



Fiscal Year 2016

Description of Funded Projects

The fifty States, the District of Columbia, and five U.S. Territories were awarded Fiscal Year 2016 funds to perform a total of 693 projects that benefit the specialty crop industry. All the eligible entities submitted their applications by the established deadline of July 6, 2016. The approved awards are listed alphabetically.

Alabama

Recipient:	Alabama Department of Agriculture and Industries	Award Amount:	334,169.30
		Number of Projects:	15

- This partnership with Auburn University will facilitate the development of regional and farm-specific brands based on collecting data from leading Alabama agricultural and food groups about regional and commodity strengths; and collect data from growers about barriers and opportunities for branding their crops.
- This partnership with Auburn University will determine the effects of fruit maturity on postharvest longevity, fruit quality, and consumer preferences of 'AU Golden Dragon' and 'AU Golden Sunshine'. Kiwifruit from each cultivar will be harvested weekly for 4 weeks and initial fruit quality will be assessed. Fruit will then be placed in cold storage and fruit quality will be measured bi-weekly until fruit is no longer marketable for fresh fruit according to commercial standards. Fruit from each harvest will be measured for fruit quality, and subjected to a consumer preference study.
- This partnership with Auburn University at Montgomery (AUM) will enlarge, improve or develop three major teaching and demonstration gardens to be located at WC Patton Park in Birmingham, AUM in Montgomery, and the Poarch Creek Indians Community Garden in Atmore. The gardens will be used to teach students and community members about the economic, nutritional, and culinary value of specialty crops along with how best to install and manage the plantings.
- This partnership with Auburn University will design and build a low-cost, efficient heating system that can be used to heat Deep Water Culture nutrient solution that will reduce energy costs for greenhouse vegetable growers and decrease the time needed to produce a marketable crop of lettuce. We also propose to disseminate findings to growers across the State in a timely fashion.
- This partnership with the Alabama Watermelon Association (AWA) will promote the State's watermelon industry throughout Alabama and across the United States. It will also increase consumption by educating consumers on the versatility and health benefits of eating watermelon, best practices in purchasing, storing, and preparing watermelon, and highlighting the economic benefits of supporting local farm agriculture.
- This partnership with the Alabama Nursery Landscape Association (ALNLA), Auburn University, and the Alabama Cooperative Extension System will develop monitoring tools and resources for the nursery industry to recognize and diagnose the cypress weevil and carpenterworm.
- This partnership with the University of West Alabama will incorporate Ampelomyces sp. endophyte into sweet corn in order to improve drought tolerance and production. This research will examine the effect of drought stress on non-symbiotic sweet corn plants and sweet corn colonized with Ampelomyces sp. under both greenhouse and field conditions.

- This partnership with Druid City Garden Project’s innovative programs will enhance students’ knowledge of heirloom plant varieties and farming techniques. This project will also increase the expansion of the Alabama heritage seed nursery and teaching gardens to increase availability of Alabama heritage and history. It will also significantly improve student health and academic outcomes through the expanded deployment.
- This partnership with Homewood City Schools will increase the demand and consumption of more specialty crops in the local community. In the city of Homewood, Alabama, 42 percent of the students live in apartment complexes and 28 percent of students receive free/reduced lunches. This population does not have access to learning about the many benefits of specialty crops or growing fresh fruits and vegetables without the outdoor classroom and garden towers. We want to utilize a hoop house to explore best growing practices and develop a system of growing specialty crops from seed to support the outdoor classroom and the five garden towers.
- This partnership with the Alabama Cooperative Extension Service will enhance the competitiveness of Alabama fruit and vegetable growers by ensuring they have access to training required by the Food and Drug Administration and produce buyers. The project will fund a series of courses to assist fresh fruit and vegetable growers in meeting federal Food Safety Modernization Act Produce Safety Rule (FSMA PSR) requirements and buyer requirements such as Good Agricultural Practices (GAPs).
- This partnership with Mobile County Schools will provide teachers with the opportunity to incorporate garden education and farm-to- school based activities into the school day; enhancing learning, increasing health and nutritional knowledge, increasing knowledge of agricultural practices and increasing the consumption of specialty crops, while teaching the required concepts
- This partnership with Alabama A&M University will evaluate a wide range of mungbean varieties and germplasm lines for adaptation and agronomic traits desirable for production in Alabama. It will also develop nutritional profiles of dry seed and sprouted beans and identify markets and market strategies for small farmers. It will assist in creating an awareness of and disseminate information about production practices, marketing and nutritional aspects of mungbean.
- This partnership with Pike Rod School will provide an opportunity to introduce students to many new fruit and vegetables. A vegetable garden and a fruit tree orchard will be planted with produce the majority of the kids have not eaten before. We will create a beehive learning station that will support our community by providing a large portion of pollination for our surrounding orchards, pollination gardens, and local lake and ponds. This will help increase the yield of our crops and will provide learning opportunities for our school in the following areas: biology/entomology, agriculture, ecology, environmental studies, nutrition, and business.
- This partnership with Troy University will provide children in the local community with increased access to fresh fruits and vegetables and encourage greater consumption. It will also enhance nutritional knowledge about fruits and vegetables for children in Montgomery and Troy.
- 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.

Alaska

Recipient:	Alaska Division of Agriculture	Award Amount:	212,792.61
		Number of Projects:	5

- The School of Natural Resources and Extension (SNRE) at University of Alaska Fairbanks (UAF), will increase the marketing value of Alaska- grown produce and increase public awareness of food quality, by providing a quantitative report on the nutritional content of locally grown produce versus imported produce available at Fairbanks supermarkets, using spectroscopy to analyze produce from both categories throughout the season.

- Nutrient requirement is crucial for quality and production of peony flowers in Alaska. Growers often send their soil and tissue samples to a laboratory, but can't use the results due to lack of a guideline they can use to compare their results. To develop such a guideline, in the past 2 years we have analyzed samples (good vs. poor peony) across the State. Since weather affects plants' ability to use soil nutrients, a reliable guideline requires a minimum of 3-year results in order to guide growers for nutrient management. The School of Natural Resources and Extension, UAF, proposes a 2-year study so that an adequate standard for soil and tissue nutrient can be developed. In year one, we will travel to growers' fields across the State to sample well and poorly grown Sarah Bernhardt and Duchess peony plants of and their corresponding soils. Those samples will be sent to a commercial laboratory for analysis of nutrient concentration in tissues and soil samples. From those and previous 2-year results, a nutrient guideline for soil and peony tissues will be developed. In year two, we will verify the guideline through sampling selected sites across the State for peony tissue and soils. The samples will also be sent to a laboratory and the results will be used to validate the newly developed standard. In addition, the results of both years will be interpreted and sent back to growers to guide their peony nutrient management.
- The Southeast Alaska Watershed Coalition and the Sustainable Southeast Partnership will conduct a Southeast Alaska Local Food Demand Analysis by collecting detailed information from commercial specialty crop producers and various types of consumers in northern Southeast Alaska. This study will identify crops that can be grown cost effectively in the region, as well as consumer demand and preferences for crops.
- 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.
- Alaska Grown specialty crops have a fast but furious season during the short summer months. To enhance the competitiveness of Alaska Grown specialty crops with such a limited window, the Division requests program funds to expand our Meet Me at the Market program. During summer 2016 we piloted a Meet Me at the Market program with Specialty Crop funds that has proven very successful. The Meet Me at the Market project points consumers to markets that sell and promote Alaska specialty crops. We work with produce managers and farmers market managers to do specialty crop specific advertising with the goal of making it a habit for Alaskans to look for Alaska Grown specialty crops during market visits. During the summer months we will air 30- second commercials when Alaska Grown produce is available in the retail markets and then we will do radio and electronic ads pointing consumers to our interactive farmers market map. In 2016 we piloted this program and got some preliminary baseline data about its impact. At the end of this program we anticipate an increase in sales at farmers markets and retail outlets. We will monitor this by doing customer counts at farmer's markets, and through producer and market manager interviews. During the winter months we will work with partner organizations to develop the advertising campaign and monitoring plan. In spring we will begin delivering supplies to farmers markets and retail stores and in fall 2017 we will conduct our interviews to measure the impact.

American Samoa

Recipient:	American Samoa Department of Agriculture	Award Amount:	251,046.44
		Number of Projects:	2

- The American Samoa Government Department of Agriculture (ASG DOA) looks to significantly increase local production of highly important specialty crops. Over 90 percent of food is currently imported into American Samoa. As such, ASG DOA will design specific methodologies to be used by local farmers, including beginning and socially disadvantaged farmers, to improve the productivity of their farms. ASG DOA will accomplish this by focusing on increasing crop yields per acre and decreasing cost of production per acre.
- 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.

Arizona

Recipient: Arizona Department of Agriculture

Award Amount: 917,695.51

Number of Projects: 19

- As the next step following the SCBGP-funded 2015 International Fusarium Wilt of Lettuce Symposium, the University of Arizona's Yuma Center of Excellence for Desert Agriculture (YCEDA) and Cooperative Extension Service will evaluate methods to advance early detection of Fusarium Wilt (FW), along with field trials to evaluate effectiveness of current FW of lettuce treatment tools. FW is a destructive soilborne fungal disease that threatens the competitiveness of Arizona's \$700 million lettuce industry, and was rated by YCEDA stakeholders as the number one most critical threat in need of solutions. Results of this project will enable growers to make appropriate management decisions earlier in the crop cycle. Early detection methods will include a comparison of novel DNA-based techniques for rapid detection of plant pathogenic fungi in the field, as well as remote spectral analysis of plants challenged with FW and other disorders to identify unique spectral signatures associated with FW-infected lettuce plants. Results will promote UAV/Drone assessment of crop health, and enable discrimination among causes of plant disease. To complement early FW detection, commercial field trials of current lettuce varieties will evaluate novel chemical and biological products, both commercial and experimental, that have shown promise in disease suppression. Validation or refutation of efficacy data in modern lettuce systems is critical. Results from this project, such as varietal resistance, product efficacy and early detection methodologies will be disseminated to conference participants and other stakeholders through various methods including informational flyers, workshops, and non-traditional outreach such as video and social media.
- The Arizona Nursery Association (ANA) will use these grant funds to enhance educational offerings for Arizona nursery professionals and the consuming public to increase industry knowledge and increase sales of Arizona-grown plants. To accomplish this, ANA will deliver a 1-day educational conference for the green industry and continue a Statewide campaign to inform the public about the value of purchasing locally-grown garden and landscape plants.
- The Yuma Fresh Vegetable Association will increase consumption of specialty crops through the Farm Fresh Forks program, a specialty crop tasting experience with local Yuma restaurants.
- The University of Arizona, in cooperation with several Arizona olive growers will determine basic irrigation and fertilization information for the local industry. This includes calculation of crop evapotranspiration and monthly leaf nutrient levels. Also, an experiment will be conducted to determine if enhanced phosphorous fertilization will lead to improved fruit set and productivity.

- Pecans are one of the most successful specialty crops in Arizona. As pecan acreage grows, so does the demand for accurate nutrient management recommendations. University of Arizona research has provided valuable information to date, however important questions remain unanswered and need to be addressed through long-term research. In contrast to annual crops, determining nutrient demands and developing effective management strategies for long-lived perennial pecans requires multi-year studies. The proposed research will measure tree responses to zinc, phosphorus, and nitrogen variables to refine fertilizer recommendations for desert-grown pecans, evaluate efficacy of management techniques, and develop accurate plant tissue analysis standards. Each of these three nutrients (zinc, nitrogen, and phosphorus) will be addressed with individual field studies. Zinc deficiency is prevalent in pecans grown on high pH desert soils unless zinc is carefully managed. The industry standard technique for zinc management has been to apply 5 or more foliar zinc applications annually to mature trees and as many as 12 or 13 applications on young, rapidly-growing trees. This is an expensive practice (approximately \$30/acre/application). Our recent studies (funded in part by SCBGP grants) have demonstrated the effectiveness of chelated zinc (Zn-EDTA) applied to the soils of young orchards via injection into irrigation water (fertigation). As a result of our studies, roughly one quarter of the pecan acreage in Arizona, primarily young trees, are now fertilized by fertigated Zn-EDTA. Our research to date has a significant limitation in that Zn-EDTA fertigation has only been studied on relatively young trees (1 to 4 years old). It is crucial to continue this research project until the trees reach full production so we can determine the effectiveness of Zn-EDTA fertigation on more mature trees. The SCBGP grant will provide critical funds to extend the project lifetime and allow us to make recommendations for Arizona's established orchards. Nitrogen is the second-most managed nutrient in Arizona pecan orchards. However, there is a conspicuous lack of data regarding nitrogen requirements or optimum application rates for pecans. This is reflected by the fact that nitrogen application rates in Arizona orchards range from 100 to 500 pounds N/acre. Furthermore, there are no studies that have evaluated effects of nitrogen on trees from the time of planting to nut bearing. Nitrogen affects tree growth, nut production, and the time from planting to nut production. Minimizing the length of time for an orchard to begin commercial production (approximately 7 years) is crucial to orchard profitability. We initiated a field experiment to study tree responses to varying nitrogen application rates in a newly-planted orchard. However, that study has not yet had time to produce meaningful data and, like the zinc study cited above, requires funding for additional years to reach fruition. Finally, there are significant questions concerning pecan orchard phosphorus management. Although essentially all Arizona growers apply phosphorus, no one has documented positive effects on tree growth or productivity. Leaf tissue analyses suggest that southwestern pecan trees generally lack sufficient phosphorus. According to a survey we conducted of commercial Arizona pecan orchards, average Arizona pecan leaf phosphorus concentrations are 0.13 percent, compared to recommendations for irrigated pecans of 0.14 to 0.30 percent, but we do not know whether this apparent lack of phosphorus is detrimental. We initiated a study to systematically evaluate pecan phosphorus demands of young pecan trees. Early results suggest positive responses to optimized phosphorus fertilization, although we have only 2 years of data and need to follow tree development for several more years to facilitate development of recommendations for more mature trees.
- 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.
- Heavy metals are of concern in edible fresh fruits and vegetables. Many of the alluvial soils used for crop production in the Arizona Desert contain low levels of several metals, including lead (Pb) and cadmium (Cd). The principal source of irrigation water for vegetables and fruit crops in the low desert is the Colorado River which also contains detectable levels of these metals. In addition, these metals are commonly found in the phosphate fertilizers widely used in the region. Accumulation of these metal elements into food crops is a health concern as potential carcinogens or causal agents of human organ dysfunction. A previous survey conducted by the University of Arizona with SCBG funding found 10 percent of the spinach samples collected exceeded the EU ML of 300 ug/kg fw for Pb and 33 percent exceeded the EU ML for of 200 ug/kg fw for Cd. Approximately 4 percent of the leaf lettuce samples also exceeded this ML for Cd. The 95 percentile exposure estimates exceed the Food and Drug Administration's provisional total tolerable intakes for young children. Overall, the health risks from Pb and Cd from vegetable and fruit crops produced in the low desert are generally low. However, there are a few instances of potential compliance challenges. The objective of this project is to continue the development of a soil test algorithm as a tool to reduce potential heavy metal exposure and future compliance issues for leafy vegetables.

- The University of Arizona proposes to develop antibodies to secreted proteins of the causal agent of citrus Huanglongbing disease (HLB, also known as citrus greening) that will make it possible to detect HLB at earliest possible times. HLB is an imminent threat to the Arizona citrus industry. It has already spread to Florida, Texas, and recently California. The causative agent, bacterium *Candidatus Liberibacter asiaticus*, causes HLB in all citrus varieties, including the highly valued Arizona lemon. HLB is the most feared disease among growers because there are no cures. The best control for this disease is to prevent its introduction and establishment in Arizona. For this to be successful, an early detection tool is essential. The infested trees carry only a tiny amount of the deadly bacterium in sporadic areas of a tree before identifiable symptoms develop. Normal sampling scheme could not guarantee to hit tissues where the bacterium initially infects. As with other pathogenic bacteria, HLB-causing bacterium produces effector proteins that are secreted outside of the bacterium and circulated in the vascular system of the infected trees, even in the early stage of the infection. We intend to produce antibodies to four such secreted HLB effector proteins, and evaluate their competency in the early detection of HLB. The availability of these antibodies will make it possible to develop easily accessible and handy detection tools for HLB and strengthen early detection, interception, and eradication of HLB-infested materials and protect Arizona citrus industry from a grave threat.
- University of Arizona Extension researchers will continue promising work with the herbicides flumioxazin (e.g., Chateau) and the Prowl H2O formulation of pendimethalin in chile peppers. Previous work funded by the SCBGP will be expanded to study the arrangement of nozzles, nozzle types (i.e., spray pattern angle), and other application parameters needed to minimize herbicide injury. In addition, the use and arrangement of spray shields with flumioxazin will be studied. With Prowl H2O, spraying with the nozzle over the crop row (i.e., 30 inch nozzle spacing on 30 inch crop rows) will be compared to the more typical 20 inch nozzle spacing on booms. When the nozzle is over the crop row the chile pepper foliage may shield the stems and minimize the development of “brittle stem” where stems break off at the soil surface with very little applied pressure. Higher rates of Prowl H2O will also be studied to better understand the factors leading to stem injury. Studies with both herbicides will be conducted in different soils types compared to the past studies to broaden the applicability of the results and help gain support from BASF and Valent for 24c SLN chile pepper herbicide labels. The results will be disseminated to chile pepper growers through grower meetings, research reports, and Extension publications. An important outcome would also be obtaining 24c SLN labels to provide chile pepper products with addition herbicide tools need to reduce hand weeding costs.
- The University of Arizona will assess the use of newly identified genetic markers present in non-culturable fecal bacteria of birds, ruminants (e.g., cattle), and human hosts as new indicator organisms for irrigation waters. Samples from irrigation water canals in Yuma and Maricopa, AZ, will be collected and the samples will be concentrated. The nucleic acids (DNA) present in the samples will be extracted and analyzed for specific genetic fecal markers using quantitative real time polymerase chain reaction (qPCR). Genomic copies of the fecal markers will be analyzed using statistical measures to estimate levels of pollution (i.e., fecal loads) and to compare these figures with levels of cultivable *Escherichia coli*/coliforms (Colilert), *Salmonella*, and physicochemical data (e.g., water temperature, pH, conductivity, turbidity). Information about the distribution and persistence of the source-specific genetic markers will allow us to determine whether these alternative indicators will improve assessments of human health risks in irrigation waters and help to direct any mitigation efforts by identifying the source of contamination (i.e., human or animal).
- Metagenomics is the study of genetic material recovered directly from environmental samples and can assist in identifying organisms present in any environment. Metagenomics provides faster and more precise analysis of multiple samples, delivers information on pathogen occurrence in water, allows scientists to identify microorganisms not previously possible using culture based-methods, and has revolutionized the way scientists view the living world. Sequencing of irrigation water could validate the use of traditional indicator organism in southwest U.S. canals. This project will sequence the genomic materials of a subset of stored samples collected during a previous project to define optimal monitoring strategies for irrigation waters. The specific objectives of the current project include: 1) sequencing 250 irrigation water samples (currently stored in -80°C); 2) validating a previously quantified non-pathogenic surrogate (i.e. *Escherichia coli*); 3) identifying new pathogenic indicators in irrigation waters of the southwest United States; and 4) determining if these novel indicators were correlated to the presence of known foodborne pathogens.

- The University of Arizona, Yuma Agricultural Center will enhance the competitiveness of certified-organic vegetable growers in Arizona by developing a knowledge base of scientifically-based approaches and tactics for cost-effectively controlling insect's pests in leafy vegetables destined for the fresh market. Specifically, research will be conducted in small experimental plots and in on-farm trials with collaborating organic growers to develop a Relative Efficacy Index for biopesticides used in organic-certified leafy vegetables. Additional studies will be conducted to evaluate the effectiveness of non-chemical management alternatives (e.g., alyssum intercropping and augmentative lady beetle releases) against important insect pests in organic-certified leafy vegetables under desert growing conditions. Educational information derived from research conducted during this project will be shared with growers and PCAs through UA Cooperative Extension educational meetings, field demonstrations, and periodic electronic technical publications and fact sheets.
- University of Arizona extension faculty will evaluate preemergence herbicides registered for use in pecans and pistachios including several less commonly used herbicides. The goal is to provide information to Arizona pecan and pistachio orchard managers to help them reduce their reliance on postemergence herbicides for weed control, especially the use of glyphosate (e.g., Roundup branded herbicides). Preemergence herbicides can reduce the number of postemergence herbicide applications needed for weed control in a season, can suppress weeds during the monsoon season when rainfall restricts orchard access, and increase the diversity of herbicide mechanisms of action used in an orchard. This diversity reduces grower's risk of developing herbicide resistant weed populations which is an important outcome of this project. Other outcomes include developing and presenting information on the duration of control and efficacy of additional herbicides under Arizona conditions to supplement what is known about preemergence herbicides such as Pindar GT and Prowl H2O. The overarching goal is to maintain herbicide susceptible weed populations and the ability of growers to economically control weeds in their orchards. The general tasks to be completed during this project included establishing three research and demonstrations plots each year, collecting weed control efficacy data, summarizing results, and presenting educational materials to growers. Knowledge will be disseminated via grower meetings (e.g., PowerPoint presentations), face-to-face meetings, demonstrations in orchards, research reports, and an Extension bulletin at the end of the grant cycle. Additionally, grower attitudes will be reached at the annual Arizona Pecan Growers Association meeting.
- The University of Arizona Cooperative Extension Turf Science program personnel in Maricopa County will evaluate the adaptation and performance of native grasses and alternative groundcovers to generate local research-based information for water and nutrition requirements and pest management practices for each species. The objective will be to utilize these species as a turfgrass replacement when removed, especially from non-play areas on golf courses or in residential and commercial landscapes. Stakeholders including golf course superintendents, municipal and school turf managers, and commercial landscapers will have increased awareness and knowledge about the characteristics and performance to implement and adopt these species when replacing turfgrasses. Golf courses, athletic fields and parks, residential and commercial landscapes, and streetscapes and rights of way commonly utilize warm-season Bermuda grass for aesthetics and function. There is increasing attention towards the perceived high water use by turfgrasses in landscapes and especially on golf courses. Golf course superintendents strive and strategize to optimize water use for turf. Strategies include reducing turf from non-play areas to reduce water use and the intensity of management. This project can impact over 300 golf courses in Arizona when alternative groundcovers or native grasses are used when high-maintenance turfgrasses are removed from non-play areas. The expectations at the conclusion of the experiments are that at least five to six species of plants that are tolerant to drought, heat, and salt will be acceptable and available for golf courses and other landscapers.
- The University of Arizona Cooperative Extension Field Crops IPM Program is proposing to study the residual of neonicotinoid insecticides in honey, honeybee, and its products. As the major crop pollinators, honeybee hive health needs to constantly be monitored. In recent years, large-scale losses of honeybee colonies have occurred throughout North America and Europe. Researchers attributed that to a combination of environmental stressors that compromises the immune system of honeybees and make them more susceptible to diseases. Pesticides have been targeted as a potential factor contributing to the decline of honeybee populations, along with other factors like diseases, pests and nutritional stress. As a relatively new group of systemic insecticides, neonicotinoids are suspected as potential contributors to the decline of honeybee colonies. Foraging honeybee workers are usually exposed to sub-lethal doses of neonicotinoids that have been up-taken systemically reaching both pollen and nectar. With the newness of our knowledge of both colony collapse disorder and neonicotinoids, it is essential to build up information to help determine the implication of this group of chemicals on honey and honeybee health. There is a need to better understand the risk of insecticides to honeybees' both toxicity and exposure. This proposed project aims at analyzing neonicotinoids residues and their metabolites in honey and honeybee products. The major outcome is to provide different levels of government officials, industry, and the public with scientific-based information on this controversial issue to inform any decision regarding this group of insecticides.

