonstrations, and training days.	$49,978.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Kentucky Department of Agriculture	$255,673.30	5. New Digital Tools and Marketing Strategies for a Post-COVID-19 Marketplace	Through this project, the Center for Crop Diversification will expand its offerings to meet the highly diverse marketing education needs of scale-variable Kentucky specialty crop farms and businesses by developing new trainings and resources, while updating and extending several existing programs.	$55,124.00
Louisiana Department of Agriculture and Forestry	$408,716.86	1. Introduction of Youth and Producers to Sustainable Watermelon Farming Utilizing Local Agricultural Byproducts	McNeese State University (MSU) will collaborate with the IBC Charter Academy (Coushatta Tribal Youth) and Allen Parish high school students to conduct research and demonstration on a sustainable watermelon patch making use of locally produced byproducts for recruitment of youth into specialty crop agriculture, for undergraduate education, for graduate student research, and for local producer education.	$44,820.00
Louisiana Department of Agriculture and Forestry	$408,716.86	2. Expanding Hustle & Grow Youth Education Program: Promoting Urban Farming and Increased Access to Specialty Crops in Additional Schools	The Walls Project's Hustle & Grow program, in partnership with Healthy BR, will teach high school students the business of urban agriculture through community farming. The program empowers surrounding neighborhoods to develop a sustainable food system and land stewardship ethic through outdoor hands-on experiences in growing, producing, and distributing fresh food in an urban setting.	$33,415.00
Louisiana Department of Agriculture and Forestry	$408,716.86	3. Develop and Validate a Low-Cost Produce Washing Setup for Small and Medium Scale Growers	Washing of fruits and vegetables with water has been identified as the step to remove dirt, chemical residues, and other organic material present on the produce surfaces. During the washing step, the microorganisms present on the produce surface due to preharvest contamination can get dislodged in the wash water which increases the risk of spreading the bacteria to other non-contaminated produce.	$54,500.00
Louisiana Department of Agriculture and Forestry	$408,716.86	4. Intensive Protected Structure Production and Fruit Quality Evaluation of Southern Highbush Blueberries and Primocane Blackberries and Raspberries	The Louisiana State University (LSU) Agricultural Center will introduce and evaluate new and existing low chill southern highbush blueberry cultivars and primocane blackberry and raspberry cultivars for development as high-value fruit crops for commercial producers, nurserymen, and homeowners. New and intensive production practices will be employed using container substrate culture and protected structure growing environment.	$84,775.00
Louisiana Department of Agriculture and Forestry	$408,716.86	5. Documenting the Impact of 2,4-D Choline and Glufosinate on Sweet potato Growth and Yield as Influenced by Reduced Rate and Growth Stage	The proposed LSU AgCenter research aims to assess the impact of the herbicides 2,4-D choline and glufosinate, applied at reduced rates that are often encountered in off target or spray tank contamination events, on the growth and yield of sweet potato varieties commonly grown in Louisiana. In addition, susceptibility as affected by plant growth stage at time of exposure will be assessed. Such information will be critical to the sweet potato industry in terms of possibly leading to more restrictive label application requirements in close proximity to the crop.	$25,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Louisiana Department of Agriculture and Forestry	$408,716.86	6. Louisiana Strawberry Industry Consumer Awareness Program	The Louisiana Strawberry Marketing Board will raise awareness of the availability, high quality and nutritional value of Louisiana strawberries during peak harvest season through marketing and promotion via digital audio advertising, streaming television advertising and digital interstitial ads, thereby increasing the competitiveness of Louisiana strawberry growers and increasing strawberry sales.	$70,478.37
Louisiana Department of Agriculture and Forestry	$408,716.86	7. Promoting Louisiana-grown Pecans	The Promoting Louisiana-grown Pecans program by the Louisiana Department of Agriculture and Forestry (LDAF) will enhance the competitiveness of specialty crops by implementing a promotional campaign intended to increase sales of Louisiana-grown pecans. To accomplish this, LDAF will develop a marketing campaign, purchase outdoor advertisements and develop artwork to be placed on the social media pages of Certified Louisiana, Louisiana Grown, Louisiana Department of Agriculture and Forestry, and the Louisiana Pecan Growers Association.	$62,400.00
Maine Department of Agriculture, Conservation, and Forestry	$610,638.42	1. The Millennial Opportunity: Expanding Supply, Demand, and Infrastructure for a New Era of Maine Wild Blueberry Sparkling Wine	Bluet, creator of Maine's first nationally viable wild blueberry sparkling wine, will continue to work with a wide range of stakeholders in 2021-2022, the second year of the proposed three-year project, to expand supply, demand and nfrastructure for a new era of low-intervention Maine wild blueberry sparkling wine.	$99,525.00
Maine Department of Agriculture, Conservation, and Forestry	$610,638.42	2. Creating a Replicable Farm Equipment Sharing Co-Operative For Growers Using Soil-Steaming Technology in Their Hoop-House Production	The Cumberland County Soil and Water Conservation District will organize a soil steamer equipment sharing co-operative which will facilitate access to an expensive yet effective technology to a core group of farmers, demonstrating through community outreach an alternative model of farm capitalization as well as innovative technology specific to specialty crops grown in hoop-houses. Through use-fees, the CCSWCD will leverage co-op funds for further farm equipment co-operatives.	$40.642.00
Maine Department of Agriculture, Conservation, and Forestry	$610,638.42	3. Expanding on Daybreak Growers Alliance's Wholesale Aggregation, Marketing and Distribution Model for Maine Specialty Grown Crops	Daybreak Growers Alliance will expand upon its existing wholesale program with the aid of the third and final year of SCBG funding support by increasing marketing and promotion of the most popular specialty crops DGA distributes.	$29,740.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Maine Department of Agriculture, Conservation, and Forestry	$610,638.42	4. Formation of Maine Flower Collective: A Cooperative to Enhance the Competitiveness and Market Reach of Maine's Cut Flowers	The Maine Flower Collective (MFC) will research potential market expansion for Maine-grown specialty cut flowers and strategies for increasing access, availability, and distribution across the state and region. By forming the MFC, Maine's specialty cut flower farmers will be able to aggregate and distribute their flowers more efficiently, thereby allowing them to better compete with conventional wholesalers that resell imported flowers.	$93,950.00
Maine Department of Agriculture, Conservation, and Forestry	$610,638.42	5. Maine Produce Safety Improvement Project II	The Maine Organic Farmers and Gardeners Association will continue the successful work it began last year to enhance the competitiveness of specialty crops by increasing the number of farms able to come into compliance with the Food Safety Modernization Act (FSMA) Produce Safety Rule, and/or a GAP/GHP audit, by providing food safety education, one-on one technical assistance, and financial resources to Maine farmers.	$90,518.00
Maine Department of Agriculture, Conservation, and Forestry	$610,638.42	6. Investigating Cultural Practices to Improve Integrated Pest Management Practices for Potato Virus Y (PVY) of Potato.	The Maine Potato Board will investigate the efficacy of cultural practices to reduce the incidence and spread of potato virus Y (PVY); specifically, the practices of intercropping (mixed- species planting or nurse cropping), grain-seeded spray alleys to prevent potato plant damage and mechanical PVY infection, grain seeded field borders as PVY buffers, and improved targeting and management of environmental inoculum provided by volunteer potatoes and solanaceous weeds. Project results will be shared with Maine potato producers through grower meetings (e.g., Maine Potato Conference), and through a written report on Integrated Pest Management Strategies for PVY in Maine, that will be distributed through the Maine Potato Board.	$79,245.00
Maine Department of Agriculture, Conservation, and Forestry	$610,638.42	7. Exploring Fertilizers, Soil Amendments, and Pollination as Tools to Improve Wild Blueberry Resilience to Warming	We also continued evaluating blueberry growth under two temperature regimes that mimic climate warming. We also found that wild blueberry plants grown at 3 to 5ºC above ambient temperature had less available soil water and nutrients due to increased water loss under warming yet showed an extended growth period and increased yield. It is critical that we begin to understand how farmers can adapt to changes in crop production given new products on the market, longer seasons, and warming conditions.	$99,894.00
Maine Department of Agriculture, Conservation, and Forestry	$610,638.42	8. Producer Groups Outreach Tool for Off-Season Education	Agricultural Resources Development Division of the Maine Department of Agriculture, Conservation and Forestry will offer a digital library application to offer lectures, workshops and educational content for Maine specialty crop producers. The application will allow for scheduling of one-on-one business advising, and store educational content year-round.	$15,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Maine Department of Agriculture, Conservation, and Forestry	$610,638.42	9. Promoting Awareness of Key Maine Specialty Crops Through Video to Increase Sales.	The Maine Department of Agriculture, Conservation and Forestry (DACF) promotes Maine agricultural products, including fruits and vegetables, to consumers and industries in Maine and across the region and country. In recent years, DACF has been expanding its marketing and promotion efforts. DCAF launched a consumer-facing website launching in July 2020 to promote local ag products, events, and services. DACF has been increasing its social, print, and radio media promotion. Recently DACF has been assisting agricultural producers market their products outside the state, with a 2-year-old national and international trades show program.	$16,757.27
Maryland Department of Agriculture	$483,992.80	1. Evaluation of a Unique Maryland "Heritage" Hop for the Maryland Craft Beverage Industry	Grow & Fortify will support, and promote, the research of University of Maryland Extension Western Maryland Research and Education Center (WMREC) to conduct research trials to more clearly understand the potential value of a unique hop that has been growing on a local farm for over 100 years. This hop will be evaluated to determine if it meets both quality, and quantity requirements for commercial demand, and the needs of the Maryland craft alcohol industries. The research results will be disseminated widely to commercial hops producers and brewery community.	$25,900.00
Maryland Department of Agriculture	$483,992.80	2. Promotion of "Old Line Marketplace"	Grow & Fortify will promote the launch of an exciting new tool to help build the customer base and demand for products offered from Maryland's small business sector, including specialty crop growers. Old Line Marketplace is the first of it's kind here in Maryland and will serve as a platform where customers can easily shop for a wide range of Maryland grown, made, or manufactured products, with a special emphasis on products utilizing raw agricultural commodities grown in Maryland as well as products classified as Maryland's Best. We believe promotion for this new marketplace is key and therefore we will build a promotional plan which will include short promotional videos and interviews highlighting specialty crop products, as well as advertising the marketplace to both merchants and customers, through public radio, commercial radio and social media advertising.	$39,500.00
Maryland Department of Agriculture	$483,992.80	3. Maryland's Best - Promoting Maryland specialty crops to consumers and distributors	Maryland Department of Agriculture's Agriculture and Seafood Marketing Section will promote local specialty crops to consumers and distributors through advertising, virtual presentations with libraries, the web site Marylands.Best.net, Maryland Public Television, business to business meetings and point of sale promotional material. MDA will also conduct an analysis of the Maryland's Best program benefits to specialty crop growers.	$164,751.66

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Maryland Department of Agriculture	$483,992.80	4. Adding Value to Specialty Crops: Regulatory Decision Trees for Maryland Specialty Crop Growers	Maryland specialty crop growers who desire to make value-added products must first locate, interpret, and apply laws and policies related to food safety, processing, licensing, and labeling. Understanding the applicable standards enforced by state and local governmental agencies is difficult and can stifle grower efforts. The Agriculture Law Education Initiative (ALEI), in partnership with the University of Maryland College Park (UMCP) and Eastern Shore (UMES) Extension, will create Regulatory Decision Trees to centralize this information and provide technical support to growers, including but not limited to, beginning and socially disadvantaged growers, and direct-to-consumer sellers. The Decision Trees, broken down into common product types, will equip growers with the knowledge they need to undertake the production of value-added products. The desired outcome for this project is to enhance the competitiveness of specialty crops within Maryland's value-added economy by helping to create or maintain Maryland specialty crop businesses. Project activities will include creation of Regulatory Decision Trees, an online self-assessment tool, a process plan checklist, a pilot program at UMES Extension to help growers understand and measure food safety benchmarks, and technical assistance to producers using the resources. The ALEI will distribute and educate throughout the state at winter grower meetings, University of Maryland Extension programs, webinars, ALEI website, and more.	$35,912.26

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Maryland Department of Agriculture	$483,992.80	5. Developing an Apple Fruit Maturity Assessment Program for Maryland growers to Improve Harvest and Storage Decisions of Economically Important Cult	University of Maryland researchers in partnership with apple growers in Western and Eastern Maryland will develop an apple fruit maturity assessment program to be used as a tool to improve harvest and storage decisions of economically important cultivars recently adopted by growers statewide. We will conduct harvests and evaluations of the commonly used apple fruit maturity indices of widely grown apple cultivars throughout ripening on the tree, for two consecutive growing seasons, grown under the diverse environmental conditions of Maryland. Through our "Fruit Pulse" newsletter this critical information and our recommendations will be timely disseminated to fruit growers throughout the state in order to help them improve their harvest decisions based on their environmental conditions and fruit target markets. This will allow them to increase the value and marketability of their crop that can lead to greater profits. We will additionally share our information and findings to apple growers and other stakeholders via local grower commodity meetings, regional meetings and conferences, field day tours, newsletters, web postings and other outreach venues. We anticipate the adoption of the practice of using maturity indices as a tool for harvest and storage decisions of their apple cultivars will help local growers improve the profitability of their orchards. It is anticipated that this fruit maturity assessment program will be transferable to other specialty crops.	$15,752.89

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Maryland Department of Agriculture	$483,992.80	6. Unveiling Fungicide Resistance in the Downy Mildew Pathogen in Maryland Vineyards	The University of Maryland will improve the effectiveness and sustainability of grapevine downy mildew (DM) management by understanding species prevalence and assessing fungicide resistance issues in a two- year project. Wine grape production is a fast-growing specialty crop sector in Maryland involving both established farmers seeking an additional value-added crop, and beginning growers interested in filling the niche for locally produced wine. Due to the warm and humid growing season, DM is one of the most persistent and devastating diseases in Maryland vineyards. Control of DM heavily relies on synthetic fungicides. However, fungicide use is threatened by increasing resistance issues due to intensive sprays over the last decades. In this project, we will take integrated approaches to 1) characterize and identify species of the Plasmopara viticola complex causing DM in Maryland vineyards; 2) determine frequencies of resistance to commercially available DM fungicides; and 3) identify molecular method(s) for quick resistance detection based on understanding of mechanisms underlying fungicide resistance in DM pathogens. The outcomes of this project will not only educate growers and stakeholders on resistance management guidelines, but also eliminate ineffective fungicide sprays which in turn reduces chemical input and increases grower's profits, for the sustainability of wine grape production in Maryland.	$30,664.80

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Maryland Department of Agriculture	$483,992.80	7. Produce Safety GAP/GHP Programs: Market Access and FSMA Produce Safety Rule Compliance	The Maryland Department of Agriculture Food Quality Assurance Program will partner with the University of Maryland Plant Sciences and Landscape Architecture Department, University of Maryland Extension, University of Maryland Eastern Shore and the University of Maryland Agricultural Law Education Initiative to continue providing coordinated food safety programs based on research; lessons learned from previous projects; identified gaps in specialty crop growers food safety knowledge; and updates to GAP and Produce Safety Rule standards to assist specialty crop producers in complying with the Food Safety Modernization Act Produce Safety Rule and maintaining/gaining market access through GAP certification. Programs will include in person and virtual formal training sessions, fact sheets, webinars, how to videos, and updated templates for food safety plans to educate specialty crop growers on prevention, detection, control, and intervention food safety practices; technical assistance to develop and implement effective food safety plans; verification of prevention strategies effectiveness through detection of microbial threats; inspection and certification of compliance with food safety practices; consumer specialty crop food safety education; and cost share funds to assist with the implementation of effective food safety plans and practices.	$120,191.65
Massachusetts Department of Agricultural Resources	$457,684.38	1. Assessing Agricultural Water Quality for Food Safety on Massachusetts' Specialty Crop Farms	The Massachusetts Department of Agricultural Resources (MDAR) as lead agency, along with collaborator University of Massachusetts Extension, will increase understanding among regulators, educators and producers of the microbial risk associated with currently available water sources for agricultural use among specialty crop farms in Massachusetts. This project will use water testing and development of a water quality baseline for representative water sources in the state to provide targeted outreach and education on best practices for water sampling and use. Additionally, the project will help growers comply with state and federal food safety regulations and voluntary 3rd-party audit programs by providing cost-share funds to offset producers' expenses related to required water sampling.	$150,000.00
Massachusetts Department of Agricultural Resources	$457,684.38	2. Enhancing technological decision-making tools for MA cranberry growers	The Cape Cod Cranberry Growers' Association will develop technological decision-making tools for Massachusetts cranberry growers. This will be accomplished by making enhancements to the existing BOGS Online Grower System, focusing on areas that will help drive user decisions regarding integrated pest management, water use, cultural practices, yield, pesticide and nutrient use, reporting and overall on-farm efficiencies. Enhancements will also be introduced to assist in regulatory compliance.	$80,739.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Massachusetts Department of Agricultural Resources	$457,684.38	3. Innovative Boston Food Hub's whole-crop marketing benefits Massachusetts specialty crop growers	Boston Food Hub is an innovative program of Boston Area Gleaners that supports dozens of Massachusetts specialty crop growers. This marketing project will increase sales by 36% and new delivery access points by 10 by creating and implementing a marketing plan; strategies will include website expansion, new social media presence, and advertising on our fleet of trucks.	$40,700.00
Massachusetts Department of Agricultural Resources	$457,684.38	4. Promoting the Healthy Incentives Program to increase sales of Massachusetts' grown fruits and vegetables.	CISA will increase sales of and access to local fruits and vegetables by providing training and promotional support to Healthy Incentives Program (HIP) vendors and educating eligible people about where, why, and how to use HIP to purchase fruits and vegetables directly from local farms.	$89,874.30
Massachusetts Department of Agricultural Resources	$457,684.38	5. Protecting Massachusetts specialty crops from two invasive pests through monitoring, research, and outreach.	Two University of Massachusetts Extension programs (the Landscape, Nursery, and Urban Forestry Program and the Fruit Program), the Stockbridge School of Agriculture, and the Department of Environmental Conservation are joining forces to monitor for SLF in MA, to conduct Extension/outreach on both invasive pests, and to conduct applied research aimed at (1) identifying attractive lures for SLF and (2) monitoring for the Samurai wasp, an egg parasitoid of the BMSB. This information is important given the potential implementation of biological control of BMSB in agricultural areas while potentially reducing urban and suburban home invasions of BMSB.	$58,928.43