- The adaptation of this *Escherichia coli* as an indicator of irrigation water safety was based on standards developed by the U.S. Environmental Protection Agency (USEPA) for recreational waters, which was based on epidemiological studies. Recently, the USEPA has proposed the use of bacterial viruses (coliphages) that infect *E. coli* as a standard for recreational waters. While neither the USEPA nor the Food and Drug Administration have yet proposed acceptable levels on the number of coliphage for recreational waters, this study will provide information to the farming community on levels in irrigation water currently utilized. This would allow for an assessment of the impact of any future proposed regulations. A new rapid method called FastPhage[®] has been approved by the USEPA for the detection of coliphages in groundwater in produce harvest areas. This test incorporates the use of shelf-stable, ready-to-use reagents in a simplified format. In the proposed study, the University of Arizona will: 1) determine the concentration of coliphages in irrigation waters used for produce production in Arizona; 2) assess a new method for the rapid quantification of coliphages for irrigation waters; and 3) determine the relative concentrations of *Escherichia coli* and coliphages in irrigation waters in Arizona. This work should result in the first study ever on the occurrence of coliphages in irrigation waters and the assessment of a rapid method for their detection.
- Limited data is available regarding the persistence and transport of microbial pathogens in irrigation waters following transient contamination events (e.g., rainfall, leaky septic systems). Information is available for microbial levels in irrigation waters and on produce in the fields; however, little information is available to bridge the gap between these two areas both physically and temporally. The University of Arizona will conduct field studies to ascertain the transport and persistence of microorganisms using a tracer non-pathogenic microorganism (MS2 coliphage) and a tracer dye (rhodamine) in irrigation canals and via irrigation processes (sprinkler and furrow irrigation) to determine how much is then transferred to the edible portions of produce. The information acquired during this study will allow growers/ producers of specialty crops to make risk-based assessments (based on scientific data) of the quality of their water and help them to determine when it is safe to irrigate fields. This will improve the competitiveness of these products by limiting the harmful effects of product recalls (both financial effects and the extreme negative effects on consumer confidence).
- In recent years *Salmonella* has become the bacterial pathogen most commonly associated with foodborne outbreaks in the United States. Several studies have detected *Salmonella* in irrigation waters in Arizona. In a study conducted in Yuma and Maricopa Counties in 2003 to 2004, *Salmonella* was detected in 26.7 percent (30/112) of the samples. In a more recent study (2014-2015) in Maricopa during the winter growing season, 26.9 percent (7/26) of water samples were positive for *Salmonella*. These studies also found no relationship between the occurrence of *Escherichia coli* indicators and the presence of *Salmonella*. The existing data is also not quantitative (i.e., only its presence or absence in 1-liter volumes). To assess the potential risks from *Salmonella* in these irrigation waters, the University of Arizona will determine *Salmonella* concentrations so a risk assessment can be performed. The objectives of this study are to: 1) determine the occurrence and concentration of *Salmonella* in irrigation waters in Yuma and Maricopa Counties; 2) to conduct a risk assessment to determine what levels of *Salmonella* would present a risk; and 3) provide guidelines to reduce the risk. The data generated from this study will be used in a risk model to determine what levels may present a significant risk and what management practices, if necessary, can be done to reduce the risk (e.g. delay harvesting for 1 to 2 days).
- Arizona State University will facilitate increased sales of Medjool dates by developing target-oriented marketing activities based on identifiable segments of Medjool date consumers. Over the past 4 years, the gross production of Medjool dates has approximately doubled in Arizona, with the growing region increasing to over 3,000 harvested acres in 2014. As the supply of Medjool dates increases, consumer demand needs to increase correspondingly. The goal of this project is to create marketing and communication strategies that specifically target existing and potential customers of Arizona-grown Medjool dates. Employing latent class analysis to analyze consumer choices reveals the characteristics of specific consumer segments which will then enable marketers to better understand shoppers and create consumer-oriented marketing strategies to more effectively communicate benefits of Medjool dates to specific consumer segments. In addition, a bivariate-ordered probit analysis will be conducted to elicit consumers' likelihood to purchase Arizona Grown dates versus California Grown dates as well as an analysis of Medjool dates in reference to a key competitive product, such as Deglet Noor dates (same category) and almonds (different category). For the analysis, we will draw on a national consumer study comprising 3,000 participants. The models and related findings will be shared with Arizona specialty crop growers. Success will be measured in terms of insight, interest and implementation.

Arkansas

Recipient: Arkansas Agriculture Department

Award Amount: 294,556.67

Number of Projects: 7

- The Arkansas Agriculture Department will promote Arkansas's specialty crops at the Produce Marketers Association Fresh Summit 2017 by: purchasing exhibit space; renting a booth structure; and enabling Arkansas specialty crop producers to be sub-exhibitors and attend the produce show to generate new sales and retain existing buyers, and increase awareness of Arkansas's specialty crops outside the State's borders.
- Raising Arkansas, Inc. will work with new, beginning, and historically disadvantaged growers to obtain GAP certification among 11 farms in a group model and GHP certification allowing Raising Arkansas to provide services to these specialty crop growers, increasing local specialty crop availability and year-round economic benefits for producers.
- The Arkansas Agriculture Department will promote the use of specialty crops through events that showcase preparation and production techniques of Arkansas grown specialty crops by hosting and promoting regional events that will link local chefs with local specialty crop producers to increase awareness, utilization, and sales of specialty crops.
- The University of Arkansas System Division of Agriculture will identify the physiochemical (physical, compositional and nutraceutical) and descriptive sensory (appearance, basic tastes, feeling factors, texture, and aromatics) attributes of Arkansas fresh-market peaches and nectarines to assist the breeding program in identifying characteristics of importance to consumers, resulting in enhanced variety development and dissemination of results for growers and researchers.
- The Department of Food Science, University of Arkansas, will meet the hot product trend in developing innovative, high quality, protein-rich, fiber dense, and healthier snack food products from vegetable edamame to benefit both consumers and growers. Research approach will utilize fresh (vegetable) and dried edamame incorporated with other specialty crops including vegetables (spinach, carrot) and/or fruit (blackberry, blueberry, strawberry) to prepare tasty, healthy, and protein-rich low calorie snack chips with maximum retention of all the nutrients in the finished products. The outcome will be the creation of healthy snacks with nutraceutical and functional properties good for kids and adults that will have an impact on wellness and, in consuming less calorie snacks, be favorable to reducing obesity. Ingredients and conditions will be optimized to produce the snack chips which will have potential for commercialization. These products will be all natural, gluten, dairy, and egg free, rich in protein and dietary fiber, low calorie, no trans-fat, no cholesterol, and vegetarian/vegan. They will provide less obesity risk for consumers from all categories and ages. The findings will be disseminated to stakeholders through grower meetings, field days, and professional meetings.
- This project will be conducted by the University of Arkansas at Pine Bluff (UAPB). UAPB will provide food safety and Good Agricultural Practices (GAP)/Good Handling Practices (GHP) training and technical assistance to 40 small, beginning, and socially disadvantaged specialty crop producers (SDSCPs) and 4 packing sheds in 10 counties in eastern Arkansas. This project will help farmers and packing shed specialty crop producers in eastern Arkansas overcome barriers that have prevented them from accessing certain specialty crop markets that require GAP Certifications. These barriers are food safety education and GAP/GHP Certification. The objectives of the project are: to assist 10 farmers/packing shed in becoming GAP/GHP Certified; to provide reimbursed cost for 10 farmers/packing shed for the cost of USDA GAP/GHP Certification; and to provide specialty crop marketing education and information to producers. The outcomes from the project will be as follows: producers and packing shed owners will increase their knowledge of GAP /GHP; producers will start implementing GAP practices; producers will be assisted in developing food safety manuals for their specialty crop operations; 10 producers/packing shed owners will become GAP Certified and access additional markets; This project will be conducted in the following eastern Arkansas Counties: Crittenden, Cross, Desha, Drew, Lee, Lincoln, Monroe, Phillips, and St. Francis.
- 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.

California

Recipient: California Department of Food and Agriculture

Award Amount: 22,338,749.72

Number of Projects: 73

- Increasing consumption of California specialty crop in urban communities, especially among teens, will be crucial to the economic future of specialty crops. Timely reinforcement from peers can influence attitudes toward nutritious specialty crops. Kids Growing Strong proposes a program leveraging successful volunteer leadership training that will invite teens to learn about specialty crops and healthy nutrition; visit farms for first-hand research; help craft authentic peer-to-peer messaging and program curricula; and take the message to the public through local outreach at public events, schools, and other venues. Teens will contribute valuable personal insight, time, and effort. The program will foster leadership, broaden skill sets, and empower them to be advocates for specialty crop consumption, nutritious diets, and the ecologically responsible California agricultural model.
- American Pistachio Growers (APG) proposes launching a California Grown advertising campaign featuring pistachio kernels from California as a healthy ingredient to foodservice professionals in European target markets. The European Union (EU) is the largest export market for California pistachios, consuming 46,352 metric tons (MT) valued at \$427,847,885 in 2015. However, pistachio kernel exports (the product most used by the foodservice industry) represented just 2,212 MT valued at \$13,600,596. Yet this has increased 59 percent since 2012. These trends have primed the region for increased kernel pistachio imports from California. By supporting full page advertisements in popular Hotel Restaurant and Institutional trade publications highlighting the high nutritional content of pistachio kernels from California, APG will leverage the already popular California Grown logo to create interest and demand among professional bakers and chefs.
- In 2016, the Buy California Marketing Agreement (BCMA) refreshed its integrated paid media program, designed to highlight the diversity and uniqueness of "California Grown" specialty crop products. Through an integrated partnership with a major media partner, the program will deliver the message through a combination of culinary and lifestyle online assets, affording the ability to expand the number of specialty crops highlighted through the effort. This strategic approach will be extended into 2017. BCMA will continue to expand and enhance the program's digital presence and align with consumers' ever-increasing reliance on digital media. The "California's Agricultural Rock Stars" campaign approach presents the specialty crops and their farmers as iconic VIPs, literally growing and fueling the aspirational California lifestyle. The campaign will grow an online community of people who support California specialty crops and provide a consistent stream of content highlighting the wide variety and seasonality of specialty crops and farmers in the State of California through multiple social media sites. It will increase awareness at point of sale and sales of California specialty crops through targeted retail promotions. It will also take a different approach to marketing through a pilot college internship program that will introduce the next generation of Californians to California specialty crops. Select event activations will be used to extend the opportunity to specialty crop stakeholders to participate in the integrated campaign, directly face a large number of consumers, or select retail partners for the campaign's targeted retail promotions.
- California had a record 2015 olive oil harvest of 4 million gallons compared to 2.4 million gallons in 2014 (University of California, Davis [UC Davis]). Recent olive plantings are reaching production age, making oil olives one of California's fastest growing specialty crops. However, imported olive oil has 96 percent of U.S. market share. There is a need to promote quality and value/pricing of California grown oil olives. California Olive Oil Council (COOC), representing 400-plus California oil olive growers, seeks to leverage a new California Grown partnership and execute a national retail/media/quality conscious consumer campaign to boost sales of California olive oil. Tasks include creating marketing materials with California Grown and hosting 19 events (Tree to Tables, Fancy Food Shows, growers' workshops) to promote California oil overall and train producers. The goal is to increase annual sales of California olive oil by \$14.4 million (\$48.6 million to \$63 million) by 2019 (measured by independent sales reports), directly benefitting California specialty crop producers.
- Most American consumers are not aware that 60 percent of figs sold and consumed in the United States are imported, primarily from the Middle East, Europe, Chile, and Mexico. The California Fig industry produces 100 percent of U.S. figs sold commercially, yet the California Fig industry has seen a staggering 241 percent increase in fig imports since 2007-2008, further threatening the economic viability of fig growers, processors, suppliers, employees, and the surrounding communities. The California Fig industry must act quickly to raise awareness, stimulate consumption, and drive sales of California grown figs to help ensure a sustainable economic future for all involved in the domestic fig value chain. Therefore, the California Fig industry requests funding to execute a comprehensive marketing campaign, "When You Think Figs, Think California Grown," to encourage today's fitness and on-the-go-minded consumers to seek and select California grown dried and fresh figs by highlighting the nutrition benefits of California grown figs.

- The Monterey Winegrowers Council (also known as Monterey County Vintners and Growers Association) in partnership with the California Strawberry Commission seek to increase awareness and drive sales of California chardonnay wine (and grapes) and strawberries through innovative cross marketing activities targeting the Generation Y (Millennial) demographic. The program includes the following components: digital marketing campaign, in-store marketing programs in five cities, in-market media launch events, and buyer and media/blogger educational visits to chardonnay and strawberry growing regions. Selling the dream of the California coastal healthy lifestyle, the program will use the beauty of California's premier chardonnay and strawberry growing regions to entice buyers and provide "the cheapest travel available," offering the buyer an opportunity to bring the California lifestyle to their table through the simple purchase of California grown chardonnay and strawberries.
- This project will enhance marketability and competitiveness of California specialty crops by developing opportunities for producers to sell products in viable foreign markets and increase foreign consumer awareness. Leveraging the "California Grown" identity, this project will increase export sales of specialty crops through multi-commodity promotions. Five independent, week-long reverse trade missions will include prescheduled meetings between 20 importers and 40-plus suppliers (estimate 400 - 600 meetings), using chef demonstrations with suppliers' specialty crop products to educate buyers and foreign media on health benefits and meal prep options to incorporate products in each country's diet. Foreign media will publish articles in respective countries promoting what they learned about California specialty crops and create consumer awareness. The project is expected to generate 10 percent export growth in target markets and specialty crop awareness reaching five million potential foreign consumers.
- The Humboldt County Office of Education will help specialty crop farmers and school districts overcome distribution and seasonality challenges of farm to school procurement in rural Humboldt County. To do this, Humboldt County Office of Education will develop schools' capacity to purchase and process large volumes of local specialty crops at peak availability in summer and facilitate collective purchasing to aggregate demand of local specialty crops from multiple districts. These efforts will make schools a more viable market for local specialty crop farmers and increase access to local produce in schools. Success will be measured by the number of farmers selling produce to schools, the income generated by these sales, the number of food service staff trained in specialty crop processing and preparation, the number of schools with expanded offerings of local specialty crops, and the number of students with greater access to specialty crops.
- The United States' population is more diverse than ever. Sunsweet Growers (SSG), a California grower-owned co-op (representing 70 percent of United States prune sales) seeks to promote 100 percent California grown prunes as a tasty and healthy snack choice to encourage new target consumers for California prunes. Nielsen market data shows strong prune purchasing potential from new target groups and relevant messaging is needed to attract these presently untargeted consumers. Tasks include a consumer marketing campaign (messages/testing, outreach, and ads), with an outcome of increased grower returns by \$15 million by 2018. The project is supported by California Plum Board, representing all California prune growers, and California Dried Fruit Coalition. Soft demand, rising costs, and foreign competition have resulted in a 40 percent decline in California prune acreage from 2001 - 2014 (U.S. Department of Agriculture National Agricultural Statistics Service); accordingly, higher demand is critical to industry health.
- Demand for local specialty crops has increased among institutional buyers; however, challenges in supply and distribution continue to limit schools and hospitals from purchasing more California grown specialty crops. The goal of the project is to increase the availability of specialty crops in schools and hospitals through organizing buyer collaboratives and helping specialty crop growers overcome barriers in selling to institutions. The project helps specialty crop growers access available funds through three sales channels: direct sales, sales through distributors, and the U.S. Department of Agriculture's Unprocessed Fruit and Vegetable Pilot Project. The project is timely because there is more than \$1 million set aside in school meal programs for California grown specialty crops that is currently unused. The outcomes are to increase specialty crop sales to \$1.2 million among project partners and to increase access to specialty crops among 16 schools and hospitals.
- The Wine Institute seeks funds for a U.S. promotional campaign that expands California specialty crop market opportunities by highlighting the ideal growing conditions, stringent farming/environmental standards, and sustainable practices of California grown wines and other specialty crops that provides a compelling reason for consumers and trade to choose California Grown. Through publicity, events, social media, websites, and publication of a "coffee table" book taking readers on a culinary tour of the State's wine and specialty crops by region, the project will communicate reasons to choose California grown to key trade, media, and consumers, and increase California wine sales and grower returns.

- San Diego County institutions (K-12 schools, hospitals, universities, childcare, local government, and community organizations) have greatly increased their purchasing of California grown specialty crops in recent years. However, barriers persist. This project will remove specific barriers to California grown specialty crop purchasing including: 1) Unsupportive purchasing policies; 2) A need for grower training; 3) Poor market information; 4) A lack of business relationships between growers and institutions; and 5) The need for alignment among institutions. Activities to address these barriers include technical assistance to adopt purchasing policies prioritizing California grown specialty crops, biannual grower trainings, market research on local California grown specialty crops availability, annual local foods tradeshow for California grown specialty crop producers, facilitating relationships, and convening institutions to align California grown specialty crop purchasing priorities. Removing these market barriers will support increased California grown specialty crop purchasing by institutions, with a target of one million dollars in increased purchases by the end of 2018.
- Livermore Valley's (LV) growers face mounting costs. Fruit Grower News and grower reports show labor costs rose 25 percent and water 18 percent in 2015 while 3-year regional grape prices are stagnant (National Agricultural Statistics Service). Livermore Valley Winegrowers Association (LVWA) seeks to counter this and bring sustainability to all LV growers (70 percent of California District Six wine region) through a marketing campaign targeting high frequency wine consumers (more than one time per week) nationwide. The project benefits growers by boosting prices for LV grapes by \$3.3 million by 2019 through building demand for higher value winegrape uses (e.g., high-end wine versus bulk/juice) and focusing on the region's distinct terroir. Tasks include a regional market assessment, creation of promotional materials for industrywide promotion and growers/winemakers to market themselves (maps/printed collateral), media engagement and tours, and ads.
- The Oak Park Farmers Market is located in Oak Park, Sacramento, CA, which is a racially diverse, low-income community of 17,000 people. NeighborWorks launched the market in Oak Park in order to increase access to healthy produce in this community. The Eating Healthy Campaign will increase access to specialty crops for low-income families in this and surrounding neighborhoods through nutrition education activities and market promotion. The Oak Park Farmers Market will provide nutrition education activities on specialty crops for families with children. The activities will include learning about the nutritional value of specialty crops and how to prepare child-friendly healthy snacks. NeighborWorks will partner with schools, city community centers, health care clinics, and other social service agencies to ensure the target population is reached. The increased customer base will also support continued efforts to attract new specialty crop vendors to the Oak Park Farmers Market.
- The Center for Ecoliteracy will develop, design, and conduct a multi-channel "Farm to Summer" marketing campaign to promote the quality and benefits of healthy, freshly prepared summer meals made with California grown fruits and vegetables. In coordination with regional clusters of school districts participating in the California Thursdays Network that serve summer meals, the "California Food for California Kids" campaign will target three markets (San Diego, Sacramento, and Contra Costa counties) with public relations and advertising efforts. The campaign will include four integrated components: 1) Promotional events at summer meal sites; 2) Public relations and earned media efforts; 3) Advertising in outdoor (transit), broadcast (radio), and online media; and 4) A valued spokesperson. It will be designed to increase consumption of California grown fruits and vegetables and feature specialty crop images from the California Thursdays' program to convey quality, freshness, and local source.
- Food hubs are an increasingly important sales channel for many small- to medium-scale specialty crop growers, offering farmers transportation efficiency and greater access to markets through aggregation. According to a national food hub survey, 98 percent of food hubs expect to see increased demand for local food products, the majority of which are fruits and vegetables. This project will enhance the market opportunities for specialty crop growers in California by creating a strong food hub network in the State, and increase specialty crop growers' capacity to supply new markets by providing targeted technical assistance to farmers through individual food hubs. The project will achieve these goals by identifying a structure, host organization, and funding strategy for a statewide food hub collaborative learning network in California and by working with food hubs to improve their farmers' understanding of food safety compliance and good agricultural practices.

- Many Californians, especially children, lack sufficient access to specialty crops. For this project, the Office of Farm to Fork will promote consumption and usage of California specialty crops and offer assistance to schools to increase their specialty crop purchases. The Office of Farm to Fork will work with producers and schools participating in the U.S. Department of Agriculture Pilot Project for the Procurement of Unprocessed Fruits and Vegetables to increase the amount of produce schools source directly from California specialty crop farmers. They will also provide procurement and menu-planning support to school food service staff to increase the amount and variety of California specialty crops served in school meals. To improve access to specialty crops through summer meal programs in California, the Office of Farm to Fork will develop strategies to increase direct purchases of summer California fruits and vegetables and provide specialty crop marketing support to increase children's participation in summer meal programs at pilot sites in the Central Valley. The Office of Farm to Fork will also work with culinary arts students to expose them to California specialty crop farms and work with program staff to assess specialty crop representation in culinary arts curriculum. In order to further the overall reach and sustainability of the projects, the Office of Farm to Fork will coordinate with county farm bureaus, California Grown, and specialty crop marketing boards to develop a Specialty Crop School Food Access Taskforce (Taskforce) and strategies to create long-term promotion, procurement, usage, and consumption of specialty crops.
- Riverside Unified School District (RUSD) proposes to pilot a food hub, the first such produce distribution arrangement ever operated by a school district. If the hub works well, countless school districts will be able to develop hubs in their communities. Building on its current school food service, which features salad bars and high levels of fresh produce, RUSD proposes to develop an expanded market for growers by developing a hub that will acquire, store, and distribute fresh produce to corner stores, Women, Infants, and Children Supplemental Nutrition Program stores, childcare centers, and smaller school districts with limited access to fresh fruits and vegetables. RUSD and the County of Riverside Department of Public Health (CRDPH) will provide ongoing technical assistance to ensure successful storage, preparation, and marketing of produce items. The University of California's Nutrition Policy Institute will conduct an in-depth process and outcome evaluation so that other school districts will be able to replicate the pilot.
- Although Zinfandel, which is almost exclusively grown in California, is often called "America's Heritage Grape," it has not been receiving the attention it deserves. Zinfandel: Stories of America's Heritage Grape builds on the Association of Zinfandel Advocate and Producers' 25-year history of creating meaningful experiences and building relationships between Zinfandel producers, winemakers, growers, and enthusiasts. Through compelling storytelling captured on video and popularized through social media, educational exhibits, and live events, the world of Zinfandel will captivate new audiences throughout California and beyond. As a result, the demand for Zinfandel will increase because a wider base of new and existing wine lovers will personally identify with the grape's rich history, the vibrant personalities of today's wine producers, and the dynamic community of Zinfandel consumers.
- Pomegranate processing in California generates large volumes of pomace which is either disposed of in landfills or used as animal feed. Research of aqueous extracts of the pomace showed that the peel fraction contains high levels of polyphenol antioxidants which have shown reduced undesirable obesity related metabolic characteristics. Consumers are aware of the antioxidant and anti-inflammatory properties of pomegranates, so there is an opportunity to develop functional food ingredients from the pomegranate peel. These new ingredients would provide support to the specialty crop industry and offer new healthy and nutritious food products to consumers. The project aims to develop pomegranate peel powder and water-soluble extract that will be incorporated as functional ingredients for antioxidant-rich food products. The functionality of peel powder and its extract will be evaluated in solid and liquid food systems, such as baked goods, herbal tea bags, juice, and yogurt.
- Even with California's rich specialty crop heritage, youth fail to connect the acres of farmland around them to the specialty crops on their tables and the crops' contributions to healthy eating. Students for Eco Education and Agriculture's (SEEAG) The Journey of a Lemon and California Specialty Crop Nutrition Program helps to make that connection by educating students in Los Angeles and Ventura counties about specialty crops and demonstrating their importance to lifelong healthy habits. The program, which expands on SEEAG's already proven curriculum, uses lemons and other top specialty crops to demonstrate food science and nutrition lessons. The results of this program increase direct participants' consumption, access, and preparation of specialty crops, and extend to their immediate networks to foster a regional appreciation of the specialty crop industry. Through the program, 10,200 consumers will gain knowledge about eating, accessing, and preparing more specialty crops, and 8,500 will report an intention to eat more specialty crops.

- California's specialty crops depend on bee pollinators. Some require pollination, while others have higher yields and quality when bee pollination occurs. Healthy, abundant pollinator populations are thus essential to healthy foods. The project's first goal is to promote awareness and relevance of the specialty crop-pollinator connection to the public, including creating pollinator habitat in food gardens. The project will conduct onsite and virtual outreach programs to accomplish these goals. Success will be measured by visitor counts, surveys, post-tour evaluations, and online page views. The second goal is to train other educators to expand outreach. The project will train student interns, Master Gardeners, and K-12 educators. Success will be measured by the number of people trained and the number of programs they offer in the year after their training. Both goals will be based at the University of California, Davis Haagen-Dazs Honey Bee Haven educational garden. The garden includes 20 California specialty crops.
- The goal of the project is to partner with the Klamath Trinity Resource Conservation District to expand access to healthy, safe, and locally produced specialty crops within the underserved Hoopa Valley Indian Reservation community in rural Northwestern California. The intended outcomes will be the enhancement of the competitiveness of specialty crops through an increased number of local specialty crop producers and several experiential and digital educational opportunities focused on crop production, preservation/preparation, and nutrition. These opportunities will target seniors, adults, and children and, in some instances, emphasize those specialty crops that are also indigenous and important to the continued native lifeways and traditional diet of the local community.
- Calaveras Unified School District, in partnership with the University of California Cooperative Extension Central Sierra, will create a district-wide Garden Enhanced Nutrition Education (GENE), school-based specialty crop distribution and farm partnership model which will address knowledge about, access to, demand for, and consumption of specialty crops. Through direct lessons and training of staff and volunteers in curriculum delivery, six schools will expand garden programs to provide GENE lessons aligned with Next Generation Science Standards and Common Core State Standards for students to learn about growing food and the long-term health benefits of eating specialty crops. GENE and cooking skills classes for families, focused on increasing specialty crop consumption, will also be taught. Farm field trips and seasonal specialty crop tastings through Harvest of the Month, supported by a school-based community supported agriculture distribution model, will provide easy access for families to purchase locally grown specialty crops.
- The project will partner with Interfaith Sustainable Food Collaborative to increase marketing of specialty crops by establishing producer marketing relationships with faith-based institutions. The project will benefit local specialty crop producers who need additional marketing outlets to maintain economic viability. The project goals include: 1) Increase purchasing of local produce by promoting farmers' products to more than 1,900 faith-based groups through outreach, technical assistance, training, resource materials, and conferences; 2) Develop 40 specialty crop marketing outlets including farm stands and Community Supported Agricultures at faith-based sites; and 3) Offer 50 nutrition education workshops including cooking demonstrations integrated into sales and delivery dates to more than 850 individuals. The project builds on 3 years of experience in Sonoma and Marin Counties by expanding into Alameda and Contra Costa Counties. Partners include private farms, diverse faith-based groups, and government agencies. Independent evaluation will include surveys and focus groups.
- Thousand cankers disease (TCD) is an emerging disease first discovered as responsible for dieback and death of black walnut in western states and now confirmed as a widespread threat to English walnut, *Juglans regia*, and its rootstocks in California orchards. TCD is caused by a fungal infection following attack by the walnut twig beetle (WTB), which aggregates and transmits the pathogen. The multiple infections result in cankers that girdle and kill branches and stems. TCD management in orchards must include the capacity to determine which host trees are likely to become infected and the ability to detect and deter the vector. The project will identify volatile organic compounds that attract or repel WTB and develop and field test an improved lure for monitoring WTB populations and a repellent for disrupting WTB aggregations. Success of the project will be evaluated by field studies to assess efficacy and surveys to estimate grower adoption of an optimized lure and/or repellent. The project partner is the Regents of the University of California, Davis.

- Kindergarten through fifth grade children will learn about specialty crops through 10 fun, engaging, child-friendly videos aligned with Common Core Curricular and Next Generation Science Standards. Building on the expertise of Farm Fresh To You and its partners in farming, health, produce, and marketing, the videos will highlight specialty crops and will bring the farm to life, showing kids where food comes from, how crops are grown and harvested, the health benefits, and will include recipe cards aligned with Harvest of the Month. The videos will be disseminated to 6,000 students in classrooms and enhance existing educational farm tours reaching 3,000 of those students. To leverage the campaign and widely disseminate these videos to families, the project will implement an integrated marketing campaign with partners on existing robust social media platforms. The project will expose nearly 20,000 children to these videos and will measure learning outcomes through surveys with children and teachers, and Google analytics. The project partner is Capay Inc., dba Capay Organic.
- The drought in California highlighted the water crisis and urgent need to replace the current hot lye and steam peeling methods. These methods are associated with problems of high water and energy use, environmental pollution, and high cost of wastewater treatment. An infrared dry-peeling technology has recently been developed and demonstrated in a pilot scale. Infrared radiation heating is used to lose the skin of fruits and vegetables. It eliminates the use of chemicals and water and the treatment of wastewater with high salinity. However, the continued development to improve throughput capacity of the dry-peeling technology is needed. The aim of this proposed project is to further develop the dry-peeling technology for fruits and vegetables using sequential flame and catalytic infrared heating to achieve high peeling capacity and reduced energy consumption, cost, and peeling loss, but improve product quality. The project partner is the Regents of the University of California, Davis.
- Founded in 1989 as a 3-acre working farm at the Orange County Fair & Event Center, the Centennial Farm was created to educate youth about agriculture and its importance to daily life. The goal of this project is to create a garden dedicated to local specialty crops, in order to teach visitors the unique nutritional advantages of having access to and consuming local California/Orange County specialty crops. The project will utilize the Orange County Fair's experienced staff, volunteers, partners, and new intern program to develop the garden, exhibits, and related curriculum. The exhibits and lessons will be presented to the existing audiences of school children and regional visitors, through the farm school tours program, afterschool program, self-guided tours, and major events. In total, more than 1.25 million visitors will be exposed to the exhibit during the grant period, with measured increased knowledge and changed behavior in more than 125,000 youth and adult consumers.
- The Nutrition Within Reach in the Imperial Valley project will use locally grown California specialty crops to improve the nutrition of one of the most socioeconomically disadvantaged communities in the Nation. Imperial County has the highest rates of diabetes and childhood obesity in the State, and low rates of fruit and vegetable consumption. This is despite the fact that the county is the Nation's leading producer of winter vegetables. The project will develop a community farm cultivated in cooperation with a local Future Farmers of America chapter, and utilize the produce from that farm to help local families learn how to include specialty crops in their diet in simple, inexpensive, and culturally relevant ways. In the process, students will gain hands-on experience managing a farm, from the planning stages all the way through to marketing their crops. Students will actively participate in every aspect of production. These students will in turn educate others within the community about the specialty crop industry. The project partner is the Imperial Valley Conservation Research Center.
- The purpose of this project is to develop a website to host decision support tools (DSTs) for avocado growers. Avocado growers integrate many different factors into their management decisions, such as rootstock selection, irrigation frequency, fertilization timing and amount, and pruning. Environment and soil type also affect these decisions. The California Avocado Commission has funded research to analyze large data sets of more than 30 avocado groves to develop predictive grove management models. These models integrate factors such as irrigation, fertilization, and yield to aid growers in their management decisions. These models must now be made into a usable tool for growers to access and utilize in their decision making process. The project will develop a website to host and maintain the DSTs to make them available to the California avocado industry. The website and necessary training will be extended to growers through the commission's established grower outreach program.

- The project addresses the goal to train the next generation of vegetable crop workers and increase effective stewardship practices in vegetable production systems. Projections for near-future retirements of California's agricultural production, marketing, and postharvest handling sectors indicate severe re-staffing needs. To address these needs, vegetable crop production course instructors from four California universities will create a series of high-quality instructional videos on vegetable crop production systems. The videos will be used to improve postsecondary student training and increase the number of trained graduates from California university horticulture programs with expertise in vegetable production by 20 percent as measured by objective evaluation tools that will be developed with vegetable crop industry partners. The purpose is to develop video materials for these diverse student groups that will increase their knowledge of innovative systems and motivate them to pursue professions in horticulture. The project partner is the Regents of the University of California, Davis.
- In 2014, the California Apple Commission (CAC) received a Specialty Crop Block Grant to investigate the benefits of shade cloth on apples in California. Due to unforeseen challenges such as an extremely early apple harvest, the closing of California shipping ports, and structural design issues, the project lost almost a year of valuable data for the project. The CAC is requesting additional funding to obtain more data which will strengthen the validity of the findings. Since the shade cloth is already purchased and installed, the additional funding will pay for the cost of the extended research and personnel to implement the grant.
- Moringa is a highly nutritious, drought tolerant crop with market potential for both fresh and value-added sales. Southeast Asian farmers in Fresno are growing moringa on a small scale and selling direct at farmers markets. Moringa leaves are highly perishable, needing to be sold within 1 day of harvest. Drying moringa extends the life of the saleable product and gives farmers entry to additional market channels for the value-added product. This project will identify (through research and replicated trials) and train farmers in best practices for drying moringa leaves. The project will also identify buyers interested in sourcing California grown moringa, both fresh and dried, and support farmers in marketing moringa to new buyers to boost sales. Specialty crop growers across California will gain information about value-added processing of moringa, a crop with high nutritional value about which little California-focused marketing and processing information exists. The project partner is the Regents of the University of California, Davis.
- This project will determine irrigation requirements and assess disease resistance of new and recently introduced landscape plants at two University of California facilities, one in Northern and one in Southern California. Plants will be established in year one and exposed to irrigation treatments in year two. Plants will be measured for growth, assessed for disease resistance, and evaluated for aesthetic quality. The University of California, Davis site will be expanded to include a disease resistance assessment field. Three new fields will be installed at the University of California, South Coast Research and Extension Center in Irvine, CA, to duplicate the University of California, Davis fields. There are no California academic ornamental plant breeders, so collaboration with Dr. Ryan Contreras, Oregon State University Department of Horticulture, will be established to bring his landscape plants to California. The test site design will enable the concurrent determination of the fire blight resistance and irrigation requirements of Dr. Contreras' Cotoneaster plant selections. The project partner is the Regents of the University of California, Davis.
- The Center for Ecoliteracy (CEL) will create a suite of six specialty crop lesson plans that align with California history and social science standards. Working with experts in the history of California agriculture, CEL will design innovative and developmentally appropriate learning experiences for fourth graders to complement that grade level's emphasis on California history and geography. The lessons will focus on six specialty crops: almonds, grapes, strawberries, peppers, tomatoes, and figs. The conceptual foundation of the lessons will be based on CEL's "Big Ideas: Linking Food, Culture, Health, and the Environment." Educators in three regional clusters (in Sacramento, San Diego, and Stanislaus counties) will receive professional development to implement the lessons and conduct classroom assessment. The lesson plans will be published, disseminated through the California Thursdays Network of 58 school districts, and made available for free on CEL's website.

- The Mendocino Food Hub completed its pilot year in December 2015 after conducting a comprehensive feasibility process. To fully participate in the food hub, beginning specialty crop producers need strong business and production skills to comply with wholesale buyer requirements. North Coast Opportunities (NCO) will provide farmers with advanced training and one-on-one technical assistance in scaling up their farming businesses (production planning for local markets, labor and machinery efficiency, food safety compliance, and business accounting); carry out a specialty crop promotional campaign; conduct outreach to buyers and build buyer capacity to purchase from local specialty crop producers; and add new delivery routes and nodes to the distribution network. NCO will also explore sustainable ownership models and transition to an independent ownership structure by the end of the grant. Success will be measured by tracking the numbers of producers and buyers and the total food hub sales volume.
- This training project, a partnership between California FarmLink and the Resource Conservation District of Monterey County, enables beginning and Latino farmers to expand and create profitable vegetable and berry operations. The 2-and-a-half-year project combines a yearly seven-workshop "Winter School" series and one-on-one technical assistance (TA) to provide 130 beginning and Latino farmers with the critical conservation, agronomic, and finance training, tools, and resources needed to sustain and scale up operations. The one-on-one TA is part of a continuum of services that begins with workshops and existing client relationships, empowering farmer action to address individual business needs. The Winter School workshops will cover the following topics: Finance and Conservation Introduction/Intake; Farm Planning, Soil Sampling, and Nutrient Management; Water Management and Regulations, Erosion Control; Crop Production, IPM, Food Safety; Business Accounting and Product Marketing; Securing Financing; and Crop Insurance and Recordkeeping.
- This project will develop best management practices to mitigate pest risk to orchard and row crops associated with forage plantings that are increasingly implemented to support honey bees and other pollinators. It contributes to a more sustainable system for specialty crop production by adding a critical component to overcome pest risk, a key barrier to adoption of habitat plantings. The project will monitor export of key pests and natural enemies from pollinator plantings and quantify pests at individual flower species currently being assessed for support of crop pollinators. Plant-species-specific data on pests will be integrated into a decision tool used to optimize pollinator seed mixes. To date, the tool has considered only beneficial aspects of plants. The resulting innovation will provide critical balance between benefits and liability of different species, allowing for crop-specific selection of plants that avoid pest risks and maximize biological control and pollination benefits. The project partner is the Regents of the University of California, Davis.
- Grapes are damaged when tissues freeze in spring frosts. Frost damage is triggered by certain bacteria that catalyze ice formation near 32 degrees Fahrenheit. Without those bacteria, grapes can supercool as low as 25 degrees Fahrenheit and avoid damaging ice formation. Overhead sprinklers can prevent damage to vines, but take considerable water, which is not always available. The use of wind machines for frost control is expensive, energy demanding, and noisy, requiring air inversions to work. Understanding the microbiology of grape vines will enable farming practices that avoid damaging ice formation without the need to warm plants by unsustainable methods, reducing water and energy demand. The project will research strategies to enable grapes to tolerate cold temperatures by reducing ice nucleating bacteria on leaves and by selecting and managing cover crops that do not support ice nucleating bacteria that migrate to grapes. The project partner is the Regents of the University of California, Cooperative Extension.
- Nitrogen (N) management work plans are now required of almond growers statewide. To meet this goal, growers must first predict yield in each production unit and use that to develop an N management plan. This project will build statistical models for early-season yield projection and mid-season yield updates and capitalizes on unprecedented access to historic yield data and biophysical, climate, and remote sensed data from a large number of growers. The project's monitoring and modeling approach will capture prior-season canopy and current flower emergence using aerial imagery, and combine that with historic yield data and geospatial biophysical, climate, and remote sensed data to provide a block specific almond yield prediction. The outcome will increase the utility of the current online Nitrogen Management tool and assist growers to manage N efficiently and comply with mandated requirements. The model will also be a powerful research and development tool to optimize management and sustainability. The project partner is the Regents of the University of California, Davis.

- The California Association of Pest Control Advisors (CAPCA) and the California Avocado Commission plan to bring new best practice updates on the identification and mitigation of Polyphagous Shot Hole Borer (PSHB) to Pest Control Advisers (PCAs). In light of new quarantines and expanded infestation boundaries into Ventura County in November 2015, training PCAs on current detection, treatment, and trapping will be key to aiding containment and protecting the industry. This educational outreach to PCAs and the real-time updates via the crop team's risk management network are designed to manage PSHB and the disease it carries to minimize economic harm to California avocado growers. CAPCA's broader interest is also in developing rapid response crop teams by commodity to educate PCAs and network growers, researchers, industry, and interested parties to quickly and effectively address new pest threats in California.
- This project seeks to enable organic fresh market tomato growers to be better environmental stewards and better growers through increasing their nitrogen (N) management efficiency. Organic growers have the technology to match the timing and amount of N applied with the needs of their crop, but lack reliable data on temporal N uptake by plants and release from organic amendments. This project aims to quantify and provide growers with information about seasonal N uptake curves of organic fresh market tomatoes, temporal availability of N from organic amendments, and improved grower N assessment techniques by defining critical leaf N values and petiole nitrate-N concentrations. The findings will be communicated to growers through publications, a video tutorial, workshops, and farm visits. This research will enable growers to apply optimal N, when needed, thereby decreasing air and water pollution as well as cost and resource waste, resulting from improper fertilization. The project partner is the Regents of the University of California, Cooperative Extension.
- Strawberries are the third most valued crop in California and the most sensitive to salinity. Limited information on the salt tolerance of strawberries produced on the coastal regions of California has led to significant yield losses in recent years. Published thresholds of strawberry tolerance to soil salinity may not be directly transferable to the soils, climate, and cultivars that are typical to the coast, the main production region in California. Many growers in the Ventura/Oxnard and Watsonville area successfully produce strawberries in soils that have electrical conductivity above the published salt tolerance threshold of 1.0 dS/m. Growers are either incurring yield losses or the published thresholds may be incorrect for modern cultivars. This project aims to determine soil salinity tolerance levels to the four most popular strawberry cultivars grown in California in order to develop accurate salinity management strategies for optimizing yields and to support the sustainability of the strawberry industry. The project partner is the Regents of the University of California, Cooperative Extension.
- Climate change has led to higher sea levels and farther saltwater intrusion, and promotes water transpiration from plants and evaporation from soil, increasing salt accumulation in soil. Lettuce is particularly vulnerable to salt stress, and salinity is a major constraint in all lettuce production areas in California. Thus, there is a pressing need to adapt lettuce production to the changing environment in order to protect and even increase current production levels. The integrated analyses of physiological and genetic mechanisms will allow identification of critical factors in salt tolerance, which could be used to develop molecular markers to create tolerant germplasms. The purposes of this proposal are to identify physiological traits, proteins, and genes underlying salt-tolerance in lettuce and incorporate them into new cultivars. This project aims to increase salt tolerance, profitability, and sustainability of lettuce production in California. The project partner is USDA, Agricultural Research Service.
- This study will evaluate two foothill mandarin (*Citrus unshiu*) production practices not commonly used in other California citrus. Foothill soils are low in organic matter and key nutrients, so growers consider pruning and mulching critical to fruit quality and orchard sustainability. However, there is little data on impacts of these practices in citrus. Increased organic matter enhances soil nutrient and water-holding capacity, and reduces nitrogen leaching. Wood chips, horse manure, and other organic materials are readily available and inexpensive. The project will assess impacts of organic mulch by measuring soil organic matter, tree growth, leaf nutrient status, fruit yields, and quality. The project will assess pruning impacts on scale insects, fruit yield, and quality. Research will be conducted in commercial mandarin orchards. Area citrus growers will cooperate in the research and in field meetings to share findings with other growers. This study benefits both organic and conventional growers. The project partner is the Regents of the University of California, Cooperative Extension.

- This project will develop guidelines for growers of processing tomatoes on how to implement late-season deficit irrigation to increase the fruit soluble solids concentration without significant yield penalty. Low soluble solids concentration requires more energy for processing. The soluble solids concentration can be increased by some degree of deficit irrigation in the second half of the growing season. To develop indicators of when and by how much irrigation has to be cut back to obtain optimal soluble solids concentration and yields, the project will conduct replicated field trials with irrigation treatments ranging from 25 to 100 percent of evapotranspiration and will evaluate measurements of the normalized difference vegetation index, thermal imaging, soil and plant water potential, and soluble solids concentration of early ripening tomatoes. Analysis will identify the most appropriate measurements growers can use as decision-support tools. The recommendations will be shared with stakeholders through online media, field days, conferences, and trade journal articles. The project partner is the Regents of the University of California, Davis.
- Incorporation of nitrogen (N) rich cole crop residues in fall can release considerable amount of inorganic N in soil during winter rainy seasons on land that is bare fallowed, that is vulnerable to loss via leaching. This could worsen the nitrate pollution of groundwater that already poses health risks to 254,000 people in areas within California where cole crops are produced. Studies in the European Union and Canada showed that application of high-carbon/nitrogen ratio (C/N) organic amendments can immobilize N mineralized from cole crop residues resulting in reduction of N losses in winter and improved water holding capacity of the soil. Using locally available amendments, a team of researchers and growers will identify practical high-C/N organic amendments and in field trials examine their effects on N loss in winter after cole crop residue incorporation; soil moisture and N dynamics; and yield, costs, and net returns of subsequent lettuce and strawberry production. The project partner is the Regents of the University of California, Santa Cruz.
- Whole-orchard recycling by incorporating old almond tree residues back to soil before replanting improves soil health and carbon sequestration without affecting yield. Although seldom implemented, whole-orchard recycling is gaining momentum due to the increasing need to sequester carbon on cropland, burning restrictions, and biomass power plant closures, resulting in excess biomass waste accumulation. Drought and high almond prices have encouraged turnover of less productive orchards. This project considers tree residues as a resource to effectively improve sustainability and resilience of the almond industry. The project will conduct trials to evaluate the short and long-term impact of whole-orchard recycling on replanted tree health and growth, soil health, carbon footprint and nitrogen dynamics, and yield resilience to deficit irrigation. Results will be presented to growers at field days and through webinars and factsheets. The project partner is the Regents of the University of California, Davis.
- The Central Coast provides produce to the United States and much of the world. Recent water quality data show that fertilizer nitrate enters ground and surface waters at high rates. To address the disconnect between available and adopted good nutrient management practices, the Fertilizer Research and Education Program is forming a working group of key regional stakeholders to identify barriers and guide strategies that increase best management practice adoption. This work will utilize recent social science research findings to catalyze the implementation of best management practices that are protective of water quality by integrating innovative targeted technical training, hands-on field demonstration, and outreach to growers and farm staff at all levels.
- The viability of the California avocado industry is threatened by the exotic pest complex *Fusarium* dieback, which is formed by two shot hole borer beetle species, each associated with specific fungal species. These complexes have spread from urban-wildland forests into many commercial avocado groves. While the two beetle invasions were initially geographically isolated, the two populations recently converged in Orange County, with unknown repercussions. The project's goal is to develop an integrated pest management (IPM) strategy for these pest complexes. Because no control methods are currently available, this project will be a success when it produces and enables adoption of the following IPM building blocks: 1) Robust, rapid identification tools for fungi with the beetles; 2) Tests showing the effectiveness of several control measures in the field; and 3) A risk model based on grove and landscape traits that guides users to which control measures would be most suitable for individual groves. The project partner is the Regents of the University of California, Riverside.