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Michigan Department of Agriculture and Rural Development	$1,955,693.23	1. International and Domestic Promotion of Michigan Specialty Crops	The Michigan Department of Agriculture & Rural Development's (MDARD) International Marketing Program will continue collaborative work with the Cherry Marketing Institute, Michigan Bean Commission, Michigan Apple Committee, the Michigan Potato Industry Commission, Michigan Asparagus Advisory Council, and the Michigan Blueberry Commission to promote specialty crops both domestically and internationally. The project will allow Michigan specialty crop companies and commodity groups the ability to exhibit at domestic and international trade shows and the ability to bring domestic and international buyers to Michigan as part of a buyers' mission for specialty crops. Connecting the Michigan specialty crop industry with potential buyers is critical for the expansion of sales both domestically and internationally, especially, as production continues to increase and there is additional competition in the domestic market. The International Marketing Program will work to secure booth space at various trade shows, recruit and assist with organizing the specialty crop exhibitors for each of the shows. Additionally, the International Marketing Program will collaboratively work with the specialty crop commodity groups to provide mini grants to bring either domestic or international buyers to Michigan. Finally, the International Marketing Program will work in the specialty crop commodity groups to collaborate on the production of promotional videos for the specialty crop commodity group. The goal of all activities is to increase purchases of Michigan specialty crops and provide markets for producers.	$168,590.98
Michigan Department of Agriculture and Rural Development	$1,955,693.23	2. Identification of Improved Dry Bean Varieties, Maturities, and Integrated Weed Management Systems: Managing Production for an Evolving Market Place	The Michigan Bean Commission (MBC) will work to improve environmental and economic sustainability of dry bean production in Michigan while improving quality and reducing the use of synthetic crop inputs to better meet the demands of a changing marketplace.	$100,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Michigan Department of Agriculture and Rural Development	$1,955,693.23	3. Getting to the Root of the Problem: Increasing Vegetable Plant Establishment and Productivity	The Michigan Vegetable Council has partnered with MSU researcher, Dr. Mary Hausbeck and extension educators Ben Werling and Ben Phillips to develop recommendations for the state's root crops to limit soil-borne pathogens that prevent plant establishment and productivity. Michigan produces a wide range of root vegetables including table beets, parsnips, celeriac, turnips, radishes, and carrots. Growers of these crops are challenged each year by a range of soil-borne pathogens that prevent plant establishment and cause root lesions. The most prevalent soil-borne pathogens affecting Michigan's root crops have not been identified and is a proposed objective of this project. The use of cover crops is a widespread practice especially in shortened vegetable crop rotations. However, these cover crops may be susceptible to the very plant pathogens that they are supposed to suppress. Determining the cover crops that can be used in the root crop production system is a proposed objective. These cover crops must be tested to determine whether they are susceptible to the primary root pathogens of the various root crops. The results of the studies and recommended practices will be shared with the state's stakeholders. The anticipated outcomes from this project include a decrease in the risk soil-borne pathogens which will lead to increased productivity	$90,591.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Michigan Department of Agriculture and Rural Development	$1,955,693.23	4. Advancing Weed Management in Michigan Carrots through Novel Cultural, Electrical, and Physical Approaches	Michigan ranks fourth in both acreages of processed carrots and total carrots (processed and fresh market). Weed management is one of the biggest challenges in carrots due to 1) their slow germination and early growth; 2) lack of registered herbicides; 3) increased incidence of herbicide resistant weeds; and 4) scarcity of labor for rogue weeding. In Michigan, large-scale commercial production of carrots has been dependent on a relatively narrow range of herbicides including Lorox, which has contributed to the development of resistance among important weeds (e.g., Powell amaranth). Lorox is also under regulatory review for its potential risk as an endocrine disrupter, and the cancelation of its registration in Europe and elsewhere suggests that it may soon be unavailable to Michigan growers. Other herbicides, including Prowl and Caparol may serve as useful alternatives, but each have limitations that limit their effectiveness. Along with this, late emerging weeds have fewer control options that lead growers to choose expensive hand weeding options. Weeds that escape control efforts can produce hundreds-of-thousands of seeds that fall to the soil and ensure weed pressure for years to come. Reducing the impact of this seed rain along with effective early season weed control is critical to long-term sustainability of carrot production in Michigan. Therefore, the main goal for this project is to evaluate novel weed management approaches including competitive cultivars, seed priming, stale seedbeds, mechanical cultivation, and electrical weeding for effective early and late-season weed management and optimum crop quality and yield.	$98,525.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Michigan Department of Agriculture and Rural Development	$1,955,693.23	5. Enhanced Strategies to Communicate the Value of Michigan Dry Beans: Conventional and Digital Educational Programs to Increase Bean Consumption for	The Michigan Bean Commission (MBC) has been chartered to enhance the production and consumer use of dry beans grown in the State of Michigan. The Michigan Bean Commission activities embrace the health, food, therapeutic, and dietetic value of beans and bean products; carry out market development, market research, and promotional programs. PA 114 established the MBC in 1965 to support the growth and prosperity of dry bean growers and supply chain stakeholders. It has consistently demonstrated commitment to sound economic development and innovative consumer marketing initiatives. Michigan is known throughout the world as a top producer of dry edible beans. Michigan works hard to grow and market world-class beans that reflect the place from which they originated, and the passionate commitment of the people involved. As today's consumers become increasingly health conscious, they appear to be eager to learn more about the nutritional value, preparation, inclusion, and consumption of beans within their lifestyle and budget. This project is designed to enhance consumer awareness through educating and engaging them directly regarding the health benefits of incorporating nutrient dense dry beans in their daily diet. This will be achieved through the implementation of multifaceted strategies to communicate and educate the value of Michigan dry beans. It is proposed that conventional and digital approaches (social media and web-based resources) designed for specialized educational programs be targeted to increase Michigan dry bean consumption. Beans clearly have a significant role among today's health-conscious consumers. Additional bean education and communication for consumers is a promising opportunity.	$124,400.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Michigan Department of Agriculture and Rural Development	$1,955,693.23	6. Improving Grape Berry Moth Management in Michigan Vineyards	In this two-year project, the Michigan State Horticultural Society will work with contractors at Michigan State University to improve management of the most damaging insect pest of vineyards, grape berry moth. This native insect remains a major challenge for vineyard managers in Michigan, resulting in significant yield loss and reduced fruit quality at harvest. To explore reasons for this pest challenge and to explore new control tactics, the project will conduct widespread monitoring of berry moth populations for their susceptibility to common insecticides. Due to the challenge of reaching this pest in wooded habitats where it persists on wild grapevines, drone-based application will also be tested to determine the effect on reducing infestation in vineyards, through a public-private partnership. Monitoring for this pest is also challenging, especially identifying the timing of late season populations that cause the greatest economic injury, and so we will also explore some new lures for monitoring berry moth before harvest. Finally, extension staff will work with grape grower organizations to deliver updated IPM programs to the juice and wine grape industries	$99,979.00
Michigan Department of Agriculture and Rural Development	$1,955,693.23	7. Specialty Crop Grower Directory for the Michigan Craft Beverage Industry	Michigan Craft Beverage Council will increase access to Michigan-grown specialty crop inputs into the craft beverage supply chain by creating, maintaining, and promoting a grower directory for craft beverage manufacturers, industry members, and enthusiasts.	$45,662.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Michigan Department of Agriculture and Rural Development	$1,955,693.23	8. New Herbicides and New Uses for MI Nursery Shrub Containers	The Michigan Nursery and Landscape Association (MNLA) will establish effective, environmentally responsible weed control programs for container nursery shrubs to increase returns on investments, skilled job creation, and foster revenue generation. The objectives of this trial are to evaluate over-the-top use of seven new granular herbicides in side-by-side comparisons with in-season and early winter dormant applications to container coniferous, deciduous, and broadleaf evergreen shrub crops. Consecutive applications will be evaluated for long-term efficacy and minimal phytotoxicity. Outcomes will be measured quantitatively as <20% crop injury of any kind and >75% reduction in weed biomass at the project's conclusion by comparing harvested weed biomasses from untreated/control areas to treated pots. In many states, container production has risen dramatically in the past 25 years. In MI container sales have decreased (2014-19) by 23%. Given labor shortages, further intensified with the COVID-19 pandemic, container production is a logical choice as it can afford easier weed management, due to the new herbicides introduces in this sector. Also skilled jobs can be expanded as increased technical skills are required with containers. MI nursery stock is in high demand in 2021, stock shortages are already occurring, and container production has quicker turn-around-times vs field. The last side-by-side studies were conducted in 2002-2004 in Oregon, for six container weeds. These new side-by-side studies with the seven new herbicides that pre-date 2004, and six new weed species that have escalated since 2004, include: Conyza canadensis; Poa annua; Stellaria media; Sonchus arvensis; Galinsago quadriradiata and Erechtites hieraciifolius.	$91,555.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Michigan Department of Agriculture and Rural Development	$1,955,693.23	9. Increasing the Productivity of Michigan Asparagus Through Sustainable Disease Management Tactics	The Michigan Asparagus Advisory Board has partnered with MSU researchers to develop strategies to mitigate the destructive diseases that affect Michigan's $23 million asparagus industry and reduce yields. Losses from plant death in the field and poor spear quality on the fresh market packing line is costly. Growers have reported up to 50% yield loss and a critical reduction in field longevity. Infection by the prevalent soil-borne pathogens Fusarium spp. and Phytophthora asparagi cause crown and root rot. The foliar diseases purple spot and rust result in lesions on the foliage and premature defoliation which also negatively impact yield. Our field studies will compare asparagus cultivar susceptibility to rust and purple spot and test new fungicide products for their ability to protect the fern from rust. We will build on previous efforts to improve the quality and health of asparagus crowns by targeting the nursery for mitigation strategies that target Fusarium and Phytophthora. The outcome of this proposed project will be a sustainable and resilient asparagus cropping system with the capacity for increased yields and competitiveness	$86,950.00
Michigan Department of Agriculture and Rural Development	$1,955,693.23	10. Advancing Agbot and Drone Technologies for Sustainable Soil and Weed Management in Michigan Vegetables.	Michigan State University will conduct research aimed at reducing fertilizer, herbicide and labor costs while improving profitability in Michigan vegetable crop production through 1) evaluation of visual and multispectral aerial imagery to inform adaptive and efficient soil fertility management strategies; 2) testing of compact autonomous agricultural robots to selectively remove weeds from crops; and 3) dissemination of results through grower meetings and field days.	$99,891.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Michigan Department of Agriculture and Rural Development	$1,955,693.23	11. Taking Asparagus Disease Management into the Future with Real-Time, in-Field Sensor Data	The applicant organization is the Michigan Asparagus Advisory Board. The expected outcome is improved disease management with a sensor technology package that is affordable, provides easy access to the data in real time, and provides timely disease model output through the MSU Enviroweather website. The disease forecaster TOMCAST has been adapted to time fungicide sprays to the asparagus fern for protection from purple spot disease and helps growers maximize the return on their input dollars through better timing of fungicides. TOMCAST was implemented by the industry ~15 years ago and is used today but the technology needs to be updated. Our project proposes: 1) Comparing the TOMCAST output from LOCOMOS (Low-cost sensor monitoring system) and a representative commercial system, 2) Developing a system to connect LOCOMOS units to the Enviroweather network. 3) Programming the TOMCAST disease model on the MSU Enviroweather website, and 4) Demonstrating the efficacy of the LOCOMOS sensor package in a field demonstration plot with a commercial grower. The success of this project will be measured by tracking the number of users of the TOMCAST model on the Enviroweather website, and surveys at the start and end of the project will capture the number of growers that adopt the new technology package to more sustainably manage the disease.	$99,800.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Michigan Department of Agriculture and Rural Development	$1,955,693.23	12. Evaluating and Disseminating Soil Amendment Practices to Mitigate Heavy Metal Uptake by Carrot	Michigan State University will evaluate and disseminate soil amendment practices to mitigate heavy metal uptake by carrot. Michigan produces over ten million pounds of carrots annually for baby food production. Contamination of baby foods and their ingredients by heavy metals (specifically, arsenic [As], lead [Pb], cadmium [Cd], and mercury [Hg]) have raised serious concerns on food safety and potential negative impacts to the health and development of vulnerable young children. To safeguard food safety and public health, and improve economic profitability for producers, scientifically robust management strategies are needed to minimize heavy metal uptake by carrot. This project will evaluate the effectiveness of individual or combined soil amendments to minimize plant uptake of multiple heavy metals (As, Pb, Cd, and Hg) using early-growth stage screening experiment and full season soil pot growth experiment in a greenhouse. Heavy metal uptake by carrot will be related to soil physicochemical properties, heavy metal concentrations in bulk soil and rhizosphere soil, bacterial communities, and abundance of metal-resistant bacteria. Extension and outreach activities will be performed to disseminate research results. This project expects to improve food safety, public health, and economic profitability by mitigating heavy metal contamination of carrots.	$100,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Michigan Department of Agriculture and Rural Development	$1,955,693.23	13. Combining Pest Control Strategies to Increase Quality of Yield of Michigan Onions	In Michigan, producers continue to wage a yearly battle to protect onion foliage from Stemphylium leaf blight (SLB). Fungicide tools have been developed to alleviate disease pressure, but the longevity of these tools is at risk. Stemphylium vesicarium, the causal agent of SLB, is a highly adaptable pathogen and Michigan's most effective fungicides are at risk for resistance development. An integrative management approach with additional control strategies is needed to combat fungicide resistance. Our previous research indicates that onions need to be protected from SLB starting early in the season. Based on these results additional research is needed to determine where the early season SLB is coming from. Also, because fungicide programs need to begin earlier than previously thought improvements are needed to better time application interval during the growing season and reduce the total number of fungicides applied. Further, there is a growing evidence that thrips can exacerbate SLB and improvement in thrips management may help alleviate foliar disease pressure. In this proposal, the Michigan Onion Committee aims to develop an integrated pest management program to mitigate fungicide resistance and improve control of SLB by 1) determining the role of cover crops in early season SLB, 2) optimizing the TOM-CAST disease forecaster for SLB in Michigan, 3) determining how thrips and SLB can be managed with pesticides that are safer for biological control agents, 4) determining how thrips spread foliar diseases, and 5) communicating research results and SLB management recommendations to growers.	$98,814.00
Michigan Department of Agriculture and Rural Development	$1,955,693.23	14. Finding Solutions to Cherry Orchard Replant Disorder Using Chemical and Organic Amendments	The Quintanilla Lab at Michigan State University will establish a trial orchard and develop non-fumigant management strategies for cherry orchard replant disorder focused on nematodes with the goal of disseminate results to growers and stakeholders via extension articles, field days and grower meetings in order to increase sustainable management practices for orchard replant disorder.	$95,685.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Michigan Department of Agriculture and Rural Development	$1,955,693.23	15. Characterizing Apple Storage Practices and Potential Risk of Listeria Contamination	The Michigan Tree Fruit Commission, in partnership with Michigan State University AgBioResearch food safety scientists and Extension educators, will develop recommendations for controlling risk of Listeria contamination during apple storage and disseminate results to stakeholders through presentations at scientific and industry meetings. Data on apple storage practices and facilities will be collected by surveying growers, and environmental sampling of apple storage facilities will be conducted to determine the prevalence of Listeria. These data will be used to model risk associated with specific apple storage and handling practices. The resulting risk matrix will be publicly available and allow for growers and producers to determine any practices that should be implemented to reduce the potential for Listeria transmission on apples.	$99,984.00
Michigan Department of Agriculture and Rural Development	$1,955,693.23	16. Climate Resilience in Potato: Field and Storage Assessment	Michigan State University will conduct field and storage studies to understand the effects of mid-century global climate change projections on commercial potato production. We will examine the effects of water and heat stress on commercial and newly developed potato varieties. Potato tuber processing quality from late season storage is critical to the sustainability of the potato industry in Michigan as well as other production regions in the US. We will study how changes to timing, duration, and severity of in-season abiotic environmental factors affect tuber quality attributes. Storage studies will be implemented to evaluate the impact of in-season abiotic stress on tuber sugar concentration, dry mater content, dormancy, and processing quality. Results will be used to develop recommendations to mitigate abiotic stress during field production of potato and manage effected tubers once in storage. The findings of this research will be disseminated to local, regional, and national stakeholders through extension and scientific meetings.	$100,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Michigan Department of Agriculture and Rural Development	$1,955,693.23	17. Researching Efficacy of Growing Blueberries in In-Ground Containers Through On-Farm Trials	The average blueberry yield in Michigan ranges from 5,000 to 10,000 pounds per acre compared to 20,000 to 40,000 pounds in the Pacific Northwest, which benefits from higher organic matter, greater plantings of superior varieties, milder winters, and higher annual rainfall. Michigan blueberry growers have struggled to remove and replant blueberry varieties due to the lack of plant vigor that comes with mono-cropping. Planting newer varieties in containers with appropriate high-nutrient substrate may help offset the lack of stable organic matter, lack of organic acids, and aid in nutrient uptake, but research is needed to determine the efficacy of this practice on Michigan blueberry farms. Accordingly, Michigan Blueberry Growers Association (MBG), a grower-owned cooperative, seeks to meet this need by executing a research project to conduct trials of container-planted blueberries on Michigan blueberry farms. To meet the project goal of determining the potential viability of this practice for the Michigan blueberry industry, trial plantings will be conducted on three separate blueberry farms. During the project period, pilot plantings will be established and regularly monitored, with tasks including documenting data on overall plant vigor, soil health, water use, and yields. Overall project results will be reviewed by Michigan State University Extension, documented, and widely shared with Michigan blueberry growers through an educational presentation and digital report, reaching at least 115 Michigan blueberry growers, the main project outcome. Project will have a positive impact on plant health and provide insights on whether this practice is a potential solution to strengthen farm sustainability.	$99,793.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Michigan Department of Agriculture and Rural Development	$1,955,693.23	18. Branding Montmorency tart cherries with a Geographical Indication: Legal and consumer research and development	The Michigan Cherry Committee (MCC) will research the feasibility of using a Geographical Indication (GI) for branding domestically-produced Montmorency tart cherries and defending our products from unfair competition and fraudulent use internationally. Using consumer surveys and industry input, we will develop logos for branding and the production rules that will be certified for the GI. We will conduct legal research related to domestic and international registration of the GI and undergo the registration process at the United States Patent and Trade Office (USPTO). Results of survey research and registration outcomes will be disseminated to growers and processors as they become known. The overall goal is to get a GI certification mark that can apply to tart cherries across the U.S. However, if USPTO administrative decisions are not favorable for a U.S.-wide mark, we will apply for registration of a Michigan-based GI mark, which has a high likeliness for success. Either mark would provide great advantages to our greater U.S. tart cherry industry. After registration with the USPTO, we will begin the process of registration with the European Union (EU), one of the U.S. tart cherry industry's top export markets. Registration with the EU will enable us to incorporate the EU's well-recognized Protected Geographical Indication logo into our branding, which may have significant marketing value in third countries such as Japan and South Korea. The outcome of this project will be a registered GI branding logo that can be used for tart cherries both domestically and abroad in future marketing projects.	$89,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Minnesota Department of Agriculture	$1,343,698.56	1. Building an Integrated Hop Breeding Program	The University of Minnesota, Twin Cities campus will develop, evaluate, and preserve powdery mildew resistant germplasm for hop growers in Minnesota. This project builds on our previous MDA SCBG funded work that resulted in building a trellis on the St. Paul campus for growing hops, identifying wild hops that exhibited high levels of powdery mildew resistance, and characterizing and identifying lines from breeding populations that exhibit good agronomics, brewing characteristics and powdery mildew resistance. The project outcomes include long-term preservation of a promising hop breeding line and four wild hop accessions carrying broad-spectrum powdery mildew resistance, expanding the scope of the University of Minnesota hop breeding program, and developing elite hop cultivars that are adapted to Minnesota and carry broad spectrum powdery mildew resistance. Viruses and other pathogens will be removed from our promising hop germplasm (one breeding line and four wild hop accessions) at the National Clean Plant Network-Northwest (NCPN-NW) in Prosser, WA and subsequently deposited in the National Clonal Germplasm Repository (NCGR) in Corvallis, OR for long-term storage and distribution. Eight potential cultivars will be evaluated at the University of Minnesota and two grower-cooperator locations and in collaboration with local breweries. With the aim to develop elite cultivars carrying powdery mildew resistance that are adapted to Minnesota, we will introgress powdery mildew resistance from wild hop accessions into elite cultivars through molecular breeding approaches.	$148,566.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Minnesota Department of Agriculture	$1,343,698.56	2. Statewide Media Promotion of Minnesota Grown Specialty Crops	This project increases sales and awareness of Minnesota specialty crops with statewide marketing, through a two-year statewide earned media public relations campaign. Minnesota Grown is the flagship statewide promotion program to stimulate demand for and sales of local food and plants. Since its founding by the state legislature in 1987, this public-private partnership has grown to include 1,326 producer members. Minnesota Department of Agriculture (MDA) staff manage the program, which includes a robust online platform and directory; an extensive array of marketing materials for member farms and retailers; a limited amount of paid TV advertising across Minnesota; and some public relations activities. The program receives an annual appropriation of $186,000 to support these activities. The Minnesota Grown Program strategically directs this appropriation to specific marketing, including paid advertising through television and digital platforms. While public relations efforts remain a critical part of our marketing strategy, a campaign of this size requires more time, expertise, and contact building than our program staff can undertake. A PR firm has the resources necessary to write and pitch the stories to local, regional, and national markets, as well as manage connections with local social media influencers. They can coordinate, schedule, and create the messaging for the campaign, and provide detailed reporting and analysis of results. Specialty Crop Block Grant funds will directly support the media marketing portion of our program marketing initiatives.	$147,888.00
Minnesota Department of Agriculture	$1,343,698.56	3. Development of a Genetic Test for Accurate Identification of Native American Highbush Cranberry	Development of a genetic test to identify American highbush cranberry (native, edible fruit, ornamental) from the nearly identical European (non-native, inedible fruit) will increase use of the native, and reduce genetic pollution and invasiveness. The University of Minnesota will develop a definitive genetic test to distinguish American highbush cranberry (Viburnum opulus var. americanum) from the European highbush cranberry (V. opulus var. opulus) and other relatives. American highbush cranberry is sold by many nurseries for its attractive flowers, fall color, edible fruit, and as a key plant for restoration of native landscapes. Unfortunately, European highbush cranberry with inedible fruit, is nearly identical and is often mistakenly sold as American.	$148,862.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Minnesota Department of Agriculture	$1,343,698.56	4. Enabling Rapid Molecular Diagnostics of Trunk Diseases for Minnesota Fruit Farms	Implementation of rapid molecular diagnostics for early detection of grapevine trunk diseases will provide Minnesota fruit growers and nurseries with insight to improve climate-appropriate management practices and identify sources of disease. The University of Minnesota will conduct this research project to develop a diagnostic assay for grapevine trunk diseases (GTD), which are a leading threat to grape production worldwide, including Minnesota. These diseases contribute to vine decline and death, reducing productivity and affecting the grower's bottom line. Growers need to diagnose GTD on their farms to take responsive action, but current diagnostic techniques are not adequate. The aim of this project is to develop and implement rapid molecular diagnostic (RMD) techniques for targeted identification of the major GTD pathogens unique to the Upper Midwest. Minnesota fruit growers, nurseries, and wineries will benefit from the development of RMD of GTD that would take just a single day for diagnosis rather than the several months required by current diagnostic techniques. RMD would allow growers for timely interventions of cultural practices and locate sources of diseases for removal and destruction. Additionally, RMD will better improve key GTD mitigation practices such as pruning timing and tool sterilization. For nurseries and breeding programs, RMD can be a tool for development of broader disease-free propagation techniques from which stock plants could be broadly certified as disease-free and plants supplied to growers would have increased longevity.	$131,811.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Minnesota Department of Agriculture	$1,343,698.56	5. Precision IPM and Reducing the Risk of Japanese Beetle in Wine Grapes	Novel research, via GIS and an "Attract & Kill" strategy will be implemented in commercial grape vineyards to manage Japanese Beetle, a pest of >300 host plants, and one of the most damaging, invasive pests of specialty crops in Minnesota. This project by the Department of Entomology, University of Minnesota will demonstrate the value of one or more Integrated Pest Management (IPM) strategies for improved Japanese Beetle (JB) solutions for growers. One of the first questions we all ask when finding the ultra-high JB aggregations on wine grapes is "how did they get here, or where are they coming from?" A foundational purpose of this study is to answer this question; knowing the source of the problem is key for improved IPM. Objective 1 frames this question as "Landscape-level Risk of JB", because we know the insect is responding to a complexity of soil, vegetation, and weather/climate interactions. Because of the many factors involved, at an agroecosystem scale, we propose that a GIS (geographic inform. system) approach is well suited for pooling the data for analysis. We have experience in producing multi-county and state-level pest risk maps (see Potter et al. 2021). We also have preliminary data on high levels of overwintering survival by JB grubs (in part due to the grub depth at 8-10" below the surface). We also have data on the relationship between soil texture, as a basis for pursuing a GIS approach. We now need more data, over a broader geographic area, and propose sampling in 15 counties, and areas with several vineyards. Objective 2 is designed to answer the question of Local, Vineyard-specific Risk, where detailed JB sampling from the trellis edge, then transects down the trellis at specific distances, will provide evidence of the extent of an Edge Effect. This effect has been documented in soybean (Sara et al. 2012) and other crops. Objective 3, based on beetle behavior, will pursue an "Attract & Kill" method for JB management. With results from Objs. 2-3, we intend to show that foliar insecticide use can be reduced substantially. This will be achieved via spatially-driven, or "hot-spot sprays" limited to areas of vineyards where JB are most common, vs entire vineyards. For Obj. 4 we will use several Environmental Impact indices to quantify the value of reducing insecticide use. Finally, by hosting proactive Outreach/Extension events, such as at least one field day each summer, winter educational meetings (e.g., MGGA), and publishing research updates each year in the MN Fruit & Veg. News, we plan to increase awareness of outcomes to growers throughout the project.	$149,628.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Minnesota Department of Agriculture	$1,343,698.56	6. The Chemical Biology of Adventitious Rooting in Hybrid Hazelnut	The University of Minnesota will apply a novel chemical biology focus to understand the 'chemical space' that regulates extrinsic control of root organogenesis in hybrid hazelnuts. Standard techniques for induction of roots, either for cuttings or for in vitro propagation is to treat with indole-3-butyric acid (IBA) or possibly α-naphthaleneacetic acid alone or combined with IBA. Variations on this basic strategy have dominated woody plant propagation for the last 70 years. The under explored chemical space that have potential fall into five main categories: 1) compounds that bind to the auxin receptor more strongly that IAA and/or are more persistent than IBA (Figs. 1,2,3); 2) sequestered compounds, such as ester or amide forms of auxins, that alter permeation or serve as 'slow release' agents; 3) the induction of amide conjugation reactions may reduce auxin induced rooting responses such that inhibitors of that process offers could be useful; 4) novel analogues with, like IBA, longer side chains requiring peroxisomal ß-oxidation; 5) recognizing the role of proper auxin gradients in the initiation of root organogenesis, non-responsive plants may have too high of levels of endogenous auxin to respond, thus compounds that reduce auxin production may heighten extrinsic control. This proposal will explore in depth these chemical opportunities to further define the differences in the auxin responses in easily rooted and less tractable lines of hazelnut.	$150,000.00
Minnesota Department of Agriculture	$1,343,698.56	7. Non-Seasonal Production of Nutritionally Rich Sprouts and Microgreens for Health Benefits	This project will advance non-seasonal consumption of nutritionally enriched Sprouts and Microgreens as specialty crops to counter health disparities and co-morbidities in the Native American communities worsened by COVID-19 pandemic. Indigenous People Task Force (IPTF) in collaboration with the Global Institute of Food Security and International Agriculture (GIFSIA) at North Dakota State University will advance organic and sustainable production innovation for health-targeted and nutritionally rich Sprouts and Microgreens. Nutritionally enriched Sprouts and Microgreens, grown throughout the year in indoor vertical production system are extremely important to address nutritional insecurity and associated public health challenges facing communities across Minnesota. Poor and imbalanced nutrition-influenced co-morbidities as seen globally has worsened COVID-19 susceptibility and particularly in Native American and BIPOC communities.	$150,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Minnesota Department of Agriculture	$1,343,698.56	8. Cut Flower Perennial Flax: Production & Postharvest Considerations for a New Floriculture Crop	The project goal is to test our perennial flax (Linum) selections for cut flower production and postharvest storage conditions that enhance vase life. The University of Minnesota, Dept. of Horticultural Science is conducting this research project with the following partners: Rosemount Research and Outreach Center (RROC, Rosemount, MN), Len Busch Roses, Inc. (Plymouth, MN; commercial cut flower grower & cut flower wholesaler), Walters Gardens (Zeeland, MI; perennial producer company), Koehler & Dramm Wholesale Florists (Minneapolis, MN; cut flower wholesaler) and Sweet 16 Farm (Houston, MN cutflower grower). Perennial flax (Linum) has potential as a new cold-hardy cut flower for its fine-textured foliage and blue flowers (blue was Pantone Color of the Year in 2020). We are breeding cut flower perennial flax for the floral design industry. Our previous studies have shown perennial flax to be useful as a blue-flowered filler material in floral designs with an average vase life of 9 days, although rapid petal drop exists. Additionally, little is known about optimal storage conditions. Recent findings showed that wet and dry storage may be possible for cut stems. This study aims to answer production (Obj. 1) and postharvest (Obj. 2) questions by trialing production (container) methods, as well as greenhouse and field production techniques; testing the level of ethylene produced by flax flowers; determining the effect of 1-MCP and AVG on flower longevity and vase life; evaluating the effect of wet vs. dry storage to determine the optimal storage conditions. Given that AVG, 1-MCP are applied during storage/transport in commercial cut flower operations, this study will answer questions pertaining to postharvest handling of perennial flax cut flowers to bring the species as a new cut flower to the market.	$150,000.00
Minnesota Department of Agriculture	$1,343,698.56	9. Improving the Economics of Perennial Ryegrass Seed Production Through Pest Monitoring and Endophytes	The integration of an insect (armyworm) monitoring and trapping program coupled with a perennial ryegrass seed production and endophyte survey to improve the profitability of turf grass seed production in northern Minnesota.	$60,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Mississippi Department of Agriculture and Commerce	$425,800.19	1. Nondestructive Detection of Spotted Wing Drosophila Infestation in Blueberry Fruit Using Optical Imaging	Spotted Wing Drosophila (SWD) is a devasting pest for blueberries grown in Mississippi and beyond. Blueberry growers are under intense pressure to monitor SWD infestation and protect yield loss. The zero tolerance for SWD larvae inside the fruit is also posing significant challenges for packinghouses in identifying and removing infested fruit to ensure safe fruit to consumers. Current methods for detecting SWD infestation in blueberries are tedious, destructive, labor-intensive, and thus unsuitable for high-throughput inspection. Therefore, Mississippi State University will conduct novel research to explore the development of a non-destructive and rapid method based optical imaging technology for enhanced detection of SWD infestation in blueberries. Research-based findings will be shared with stakeholders and the scientific community via extension publications, peer-reviewed articles, electronic newsletters and social media.	$35,218.00
Mississippi Department of Agriculture and Commerce	$425,800.19	2. Public Relations and Marketing Campaign to Promote Buying Mississippi Turfgrass	Farm Families of Mississippi will develop and implement a promotional campaign educating consumers on the turf grass industry in Mississippi. We will work with the Department of Plant and Soil Sciences at Mississippi State and the Mississippi Turf Grass Association to establish economic impact of the turf grass industry in Mississippi using the latest data available, produce and air television and radio spots and buy billboards and digital marketing space promoting Mississippi turf grass.	$78,862.04
Mississippi Department of Agriculture and Commerce	$425,800.19	3. Delineating Sweetpotato Weevil Boundaries in South MS to Update Regulated Zones	Mississippi State University will conduct research to 1) determine the extent of sweet potato weevil presence in counties defined as “eradication areas” through extended weevil trapping, 2) determine if substantial evidence exists through this weevil trapping to recategorize “eradication areas” as green-tag weevil free counties without jeopardizing existing sweet potato production regions, and to 3) work with the Mississippi Department of Ag and Commerce- Bureau of Plant Industry Division (MDAC-BPI) to ensure that quarantine regulations reflect updated information that best protects Mississippi sweet potato growers.	$12,075.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Mississippi Department of Agriculture and Commerce	$425,800.19	4. Determine Levels of Heavy Metals in Mississippi Sweet Potato and Develop Farming Practices to Mitigate Risk.	Mississippi State University will conduct research to 1) Determine the extent of heavy metal contamination in sweet potatoes produced in Mississippi, through sweet potato root and soil sampling , 2) establish if any current production methods contribute to heavy metal content in sweet potatoes, and 3) collaborate with other sweet potato producing states though the US Sweet Potato Council to generate baseline data for the presence of heavy metals that could be used to establish allowable limits at the state and federal level. Research-based findings will be shared with stakeholders and the greater scientific community via field days, production meetings, expos, conferences, extension publications/fact sheets/bulletins, and electronic newsletters, webpages, and social media.	$44,620.65
Mississippi Department of Agriculture and Commerce	$425,800.19	5. Improved Herbicide Selectivity in Tomato by Safening Action of Benoxacor and Fenclorim	The Mississippi State University will provide effective control of problematic weeds in tomato production systems by increasing tolerance of tomato to effective herbicides using safeners. The main goal of this project is to use safeners to increase tolerance of tomato to herbicide that are effective in controlling problematic weeds, including yellow and purple nutsedge, annual grasses, and pigweed species. We will also confirm if the use of safeners do not produce any antagonistic effects with the herbicides tested. Results from this project will be made available to approximately 1,200 stakeholders at the Vegetable Field Day, American Society of Horticultural Science, and Southern Weed Science Society Annual Meeting. The general tasks of the project will be to evaluate the safening effect of benoxacor and fenclorim on tomato against selected herbicides. Safeners identified from this project, will then be tested in the greenhouse and field, together with standard herbicides labeled in tomato, to confirm yield potential and level of tolerance to the applied herbicides.	$33,178.92
Mississippi Department of Agriculture and Commerce	$425,800.19	6. Evaluating Native Christmas Trees Species Production in North Mississippi	Mississippi State University Extension will increase producer access, awareness, and knowledge of native Christmas tree specialty crops through further research and educational/demonstration efforts with the North Mississippi Research and Extension Center (NMREC). Informed producers can make better choices deciding which native Christmas tree to grow and be more successful in grower operations when armed with knowledge of proper installation, maintenance, and production practices.	$17,940.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Mississippi Department of Agriculture and Commerce	$425,800.19	7. Enhancing Production Efficiency and Profitability of Greenhouse Vegetables in Mississippi	Mississippi State University will implement greenhouse hydroponic technologies, environmental controls, and water and nutrient management strategies to mitigate seasonal fluctuations in vegetable yields, quality, and nutritional values while developing scientifically based practical actions and disseminating results and knowledge through Extension training modules, social media, a revitalization of the Greenhouse Tomato Short Course (New Name TBD), and scientific and grower meetings.	$51,566.00
Mississippi Department of Agriculture and Commerce	$425,800.19	8. Utilize Machine Vision Technology to Improve Efficiency and Reduce Labor of Local Sweetpotato Packing Lines	Mississippi State University will collaborate with local sweet potato packinghouses to enhance the efficiency and reduce human labor of packing operations by: 1) assessing the status of automation technology utilized in local sweet potato packing lines and 2) designing and evaluating a machine vision technology-based inspection system for automatically grading and sorting sweet potatoes for size, shape and defects. Research-based findings will be shared with stakeholders and the greater scientific community via field days, extension publications, peer-reviewed articles, electronic newsletters, webpages, and social media.	$34,911.00
Mississippi Department of Agriculture and Commerce	$425,800.19	9. High Tunnel Production of Containerized Specialty Cucumber Varieties	Mississippi State University will conduct research to: 1) identify cucumber varieties for productivity and superior fresh eating quality suitable to be produced in a high tunnel production system in Mississippi and 2) investigate the effect of a high tunnel combined with containerized production on planting and harvest time, yield, and fruit quality of cucumber varieties. Challenges for Mississippi vegetable growers in producing cucumbers lies in the lack of good variety choice for local production, sensitivity of cucumber plants to low temperatures, and high pressure from soilborne diseases. A high tunnel serves an economical season extension tool, which can potentially extend growing season into early spring and late fall, improve yield and quality, and reduce disease occurrence for warm season vegetable production.	$18,840.00
Mississippi Department of Agriculture and Commerce	$425,800.19	10. Evaluating bermudagrass (Cynodon spp.) germ plasm collection for varietal development	Mississippi State University will evaluate a bermudagrass (Cynodon spp.) germplasm collection and develop new seeded and vegetatively propagated turf bermudagrass varieties by conventional breeding and molecular markers. This project aims to characterize turf quality and stress tolerance of the germplasm collection and identify superior genotypes for hybrids development.	$24,801.25

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Mississippi Department of Agriculture and Commerce	$425,800.19	11. Production of High Quality Microgreens Affected by Fertilization Rate and Substrate Type	Mississippi State University will conduct research to: 1) Investigate the effect of fertilization rate on yield and mineral nutrient of microgreens; 2) Compare the use of soilless substrate and hydroponic pads in the production of different microgreen species; 3) Identify optimum seed sowing rate for various microgreen species. Results generated from this study are expected to increase competitiveness of vegetable growers and promote a healthy local food system in Mississippi. Microgreens are a collective term for vegetable or herb seedlings consumed at a young stage harvested 7 to 21 days after germination. Microgreens are known to have high concentrations of mineral nutrients as well as health beneficial bioactive compounds. As a new specialty crop, market value of microgreens is $30 to $50 per pound, drawing interest among vegetable growers in Mississippi for the high value and short production cycles.	$16,558.75
Mississippi Department of Agriculture and Commerce	$425,800.19	12. Value-Added Product Training for MS Christmas Tree Growers	Mississippi State University will increase revenue of Christmas tree farms through value-added product training workshops. Cut evergreens are a renewable, recyclable, and sought-after for use as Christmas decorations. Mississippi State University Extension and MAFES faculty will conduct a series of three, value-added, evergreen product training workshops. These educational programs will benefit Mississippi Christmas tree growers as well as farmers from nearby counties in Louisiana and Alabama, and MS cut flower farmers. The purpose of this training is to provide hands on practice in the material selection, construction, cold storage, and marketing of value-added evergreen products from their farms. In January 2023, we will record in our annual report the sales accounted of value-added products from the trainees.	$16,469.00
Missouri Department of Agriculture	$428,949.77	1. Black Walnut for Kernel Markets – Cultivar Release and Modern Genetics	The black walnut (Juglans nigra) breeding program at the University of Missouri Center for Agroforestry (UMCA) has pursued the genetic improvement of black walnut as a specialty nut crop for Missouri since 2001. The breeding program has reached the long-awaited release of its first nine advanced breeding selections. This proposal centers around (a) the pilot release of these selections to facilitate orchard adoption and (b) developing modern genomic tools to accelerate the continued improvement of black walnut as a nut/kernel crop.	$49,906.30