- Health threats to honey bees like the parasitic Varroa mite threaten crop pollination security. As the largest specialty crop producer, using most of the managed bees available nationwide, California is the single greatest beneficiary of healthy honey bees. This long-term program will breed honey bees that have been enhanced for resistance to mites and for functionality in commercial beekeeping operations. Over three breeding seasons, a consortium of bee breeders, commercial beekeepers, and scientists will build on existing knowledge and resistant strains to select bees with reliable traits including resistance, early season population buildup, and good honey production. Improved resistant bees that mitigate the damaging effects of Varroa mites and chemical treatments will reduce bee mortality and improve bee health, thus increasing pollination sustainability. The project will be proven successful as California pollinators and queen producers adopt the new selected Varroa-resistant stock. The project partner is Project Apis m.
- The bagrada bug is an invasive insect that has become a serious pest to cole crops throughout the Southwestern United States. This project will provide a sustainable pest management strategy for suppressing this pest in California. First reported in 2008, the bagrada bug has spread throughout the agricultural areas of Imperial and Riverside Counties, up through the Central Valley, and along the coast from San Diego to Monterey Bay. Currently, the only means for controlling this pest is conventional pesticides. This leaves organic producers of cole crops at risk since there are no effective organically registered control measures. A long-term, self-sustaining solution is the introduction of parasitoids specialized in feeding on this pest. This project will evaluate a novel parasitoid for host specificity, determine if any resident natural enemies are attacking bagrada bug, and submit release permits to the appropriate authorities. The ultimate goal is the release of the new parasitoid.
- Due to severe drought and water stress and the high levels of navel orangeworm in the last several years, aflatoxin (AF) contamination of almond has again become an important issue in marketing and consumption of almonds. AFs are secondary metabolites produced by two fungi, *Aspergillus flavus* and *A. parasiticus*, which infect and contaminate nut crops with AFs. This has created major marketing problems in exported loads of almonds because the allowable tolerances for aflatoxins are very low (10 to 15 parts per billion). Some strains of *A. flavus* do not produce AFs (called atoxigenics). One atoxigenic strain (AF36) has been selected after 10 years of research, registered in 2012 on pistachio, and used in a very large scale commercially as a biocontrol approach to reduce AFs. The project proposes to do additional research that is needed in order to register AF36 on almond so that it is used in commercial orchard applications to reduce AF contamination and improve marketing and food safety of almond. The project partner is the Regents of the University of California, Davis.
- Phytophthora root and crown rots are common destructive diseases of almond and walnut rootstocks in California. Developing resistant cultivars by traditional breeding is slow and uncertain. The U.S. Department of Agriculture, Agriculture Research Service was first to demonstrate a Ribonucleic acid interference-based (RNAi) method referred to as host-induced gene silencing (HIGS) in walnut against crown gall disease. This project offers new dimensions of speed and versatility to almond and walnut rootstock breeding by providing resistance to Phytophthora via HIGS and combining it with HIGS resistance already developed for crown gall and root lesion nematode pests.
- There is compelling evidence that the health of an animal or plant is a function of the activities of its resident microbiome. The goal of this proposal is to design a beneficial citrus microbiome whose deployment can be integrated into current citriculture during the nursery propagation stage to provide a sustainable and an environmentally friendly management tool for citrus Huanglongbing (HLB). The project will utilize a naturally occurring phenomenon observed in Florida, where groves containing many severely symptomatic trees also contain a small number of trees that exhibit minimal HLB symptoms. These trees are referred to as survivor trees. The project will employ a novel greenhouse bioassay to identify microbes in survivor trees that inhibit *Candidatus Liberibacter asiaticus* (CLAs) titers and HLB symptoms. The project will use two complementary approaches to create CLAs-inhibiting source trees. These deliverable solutions will be extended to the citrus community through a multi-faceted outreach plan. The project partner is the Regents of the University of California, Riverside.

- Phytophthora as a genus is an enormously destructive plant pathogen on many crops in California and globally. *Phytophthora cinnamomi* (Pc) has a broad host range and causes Phytophthora root rot, the most serious disease and the major constraint for avocado production in California. This disease affects 60 to 75 percent of California growers causing losses of \$40 million annually. In 2015, this pathogen was identified as an emerging pathogen on blueberries. In 2013, the California avocado and blueberry industries were worth an estimated \$435 million and \$123 million, respectively, with significant growth occurring in the blueberry industry (approximately \$93 million over the last 6 years). The goal of this project is to implement newly developed molecular tools to rapidly and accurately detect Pc plant material, soil, and water samples in the field. Additionally, the project aims to transfer these technologies to end users such as pest control advisors, growers, nurseries, and extension agents. The project partner is the University Corporation at Monterey Bay.
- Navel orangeworm (NOW) is a major pest of specialty crops and the top factor in infestation by *A. flavus* and subsequent aflatoxin contamination. Stakeholders have initiated a collaborative Sterile Insect Technique program (SIT) to replace the discontinued APHIS Boll Weevil program. Currently, gamma sources are the only practical means for insect sterilization on the required level. Western Regional Research Center (WRRC) scientists have reported that x-ray is a suitable substitute, but cannot practically meet the throughput required. WRRC scientists have also shown that natural products can sensitize fungus and bacteria to existing treatments, reducing required doses. It is known that insects can be sensitized to radiation under certain controlled atmosphere conditions. The project will investigate sensitizing NOW through application of natural compounds, atmospheric conditions, and electromagnetic pre-treatments, with the goal of reducing required doses to the point that x-ray can replace radioisotopes for a large SIT program. The project partner is USDA, Agricultural Research Service.
- This project will provide a sustainable, cost effective management tool for control of the brown marmorated stink bug (BMSB), a new, invasive pest to California. BMSB was inadvertently introduced from Asia to the mid-Atlantic States in the mid-1990s. It is highly polyphagous and spreading throughout California. There are high populations in Southern California and in urban centers from Modesto to Chico. In the Eastern and Northwest United States, urban populations of BMSB have spread into agricultural regions causing serious economic damage to fruit crops, vegetable, and field crops. BMSB's piercing, sucking mouthparts discolor fruit, which in turn makes them unmarketable. Laboratory tests will be completed to obtain a field release permit for a parasitoid found in China that specializes in feeding on BMSB. In addition, a State-wide survey will determine if this parasitoid is already in California in the event that the field release permit request is delayed. The same survey will provide data for the release permit.
- The recently finalized Food Safety Modernization Act (FSMA) rules require specific food safety practices for produce. FSMA requirements are generalized to cover all crops. However, application of these requirements differs for specific types of crops like stone fruit. Northern California farmers grow a significant percent of stone fruit in the United States, but Center for Healthy Communities (CHC) at California State University, Chico (CSU Chico) survey results show that essentially all north State farmers do not have a food safety plan in place. Previous CHC funding has enabled the development of a generalized on-farm food safety training program, Enhancing Agricultural Safety Year-Round: Good Agricultural Practices (EASY GAP). California Department of Food and Agriculture funding would allow EASY GAP for California Stone Fruit to develop materials specifically for stone fruit farmers. The training and materials would increase understanding of on-farm food safety as evaluated by pre and post quizzes and provide GAP training certificates.
- Avocado is the most salt sensitive tree crop grown in California and growers must utilize leaching fractions to maintain low soil salinity levels. Most avocado growers base irrigation scheduling and leaching fractions on experience and do not use sensors to precisely monitor water application. Since many avocado groves are on steep slopes, runoff can be an issue if leaching and general irrigation are not carefully monitored leading to water wastage. This project will establish a demonstration block at the California Avocado Commission's demonstration grove in Ventura County using several different soil moisture sensor systems to schedule irrigation and leaching fractions. Through field days, growers will be able to see the technology firsthand and learn how to install and use it to better manage irrigation. By documenting water use, leaching fractions, and tree growth under sensor-based and conventional irrigation practices, growers will see the benefits of this technology.

- The major goal of the project is to ensure growers and farm-type operations covered under the Produce Safety Rule understand the requirements and have the proper tools and training to take action before mandatory compliance periods begin. Almond Board of California (ABC) will utilize internal and external expertise to assist almond farm operations in understanding the requirements through development of tools and resources and providing educational seminars. In addition, ABC will leverage existing communications programs and educational events to educate growers and farm operations. Outcomes of this project will be to: develop a Produce Safety Rule toolkit; develop an almond grower and farm operation produce safety training curriculum; build out a training workshop schedule and initiate statewide training workshops; develop/implement Produce Safety Rule outreach campaign; and incorporate Produce Safety rule training into the Almond Conference agenda.
- Community Alliance with Family Farmers (CAFF) will host and participate in workshops with the goal to explain Food Safety Modernization Act (FSMA) rules and good agricultural practices throughout California in collaboration with University of California Cooperative Extension and other organizations, focusing primarily on small and minority specialty crop farmers who may have a qualified exemption from FSMA and who typically cannot afford food safety consultants. CAFF expects to directly reach 600 farmers in workshops, 50 farmers through one-on-one support, 50 growers in 2 webinars, and 100 growers from previous contacts. The project will develop materials appropriate to the audience in collaboration with the University of California, Davis and the National Sustainable Agriculture Coalition. The materials will be approved by the Food and Drug Administration. The webinars will be posted online with all other materials, and CAFF will make the information available to organizations and growers around the country. The major outcome will be that these growers will learn about and understand FSMA rules, food safety threats, and third-party audits for good agricultural practices certification.
- 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.
- As noted in the U.S. Department of Agriculture's (USDA) Building Blocks for Climate Smart Agriculture and Forestry, soil health is a fundamental action that must take priority to address climate change conditions. Climate-smart practices designed for working production systems provide multiple economic and environmental benefits in addition to supporting resilience to extreme weather, reduced emissions, and increased carbon storage. California On-Farm Soil Health Network was established in three pilot regions through a cooperative effort to address the low adoption rate of soil health practices by producers through creation of localized and customized systems where farmers can learn from each other. Success stories, research, and demonstrations will be shared across a Statewide network of partners. East Stanislaus Resource Conservation District staff will work with partners to assist in the implementation of regional hubs that require facilitation of stakeholder meetings, shared challenges, and demonstrations that promote soil health practices for drought resiliency.
- The Center for Produce Safety will partner with University of Connecticut to evaluate *Listeria* survival on stone fruits as influenced by current packinghouse practices. The recent multi-state recall of stone fruit due to concern about contamination with *Listeria monocytogenes* highlights the potential for stone fruits to serve as a vehicle in *Listeria* transmission. Further, the incident also demonstrates the pathogen's ability to persist and survive on stone fruits during handling, storage, and transportation. While investigations on the persistence of *Listeria* have been performed on other produce, there is a general lack of knowledge on the behavior of pathogens associated with stone fruits. Also, each produce type has unique compositional and physical characteristics that require produce-specific management practices. Therefore, to develop stone fruit-specific risk reduction knowledge and preventive controls, this study will investigate the survival and growth of *Listeria* on peaches and nectarines under packinghouse environment, storage, and transportation conditions. The study will be performed under conditions simulating stone fruit unloading and staging, waxing and fungicide application, storage, and transportation from the packing facility. The goal of this study is to provide quantifiable data on the effect of current practices on *Listeria* survival on stone fruits. Furthermore, the identification of food safety risks associated with different steps within the packinghouse continuum will help develop comprehensive preventive controls for foodborne pathogens, including *Listeria monocytogenes*.

- This project establishes a Northern California Collaborative Regional Alliance for Farmer Training that will host monthly tours of successful specialty crop farms for new and aspiring farmers in Yolo, Sacramento, Solano, Sonoma, Napa, Mendocino, and Lake counties in partnership with The Farmers Guild, Grange Farm School, and Farmer Veteran Coalition. The primary objectives of the project are to increase opportunities for beginning farmers to learn directly from well-established specialty crop farmers and strengthen local peer support networks for specialty crop farmers. During each growing season, participants will visit established farms in their region, learn about a specific topic from the farmers, and network with their peers. Local specialty crop farmers will guide the tours through community planning and evaluation meetings. Collaboration with established support networks for new farmers in these regions will help ensure broad participation, impact, and sustainability. The project partner is the Regents of the University of California, Davis.
- The Center for Produce Safety will partner with University of California, Davis, to provide data to the California citrus industry to validate packinghouse practices. After harvest, fresh oranges and lemons are sorted, washed, and packed in packinghouses for further distribution and sale. Because green and blue molds result in significant losses of citrus fruit during storage and shipping, fungicides are often applied during packing. Recirculating drench applications are common because they significantly increase fungicide efficacy, but they also provide an opportunity for cross contamination or movement of microorganisms throughout the facility, which can be a food safety issue if not appropriately managed. The overall goal of this project is to provide data that the California fresh citrus packinghouse industry can use to support the controls that reduce or eliminate foodborne pathogen cross contamination where citrus fruits are comingled or where recirculating materials come into contact with the fruit. A laboratory component is included for the most common fungicides to determine minimum compatible sanitizer concentrations that are effective in eliminating *Salmonella* and *Listeria monocytogenes*. The laboratory data will be verified in a pilot-scale citrus packing facility, and the results of these studies will be used to prepare documents the industry can use to support the efficacy of their food safety practices.
- The Center for Produce Safety will partner with the University of Arizona to assess the potential reservoirs of *Cyclospora* and occurrence in irrigation waters. *Cyclospora* has recently been implicated in outbreaks associated with United States produce imported from Mexico. *Cyclospora* outbreaks have also been linked to drinking water. Information on the sources and occurrence of this organism are very limited. Currently, only humans, and possibly primates, are believed to be infected by this parasite. The goal of this project is to determine if produce grown in the United States is at risk of contamination from irrigation waters contaminated with human sewage (e.g., from faulty/leaky septic systems or compromised sewer pipes) and treated wastewater effluents that could potentially be discharged into surface waters used for the irrigation of food crops. Large-volume irrigation water samples and raw sewage and treated wastewater grab samples collected monthly over 2 years in Arizona and Texas will be concentrated by filtration and examined for the presence of *Cyclospora cayetanensis*. The specific objectives are: a) to determine the occurrence of *C. cayetanensis* in irrigation waters in Arizona and Texas, which will allow a determination of any risk from *C. cayetanensis* and to identify areas of potential risk; and b) to determine the occurrence of *C. cayetanensis* in raw sewage and treated wastewater effluents in produce-producing areas such as Yuma, AZ, and El Paso, TX, which will allow for an assessment of the incidence of *C. cayetanensis* infection in these communities. In addition, treated wastewater effluents are sometimes released into watersheds and could potentially impact irrigation waters. This study will determine if any risks exist from *Cyclospora* in irrigation waters from these two regions.
- The Center for Produce Safety will partner with University of California, Davis to conduct multi-site investigative environmental sampling for *Listeria* in California citrus packinghouses. Fresh whole citrus has not experienced an incident of recall, illness, or outbreak, and California citrus production practices and regions appear to significantly limit the environmental risk of preharvest contamination. However, recent serious incidents associated with California apples, which involved the bacterial pathogen *Listeria monocytogenes* (*L. monocytogenes*), have prompted proactive measures to more carefully assess postharvest risks and develop validated interventions for citrus system-wide. In this project, confidentially enrolled handlers will participate in a detailed survey involving facility sampling for indicator *Listeria* and *L. monocytogenes*. The data collected will provide critical baseline knowledge for the design and implementation of sanitation and an on-going environmental monitoring program (EMP), which will ultimately protect food contact (Zone 1) surfaces from the establishment of resident *L. monocytogenes* and minimize the potential for contamination of citrus during daily operations. The major outcome will be the development of a model EMP and guidance in establishing an environmental-zone Master Sanitation Schedule linked to EMP outcomes for California fresh citrus packinghouses. Other anticipated outcomes include a general overview and report card of the California citrus packing environment, and the identification of potential sources of *Listeria* related to citrus growing regions and harvest/postharvest practices. Closing this knowledge gap will result in measureable improvements in reducing *L. monocytogenes* prevalence.

- The Center for Produce Safety will partner with Cornell University to develop geospatial models that predict surface water microbial quality for individual water sources. The quality of surface water used for produce production (e.g., irrigation, frost protection) has emerged as a key issue for preventing preharvest microbial contamination of produce. As part of the Food Safety Modernization Act, the Food and Drug Administration established microbial standards for the use of surface water for produce production, including how frequently water should be tested. However, surface water quality is known to vary based on adjacent or upstream land use and weather (i.e., meteorological) factors. Therefore, targeted approaches to water testing and treatment that account for this variation may improve growers' ability to identify and address on-farm food safety risks associated with surface water use.
- The Center for Produce Safety will partner with Washington State University to provide data to the apple industry on sanitizer validation on apple packing lines. *Listeria monocytogenes* is listed by the Food and Drug Administration (FDA) as a pathogen of concern and has been singled out on both ready-to-wash and ready-to-eat produce due to its nature as a true environmental species. The overall goal of the project is to comparatively assess and validate critical operating parameters for registered, commercially practical, and legally allowed sanitizers against *L. monocytogenes*, and to verify their efficacy on multiple apple packing lines. The project will 1) Validate the efficacy of selected sanitizers against *L. monocytogenes* on whole apple surfaces through laboratory testing; and 2) Verify the selected sanitizer interventions in model/pilot packing line and representative commercial apple packing lines in two states. This project will provide data for apple producers about the practical efficacy of antimicrobial interventions under commercial packing conditions, resulting in tested and proven methods for spray bar intervention in fresh apples. This information will fill critical gaps in the knowledge and will be crucial to reduce *L. monocytogenes* risk in fresh apples.
- This project will develop the tools to implement a number of climate change adaptations on specialty crop lands in Sonoma, Mendocino, and Napa counties. An element including inventory/assessment methods and beneficial management practices will be developed for vineyards and pear orchards to reduce greenhouse gas emissions, increase carbon sequestration, increase soil health, and increase water use efficiency. A stakeholder group of specialty crop growers, and wine grape and pear associations will be central to the project. Scientists will inform the group and provide a basis for the project. The element will be reviewed by the grower group and be field tested for cost effectiveness. California Land Stewardship Institute will apply the new element to 300 sites, and it will be added to the Fish Friendly Farming program, applying it to more than 870 specialty crop growers over time. Implementation will be tracked through California Land Stewardship Institute's database. The element will also be available to more growers through specialty crop

Colorado

Recipient:	Colorado Department of Agriculture	Award Amount:	627,177.99
		Number of Projects:	12

- 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.
- The Colorado Department of Agriculture (CDA) will partner with Colorado produce associations, growers, and handlers to exhibit at the Produce Marketing Association's (PMA) Fresh Summit Expo to be held in New Orleans, LA, October 19-20, 2017. A Colorado Pavilion at PMA, the largest produce expo in the United States, increases exposure and sales potential of Colorado specialty crops and companies. CDA will assist up to 12 Colorado companies and associations in gaining a national and international buying audience through attendance at Fresh Summit Expo, increasing awareness of Colorado as a reliable supplier of fruits and vegetables.

- The sod industry in Colorado has suffered for many years due to misinformation that is abundant in public discussions, and incorrect assumptions concerning the amount of water required to achieve a healthy lawn. The Rocky Mountain Sod Growers (RMSG), in partnership with Northern Colorado Water Conservation District (NCWCD), plan to develop an advertising campaign designed to educate the public concerning the benefits of sod to the environment, and how to conserve water, based on scientific research. The RMSG, by working with NCWCD, plans to conduct an educational campaign that will focus on turf responses to deficit irrigation (primarily Bluegrass), irrigation management for water savings, and an emphasis on overall management and practices as key to saving water. A baseline for measurement of the impact of the campaign will be established through an initial survey of sod growers in the State that will include questions concerning income, number of employees, acres available, etc. Once the project has been completed, another survey will be conducted to measure impact on the industry. Elements of the campaign will include website, broadcast, social, and print media. The RMSG has established a robust educational website and the purpose will be to drive more people to the website where they may learn the facts about sod and resources available to them from experts located throughout the State. Another measurement will be the number of visitors to the website as well as how long they stay, where on the site they are most likely to linger, etc. This information will be useful in updating and expanding the site.
- Fort Lewis College, as manager of the Old Fort Market Garden Incubator program, will address land access for beginning farmers by hosting landowner and land-link workshops. By partnering with Colorado Land Link, these workshops will educate landowners about infrastructure and lease management as well as give them the opportunity to meet local farmers who are looking for land. To increase the number of qualified candidates for the program, we will create a Farmer in Training (FIT) program to provide beginning farmers who would like additional experience before applying to be an incubator. FIT participants will be compensated while implementing an assigned crop plan under the guidance of staff. To assist regional development of incubator programs, staff and farmers will conduct four site visits to help evaluate resources and assist with recruitment of participants. Lastly, we will expand markets for specialty crops produced at Old Fort by hiring a marketing coordinator to continue successful marketing efforts and create an on-site farm stand at Old Fort.
- The Colorado Nursery & Greenhouse Association (CNGA) continues to educate consumers about the benefits of gardening and planting and to encourage consumers to “Get out and Plant Something!” via the Plant Something Colorado Campaign. The campaign focuses on planting annuals, perennials, trees, shrubs, and other plant material purchased from locally owned garden centers and produced in Colorado. All plant material that is sold at garden centers fit within the specialty crop definition. We plan to continue our award-winning contest for the third year via a social media campaign. The contest invites participants to visit local garden centers to pick up a Plant Something plant stake, seed packet, go out and plant something and then share pictures of their progress on a variety of social media sites. By using the hashtag #plantsomethingco we will be able to track the number of pictures that are posted and give individuals with the most points a prize. The contest will begin on May 14, 2017 (Mother’s Day) and end in late July/early August, which correlates with the primary planting time in Colorado. In addition to our social media advertisements, we plan to attend events that attract our target market of females between 25 and 44 years old. Examples of events are plant sales, farmers markets, local concerts, etc. In 2017, we would like to add a blog section to the plantsomethingco.org website. CNGA has committed to this program by providing a significant amount of money in 2015 and 2016 and will continue in 2017.
- Plant Select® will improve propagation and production techniques of numerous difficult-to-produce herbaceous and woody taxa. Scientifically-based propagation and production protocols will be developed for certain difficult to propagate and/or produce Plant Select® taxa so that growers will be able to meet market demand. Protocols for maintaining stock plants to be able to produce enough cuttings will be researched and developed to help meet the market demands for certain Plant Select® varieties. Propagation procedures, including water and light requirements for successful production, along with many other factors will be researched. Following completion of each taxa specific project, results will be used to update or write propagation and production protocols that will be disseminated by means of the Plant Select® website.

- Colorado State University (CSU) will evaluate hop cone (*Humulus lupulus*) quality and yield grown hydroponically using PHILIPS LED internodal light bars, in addition to overhead photo period extending lighting. Within the CSU Horticulture Center's tallest corridor (20 feet), six replicates of three cultivars (Cascade, Centennial, and Columbus) will be grown hydroponically. For each cultivar, six plants will receive internodal LED lighting, and another six will not receive internodal lighting. The plants will be grown from clonal plant material until the summer solstice (approximately 100 days), at which point flowering will be induced. Cone harvest will occur approximately 4-5 weeks later. Outcomes for the project include: 1) internodal light effects on hop quality and yield; 2) development of controlled environment hydroponic hop production methods for Colorado; and 3) an economic analysis of the cost benefits of intensive high density controlled environment hydroponic hop production. General tasks include: the initial set up of the hydroponic system (piping, emitters, water tank) along with the planting of rooted clonal plants into bato buckets; weekly trimming of basal foliage to improve airflow, leaf nutrient analysis, as well as spraying for pests (if needed); and harvesting efforts with subsequent cone analysis. Data will be analyzed as it is collected throughout the experiment, as well as at the end of the experiment. An economic analysis will be conducted on the hop cone yield and quality data as compared to yield and quality data in the USDA annual hops
- The Colorado Wine Industry Development Board (CWIDB) will enhance the competitiveness of local wines by hosting a series of educational and networking seminars each focusing on specific wine styles. Producers will learn about and taste classic wine styles from around the world, comparatively taste local Colorado wines with benchmark examples of iconic wines, and interact with key retail and restaurant partners in Colorado to receive valuable feedback on how sales of Colorado wine can be increased. Each seminar will be conducted twice, once in the Denver metro area and once in the Grand Valley, to allow maximum participation amongst winery, retail, and restaurant participants. Tentatively, we will host three seminars (conducted in duplicate) every 3 months with one final joint seminar held at the annual grape and wine conference held in Grand Junction in January 2018. The goal is to include 10 winery representatives and 5 wholesale buyers at each of the 6 initial seminars and then to have 50 winery representatives and 10 wholesale buyers at the VinCO seminar. Participants may attend more than one seminar. While we hope total attendance to reach 170, we think that will perhaps be from 120 different people.
- Colorado State University will continue to develop a program of research and technical support, led by Dr. Mark Uchanski, and designed to identify and remove constraints to specialty crop production and/or marketing, and thus increase the State's production of these high value crops. There is great need to minimize the current negative impact of such limiting factors as climatic extremes, soil conditions, disease and other pests, and limited market innovation. This program will build on the foundation established through prior partnering with the Colorado Department of Agriculture, as well as more effective collaboration with related, long-standing CSU programs that address these same problems, including those located at numerous off-campus Research Centers in key production regions around the State, as well as the Local Food Systems Extension program. Program development and implementation will also be guided, results communicated, and impact assessed, by working with key grower-based organizations, such as the Colorado Fruit and Vegetable Growers Association, Colorado Onion Association, Colorado Potato Administrative Committee, Rocky Ford Growers Association, and Western Colorado Horticulture Society.
- Chile peppers are one of the most popular and profitable crops grown in Colorado. Marketing opportunities for high-quality peppers produced in Colorado continue to expand and are being aided by efforts of the newly formed Pueblo Chile Growers Association. The purpose of this project is to facilitate the growth of the Colorado pepper industry by identifying the pungency and nutrient composition of Colorado-grown peppers. This research project will examine standard pepper varieties grown in Colorado as well as novel varieties developed by the Colorado State University breeding program. In total, the proposed research will: 1) determine the pungency of Colorado-grown pepper varieties; 2) characterize pepper biochemistry to identify nutrient compounds; and 3) examine the post-harvest characteristics of specialty peppers to extend shelf life and marketability. Overall, this project will expand the understanding of the flavor and health benefits of chile peppers. The ultimate outcome would be an increase in demand and marketability for Colorado-grown peppers.

- In its first few years of existence, the Colorado Fruit and Vegetable Growers Association (CFVGA) has developed into a centralized resource for growers across the State. Via CFVGA-sponsored surveys and interviews, growers have indicated a strong desire for additional opportunities to promote their products to consumers and wholesale buyers. Accordingly, the CFVGA is poised to capitalize on the momentum created by Colorado Proud and other marketing programs established by the Colorado Department of Agriculture (CDA). Specifically, the CFVGA will use this project to enhance marketing efforts via electronic media, and promotional events targeted towards Colorado consumers, retailers, and wholesale buyers. In addition, the project will support marketing opportunities via the highly successful grower/buyer networking sessions conducted at the annual CFVGA conferences. Secondly, the CFVGA will assist Colorado growers in a topmost concern: recruiting qualified labor. Securing local farm workers is a critical need for growers of all production scales. CFVGA will implement a pilot campaign of radio ads to recruit local farm workers. Finally, Colorado growers of all sizes struggle with understanding and implementing on-farm food safety practices to meet standards in various markets. As a result, the CFVGA will partner with Colorado State University and the CDA to foster educational outreach to growers. The CFVGA will use its organizational platform to efficiently distribute information to growers of all sizes across the State. The ultimate outcome would be an increased knowledge and adoption of food safety practices.
- This project is a partnership between the Colorado Potato Administrative Committee and Colorado State University designed to enhance the competitiveness of potato growers through increased understanding of potato production systems that will improve soil health. This research will provide best management practices to Colorado potato growers resulting in improved soil health. Improved soil health will result in building sustainable soil fertility with fewer inputs, reductions in yield robbing soil-borne pathogens, and potential environmental benefits from less pesticide and irrigation water use. This project is designed to enhance and expand upon previous research Colorado State University, USDA, and Agro Engineering have conducted on cover crops, biological nematode control, and companion cropping potential. This research will 1) determine soil-borne populations of pathogens, neutrals and beneficial bacteria and fungi in response to rotational length and cropping sequence; 2) determine the contribution of rotation length and diversity on soil fertility status; and 3) determine the economic benefits to these cultural practices alone and in combination. Field studies will be conducted on farm under commercial grower operations. A 2-year rotation (barley-potato) and 3-year rotation (barley, cover crop polyculture, potato) will be compared to determine soil fertility benefits; nematode and microbial populations (pathogen and beneficial) using laboratory and sequence-based assays; and an economic analysis will be performed to determine benefits of cultural practice change at each phase of the rotational scheme. A major output of this work will be the development of best management practices to enhance the resilience of soil in intensive potato cropping systems.

Connecticut

Recipient:	Connecticut Department of Agriculture	Award Amount:	269,804.28
		Number of Projects:	5

- This partnership with the Connecticut Agricultural Experiment Station (CAES) will evaluate the impact of nanoscale copper and zinc micronutrients on disease suppression, yield, and nutrient content of strawberries and pumpkins.
- The Connecticut Agricultural Experiment Station (CAES) will evaluate growth, yield, disease resistance, and quality characteristics for a large number of hop varieties to enable growers to plant suitable varieties for successful commercial production in Connecticut.
- The Connecticut Agricultural Experiment Station will assemble multiple populations of hygienic bees of diverse origins, including feral populations surviving in our state forests, to produce queens that will support populations of hygienic and genetically diverse workers within each colony. Queens produced through our breeding program will be evaluated relative to existing hygienic bee strains to quantify their hygienic behavior, resistance to varroa mite infestation, colony health, gentle behavior, honey yields, and overwintering survival. The best hybrids will be used to replace queens kept by beekeepers throughout Connecticut, to thereby improve profitability, sustainability, and competitiveness of our apicultural industry.
- The Connecticut Agricultural Experiment Station will assist growers and beekeepers to establish and maintain pollinator habitat, will evaluate pollinator habitat for bloom throughout the growing season, and will also measure the abundance of specialty crop pollinators visiting the habitat.
- This project will 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.

D.C.

Recipient: University of the District of Columbia, College of Agriculture **Award Amount:** 208776.33
Number of Projects: 5

- This partnership with Washington Parks & People seeks to increase purposeful year-round growing of specialty crops in compressed and challenged urban spaces through working with Community Harvest Network members to establish new acres for specialty crops and/or adopt sustainable practices of specialty crop production and marketing.
- This partnership with FoodPrints seeks to increase production of, access to, and consumption of in-season vegetables and fruits for students and their families through a school-based education program that will provide urban school gardens, teaching kitchens, hands-on classes and parent education.
- This State project seeks to increase the capacity to implement Urban Food Hubs in the District of Columbia through utilization of specialty crop production as an intentional training venue.
- This State project seeks to improve usage and dietary intake of locally grown specialty crops among underserved food assistance recipients by conducting an evaluation of various methods of nutrition interventions and implementation of client-centered strategies.
- 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.

Delaware

Recipient: Delaware Department of Agriculture **Award Amount:** 302,987.60
Number of Projects: 8

- The University of Delaware's project goal is to sequence, assemble, and annotate the genome of *Phaseolus lunatus*, lima bean, in order to better facilitate identification of disease resistance genes towards a major lima bean pathogen, and to enable future identification of additional desirable traits for crop improvement.
- Delaware Farm Bureau will run a media campaign each month, highlighting the health benefits of in-season specialty crops researched through the United States Department of Agriculture (USDA) by Delaware Farm Bureau (DFB) in conjunction with Delaware Restaurant Association, Delaware Food Industry Council and Delaware U-Pick farms to educate consumers and encourage them to buy fresh while highlighting local restaurants and grocery stores where DFB members sell their product.
- The project will be conducted by Blue Skies Farm Delaware and will examine the economic feasibility of growing edible truffle mushrooms on open agricultural and forested lands in Delaware by conducting field tests in these two habitats.
- The Delaware Department of Agriculture will partner with the University of Delaware Cooperative Extension, Delaware Department of Children, Youth and their Families, Terry Children's Center, and Planting Hope Urban Farm in a project to reach an underserved population, children with mental illness and their parents/guardians. Over 3 years, Terry kids, their parents/guardians, and Terry Center teachers and staff will be offered programming focused on nutrition, food safety, and access to specialty crops. Kids programming will include activities at Planting Hope Urban Farm. Lima beans will be a focus crop, and a demonstration production area will be built. To reinforce what kids are learning and promote the consumption of Delaware specialty crops, this project also proposes to incorporate the "Farm to School" program into the Terry Center Food Service.

- In a 2010 Delaware Department of Agriculture (DDA) economics report, the annual value of agricultural production was over \$1 billion dollars and the annual value of agricultural products sold directly to consumers was over \$3.5 million. Delaware’s dedication to agriculture is reflected through its proactive approach to farmland preservation, reaching 156,468 acres conserved in 2010. Although farmland is preserved, there is a lagging number of new Farmers prepared to engage the land in active practice. A “Young Farmers Program” was created by the DDA in 2011 to remove the barriers to land acquisition and in 2015 Delaware Cooperative Extension (DCE) launched a “New & Beginning Farmer Training Program” to facilitate skill building and knowledge transfer. The key element of the “Growing Beginning Farmers Initiative” (GBFI) is to compliment the work started by DCE, utilizing Delaware Nature Society’s Coverdale Farm Preserve as a living classroom. A year long series of workshops will provide New & Beginning Small-Scale Vegetable Farmers an opportunity to gain hands-on experience growing diversified specialty crops in high tunnels. The GBFI workshop series will address four core areas of high tunnel growing: site preparation and construction; soil health, variety selection, and seed starting; growing selected specialty crops; and season transition and extension. The goal of the initiative is to establish Coverdale Farm Preserve as an anchor partner in the effort to raise the next generation of Delaware Farmers and to scale-up our contribution to our local food system.
- Lima bean breeding efforts at University of Delaware have been carried out by Extension Vegetable and Fruit program Associate Scientist, Emmalea Ernest, with support from faculty from the Department of Plant and Soil Sciences. The first two cultivars from the breeding program, initiated in 2004, were released in spring 2016. The proposed project will build on past work to address three major production constraints of lima bean in Delaware: heat stress, downy mildew caused by Phytophthora phaseoli, and root knot nematode (RKN). Breeding and selection for heat tolerance, and RKN and downy mildew resistance in lima bean will lead to varieties with improved yields under high temperature conditions, decreased need for pesticide applications, and reduced production costs for this crop, which is important for the viability of Delaware’s processing vegetable industry.
- The University of Delaware Cooperative Extension vegetable program will be the partner in this project. Lima bean (*Phaseolus lunatus*) is the most important processing crop in Delaware. Specialty succulent lima beans currently represent less than 5 percent of the lima beans grown in Delaware. This project seeks to introduce new succulent specialty lima bean types adapted to Delaware from the University of Delaware breeding program and other germplasm sources. There will be four aspects to the project: 1) specialty types already developed as offshoots of the UD green baby lima breeding program will be increased for larger scale field evaluations; 2) breeding lines from the UD program not previously tested and selected germplasm from USDA and other sources with potential as specialty types will be evaluated in small plot field trials; 3) diverse lines will be evaluated for cooking characteristics (such as resistance to bleeding) for use in further breeding of specialty limas; and 4) all selections identified as having potential to advance as specialty limas from this project will be evaluated for freezing and cooking characteristics and for consumer acceptance. The main outcomes of this project will be the identification and initialized release of new or improved specialty succulent lima beans for the Delaware vegetable processing industry. By evaluating specialty succulent lima beans from the Delaware breeding program, there is potential to introduce new lima bean types and increase acres of lima beans grown in Delaware, providing extra income to Delaware vegetable growers and processors.
- The Delaware Christmas Tree Growers' Association (DCTGA) is proposing a project designed to expand the marketing of Real Christmas trees by expanding local signage to all member farms to let consumers know where they can go to get a real Christmas tree and to create a TV marketing initiative, which will focus on the environmental benefits of real Christmas trees. This initiative will be reinforced by providing each member farm with two signs to place on their Christmas tree farm explaining environmental benefits of Christmas trees.

Florida

Recipient:	Florida Department of Agriculture and Consumer Services	Award Amount:	3,884,514.96
		Number of Projects:	33

- 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.

- Damaging outbreaks of several invasive species of thrips and two emerging thrips-vectored tospoviruses, Tomato chlorotic spot virus (TCSV) and Groundnut ringspot virus (GRSV), are significantly impacting vegetables and other specialty crops in Florida. Past research has shown that some commercial tomato cultivars and inbred lines possessing virus resistance to Tomato spotted wilt virus (TSWV), a related tospovirus, are also resistant to TCSV and GRSV. We want to continue to evaluate currently available TSWV-resistant cultivars and accelerate the development of new cultivars adapted to south Florida conditions for resistance to TCSV and GRSV. Proper diagnosis is the basis for making sound management decisions. We want to continue development of rapid, field-based diagnostic tests for specific identification of these three tospoviruses affecting south Florida production. Additional research is needed to characterize epidemic development of tospoviruses on both a local and regional level to identify conditions that foster epidemics. The key vector, the western flower thrips, has developed resistance to all currently available insecticides. Another important vector, the common blossom thrips, is also developing insecticide resistance. Resistance to conventional insecticides in populations of each thrips species should be determined so that registration of other insecticides with different modes of action can be justified. Recent outbreaks of the invasive palm thrips in south Florida necessitate assessment of this thrips' ability to vector Florida tospovirus isolates. Development of effective management strategies requires a multi-pronged approach. Collectively, this information will help us to develop integrated management strategies that are effective, economical, and sustainable. The project partner is the University of Florida.
- Potatoes are discarded by the ton as the result of potato skinning. Potato skinning is the removal of the outer layer of cells on the freshly harvest potato tuber. These skinning areas are undesirable by consumers, entry points for disease resulting in rot, and water loss causing a reduction in tuber weight. Desiccation of the potato plant before harvest causes the potato skin to be thicker and reduces the incidence of skinning. Florida potato growers use recommendations from other States that use different cultivars and different climates. The proposal would use two objectives to reduce potato skinning. The first objective would evaluate the appropriate timing of desiccants in three cultivars that are commonly grown in Florida. The three cultivars included will be a red, yellow, and purple skin potato. Diquat will be applied at 7, 14, and 21 days before harvest. The second objective would evaluate chemical and mechanical vine desiccation. The chemical method included will be glufosinate, carfentrazone, diquat, and paraquat and the mechanical method will be mowing. All of the methods will be applied at a singular desiccation timing. All of the research will be conducted in the early spring at the same time as growers. The first year will be conducted at the UF Hastings research farm and the second year will include growers' fields. Data will be shared with growers by county extension newsletters, posting to the UF Electronic Data Information System, and showing plots and data to growers during the Hastings Potato Field Day. The project partner is the University of Florida.
- Grapevine leafroll disease (GLD) is caused by a complex of vector-borne virus species in the family Closteroviridae. GLD is considered an economically important disease affecting grape fruit quality in major grape-growing regions worldwide. Typically, grapevine diseases can be transmitted from the mother vine to planting materials not properly screened for pathogen infections. Although muscadine grapes are considered tolerant to Pierce's Disease (PD) and anthracnose, they can be susceptible to economically important diseases transmitted with planting materials such as those caused by viruses, and *Eutypa* spp. and *Agrobacterium tumefaciens*. GLD can affect American native hybrid varieties, although typically symptoms are not always expressed on infected vines. In 2010, we detected grapevine leafroll associated virus-1 (GLRaV - 1) in "Supreme" and "Magnolia", commercial muscadine grape varieties (*Vitis rotundifolia* Michx.) from the State of Florida. Transmission vector(s) for GLRaV-1 in the southeastern region have not been determined, which makes management of GLD in muscadine and American native hybrid grapes difficult. The objectives of this project are to: 1) conduct leafroll disease survey to determine the spread of GLRaV-1 and its vectors in Florida vineyards; 2) develop rapid diagnostic assays (ELISA and PCR based tests) for early monitoring GLRaV-1 infestation in muscadine and American native grapes; 3) develop community of practice (CoP) on best practices for leafroll disease prevention; and 4) produce clean planting stock materials for muscadine and American native grapes. The disease can be transmitted by infected planting materials, and if not mitigated on a timely manner, will compromise the sustainability of the Florida's grape and wine industry. The project partner is Florida A&M University.

- The project will focus on the development of an integrated management program for melon thrips (*Thrips palmi*), common blossom thrips (*Frankliniella schultzei*), and western flower thrips (*F. occidentalis*). All three thrips species commonly occur in southern Florida tomato fields and transmit tomato chlorotic spot virus (TCSV). TCSV was first detected on southern Florida tomatoes in 2012 almost simultaneously with the appearance of melon thrips and common blossom thrips on tomatoes. Western flower thrips were recorded as a pest of tomatoes for a long time. With increasing thrips populations, a serious outbreak of TCSV occurred on tomato crops in 2014. In 2015, a more serious outbreak of TCSV occurred resulting in 30 – 70 percent of the plants infected. Tomato growers have therefore asked the University of Florida Institute of Food and Agricultural Sciences (IFAS) for emergency help in dealing with this program. Routine use of insecticides did not provide any positive results. The development of a proper management program for thrips and their transmitted viruses will usher in hopes of reducing yield losses and preventing the further TCSV spread to other parts of Florida and other tomato growing states. Specific objectives of this project are as follows: 1) Conduct surveys to determine the abundance and distribution of thrips on common vegetable and ornamental hosts; 2) Perform studies determining the effects of various plastic mulches on population abundances of thrips species and on TCSV infected plants; 3) Effects of biocontrol agents and insecticides on the abundance of thrips and TCSV in tomato; and 4) Investigate the potential of *T. palmi* in transmitting tospoviruses to tomato plants. There has been no previous research on the potential for melon thrips to transmit TCSV. The project partner is the University of Florida.
- Olive (*Olea europaea*) establishment and production have been demonstrated on a commercial scale in Florida and Georgia but information is needed to assist growers with grove establishment and fertilization recommendations. Information on olive performance and fertility requirements based on Florida conditions is not presently available. University of Florida researchers have collaborated to establish an olive working group to approach key questions facing olive orchard establishment and the need to monitor for potential pest problems surrounding the development of a viable Florida olive industry. Results derived from this work will contribute to future development of best management practices for olive crops in Florida. Goals include evaluating transplant size, which may affect orchard establishment of olives, developing nutrient sufficiency data to inform olive fertilization recommendations and evaluation of associations between climatological data and phenology of olive cultivars to better understand olive performance potential across Florida's 8B, 9A, and 9B USDA growth zones. The project partner is the University of Florida.
- The contraction of the local citrus and ornamental industries has left several talented growers seeking alternative crops. Hop (*Humulus lupulus*) is a perennial plant grown commercially for its harvestable cones which are used in the production of beer to provide it with its characteristic aromatic and flavoring properties. The US commercial hop industry is located mainly in the Pacific Northwest. However, local hop production is on the rise in many states as demand for hops grown closer to home increases. The market for these home-grown hops are the increasingly popular local breweries and brewpubs, and home brewers. Local hops production is prevalent in many northern States, and new initiatives have gained traction in southern States like Virginia and the Carolinas. In conversations with brewpub owners located along the Treasure Coast, we've learned that there is a tremendous demand for local hops. This project aims to investigate the horticultural and economic feasibility of hop production in south central Florida. The initial target market are the breweries located along the Treasure and Space Coasts, with possibilities of expanding to other regions in Florida. An experimental hop yard will be established at the USDA facility in Fort Pierce and harvested cones will be given to local brewers to allow them to assess the quality of the product. Results are expected to determine whether established local growers or beginning farmers can grow hops lucratively for the local and/or Florida microbrewery industry, and whether the quality of hops produced meets the standards of brew masters. The project partner is the University of Florida.