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Missouri Department of Agriculture	$428,949.77	2. Promoting Specialty Crops in Missouri Schools	The Missouri Grown program at the Missouri Department of Agriculture proposes a project that aims to increasing the consumption and knowledge of specialty crops in children and adults through stipend purchases of specialty crops for schools. An outcome focus for this project is to increase the competitiveness of specialty crops in Missouri through increased consumption. To complete this project, schools can apply and sign an agreement for a stipend for $1,000 to cover the cost of purchasing specialty crops from Missouri farmers to serve the students and staff through the school food service program. Schools must also agree to include at least one educational interaction about the importance of eating fresh, local foods. This can include the farmer if possible, either in-person, doing a tour or an online tour presentation. Funded schools must show proof of serving the food and of the educational experience.	$50,000.00
Missouri Department of Agriculture	$428,949.77	3. Show-Me the Gold – Missouri's Honey	The Missouri State Beekeepers Association (MSBA) will promote locally produced Missouri honey with a marketing plan that will educate Missouri beekeepers and residents. MSBA will focus on the honey production process (from nectar producing plants to where Missouri residents and visitors can purchase local honey) throughout the calendar year. Education for local beekeepers will include marketing strategies to use in their communities. Marketing and promotion of Missouri honey to residents will take place by developing and delivering information to local news outlets (example: news releases to local newspapers & radio stations as well as social media platforms such as Facebook, Instagram, etc.).	$24,123.00
Missouri Department of Agriculture	$428,949.77	4. Establishing a Hands-on High Value Specialty Crop Fruit Education Site	Lincoln University Co-operative Extension to establish and operate a Fruit Education Site, focusing on blackberries, elderberries, and high tunnel strawberries. The project will effectively guide and educate farmers regarding all aspects of production and marketing of the selected fruits by hands-on group training. While this project focuses on Hmong farmers, the project will be available to and valuable for farmers throughout Southwest Missouri. The project will also include consumer education in processing elderberries at several farmers markets, as well as farmer education in marketing the fruit grown on the education site.	$50,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Missouri Department of Agriculture	$428,949.77	5. Breaking Ground – Virtual Training for 21st Century Specialty Crop Farmers	This Webb City Farmers Market project will create and share educational videos on eight specialty crops. Each crop will be featured in a 45-minute video shot over a growing season which examines best practices and issues found on one farm in Southwest Missouri, as well as three to four 7-minute videos exploring in detail some issue connected to the production of that specialty crop. In addition, this project will create and post six to eight 7-minute videos documenting best practices from implementation of infrastructure through harvest/marketing of each of three crops: blackberries, elderberries, and high tunnel strawberries. Links to the live virtual presentations and 7-minute videos will be posted on training page of webbcityfarmersmarket.com so farmers in Missouri, and indeed farmers across the country, can access the information as needed. This grant also includes training on shooting raw video footage to ensure high quality presentations.	$44,939.00
Missouri Department of Agriculture	$428,949.77	6. Beekeeping and Honey Production: Niche Agriculture	The Delta Area Economic Opportunity Corporation (DAEOC) will develop and implement a demonstration beekeeping and honey production education and job training model titled Beekeeping and Honey Production: Niche Agriculture. The learning environment will include both classroom and hands-on training and promote natural beekeeping in rural areas for a source of income and integrated with regional biodiversity conservation efforts. The educational module will provide participants the opportunity to gain experience using practical and natural techniques in the handling and management of bees and honey production. A local farmer, Lincoln University, the Missouri Community Action Network, and the Missouri Beekeepers Association will partner with DAEOC to design the training module.	$50,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Missouri Department of Agriculture	$428,949.77	7. Meeting the Demand for Locally Grown Roses, Chrysanthemums, Specialty Bulbs	Urban Buds: City Grown Flowers will demonstrate the viability of locally grown specialty crop flowers in a heated hoop house. There is a resurgence in demand for locally grown specialty crops such as roses, heirloom chrysanthemums (mums), tulips, and hyacinths. These crops are considered staple products within the florist industry and are three of the most frequently imported flowers. This project directly addresses two major concerns of small-scale Missouri farmers and the floral industry at large and serves as a demonstration for other growers to bring the production of these important crops back to the United States. The two major concerns we are addressing are 1. Farm financial health and 2. Effective and efficient growing practices. Through our targeted outreach efforts, the long-term goal of this project is to demonstrate the creation of a viable revenue stream, adaptation of sustainable growing techniques, and decreased reliance on imported flowers.	$44,710.00
Missouri Department of Agriculture	$428,949.77	8. Evaluating Native Edible Plants as Specialty Crops in Missouri	Lincoln University will conduct an education project to evaluate and promote nettles, wild leeks, wild onions, mints, cup plant, cattail and goldenglow as specialty crops in Missouri. These edibles have increased in popularity in recent years for consumption as regular vegetables, greens or herbs. One of the goals of this project is to encourage farmers and producers to cultivate these species to increase diversity and resiliency in their farms and to gather them from their lands in a sustainable way. Several of these species, especially stinging nettles and wild leeks, are already used by chefs in St. Louis, Kansas City, Springfield and Columbia, but the availability is sometimes unpredictable. This project will be done in collaboration with plant growers, farmers, chefs, landscape designers and educators.	$49,843.60
Missouri Department of Agriculture	$428,949.77	9. Specialty Crop Outreach and Education at Amanda Belle's Hospital Farm	Springfield Community Gardens educational project will leverage the existing investment of multiple local and federal stakeholders for beginning and socially disadvantaged farmers into a long-term solution towards financially viable agricultural careers. These funds will also maximize SCG's long-term organizational objectives, creating opportunities for an innovative and efficient local food system. Specifically, the project will provide 390 beginning and socially disadvantaged farmers propagation education, as well as outreach and marketing using social media and other online tools, to increase awareness and expertise in local specialty crop production. Specialty crops will include salad greens, lettuce, root (cooked), root (raw), allium, cooking greens, cooking vegetables, raw vegetables, herbs, cut flowers, fruits, and berries.	$30,403.36

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Montana Department of Agriculture	$3,076,940.42	1. Establishing the Industry and Market for Montana's High-Value Fractioned Pulse Ingredients via Food Product Innovation	To maximize the market opportunity of Montana pulse crops, Montana State University Food Product Development Lab partnered with Montana pulse stakeholders to investigate the potential of highvalue fractionated pulse ingredients in developing texturized pulse protein (TPP) and other food products. Texturized plant proteins are gaining selling points for their meat-mimicking qualities while being lower in ecological footprint. This project will establish Montana's first TPP extrusion technology and create product recipes using Montana fractionated pulse ingredients and TPP, which will advance Montana's pulse technology and encourage more Montana value-added pulse products to enter the market.	$227,814.00
Montana Department of Agriculture	$3,076,940.42	2. Honey Bee Antiviral Defense Mechanisms in the Context of Stressors and Stimulants	The goal of research lead by Dr. Michelle Flenniken at Montana State University is to reduce the number of virus-associated honey bee colony deaths. Montana is an important beekeeping state, which ranked 4th for honey production in 2018 (i.e., 14.8 million pounds, $22 million) and provided over 260,000 colonies for pollination. Honey bee health is impacted by many factors, including plant derived nutritional resources and phytochemicals, agrochemicals used in cropping systems, and pathogens, including iruses. Beekeepers are concerned about the negative effects of viruses and agrochemicals on bee health, and interested in the potential of natural compounds to boost immune competency and reduce virus infection.	$141,336.00
Montana Department of Agriculture	$3,076,940.42	3. Nursery Survey for Brown Marmorated Stink Bug in Montana	The Montana Department of Agriculture (MDA) will work with other agencies in the state to prevent the movement of Brown Marmorated Stinkbug (BMSB) throughout Montana. BMSB is a pest of concern for Montana as it can cause serious damage to crops and nuisance problems to home-owners. MDA's role will be to use insect traps to survey for the presence of BMSB in nurseries over two years to prevent accidental introductions to other parts of Montana.	$11,365.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Montana Department of Agriculture	$3,076,940.42	4. Characterization of Chickpea Pathogens in Montana and Evaluation of Fungal Species Response to Fungicide Sensitivity	Montana State University – Plant Science and Plant Pathology Department. Chickpea is an important specialty crop in Montana. Before the 2020 chickpea field survey, no information was available on the diversity of chickpea pathogens, except F. oxysporum. This information is essential to inform breeding efforts, disease control choices made by growers, and to assess future threats to Montana chickpea production in a conscientious way. Outcomes- Conducting the second year of field surveys (continuation of an SCBC-funded 2020 survey) to isolate soilborne pathogens and Botrytis gray mold pathogens from the chickpea leaves, young pods, shoots, etc. Isolation of prevalent pathogens, along with novel pathogens of chickpea. Evaluation of fungal pathogens and oomycete pathogen sensitivity to fungicides.	$100,973.00
Montana Department of Agriculture	$3,076,940.42	5. Improving Efficiency and Sustainability of the MSU Potato Lab Tissue Culture Program	Montana Seed Potato Certification (MSU) will work towards improving efficiency and reducing risks and costs in the Montana Seed Potato Certification Tissue Culture Program. This project plans to improve efficiency and reduce programmatic risks and cost through two objectives: 1. Improve standard operating procedures by: a. Increasing time intervals between maintenance cutting of tissue culture plantlets. b. Establish a long-term storage protocol for mother-stock. c. Establish procedures for preventing and treating microbial and insect contamination of tissue culture plantlets. d. Cross-training Potato Lab personnel for proficiency in tissue-culture methods. e. Develop a database module for the tissue culture program that would track origin of all mother-stock, testing history, and cutting schedules for maintenance and increase of plantlets for distribution to farmers. 2. Convert plant growth lights from fluorescent to LED. a. Change all fluorescent lighting to a LED source to minimize risk of overheating. b. Correlate optimal plant growth with light intensity (umol/m2 /sec).	$94,430.00
Montana Department of Agriculture	$3,076,940.42	6. Optimizing Production, Storage, and Marketing of Winter Storage Vegetables in Montana	Montana State University aims to identify specific cultivars, production practices, achievable on-farm storage conditions, and marketing practices to extend the sales season and volume for Montana-produced carrots and winter squash through the winter. The student-run organic vegetable farm will grow and evaluate multiple cultivars of these crops with special consideration to harvest timing relative to the onset of extreme cold weather. After harvest we will store carrots and squash in a range of typical on-farm storage conditions, including rudimentary climate-controlled options available at low cost to small farms. Finally, we will evaluate the culinary quality of these crops after storage for up to 6 months after harvest.	$143,573.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Montana Department of Agriculture	$3,076,940.42	7. Evaluating the Effect of Long-Term Rotations and Previous Crop on Pathogens of Pea and Lentil	Pulse crops have become an important component of dryland cropping systems in Montana due to their use as an alternative to fallow, which has increased soil quality and profitability. There are two objectives for the research proposed here to be performed at the Montana State University Eastern Ag Research Center in Sidney, MT. First, we will examine the effect of rotations and previous crop in current rotation studies on the identity of Fusarium species causing root rot and characterize the pathogens involved. In addition, we will initiate a long-term rotation study designed specifically to understand how pathogens proliferate and evolve under these conditions. The results from this study will enable plant pathologists to provide improved plant disease control recommendations to the agricultural community.	$84,497.00
Montana Department of Agriculture	$3,076,940.42	8. Advancement of Genetic Tools to Understand Potato Virus Y Resistance Mechanisms	Dr. Michelle Flenniken (Plant Sciences), Montana State University. Montana growers have experienced increasing losses of early generation seed potatoes due to wider prevalence of Potato virus Y in their fields. Potato virus Y-infection reduces the value of the initially infected potato tubers, as well as successive generations of seed potato crops. Severe PVY-infection may result in loss of entire seed potato generations. Genetic resistance to PVY is a sustainable way to prevent losses in potatoes. This research projct will (1) Establish an efficient system for gene functional analysis for potato, using published viral vectors and protocols. (2) Apply these system to investigate the role of Beta-1-3-glucanase genes within the context of Potato virus Y infection. The outcomes of this project include the development and optimization of broadly-applicable gene analysis tools, as well as a greater understanding of molecular mechanisms of resistance to Potato virus Y.	$44,913.00
Montana Department of Agriculture	$3,076,940.42	9. New Supportive Resources for Montana Beekeepers	The Montana Department of Agriculture Natural Resource Section (MDA-NRS) aims to provide Montana beekeepers with adequate tools to prevent honey bee colony losses from excessive pests, diseases, and varroa mite numbers and, ultimately decreasing colony losses every year. The MDA-NRS will provide registered beekeepers with sampling kits to monitor for varroa mites and an MDA-NRS made pocket-guide that contains resources to help identify pests and diseases of honey bees and MDA regulations for beekeepers' reference. The MDA-NRS will purchase and distribute sampling kits, use the camera system to create publication quality images of pests and diseases, both in the lab/office and in the field, and utilize these images to create and publish a pocket-guide to distribute to registered beekeepers to use as a resource.	$19,733.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Montana Department of Agriculture	$3,076,940.42	10. Optimizing Essential Oil Seed Treatments and Enhancing its Efficacy in Managing Root Rot Pathogens of Pulse Crops	The potential of essential oil (EO) seed treatment in managing pulse crops pathogens has been determined from multiple studies in our lab. However, formulation of an improved EO seed treatment is necessary to achieve a desired in vivo EO efficacy in managing root rots. The purpose of this project is to optimize EO seed treatments and increase their efficacies in managing pathogens causing root rot and damping-off on pulses. Outcomes: This study will formulate an EO seed treatment with desired seed surface coating ability of Eos and evaluate its phytotoxicity on pulse crops. It will determine the compatibility of Eos with Biological Control Agents (BCAs) and Plant Growth-Promoting Bacteria (PGPB) identified from previous studies. Additionally, it will measure the efficacy of EO seed treatments alone or by using a cocktail of Eos with BCAs/PGPB and/or fungicides against root rot pathogens.	$80,651.00
Montana Department of Agriculture	$3,076,940.42	11. Improving Methods of Exploring the Microbiome of Pulse Crop Fields	Montana State University will focus on methods for detecting and characterizing soilborne pathogens and beneficial microbes in diseased and non-diseased pulse crop fields. Additionally, the project has an objective to isolate beneficial microbes in the soil and explore their relationships with soilborne plant pathogens for biocontrol (antagonistic bacteria) management options for soil-borne pulse diseases specifically root rots where no conventional management options exist. The ultimate aim of this project is to develop a soil testing system to inform growers of disease risk and soil health and allow them to base planting and management decisions on this knowledge. The project will focus on pulse crops but since the techniques are broadly applicable, will potentially benefit all specialty crops in Montana.	$73,567.00
Montana Department of Agriculture	$3,076,940.42	12. Developing Direct to Consumer Market for Montana Craft Cider	Montana craft cider is a value-added product that utilizes local farmers' supplies of apples, along with cherries, berries, hops, stone fruit and botanical herbs. The Northwest Cider Association (NWCA) is submitting this marketing and promotions project. NWCA is a member-based nonprofit that supports all facets of the cider industry in Montana, Oregon, Washington, Idaho and British Columbia. NWCA began in 2010 with 10 members and now supports 100+ cidermaker members. There are currently 7 cideries in Montana. This project is strategically designed to respond to drastic changes in consumer purchasing behaviors brought on by COVID that are anticipated to continue after the pandemic. This project will increase sales of, and access and awareness to Montana craft cider through an innovative multi-cidery sales offer coupled with extensive national marketing and promotions.	$320,862.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Montana Department of Agriculture	$3,076,940.42	13. Abundant Montana: Increasing Specialty Crop Competitiveness and Consumer Awareness through Expanded Marketing and Media Hub	The Alternative Energy Resources Organization (AERO)'s Montana food systems directory, Abundant Montana (AMT), is expanding into a financially self-sustaining statewide marketing and media hub for Montana food. This project will specifically fund specialty crop (SC) marketing. The hub structure uses a successful revenue-based model licensed from Michigan-based Taste the Local Difference, and includes partner relationships with regional/statewide Montana program collaborators and AMT listers. The statewide AMT specialty crop marketing plan will increase consumer awareness of SCs through education and digital marketing, enhancing the competitiveness of Montana's SCs.	$209,078.00
Montana Department of Agriculture	$3,076,940.42	14. Influence of Arbuscular Mycorrhizzal Fungi and Rhizobium on Soil Health and Plant Growth	Montana is America's top producer of pulse crops with more than 1.4 million acres currently growing. With this project, MSU aims to access the effects of inoculation on beneficial soil microbial communities, root rot, soil chemical properties and pulse crop growth. The outcome of this study could be used to determine if reinoculation of pulse crops with specific microbes that facilitate soil health and plant growth is essential.	$375,000.00
Montana Department of Agriculture	$3,076,940.42	15. Identify and Explore Resistance to Control Pea Ascochyta Blight Disease	Dr. Li Huang (Genetics and Plant Pathology), Dr. Kevin McPhee (Pulse-crop Breeding) and Dr. Qing Yan (Plant Pathology) from Montana State University propose to develop organic strategies to manage pea Ascochyta Blight (AB), a predominant disease affecting a half of the nation's pea production produced in Montana State. Our strategies are fungicide/chemical independent, therefore, the outcomes will result in the development of environment-friendly strategies for managing pea AB disease and enhancing food safety. The expected outcomes of the project will, 1) enrich resistance resources for breeding high levels of resistance pea cultivars, 2) establish a new approach for farming using beneficial bacteria living inside pea plants to suppress Ascochyta pathogens.	$349,543.00
Montana Department of Agriculture	$3,076,940.42	16. Evaluation of Cover Crops as Contributors to Plant Disease in Pea and Lentils	This research project, performed at the MSU Eastern Ag Research Center and Northern Ag Research Center, seeks to determine the effect of cover crops containing pulses on disease the following season in pea or lentil by both field and greenhouse studies. Cover crop mixes containing pea or lentil, grasses, alternative hosts such as clover, or pathogen inhibiting brassicas will be planted at both locations and either hayed (Sidney) or grazed (Havre). Disease will be identified in both the cover crop mix and the peas or lentils planted the following season. The results of this study will help guide RMA policy and provide better recommendations to producers.	$145,995.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Montana Department of Agriculture	$3,076,940.42	17. Evaluating Honey Bee Infecting AnBV-1 Distribution, Sequence Diversity, and Utility for Laboratory-Based Virus Infection Studies	The goal of research led by Dr. Michelle Flenniken at Montana State University is to reduce the number of virus-associated honey bee colony deaths. Recently, Flenniken and team discovered a new bee infecting virus called Andrena associated bee virus-1 (AnBV-1). It is not yet known whether AnBV-1 is in the United States, but it seems likely given that it was detected in both mining bees and honey bees in Israel. It is important to understand if AnBV-1 is a contributing factor to bee health in the US. Goals/Tasks: The goals and associated tasks of this project are to: (1) examine if AnBV-1 is circulating in US bee populations using a bioinformatics approach, (2) test for AnBV-1 presence in Montana bee samples using molecular diagnostic tests (PCR/qPCR), and (3) develop a laboratory-based system for studying the impact of AnBV-1 on honey bee health. Outcome: This project will evaluate the AnBV-1 prevalence in the US, with a focus on Montana, and result in the development of laboratory based system to understand the impact of AnBV-1 on honey bee health.	$38,932.00
Montana Department of Agriculture	$3,076,940.42	18. Pulse Promotion in Mexico and Latin America	Montana Department of Agriculture (MDOA) proposes to increase the competitiveness of dry peas, lentils, and chickpeas in Mexico and Latin America by using a three-year approach to forge strong and lasting relationships with pulse buyers and end consumers in Mexico and Latin America. In 2022, with the help of a contractor, MDOA will recruit buyers from Mexico and Latin America to bring to Montana for a tour of farms growing pulses, pulse processing facilities, and B2B meetings with our export companies to increase sales of pulses to Mexico and Latin America. In 2023, MDOA will organize an outbound mission to include a networking dinner event show casing Montana grown pulses prepared by a professional chef. In 2024, MDOA will host an inbound trade mission with the companies who participated in the networking event the previous year to strengthen buying relationships and secure long-term sales.	$257,141.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Montana Department of Agriculture	$3,076,940.42	19. Weed Management in Dryland Chickpea and Faba Beans in Montana	Chickpea (Cicer arietinum L.) and faba bean (Vicia faba L.), cool season annual legumes, are gaining attention as alternative crops in Montana because of their economic advantages, high protein, and biological nitrogen fixation. However, these crops are poor competitors with weeds because of their slow germination and early growth until canopy closure. This project will conduct field dose response studies to estimate the effective rates for weed control and crop safety (chickpea and faba bean) of selected non-labeled herbicides tested in the first study. This 3-yrs. Research will be conducted at four sites across Montana: (1) Southern Ag Research Center, Huntley; (2) Post Agronomy Farm, Bozeman; (3) Western Ag Research Center, Corvallis; (4) Northwestern Ag Research Center, Kalispell.	$129,836.00
Montana Department of Agriculture	$3,076,940.42	20. Varietal Education to Advance Best Practices	This project is a partnership between the Montana Wheat and Barley Committee and Montana State University. There is a long history of cultivar development for pulse crops designed to be better adapted to Montana's specific climate, condition and diverse growing regions. While these cultivars have been made to improve agronomic outcomes and require less input, a lack of education directed toward farmers has led to a limited uptake of the best suited varieties. A Montana State University varietal education specialist will inform producers on the releases and best practices and technologies resulting in increased yields, reduced inputs, increased efficiency, increased economic return, and conservation of resources.	$45,851.00
Montana Department of Agriculture	$3,076,940.42	21. Montana State Grain Lab Pulse Crop Market Access	The Montana Department of Agriculture in partnership with the Montana State Grain Lab (SGL) is requesting funds to raise awareness of the pulse crop sampling and inspection services of the lab, resulting in the enhanced competitiveness of Montana pulse crops. Grant objectives include educating producers on the value of official samples/inspections, increased data collection and analysis of pulse crops, and promotion of the services offered by the SGL.	$56,352.00
Nebraska State Department of Agriculture	$820,903.78	1. Integrating Cover Crops in Dry Edible Bean for Suppression of Herbicide-Resistant Weeds Suppression of Herbicide-Resistant Weeds	The Weed Science Program of the University of Nebraska Panhandle Research and Extension Center (PREC) will compare the competitive ability of a cereal cover crop to suppress weeds in dry edible bean when planted at different timings, and in combination with various standard herbicide treatments used in western Nebraska dry bean production. Results from the trial may provide a novel use of cover crops in western Nebraska.	$31,104.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Nebraska State Department of Agriculture	$820,903.78	2. Double-Cropping Vegetables and Strawberries in Plastic Mulch Film: Reducing Waste and Increasing Profits	The University of Nebraska – Lincoln will enhance the competitiveness of specialty crops in Nebraska through research on double-cropping vegetables and strawberries in plastic mulch film. Results from field trials will be shared at grower meetings to increase knowledge about plastic mulch film reuse and annual strawberry production opportunities in Nebraska.	$66,263.00
Nebraska State Department of Agriculture	$820,903.78	3. An Image and Sensor-Based White Mold Alert System for Dry Edible Beans	This project will be carried out by the University of Nebraska's Panhandle Research and Extension Center (PHREC) in western Nebraska. The overall goal of this project is to develop a decision support system (DSS) that will increase efficiency and success in monitoring and controlling white mold of dry edible beans for stakeholders and growers in western Nebraska. This DSS will be comprised of in-situ temperature and relative humidity (RH) sensors, pivot-mounted cameras, low-cost telemetry, image recognition, edge and cloud computing techniques.	$65,000.00
Nebraska State Department of Agriculture	$820,903.78	4. CRISPR-Mediated Nutritional and Functional Enhancement of Yellow Pea for Human Health Benefits and Industrial Uses	The University of Nebraska – Lincoln, Department of Plant Pathology, will develop an efficient and routine protocol that would make yellow pea amenable to gene editing-based genetic modifications. The protocol will offer quick and targeted development of next generation of improved commercial yellow pea cultivars able to mitigate negative effects of diseases, drought and other adverse conditions stabilizing and improving productivity and availability of this nutritious food crop.	$45,360.00
Nebraska State Department of Agriculture	$820,903.78	5. Vineyard Weed Control and Soil Impact: A Sustainable Approach	Mac's Creek Vineyards will study, by analyzing soil, petiole and leaf samples, what impact, if any, the use of chemical herbicides compared to essential oils have on the soil quality/soil nutrients. They will also examine the extent to which the herbicides and essential oils "lock up" the soil thereby blocking the vine's ability to take up nutrients to benefit plant health. The results will be disseminated to stakeholders through grower meetings and/or field days.	$56,090.00
Nebraska State Department of Agriculture	$820,903.78	6. Develop a Standard Grape Quality Evaluation Program to Improve the Sustainability and Profitability of Nebraska Grape and Wine Industry	The University of Nebraska Food Processing Center (FPC) and their Viticulture Program (UNVP) will develop a standard grape quality evaluation program to improve the sustainability and profitability of the Nebraska Grape and Wine Industry by collaborating with the Nebraska Winery and Grape Growers Association (NWGGA). This project will develop standard protocols of sampling, shipping, testing, and reporting to ensure a more complete, reliable, consistent, and short turnaround time analysis of fruit quality.	$69,413.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Nebraska State Department of Agriculture	$820,903.78	7. Creating Listeria Control Specialists in Nebraska Packinghouses and Processing Plants	In collaboration with the Nebraska Department of Agriculture (NDA) and Nebraska commodity groups, the International Food Protection Training Institute (IFPTI) will enroll 56 Quality Assurance (QA) Managers from packinghouses and processing plants in Nebraska into the Listeria Control Specialist Certificate Program, developed by experts from the American Frozen Food Institute (AFFI). AFFI leads the Alliance for Listeriosis Prevention, which promotes food safety practices that minimize the presence of Listeria monocytogenes (Lm) in food products.	$50,000.00
Nebraska State Department of Agriculture	$820,903.78	8. Nebraska Certified Sustainable Specialty Crops	The Nebraska Grape and Winery Board will engage the Nebraska specialty crop industry in the creation of a sustainability program (to include mission, vision, standards, measurable criteria, certification process, etc.), to identify, create, adapt, implement, and be recognized for, commitment to sustainable practices (i.e., attain the recognition as a Nebraska Certified Sustainable Specialty Crop Producer (or Winery)). This process will be disseminated to Nebraska specialty crop stakeholders via a program rollout workshop held in conjunction with the Nebraska Specialty Crop Conference.	$73,500.00
Nebraska State Department of Agriculture	$820,903.78	9. Hydroponic Growing Systems to Address Food Security Sustainably	Nebraska Extension will provide experiential workshops on hydroponic plant production system technology and conduct farm tours to demonstrate cooperative farm prototypes exhibiting water/labor conservative production alternatives to specialty crop growers and to increase availability of fresh produce in high need areas.	$29,216.00
Nebraska State Department of Agriculture	$820,903.78	10. Managing Diseases of New Pulse Crops in Nebraska with New Chemical Products	The plant pathology program at the University of Nebraska, Panhandle REC will conduct a study at the Research and Extension Center in Scottsbluff that will test new, relatively inexpensive commercially available chemicals for their ability to reduce damage in cowpeas as a result of both fungal and bacterial diseases and improve yields. We will also be observing and promoting another new pulse crop, mungbean. The results will be shared with clientele (growers, consultants, and colleagues) via both research- and extension-oriented publications, commodity grower meetings, and field days.	$36,720.00
Nebraska State Department of Agriculture	$820,903.78	11. High Value Yellow Pea Varieties with High Protein Quantity and Quality for Nebraska	The University of Nebraska Panhandle Research and Extension Center will evaluate commercially grown yellow pea varieties from Nebraska farmers' production fields and experimental yellow pea varieties from the UNL's variety trials for superior quality seed proteins, important non-protein nutrients, and antinutritional factors. The objective is to identify commercial pea varieties with high % of superior quality seed proteins, important non-protein nutrients, and low % of anti-nutritional factors for immediate use by NE-farmers.	$49,896.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Nebraska State Department of Agriculture	$820,903.78	12. Identify Nebraska-Grown Pulses with High Value for Human Food Uses	The University of Nebraska Panhandle Research and Extension Center (UNL-PHREC) will evaluate seven pulses (yellow pea, chickpea, lentil, cowpea, mungbean, faba bean, and black gram) grown at Scottsbluff for superior quality seed proteins, important non-protein nutrients, and low % of anti-nutritional factors. The project will be in collaboration with Dr. Kaustav Majumdar (UNL Food Sci. & Technology), Dr. Bijesh Maharjan and Dr. Bob Harveson (UNL-PHREC). One or two varieties of each pulses will be grown in the field at Scottsbluff, NE under irrigation following standard production methods. Standard agronomic traits (flowering, maturity, plant height, disease and insects, if any) will be recorded.	$35,640.00
Nebraska State Department of Agriculture	$820,903.78	13. Can Turmeric Be a Viable Crop for Nebraska Specialty Crops Growers?	The University of Nebraska-Lincoln (UNL) Panhandle Research and Extension Center will evaluate turmeric varieties to identify the best adapted variety for production of high quality turmeric in Nebraska. Five to ten turmeric varieties will be planted in large pots in the greenhouse at Scottsbluff. The experiment will be a randomized complete block with four replications. Trials will be planted following standard production practices.	$22,464.00
Nebraska State Department of Agriculture	$820,903.78	14. Enhancing Nebraska Dry Bean Tolerance for Drought and Heat Stress	The Nebraska Dry Bean Breeding Program has incorporated new genetic variation from tepary beans into dry bean genotypes with the goal of improving dry beans' ability to tolerate drought and heat stress. We will conduct drought tolerance trials in Nebraska and heat tolerance trials in California and Puerto Rico to determine which interspecific genotypes perform best under these abiotic constraints and incorporate them into the Nebraska Dry Bean Breeding Program.	$38,353.00
Nebraska State Department of Agriculture	$820,903.78	15. Columbia Root-Knot Nematode Survey	This project is designed to maintain Nebraska's Columbia Root Knot Nematode (CRKN) pest-free status by the Nebraska Department of Agriculture (NDA) conducting comprehensive soil surveying throughout Nebraska to confirm the presence or absence of CRKN in Nebraska.	$24,300.00
Nebraska State Department of Agriculture	$820,903.78	16. Japanese Beetle Survey	The Nebraska Department of Agriculture (NDA) proposes a coordinated, comprehensive survey to document the presence or absence of Japanese Beetle in Nebraska and to provide certification to facilitate out of state shipments of Nebraska grown nursery stock. This survey will assist in keeping interstate and international markets open to Nebraska nursery stock. The monitoring will confirm the status of the pest in our state to determine what steps, if any, are necessary to certify nursery stock.	$36,600.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Nebraska State Department of Agriculture	$820,903.78	17. Thousand Cankers Disease of Walnut Survey	The Nebraska Department of Agriculture (NDA) will conduct a survey for walnut twig beetle across the state and confirm compliance with the Nebraska Thousand Cankers Disease (TCD) of walnut quarantine through inspections. The results of this survey will be used to confirm the presence or absence of TCD in the state. This will allow for movement of products, like nursery stock and scion wood, out-of-state. Should TCD be found during this survey, the information could be used to determine the extent of the infestation, and potentially mitigate the impact on trade.	$26,450.00
Nevada Department of Agriculture	$273,886.87	1. Farm to Kitchen: Increasing Access, Consumption & Sales of Specialty Crops	This two-year project of the nonprofit Nevada Grown is a multi-faceted, statewide project centered around a “farm to kitchen” approach, following the path of food from the farm to the consumer’s home, including how to purchase, store, cook and preserve specialty crops. It will include robust print and social media promotions of specialty crop farms, farmers markets & other sales avenues; outreach to underserved populations including seniors, Hispanics, SNAP, WIC and senior farmers market coupon recipients; and interactive dialogue with consumers through community events and social media to encourage increased consumption of specialty crops. The intended outcomes are to enhance the competitiveness of specialty crops through increased sales, increased consumption and increased access.	$32,224.00
Nevada Department of Agriculture	$273,886.87	2. Assessing the potential of native shrubs for nursery production	The University of Nevada Las Vegas will investigate the potential of developing native shrubs of the Mojave Desert and the Great Basin for nursery production in Nevada. A panel of botanists and horticulturalists will provide a list of shrub species to investigate. Seed from specific ecoregions will be collected and studies carried out to determine optimum techniques for germination and best soil mixes for growth. Those species that demonstrate the best response in terms of growth and visual appearance will be selected for a grow-out.	$36,038.40
Nevada Department of Agriculture	$273,886.87	3. Marketing & Promotion of Lavender, Honey & Specialty Crops through Agritourism	This project of the nonprofit Sierra Nevada Lavender & Honey Festival provides for production of a regional agritourism festival in 2022 and 2023, that highlights two popular specialty crops- lavender and honey. It will provide sales and promotional opportunities to specialty crop producers and will provide opportunities for consumer education for lavender, honey and other specialty crops. The intended outcomes are to enhance the competitiveness of specialty crops through increased sales, increased consumption and enhancing or improving the economy as a result of specialty crop development.	$46,500.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Nevada Department of Agriculture	$273,886.87	4. Evaluation of Tomato Rootstocks and Wild-Relatives for Salinity Tolerance	The University of Nevada, Reno, will determine if the use of rootstocks can improve tomato salt tolerance and benefit growers through higher yields. Trials under greenhouse and field conditions will be conducted with several tomato genotypes (commercial rootstocks, cultivars and wild relatives). Physiological and morphological root responses will be evaluated to determine tolerance traits under soil salinity in Northern Nevada. The project's outcome is expected to enhance the competitiveness of local tomato production using vegetable grafting, which should increase yields and resource use efficiency (e.g., water and nutrients). Results will be disseminated to stakeholders through grower meetings, field days and fact sheets.	$70,510.58
Nevada Department of Agriculture	$273,886.87	5. Pilot Nevada Farm Network	Desert Farming Initiative at UNR and NEON Agency propose to enhance the competitiveness of specialty crops by initiating a pilot Nevada Farm Network. The project proposes to identify specialty crop production information gaps and develop an online platform that includes an initial resource library, a forum for the Nevada specialty crop farm community, and one pilot educational video produced by NEON Agency.	$16,843.56
New Hampshire Department of Agriculture, Markets and Food	$299,406.92	1. Increase Awareness and Consumption of New Hampshire Grown Vegetable and Berry Crops	The New Hampshire Vegetable and Berry Growers Association project will focus on outreach to the local community and consumers by creating a website and active social media profiles with content designed to increase awareness and interest in farms while promoting more local farm visits for purchasing and pick your own. The project will serve as a central clearinghouse for consumers seeking timely information about where to purchase and pick your own vegetables and berries. The multi-pronged approach–website, social media and digital advertising–will together provide substantial frequency and reach. This should result in increased visitation and sales. The project will also encourage membership participation and web site visits from other New Hampshire Growers by creating a user-friendly website which will disseminate local, state, and regional updates on current issues and news. The web platform will also include online membership registration, free farm listings for any and all local producers, and links to growers' guides and libraries.	$40,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
New Hampshire Department of Agriculture, Markets and Food	$299,406.92	2. Off-peak Season Marketing of New Hampshire's Maple Producers and their Crop	The New Hampshire Maple Producers Association (NHMPA) will support its members in increasing understanding of the general public during the time following "maple season" each year (2022-2024) that real maple is pure, local, and versatile – the smarter sweetener!	$62,076.00
New Hampshire Department of Agriculture, Markets and Food	$299,406.92	3. Increasing the Competitiveness of NH Specialty Crops through Energy Savings	The Cheshire County Conservation District (CCCD) will work with partners to provide education, technical assistance, and financial incentives to specialty crop producers in NH to improve their energy efficiency, lower their electricity costs, and shift toward renewable energy production. This project will lower specialty crop producers' farm input costs to ensure their continued profitability and the competitiveness of their products in the market. The CCCD will incentivize producers' active participation in this project with a stipend they can use to invest in accessing energy efficiency and renewable energy options.	$46,000.00
New Hampshire Department of Agriculture, Markets and Food	$299,406.92	4. NH Wine Grape Varietals – Increasing Public Awareness and Expanding Grower/ Winemaker Knowledge	The New Hampshire Winery Association, a non-profit organization promoting grape growing and wine making, intends to: 1) increase public awareness of distinctive wine grape varietals grown in the state, along with the unique wines produced from those varietals, to encourage more vineyard plantings; and 2) provide educational opportunities for growers and winemakers to improve the harvest quantity and quality, particular to the varietals that adapt well to the New Hampshire agricultural conditions.	$12,000.00
New Hampshire Department of Agriculture, Markets and Food	$299,406.92	5. Researching the Potential of Farmer's Market Incentive Programs for NH Families	This project aims to investigate farmers' market incentive programs for food insecure NH families that are available or could be available. In particular, MCCD aims to research the Women's, Infant, and Children (WIC) Farmers' Market Incentive Program, analyze its previous struggles, and collaboratively create a plan to re-implement the program in NH. This collaboration will include NH Department of Health & Human Services, NH Food Bank's Granite State Market Match program, farmers' markets, specialty crop producers, and food insecure families benefitting from programs.	$15,510.00
New Hampshire Department of Agriculture, Markets and Food	$299,406.92	6. Buy New Hampshire Specialty Crops Social Media Video Campaign Featuring User Generated Content (UGC) in Partnership with NH Division of Travel & Tourism Development	The NH Dept. of Agriculture, Markets & Food will increase sales of all New Hampshire specialty crops through work with micro-influencers to create video content as well as create our own video content to engage social media audiences about NH specialty crop farms and products.	$97,193.56