- A desired outcome of the project is to gain new knowledge about chilli thrips, a serious and relatively new pest of strawberry and blueberry crops in Florida. Knowledge about its activity and habits in these crops will be instrumental for developing economic damage thresholds and sampling plans that can be used by growers to make scientifically-based control decisions. General tasks include experiments relating chilli thrips density to plant injury and yield loss, field sampling to determine chilli thrips distribution and spread, and population growth modelling based on temperature. Sampling plans will be developed and simulated using computer software and then field validated. The most efficient sampling plan will be disseminated to users using a website with a smartphone-friendly version so that sampling plans can be easily used in the field. A second desired outcome of the project is to recommend control options for chilli thrips that complement and build on those for flower thrips. Tasks include laboratory and field evaluation of commercial biological control agents and evaluating insecticide rotations that prioritize pollinator friendly products for flower thrips during bloom (particularly in blueberries), more resilient products for chilli thrips earlier/later in the season. New products (e.g., tolfenpyrad, flupyradifurone) for strengthening resistance management practices will be tested. Finally, using flowering plants (appropriate species determined in current experiments) as habitat for natural enemies and as trap crops for flower and chilli thrips will be tested in field plots. Results will be disseminated via web and print materials and at grower meetings and events. The project partner is the University of Florida.
- The cash receipts in Florida for fruits and vegetables alone were \$4.14 billion in 2013, over 50 percent in total farm marketing. The Food and Agriculture Organization of the United Nations reported that the postharvest losses of fruit and vegetables accounted for at least 25 percent of the crop total anywhere in the world, indicating a loss of more than \$1 billion each year in Florida alone. An even more serious problem is foodborne disease outbreaks caused by consumption of fresh produce, including 629 outbreaks between 2004 and 2013 in the United States. It is believed that the majority of illnesses linked to fresh produce were a result of postharvest contamination. Chlorine dioxide is an ideal biocide for use on produce. Preliminary data for strawberries and blueberries showed beneficial effects of chlorine dioxide on fruit quality and microbial reduction when used as controlled-release gaseous agent in the clamshell packaging. This study will expand these observations to other major Florida crops including citrus and tomatoes, and scale up the research to commercial levels for the four crops. Biofilm formed by some strains plays a major role in the persistence of foodborne pathogens on produce surfaces, and we will confirm the capability of chlorine dioxide for disinfection of the pathogens through enhanced penetration of biofilms. This will be a 2 year project, and the work will take place at the USDA-ARS Horticultural Research Laboratory in Ft. Pierce, FL. The work will be conducted by a technician and a visiting scientist who will be supported by this grant and supervised by the principle investigators. The project partner is USDA's Agricultural Research Service.
- Peaches are a relatively new crop in Florida, facing a challenge to educate both produce retailers and consumers about the crop. There is not wide awareness of the production season (March through May), or that the crop is tree-ripened and possesses different qualities than peaches from other States. The goal is to create awareness of the young and growing Florida peach industry to both retail buyers as well as consumers, and to increase sales of peaches for Florida growers. Through cooperation with the Fresh From Florida campaign, both educational and promotional materials will be developed to encourage retail promotion of Florida peaches during peak season. This program will include bonus incentives for the retailers to feature Florida peaches in advertising and instore promotions to include point-of-purchase signage and samplings, thereby increasing sales potential. Additionally, a Statewide marketing campaign including digital, social, and outdoor advertising (which has been used to promote other commodities) will be incorporated by Fresh From Florida to increase consumer awareness and likelihood to purchase. All of the digital, social, and outdoor ads will promote Florida peaches and encourage consumers to buy local, Florida peaches while they are in peak season and available in stores. The third part of the program will include advertising and public relations efforts directed at retail produce buyers. Print ads and articles will run in industry publications (e.g., Produce News or The Packer). Fresh From Florida has produced successful Florida sections in prior years, and will broaden the effort to include peaches. The project partner is the Florida Specialty Crop Foundation.

- Commercial crop scouting companies in Florida are at the forefront of early detection of many cropstress related issues in thousands of acres of cucurbits. For example, on average, a crop scout takes 60 minutes to scout 100 acres using a conventional random sampling technique. This approach is limited in that it will visually evaluate only up to 25 percent of the crop area. Thus there is a high likelihood of missing early detection of plant diseases, nutritional, and water stress at the single leaf/plant level, which can lead to major crop losses. This project will address this critical issue through incorporation of Unmanned Aerial Vehicles (UAV) and multi-spectral imagery into commercial cucurbits scouting in Florida from 2017-2019, and studying the possibilities in improving early detection of biotic and abiotic issues. The research will be conducted at the University of Florida, NFREC, Quincy, in collaboration with Glades Crop Care (the largest commercial vegetable scouting company in Florida and the Southeast), AgriBugs (a commercial drone company with FAA's COA to conduct studies in Florida) and the University of Pennsylvania General Robotics, Automation, Sensing & Perception Laboratory (GRASP; the leading advanced robotics lab in the United States). The primary beneficiaries of the project are crop-scouting companies who will make effective management recommendations for Florida cucurbit producers using the new and improved scouting process incorporating UAV and multi-spectral imagery data. The scouting companies will directly utilize the new scouting approach for successful production of watermelon, cucumber, and squash in an estimated 2000 acres by 2018. The project partner is the University of Florida.
- Fresh market tomato is Florida's largest vegetable crop, valued at nearly \$500 million in annual gross sales. However, increasing labor costs and decreasing labor availability pose immediate threats to the industry—which is heavily reliant on manual labor for practices including pruning, staking, tying, and especially harvesting. Mechanical harvest offers a permanent solution to these problems. This project is a continuation of a previously-funded SCBG project to develop improved compact growth habit (CGH) tomato cultivars. CGH tomatoes do not require pruning, staking, or tying; and they have concentrated fruiting and stem-free harvest—making them amenable to once-over mechanical harvest. The adoption of CGH varieties and mechanical harvest would impact the entire Florida tomato industry by significantly reducing labor needs, and by reducing production costs (no stakes or string; reduced water, fertilizer, and pesticide inputs due to a shorter production window). In the current project, we will utilize advanced CGH parental lines and molecular marker resources developed through the previous SCBG project to improve our breeding efforts and accelerate the development of CGH tomato hybrids with commercially-acceptable yields and marketability. In order to accelerate the adoption of CGH varieties, we will build upon our previous project's findings by using field experiments to determine when and how fertilizer should be applied to CGH tomatoes in order to maximize yield. And finally, we will subject fruits from the most advanced CGH parents and hybrids to mechanical harvest simulations to determine postharvest quality and suitability to mechanical harvest. The project partner is the University of Florida.
- Olive production is an emerging agricultural commodity in Florida, however, little is known about arthropod pests that could potentially impact Florida olive production. We will address the needs of Florida olive producers through the following objectives: 1. Survey Florida olive groves to determine which pests cause damage that would necessitate pest management; 2. Develop an IPM plan for the pests of concern; and 3. Work with County Extension Agents to distribute the pest management plan to interested growers. Determining pest pressure and best management practices for controlling pests will help Florida growers make ecologically and fiscally responsible pest management decisions. Cost savings from sound pest management decisions will especially help growers during the first 3 years of tree growth when trees do not produce fruit. Two years of active sampling will take place in groves in Suwannee, Citra, and DeLeon Springs. Additionally, samples will be accepted from other groves. Samples will be processed in Gainesville (UF and USDA-ARS-CMAVE) and new county records sent to FDACS-DPI (Gainesville) for confirmation and storage. Specific IPM plans will be developed for the most damaging pests discovered. In conjunction with extension agents, IPM plans will be distributed to growers through on-line and personal contact as well as grower meetings. Work will be supervised by Dr. Gillett-Kaufman (UF/IFAS) and Dr. Allan (USDA-ARS-CMAVE) who will develop experimental protocols and prepare reports/publications based on the results. Personnel will be hired to conduct field work and process samples. The project partner is the University of Florida.

- Citrus, a billion dollar industry worldwide, has been decimated in recent years by pests and diseases, most seriously by citrus greening (HLB). These problems have been particularly severe in Florida, the largest citrus producer in the United States. Further, citrus is vulnerable to freeze injury at -2°C and below. While commercial citrus was once cultivated up into the northern regions of peninsular Florida, freezes over the last century have reduced the growing regions primarily to the southern regions of the State, where salinity, calcareous soils, and soil drainage are problems and crop production constantly competes with urban development. This relocation of growing regions in Florida has also exacerbated the pest and disease pressures plaguing the production of citrus. We are in the unique position that our continued efforts at breeding cold hardy germplasm has allowed us to transfer HLB tolerance from citrus relatives to commercial quality citrus. However, additional evaluations of these traits and fruit quality and horticultural traits are needed. Thus, the overall objective of this project is to develop disease resistant/tolerant citrus types that can be introduced or reintroduced into colder climates. Specific objectives: 1) Test already created novel citrus scions for cold resistance, disease tolerance (with marker technology, gene expression assays and bioassays), deciduousness, and acceptable horticultural characteristics; 2) Create additional such scions as resources allow; and 3) Use state-of-the-art science and technology to convert already industry-valued citrus types to more cold tolerant and/or disease tolerant equivalent types, as resources allow. The project partner is the University of Florida.
- Research and extension activities are proposed to address the unsustainable practice of using an extended period of overhead irrigation to limit heat stress during the establishment of bare-root strawberry transplants on black plastic mulch. We anticipate that the combination of low-volume sprinklers and living mulch in row middles will increase the sustainability of strawberry production by decreasing water use during bare-root transplant establishment, promoting infiltration at the expense of runoff, increasing the diversity of the cropping system, and improving cropping system resilience to weeds and to the sting nematode (*Belonolaimus longicaudatus*). On-farm and on-station field experiments will be conducted to compare: (1) conventional high-volume sprinkler irrigation; (2) low-volume sprinkler irrigation; (3) high-volume sprinkler irrigation and living mulch; and (4) low-volume sprinkler irrigation and living mulch. During strawberry establishment, irrigation infiltration and runoff will be assessed. Data will be collected on strawberry stand establishment, growth, and fruit yield. Living mulch suppression of weeds and sting nematodes will also be assessed. A virtual field day, accessible via the internet, will be developed using video and/or photos that capture the entire production process. The advantages of a virtual field day are that growers can see the results of the research over time and do so at a time convenient to them. Results will also be disseminated via conference presentations and refereed journal articles. The project partner is the University of Florida.
- Fresh-market sweetcorn is a high-value specialty crop, worth \$130 million annually (>10 percent of Florida's total vegetable production), and ranked second nationally (USDA/NASS, 2015). However, for as yet unknown reasons, serious outbreaks of postharvest decays occur intermittently, threatening the profitability of our growers. The harvest season is November to June, from Homestead to north Florida. Sweetcorn is very perishable and susceptible to rapid losses in quality during handling and shipping. Therefore, Florida growers typically cool soon after harvest with sanitized, chilled water (hydrocooling). Despite this precaution, there are seasons when growers report up to 40 percent rejected loads due to development of decay on husks, silks, and shanks during shipping. The cause for these losses has not been established. We have preliminary data confirming the benefit of hydrocooling to quickly cool sweetcorn and maintain quality. Sweetcorn is typically tightly packed into wooden crates, stacked on pallets, then cooled with overhead water spray. Our tests showed that this can restrict water flow through the wooden crates resulting in non-uniform cooling of the ears inside the pallet load (Talbot et al., 1989; Maul et al., 1997). There are newer sweetcorn containers that show promise to increase cooling efficiency and sanitizing. This project seeks to systematically document the extent of naturally occurring populations of decay pathogens on sweetcorn ears from commercial harvest through cooling and storage, and to identify innovative cooling and sanitizing methods to reduce those populations while maintaining postharvest quality. The project partner is the University of Florida.

- Feeding Florida is a Partner State Association of Feeding America, the Nation's leading hunger-relief organization. Feeding Florida and its 14 member food banks support over 3 million food insecure clients across all 67 counties of the State. Obtaining adequate fresh fruits and vegetables is paramount to our efforts to create a nutritionally balanced solution for a well-fed, hunger-free Florida. Feeding Florida launched Farmers Feeding Florida (FFF), a collaborative partnership with the Florida agricultural industry, to increase donations of wholesome, but unmarketable, fresh produce to people in need. Two key areas of focus for that program involve supply chain management (including setting up logistics, packaging and processing of donations and routing to appropriate agencies) and produce donation development (including sourcing donations, developing and maintaining relationships with growers and new suppliers, attending grower and commodity meetings to increase awareness of the program, etc.) This grant request would help us to continue to expand the FFF in new ways that can tap the true potential of fresh produce grown in Florida. Current estimated waste volume of Florida's top specialty crops is over 950 million pounds. The costs associated with securing an increasing percentage of this volume will be significant. FAFB will focus on crops, volumes, seasonality, and throughput in a controlled and effective manner. Our goal is to match produce pounds with serving level data to fully address food insecurity in the State. The project partner is the Florida Specialty Crop Foundation.
- Sustainability/profitability of the Florida blueberry industry is constrained by high production costs, including soil amendments and the need to hand harvest berries. Further, bacterial leaf scorch disease of blueberry has been confirmed in Florida, which has eliminated susceptible cultivars from production. Sparkleberry, a wild blueberry species, grows well on non-amended soils - thus requiring decreased soil inputs - and has a tree-like growth habit - making it more amenable to mechanical harvesting. Additionally, sparkleberry shows tolerance to the bacteria causing leaf scorch. Incorporating these traits into southern highbush blueberry (SHB) would alleviate soil constraints, facilitate mechanical harvesting, and increase disease resistance. Plantings of own-rooted SHB vs those grafted onto sparkleberry rootstocks were established in 2011 and we propose to evaluate vegetative/reproductive growth, yield, and mechanical harvesting efficiency over the next 2 years. Our plantings are grafted onto sparkleberry seedlings, which impart variability to the grafted plants. Thus, we will evaluate clonal sparkleberry plants for future use as blueberry rootstocks by measuring rootstock vigor and extent of sprouting. Finally, observations suggest that bacterial leaf scorch symptoms are significantly reduced in grafted compared with own-rooted blueberry. Bacterial leaf scorch severity in grafted and own-rooted plants will be rated, the presence and viability of the bacterium responsible for the disease will be measured, and distribution of the bacterium throughout the plants will be determined. We anticipate that grafted SHB will exhibit greater growth, yield, and improved mechanical harvesting traits compared with own-rooted plants, and that grafted plants will exhibit greater resistance to bacterial leaf scorch. The project partner is the University of Florida.

- The Florida wine and grape industry has been one of the Nation's great agricultural success stories capable of generating economic impact close to a \$1 billion (“The Economic Impact of the Wine and Grape Industries in Florida”, 2010 Report of the Stonebridge Research Group, LLC) with 26 certified FL Farm Wineries and up to 1000 acres of operational vineyards. Pierce's disease is the key limitation for majority of the Southeastern United States and commercial grape growing is solely based on native muscadines and Florida hybrid bunch grapes. The need for new superior quality native cultivars has been recognized and expressed by grape growers from the State and the region at various meetings and conferences over recent years: 2015 Annual Florida Grape Growers Association Conference, Palatka, FL, and Muscadine Coalition Meeting, 2015 Southeast Fruit and Vegetable Conference, Savannah, GA (ISSUE). The Center for Viticulture and Small Fruit Research at Florida A&M University is committed to the development and growth of Florida's viticulture industry. “Improving the quality of Florida's grapes and wines” is our State mandate (Florida Viticulture Policy Act, Ch599FS) and our mission (www.famu.edu/CAFS/Viticulture). Our grape breeding program addresses industry-based and market focused objectives, we maintain the major grapevine germplasm collection in the southeastern United States and serve as a NCPN Regional Clean Center for Grapes. Over the past decades, with the modest financial support of the State industry (FL Viticulture Trust Fund), the Florida A&M University's grape breeding program strived to develop new and improved grape cultivars (Muscadine Grape Plant Named Majesty: US Patent PP21, 965 P3), and was able to generate a wide variety of advanced breeding lines with valuable qualities for commercial utilization. Currently we experience increased demand from nurseries in Florida and Georgia for licensing our proprietary muscadine variety “Majesty” and inclusion of new muscadine varieties into the Southeastern Clean Vine Program due to increased muscadine grape and wine sales and growing interest for exporting muscadine planting stock abroad. The proposed project aims to speed up the evaluation of our advanced selections and in cooperation with industry partners (FGGA members and our stakeholders in neighboring states) to deploy a fast 2 year evaluation trial to deliver novel, disease-resistant varieties with desired wine aroma and flavor characteristics, seedlessness, and attractive large berry appearance for fresh fruit grape consumption. Objective -- Eleven advanced breeding lines including two seedless bunch grape hybrids, three seedless and three seeded muscadine for fresh consumption, and two bunch and one muscadine for wine-making will be aggressively tested in the University's experimental vineyard at the Center for Viticulture and Small Fruit Research and commercial vineyards in Florida, Georgia,, Alabama, and Texas during fiscal year 2017-2018 and 2018-2019 (TARGET). A comparable trial analysis with standard cultivars as controls will be performed to ensure that the new varieties are optimized for profitable economic gains to growers in grape and wine industry Benchmark -- Ultimately, this work will build a breeding and evaluation pipeline that is expected to result in quick cultivar release and increased profit for Florida grape growers (OUTCOME). The project partner is the Florida A&M University.
- Strawberry growers in the Southeast face rising production costs combined with competition from foreign markets and low commodity prices. These issues are especially important for growers that rely solely on the strawberry crop. Planting a vegetable crop on the same bed prior to strawberry crop termination which enables continued berry harvest while the new vegetable transplants become established (intercropping), or planting a second crop following strawberry crop termination (double cropping) are two techniques used by growers to diversify, reduce risk, and increase profits. This research will help growers determine: 1) the optimal time to transplant a vegetable crop onto a strawberry bed; 2) the optimal time to terminate the strawberry crop when intercropping; 3) the most effective and economical way to terminate the strawberry crop; and (4) the most effective technique to grow multiple crops on a single bed and maximize yield and economic return. This information will help strawberry growers diversify their production systems and reduce income risk. The project partner is the University of Florida
- Outcome 1: Demonstrate susceptibility of whitefly nymphs to three key insecticides. Insecticide resistance monitoring will demonstrate whether buprofezin (Courier), pyriproxifen (Knack) and spirotetramat (Movento) continue to be reliable management tools for managing whitefly nymphs, secondary spread of TYLCV, and irregular ripening. Six to eight populations of whiteflies from commercial tomato fields in central and south Florida will be tested. Outcome 2: Demonstrate efficacy of key conventional and biological insecticides for control of whitefly nymphs. Replicated field trials will demonstrate the efficacy of two microbial insecticides and one insecticidal soap, as well as the three insecticides listed in Outcome 1. Results will improve growers' ability to manage whitefly nymphs, TYLCV, and irregular ripening employing insecticides that have limited impact on non-target organisms including pollinators and beneficial arthropods. Outcome 3. Gather baseline information on TYLCV and irregular ripening from growers across the State. At least 20 commercial tomato growers will provide baseline information on losses to TYLCV and irregular ripening and measures taken to address these problems by answering a survey. The survey will provide an assessment of the risk posed by TYLCV and irregular ripening, and will outline practices that growers are presently using to combat these problems. This will help define research priorities for the future. The project partner is the University of Florida.

- The outcome of this project will be the development of precision herbicide application technologies that significantly reduce the herbicide inputs needed to achieve satisfactory weed control in fruit and vegetable crops grown on plastic mulch. The first step in the program will focus on reducing herbicide inputs under plastic mulch. Growers currently spray the entire bed-top although broadleaf and grass weeds only emerge in holes punched for the transplants. Doctors Boyd and Schumann developed an applicator that attaches to standard hole-punching equipment and detects where holes are punched and only delivers herbicide to the exposed soil. Using this technology, herbicide inputs can be reduced up to 95 percent. This project will build upon the preliminary success and refine the equipment, improve precision, as well as define optimal herbicide volumes and rates needed to maximize weed control and economic return. The second step of this project will be the development of precision herbicide technology for use immediately after transplant. The technology developed for herbicide application during the hole-punch operation will be modified to detect transplants and facilitate application to the exposed soil following transplant. The third step will be the development of a precision applicator capable of differentiating nutsedge from vegetable crops based on leaf area to perimeter ratios. The technology will capture images of the bed-top, identify the presence of nutsedge, and apply herbicides only where it is needed. All three technologies are designed to be added to equipment already owned by growers and will reduce herbicide use and overall production costs. The project partner is the University of Florida.
- This project will expand a pilot project in which a commercial aggressive mycorrhizae species developed symbiotic relationships with Kuharske citrus rootstocks in common peat: perlite potting media. This was verified by the University of Florida mycorrhiza lab. Shoot growth and plant health were similar to non-inoculated tree given 18 g controlled release fertilizer rates, but with 1/3 the rate. The expanded project will compare growth of inoculated budded trees at different fertilizer rates under commercial conditions at a larger scale of 1520 trees. Trees will be budded and grown at the MREC-Apopka citrus greenhouse. This project will also evaluate economic cost in the greenhouse stage. After trees achieve 80 percent at marketable size, subsamples will be analyzed for mycorrhiza associations, with the rest transferred to a collaborator, likely Dr. Outa at the Immokalee REC, for field trials evaluating growth and vigor. The first and most damaging effect of HLB is root death that initiates a downward see-saw effect of diminishing root mass, then leaf mass. Mycorrhizae expand the capacity of roots for water and nutrient absorption. The mycorrhizae to be used was discovered from an isolated palm tree in a desert in the Middle East. It is hypothesized this mycorrhizae association will be resistant to HLB and will supplement root loss, strengthening trees under assault by HLB. Trees will be ready for field trials 12-14 months after potting. Beneficiaries will be mainly citrus grove owners and processing plants, through stronger and more productive trees. Strong mycorrhizae associations would reduce fertilizer cost. The project partner is the University of Florida.
- Traditional agronomic crops such as peanuts, soybean, and cotton grown in Florida have a low profit margin. In contrast, peach and nectarine production is potentially very profitable in Florida. The market window for peaches and nectarines in the United States exists between 31 March and 31 May, with little competition nationally and internationally. The spring weather in Florida is normally sunny and dry allowing for the development of high quality fruit with good sweetness and color, while minimizing potential of fruit diseases such as brown rot. Peach production in north Florida declined in the 1980s and 1990s. However, with potential high profitability and mild winter temperatures, growers in Florida have shown renewed interest with a three-fold increase in State production in the last decade. Traditional northern-grown peach and nectarine cultivars are not adapted to the subtropical climate of Florida. The University of Florida has developed many new varieties of peaches and nectarines specifically adapted to growing conditions in Florida. The major impediment to the expansion of a peach industry in Florida is a lack of demonstration sites that can showcase new UF varieties and provide yield and quality data coupled with an economic analyses based upon these new cultivars. An orchard was developed at NFREC-Quincy with a previous FDAC grant, and we now need to utilize this facility and new grower plantings to provide yield and quality data for new varieties. The project partner is the University of Florida.