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
New Jersey Department of Agriculture	$757,150.60	1. Research into the Efficacy and Methodology of Sanding New Cultivars in Renovated Cranberry Bogs.	The American Cranberry Growers' Association (ACGA) will research best practices in the sanding of cranberry bogs recently renovated with new cultivars – including sand depth, time-from-planting, and breed-specific responses – to improve productivity and rate-of-return. This research reflects the hypothesis that light sanding of newly planted beds (in the 1st and 2nd years after planting) decreases the time to onset of productivity. The grant equipment will be used by scientists at the Rutgers University Philip E. Marucci Center for Blueberry and Cranberry Research, and the results will be disseminated at biannual grower meetings.	$34,150.00
New Jersey Department of Agriculture	$757,150.60	2. Marketing Campaign for Cumberland County Specialty Crop Commodities	According to the latest figures from the U.S. Census of Agriculture, Cumberland County alone accounts for nearly 20% of the entire state's agricultural economy, and the commodities produced are some of the most diverse in New Jersey. Cumberland County is the #1 producer of such commodities as beets, cabbage, collards, escarole, kale, lettuce, radishes, tomatoes, peaches, cut flowers, and nursery stock. In specialty crops, Cumberland is a significant producer of Christmas trees, cut flowers, fruits, herbs, honey, lavender, mushrooms, organic, peppermint, potatoes, sweet corn, and vegetables. There is strong interest at the county level to support our agricultural industry sector and encourage diversity in commodity production. The proposed marketing campaign would accomplish both goals by highlighting Cumberland County's agricultural sector and encourage entrepreneurial investment in specialty crop production.	$40,000.00
New Jersey Department of Agriculture	$757,150.60	3. Increase Specialty Crop Farming in NJ by Providing Access to Affordable Land Via Long-Term Leases on Preserved Farmland	The Foodshed Alliance will increase the number of specialty crop farms in New Jersey by providing emerging and expanding farmers with affordable long-term leases on preserved farmland. Grant funding will be utilized to create marketing materials (videos and advertising) to reach specialty crop farmers in need of farmland.	$36,100.00
New Jersey Department of Agriculture	$757,150.60	4. Judgment of Princeton International Wine Summit	Working in collaboration with the New Jersey Department of Agriculture and the New Jersey State Division of Travel and Tourism, the Garden State Wine Growers Association will use funding awarded from this Specialty Crop Grant to develop a first-ever international wine conference hosted by New Jersey's wine industry. Our program will be called the Judgment of Princeton International Wine Summit. The goal of the campaign is to create international exposure for New Jersey's wine industry with a series of events that will feature a reception for international and domestic wine writers, wine seminars and a major tasting event.	$40,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
New Jersey Department of Agriculture	$757,150.60	5. New Jersey's Specialty Crops: Expanding Awareness, Education, and Demand through FAH at the Land Stewardship Center	The New Jersey Agricultural Society, if awarded, will establish an agreement/contractual relationship with the NJ Department of Agriculture to lead and execute the project. The NJAS's new Farmers Against Hunger at the Laurel Run Land Stewardship Center ("the Center") in Burlington County will serve as the hub for this project, which will focus exclusively on specialty crops. The targeted outcomes of this project are to: Expand awareness of the importance and nutritional value of specialty crops, to include fruits and vegetables through focused exposure to such crops at the new Land Stewardship Center; Develop in those most in need the knowledge and skills necessary to prepare delicious and nutritious meals using fresh produce; and Increase awareness of and exposure to local sources for purchasing fruits and vegetables, e.g., New Jersey's specialty crop farmers, farmers markets, etc., to drive demand.	$40,000.00
New Jersey Department of Agriculture	$757,150.60	6. Expanding Specialty Crop Exposure in NJ High-Need Urban Elementary Schools	The New Jersey Agricultural Society, through its signature Learning Through Gardening program, proposes to expand its school-based garden production of fruits and vegetables at 12 new (not previously funded) elementary schools that serve high-need students in urban areas across New Jersey. The project includes providing the essential start-up materials, supplies, and support for the 12 new school-based gardens, as well as three-year ongoing support to the schools for their gardening programs. The project will also expand outreach to teachers through on-site visits and activities and the development and distribution of 10 new school garden-based lesson plan to teachers in the 12 target schools. These lesson plans will also be made available online to the public regardless of association with LTG.	$40,000.00
New Jersey Department of Agriculture	$757,150.60	7. NJ Specialty Crops Advancement through Ag Leadership Development	The New Jersey Agricultural Society (NJAS) has as its overarching mission to preserve and enhance agriculture, farming, and related activities and businesses in New Jersey through educational, informational, and promotional programs. As two key areas of its supporting agenda, the NJAS: (1) identifies issues impacting the agricultural industry and articulates those issues to key audiences, and (2) builds coalitions to preserve, enhance, and promote economically viable agriculture. In alignment with this mission and agenda, the NJAS proposes the NJ Specialty Crops Advancement through Ag Leadership Development project. This project is fully integrated into the NJAS signature NJ Agricultural Leadership Development Program (NJALDP).	$40,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
New Jersey Department of Agriculture	$757,150.60	8. Advertising Jersey Fresh Blueberries 2022	After a year of pivoting and adjusting a more traditional media plan to account for the effects of Covid on targeted media outlets, The New Jersey Blueberry Growers Association seeks Specialty Crop Block Grant funding for a project to promote awareness and purchase of local, New Jersey grown blueberries in season via newer, non-traditional marketing methods to reach a more diverse audience.	$40,000.00
New Jersey Department of Agriculture	$757,150.60	9. Increasing the Sale of Deciduous & Flowering Trees & Landscape Conifers Through Education and Management Tips	Deciduous trees, such as ash, elm, poplar, oak, and others, provide many benefits to the environment and to pollinators. Flowering trees and landscape conifers also provide a multitude of environmental benefits, and all are considered specialty crops by the USDA. With an ever-present threat to these specialty crops by invasive pests and disease, the public must be made aware of the many benefits they bring and be provided with methods to manage these assets. This project, “Increasing the sale of deciduous & flowering trees and landscape conifers through education and management tips,” will use an already successful platform to convey this message and allow the New Jersey Forestry Association to increase marketing and educational efforts to reach an even greater audience. “Backyard Forestry in 90 Minutes” is a free monthly program that has been offered at no charge to anyone that is interested in trees, forests, or the environment and has been successfully running since 2014.	$23,000.00
New Jersey Department of Agriculture	$757,150.60	10. Landscape Plants of New Jersey and Jersey Grown Directory Guide	The New Jersey Landscape Contractors Association will assist in increasing the awareness of native landscape plants of New Jersey, explain the Jersey Grown program, encourage more producers to participate in Jersey Grown program and how readers can locate Jersey Grown Certified Suppliers from which they may purchase by publishing a Landscape Plants of New Jersey and Jersey Grown Directory Guide. The guide will be mailed to approximately 3,800 landscape professionals and delivered to nurseries throughout the state to provide free to consumers. The guide will include plants found in New Jersey, such as annuals (geraniums), broadleaf evergreens (rhododendron), deciduous flowering trees (dogwood), conifers (hemlock), shrubs (barberry), and perennials (switchgrass), etc. The plan is to continue to strengthen the Jersey Grown brand name to enable the industry to benefit from locally produced nurseries, turfgrass and greenhouse products.	$23,504.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
New Jersey Department of Agriculture	$757,150.60	11. Increasing Sales of Plants and Flowers in New Jersey through the 'Plant Something' Marketing Program	The New Jersey Nursery & Landscape Association's aim with this project is to continue to expose the general public in New Jersey to the environmental, physical, and emotional benefits of New Jersey grown (i.e., Jersey Grown) plants, flowers, and trees. This grant award would allow for further participation in this award-winning industry promotion. Building upon the success that has already been established thru campaigns, promotions, and educational outreach, we hope to utilize the "Plant Something" brand awareness to help inform the public of not only the benefits of planting (environmental, physical, and emotional), but the need to plant "Jersey Native" plants, pollinator-friendly plants, and inform the consumer on the negative impacts of invasive species such as the Emerald Ash Borer, Spotted Lanternfly and Beech Leaf Disease. Components in this grant request include licensing of the Plant Something program, public relations, media and awareness, social media promotions, public events (if allowed during the pandemic), and Point of Purchase/Sale Materials.	$20,000.00
New Jersey Department of Agriculture	$757,150.60	12. Increasing Sales of Specialty Crops by helping producers find career-oriented employees through apprenticeship & marketing	In order to "enhance the competitiveness of specialty crops through enhancing or improving the economy as a result of specialty crop development," producers of specialty crops need to have a sufficient workforce. Throughout New Jersey, these producers are experiencing unprecedented shortages of available employees due to COVID-19, resulting in decreased production and sales. Through an already-approved US DOL registered apprenticeship program, the New Jersey Nursery & Landscape Association can help these producers find and retain employees. This grant would include the development of new occupations that are needed by producers, such as horticulturalists, and would market the opportunities through colleges, FFA, workforce development boards, and any other opportunity that arises.	$21,100.00
New Jersey Department of Agriculture	$757,150.60	13. Two Educational Seminars/Tastings Highlighting New Jersey Wine Grape Varieties for Growers and Wine Industry Influencers	The OCPVA will organize and execute two educational seminars (one in the northern part of the state, one in the southern) for wine writers, sommeliers, grape growers, and other influencers highlighting New Jersey wine grape varieties and the wines produced from them. OCPVA will partner with Rutgers NJ Center for Wine Education to coordinate venues and speakers for the events. Topics will include climate and soil conditions in the state, as well as the economics of grape growing. The book Wine Grape Varieties for New Jersey will be used as a teaching tool. Wine industry influencers from New York City, Philadelphia, and New Jersey will be targeted. Award-winning wines from across the state will be available for tasting.	$13,884.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
New Jersey Department of Agriculture	$757,150.60	14. Establishing and Demonstrating Methods for Hazelnut Harvesting and Processing in New Jersey	Rutgers, The State University of New Jersey ("Rutgers University") will assemble the equipment and protocols necessary to demonstrate, document, and extend effective methods for hazelnut harvesting and processing in support of new and prospective growers of this low-input, high-value crop.	$39,991.00
New Jersey Department of Agriculture	$757,150.60	15. Developing Best Management Practices for Native Plant Nurseries in New Jersey	Rutgers, The State University of New Jersey will develop best management practices and educational programming to support the New Jersey nursery and landscape industries in the production of native plants as a specialty crop. Nursery growers, landscapers, and the general public will be invited to the research farms to see first-hand the many native plants that can be incorporated into ornamental landscape plantings and used for ecosystem restoration projects. The design of this project has the potential to increase the competitiveness of native plants as a specialty crop in the ornamental market. It is the project team's expectation that this will result in increased profits for growers and an increase in the ecosystem services provided by native plants throughout the State of New Jersey.	$39,932.00
New Jersey Department of Agriculture	$757,150.60	16. Evaluation of the Feasibility of Hard Cider Apple Production in New Jersey	Rutgers University will spur the growth of the New Jersey hard cider apple industry through concise survey tools and data-driven horticultural recommendations. These tools and educational materials will be outreached to growers through twilight meetings, factsheets, social media, and articles. Information from the surveys and field trials will be utilized to develop decision-making tools (enterprise budget). These will aid New Jersey growers in deciding if establishing a hard cider apple orchard/cider mill will be an economically feasible venture.	$37,338.00
New Jersey Department of Agriculture	$757,150.60	17. Develop Retail Level Packaging to Improve Food Security, Reduce the Use of Plastics, and Highlight the Locally Grown Specialty Crops of Our Family	This proposal aims to level the playing field between large and small specialty crop producers and give our small family farms an opportunity to work directly with retailers/wholesalers to provide consumers with a more secure, environmentally friendly retail packaging option. Jersey Fruit will work directly with targeted retail accounts to identify and implement new packaging solutions that increase input recyclability, reduce the use of plastics and emphasize the "local" origin of our products through the prominent use of the "Jersey Fresh" promotional logo, thereby making Jersey Fruit-branded products more attractive for retailers and consumers.	$40,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
New Jersey Department of Agriculture	$757,150.60	18. Marketing Jersey Fresh Local Peaches	The NJ Peach Promotion Council will direct and coordinate a group of approved ad successful techniques to market Locally Grown New Jersey peaches using expert consultants, volunteers, and director growers and Personnel from Rutgers University and the New Jersey Department of Agriculture. Since environmental conditions affect the size of the NJ peach crop and the timing of the marketing season, occasionally adjustments must be made on the technology utilized to meet the goal of enhancing the sales movement and viability of the NJ Peach crop and the industry that sustains it. The outcome will be focused on maintaining and enhancing the sustainability of a viable peach industry in the state.	$40,000.00
New Jersey Department of Agriculture	$757,150.60	19. Know Your Farmer, Know Your Food, Connecting Consumers with New Jersey Potato Growers	The New Jersey White Potato Association will be promoting Jersey Fresh branded potatoes for wholesale and retail consumption. The goal of this project is to increase the volume of Jersey Fresh potatoes sold by embracing the “Know Your Farmer, Know Your Food theme. We will be using point of sale merchandise so that consumers will be able to put a name, face, and place on where their potatoes came from. We will be using our Jersey Fresh Potato packaging material, POS merchandise, website, and advertising to achieve this goal. In addition, we will be conducting a variety of trials of new varieties of potatoes in New Jersey in order to help our growers maximize yields and return on investments.	$40,000.00
New Jersey Department of Agriculture	$757,150.60	20. Specialty Crop Box and Mobile Marketing Program	The Tri-County Cooperative Auction Market Association seeks to increase sales, the efficiency of distribution, and consumption of specialty crops among residents of the Hightstown and East Windsor area, including those impacted financially by Covid-19, through a fresh produce box and mobile marketing program. Tri-County will partner with the Rise Community Services Partnership, a 501(c)3 non-profit organization in Hightstown, NJ, to accomplish the project’s goals. The program’s success will be measured by the number of families served who report increased consumption and increase in sales to new customers via the mobile marketing system.	$40,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
New Jersey Department of Agriculture	$757,150.60	21. Improving the Aggregation and Transportation to Newark, NJ for Rural and Urban Specialty Crop Farmers	Urban Agriculture Cooperative will aggregate 15 growers of specialty crops in the Northern New Jersey counties, sell their crops both online and in-person and transport their crops, so they do not have to physically attend and sell in the Newark NJ markets. UAC will sell and transport $24,000 worth of specialty crops the last mile from our cold storage and packing sites to farmer's market pick-up locations, pantries, and urban residences in the Newark, NJ area. UAC will thus significantly improve specialty crop access to underserved urban populations (5 community markets/ contactless pickup locations), serving over 250 unique customers living in food deserts as defined by USDA. As a nonprofit aggregator in a developing local foodshed, we are committed to extending training reimbursements and sharing knowledge with our food and agriculture communities.	$40,000.00
New Jersey Department of Agriculture	$757,150.60	Grant Admin	Ensure that the State Agency and sub-awardees abide by Federal and State requirements and regulations by performing pre-award and post-award activities to administer Specialty Crop Block Grant Program funding.	$25,393.29
New Mexico Department of Agriculture	$598,925.57	1. Reducing Costs & Improving Environment Safety of Onion Herbicide Programs	New Mexico State University (NMSU) will expand weed control options available to onion farmers by conducting studies and outreach activities that support a Special Local Need registration for delayed pre-emergence (after onion germination but before onion emergence) applications of the residual herbicide pendimethalin. Compared to the residual herbicides currently registered for application at onion seeding, pendimethalin is less expensive and features lower risk of harm to the environment. Thus, this project will improve the economic and environmental sustainability of onion production in New Mexico.	$43,712.99

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
New Mexico Department of Agriculture	$598,925.57	2. Creating Listeria Control Specialists in NM Packinghouses & Processing Plants	The Southwest Border Food Protection and Emergency Preparedness Center (Center) is a collaborative effort of New Mexico State University (NMSU) College of Agricultural, Consumer and Environmental Sciences (ACES); Cooperative Extension Service (CES), and the New Mexico Department of Agriculture (NMDA). The Center helps protect the nation's food supply against threats ranging from foodborne illnesses, supply chain disruptions to agroterrorism. We honor a three-prong approach to Food Protection: Food Safety, Food Defense and Food Security. This proposal will address food safety concerns through collaboration with the International Food Protection Training Institute (IFPTI) to enroll 36 Quality Assurance (QA) Managers from packinghouses and processing plants in New Mexico into the Listeria Control Specialist Certificate Program, developed by experts from the American Frozen Food Institute (AFFI). AFFI leads the Alliance for Listeriosis Prevention, which promotes food safety practices that minimize the presence of Listeria monocytogenes (Lm) in food products.	$40,000.00
New Mexico Department of Agriculture	$598,925.57	3. Shaping the NM pecan root-soil microbiome to improve orchard health & productivity	Pecans are one of the most important specialty crops in New Mexico, annually contributing $185 million to the state's agricultural economy. Pecans trees are unusual in that their roots lack root hairs, which may be a contributor to inefficient tree acquisition of nutrient (e.g., zinc) and water in pecan orchards. Certain microbial species living in association with pecan roots are thought to increase root function similarly to root hairs. Other microbial species may benefit root health or function in different ways. We hypothesize that these beneficial microbial populations can be managed by New Mexico producers to improve pecan orchard health and, ultimately, productivity. To test this, we at New Mexico State University (ACES College) propose using molecular techniques and microscopy to monitor changes over three years in the diversity and abundance of microbes associated with pecan tree roots grown under three different orchard floor/soil treatments (vegetation-free, cover crop, and compost).	$76,413.88

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
New Mexico Department of Agriculture	$598,925.57	4. Growing Community Now SC Carrot Growers' Training Prog for Young & Beg Farmers	Growing Community Now, a project of the Taos based 501(c}3 organization Agriculture, Implementation, Research, Education (A.I.R.E), will provide socially disadvantaged young and beginning farmers with intensive no-cost hands-on training in growing (regenerative) carrot varieties that are adapted for northern New Mexico's short high desert growing season. Training will be conducted by experienced carrot growers from Taos County and Taos Pueblo, using sustainable practices to increase the yield of carrot crops for the benefit of northern New Mexico school districts and charter schools, the Taos Grower's CSA, farm-to-table markets, and northern New Mexico food banks.	$50,000.00
New Mexico Department of Agriculture	$598,925.57	5. Enhance the Competitiveness of SC- NM K-12 Educators & Students	Enhance the competitiveness of specialty crops through educator workshops to increase their understanding of the Science, Technology, Engineering, and Mathematics (STEM) found throughout the specialty crop processes. New Mexico Ag in the Classroom (NMAITC) is the non-profit educational outreach program of the New Mexico Farm and Livestock Bureau Foundation. The purpose of NMAITC is to educate the general public, with an emphasis on K-12 students and educators, about the importance of agriculture. If awarded this grant, it will allow us to further our purpose by providing K-12 educators the opportunity to learn about New Mexico's specialty crops and how to incorporate them into their curriculum. We will also develop educational posters for classroom instruction and teachers will work with the school nutritionist and/or school cafeteria personnel, asking them to display the posters in the school.	$100,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
New Mexico Department of Agriculture	$598,925.57	6. Educational Workshops Featuring NM Green Chile	The project entails conducting educational workshops for new retailers to increase awareness, competitiveness, and access to New Mexico Fresh Green Chile. New Mexico Department of Agriculture (NMDA) staff will coordinate with retailers, culinary professionals, growers, processors, and other professionals to plan and execute these workshops on state, regional, and national levels. The venues will include retail supermarkets, distribution centers, and others. The workshops will include educational training, roasting and sampling segments, cross-merchandising tips, preparation and access discussions. A social media component will increase traction and awareness of New Mexico green chile, including media (videos, graphics, etc.) that can act as teaching aids, event announcement platforms, and more. All chile used will be unbranded to avoid marketing of any individual businesses or brands. Workshops and discussions will focus on nutritional information, flavor profiles, preparation and handling, storage in commercial establishments, and traditional and non-traditional cooking methods with green chile.	$22,855.78
New Mexico Department of Agriculture	$598,925.57	7. Eval Retail Mktg Tools/ Stimuli to Improve Healthy Food Selection, Reduce Food Insecurity & Improve Food Affordability	We have developed this scope of research through a partnership between New Mexico State University and the New Mexico Farmers' Marketing Association (NMFMA) and their "Double Up Food Bucks" SNAP program. This specialty crops grant would provide needed funding to assist researchers with the necessary tools and supplies to explore New Mexico citizens' diets, better perceptions of food insecurity, and access to affordable healthy foods. This will be evident upon the completion of the experiments and data analysis. The different aspects of this proposal will assist New Mexico grocery retailers in identifying effective marketing tools/stimuli to assist New Mexico consumers in reducing food insecurity, accessing affordable healthy foods, and supporting economic stability in New Mexico.	$102,596.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
New Mexico Department of Agriculture	$598,925.57	8. Growing Forward Farm-growing SC agtivities through training and ed opportunities in NW NM	Growing Forward Farm is a project of the New Mexico State University, San Juan County Extension Office to increase the competitiveness of specialty crops through education and consumer awareness programs. The project will create agritourism trainings and educational programs to increase the consumption, safety and access of specialty crops in Northwest New Mexico. Growing Forward Farm is a 12-acre outdoor educational facility located at the San Juan County Cooperative Extension Service office in Aztec, NM. The farm will provide ag-tivities programs to connect community members to specialty crop products and will increase consumption of specialty crops through educational programs, tasting events and tours. There is a great need in the region to assist specialty crop farmers in diversification strategies and improve their food safety practices and certifications to enter new markets. The project will assist farmers in business development and create a toolkit for New Mexican specialty crop growers looking to expand into agritourism operations.	$113,721.00
New York State Department of Agriculture and Markets	$1,234,780.08	1. Monitoring the Occurrence and Spread of Streptomycin Resistance and Refinement of Alternative Management Programs for Fire Blight	Cornell University will monitor fire blight epidemics for early detection of streptomycin resistance in major production regions of NY. Strains with unique identities will be tracked and map in QIS. They will also conduct field research to develop and refine novel approaches to fire blight management involving growth regulators and defense inducers as alternatives to antibiotics. These results will be disseminated to stakeholders statewide through grower meetings, field days, and grower-focused publications.	$96,403.00
New York State Department of Agriculture and Markets	$1,234,780.08	2. Improving Management of Sour Rot Disease and Important Insect Vectors in NY Wine Grapes	Cornell Entomologists and plant pathologists will develop a better understanding of the biology and management of sour rot in wine grapes in NY leading to more judicious use of pesticides and reduced crop loss. Sour rot can be a devastating disease for wine grapes in New York and other grape growing regions. Previous research has shown that weekly applications of insecticides targeting Drosophila fruit flies, important vectors of the disease, and antimicrobial pesticides targeting causal bacteria and yeasts can provide substantial benefit, especially the insecticide component. However, we have documented significant levels of insecticide resistance to three of the main insecticide classes labeled for use against Drosophila in grapes. Hence, there is a great need to limit the use of insecticides to when they are needed. We will address several objectives relevant to improving management of sour rot: Through achieving these objectives, we will enhance the competitiveness of specialty crops in NY through greater capacity of sustainable practices.	$99,985.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
New York State Department of Agriculture and Markets	$1,234,780.08	3. Making the Switch: Incorporating Biopesticides into Vegetable Disease Management	Cornell University will increase grower adoption of biopesticides for control of tomato bacterial diseases and cucurbit powdery mildew through on-farm demonstrations and replicated research trials of biopesticide efficacy and sharing results through twilight and winter grower meetings plus extension publications and web postings.	$99,436.00
New York State Department of Agriculture and Markets	$1,234,780.08	4. Energy Efficient Lighting Control to Increase the Profitability of NYS Commercial Greenhouses	The goal of this project is to improve NYS greenhouses energy use efficiency and operational profitability while promoting energy conservation through the use of advanced horticultural lighting controls. Supplemental lighting represents roughly 30% of production costs for the roughly 130 acres of NYS greenhouses that produce specialty crops during winter. That accounts for an estimated $13 million in electricity costs per year. An advanced lighting control system developed by Cornell University (LASSI: Light and Shade System Implementation) can reduce energy costs by 20-35%, increasing operational profitability by an average $17,000/acre/year. Working in collaboration with greenhouse growers across NYS, we will implement LASSI in 8 commercial greenhouses and promote statewide adoption of energy efficient light control technologies. Three Cornell Cooperative Extension (CCE) educators will assist with recruiting participants and disseminating project results. 7 greenhouse operations have already expressed interest in implementing the system. Cornell will work with Candidus Inc. to deploy the LASSI control system for 12 months at 8 greenhouses. Energy savings and profitability increases will be reported monthly. Final results will be disseminated to at least 200 growers across NYS leading to adoption of the system by 15 growers within one year after the project completion. A total of 75 facilities are expected to adopt advanced greenhouse lighting controls over the next 5 years.	$99,868.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
New York State Department of Agriculture and Markets	$1,234,780.08	5. Facilitating Regional Hazelnut and Chestnut Industries through the Identification of Improved Genetic Materials and Best Management Practices	Cornell Cooperative Extension Tompkins County (CCE Tompkins) will direct this project to provide the necessary groundwork for commercialization of chestnut and hazelnut production in New York State. It will involve a strong collaboration between CCE Tompkins, a Cornell PhD student, the NY Tree Crops Alliance (a newly formed grower cooperative), and current regional growers, bringing to bear high level research and farmer experience to facilitate the development of the nut-cropping sector in the near and medium term. We will identify and survey early-adopter growers of these two crops, identify superior genetic material and best management practices, and provide a hub for information-sharing among current and prospective growers. Hundreds of thousands of acres of underutilized land in NYS have suitable soils and climate for these crops. The development of hazelnut and chestnut industries will result in increased production and income for ag and non-ag landowners. Compared to commonly grown tree fruits, establishment and growing costs for these crops are lower. However, optimal genetic material and best management practices have not been determined. NYS markets for healthy chestnut and hazelnut products are strong and can be supplied with regional production. As a result of this project, new and established farmers planting these perennial tree crops will have: • Selected germplasm available for commercial trial, • Knowledge of optimal planting systems and plant material for easier management including harvest, • Understanding of best processing equipment options for their scale, and • Knowledge of ready markets as their trees start producing a crop.	$86,248.00
New York State Department of Agriculture and Markets	$1,234,780.08	6. Marketing and Promotion of New York State Specialty Crops	NYSAGM will continue to enhance the competitiveness of specialty crops by increasing wholesale and retail demand for New York grown specialty crops. Marketing activities will focus on a coordinated presence at key national and regional tradeshows, thereby building awareness and expanding sales networking opportunities for various New York State specialty crop commodities and their representatives. Activities will also include the production and distribution of promotional materials, including an updated buyer's guide, for use at trade shows. Effectiveness will be measured by lead capture tracking.	$189,397.02