- Blackberry is an attractive specialty crop with extremely high nutritional value and antioxidants. Because of the consumer-driven demand and the release of new cultivars with superior fruit quality and adaptability to diverse climate, blackberry consumption has shown a rapid increase in recent years. As a result, from 2009 to 2014, the blackberry grower price in the United States increased from \$0.56 to \$0.97 per pound, and the production value increased from \$30.8 million to \$43.2 million. However, current blackberry production in Florida is limited primarily to home gardens and small commercial U-pick operations. Our previously-funded project demonstrated that, with suitable cultivars and optimal management practices, higher-than-average yields of blackberries are feasible in Florida. To maximize the crop productivity and profitability, we have identified that the most critical issue is a lack of knowledge on: 1) adaptability of new cultivars to the growing conditions in Florida; 2) optimal growing environments and production systems; and 3) disease management. This proposal will build on the previous project's efforts to fill a gap in our current knowledge and to develop production recommendations for Florida growers. The results will be disseminated to growers through presentations at growers' meetings, field days, and extension articles. This project can promote new production of a high-value, alternative crop for currently struggling specialty crop industries in Florida. The project partner is the University of Florida.
- Artichoke is an exotic vegetable crop, which retail prices ranging from \$1.5 to \$5 per head. Although the production value of artichoke is higher than most major vegetable crops in Florida, California produces nearly 100 percent of all commercially grown artichokes in the United States. Its exceptionally high nutritional value and antioxidant capacity also make artichoke an attractive crop, as consumers have become more aware of health benefits of "functional food" in recent years. Therefore, artichoke has a considerable potential to become an alternative crop for currently struggling specialty crop industries in Florida. The main challenge to grow this cool-season crop in Florida is the chilling requirement. The principle investigator in this proposal has previously developed management practices for commercial artichoke production in South Texas. We are also currently conducting preliminary trials at the Gulf Coast Research and Education Center (GCREC), as well as two on-farm trials, and we were able to successfully produce high quality artichoke heads. Based on the preliminary results, we anticipate that, with suitable cultivars and optimal management practices, warm winter in Florida may actually enable early production of artichokes during winter months when prices are highest in the market. In this project, we propose to conduct field trials to: 1) select cultivars suitable to the Florida environment; 2) develop management and cultural practices; and 3) provide guidelines of pest management. Our goal is to introduce artichoke as a new specialty crop in Florida and improve viability and profitability of Florida growers. The project partner is the University of Florida.
- There is an opportunity to increase sweet potato acreage in Florida to meet an early season market window, but one of the major drawbacks to potential new growers is the difficulty in managing wireworm which cause feeding damage to the marketed product. In this 2-year project, the desired outcomes will be: 1) Determine the best methods of predictive wireworm sampling; 2) Evaluate several chemical and biological wireworm IPM tactics; and 3) Provide Extension outreach and deliverables. The project partner is the University of Florida.
- A helicopter will be employed to continue the implementation of the early detection and suppression of Laurel Wilt (LW) in the commercial avocado production area of south Miami-Dade County, Florida. Aerial surveys will be conducted on a 6-week interval throughout a 12-month period. Typically, the commercial avocado production area is divided into four quadrants (NE, NW, SE, SW), to fly one quadrant generally takes 2.5 to 3 hours, and each quadrant is flown on a different day. This is done to avoid pilot fatigue and late morning or afternoon lightning storms. LW coordinator duties include scheduling helicopter flights, marking LW suspect sites with a handheld GPS unit, downloading and collating the data, identifying the approximate street location of the LW suspect groves, and meeting with commercial avocado growers and tree destruct companies in a timely manner to provide the locations of groves with LW suspect trees. The LW coordinator contacts grove owners and visits LW suspect grove sites to facilitate control measures. On occasion the LW Coordinator will sample LW suspect avocado trees and provide them to the Plant Diagnostic Clinic located at the UF/IFAS TREC site in Homestead for molecular verification of the pathogen. The LW Coordinator will provide information and data on the dates of aerial surveys and numbers of locations of LW suspects to avocado producers, the Avocado Administrator and Avocado Administrative Committee, the University of Florida (e.g., for workshops, publications, etc.), and UF/IFAS scientists investigating the epidemiology and economic impact of LW and FDACS-DPI. The project partner is the Florida Avocado Administrative Committee.

- Commercial production of pomegranate trees and fruit is a specialty crop industry that emerged in Florida in recent years. Florida growers and nurseries' interest in growing pomegranates has increased rapidly as citrus growers are facing unprecedented challenges from citrus greening and berry growers are facing fierce competitions from other countries. The Florida Pomegranate Association has urged us to test pomegranate varieties under Florida's climatic and soil conditions, to evaluate their plant growth and fruiting characteristics, and to determine the nutrient needs of pomegranates. Considering these dire needs, PI Deng's team at the University of Florida's Gulf Coast Research and Education Center (GCREC) in Wimauma will establish a replicated trial of 12 pomegranate varieties and collect data on plant growth, time to flowering, time to fruiting, fruit quality and yield, and ripening time of these varieties. Co-PI Agehara's team at the GCREC will assess the effect of soil fertility and leaf tissue nutrient levels on pomegranate plant growth, fruit yield, and fruit quality in growers' orchards and develop fertilization guidelines for pomegranate production. Deng and Agehara will disseminate research findings and recommendations to Florida growers and nurseries. Findings from this project will fill a major knowledge gap and enable Florida growers and nurseries to select suitable pomegranate varieties and to apply right amounts of fertilizers at the right time, which will benefit Florida growers significantly with increased pomegranate crop yields, improved fruit quality, lowered fertilizer costs, minimized nitrate leaching and runoff, and enhanced grower stewardship of Florida's water supply. The project partner is the University of Florida.
- With the loss of methyl bromide, the difficulty identifying efficacious alternatives, and more stringent regulations on use of soil fumigants, watermelon producers are in critical need for integrated practices to manage soilborne diseases and improve productivity and profitability of the watermelon industry. Our 2-year watermelon grafting project (ending January 2017) currently funded by the FDACS Specialty Crop Block Grant Program has demonstrated great potential of using grafted plants with selected rootstocks for Fusarium wilt management and fruit yield and quality improvement in seedless watermelons. We have recognized the critical need for a continuation phase-II project which will allow us to establish a solid research-based foundation and work with more commercial growers for producer driven on-farm trials for optimizing the integrated use of grafting in seedless watermelon production systems. It is built on findings and stakeholder feedback from the phase-I project with the goal of enhancing and optimizing integration of grafting into the watermelon production systems in Florida to achieve long-term environmental and economic sustainability. An integrated approach for Fusarium wilt and root-knot nematode management involving grafted watermelon plants will be further examined. Feasibility of using selected rootstocks for early planting and fruit quality improvement to increase economic returns will be assessed. Costs and returns related to commercial applications of site-specific use of grafted watermelons will be evaluated. We will assess project outcomes and successfulness by working closely with the project advisory committee consisting of growers and county extension agents. The project partner is the University of Florida.
- The Center for Produce Safety will partner with the University of Pittsburgh to identify a more accurate measure of viral contamination of water. Ensuring high-quality irrigation water used in the production of fresh produce is necessary to protect the public. The highest risk from exposure to contaminated water is due to viruses; however, water quality is currently monitored using bacteria that are poor representatives of viruses. All previous viral indicators are limited by a low abundance (i.e., are difficult to detect) in the environment. Recently, a bacteriophage (a virus that infects bacteria), named the "cross-assembly phage" (crAssphage), was discovered and shown to be more abundant than all other bacteriophages in the human gut combined. Investigations have shown crAssphage to be highly abundant in sewage. As crAssphage is a virus, it will be a better representative of viral contamination in the environment. The primary outcome from the proposed research project will be the first evaluation of crAssphage in irrigation waters, allowing for the future application of this viral indicator for monitoring of irrigation waters. In this investigation, irrigation water will be sampled and measured for crAssphage, viruses, and indicators to demonstrate the correlation between crAssphage and pathogens. Also, the sample volume necessary to accurately measure crAssphage will be determined. The development of a viral monitoring tool based on crAssphage will enable risk managers to have an accurate and abundant indicator of viral contamination. This indicator will ultimately provide greater protection of public health and improve consumer confidence in produce consumption. The project partner is the Center for Produce Safety.

- Based on farmer input, regulatory obligations, and industry needs, we have three desired outcomes: **OUTCOME 1:** At least 65 percent of 120 small and mid-size producers will gain knowledge of the Food Safety Modernization Act (FSMA), identify necessary steps to become compliant, and express intent to adopt risk mitigation best practices on their farm. Farmers will participate in a one-day (8 hours) training of the FSMA National Food Safety Curriculum from the Produce Food Safety Alliance, supplemented with materials developed by the Southern Region Center for Food Safety grant team. We will partner with Michelle Danyluk, Keith Schneider, and other Food and Drug Administration approved Lead Trainers to train farmers and farm staff. (Hochmuth, Perez, Henry, Treadwell, Galindo with Schneider, Danyluk, and staff) **OUTCOME 2:** At least 65 percent of 200 beginning producers will improve their agribusiness, marketing, postharvest handling, and crop production knowledge and skills thus reducing risk of common mistakes associated with farm attrition. Our team prioritized the development of a comprehensive beginning farmer programming with particular emphasis on financial literacy including business plans. To date, we have conducted a national review of successful beginning farmer programs, and surveyed beginning farmers for educational needs. 2017 funds will focus on development of agribusiness and marketing content and appropriate program evaluation. (Treadwell, Henry, Athearn, Skvarch, Galindo, and staff) **OUTCOME 3:** Update the UF/FAMU Small Farms and Alternative Enterprises Website specialty crop content, maintain our active social media presence, market our programs effectively, and document use of electronic education (Treadwell, Henry and staff). The project partner is the University of Florida.
- There are about 200 acres of satsumas planted in north Florida, although much of that acreage consists of young non-bearing trees. The Specialty Crop Block Grant program has previously funded research at the NFREC-Quincy concerning the yield and fruit quality of satsumas over a 5-year period which has been published on-line (University of Florida EDIS publication) and in a refereed journal. We have shown that average yield per acre per year can exceed 20 tons, and that satsuma production is potentially very profitable in north Florida. The growers are receiving a good price for their fruit; however, many growers are concerned about market saturation. Satsumas are sweet, easy to peel, have few seeds, although they are perishable and must be hand clipped when harvested. We have the opportunity to grow other high quality fresh market citrus in north Florida. At the NFREC-Quincy we have also successfully grown Navel, Minneola Honeybell, Sugar Belle, Tango, and other citrus cultivars. The most urgent need in north Florida regarding citrus is the identification of cold hardiness, yield and fruit quality of new citrus cultivars and selections. We are evaluating the following mandarin hybrids USDA selections: FF13712, FF6377 and FF6385 and will evaluate new UF mandarin hybrid selections (UF900, C4-15-19, N40W-6-3 and UF 950). Our citrus orchard will serve a research/extension purpose that will identify and showcase the best citrus germplasm available. We will also work with local growers Mack Glass (Marianna, Jackson County) and Harvey and John Suber (Gadsden County). The project partner is the University of Florida.

Georgia

Recipient:	Georgia Department of Agriculture	Award Amount:	1,070,978.39
		Number of Projects:	18

- This partnership with the Georgia Food Bank Association seeks to provide grower/packer incentives equal to harvest and packing costs to enable growers to donate their wholesome but unmarketable produce to Georgia's eight regional food banks. These food banks will then distribute this food to low income seniors, children, and working families through their network of 2,400 partner agencies and food-pantries in 159 counties.
- This partnership with the Georgia Fruit and Vegetable Growers Association, working in cooperation with growers, commodity organizations and agribusiness companies across Georgia, will bring together farm and ranch producers to feature Georgia's specialty crop fresh produce industry at the 2016 PMA Fresh Summit in Orlando, FL.
- This partnership with the Georgia Fruit and Vegetable Growers Association (GFVGA) seeks to provide the latest and most current research based educational information on specialty crop production practices, pest management techniques, marketing programs, sustainability needs, regulatory issues and food safety guidelines utilizing workshop presentations, hands-on training, networking, and on-the farm consultation.
- This partnership with Georgia Organics seeks to provide technical workshops for lettuce growers on-farm during field days and farm tours, at the Georgia Organics annual conference, and at other key agriculture conferences addressing production, while integrating pest management, safe handling, organic certification training, and other related topics. Georgia Organics will also distribute and, when appropriate, develop new production resources to provide robust technical assistance workshops to lettuce growers.

- This partnership with the University of Georgia seeks to protect surface and groundwater quality by monitoring and evaluating different methods of reducing off-site movement of nutrients from blueberry beds and will disseminate information gained through field days and industry meetings.
- This partnership with the University of Georgia seeks to evaluate lavender production in Georgia; assess its economic viability as a specialty crop for Georgia growers; and identify the market potential and marketing strategies for lavender sales. The results from this project will be disseminated to producers and extension agents via workshops, fact sheets, and individual consultation. Market analysis will be provided to the public through reports and popular press articles.
- This partnership with Georgia Pecan Growers Association (GPGA) seeks to increase pecan awareness and product demand by using targeted marketing opportunities to promote the health benefits and versatility of pecans to new consumers. As emphasized within this grant's specifications, GPGA's projects will increase sales and marketability and drive demand for pecans. Additionally, GPGA will expand child and adult knowledge of nutritional benefits, improve access, and increase consumption of Georgia pecans.
- This partnership with the Eastern Cantaloupe Growers Association (ECGA) seeks to increase the market share and consumer awareness of Georgia Cantaloupes by communicating the safety and quality of eastern cantaloupes to retail produce buyers and by restructuring the website to create a more consumer friendly resource. ECGA will connect with produce buyers nationally by attendance at tradeshow such as PMA's Fresh Summit attended by more than 900 produce buyers.
- This partnership with the Georgia Farm Bureau Foundation for Agriculture seeks to increase youth literacy of Georgia's specialty crops through teacher developed educational materials and by disseminating materials through venues that include the general public as well as students.
- This partnership with the Georgia Olive Growers Association (GOGA) and the University of Georgia seeks to address the top grower-identified project priorities to help Georgia's olive industry grow, including: isolating a scientifically-based method of pruning to increase yield of olives planted in super high density orchards; educate local consumers about the health benefits associated with consumption of extra virgin olive oils and how to ensure the purchase of quality oils; and development of a growers' manual outlining basic production practices and economic data for developing initial business plans.
- This partnership with Georgia Watermelon Association seeks to educate consumers on the nutritional benefits of watermelon, and to encourage and increase consumption to positively impact the Georgia watermelon industry.
- This partnership with the University of Georgia seeks to minimize the incidence of blossom-end rot in bell pepper by developing management strategies which can be implemented by growers and by distributing results to stakeholders at grower meetings and field days.
- This partnership with the University of Georgia seeks to develop specific guidelines for peach growers in Georgia to help them perform effective location and variety specific crop load management. The effects of timing and intensity of thinning during flower or fruit development on fruit size, quality, and yield will be evaluated in multiple peach varieties of high importance to Georgia. This information will be used to develop decision making guidelines that will be provided to Georgia peach growers.
- This partnership with the University of Georgia seeks to focus on alternative insect control measures to assist the small market farmer in more successfully growing squash and tomatoes. This project will focus on the use of organic alternatives to control the most prolific pests of these two crops, including leaf-footed bugs, stinkbugs, squash bugs, and squash vine bores. Results to be disseminated to stakeholders via field days, training, and publications.
- This partnership with the University of Georgia seeks to identify native azalea plants for breeding compact varieties that sustain native pollinators. The project will use a genetics-based approach to develop native ornamental plants that have both ecological and economic value.
- This partnership with the Vidalia Onion Commission (VOC) seeks to implement a long-term marketing campaign in an effort to reach a younger audience of consumers aged 21-45. The Vidalia Onion Committee also seeks to provide more tools and resources to retailers in an effort to improve performance at the store level.

- This partnership with the Vineyard and Winery Association of West Georgia (VVAWG) seeks to evaluate the effect of three trellising systems on four leading Pierce's disease-tolerant grape varieties on economic inputs, physiological characteristics, yield, and quality of grapes produced. The results of this study will be shared with current and prospective winegrape producers at regional meetings and field days.
- 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.

Guam

Recipient:	Guam Department of Agriculture	Award Amount:	210,938.97
		Number of Projects:	1

- Banana is the most important crop on Guam. Its successful production is restricted by an occurrence of several diseases, especially by a fungus causing Fusarium wilt known also as Panama disease. A recent global spread that started in Central America threatens banana industries supplying fruits to Northern America and Europe as well as industries in Asia supplying China, Japan, Korea, and several other countries. Fusarium wilt is also present on Guam and infected practically all banana plantations and banana plant clusters around residential areas, individual homes, etc. The Tissue culture division at the Guam's Department of Agriculture imported several semi-resistant varieties from Puerto Rico and wants to import one fully resistant variety from the Department of Agriculture in Davao, Philippines. The banana world market is quite unique. Some varieties that are highly appreciated in Northern America are not appreciated in Asia (including Guam). For example, FHIA-01 an appreciated variety having satisfactory resistance to Fusarium wilt was obtained several years ago by Guam DoA from Central America, propagated, and planted by local farmer. This resistant variety (FHIA-01) yields well and produces a high-quality crop. Unfortunately this farmer couldn't sell these bananas on the local market even below his production costs. On the other hand other less-resistant or non-resistant varieties sell well despite higher cost and extensive use of pesticides. At least two other resistant varieties of banana in the possession of Guam's Department of Agriculture are desired by the local market (FHIA-02 and FHIA-03) and a few established in earlier times (Mysore, Williams, and Dwarf Cavendish) showing good resistance but unacceptable vulnerability to typhoons. Another one, GCTCV 219 cultivar that is highly desired by Asian markets will be imported from the Philippines. This Giant Cavendish variety can be imported to Guam only as tissue culture seedlings. These seedlings may be easily propagated in the DoA tissue culture lab and supplied to banana growers in quantity. With respect to Fusarium wilt, a major goal of Guam Department of Agriculture, as well as regional goals coordinated by Philippines Department of Agriculture and various National and International Banana Breeding Centers, is to eliminate Fusarium wilt by planting only fusarium resistant bananas. Farmers who have access to resistant varieties are eager to convert their plantations to resistant ones as soon as possible. New plants placed in the ground between existing ones start to produce bananas within 2 years, which allows farmers to eliminate diseased plants successively without interruption of production and profit. We plan to produce several varieties of resistant bananas and provide them to local farmers and backyard growers in adequate quantities estimated several thousand. We will be able to supply as many as 10,000 plants if needed.

Hawaii

Recipient:	Hawaii Department of Agriculture	Award Amount:	422960.68
		Number of Projects:	11

- 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.
- Partner with Sustainable Molokai to increase access and awareness of the numerous varieties of Molokai-grown kalo (taro) through hosting monthly workshops in schools and communities teaching growing, preparation, and increasing access to kalo.
- This partnership with the Hawaii Export Nursery Association will undertake a national marketing campaign to increase awareness of the quality of Hawaiian potted foliage products, and increased sales through hosting a horticultural conference, promotional advertising in national trade publications/social media, and identifying new distributors and exhibiting Hawaiian potted foliage at industry trade shows.

- This partnership with the Kahumana Farm Hub will provide farmers and backyard growers with access to new markets, such as restaurants, retail stores, and food hubs through its established market buyer channels, cold storage, processing, packaging material, and assistance with delivery costs.
- This State project will increase the production of specialty crops in Hawaii through the creation of projects that increase the production of specialty crops for food on lands that are currently transitioning to medium-to-small farms.
- This partnership with Mala Kaluulu Cooperative will aggregate, distribute, process, and market Hawaii-grown breadfruit through providing a collaborative information-sharing platform to facilitate the adoption of more sustainable production systems and best practice methods.
- This partnership with the University of Hawaii College of Tropical Agriculture and Human Resources will recommend Ohelo kau la’au as a locally grown, unique Hawaii food product, as a nutraceutical/health food, and food additive through establishing fields that demonstrate the technical feasibility of commercial Ohelo kau la’au as a specialty food while also providing a source of raw materials for research on ohelo’s nutraceutical and antimicrobial properties.
- This partnership with The North Shore Economic Vitality Partnership will provide increased access to 8 institutional markets for 12 North Shore Oahu specialty crop farmers through implementation of a comprehensive USDA GroupGAP certification program that encompasses farm site-specific best practices; the development of Quality Management Systems and food safety plans; and ensuring record-keeping and compliance to allow for verification of best practices through external farm audits.
- This partnership with the Hawaii Agricultural Research Center will screen corms and leaves in taste panels to predict product adoption for growers, determine the in vitro and field growth parameters optimal for taro lines, yield, and length of growth cycle through micropropagation of taro lines imported from Fiji, Tonga, other foreign countries, as well as Hawaiian lines.
- This partnership with the Same Canoe Local Food Challenge will raise consumer awareness and increase consumer purchasing of fine canoe plant crops through hosting special events at points of sale, community-based workshops, farm tours, and educational film discussion groups.
- This partnership with the University of Hawaii at Manoa, Maui County, will provide a farming learning environment for the community, including “GoFarm” students by developing 2 acres of land in the central Kahului area into beginning farmer, hands-on education, and practice plots.

Idaho

Recipient:	Idaho State Department of Agriculture	Award Amount:	1,902,564.60
		Number of Projects:	16

- American Pulse Association with pulse industry partners and professional contractors will conduct a series of outreach efforts designed to inform and train U.S. supermarket dietitians about the many health and nutrition benefits of using pulses in consumer diets. The project goal is to increase consumer knowledge and awareness of pulse crops and pulse-based products. This project will educate dietitians about pulse cooking techniques, emerging pulse ingredients, and pulse retail products available in grocery stores through continuing education webinars, toolkits, conference outreach, and consumer education resources for registered dietitians who are members in the Academy of Nutrition and Dietetics Food and Culinary Professionals Dietetic Practice Group. By targeting this influential group, we will have the opportunity to reach thousands of consumers who are looking for healthy and nutritious meal plans. The success of this project will be evaluated and measured through several on-line surveys.

- The Public Policy Research Center at Boise State University, in collaboration with the Department of Geosciences, proposes to conduct an assessment on the current state and projected future of the wine grape industry in Idaho. As a specialty crop, wine grapes present unique opportunities and challenges to the industry and the State. As a relatively new crop in the State, there is a lack of comprehensive data and information from an integrated science-socioeconomic perspective to help existing and potential growers, and industry stakeholders. The proposed research will develop this comprehensive assessment through a review of best practices from other (peer) States, an integration of the existing biophysical and geoscience research and data, a State-wide wine grape and wineries survey of stakeholders (production, industry and distribution, wineries and cideries, State government, and other regulatory and relevant interests). Of specific interest are issues of workforce education, sustainable labor availability, market factors, and State policies. Combined with current and available science on climate change and soil, this project will provide currently unavailable integrated data to give the industry a means to develop a roadmap for the future of Idaho's wine grape industry.
- The overall goal of this proposal is to fill significant knowledge gaps in the *Fusarium proliferatum* and onion interaction that results in onion bulb rot. This has been an emerging and significant problem for onion producers in the Treasure Valley for the past two seasons. It is also a disease problem for which very little information is available. Drs. Schroeder, Woodhall, and Thornton from the University of Idaho, via the Idaho Eastern Oregon Onion Committee, will complete research that will enable the development of management strategies to reduce the impact of *F. proliferatum* on onion production. The expected outcomes include a validated real-time PCR detection method for *F. proliferatum*; the identification of *F. proliferatum* inoculum sources; the determination of the infection window of *F. proliferatum* on onion and the determination of the impact of temperature and curing parameters on onion bulb rot caused by *F. proliferatum*. The results will be disseminated to stakeholders through grower meetings and field days. Incorporation and application of this information by onion stakeholders will result in increased yields, reduced inputs, and increased efficiency of storage inputs resulting in an increased economic return for onion stakeholders.
- The proposal "Increasing Sales, Creating Demand, and Developing Market Share in International Markets", outlines a project that will be conducted by the Idaho-Eastern Oregon Onion Export Committee (IEOOC). Idaho and Eastern Oregon's crop is 90 percent yellow onions and it is important to stay in front of the Mexico retailers, foodservice professionals, importers, and consumers and let them know of the versatility, availability, and benefits of yellow onions. The project includes conducting a Yellow Onion Promotion in Mexico, participation in two international trade missions, and one international trade show. The Yellow Onion Promotion will assist in the sales of yellow onions in Mexico and build awareness for the onions. The main focus of the yellow onion promotion will be with point of sale activities in traditional Mexico markets within the retail sector, with secondary support in the foodservice sector for an integrated program.
- The Idaho Nursery and Landscape Association will establish a contractual agreement with ISDA to ensure project completion and manage related funds. Stephen Love and Bob Tripepi, researchers from the University of Idaho, will execute the research associated with the project. Outcomes of this research are two-fold: 1) development of water-conserving, sustainable, native plant products for the Idaho landscape nursery industry, and 2) concurrent delivery of plant propagation protocols for new native plant products to enhance success of marketing and delivery.
- The Idaho Potato Commission (IPC) will invest in research around a technique or application that will decrease or eliminate mold and other bacterium which accelerates deterioration in container shipments in transit to overseas markets, causing substantial and cost-prohibitive rejections on the receiving end. The International Marketing Director will oversee the project and disseminate the results and product/company references to the Idaho® potato industry through an international export shipper seminar, the IPC and Idaho Grower Shipper Association (IGSA) convention, the annual Potato School, and various on- and offline communications.
- The University of Idaho will conduct research which will contribute towards efforts to mitigate the potential impact of the notorious pale cyst nematode (PCN) by identifying PCN effectors for developing PCN-resistant potato cultivars. Findings from this research will be presented to the scientific community through publications and presentations at national/regional meetings and to stakeholders at grower meetings such as the UI Potato Conference, the Idaho Plant Protection conference, and other appropriate venues such as field days.