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
New York State Department of Agriculture and Markets	$1,234,780.08	7. Identifying Alternatives to Neonicotinoids and Chlorpyrifos for Controlling Insect Pests in New York State Specialty Crops	Specialty crops entomologists at Cornell University and New York State Integrated Pest Management Program will work together to identify effective alternatives to neonicotinoid and chlorpyrifos insecticides for managing key insect pests of fruit, vegetables and turfgrass. Specialty crops in New York generate nearly $1.4 billion annually and are instrumental to the state's economy. Multiple insect pests attack specialty crops and considerable economic loss results if they are not controlled. Neonicotinoid and chlorpyrifos insecticides are often used in Integrated Pest Management programs to protect specialty crops from these pests because they are highly effective and relatively inexpensive. Despite these attributes, there is increasing concern that their benefits do not outweigh potential harm to the environment including negative impacts on pollinators. Consequently, there is a great deal of interest in identifying both conventional and bio-based tools to replace neonicotinoids and chlorpyrifos. Additionally, there is interest in providing predictive degree-day models that would aid in application timing of these alternative tools. We propose to evaluate the efficacy of alternative conventional and bio-based strategies that have the most promise to protect specialty crops from pests currently managed with neonicotinoids and chlorpyrifos, and to make predictive tools available for timing applications of these alternatives via NYS IPM's Network for Environment and Weather Applications website. We also propose to gauge adoption and success of the alternative strategies. We will disseminate our results at stakeholder meetings, through newsletters and via on-line resources. Expected outcomes include identifying viable alternative treatments and their adoption to keep New York's specialty crops industry viable and profitable.	$460,000.00
North Carolina Department of Agriculture and Consumer Services	$1,267,999.71	1. Controlling Guava Root-Knot Nematode (GRKN) in Sweet Potato Packing Facilities	The NC Sweet Potato Commission Foundation will mitigate the spread of Guava Root-Knot Nematode (GRKN) in packing facilities through a three-fold approach. In cooperation with NC State University, nematode specialist Adrienne Gorny will develop a rapid-response test to identify the presence of GRKN in sweet potatoes prior to their being packed or stored for later shipment.	$166,763.00
North Carolina Department of Agriculture and Consumer Services	$1,267,999.71	2. UAV Biosurveillance of Curcurbit Downy Mildew	North Carolina State University will develop an unmanned aerial vehicle (UAV) biosurveillance system for precision disease management of cucurbit downy mildew through early detection of Pseudoperonospora cubensis airborne sporangia and establishing a crop's risk of infection. We will work closely with stakeholders to ensure system relevance and we will actively disseminate results through grower meetings and field days.	$77,850.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
North Carolina Department of Agriculture and Consumer Services	$1,267,999.71	3. Precise Indoor Vine Conditioning	The North Carolina State University (NCSU) will reduce costs and pesticide input in NC vineyards by developing controlled environment (CE) technology to optimize grape transplants. NC has the seventh largest grape and wine industry in the US, with an economic impact of $1.95bn. However, two factors pose major challenges for grape growers in NC: a) severe systemic biotic diseases; and b) high establishment and management costs. Those two factors often lead to high-risk operations, in which frequent poor vine performance contributes to non-profitable grape production conditions. We propose to develop precise indoor vine conditioning (PIVC) protocols, using CE technology to optimize the fruiting capacity of grapevines, leading to plants that can be planted and cropped in the same year.	$85,840.00
North Carolina Department of Agriculture and Consumer Services	$1,267,999.71	4. Mitigating Soilborne Diseases in Floriculture Crops	In North Carolina (NC), the greenhouse floriculture industry is economically important to the state: it represents a farm-gate value of $180 million and is one of the top 6 crops in the state. However, the industry battles soilborne diseases, which impact production and profits to an estimated $17 million in losses. Phytophthora crown and root rots represent the largest portion of soilborne diseases in NC and have been identified as one of the top 3 problems in the industry.	$125,000.00
North Carolina Department of Agriculture and Consumer Services	$1,267,999.71	5. Greenhouse Production of Strawberry in North Carolina	The North Carolina (NC) State University will investigate technical and economic strawberry greenhouse production, with the goal to produce comprehensive strawberry greenhouse production guidelines for NC. The NC strawberry industry is the largest in the Southeast and the third largest in the country. While plasticulture production systems are common in NC, farmers often struggle with the reuse of existing greenhouses structures for the production of strawberries.	$54,190.00
North Carolina Department of Agriculture and Consumer Services	$1,267,999.71	6. Extending Muscadine Shelf-life for New Markets	Muscadine grapes, unique to the warmer parts of the United States, are generally consumed regionally. Expansion of the market has happened slowly and shipments to Canada have had successful consumer interest recently. In trial shipments, it was found that Asian markets will pay a premium price for large size, purple colored muscadine grapes and there is interest in sending muscadine shipments to Hong Kong.	$100,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
North Carolina Department of Agriculture and Consumer Services	$1,267,999.71	7. Genetic Understanding of HWA-Susceptibility in Hemlocks	This project will be a collaboration between the Forest Biotechnology Group in the Department of Forestry and Environmental Resources and the Forest Restoration Alliance in the Department of Entomology and Plant Pathology at North Carolina State University. We propose an integrative approach to understanding the genetic response to hemlock woolly adelgid (HWA) infestation in susceptible and resistant hemlock species, and how these genetic regulations are transduced to alterations in phenotypic traits associated with HWA susceptibility. The proposed project builds upon ongoing research in developing a CRISPR genome editing system for hemlocks funded by the SCBGP in 2020-21.	$125,000.00
North Carolina Department of Agriculture and Consumer Services	$1,267,999.71	8. Management of Sweet Potato Bacterial Postharvest Diseases	North Carolina State University will develop integrated management strategies for bacterial soft rot in sweet potato postharvest by determining which bacterial pathogens are causing disease, identifying effective products for chemical control that are acceptable for organic and export markets, and providing information on diagnostics and cultural management to stakeholders to through web-based resources, grower meetings, and field days.	$81,439.00
North Carolina Department of Agriculture and Consumer Services	$1,267,999.71	9. Improved Christmas Tree Health through Genomics	This project will be a collaboration between the Christmas Tree Genetics Program, the Forest Health and Conservation Program, and the Molecular Tree Breeding Lab in the Department of Forestry and Environmental Resources at North Carolina State University. Our goal is to accelerate the genetic improvement of Fraser fir against the tree-killing pathogen Phytophthora root rot (PRR). Fraser fir is one of North Carolina's most important specialty crops generating annual revenues exceeding $100 million. The development of novel genomic tools and technologies will have a positive, transformative impact on the North Carolina Christmas tree industry.	$150,000.00
North Carolina Department of Agriculture and Consumer Services	$1,267,999.71	10. Protecting Pollinators in Ornamental Plant Production	This project is a collaboration between North Carolina State University Department of Entomology and Plant Pathology, NC Extension Service, and cooperating nurseries to develop Integrated Pest Management (IPM) tactics to reduce the use of neonicotinoid insecticides. Neonicotinoids threaten pollinators and other beneficials but also greenhouse and nursery profits since many wholesale buyers and consumers will not purchase neonicotinoid-treated plants. We will develop IPM protocols for using alternative insecticides, cultural practices and biological control to replace neonicotinoids. Results will be disseminated to growers, extension professionals, and other stakeholders through web resources, extension workshops, and national print publications.	$100,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
North Carolina Department of Agriculture and Consumer Services	$1,267,999.71	11. Specialty Crops in Early Childhood Education	Farm to preschool (F2P) is a set of strategies that offer increased access to locally grown foods through local procurement, gardening opportunities, and agriculture education activities. F2P encourages family/community engagement and provides additional market opportunities for farmers. ASAP, in partnership with NC Community College (CC) Early Childhood Education (ECE) programs, will improve child/adult nutrition, increase knowledge/consumption of specialty crops, and expand access to specialty crops in underserved communities through the proposed Specialty Crops in Early Childhood Education project.	$125,000.00
North Dakota Department of Agriculture	$3,272,190.59	1. Providing Access to Specialty Crops to Grade Schools in North Dakota	The North Dakota Department of Agriculture (NDDA) will provide educational resources and grants to grade school classrooms to purchase supplies to grow lettuce, herbs, tomatoes and peppers in their classroom during the school year. The growing of vegetables in the classroom will provide hands on learning to enhance STEM education already being taught.	$61,915.88
North Dakota Department of Agriculture	$3,272,190.59	2. Disentangling the Root Rot Pathogen Complex in Lentils through Molecular Diagnostics	The National Agricultural Genotyping Center will optimize a root rot pathogen assay that will test environmental samples from university and private lentil fields to provide preliminary pathogen data in ongoing research and further evaluate molecular diagnostics as a proactive management tool for root rot disease in pulse crops.	$114,636.00
North Dakota Department of Agriculture	$3,272,190.59	3. Comprehensive Panel to Detect Genetic Markers Linked to Herbicide Resistance in Pigweeds	The declining herbicide options to manage pigweeds is a persistent concern for North Dakota dry bean producers. Knowing the herbicide resistance potential of local pigweed populations can help producers avoid costs of using ineffective chemical control. The National Agricultural Genotyping Center will optimize diagnostic assays to detect genetic markers linked to herbicide resistance in pigweeds collected from dry bean fields. The specific objectives for this project are to: 1) evaluate target-site mechanisms for ALS- and PPO-inhibiting herbicide resistance in late-season pigweeds that persist in dry bean fields, and 2) validate high-throughput diagnostic assays for detection of commonly occurring target-site mechanisms.	$123,086.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
North Dakota Department of Agriculture	$3,272,190.59	4. Enhancing Rust Resistance in Confection Sunflower Production through Next-Generation Technologies	The National Sunflower Association will use newly available genome sequence information for sunflower to identify diagnostic single-nucleotide polymorphism (SNP) markers tightly linked to the rust resistance genes (R genes) expanding the options for stacking resistance to obtain an enhanced, long-lasting resistance to the rust disease. Rust is a growing threat to sunflower production worldwide, leading to losses in yield and seed quality. This project will apply cutting edge genetic and genomic approaches to characterize the genetic basis for rust resistance in sunflower. With improved next generation sequencing (NGS) and the decreased cost of sequencing, it is now feasible to discover millions of SNPs for any plant and connect these markers to desirable phenotypic traits.	$130,004.00
North Dakota Department of Agriculture	$3,272,190.59	5. Increasing Consumer Use and Consumption of Peas, Lentils and Chickpeas	The Northern Pulse Growers Association (NPGA) proposal is to design an educational outreach program to the restaurants in the region which will address the priorities of the North Dakota Department of Agriculture related to enhancing the competitiveness of specialty crops through increased sales and consumption of dry peas, lentils, chickpeas and fava beans.	$80,730.00
North Dakota Department of Agriculture	$3,272,190.59	6. Virtual Experiences Delivering Real Protection of Specialty Crops from Plant Diseases and Economic Loss	North Dakota State University plant pathologists will deliver transformational educational experiences to growers by utilizing immersive 360-degree videos and drone imagery that teach disease management practices by letting growers 'experience' protection of specialty crops from diseases and yield loss.	$121,177.00
North Dakota Department of Agriculture	$3,272,190.59	7. Root Rot of Lentil: Evaluation of Crop Rotation, Intercropping and Risk Assessment	Lentil production has been an economic boon to northwest North Dakota, but in recent years root rots have becoming increasingly problematic. Recommendations for a four-to-five-year rotation between lentil crops to avoid the build-up of root rot pathogens in the soil can be a challenge for many growers, as lentils may be their primary profit generating crop. The North Dakota State University Williston Research Extension Center will compare one-, two-, three- and four-year intervals in between lentil crops to determine the effect of these rotation lengths on root rot disease severity and yield in a no-till, dryland cropping system. Intercropping lentils with mustard will be evaluated for suppression of root rot in lentils in a short rotation. Finally, a soil root rot potential seedling bioassay will be used to determine the effect of rotation length on root rot inoculum in the soil and these data will be correlated with yield and field root rot severity. This effort will improve root rot management and help generate more specific rotation recommendations for lentils grown in North Dakota.	$28,662.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
North Dakota Department of Agriculture	$3,272,190.59	8. Pyramiding Desirable Bean Rust Genes for Broader and Durable Resistance	Bean rust is one of the most important diseases both in North Dakota and worldwide. Under high disease pressure conditions, seed yield losses range between 50 to 100%, especially if infection occurs at early growth stages. Genetic resistance is a good control alternative because of lower costs compared with chemical applications, plus it is more environmentally friendly. Since its beginning in the early 1980s, the dry bean breeding program at NDSU focused its efforts on the genetic improvement of rust resistance. The Ur-3 gene was deployed in many released varieties and provided rust protection during many years. Unfortunately, bean rust is a highly variable pathogen and in 2008, a new race of the pathogen that overcomes the Ur-3 resistance gene, was detected in North Dakota. Fortunately, a few alternative genes were found to be effective against this new race (named 20-3). The NDSU dry bean breeding program started efforts to incorporate the Ur-11 resistance gene which has broader resistance. However, additional genes are needed to ensure long-term durable resistance. Recent efforts are focused on incorporating the Ur-5 gene.	$162,533.00
North Dakota Department of Agriculture	$3,272,190.59	9. Integrated Improvement Process of Cold-Hardy Grapes; from Breeding, Production, to Sensory Analysis	The Northern Crops Institute will lead a collaborative and integrated effort between North Dakota State Universities Grape Germplasm Enhancement Project (GGEP) and the North Central Research Extension Center (NCREC) to evaluate 11,000+ winter-hardy grape accessions, including breeding projects, to grafting and production improvements, to final microvinification (small batch wine) process and tasting evaluations at the NCI. Outcome to include an improved process for selecting and screening cold-hardy grapes for North Dakota and disseminate non-proprietary information to all stakeholders in the expanding grape and wine industry through industry meetings, reports and with the Winery Association of ND (WAND) and the ND Grape and Wine Association (NDGWA).	$270,134.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
North Dakota Department of Agriculture	$3,272,190.59	10. Evaluation of Lupin Adaptation in North Dakota and Seed Quality for Food Ingredients	The North Dakota State University Carrington Research Extension Center will evaluate a diverse number of lupin selections to determine their adaptation for production in North Dakota and assess their nutritional profile for inclusion in food products. This project will source and assemble a diversity of lupin genetics representing experimental lines and released varieties grown in other parts of the world. Seed quality of the most adapted materials will be evaluated to determine their level of the primary nutritional factors important for lupin as a food ingredient or product and to assess any presence of alkaloids, an antinutritional factor. Multiple food ingredient companies and researchers will be provided with seed samples for evaluations to determine acceptance within their products. Achievement of project objectives will position North Dakota to be in a favorable position to supply the emerging demand for this high-quality plant-based protein.	$196,972.00
North Dakota Department of Agriculture	$3,272,190.59	11. Impacts of Fungicide Applications and Plant Diseases on Specialty Crop Yields After Hail	North Dakota State University plant pathologists will; 1) determine the severity and yield impact of diseases that occur on pinto bean, navy bean, chickpea, dry edible pea and confectionary sunflower following hail, 2) determine the disease severity and yield impact of foliar fungicide and cupric hydroxide applied after hail events, 3) determine the impacts of fungicide applications on plant health, and 4) develop and disseminate management recommendations to growers at meetings, field days and through media.	$180,342.00
North Dakota Department of Agriculture	$3,272,190.59	12. Mining the Soil and Host Genetics for Sustainable Answers to Verticillium Wilt in Potato	North Dakota State University plant pathologist and potato breeder, and University of Minnesota potato breeder will improve the management of Verticillium wilt of potato using sustainable methods. Specifically, we will develop, optimize and validate multiplex qPCR methods to quantify Verticillium dahliae and Colletotrichum coccodes from potato stem tissue and soil, and identify genetic regions associated with resistance to V. dahliae in potato breeding germplasm developed for North Dakota growers. This project is somewhat unique in that it will leverage existing genetic and phenotypic data for NDSU breeding lines. These efforts focus on two inter-related, critical and sustainable aspects of Verticillium wilt management and bring together three potato researchers with complementary expertise.	$176,720.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
North Dakota Department of Agriculture	$3,272,190.59	13. Defining Optimum Row Spacing for Improved Size Profile and Yield of Chipping Potato Tubers	North Dakota State University will determine the value of narrower row spacing to reduce size profile and improve total marketable yield. Potato chips are most sold in small bags of 0.75 to 1 oz. Because smaller bags are most popular to consumers, chip processors would like to receive smaller sized tubers and will likely mandate a smaller size profile soon. It is unknown though what effect row spacing would have on chipping potato production. Because it is very costly for a commercial potato grower to change equipment for narrower row spacing, a research project should be performed to determine if there is value in narrower row spacing. The purpose of this study is to determine the optimal row spacing of chipping potatoes to improve marketable potatoes.	$117,844.00
North Dakota Department of Agriculture	$3,272,190.59	14. Inducing Sterility in Ornamental Woody Trees and Shrubs	Many woody plants are well adapted for the harsh growing environment of North Dakota. Unfortunately, with non-native plants, there is a risk of invasiveness. Examples of this include Siberian elm and common buckthorn. Both plants are well adapted for growing in very difficult places but are highly invasive. This North Dakota State University project proposes to 1. evaluate commercially available sterile ornamental trees and shrubs and 2. induce sterility by developing tetraploids of several different woody trees and shrubs. These tetraploids will be utilized for breeding and inducing sterile cultivars to be used in the ND nursery and landscape trade.	$45,739.00
North Dakota Department of Agriculture	$3,272,190.59	15. Develop Complementary Pulse Proteins for Improving Nutritional Quality and Functionality of Pulse Proteins	North Dakota State University will address the critical needs of pulse proteins to be utilized as “Alt protein” in the food industry, which can directly help increase the market and profitability of pulse production in North Dakota (ND). In North America, positioning a good/excellent source of protein claim in food requires enough “high-quality” protein. The quality of a protein is primarily determined by its amino acid composition and digestibility. Pulse proteins are known to be deficient in certain essential amino acids such as sulfur amino acids or tryptophan. The most promising solution to overcome these deficiencies by combining pulse proteins with cereal proteins/or another source of plant protein, leading to a complete amino acid profile and overall digestibility and functionality. However, functionality, sensory and flavor profile of pulse protein blends are not explored yet. Therefore, the aim of this study is to investigate the effects of pulse protein and/ or rice, hemp protein blending method, ratio on amino acid profile, in vitro digestibility and physicochemical characteristics of protein mixture.	$181,758.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
North Dakota Department of Agriculture	$3,272,190.59	16. Determining Nitrogen Use Efficiency of New Russet-skinned Potatoes	North Dakota State University (NDSU) will determine the response of lower nitrogen rates of newly released potato cultivars or advanced selections from the NDSU potato-breeding program. There is a great push for more sustainable potato production North America from consumers and processors. One way to improve sustainable potato production is to reduce inputs by using new cultivars that have higher nitrogen use efficiency. A reduction of inputs could lessen the production cost and put fewer products into the environment. Exciting cultivars that the NDSU Potato Agronomy program have tested can produce potatoes with less nitrogen than the standard Russet Burbank.	$134,594.00
North Dakota Department of Agriculture	$3,272,190.59	17. Optimizing Fungicide Spray Droplet Size for Improved Management of Foliar Diseases in Field Peas	The North Dakota State University Carrington Research Extension Center, in cooperation with the NDSU North Central and Langdon Research Extension Centers, will conduct multi-location field trials to develop rigorous disease management recommendations for optimizing fungicide spray droplet size for improved management of Ascochyta blight and powdery mildew in field peas. Field peas, grown for domestic and international consumption and for the non-GMO plant-based fractionated protein market, are an important rotational legume in western and central North Dakota. Powdery mildew and Ascochyta blights are economically important diseases of field peas, impacting both seed yield and seed quality, and fungicides are important tools for their management. Preliminary research indicates that the yield response to fungicide applications in field peas is strongly influenced by the spray droplet size utilized in fungicide applications. This project seeks to establish field studies to develop rigorous recommendations on optimizing fungicide droplet size relative to crop canopy characteristics for improved management of Ascochyta blight and powdery mildew in field peas.	$107,581.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
North Dakota Department of Agriculture	$3,272,190.59	18. Optimizing Fungicide Tank-Mixes with Chlorothalonil for Improved Management of Ascochyta Blight in Chickpeas	The North Dakota State University Carrington Research Extension Center, in collaboration with the NDSU North Central and Williston Research Extension Centers, will conduct field trials and conduct outreach to North Dakota and Montana chickpea producers to improve the management of Ascochyta blight in chickpeas. With the development of resistance to QoI fungicides, Ascochyta blight of chickpeas is managed almost exclusively with fungicides with DMI (triazole) and/or SDHI modes of action. Neither mode of action provides satisfactory disease control under conditions of high disease pressure, and the reliance on two modes of action is high risk for the development of fungicide resistance. The contact fungicide chlorothalonil represents another mode of action and is registered for use on chickpeas, but it is not used widely due to poor efficacy when applied alone. This project seeks to optimize fungicide application rates in tank-mixes with chlorothalonil, assess whether different brands of chlorothalonil perform equivalently, evaluate which commonly used fungicides benefit from this tank-mix strategy, and identify the spray droplet size that optimizes the performance of the tank-mix.	$109,377.00
North Dakota Department of Agriculture	$3,272,190.59	19. Boosting Field Pea Production and Insect Pest Control: The Role of Root Microbe Diversity	Root microbes are promising tools in the sustainable management of specialty crops that can be manipulated by farmers, although their use is hampered by variable performance and a lack of information of how they function under realistic growing conditions. North Dakota State University will conduct greenhouse and field experiments to determine how manipulating the species diversity of beneficial arbuscular mycorrhizal fungi benefits microbes associated with field pea roots, levels of key phytohormones and nutrients, plant growth, and reduces insect pest densities. NDSU will disseminate results to stakeholders via presentations and published articles.	$99,582.00
North Dakota Department of Agriculture	$3,272,190.59	20. Assessment of Improved Haskap Selections for North Dakota	The North Dakota State University Carrington Research Extension Center will make selections of new Japanese haskaps to identify varieties that are better suited to North Dakota's growing conditions. We will assess the berry cling, ripening time, productivity and fruit quality of new material and plants that were propagated in a previously supported project which will begin to bear fruit in 2022 and 2023. Results will be made available through meetings, field days, publications and web content.	$97,369.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
North Dakota Department of Agriculture	$3,272,190.59	21. Translating High-Throughput Phenotyping into Realized Genetic Gain in Pulse Crops	Collecting useful, accurate, interpretable, and biologically relevant phenotypic data in a resource-efficient manner is a major bottleneck in plant breeding. The phenotyping bottleneck, particularly for capturing under- and over-canopy traits, is a perennial problem for successful evaluation of new breeding lines. The NDSU researchers will pioneer development and utilization of a high-throughput field phenotyping platform for 1) efficient generation of high-quality trait data, 2) speed-up the time-consuming and laborious traditional data gathering, and 3) increase selection accuracy of phenotyping field experiments. We will explore a combination of aerial imaging and under-canopy robot, including development of a machine learning algorithm, for estimation of important agronomic yield-related and adaptation traits. We will focus our efforts on field pea with a current market cap value ca $9 billion due to growing plant-based protein market.	$190,453.00
North Dakota Department of Agriculture	$3,272,190.59	22. Weed Control in Onion: Using an Integrated System for Early Season Control	North Dakota State University will establish a contractual relationship with the State Department of Agriculture to lead and execute the project. Objectives are to determine appropriate herbicide applications that will keep the field weed-free without onion injury prior to the two-true-leaf stage when several products are available. Field experiments will be in a grower's field and the NDSU Agricultural REC near Oakes, ND. Data from each location will be recorded and analyzed. The findings from this research will be provided at field days, meetings, and will be published nationally and locally online. With demonstration of early season weed control, onion acreage will increase, potentially diversifying a producer's cropping system and increasing the competitiveness and profitability for ND growers.	$83,283.00
North Dakota Department of Agriculture	$3,272,190.59	23. Unlocking Beneficial Microorganisms for Enhancing Adaptability and Resilience of Dry Edible Pea	Dry edible pea is a critical specialty crop to agriculture in North Dakota, which ranks top in the US for dry edible pea production. Consumption of pea protein is gaining traction in a growing market driven by products such as the Beyond Meat burger. In North Dakota, key stresses that affect pulse crop production include abiotic stresses like drought and biotic stresses such as root rot. A growing body of evidence suggests that plants can recruit beneficial microbes from the soil to improve their adaptability and resilience to stressful conditions. Researchers from North Dakota State University are working to identify beneficial members of the pea microbiome that become enriched following exposure to biotic and abiotic stresses and applying new innovations towards harnessing them as a tool for sustainable dry edible pea production.	$199,663.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Commonwealth of the Northern Mariana Islands Department of Lands and Natural Resources	$154,006.21	1. Specialty Crop Value Added Project	The Division of Agriculture will partner with the only publicly owned Farmer's Market in Garapan to enhance the shelve life of the specialty crops by processing them to last longer, thus preventing them from either going to waste or returning them to the farmers who would then end up not making any profit. The project would also allow the market to buy more specialty crops from the farmers because any surplus would be processed and sold, thus benefiting both the farmers and the public market.	$20,000.00
Commonwealth of the Northern Mariana Islands Department of Lands and Natural Resources	$154,006.21	2. Special Crops Radio Talk Show Project	The Division of Agriculture will partner with KKMP Radio Station to do a Radio Talk Show featuring local farmers to discuss their experiences in preparing the soil, planting, nourishing, harvesting and marketing their specialty crops. Since specialty crops are healthy foods for people to consume, even chiefs and dieticians will be invited to participate to provide a well-rounded talk show program. Different farmers, chiefs and dieticians will be contacted to participate in this live radio talk show program.	$20,000.00
Commonwealth of the Northern Mariana Islands Department of Lands and Natural Resources	$154,006.21	3. Agricultural Practices and Farming Techniques Project	The Division of Agriculture will partner with Northern Mariana College CREES to provide events at selected venues around the islands or at different farm plots. These events will provide farmers opportunities to be taught the different farming techniques, composting, agroforestry, pest control, plant propagating and others. They will also be taught harvesting and marketing techniques for their products to be presentable and sellable. In addition to DOA and college staff, other technical providers will be contacted and recruited from off island to lead or be part of these events. These events will take place on Saipan, Tinian and Rota.	$75,413.00
Ohio Department of Agriculture	$573,478.02	1. The Ohio State University- "Long Cane Raspberry Production System for Acreage Expansion, Farm Diversification, Risk Mitigation and Season Extension	Dr. Gary Gao and his team members at Ohio State University (OSU) South Centers will optimize the long cane raspberry production system for growers' adoption and for helping new and existing farmers expand raspberry acreage, diversify farming operations, mitigate the risks, and extend fruit harvest season.	$95,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Ohio Department of Agriculture	$573,478.02	2. The Ohio State University- "FSMA Water Standard for Surface Irrigation Water in Tomato Production using High Tunnel Drip-line Systems"	The Ohio State University Center for Food Animal Health seeks funding to assess the environmental and food safety risks associated with the use of surface water from streams and ponds in drip-line irrigation systems and high tunnels. Fresh market tomato production systems will be evaluated in this study because it is the most common vegetable crop grown by farmers in the Midwest under high tunnels and it is frequently associated with wide-scale foodborne outbreaks.	$85,000.00
Ohio Department of Agriculture	$573,478.02	3. The Ohio State University- "Improving Tomato Yield and Quality Using Nano Fertilization with Salicylic Acid"	The Ohio State University South Centers will conduct applied research to improve the growth, fruit yield, and quality of fresh market tomato production by developing science-based management techniques and disseminating evidence-based knowledge to stakeholders via traditional and electronic Extension outreach activities.	$55,000.00
Ohio Department of Agriculture	$573,478.02	4. "Feed Our Future: Going Local in Schools to Support Ohio's Specialty Crop Industry"	The Cuyahoga County Board of Health (CCBH), backbone agency for Feed Our Future (FOF): Local Foods for Growing Minds, has successfully executed farm to school programming in the Northeast Ohio region for the past ten years. Under this funding opportunity, it is CCBH's hope to 1) increase investment in the specialty crop industry by school districts, 2) create new turn-key solutions that increase students and other stakeholders recognition and knowledge of the specialty crop industry, and 3) expand the FOF framework to one new region of the Ohio.	$55,000.00
Ohio Department of Agriculture	$573,478.02	5. Bowling Green State University - Strategic Positioning Plan for Lake Erie Sediments as a Specialty Crop Amendment"	Dr. Angélica Vázquez-Ortega (Bowling Green State University) and Dr. Guilherme Signorini (The Ohio State University) will investigate the beneficial use of lake sediments (LS) as soil amendment for specialty crops, including tomato, carrot, strawberry, and lettuce, by conducting a greenhouse experiment using various LS to soil ratios. We will determine the potential bioaccumulation of heavy metals, microcystin, polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs) in the specialty crop fruit and edible tissue to ensure food safety.	$135,000.00
Ohio Department of Agriculture	$573,478.02	6. Central State University— "Development of a Low-Cost and Smart Raspberry Drip Irrigation Robot"	Central State University (CSU) will develop a low-cost, reliable, and smart drip irrigation system for beginning raspberry farmers. CSU will integrate an automated robot to obtain real-time soil moisture data and communicate with the irrigation controls to optimize zone irrigation to not only improve water efficiency but also increase yields through reduced plant stress, management costs, and irrigation efficacy.	$95,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Oklahoma Department of Agriculture, Food, and Forestry	$601,281.20	1. Effect of Storage Time and Harvest Season on Transplant Success of Bermudagrass and Zoysiagrass Sod	Oklahoma State University researchers in the Department of Horticulture and LA will identify the effect of five storage times (0, 24, 48, 72, and 96 hours after harvest) and three harvest season (late spring, mid-summer, and late summer) on the transplant success of bermudagrass and zoysiagrass sod rolls/slabs stacked in pall.	$79,460.00
Oklahoma Department of Agriculture, Food, and Forestry	$601,281.20	2. Canopy Management of Pecan Trees for An Earlier Reproduction Recovering from Ice Storm Damage.	Scientists at Oklahoma State University (OSU) will study the canopy recovery of pecan trees damaged by ice storms to accelerate the recovery toward reproduction. Ice storms often result in catastrophic damage of pecan orchards and improper canopy management will delay return to tree productivity resulting in devastating economic loss.	$99,184.00
Oklahoma Department of Agriculture, Food, and Forestry	$601,281.20	3. Doubling the Production And Marketing Seasons For Broccoli, Snap Beans And Asparagus In Oklahoma	Scientists at Oklahoma State University's Horticulture and L.A. Department will combine their expertise and resources in small farm vegetable production and harvesting, handling and objective measurement of quality to devise systems for producing high-quality broccoli, snap beans and asparagus in their conventional and their alternate production seasons in Oklahoma.	$99,817.00
Oklahoma Department of Agriculture, Food, and Forestry	$601,281.20	4. Investigation of Hops (Humulus Lupulus) As A New Oklahoma Specialty Crop	Scientists at Oklahoma State University's Horticulture and L.A. and Biosystems and Agricultural Engineering Departments will combine their expertise and resources in new crop production and harvesting, handling and objective measurement of quality to devise systems for producing hops in field and greenhouse production systems in Oklahoma.	$99,569.00
Oklahoma Department of Agriculture, Food, and Forestry	$601,281.20	5. Enhancing Specialty Crop Competitiveness in OK Through Replicated Aquaponic Research Systems At OSU	Oklahoma State University and Symbiotic Aquaponic, LLC will create a partnership that will build and establish seven replicated media bed aquaponic systems. Specialty crop competitiveness will be enhanced through research conducted by OSU on these systems that provides valuable data and knowledge regarding specialty crop productivity within media bed aquaponic systems.	$88,076.00
Oklahoma Department of Agriculture, Food, and Forestry	$601,281.20	6. Precision Irrigation to Improve Water Use Efficiency in Production of Ornamentals, Vegetables, and Turfgrass.	As input costs continue to increase, growers are looking for simple solutions to increase production or plant quality without having to make big changes to their production. Research at Oklahoma State University will evaluate use of soil moisture sensors for precision irrigation for ornamental, vegetable, and turf production.	$85,523.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Oregon Department of Agriculture	$2,070,525.92	1. Stop the Spread of a Gill's Mealybug in Oregon	Gill's mealybug (FEGI), Ferrisia gilli, is an emerging pest. In Oregon, the crop most at risk for damage is grape. FEGI could pose a regulatory problem for growers shipping to uninfested countries or states. FEGI is also a vector of grapevine leafroll disease, a significant concern for growers. If no action is taken, this pest will spread through suitable growing areas throughout the state. In addition to grape production, it may impact both the nursery and fruit industries. Plant Program's Insect Pest Prevention and Management proposes a program to delimit the area infested by the mealybug with the intent of educating Oregon grape growers about this pest and management practices to limit its spread. No lure is available for this pest. Research is being conducted to determine the pheromone of FEGI. If it becomes available as a lure, we will utilize it in our survey effort. The work will be implemented in cooperation with OSU extension.	$24,966.00
Oregon Department of Agriculture	$2,070,525.92	2. Invasive Wasp and Bee Survey and Educational Outreach to Bee	Because invasive hornet species can destroy honeybee colonies, they pose a threat to our honey producing industry, and to Oregon specialty crops reliant upon honeybee pollination. As our beekeepers are likely to encounter these pests, they require education on recognizing invasive hornets and hive attack. Invasive mason bee species threaten our mason bee industry, which is the pollination source for several specialty crops. These invasive bees can contaminate our managed mason bee stock and increase the likelihood of transporting novel bee pests throughout the state. Exotic wasps pose a threat to our Christmas tree export industry as they can lead to product rejection if found. The outcomes of this project are 1) documenting any of the listed species found at high-risk sites and 2) creating a webinar and outreach materials targeted at beekeepers.	$100,089.00
Oregon Department of Agriculture	$2,070,525.92	3. Dry Farming Variety Trials: Connecting Producers, Researcher	Chemeketa Community College's project, Dry Farming Variety Trials: Connecting Producers, Researchers, and Students, will educate students, producers, and the community about dry farming as a resilient and reliable specialty cropping system to increase the amount of land that is considered suitable for agriculture production by demonstrating the ability to produce specialty crops without irrigation. This project will establish dry farm research trials, provide research internship opportunities for community college students to study dry farming and collaborate with Oregon State University students and researchers, and disseminate the results to a wide audience through a variety of outreach activities and events. These experiences will directly teach students and the community about specialty crop research, production, and consumption.	$88,429.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Oregon Department of Agriculture	$2,070,525.92	4. Connecting Specialty Crop Professionals with Science Classes	Oregon Agriculture in the Classroom Foundation will provide a platform for specialty crop scientists, researchers and professionals to increase knowledge, familiarity and exposure to Oregon's specialty crops within middle and high school science classrooms. This will be accomplished through a series of recorded conversations, virtual field trips, educator workshops and a repository of free media and curriculum featuring Oregon's vibrant specialty crop industry.	$80,762.00
Oregon Department of Agriculture	$2,070,525.92	5. Grow This! Driving Sales of and Access to Specialty Crops	Oregon Potato Commission will establish agreements with Oregon Aglink and Oregon State University Extension (OSU) and OSU Food Hero will lead this project and coordinate partners. This is a market access and development project designed to enhance the competitiveness of 40+ specialty crops through increasing child and adult nutrition knowledge and consumption of specialty crops by expanding access at schools and in local neighborhoods.	$174,969.00
Oregon Department of Agriculture	$2,070,525.92	6. Generating Demand for Oregon Berries: Consumer Education In-Store and Online	The Oregon Raspberry and Blackberry Commission (ORBC) and the Oregon Strawberry Commission (OSC) will generate consumer awareness and demand for Oregon grown blackberries, raspberries, and strawberries in West Coast US markets by implementing a multi-pronged consumer education campaign both in-store and online for processed berries and value-added products.	$131,900.00
Oregon Department of Agriculture	$2,070,525.92	7. Oregon Master Beekeeper Training for Spanish-Speaking Beekeepers	The Oregon State Beekeepers Association will work with the Oregon State University Honeybee Lab to develop the Oregon Master Beekeeper Program in Spanish. This effort to train Spanish-speaking beekeepers of all levels will improve inclusivity in the beekeeping industry as well as provide economic opportunity for new beekeepers (honey production, pollination services). Training will improve job performance of those working in pollination services to Oregon's specialty crops and commercial honey production.	$59,290.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Oregon Department of Agriculture	$2,070,525.92	8. New Alternatives to Replace Chlorpyrifos in Tree/ Small Crops	Chlropyriphos has been an important tool for the control of insects in many cropping systems across Oregon. The recent ruling to phase out this tool has left many growers scrambling to find viable alternatives for protecting against key insect pests. Oregon State University has been instrumental in researching new and innovative alternative control tactics that seek to increase sustainability and profitability for growers. Many of these innovative tools are still in development and require more research before they can be scaled up and applied industry wide. In this proposal we outline research into alternative control tactics against four key insect pests, codling moth (CM), spotted wing drosophila (SWD), brown marmorated stink bug (BMSB), and filbertworm (FBW). Various technologies have been developed for these pests, sterile insect technique against CM, a new arrestant against SWD, attractants for BMSB, and mating disruption for FBW. These technologies have had promising early results and have the potential to significantly enhance IPM for growers. This project strives to advance the development and implementation of these promising technologies.	$168,588.00
Oregon Department of Agriculture	$2,070,525.92	9. Growing Oregon's Asian Herb and Vegetable Production System	Oregon State University, in partnership with Herb Farm and Iverson Family Farms, will train farmers on the adoption of specialty Asian vegetables and medicinal herb crops. Additional project partners Oregon College of Oriental Medicine, SEDCOR, and Organically Grown Company will also take part in Extension market events to connect adopting farmers with market research and opportunities to showcase locally grown crops to potential buyers, creating a path to market to support new specialty crop production.	$169,313.00
Oregon Department of Agriculture	$2,070,525.92	10. Optimizing Irrigation Initiation Time in Oregon	Wine grapes are the most valuable fruit/nut specialty crop in Oregon, and the 7th most valuable agricultural commodity overall. Despite being known for its dry-farmed vineyards, about 30% of Oregon's vineyard acreage is irrigated, and competition for freshwater resources is increasing between urban and rural entities. Though there is extensive scientific literature about irrigation quantity, there is a surprising lack of literature about irrigation timing. Moreover, few wine grape irrigation studies consider fruit quality as the response variable of interest. Led by Oregon State University, this project brings together a multidisciplinary team of partners across all major wine producing regions of Oregon that include researchers, extension specialists, and producers. We aim to bridge this knowledge gap in irrigation management and develop best irrigation management practices for wine grapes in Oregon.	$174,682.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Oregon Department of Agriculture	$2,070,525.92	11. Hydroponic Agriculture: Research and Training	Oregon State University (OSU) will establish a comprehensive hydroponic agriculture research and training program to increase the State's capacity to educate new and existing farmers who are interested in diversifying their production with technologically intensive hydroponic systems. Despite being a national leader in horticulture and widely known for its local food movement, Oregon lacks opportunities to support farmers interested in hydroponic production. This project will enhance the competitiveness of Oregon specialty crops by creating opportunities for sustainable, diverse, and resilient hydroponic production systems.	$174,032.00
Oregon Department of Agriculture	$2,070,525.92	12. Improving Containment of Wild Carrot in Oregon Carrot Seed	The Oregon State University Central Oregon Agricultural Research & Extension Center and Oregon State University Institute for Natural Resources will investigate the current and potential geographic and habitat-type distribution of the industry-priority weed wild carrot in and around the carrot seed producing region of Oregon, and develop current, research-based recommendations for detection and control of this critically important seed contaminant, which poses considerable potential risk to the continued profitability of carrot seed production in Oregon. Expected products include a spatially explicit Species Distribution Model, accompanying probabilistic risk maps for use by weed control practitioners in the region, and robust, research-based control recommendations.	$149,063.00
Oregon Department of Agriculture	$2,070,525.92	13. Novel Coatings to Prevent Uptake of Smokes into Wine Grapes	Oregon State University will conduct research to produce novel food coatings to stop uptake of smoke volatile compounds into wine grapes. The recent wildfires impacted wine regions throughout the states of Oregon, Washington and California, with many wineries and vineyards not picking fruit or producing wine. The wines made from affected grapes can develop smoke related off-aromas and flavors associated with negative wine quality.	$167,270.00
Oregon Department of Agriculture	$2,070,525.92	14. Oregon Wine Direct Sales Reporting and Benchmarking and Work	The Oregon Wine Board, which represents all Oregon winegrowers and wine producers, will equip all interested producers and associations within Oregon's statewide wine industry with a sophisticated platform to aggregate, benchmark and provide analytics for direct sales data. It is anticipated that through the adoption of this new business model and recommended practices, 125 enrolled wineries will increase sales in their direct-to-consumer channels by 15% on average, in part driven by increasing access through new wine club memberships.	$169,500.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Oregon Department of Agriculture	$2,070,525.92	15. Farm to Fork: Building On-Farm Experiences	Umpqua Valley Farm to School (UVF2S) is a nonprofit organization which, if awarded, will establish a contractual relationship with the State Department of Agriculture to lead and execute this project. UVF2S will plan and implement farm field trips with local school districts and build a sustainable plan with local partners. By providing training to farmers in the areas listed, the farmers will increase sales and the ease of which they partner with school nutrition staff. Students and families will have a better understanding of our local food system and the importance of supporting local agriculture.	$72,149.00
Pennsylvania Department of Agriculture	$1,055,540.08	1. Workforce Retention, Leadership, and Food Safety for Next Generation & Diverse Background Specialty Crop Producers	Penn State Extension will develop and deliver research-based training in both English and Spanish for specialty crop growers that will focus on ways to reduce turnover and to minimize sources of contamination of fresh produce that can cause foodborne diseases. Reducing turnover, and delivering safer products to market, will in turn impact profitability and increase farm viability. Educational programs will be tailored to the needs of new and minority specialty crop growers. Once this training is developed, it will be scalable and offered throughout Pennsylvania and online.	$58,472.00
Pennsylvania Department of Agriculture	$1,055,540.08	2. Enhanced Preparedness Against Pathogens that Threaten Specialty Crop Production and Markets	This proposal builds on a long-term partnership between Penn State and the Pennsylvania Dept. of Agriculture (PDA) Plant Diagnostic Laboratory (PDL) and aims to enhance the state's preparedness against several pathogen groups threatening the production and marketability of multiple specialty crops, including hop. Due to increasing agricultural trade and globally networked plant production systems, exotic pathogens and novel pathogen variants frequently migrate.	$64,360.00
Pennsylvania Department of Agriculture	$1,055,540.08	3. Heat-Proofing and Resilience for Potatoes in Pennsylvania	The Pennsylvania State University will provide solutions to major challenges of modern potato agriculture: improving yield and quality traits, under changing environmental stressors, namely heat stress. Global climate change affects weather patterns resulting in extreme heat and drought posing a crucial challenge to sustainable potato production negatively impacting initial tuberization and tuber growth resulting in lower tuber yield and quality. The scale of yield loss due to heat stress, however, depends on the duration, severity and plant growth stage.	$63,288.00
Pennsylvania Department of Agriculture	$1,055,540.08	4. The Neighborhood Food Project	The LEAF Project Inc. will harness the energy and talents of the youth growers within our program to increase access to and consumption of specialty crops through a youth-supported community backyard garden program. Through this program, LEAF will train youth interns in the skills necessary to site, design, and build garden plots and then equip individuals, families, and organizations throughout South Central PA with the knowledge to grow their gardens and cook with the produce.	$38,124.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Pennsylvania Department of Agriculture	$1,055,540.08	5. Juventud Campesinx del Futuro (Young Farmers of the Future)	Norris Square Neighborhood Project, with its partners and youth farmers, will revitalize El Batey, one of its urban farms—transforming this community space into one with a diversity of traditional Puerto Rican specialty crops that are accessible and affordable to the community, and celebrate the cultural heritage of the neighborhood.	$92,700.00
Pennsylvania Department of Agriculture	$1,055,540.08	6. Enhancing Mushroom Yield and Quality Through On-Farm Modifications and Implementation of Novel Pest Management Strategies	Penn State University will mitigate mushroom phorid fly populations in the community and on mushroom farms by developing and facilitating the adoption of novel control methods for flies on mushroom farms in Southeastern Pennsylvania. Building on our successful proof of concept on one demonstration farm in Chester county we will work directly with mushroom growers to implement specific modifications and management strategies appropriate to individual buildings and crop management practices.	$100,228.00
Pennsylvania Department of Agriculture	$1,055,540.08	7. Techno-Economic Assessment of Hops Production, Densification, and Distribution in Pennsylvania	Penn State University will develop a scientifically-based decision-making tool for small-scale hop growers and other stakeholders to assess the economics of hops production, pelletization, and distribution in Pennsylvania. This tool will also include a comparison of the economics of hops pelletization on farm vs. in centralized locations, to assist hop growers in decision-making related to hops pelletization.	$70,740.00
Pennsylvania Department of Agriculture	$1,055,540.08	8. Preparing Beekeepers in Pennsylvania for the Spread and Management of Africanized Honeybees	The Pennsylvania State University will take the first steps to prepare beekeepers in Pennsylvania for the spread and management of Africanized honeybees. The honeybee Apis mellifera is the most important crop pollinator and produce over 600 tons of honey yearly in Pennsylvania. Currently, all the protocols and educational programs for beekeeping management in the northeast are based on practices developed for the mild temperament of European honeybee subspecies. In the US, the honeybee population is a hybrid of several European subspecies, with a great proportion of ancestry from the Italian subspecies Apis mellifera lingustica.	$147,753.00
Pennsylvania Department of Agriculture	$1,055,540.08	9. Evaluate and Select Potato Varieties to Replace “Norwis” in Pennsylvania Phase 2021-2022	Pennsylvania Cooperative Potato Growers, Inc. will work with Sterman Masser, Inc. and Penn State University Potato Team to evaluate and select potato varieties to replace Norwis in Pennsylvania. We will select varieties that may have potential to fry similarly to Norwis but have better field and storage characteristics. We are seeking higher yields and better shaped tubers that produce a high-quality fresh cut potato.	$130,217.21

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Pennsylvania Department of Agriculture	$1,055,540.08	10. Specialty Crops Test Plots and Community Education	The Indiana County Conservation District will demonstrate how to grow specialty crops by creating demonstration test plots at three locations, expand community knowledge of specialty crops, and combat food desert issues.	$100,491.24
Pennsylvania Department of Agriculture	$1,055,540.08	11. 2022 Pennsylvania Veggies Promotion and Demand Generation	The Pennsylvania Vegetable Marketing and Research Program (PVMRP) will further its marketing strategies for Pennsylvania vegetables focused on its PA Produce Month promotion by partnering with restaurants, hosting Q&As with food experts and growers, creating educational and promotional web based content for growers, enhancing the PAVeggies.org website and strategically reviewing the PVMRP promotion efforts.	$50,450.00
Pennsylvania Department of Agriculture	$1,055,540.08	12. Pennsylvania Farm to Retailer Initiative	The Food Trust will pilot the Pennsylvania Farm to Retailer Initiative to increase access to Pennsylvania produce at corner stores and school- and community-based farm stands. The Food Trust will develop new wholesale opportunities for Pennsylvania farmers who attend Philadelphia farmers markets by providing technical assistance to both store owners and farmers and creating marketing materials to promote Pennsylvania produce.	$50,000.00
Departamento de Agricultura de Puerto Rico	$483,669.55	1. Increasing High Quality Cocoa Production in Puerto Rico.	The Puerto Rico Department of Agriculture (PRDA) and the Innovation Fund for Agricultural Development (FIDA), as part of their public policy, have an interest in increasing cocoa production in Puerto Rico. This cocoa project is targeted to increase the production of cocoa and position it in the same worldwide standing as coffee from Puerto Rico. To be officially recognized as part of the best growers of cocoa in the world.	$17,920.00
Departamento de Agricultura de Puerto Rico	$483,669.55	2. Effect of Artificial Light, Phosphorus Fertilizer and Hormones to Develop Off-Season Floral Induction and Fruits Production of Pitahaya (Hylocereus	The popularity of the exotic fruit Pitahaya, or dragon fruit (Hylocereus undatus), is booming in Puerto Rico. Farmers are using different management practices, trellis systems and cultivating varieties that have not been studied on the Island. This research project is being proposed to evaluate different methods of off-season floral induction (illumination with solar energy, phosphorus fertilizer and hormones to increase flowered) will be established at the Lajas Agricultural Experiment Substation to evaluate flowering, fruit set, production, maturity index and fruit quality of off-season production.	$82,754.35
Departamento de Agricultura de Puerto Rico	$483,669.55	3. Consume Local Products with Delpais Chefs.	With the adoption of the “Delpaís” brand, the Government of Puerto Rico seeks to promote local products, by identifying and differentiating them, thus promoting their consumption, which will cause an increase in the supply, that is, greater planting of local produce.	$213,920.66

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Departamento de Agricultura de Puerto Rico	$483,669.55	4. Capacity Building in International Trade.	The Puerto Rico Department of Agriculture (PRDA), the Small Business and Technology Development Center (Puerto Rico SBTDC) and PROMOEXPORT have the priority to guarantee the food security of our Island, in addition to explore and facilitate the export of agricultural products. For the PRDA, it is important to strengthen the technical capacities of Puerto Rico farmers, to achieve the quality standards established to export agricultural products. With this new project we have the need to bring to their maximum competitive capacity the agricultural activities with the greatest economic viability, the greatest demand and potential for local and export marketing.	$26,700.00
Departamento de Agricultura de Puerto Rico	$483,669.55	5. Increase Market Competitiveness for Specialty Crops Products Cultivated in Puerto Rico after the Covid-19 Pandemic.	The Puerto Rico Department of Agriculture (PRDA) and the Innovation Fund for Agricultural Development (known by its acronym in Spanish as FIDA) are aware of the difficulties that farmers must overcome to access local markets after the Pandemic of the Covid 19. Most of our farmers still does not have sufficient knowledge in marketing. As a result, the majority of them do not possess technical marketing and sales skills neither business sense to market, distribute and sell their products without the assistance of PRDA and/or FIDA. Their presence, with the assistance of PRDA and FIDA, in trade fairs, events and conventions are great opportunities for farmers to learn how to access their target market and increase their sales. These events are also a great opportunity to develop awareness on the consumers of local products produced in Puerto Rico.	$102,000.00
Rhode Island Division of Agriculture	$273,605.74	1. Soil Steaming Technical Assistance to Reduce Disease and Weed Seeds in High Tunnel Soils	The Southern Rhode Island Conservation District (SRICD) will establish a technical assistance program for specialty crop growers in Rhode Island to utilize low pressure steam to increase yields and reduce costs in production high tunnels by offering demonstrations and instructional workshops and establishing a long-term technical assistance program to make the machine accessible to growers and researchers across the state.	$53,406.48
Rhode Island Division of Agriculture	$273,605.74	2. Preserving Rhode Island's Bounty: From Farm to Jar	The University of Rhode Island, Fisheries, Animal and Veterinary Sciences Department and Cooperative Extension Food Safety Education Program will develop a video series on proper handling and safe preservation of locally grown specialty crops. These videos will follow an interview/conversation format and feature members of the local farming community and demonstrations by URI food safety educators. This video series will not only promote safe handling and proper preservation techniques of RI specialty crops but will also enhance awareness of good agricultural practices in RI's farming community, while increasing their demand and accessibility of year-round consumption.	$24,671.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Rhode Island Division of Agriculture	$273,605.74	3. Vegetable Variety Trials for RI Growers: One-cut Lettuce for Sustainable Salad Mix	The University of Rhode Island will conduct research trials to evaluate performance of new “one-cut” lettuce varieties under Rhode Island conditions in the high tunnel and the open field. Trial data will be used to recommend varieties for specific seasons and production systems; results will be shared with Rhode Island vegetable growers through Cooperative Extension publications, field days, and participatory trial evaluation events.	$38,908.00
Rhode Island Division of Agriculture	$273,605.74	4. Technical Assistance, Training, Outreach in Support of Innovative Digital Engagement, Organic Techniques and Product Dev for Young & Organic SC Far	The Northeast Organic Farming Association of Rhode Island (NOFA/RI) seeks to enhance the competitiveness of specialty crops through technical assistance, training and outreach to young & organic specialty crop farmers. It seeks to increase the demand for more farmers who can supply organic products to state customers. The focus addresses certified organic crops or those grown with organic methods in response to increasing market demand. The project’s objectives are directed towards building farmer capacity in practicing organic techniques or in transitioning to certified organic production. The objectives further seek to diversify our forms of community engagement by using several means of interaction ranging from interactive Zoom webinars to free online trainings and YouTube channel productions.	$35,276.80
Rhode Island Division of Agriculture	$273,605.74	5. The Rhody Grown Campaign	The RI Division of Agriculture will support RI Grown specialty crops by further developing an RI Grown marketing toolkit for farms, and by investing in an externally managed marketing campaign to better reach consumers interested in supporting local agriculture. The RI Grown program, was designed to meet consumer demand for purchasing locally grown specialty crops. The RI Grown program offers a competitive advantage to any specialty crop growers who wish to use the RI Grown marketing tool kit.	$65,148.01
Rhode Island Division of Agriculture	$273,605.74	6. Enhancing Market Access for RI Specialty Crop Growers	The Rhode Island Department of Environmental Management – Division of Agriculture (RIDEM) will put measures in place to enhance market access for Rhode Island specialty crop growers through providing access to USDA Organic Certification, RI – GAP certification and Agricultural water quality testing to promote food safety.	$36,700.00
South Carolina Department of Agriculture	$601,531.03	1. Produce Safety Rule On-Farm Produce Safety Improvements and Grower Training Grant	The South Carolina Department of Agriculture will assist produce growers in enhancing food safety on their farms by offering Produce Safety Rule Grower trainings at a reduced cost and will provide a cost share program to assist produce growers in implementing on-farm food safety improvements in order to comply with the requirements of the Food Safety Modernization Act, Produce Safety Rule.	$30,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
South Carolina Department of Agriculture	$601,531.03	2. Exploring Novel Armillaria Root Rot Management Strategies in Peach	Clemson University will develop novel strategies to manage Armillaria root rot (ARR) in peach by deploying a two-prong approach that involves recombinant virus-mediated host-resistance development and nucleic acid-based bio-pesticide application. This information will be made available to the stakeholders through grower meetings and field days and communicated to the US Environmental Protection Agency.	$79,149.00
South Carolina Department of Agriculture	$601,531.03	3. Evaluation of Agricultural Carbon Waste Streams to Facilitate Anaerobic Soil Disinfestation in Watermelon Production	In partnership with Clemson University, Growers for Grace will investigate the viability of agro-industrial plant-based waste streams as a sustainable carbon source in Anaerobic Soil Disinfestation (ASD). This collaborative research will explore the efficacy of these organic waste streams against the proven ASD standard in a watermelon field trial in South Carolina. This project will also identify and evaluate efficiencies gained by using these specific substrates as an ASD facilitator relative to the commercial practice and ASD standard.	$50,000.00
South Carolina Department of Agriculture	$601,531.03	4. FoodShare Greenville: Supporting Local Farms and Low-Income Consumers in Greenville, SC	Through this project, Mill Village Farms will increase the number of boxes per cycle from 800 to 850 and ensure that 20% (over 63,000 pounds annually) of the produce included in FoodShare boxes annually, or an average of 2 items/cycle, is a specialty crop grown in South Carolina.	$41,575.00
South Carolina Department of Agriculture	$601,531.03	5. New Winter Legume Cash Crop: Developing Improved Pea Cultivars for SC Organic Cropping Systems	Clemson University (CU) will develop organic dry pea cultivars (Pisum sativum L.) adapted to SC using on-farm field selection to increase crop yield and nutritional quality. CU breeding goal is to develop organic pea cultivars adapted to South Carolina's environmental conditions, increasing seed protein and desired carbohydrate ratios with micronutrients for better human and animal health.	$56,530.00
South Carolina Department of Agriculture	$601,531.03	6. Assessing Nematode Populations Damaging Bermudagrass in South Carolina	Turfgrass nematode researchers at Clemson University will address growing concerns with pathogenic nematode populations that are damaging bermudagrass by formulating new threshold guidelines for soil populations, examining non-pesticide tools of reducing populations, and enhancing grower knowledge through novel educational programs that engage growers across the state.	$22,196.00
South Carolina Department of Agriculture	$601,531.03	7. Taking Disease Detection to the Sky: Evaluating Satellite Imagery for Virus Disease Detection in Peach Trees	This project is aimed at developing a large scale, early detection method for virus diseases in peach orchards. Clemson University researchers will collect and analyze satellite imagery and virus prevalence results. Grower partners will assist with site selection in commercial orchard blocks and assist with method validation. This will ultimately reduce costs associated with virus testing and extend the lifespan and productivity of peach orchards.	$45,145.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
South Carolina Department of Agriculture	$601,531.03	8. South Carolina Statewide Honey Pollen Analysis	The South Carolina Beekeepers Association will select 15 local bee associations, resulting in 20 collection locations throughout the state of South Carolina (15 rural + 5 urban) based on the 6 S.C. ECO Regions collecting honey samples weekly during the nectar flow and check/collect nectar as available during the nectar dearth's for honey pollen analysis to determine:1) When and which plants typically bloom. 2) What the nectar sources are for honey in particular areas of the state. 3) If maples that bloom end of January/early February are both a pollen source and honey/nectar source. The honey samples will be analyzed for pollen at universities throughout the United States and one or more articles will be published with the results. South Carolina is the first state to do this analysis statewide. Replicating this study in the future will help determine changes to the SC ecosystem.	$73,050.00
South Carolina Department of Agriculture	$601,531.03	9. Enhancing the South Carolina Specialty Crop Industry Through Education and Trade Show Promotion	The South Carolina Specialty Crop Growers Association in conjunction with the South Carolina Department of Agriculture will work together to promote the specialty crop industry through a cost share program that will assist growers in attending identified domestic industry trade show and conferences. This proposed project will benefit South Carolina specialty crop producers, growers, wholesalers, and other allied industry member.	$57,106.00
South Carolina Department of Agriculture	$601,531.03	10. Value-adding Packaging at GrowFood Carolina: Creative, Innovative Investments for Specialty Crops in South Carolina	GrowFood Carolina, the local food hub of the Coastal Conservation League, will increase specialty crop sales for our 120-plus South Carolina partner growers by contributing to the development of more marketable, in demand specialty crop products that stand out among competitors by continuing the following approach over the next year.	$24,135.17
South Carolina Department of Agriculture	$601,531.03	11. Determining Prevalence of Nematodes Damaging Strawberries in South Carolina	Following statewide survey for nematodes occurring in strawberry fields in South Carolina, greenhouse studies will be conducted at Clemson University to determine new action threshold for the most commonly occurring nematode, and the results will be disseminated to stakeholders through extension and scientific publications, grower meetings, field days, and scientific meetings.	$54,871.00
South Carolina Department of Agriculture	$601,531.03	12. Enhancing the South Carolina Specialty Crop Industry Through Value-added Packaging	The South Carolina Specialty Crop Growers Association will administer a program for small and medium sized specialty crop growers. This project will provide funding for a cost share reimbursement program to offset the burdensome cost of packaging expenses for growers. This project will enable growers to increase their share of South Carolina's specialty crop industry while complying with market outlet packaging requirements.	$18,259.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
South Dakota Department of Agriculture	$402,137.19	1. Apiaries in the Classroom: Educating South Dakota's Youth about Honey Production Through Educational Beehives	The Edmunds Central School District presents a proposal that would dramatically impact the exposure to and consumption of locally-produced honey by developing a network of apiaries and supporting curriculum geared toward educating and providing opportunities to consume locally-produced honey for South Dakota students in PreK-12.	$106,033.61
South Dakota Department of Agriculture	$402,137.19	2. Diagnose Seed Quality and Composition of Pulse Crops at South Dakota State University	Through this research, we propose to provide diagnostic services to producers for seed-borne diseases at the South Dakota State University Seed Testing Laboratory. Additionally, we propose to screen varieties of pulse crops for specific seed-borne diseases and determine if the pathogens impacts seed composition and functionality. Results will be shared with the South Dakota Pulse Council, South Dakota Pulse Growers, the Northern Pulse Growers Association, USA Dry Pea & Lentil Council and the American Pulse Association. Accessibility to seed health diagnostic services for South Dakota pulse producers is a major outcome of this project. Furthermore, data collected will educate and help the producers implement cost-effective, sustainable disease management strategies in their fields.	$64,435.00
South Dakota Department of Agriculture	$402,137.19	3. Economic Impact Study of Specialty Producers and Increased Aggregation of Specialty Producers in the State of South Dakota	The South Dakota Specialty Producers will partner with Atlantic Corporation to perform an Economic Impact Study of specialty foods and products produced in South Dakota. The information and facts gathered will be used to further promote the products and producers and show the importance of specialty products to the economy of South Dakota.	$58,120.00
South Dakota Department of Agriculture	$402,137.19	4. Integrating Early Season Cover Crops to Improve Sustainability of South Dakota Vegetable Farms	South Dakota State University (SDSU) Extension Specialists will conduct research trials on two SDSU research fields and one on-farm cooperator location to identify the optimum clover cover crop, planting method, and management strategies to improve sustainability of brassica, cucurbit, and solanaceous cropping systems. Project outcomes will include the development of new crop management systems, increased adoption of early season cover crops, and increased knowledge of production practices that can improve the resilience of South Dakota vegetable farms.	$75,138.00
South Dakota Department of Agriculture	$402,137.19	5. Increasing the Competitiveness of South Dakota Grown Specialty Cut Flowers Through Season Extension	Stems LLC will enable small-scale South Dakota cut flower growers to compete with imports by determining the best varieties and cultivars in conjunction with season extension techniques for profitable cut flower production that extends four months outside of our standard growing season. Information generated by trials will be transferred to producers through field days, publications, conferences, and other outreach efforts.	$40,318.14

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
South Dakota Department of Agriculture	$402,137.19	6. Marketing Trials for Beer Brewed with Frozen Hops	We will focus on working with craft breweries to help them develop new and additional beer styles brewed with frozen hops. The taste panel findings confirm the concept that alternative hop preservation does improve beer quality.	$21,817.60
Tennessee Department of Agriculture	$554,217.87	1. Evaluation of Supplemental Lighting on Hop Growth and Yield	Many plants use day length as an environmental cue to control the timing of flowering. Such plants are classified as short-day or long-day plants depending on if they flower when day length becomes shorter or longer than a specific number of hours, referred to as critical day length. The timing of blooming is a major yield determining factor. Hop plants are most productive when adequate vegetative bine (twining stem) growth is achieved by long day length before flowering is induced.	$24,810.00
Tennessee Department of Agriculture	$554,217.87	2. High School Agricultural Education on Good Agricultural Practice (GAP) Certification as it Relates to Hydroponic Production of Specialty Crops	Blackberry Pond Farm, LLC will increase both the understanding and numbers of next generation specialty crop producers in Good Agricultural Practices (GAP) by instruction, formation, and implementation of standard operating procedures in local high school agricultural programs in order to obtain GAP certification.	$25,000.00
Tennessee Department of Agriculture	$554,217.87	3. Friendly Farm Fruit for All	Rebel Hollow Farm will plant fruit to add to our pick your own operation in an area where fresh fruits and vegetables are not available. In addition to providing a source of fresh fruit to an area where the nearest grocery store with fresh fruit is 20 miles or more from home, we will provide education on how to prepare the fruit and a field day to 10 others to grow fruit as a way to diversify their farms.	$12,954.00
Tennessee Department of Agriculture	$554,217.87	4. Educational Symposiums for Integrating Specialty Crop Agricultural Habitats Benefiting Beginner and Advanced, Apiarists and Farmers	Partnership Management Services Inc will educate apiarists and specialty crop growers on best scientific based practices for creating successful honeybee habitats through field days and educational symposiums, while establishing secondary markets for ancillary specialty crop products.	$12,750.00
Tennessee Department of Agriculture	$554,217.87	5. Creating a Greater Opportunity for Tennessee Grapes and Tennessee Wines	Because of limited sparkling wine production capability in Tennessee, relatively few acres are used for the production of sparkling wine grapes, such as Catawba, that grow well in our climate and produce amazing sparkling wines. This project will allow procurement of specialized equipment to have modern sparkling wine production capability.	$25,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Tennessee Department of Agriculture	$554,217.87	6. Enhancing Employee Knowledge Through Certification of Tennessee Farm Winery Employees	Hillside Winery (HW) will increase the knowledge and education base of employees within the Tennessee Grape and Wine Industry. In partnership with Pellissippi State Community College and the Viticulture Enology Science and Technology Alliance (VESTA), certifications will be pursued for employees engaged in the production of value-added products using specialty crops. Hillside Winery has been producing Tennessee wines since 2008 and is the largest processor of Muscadine grapes grown in the state, including purchasing most from the largest Muscadine producer in East Tennessee (Tsali Notch Vineyards).	$13,500.00
Tennessee Department of Agriculture	$554,217.87	7. Urban Arboretum Development Program – Shelby Avenue, Nashville, TN – PHASE 2	Nashville Tree Conservation Corps will enhance the competitiveness of nursery stock trees and fortify rural Tennessee's economy by installing and marketing a public arboretum where people can learn about trees, their benefits in the city, and how to purchase trees from Tennessee Tree Farms using digital marketing tactics.	$50,000.00
Tennessee Department of Agriculture	$554,217.87	8. Expanding Children's Educational Programs Promoting Specialty Crop Purchasing and Consumption at East Tennessee Farmers' Markets	Nourish Knoxville will promote the consumption of specialty crops by building capacity for our children's educational program, Nourish Kids, at East Tennessee farmers' markets. The program will fund Nourish Kids Clubs at six farmers' markets in East Tennessee, providing children ages 2-12 with the opportunity to try new specialty crops, to participate in educational activities about specialty crops, and $5 each in Produce Bucks to spend on select specialty crops at farmers' markets, which builds revenue for specialty crop farmers. Participating children will also receive recipe cards to take home featuring specialty crops, encouraging more consumption of specialty crops at home.	$30,000.00
Tennessee Department of Agriculture	$554,217.87	9. Increasing Demand and Diversity for Additional West Tennessee Grapes	This project is for research and development of a custom crush and production facility whereas, Sanderson Family Farm will partner with the growing number of West Tennessee grape producers, farm wineries and wineries to process their respective grapes and wine and produce and bottle finished carbonated wines for each of these Tennessee businesses.	$40,000.00
Tennessee Department of Agriculture	$554,217.87	10. Tennessee Agritourism Executive Director	The Tennessee Agritourism Association will hire an executive director at a salary of $10,000 per year that will be responsible for managing daily activities, marketing, and promoting the association. We are requesting funding to cover 80 percent of the total salary due to only 80% of the responsibilities being related to specialty crops. With the increased marketing and promotion of the Tennessee Agritourism Association, we hope this drives the increase of specialty crop production by increasing the awareness of specialty crops.	$25,920.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Tennessee Department of Agriculture	$554,217.87	11. Increasing Specialty Crop Sales with Education and Resources for Market Vendors and Managers	The Tennessee Association of Farmers Markets is a statewide association providing networking, education and best practice resources to farmers markets and member organizations. TAFM will increase the accessibility of specialty crops at farmers markets by developing educational opportunities, resources and best practices for market managers and specialty crop producer vendors.	$30,000.00
Tennessee Department of Agriculture	$554,217.87	12. Teaching Proven Management Methods for Sustainable Beekeeping	Teaching Proven Management Methods for Sustainable Beekeeping aims to educate, train, and mentor 800 of Tennessee's approximately 7000 registered beekeepers (roughly 12%) in sustainable beekeeping practices. The goal of the project is to enhance the capacity of sustainable practices to achieve the following outcomes: 1) increased adoption of Best Management Practices for Bee Health; 2) increased bee colony counts; and 3) increased honey production. These outcomes will have the added benefit of improving bee survival rates and, thus, enhancing crop pollination that is so vital to Tennessee agriculture.	$27,000.00
Tennessee Department of Agriculture	$554,217.87	13. Tennessee Christmas Tree Growers - Marketing Training & Product Research	The Tennessee Christmas Tree Growers Association (TCTGA) will enhance the Christmas tree industry in our state through increased Training Events for our growers and conducting a Research Project. 1) The Training Events include education conferences, meetings, and farm tours. This will include specific training for growing and marketing Christmas trees. 2) The Research Project will explore new Christmas tree species for our farms to potentially begin growing. It includes germinating seeds from exotic conifers to produce seedlings and testing the ability for them to grow in our state.	$29,000.00
Tennessee Department of Agriculture	$554,217.87	14. Good Agricultural Practices (GAP) Audit Cost Share	The Tennessee Department of Agriculture would like to continue to increase the number of Good Agricultural Practices (GAP) certified producers offering specialty crops in Tennessee. We plan to continue to mitigate the cost of GAP audits for producers in the state by providing a cost share. GAP Certification allows producers to expand their markets to businesses such as grocery stores and institutional entities such as hospitals with stringent food safety requirements. This will allow producers to increase their income and help to ensure proper food safety for specialty crops in the state of Tennessee.	$28,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Tennessee Department of Agriculture	$554,217.87	15. Growing Viticultural Operations and Support for the Tennessee Wine Industry	The Tennessee Farm Winegrowers Alliance (TFWA) will organize and oversee a series of workshops, bootcamps, and leadership development sessions aimed at improving the viticultural and agritourism practices across Tennessee. Through conducting a series of workshops aimed at providing insights and best practices into operating a financially viable vineyard we hope to expand the overall acreage of grapes produced in the state over the next 3 years.	$45,000.00
Tennessee Department of Agriculture	$554,217.87	16. Improving Sustainable Pest Management Practices to Control Cucumber Beetles in Cucurbits	Tennessee State University will identify and demonstrate Integrated Pest management (IPM) based, sustainable pest management practices to control cucumber beetles in cucurbit crops. The university is situated in a suitable location in middle Tennessee to determine the best management practices and educate stakeholders on this issue. Striped and spotted cucumber beetles are critically important pests of cucurbits for both conventional and organic cucurbit production in Tennessee.	$44,992.00
Tennessee Department of Agriculture	$554,217.87	17. Identification of High-Quality Pod-Types in Heirloom Green Beans to Expand Tennessee Specialty Crops Markets	Tennessee Technological University will screen the heirloom green bean collection held by the Sustainable Mountain Agricultural Center to identify lines with superior pod quality traits, such as tenderness and sweetness, to enhance the Tennessee green bean specialty crop market.	$25,000.00
Tennessee Department of Agriculture	$554,217.87	18. Chickpeas as an Alternative Specialty Crop and Storage Crop for Tennessee	The University of Tennessee Institute of Agriculture will investigate the feasibility of producing chickpeas as a crop for small, diversified growers in Tennessee. Chickpea is a drought tolerant crop, requiring low fertility inputs, thereby, it could enhance the competitiveness of TN specialty crops by utilizing a low-input, sustainable cropping system, plus peas stored from the previous season could add diversity to early markets and CSA boxes, as spring crops are dependent on weather and sometimes later than expected.	$37,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Tennessee Department of Agriculture	$554,217.87	19. Investigating New Crop Adoption and Success in Tennessee: Production Methods and Marketplace Acceptance of Microgreens	University of Tennessee will support new and diversifying producers in growing and selling microgreens in Tennessee through a better understanding of market potential, customer preferences and key production practices. These efforts will investigate how light intensity during production influences visually and non-visually apparent nutritional quality, color, overall appearance, and yield of microgreens. The economic viability and marketability of enhanced visually and non-visually apparent nutritional attributes and appearance of microgreens will then be assessed through consumer behavior research to determine future market opportunities. Results will be disseminated to stakeholder groups through university extension reports, in-person/virtual meetings, and through national associations.	$25,079.20
Texas Department of Agriculture	$1,589,520.65	1. Market Matchmaking for Specialty Crop Producers in Texas	Sustainable Food Center's (SFC) project expansion will enable increased scale in production for small to mid-sized specialty crop producers across Texas. Collaborating with HEB Grocery, one of the region's largest buyers of specialty crops, SFC and project partners (Foodshed Investors (FI), National Center for Appropriate Technology (NCAT), Texas A&M AgriLife Extension (AgriLife), Plant to Profit, HEB Grocery will cultivate a pipeline between specialty crop producers and wholesale buyers to: 1) build capacity for local food procurement among at least five new wholesale buyers to expand or improve purchasing of Texas and sustainably grown specialty crops. 2) develop wholesale readiness among Texas specialty crop growers. 3) increase revenues of specialty crop growers by 10 to 25 percent. 4) match buyers with growers and facilitate transactions	$266,276.00
Texas Department of Agriculture	$1,589,520.65	2. Reducing the Potential for Cold Injury to New Vineyards in Texas by Evaluating Vine Shelter Type	Texas A&M AgriLife Extension Service & project partners, Cross Timbers Wine and Vineyard Association and East Texas Wine and Grape Producers, proposes to evaluate ten vine shelter types utilized in Texas vineyards with thermocouples placed inside and outside of the shelter for two growing seasons. Understanding temperature dynamics of each shelter type will provide critical information on determination of vine shelters removal for each Fall. This requires added time, labor, and cost or if there is a vine shelter type that does not negatively impact a vines dormancy period.	$14,470.11

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Texas Department of Agriculture	$1,589,520.65	3. Evaluation of Mobile Drip Irrigation for Melon Production in the Texas High Plains	Texas A&M AgriLife Research, in collaboration with USDA-ARS, will conduct research to determine the potential of Mobile Drip Irrigation (MDI) technology for production of melons for fresh market sales. With mobile drip technology, drip lines are attached to the drop hoses of the center pivot system and water is applied directly to the soil as the lines are dragged across the field. This new technology will be compared with conventional center pivot sprinkler irrigation and traditional surface drip with regard to crop yield, quality, water use, water use efficiency, and total economic return. Mobile drip technology has potential to greatly facilitate increased production of high-quality, high-value specialty crops and to increase the economic and environmental sustainability of existing cropping systems.	$132,203.00
Texas Department of Agriculture	$1,589,520.65	4. Pecan Scab Fungicide Resistance Management	This Texas A&M AgriLife Extension team, in collaboration with the Texas Pecan Growers Association, aims to research and remediate the pecan scab disease in the state of Texas. The ultimate goal of our research group is to develop and optimize fungicide application schemes based on the knowledge of scab's fungicide sensitivities in Texas pecan orchards. The new scab management strategy will be disseminated to stakeholders and pecan producers to improve their orchards' biosecurity and increase economic and ecological benefits. To accomplish this goal, a practical fungicide sensitivity screening protocol will be developing and improving fungicide application recommendations customized to the condition of local orchards will be provided.	$130,386.00
Texas Department of Agriculture	$1,589,520.65	5. Unlocking the Potential of Commercial Apricot Production in Texas	Texas A&M AgriLife Extension will partner with Cooper Farms of Fairfield, TX to explore the improved feasibility of commercial apricot production in Texas through: 1) protected culture production in high tunnel greenhouses; 2) the expanded field trialing of an extensive collection of new and heirloom apricot varieties. Production under protected culture (high tunnel greenhouses) will be compared to conventional, unprotected planting at Cooper Farms and at the Texas A&M Horticulture Research Farm (Somerville, TX). Plant health, vigor, yield, and fruit quality data will be collected from an expanded trial consisting of approximately 80 varieties at the TAMU Research Farm and Copper Farms to identify selections with superior fruit quality and consistent production for the Texas fruit market.	$53,337.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Texas Department of Agriculture	$1,589,520.65	6. Avocado: An Ideal Specialty Crop to Add Value and Diversify the Texas Fruit Industry	Texas A&M AgriLife Research in collaboration with industry partners: Villita Avocado Inc., Rio Farms, Inc., and Texas International Produce Association (TIPA), propose to address the key focus area of Value Added and Industry Development as it pertains to fruit (avocado) production. This project seeks to increase resilience and to diversify the Texas fruit industry by introducing avocado (Percea Americana Mill) production, utilizing the existing operational structure for fruit tree production/processing to create value-added products for conventional and niche markets. Two main outcomes are anticipated: (1) to identify avocado scion and rootstock varieties that are suitable for Texas production environments especially those that are cold-hardy and resistant to prevalent biotic and abiotic stresses such as heat, drought, salinity, and soil-borne diseases, (2) development of orchard best management practices to utilize resources such water efficiently, minimize stress impacts and increase productivity.	$113,196.00
Texas Department of Agriculture	$1,589,520.65	7. Verjus: A Natural Method to Improve Wine Acidity and Increase the Profitability of Grape Production in Texas	Researchers at the Texas A&M AgriLife Extension Service and Texas Woman's University seek to evaluate the potential of using verjus to naturally acidify Texas wine, addressing a common winemaking challenge of high pH, while simultaneously providing grape growers with an additional source of income for the fruit that is normally removed prior to harvest, but discarded. The goals of the project are 1) to assess the feasibility of verjus production by cluster thinning using a mechanical harvester, 2) determine the impact of verjus on white wine chemical composition and flavor quality, and 3) to perform a fundamental economic analysis of all recommended practices relative to current standard viticulture and enology practices in the industry, and 4) disseminate the results with Texas grape and wine industry members and other interested parties through workshops, presentations, newsletters, and journal article publications. The trial will be conducted in a commercial vineyard in Brownfield, Texas.	$116,425.00
Texas Department of Agriculture	$1,589,520.65	8. Strategic Approaches to Mitigate Salmonella Contamination of Bulb Onions	The Texas International Produce Association will partner with the Center for Produce Safety, which will in turn partner with Texas A&M University to develop an onion-specific risk reduction plan to address the recent multi-state Salmonella outbreak associated with red onions. The outbreak highlighted the pathogen's ability to persist and survive on bulb onions during production, handling, or storage. However, there is a knowledge gap with regards to the behavior of Salmonella on bulb onions. This project will determine Salmonella survival and growth on bulb onions of different varieties, and investigate how pre-and post-harvest bulb onion production practices impact the susceptibility to Salmonella contamination.	$250,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Texas Department of Agriculture	$1,589,520.65	9. Enhancing Specialty Crops Through SNAP and FMNP Use at North Texas Farmers Markets	Enhancing Specialty Crops Through SNAP and FMNP Use at North Texas Farmers Markets is a project led by GROW North Texas (The Gleaning Network of Texas dba GROW North Texas and project partners Good Local Markets, Cowtown Farmers Market, Denton Community Market, Wesley-Rankin Community Center, Texas Center for Local Food) that brings together farmers markets and community partners to increase sales of Texas specialty crops by increasing the use of SNAP and WIC Farmers Market Nutrition Program dollars by 25% at eight (8) farmers markets in North Texas. By developing education materials for training and technical support for farmers market staff and information via social media for SNAP and FNMP beneficiaries about market opportunities for Texas specialty crops, this project will reduce the barrier of unfamiliarity for both audiences and facilitate a welcoming atmosphere for SNAP and FMNP users at farmers markets. Two new farmers markets will be established to additionally increase access to fresh fruits and vegetables in under-served communities.	$192,312.46
Texas Department of Agriculture	$1,589,520.65	10. Tastes of Texas Road Tour and Texas Nursery Roadshow	The Tastes of Texas Road Tour and Texas Nursery Roadshow is a marketing campaign created by the Texas Department of Agriculture – Marketing and International Trade Division (TDA Marketing) (with project partners Texas International Produce Association, Texas State Florists Association, Texas Nursery and Landscape Association, Texas Watermelon Association, Texas Beekeepers Association, Texas Association of Olive Oil, Texas A&M AgriLife) designed to increase the awareness of Texas specialty crops to consumers throughout the state. TDA Marketing will also continue to leverage the success of the GO TEXAN marketing program to increase sales of Texas olive oil and honey by promoting sales of olive oil and honey products at GO TEXAN sponsored events.	$150,000.15
US VI Department of Agriculture	$244,603.26	1. Promoting Julie Mango as the Fruit of Choice of the US Virgin Islands	The US Virgin Islands Department of Agriculture (VIDA) Marketing Division is seeking the amount of $52,629.00 to establish and implement “The Julie Mango in Every Yard Program” in the territory. The agriculture community stakeholders (during a Specialty Crop Townhall meeting held on May 2, 2021) unanimously decided on promoting Julie Mango as the fruit of choice according to Title 7 of the Virgin Islands Code. This program will seek to train participants on grafting, tree pruning and general tree maintenance. Next, the grafted trees will be adopted by community residents, who will receive training on tree planting and care. VIDA will oversee and highlight the program via electronic and print media to help raise awareness of Julie mango as the Virgin Islands fruit of choice.	$52,629.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
US VI Department of Agriculture	$244,603.26	2. Establishment of an Agriculture Development Pilot Program for (at risk) Youths living in Public Housing Communities	Sadly, many of the crimes that takes place on St. Croix occurs in the Public Housing communities. What's even more alarming is the fact that 99% of the food consumed in the US Virgin Islands is imported, yet the number of individuals that are engaged in farming are rapidly declining due to aging, while the youths are perpetuating the crimes and violence on the community. There is a great need to intervene into this growing trend by seeking to engage Virgin Islands (VI) youths (residing in housing communities) into an agriculture Development program in order to help deter crime (or criminal intent), while enhancing the competitiveness of Specialty Crops in the US Virgin Islands. For this reason, VIDA Marketing Division is seeking the amount of $112,400.00 to establish a Youth Agriculture Development Pilot Program to teach youths in public housing communities how to access, grow, market, and consume Specialty grown crops.	$112,400.00
US VI Department of Agriculture	$244,603.26	3. Development of Wild Cinnamon (Pimenta racemosa) for the USVI nursery industry	The University of the Virgin Islands (UVI) Agricultural Experiment Station will partner with the UVI Cooperative Extension Service and will collect seeds of Wild Cinnamon or Bayrum (Pimenta racemosa), a Virgin Islands rare native fruit tree and investigate and develop propagation techniques for the local nursery industry. Pregerminative seed treatments along with vegetative propagation systems will be developed for nurseries to obtain planting stock. The leaves of this tree species are used in cooking as a substitute for cinnamon. Oils, extracted from the leaves, is used to make highly valued Bayrum. From the various germinated seedlings, we will produce viable plantlets to be given out to participating farmers and for planting in public areas. An informative fact sheet will be developed with protocol nurseries could follow to propagate and make this tree available to the general public.	$55,554.00
Utah Department of Agriculture and Food	$368,435.19	1. Buy Utah First; Bringing Utah's Consumers Together With Utah's Fruit Growers to Secure a Sweeter Future	Payson Fruit Growers, joined by over 30 fruit growers throughout Utah, will develop "Buy Utah Fruit First", an association that will create a strategic action plan to educate Utah retailers and consumers to actively seek out and purchase Utah grown fruit through initial industry evaluation, trade meetings, and targeted educational campaigns.	$47,180.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Utah Department of Agriculture and Food	$368,435.19	2. Developing Ceanothus Velutinus for Sustainable Green Industry Production by Exploring its Microbiome	Native plants are 'new blood' to the Green Industry. Utah ranks in the top 10 states for vascular plant species diversity. Developing Utah's native plants as specialty crops for nursery production and promoting their use in water-efficient landscaping can play a pivotal role in sustaining specialty crop production throughout Utah and the Intermountain West. Utah State University will establish an agreement or contractual relationship with the State Department of Agriculture and Food to lead and execute a project to develop Ceanothus velutinus (snowbrush ceanothus) as a unique broadleaf evergreen specialty crop for sustainable Green Industry production.	$62,351.22
Utah Department of Agriculture and Food	$368,435.19	3. Statewide Promotion of Utah Grown Specialty Crops	This project will alleviate some of the financial burden, human capital and time required to take advantage of modern marketing opportunities to efficiently promote and market Utah specialty crops. Emerging trends indicate that the Utah's Own program can be effective in generating centralized, coordinated and comprehensive campaigns to effectively promote Utah's specialty crops, while also providing a marketing infrastructure to oversee campaign management and execution.	$62,154.00
Utah Department of Agriculture and Food	$368,435.19	4. Understanding Southwestern Native American Peach Diversity Through Genetic and Rooting Characterization.	Utah State University (USU) Extension Assistant Professor, Reagan Wytsalucy, will work to identify American Southwestern peach germplasm diversity and rooting characteristics to understand their potential as a resource to peach breeding practices in addition to bringing their presence back to production among Southwestern Native American communities. Project results will be disseminated to Four Corners Native American Tribal communities and Horticulture professional audiences.	$21,943.38
Utah Department of Agriculture and Food	$368,435.19	5. Utah Harvest of the Season Program	Utah State Board of Education Child Nutrition Programs (USBE CNP) will establish a statewide Harvest of the Season program to provide educational resources for classrooms, gardens, and kitchens that showcase selected seasonal Utah-grown foods. The Harvest of the Season program will increase pre-K-12 students' access to, knowledge of, and consumption of Utah-grown specialty crops. Specialty Crop Block Grant Program funds will be used to market the program to students, teachers, and school food service workers. Also, will develop additional program resources.	$94,620.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Utah Department of Agriculture and Food	$368,435.19	6. SCOPE (Specialty Crop Outreach and Program Education): A Utah Public Radio Broadcast/podcast and USU Hunger Solutions Institute Community Event Pro	UPR will partner with Utah State University's Hunger Solutions Institute (HSI) and Create Better Health (CBH) Supplemental Nutrition Assistance Program (SNAP-Ed) to produce and distribute a series of educational radio broadcast/podcast programs as well as sponsor community information events to discuss ways consumers, producers, distributors, and researchers of Utah's specialty crops can work together to address hunger, improve health, and increase the production of and access to our state's unique crops.	$35,000.00
Utah Department of Agriculture and Food	$368,435.19	7. Crops in a Box: Classroom Resources for Utah Specialty Crops	Utah Agriculture in the Classroom (Utah State University Extension) will increase knowledge and consumption of Utah Specialty Crops by providing Crops in a Box educational resources and professional development to Utah teachers, grades 3-5.	$19,789.74
Vermont Agency of Agriculture	$325,756.23	1. ACORN Wholesale Network	The ACORN Wholesale Network (AWN) will be a centralized digital and physical space that facilitates the sales, aggregation, and distribution of locally produced food products to wholesale markets by partnering with existing organizations, including Farm Connex Food Connects and the Vermont Farmers Food Center. The AWN will use the Local Food Marketplace platform to aggregate specialty crop producers' inventory online to make it easier for wholesale buyers to purchase products and receive one invoice.	$58,300.00
Vermont Agency of Agriculture	$325,756.23	2. Establishing a Vermont Holistic Orchard Management Network	This project is led by Eden Specialty Cider / Eden Orchards of Newport and West Charleston, VT. The project will develop a network of small-scale and U Pick growers in Vermont to explore Holistic orchard management practices and their use in the growing of apples specifically for alcoholic cider production. This is step 1 of a multi-year project that intends to conduct research on methods and practices to improve yields, lower costs, and minimize negative environmental impacts for apples that are prioritized for flavor development over appearance and storage characteristics.	$4,000.00
Vermont Agency of Agriculture	$325,756.23	3. VitiNord 2022: A Pivotal Opportunity for Education, Collaboration, And Innovation Among Vermont Grape and Wine Producers	In summer 2019, the VitiNord planning committee selected Vermont as the site for its December 2021 (delayed to 2022 due to COVID) conference. VitiNord is the world's premier international cold-climate grape and wine conference. It is expected to bring over 300 attendees, including grape and wine producers, educators, researchers, marketers, and wine writers, to the state. The potential impact of this high-profile conference on the Vermont wine industry is huge. Conference operations are managed by local partners, and the Vermont Grape and Wine Council will handle registration and event logistics.	$20,548.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Vermont Agency of Agriculture	$325,756.23	4. Developing a Plant-Based Lure for the Swede Midge, An Invasive Pest of Brassica Crops	Swede midge, Contarinia nasturtii (Diptera: Cecidomyiidae), is an invasive insect that is threatening Brassica production in the Northeastern and North Central United States. The insect specializes on all Brassica crops, including B. oleraceae (kale, collards, broccoli, kohlrabi etc.) and B. rapa (canola, turnip, etc.) (Chen et al. 2011). Swede midge feeding scars plant tissues, creates multiple shoots, and causes the loss of marketable heads. The University of Vermont will develop an attractive lure for female swede midge through laboratory and field research to manage midge populations in broccoli fields.	$44,310.00
Vermont Agency of Agriculture	$325,756.23	5. Cultivating Local Food in the Rutland Region Through Market Expansion	Vermont Farmers Food Center (VFFC) will increase specialty crop sales for Rutland region's producers by expanding access through its Online Market and Farmacy produce prescription programs; creating new opportunities and relationships with wholesale customers; restaurants and institutions; and by establishing the infrastructure and processes to aggregate, store and distribute specialty crops.	$52,000.00
Vermont Agency of Agriculture	$325,756.23	6. Expanding Use for Vermont Pure Maple Syrup Among Existing Consumers	The Vermont Maple Sugar Makers' Association (VMSMA) will expand the use of pure Vermont maple syrup with existing Vermont consumers by introducing Vermont maple as a replacement for other sugars in coffee. The project's long-term goal is to pilot one in a series of marketing campaigns introducing pure Vermont maple syrup as a pantry staple. VMSMA will start this program with the pairing of maple and coffee and hire a local marketing firm to create a measurable, branded, and cohesive campaign during the course of the project.	$35,825.00
Vermont Agency of Agriculture	$325,756.23	7. Improved Coordination for Strengthened Local & Regional Marketing Initiatives	Using the Specialty Crop funds, the marketing team at the Vermont Agency of Agriculture will look closely at three of our premier consumer facing events to ensure robust specialty crop participation and consumer engagement, set up a reporting structure, create a standard method of recruitment, and create and distribute supporting marketing materials to ensure that each participant has the information they need to be successful during these events and beyond. We will also work with DigInVermont and participating producer associations to move the state towards one consumer facing directory.	$86,353.85

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Virginia Department of Agriculture and Consumer Services	$550,688.79	1. Point-of-Harvest (PoH) Continuing Education Program for Wild Harvesters	Appalachian Sustainable Development (ASD), in partnership with Virginia Tech (VT), will improve forest botanical competitiveness, sustainability, and profitability among Virginia's wild harvesters. Partners will accomplish this by finalizing and implementing a Point of Harvest (PoH) workforce development and continuing education program. Partners will certify five PoH instructors and 100 PoH wild harvesters, who, in turn, will gain access to equipment and premium-priced markets for sustainably and legally harvested forest botanicals through the Appalachian Harvest Herb Hub (AH).	$73,974.55
Virginia Department of Agriculture and Consumer Services	$550,688.79	2. Examining the Use of Biochar to Improve Lavender Disease Resistance in Virginia	Researchers at Virginia Tech will examine the efficacy of biochar soil treatments in promoting disease-resistance in a model specialty crop system using greenhouse and field studies. This project will develop diagnostic tools and growing recommendations for lavender farmers afflicted with Phytophthora infections that will be shared with lavender growers via U.S. Lavender Grower newsletters, social media, and conferences.	$68,382.72
Virginia Department of Agriculture and Consumer Services	$550,688.79	3. Establishment of a Hazelnut (Corylus avellana L.) Cultivar Trial at the Southern Piedmont Agricultural Research and Extension Center	The Virginia Tech Southern Piedmont Agricultural Research and Extension Center (SPAREC) jointly with Virginia State University, are requesting support to initiate a hazelnut (Corylus avellane L.) cultivar trial in Virginia. Hazelnut is a high value specialty crop whose production in the United States (U.S.) occurs primarily in the Pacific Northwest with Oregon accounting for more than 90% of the total acreage.	$53,224.41
Virginia Department of Agriculture and Consumer Services	$550,688.79	4. Improving Agronomic Traits of Edamame by Gene Editing	Edamame, also known as vegetable soybean, is becoming increasingly popular in the United States owing to its excellent nutritional value and health benefits. Most of the edamame consumed in the U.S. is imported from overseas producers. The expanding domestic demand for edamame and increasing import dependency has kindled government and local growers' interest in producing this crop. Three major factors preventing wider adoption of edamame production in Virginia are short shelf life, longer production cycle (90-100 days) to reach optimal harvesting time, and commonly used bean harvesters can cause 15-25% loss of fresh beans for edamame.	$63,538.85

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Virginia Department of Agriculture and Consumer Services	$550,688.79	5. Securing Organic Vegetable Production in Virginia Through Increased Disease Management Knowledge	Organic production in the Commonwealth of Virginia has grown to include over 28,000 acres and account for over $62,800,000 in value according to the 2019 Organic Survey conducted by the USDA. Diseases are one of the most important limiting factors for organic vegetable production in Virginia. Growers experience losses in yield and quality due to disease damage and organic disease control materials are sparse.	$72,026.57
Virginia Department of Agriculture and Consumer Services	$550,688.79	6. Assessing Suitable Production Techniques for Ramps in Appalachia	Virginia Tech, in partnership with Appalachian Beginning Forest Farmer's Coalition, Appalachian Sustainable Development, and U.S. Forest Service will develop sustainable propagation and production techniques for ramps (Allium tricoccum); this effort will involve improving our understanding of markets for cultured ramps, comparing and conserving ramp ecotypes, improving ramp production techniques, refining a site suitability model, and disseminating results to stakeholders through field days, university media and extension publications.	$70,257.88
Virginia Department of Agriculture and Consumer Services	$550,688.79	7. Evaluating the Microbial Quality of High Tunnel Environments used for Produce Production	High tunnel production has increased greatly in the last ten years. In 2010, there were approximately 400 high tunnels in the Southern Region, but since then, over 7,000 high tunnels have been built across this region with funding support through the Natural Resources Conservation Service's (NRCS) Environmental Quality Incentives Program (EQIP). Since 2010, approximately 800 high tunnels have been funded by USDA-NRCS in Virginia. Soil borne diseases threaten the long-term sustainability of vegetable production in high tunnels if left unchecked. A survey is needed to determine pathogens present within Virginia high tunnels in order to ascertain which risks are present within the Commonwealth.	$72,225.93
Virginia Department of Agriculture and Consumer Services	$550,688.79	8. Large Scale Commercialization of Ginger Production in Virginia-Assessing its Health Benefits	The Small Fruit and Vegetable Program with the Cooperative Extension in partnership with the Food Chemistry and Nutrition Science Program in the Agricultural Research Station Department at Virginia State University are seeking funding to promote the commercial production of fresh ginger roots among Virginia farmers and its health benefits among consumers.	$57,717.00
Washington State Department of Agriculture	$4,626,980.96	1. Fresh Sweet Cherries Product Launch and Market Development in India	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.	$245,768.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Washington State Department of Agriculture	$4,626,980.96	2. World Pear Day Global In-person Consumer Event Outreach and Social Media Promotion	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 attempt to set Guinness World Record(s) 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 and the Guinness World record attempt. 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.	$100,000.00
Washington State Department of Agriculture	$4,626,980.96	3. Establishing Rootstock and Production System Recommendations for New Washington Apple Selection (WSU 'L')	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.	$220,045.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Washington State Department of Agriculture	$4,626,980.96	4. Sustainable Management of X Disease by Removing Weedy Vector and Pathogen Hosts Sustainable Management of X Disease	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.	$244,750.00
Washington State Department of Agriculture	$4,626,980.96	5. Scouts and Thresholds: Implementing Biologically Based Pear IPM	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.	$246,524.00
Washington State Department of Agriculture	$4,626,980.96	6. Survey for Parasitoids that Infest the Apple Maggot and Snowberry Fly (Diptera: Tephritidae) in Washington	The Washington State Department of Agriculture will conduct a survey for parasitoids that infect the apple maggot and snowberry fly in Washington. 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.	$102,312.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Washington State Department of Agriculture	$4,626,980.96	7. Regulated Deficit Irrigation for Improved Cider Apple Quality with Reduced Water Input	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.	$244,085.00
Washington State Department of Agriculture	$4,626,980.96	8. Healthy Soils for Healthy Peas: Soil pH Management and Micronutrient Dynamics for Washington Peas	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. 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.	$244,944.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Washington State Department of Agriculture	$4,626,980.96	9. Working Buffer Practices on Marginal Farmlands to Increase Income Potential and Address Natural Resource Concerns	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.	$244,275.00
Washington State Department of Agriculture	$4,626,980.96	10. Old Wood Ciders: Evaluating Heritage Varieties for Specialty Cider	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.	$93,132.00
Washington State Department of Agriculture	$4,626,980.96	11. Stop the Spread: Building Pest Management Plans to Comply with New Grape Quarantine Rules	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).	$237,703.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Washington State Department of Agriculture	$4,626,980.96	12. Raising Awareness of Washington's Specialty Crops Locally and Internationally	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.	$250,000.00
Washington State Department of Agriculture	$4,626,980.96	13. Tree Removal for X-disease and Little Cherry Disease Infected Orchards	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.	$249,200.00
Washington State Department of Agriculture	$4,626,980.96	14. Genetic Insights into Leafhopper/Phytoplasma Interactions and Gene-based Immunization for Plant Disease Control	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.	$233,807.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Washington State Department of Agriculture	$4,626,980.96	15. Validation Study for the Tree-fruit Industry: Effective Strategies to Sanitize Harvest Bins and Picking Bags	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.	$250,000.00
Washington State Department of Agriculture	$4,626,980.96	16. Utilizing Machine Learning for Site-specific Washington State Perennial Crop Weather Forecasting	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.	$243,459.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Washington State Department of Agriculture	$4,626,980.96	17. Mechanical-assist Harvest Technologies for Reducing Labor Requirement in Tree Fruit	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.	$234,453.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Washington State Department of Agriculture	$4,626,980.96	18. Organic Online: Creating Tools and Resources to Support Organic Specialty Crop Farmers and Handlers	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.	$243,721.00
Washington State Department of Agriculture	$4,626,980.96	19. Building an Aggregation Network and Marketing Support for BIPOC Specialty Crop Farmers in Western WA	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.	$249,178.00
Washington State Department of Agriculture	$4,626,980.96	20. Gorge Grown Mobile Farmers Market: Increasing Markets for Smaller-Scale Specialty Crop Producers	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.	$54,972.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
West Virginia Department of Agriculture	$309,569.06	1. Development of a Walnut Sap Spout	Future Generations University, in collaboration with the Robert C. Byrd Institute of Advanced Manufacturing (RCBI), plans on conducting the research necessary to develop a walnut specific spout. US Forest Service data shows that West Virginia has over 20 million tappable, black walnut (Juglan nigra) trees (Ferrell). With market prices for walnut syrup over 10 times that of maple syrup, West Virginia has the opportunity to become a leader in the emerging walnut syrup market. Much less is known about walnut tree tapping than maple. Future Generation is addressing that knowledge gap with two Northeast SARE grants and private support from the Benedum Foundation. This proposal focuses on the walnut specific problems of bark thickness, optimal spout taper, and the problem of spouts backing out of trees. Successful development of walnut specific tap will allow production with existing maple infrastructure (i.e., storage, RO, evaporators) leading to increased efficiency, and quicker capital investment payback. Specific project outcomes include: - Research into the anatomical and physiological characteristics of walnut trees that are causing maple spouts to back out of tapped trees. - Research into spout characteristics as they effect volume of sap produced and volume of compartmentalization in the tree's sapwood. - The development and testing of prototype spouts to solve the issues identified above. - The commercialization of the best of the tested spouts allowing adaption by existing and future walnut syrup producers. - Extension of the developed technology through the sap and syrup production events and workshops to explore future market development.	$49,997.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
West Virginia Department of Agriculture	$309,569.06	2. Risk Assessment and Management of Spotted Lanternfly	West Virginia University will perform a project to protect specialty crops in WV from the invasion of the spotted lanternfly (slf) through research, active survey, outreach, and education. The project will assess the potential damage and spread of slf and improve early detection to mitigate the slf invasion. The research will develop a spatial model to predict the distribution of slf in WV, which will be used to generated risk maps for various specialty crops that could be damaged by slf. Active surveys of slf will be conducted for the early detection of slf by using drone and ground surveys. The project will provide rigorous formal and informal education for stakeholders and the public for detection and management of slf on specialty crops. Planned activities include outreach at grower conferences/ meetings and public training in slf identification through the WVU extension service and social networking platform. Three major outcomes/outputs of this project are: 1. Risk maps of wv specialty crop due to the invasion of slf. 2. Active detection, monitoring, and mitigation of localized slf population in the state using aerial and ground surveys. 3. Increased grower education and slf detection by the population. this project is timely and important because the invasion of slf is in an early stage of its invasion to wv, and early detection/risk assessment, could help proactive measures before slf spreads throughout wv.	$73,345.00
West Virginia Department of Agriculture	$309,569.06	3. Developing a Farmer's Market Price Reporting System	West Virginia University's cooperative extension service and Davis College of Agriculture will collect historical and current price data for 25 specialty crops sold at West Virginia farmers' markets across the state. Once collected, this data will be provided to farmers through an online platform hosted by the WVU's cooperative extension service and will be shared with the West Virginia department of agriculture. WVU cooperative extension service will host educational sessions to spread awareness about the availability of such data, an on how producers can responsibly use this data to evaluate crop prices. currently, there is no comprehensive collection of farmers market price data taking place for West Virginia markets.	$9,948.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
West Virginia Department of Agriculture	$309,569.06	4. Determining Market Potential of Dried Vegetables and Herbs	The West Virginia Military Authority's Patriot Guardens program will support veteran and military families in production and marketing of dried vegetables and herbs for sales to local culinary businesses, as well as farmers markets and other direct to consumer opportunities. Through direct support to these veteran and military families by way of education, technical, and production support, etc. the amount of locally produced vegetables and herbs will be able to reach the market, particularly those products that would receive a grade less than premium via the wholesale market. Objectives of the project would include the determination of market desire/needs, development of a network producers and a series of educational activities to include production, value added processes, food safety and more. Outputs of the project will be at least 10 producers beginning to dry, market and sell their products to various restaurants/food service businesses, farmers markets, meat shops/delis, etc. statewide, but particularly in the greater charleston – huntington metro area.	$36,324.00
West Virginia Department of Agriculture	$309,569.06	5. D4P: Diversified Protected and Perennial Production Plot	D4P (Diversified Protected Perennial Production Plot) will instigate perennial specialty crop production in the upper OV (Ohio Valley) by providing multiple entry-points for perennial crop production, from commercial farmer to home gardener to school children, while providing a vertically-integrated value chain from seed to table to facilitate perennial grower success.	$72,706.00
West Virginia Department of Agriculture	$309,569.06	6. Examining Kale Yield and Sales Based on Varieties and Cabbage Looper Control Methods in WV	Kale has been identified by the Tumrow Network as a crop with significant production gaps with respect to scalability in consideration of the length of growing season. diversity of markets, consistently high overall demand. Lack of volume production, and the favorable growing conditions found in the region. High Rocks Educational Corporation in partnership with Pocahontas County Extension will examine multiple kale (Brassica oleracea) varieties for yield and control treatments for cabbage looper damage. Three treatments (floating row cover, Bt and/or Neem Oil, hand picking larvae, and control for each variety) will be applied to each of the varieties (Winterbor, Redbor, Red Russian, Toscano, Lacinato, Westlandse). Results will be distributed through field days and publication in and National Associations of Agricultural Agents.	$28,650.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Wisconsin Department of Agriculture, Trade and Consumer Protection	$1,267,172.53	1. Field Research to Support a New Export Market for Fresh Ginseng	Fresh ginseng is in high demand in Taiwan, where it is sold in grocery stores and used in traditional Taiwanese recipes. Fresh roots are less expensive than dried ginseng and are larger in size. Korea, China, and Canada are currently filling the Taiwanese demand for fresh ginseng because fresh Wisconsin ginseng is not available to them. The GBW is pursuing exports of fresh ginseng to Taiwan as this will diversify Wisconsin sales. Diversification of markets for Wisconsin ginseng is increasingly important given the recent increase in tariff to 41% for exports of ginseng to China.	$99,920.00
Wisconsin Department of Agriculture, Trade and Consumer Protection	$1,267,172.53	2. Where Should I Put My Honey Bees? Exploring Variation in Pesticide Contamination, Nutritional Quality, and Diversity of Pollen Collected by Honey B	The Gratton Lab in the Department of Entomology at the University of Wisconsin-Madison will improve our understanding of how variation in the landscape influences the quality of pollen collected by honeybees and how this influences hive health by assessing pesticide load, pollen diversity, and protein content across different landscape types, and will share results with stakeholders through grower meetings and online materials.	$99,868.00
Wisconsin Department of Agriculture, Trade and Consumer Protection	$1,267,172.53	3. In-Season Prediction of Potato Yield Using Satellite Remote Sensing and Machine Learning for Sustainable Irrigation Management	The University of Wisconsin-Madison will develop an open-source web-based tool with the use of publicly available satellite remote sensing data and machine learning techniques for in-season potato yield prediction at the field scale to improve irrigation management, and will provide dissemination of research results through multiple extension/outreach approaches.	$99,745.00
Wisconsin Department of Agriculture, Trade and Consumer Protection	$1,267,172.53	4. Enhancing Vegetable Crop Production and Competitiveness Against Weeds with Natural Plant Growth Regulators	The University of Wisconsin-Madison will increase vegetable crop production and quality by reducing competition with weeds through timely, practical and affordable use of natural plant hormones that enhance crop growth and eliminate early season weeds.	$97,067.00
Wisconsin Department of Agriculture, Trade and Consumer Protection	$1,267,172.53	5 . Harnessing the Microbiome in Potato and Vegetable Production to Improve Disease Management and Soil Health	The proposed project, led by Amanda Gevens of the UW-Dept. of Plant Pathology & University of Wisconsin Madison Division of Extension in conjunction with Wisconsin potato and vegetable growers (WPVGA, WFMVGA, MWFPA), aims to explore the microbiome in relation to potato and vegetable crop and soil health and productivity.	$90,000.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Wisconsin Department of Agriculture, Trade and Consumer Protection	$1,267,172.53	6. Development of Next-Generation Detection Methods and Improved Biological Understanding for Tuber Necrotic Viruses in Wisconsin Seed Potato Producti	The University of Wisconsin-Madison will reduce the economic impact of potato tuber necrotic viruses by evaluating sensitive and high-throughput virus diagnosis methods to implement in seed certification, studying the biology of tuber necrotic viruses in early generation seed, and disseminating research results to stakeholders and seed certification members through outreach and extension activities.	$92,171.00
Wisconsin Department of Agriculture, Trade and Consumer Protection	$1,267,172.53	7. Equity for Wisconsin Specialty Crop Growers by Documenting and Providing Voluntary Food Safety Audits to Enhance Market Access and Availability of	Produce growers in Wisconsin seek a way to document that their food safety assurance efforts meet accepted regulatory standards, with the goal to satisfy buyer requirements. Buyers typically seek third-party food safety documentation from growers, such as regulatory inspection records for compliance with the federal Produce Safety Rule, or third-party food safety audits such as Primus GFS or Harmonized GAP. Buyers view this documentation as part of a risk-mitigation strategy that provides some evidence that a grower may be a suitable supplier. Many growers are not under mandatory inspection requirements of the federal Produce Safety Rule (PSR) and thus do not receive a regulatory inspection.	$83,029.00
Wisconsin Department of Agriculture, Trade and Consumer Protection	$1,267,172.53	8. Evaluation of Heat Treatments on Cranberry Fruit Rot Pathogen Survival and Cranberry Plant Viability	The University of Wisconsin will assess and optimize hot water treatments of cranberry vine cuttings (i.e. propagation material) as an environmentally friendly and sustainable option for the management of fruit rot fungi in Wisconsin cranberry marshes and disseminate results to stakeholders through grower meetings and articles.	$82,422.00
Wisconsin Department of Agriculture, Trade and Consumer Protection	$1,267,172.53	9. Breeding Cold Hardy Chestnuts in Wisconsin	The Savanna Institute will stimulate farmer adoption of chestnuts in Wisconsin by (1) mapping ideal soil types and target adoption zones, (2) identifying and further improving cold hardy chestnut cultivars that can extend the range for commercial chestnut production further north in Wisconsin, and (3) developing an app to facilitate crowd sourced data collection on new and established orchards regarding cold hardiness, yield and other parameters throughout WI zone 4-5 in chestnut orchards.	$81,514.28
Wisconsin Department of Agriculture, Trade and Consumer Protection	$1,267,172.53	10. Supporting Seedless Table Grape Production in Wisconsin	University of Wisconsin-Madison Division of Extension will evaluate performance of new table grape varieties by establishing replicated performance trials at five locations (Bayfield, Richland Center, Chippewa, Sturgeon Bay, Spooner) to provide locally relevant performance data for growers in support of expansion of this fresh fruit and processing crop for Wisconsin.	$74,133.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Wisconsin Department of Agriculture, Trade and Consumer Protection	$1,267,172.53	11. Using Hyperspectral Remote Sensing to Monitor Nitrogen Status of Three Processing Vegetable Crops in Central Wisconsin	The University of Wisconsin (UW) - Madison will perform a two-year study at the UW Hancock Agricultural Research Station to 1) explore the use of hyperspectral remote sensing technology to monitor in-season plant nutrient status and predict end-of- season yield of three processing vegetables including green beans, dark red kidney beans, and sweet corn; and 2) create and deliver extension materials about results from the study to the Wisconsin vegetable industry.	$69,489.00
Wisconsin Department of Agriculture, Trade and Consumer Protection	$1,267,172.53	12. The Wisconsin Apiary Outreach Initiative	The Wisconsin Apiary Outreach Initiative seeks to expand on past work to improve honey bee health and reduce hive mortality by providing outreach and educational training on honey bee best management practices (BMPs) for Wisconsin beekeepers and outreach on pollinator protection that will help honey bees and native pollinators.	$67,919.97
Wisconsin Department of Agriculture, Trade and Consumer Protection	$1,267,172.53	13. Assessing Attract-and-Kill as a New Management Strategy for Japanese Beetle in Wisconsin Vineyards	The University of Wisconsin will assess the impact of attract-and-kill as an alternative management strategy for Japanese beetle to reduce this pest's population while reducing environmental impact and non-target effects on pollinators and will provide new management recommendations to Wisconsin grape growers for managing Japanese beetle in commercial vineyards.	$62,521.00
Wisconsin Department of Agriculture, Trade and Consumer Protection	$1,267,172.53	14. Continued Evaluation of the Cordon Trellis System for Growing Currants and Gooseberries	Christopher and Julianna McGuire (dba Two Onion Farm) will continue to evaluate the cordon trellis system of growing currants and gooseberries as a method to reduce labor needs and improve fruit quality and they will also disseminate results to stakeholders through conferences, an online video, and publications.	$41,900.00
Wisconsin Department of Agriculture, Trade and Consumer Protection	$1,267,172.53	15. Survey for Potato Mop Top Virus and Powdery Scab Spongospora Subterranean f. sp. Subterranea on Potato in Wisconsin	The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) Plant Industry Bureau will survey the potato growing regions of Wisconsin for the presence of Potato Mop Top Virus (PMTV) and its vector Spongospora subterranea f. sp. subterranea (Powdery Scab) by testing potato tubers and soil using gene-based diagnostic tests and reporting the results of this survey to stakeholders though grower meetings and the DATCP website.	$25,747.59

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Wyoming Department of Agriculture	$193,001.95	1. Wyoming-Grown Peruvian Popping Beans: A Healthy Snack for Consumers (Part 2)	Family & Consumer Sciences and Plant Sciences and researchers from the University of Wyoming will evaluate WY-grown popping beans, an alternative dry bean market class and nutritious source of protein and dietary fiber. This project aims to evaluate factors that influence consumer perception of popping beans, measure growing characteristics, and evaluate advanced breeding lines of nuña beans for popping characteristics and desirable agronomic characteristics of the WY growing environment. Long term outcomes include enhanced understanding of storage factors on popping, advanced breeding line(s) better adapted to WY, and evaluation of the potential for organic cultivation.	$49,972.00
Wyoming Department of Agriculture	$193,001.95	2. Cooking It Up! From the: Zucchini Patch, Pepper Plant, and Tomato Vine	The University of Wyoming Extension Nutrition and Food Safety team will increase nutrition knowledge and consumption of specialty crops by introducing consumers to the crops, cooking and preparing techniques, and recipes. Research-based Information will be disseminated through educational programs, publications, social media promotion, and/or the University of Wyoming Nutrition and Food Safety extension website to increase the reach to more consumers.	$10,825.40
Wyoming Department of Agriculture	$193,001.95	3. June Bearing Strawberry Production in High Tunnels	University of Wyoming Extension will conduct research on June bearing strawberries grown in high tunnels to evaluate varieties for cold hardiness and yields. The goals of this project are to identify suitable varieties for high tunnel production in Wyoming, and to establish a knowledge base for strawberry producers in Wyoming. As an outcome, strawberry producers will make informed decisions regarding plant selection and strawberry management, resulting in higher yields and more sustainable production systems. The tasks required to fulfill the goals of this project include selecting and purchasing plant material, preparing soil in high tunnels, purchasing and installing drip irrigation, purchasing and applying mulch, and regular maintenance through the growing seasons including managing weeds, disease, and insect pests as needed, watering, fertilizing, harvesting, and fall clean-up.	$11,500.00

Organization	Amount Funded to Organization	Project Title	Description	Project Budget
Wyoming Department of Agriculture	$193,001.95	4. Improving Nutrition though Promotion of Local Gardening	Wyoming Food for Thought Project will develop a program to improve the availability of nutritious locally grown food to seniors and other disadvantaged individuals through a local gardening assistance program. The garden projects will include the construction of 96 square feet of raised beds per site including a season extension low tunnel/cold frame over part of the garden at each location. This project will be two pronged. First to assist senior citizens still living at home with modifying and maintaining gardens they are no longer are able to because of physical limitations. Secondly to educate disadvantaged individuals on the benefits of specialty crop production through local gardening. It is the intention of this project to continue to increase interest in local gardening and encourage their use for the production of fresh local vegetables. Participants in the project will be surveyed to assess any increase in knowledge of local gardening methods and any increase in consumption of locally grown specialty crops.	$47,865.00
Wyoming Department of Agriculture	$193,001.95	5. Yield of Hydroponic Crops vs. In-Soil Crops Under Greenhouse Conditions	Papa Joe's Produce will test differences in specialty crop yield between hydroponic systems and in-soil growth methods, all within a consistent greenhouse environment. This project will focus specifically on testing the yield of select pepper and tomato varieties within the same greenhouse. This project will provide valuable insight on potential greenhouse yields of flowering crops in hydroponic vs. soil growing methods, with additional lessons on successfully growing these crops year-round in the conditions of Northern Wyoming.	$16,704.00
Wyoming Department of Agriculture	$193,001.95	6. Indoor Specialty Crops Production for Year-Round Food Access and Distribution in Albany County, Wyoming	Feeding Laramie Valley (FLV) program of Action Resources International (ARI) will establish and share educational information regarding the design, construction, and implementation of three innovative growing systems including tower aeroponics, top drip bucket hydroponics, and tub hydroponics systems, capable of growing select specialty crops through a high yield, year-round process. The project will produce specialty crops, in particular a variety of greens such as spinach, lettuces, and kale, as well as culinary herbs to be used in the food security, access, and distribution programs of FLV, and will provide tours, workshops, and written/audio/video materials as educational opportunities for extending these innovative growth systems out into general public understanding and use.	$23,403.00