- Idaho Preferred®, a program within the Market Development Division of the Idaho State Department of Agriculture, will continue its successful promotion of specialty crops through television advertising, social media, public relations and retail promotions. The television advertising campaign will include 6 weeks of 15 second ads that promote specialty crops. These ads will air in conjunction with an on-the-road retail tour that will include stops at retailers across the State to promote seasonal specialty crops with radio remotes, on-site demos, sampling, and events. Social media will help promote the tour and events as well as increase consumer awareness of seasonal specialty crops. As a result of this three-prong promotion, sales of specialty crops will increase by \$1.5 million over 2015 baseline data.
- The Idaho Grape Growers and Wine Producers Commission (IWC) will market and promote the unique quality and growing conditions of wines produced by the more than 50 wineries and 56 wine grape growers in Idaho locally, regionally, and nationally, increasing growth and market share of this specialty crop. Through this project, the IWC hopes to bring awareness to the high quality of Idaho wines and wine grapes by utilizing media outlets, influential journalists, and visual marketing elements. As industry growth continues, the IWC will work to ensure the industry is promoted properly, and quality of wine is a key component to this.
- Between 2002 and 2016, the Idaho wine industry has grown from 11 wineries to over 50. Talented people continue to move to Idaho, planting vineyards and opening new wineries. The Idaho Grape Growers and Wine Producers Commission's (IWC) mission is to promote and raise awareness of the industry and its many members, while furthering its economic reach and providing education to members and the general public. The IWC has been fortunate in receiving grants to help assist in this mission. These funds have allowed the IWC (821 W State Street, Boise, ID 83702) to enhance its small budget and run an effective awareness and education campaign led by the Executive Director, Moya Dolsby. It is believed that continuing on this path will keep the industry growing and assist in boosting Idaho's economy. Within this project, several educational seminars to enhance member knowledge and skill will be completed while evaluating current specialty crop conditions and analyzing the best means to continue improving them. These educational seminars are different from previously held seminars as they reflect the industry's current position and the direction it would like to continue on for improvement. By focusing on member needs and requests, the IWC has developed a seminar course to directly address concerns of industry members.
- 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.
- The Robotics Vision of Northwest Nazarene University will develop a fruit crop yield estimation system, Fruit Count App (FCA), that will help Idaho fruit growers predict their yield. Accurate fruit yield estimate will impact growers' decisions about orchard management like planning thinning and harvesting operation, as well as managing packing shed logistics. In addition, fruit crop yield estimates could help the farmer discuss supply capacity with buyers, which could affect selling price by as much as 15 percent. The Fruit Count App include a vision system to capture images of fruit trees and a computer program that will estimate fruit yield from the image. The FCA will be designed so that it can be mounted on a tractor or an autonomous vehicle.
- A wide difference between nighttime and daytime temperatures and soil conditions makes southwestern Idaho an outstanding region for production of high quality peaches and nectarines. Storing stone fruit and shipping them at a later date is often more profitable for growers. Idaho has a unique opportunity to capture a big share of the national and international markets for stone fruits if suitable new cultivars are selected and harvested at an ideal harvest date and stored for an optimum period of time. In this project, Dr. Essie Fallahi Professor of Pomology and his research team at the University of Idaho Parma R/E Center will study bloom date and optimum harvest date and storage duration in 15 top new cultivars of peaches and nectarines. After completion, Idaho growers will have a great advantage in the competitive global fruit market by having the knowledge about the new cultivars and their quality, harvest stage, storability, and shipping time, and thus make an appropriate management strategy. Results will be reported to all those interested in fruit production, both commercial and small scale, during field days, local educational meetings, national professional conferences, publications, and classes.

- In order to control Potato virus Y (PVY) in the State of Idaho, University of Idaho proposes to survey all seed potato lots that undergo winter testing in Idaho for prevalence of PVY strains with subsequent elimination of lots with necrotic PVY. University of Idaho also proposes to determine effects of seed-borne PVY on potato tuber quality in storage using commercial fields with high PVY infection (>10 percent) and the Hermiston, OR, or Othello, WA, potato seed lot trials. Tubers of different varieties with seed-borne PVY will be harvested at the end of the growing season and compared to non-infected tubers from the same seed lot through analysis of specific gravity, fry color, and quality. Storage regimes will be devised to mitigate the virus effects on tubers. The proposed project will lead to a comprehensive strategy to control necrotic PVY strains.
- The goal of this project is to develop an automated real-time method for daily monitoring water stress severity in wine grape that Idaho wine grape growers can use for irrigation decision-making. In a previous project, we developed a method to calculate a water stress index (WSI) for wine grape using vine canopy temperature and weather parameters. After 3 years of testing in a research vineyard with different wine grape cultivars, we have shown that the WSI (range 0 to 1) is a sensitive, accurate indicator of irrigation events and amounts. Development of the WSI for commercial use requires real-time calculation, interpretation, and display of WSI values on a web-based user interface. In this project we will use the existing USDA Agricultural Research Service (ARS) research vineyards in Parma, ID, to collect data for interpreting WSI values and for developing a web-based, wireless interface to calculate and display WSI values in real-time. We will also install sensor network systems in four commercial Idaho vineyard sites and ask vineyard managers to evaluate the WSI values for irrigation decision-making. The applicant organization will be USDA ARS. Dr. Krista Shellie, USDA ARS Parma, ID, will be in charge of project oversight and Dr. Bradley King, USDA ARS Kimberly, ID, will be responsible for development, installation, and operation of the instrumentation networks for real-time calculation and web page display of WSI. Project results will be presented to stakeholders at the annual meeting of the Idaho Grape Growers and Wine Producers and published in peer-reviewed journals.
- The Idaho Apple Commission will set up a 3-month marketing program that will promote a different variety of apple each week. The weekly apples will be promoted by billboard signs, in-store advertising, radio advertising, print advertising, and through Social Media channels. The outcomes of this program would be increased sales, stronger demand for Idaho Apples, and a healthy positive working relationship with Idaho retailers.

Illinois

Recipient: Illinois Department of Agriculture

Award Amount: 522,007.73

Number of Projects: 10

- The Food Nanotechnology group at Southern Illinois University will develop edible coating materials by nano-encapsulating limonene as a natural antimicrobial. The group will conduct experiments on applying such coatings to locally harvested fresh berries (strawberry, blueberry, raspberry, and blackberry) for enhancing shelf life and food safety. The group will also disseminate the knowledge gained to local growers through workshops, specialty crops conferences, and factsheets in print and online media.
- 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.
- The University of Illinois (UIUC), in cooperation with the Savanna Institute, will determine the shade tolerance of black currants (*Ribes nigrum* L.) and evaluate the growth and productivity of 20 of the most widely used currant cultivars under shade. On-farm performance trials in three geographically distinct locations in the State of Illinois will determine yield in full-sun, monoculture cropping. Currants are highly nutritious berries that are under-utilized in the United States, and are one of the few crops that tolerate some shade while still producing fruit. Currants offer the potential to increase grower revenue by incorporating the small shrubs into existing orchards without affecting the productivity of the primary crop. Four field trials will be performed: 1) Shade tolerance will be evaluated by covering black currants with four levels of shade cloth; 2) Performance of commercial cultivars will be assessed in on-farm trials in Northern, Central, and Southern Illinois; 3) This cultivar trial will be established under shade cloth at UIUC to identify cultivars with exceptional shade tolerance; 4) Performance of currants in “real world” shade conditions will be measured by planting currants within an existing organic apple orchard at UIUC. To drive adoption of currants in Illinois, results will be shared with orchardists via field days, presentations at the annual Illinois Specialty Crops Conference, and an online hub for potential currant growers at the Savanna Institute’s perennialmap.org. An extension bulletin on current production, shade tolerance, and use will be developed and distributed both online and in print form.

- Approximately 35,000 acres of cucurbits are grown annually in Illinois, which includes 12,000 acres of jack-o-lantern pumpkins, 13,000 acres of processing pumpkins (92 percent of the U.S. processing pumpkins), and 10,000 acres of other cucurbits (cucumbers, gourds, melons, squash). Powdery mildew is an annual disease on cucurbits and causes more than 50 percent yield losses if it is not effectively managed. Cucurbit powdery mildew is caused by two fungal species, but species of the pathogen(s) have not been identified in the Midwest. Although some cucurbit cultivars resistant/tolerant to powdery mildew are available, the disease is primarily managed by fungicide applications. Fungicide resistance in the pathogens has been reported worldwide. Although growers of Illinois and other Midwestern States have complained about ineffectiveness of fungicides for managing cucurbit powdery mildew, no research on resistance of pathogens(s) to fungicides in the region has been reported. The objectives of this proposal are to: 1) identify species of cucurbit powdery mildew fungi in Illinois; 2) determine pathogenic and genetic variations among pathogen isolates; 3) determine sensitivity of the isolates to major fungicides (DMI, QoI, SDHI, quinoxyfen, cyflufenamid); and 4) determine the most effective use of fungicides for managing the disease. This proposal falls under the Outcome 4: Enhance the competitiveness of specialty crops sustainable practices, resulting in increased yield, efficiency, and economic return. Result of this study will be presented to growers, industry personnel, extension educators, and scientists in the Statewide and national meetings. The results also will be published in bulletins, newsletters, websites, and refereed-journals.
- The project will develop delayed fine pruning techniques adapted for practical use in Illinois vineyards to reduce: 1) the risk of crop loss to spring freezes; 2) canopy management costs, and to increase: 1) fruit yield; and 2) fruit quality. The results will allow development of guidelines for methods and timing of applying delayed fine pruning; thus, increasing the predictability of delaying bud break to avoid spring freeze damage. Development of practical delayed fine pruning guidelines will also provide growers with a precise tool to control excessive canopy shoot growth, therefore increasing the adoption of the practice from current non-use to use in an estimated 1/3 of the 820 acres of Illinois vineyards at greatest risk for spring freeze damage and excessive vigor. Grower adoption of delayed fine pruning to accomplish these goals would increase farm gate revenue to growers by \$970,000/year and make planting additional vineyard acres economically viable. The project will conduct field research with three hybrid varieties adapted to high quality, commercial production in Illinois using mature vines trained to a high, bilateral cordon. The experiment will determine: 1) reasons for current grower reluctance towards use of delayed fine pruning; 2) influence of stage of bud/shoot development at the time of delayed fine pruning on the growth and yield; and 3) the influence of temperature and light in the time period between bud burst and delayed fine pruning on the growth and yield of vines. Outreach will be delivered at annual meetings and seasonal workshops.
- This breeding project will be directed by Southern Illinois University and will include cooperation with the Horseradish Growers of Illinois to develop new Horseradish varieties for the industry and to evaluate recently released varieties for Internal Root Discoloration (IRD) resistance. Production of horseradish in Illinois is threatened by a disease complex of soilborne organisms, known as IRD that causes severe discoloration of the root, which often renders roots unmarketable. The extent and severity of this disease problem has been gradually increasing over the last few decades and is now to the point where it is threatening the viability of the horseradish production industry in Illinois. The Horseradish Growers Association will work together with Southern Illinois University to develop new horseradish cultivars with improved internal root discoloration resistance. Several horseradish germplasm accessions with high levels of resistance to this disease complex have been identified and will be incorporated into commercially adaptable varieties. The success of this project will be measured by the new varieties released over the 2 years of this project, and at least four new horseradish varieties will be released to growers during the course of this project which will benefit the horseradish growers in Illinois by having access to new high-yielding commercially adaptable varieties that are resistant to internal root discoloration. Results will be disseminated via transfer to horseradish growers in Illinois through personal contact, annual twilight meetings, and the annual horseradish conference in January.

- The University of Illinois will perform greenhouse tests to evaluate the use of thiamine dilauryl sulfate (TDS), a new and non-toxic antifungal agent encapsulated in nano-particles, to control horseradish root discoloration caused by soil-borne phytopathogens such as *Fusarium* sp. Illinois is the leading producer of horseradish in the United States, providing over 60 percent of the total production. Horseradish root discoloration due to infection by soilborne phytopathogens has caused heavy production losses to growers. Current fungicide treatments are less effective and cause environmental pollution. There is an urgent need to develop effective, long-lasting, and environmentally friendly methods to control horseradish root discoloration. The study is a continuation of a previous SCBGP project in which PI Feng's team demonstrated that nano-encapsulated TDS is an effective inhibitor of the fungi causing horseradish root discoloration under laboratory conditions. To further validate the efficacy of nano-TDS, this study will explore its use for controlling the discoloration of horseradish sets in a greenhouse. This will pave the way for field tests of nano-TDS as an antifungal agent for the control of horseradish root discoloration. Since TDS is a vitamin-B1 derivative, it will provide an eco-friendly and nontoxic new treatment to horseradish growers to minimize production loss caused by horseradish root discoloration.
- The key partners for this project are the Midwestern Regional Climate Center (MRCC) and the Illinois State Climatologist. Their partnership will help specialty crop producers mitigate the impacts of fruit and vegetable specialty crop pests and diseases by developing and hosting a scientifically based pest and disease degree day calculator for Illinois specialty crops. The most commonly produced specialty crops in Illinois such as pumpkins, horseradish, peaches, apples, sweet potatoes, sweet corn, asparagus, and tomatoes will be the primary focus. The calculator will use a surface weather station derived gridded temperature and precipitation dataset at 5km spatial resolution available through the Applied Climate Information System and Regional Climate Center Program. The calculator will be provided for free to stakeholders/specialty crop producers through MRCC's website upon project completion.
- The Illinois Specialty Growers Association (ISGA) will offer educational opportunities for specialty crop producers at four regional meetings and at the annual specialty crop conference ensuring growers ability to keep informed on production and marketing topics pertaining to their industry. First, in January and February of 2017, Dr. Rick Weinzierl, University of Illinois Emeritus (Weinzierl Fruit and Consulting, LLC), will represent the Illinois Specialty Growers Association at four key regional programs for specialty crop producers in the State of Illinois. These programs are the Southern Illinois Tree Fruit School at Mt. Vernon, IL, the Southwestern Illinois Tree Fruit School at Hardin, IL, the Southern Illinois Small Fruit and Vegetable School at O'Fallon, IL, and the Stateline Fruit and Vegetable Conference at Rockford, IL. At these programs, grant funds will pay Dr. Weinzierl to provide informational updates on integrated pest management in fruits and vegetables (one or two presentations for each day of each program) and to provide updates on ISGA activities that advance the specialty crop industry in Illinois. Dr. Weinzierl's presence at these meetings on behalf of ISGA will also encourage new and renewed memberships in ISGA. Secondly, the Illinois Specialty Growers Association will provide educational opportunities to specialty crop farmers through their annual conference in January of 2018. During the course of this 3-day conference, farmer attendees will learn how to manage and identify disease, pests, and weeds in conventional production and organic production. Labor and legal issues will focus on topics such as employment law, risk management, insurance, and immigration updates. Attendees will learn how to promote and grow their businesses through social media and marketing techniques. Season extension in high tunnels and greenhouses also will be covered. Food safety training also will be a topic of emphasis. Tasks required to fulfill these objectives include recruiting exhibitors, promoting the event through media contacts (including trade publications, newspapers, and radio), identifying the speakers and fulfilling their presentation and travel requirements, and assisting prospective attendees in the registration process. Staff will also work with the host hotel in getting a contract signed, outlining logistical requirements, and planning meal functions.

- Successfully reaching Illinois consumers to grow an awareness of the specialty crop industry and increase consumption of specialty crops means the message must start early, and through creative means. Illinois Agriculture in the Classroom (IAITC) has a rich history of being the agriculture education resource for teachers to utilize in classrooms, beginning as young as kindergarten, then cultivating their knowledge and interest in agriculture and specialty crops throughout their education. The IAA Foundation requests \$15,000 to develop and print a new Pumpkins Ag Mag and support trainings and county program implementation to ensure that new resources are actively utilized throughout the state. Pumpkin lessons and activities not only increase awareness of specialty crops grown in Illinois, but also introduce more students and consumers to the ideas of locally grown foods and the farmers that grow them, leading more consumers to engage in buying locally grown specialty crops. Specialty crop farmers will see an economic benefit through increased awareness and consumption of local specialty crops. Students will be more enthused about attending farmers markets, or a pumpkin patch and selecting their own fresh specialty products. The IAITC program brings a proven and effective delivery model that gets accurate agricultural content into the hands of teachers in every county throughout the State of Illinois. We will continue to use this effective model to introduce concepts of specialty crop agriculture, helping increasing child and adult nutrition knowledge and consumption of specialty crops through one of our most popular subject matters—pumpkins.

Indiana

Recipient: Indiana State Department of Agriculture

Award Amount: 383,889.06

Number of Projects: 7

- Purdue University will determine best practice for Indiana cantaloupe production in the areas of manure management and postharvest sanitization.
- Indiana Grown is the Statewide initiative to identify produce and products from our State. This project will use Indiana Grown as a partner to identify specialty crops grown in Indiana and products using specialty crops produced within the State to encourage purchase by end consumers.
- Schooner Hill Farms will partner with Alyssa Besser, Brown Co., 4-H Extension Educator, to promote the competitiveness of specialty crops through apiculture education, training, and use implementation for residential and small farm applications.
- 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.
- The project is aimed at expanding the impact of the Growing Opportunities greenhouse job training program to more people in Monroe County through building on the relationships it has started with its partner organizations. The project is aimed at promoting healthy families and children through expanded consumption of specialty crops by people in poverty, along with a reduction in hunger, which can have lasting effects, particularly among children and those with chronic illnesses. The project will address three issues: 1. Increasing child and adult nutrition knowledge and consumption of specialty crops, especially among low-income people and people with developmental disabilities; 2. Increasing opportunities for new and beginning farmers who lack agriculture skills and other basic skills necessary for success in any job; and 3. Improving food access in the food desert area on the Westside of Bloomington (and especially access to healthy fresh leafy greens for low-income families living in this area). Growing Opportunities is partnering with Community Kitchen of Monroe County, Hoosier Hills Food Bank, Mother Hubbard’s Cupboard Food Pantry, Stone Belt (services for people with developmental disabilities), SCCAP Energy Assistance and Energy Conservation Education, SCCAP Head Start, and SCCAP Thriving Connections.
- FoodLink 2.0 will allow the full expression of the potential of FoodLink to facilitate and improve consumer food choices and add value to the ability of farmers to more successfully market their Indiana specialty crops. FoodLink 2.0 will provide for the increased reach of specialty crop knowledge to a greater array of impressionable audiences. FoodLink has an active website with content on proper food selection, use, preparation, pairings, storage, and a variety of other quickly accessed information for well over 40 crop entries including access to quick and easy recipes that will encourage the incorporation of fresh fruits and vegetables into Hoosier diets. Additionally, FoodLink provides the consumer access to resources including food safety in the home kitchen at farmers markets and in various other places foods are consumed, along with food preparation tips and brief videos to make those tips come to life. Multiple recipes for each crop that have been selected for a high potential of success and few added ingredients, with the primary ingredient being specialty crops.

- Purdue Extension aims to increasing opportunities for new and beginning farmers, develop local and regional food systems, support the growth of organic specialty crops, and improve food access in underserved communities. The Purdue College of Agriculture funded the first year of the Purdue Urban Farm Incubator Network, which the program is currently completing. In addition to this \$50,000 grant, the Purdue Urban Farm Incubator Network also received full-time staff support via Indiana University School of Public and Environmental Affairs AmeriCorps program at the value of \$18,850 in its first year and this will be repeated in the second year. Intra-organizational collaborations for this project include faculty in the Purdue Department of Horticulture and Landscape Architecture and Department of Agriculture Economics as well as support from a Purdue Extension – Marion County Community Development Educator. Program participants also benefitted from the Purdue-organized Indiana Small Farm Conference. External organizations who advise, support, and contribute to the Purdue Urban Farm Incubator Network include the Marion County Soil and Water Conservation District and several community non-profits including Groundwork Indy, Kheprw Institute, and Indy Urban Acres.

Iowa

Recipient:	Iowa Department of Agriculture and Land Stewardship	Award Amount:	244,352.23
		Number of Projects:	11

- This partnership with the Practical Farmers of Iowa will improve the competitiveness of specialty perennial crops in Iowa through farmer-to-farmer education and farmer networks.
- This partnership with Iowa State University will provide frost protection to high density orchards by developing a low water usage solid set canopy irrigation system and demonstrate the system via a field day, an Iowa Apple Group meeting, and extension publication.
- This partnership with Iowa State University will provide educational resources and opportunities to transitioning, beginning, and existing Iowa hop growers. Program participants will unite to form an Iowa Hop Growers Association where they can seek and share information with each other.
- 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.
- This partnership with Iowa State University will reduce the amount of water-soluble or controlled-release fertilizers applied to containerized specialty annual bedding plants by developing species-specific fertilizer requirements through scientifically based quantification of nutrient requirements. Results will be distributed through grower meetings as well as industry and extension publications.
- This partnership with the Iowa Nut Growers Association, leveraging the expertise of the Iowa State University Seed Science Center, will give nut growers new value added opportunities by investigating, testing, documenting, and presenting growers with options and strategies for processing hazelnuts.
- This partnership with Iowa State University will conduct research on addressing heat stress issues inside high tunnels that lead to crop loss and poor produce quality. The research will also focus on appropriate pepper cultivars that can be profitably grown inside high tunnels. The research will disseminate results and findings through field days, workshops, conferences, and on farm grower collaborator trials.
- This partnership with the Iowa Valley RC&D (IVRCD) will maximize membership in the new USDA Group GAP Program, specifically through increased membership to the Iowa Food Hub's Group GAP Consortium
- This partnership with Iowa State University will identify all maple syrup producers (large and small) in Iowa and offer educational programs aimed at increasing production capacity by growing the overall number of taps; and educate current producers on new technological advances in sap extraction, sap concentration via reverse osmosis machines, and equipment advances that greatly increase boiling capacity.
- This partnership with Lutheran Services in Iowa's Global Green program will train and support refugee farmers in reducing barriers to market access and administration. LSI will develop and aggregate a Community Supported Agriculture (CSA) program for farmers to sell into, as well, as training and tools specific to other available market outlets.

- This partnership with Iowa State University Extension and Outreach will enhance the ability of Burmese refugee families living in rural southeast Iowa to successfully start their own farming ventures by providing them with incubator farm garden plots and teaching them about growing, marketing, and selling fresh produce through classroom and experiential learning.

Kansas

Recipient: Kansas Department of Agriculture

Award Amount: 283,597.28

Number of Projects: 6

- The Seward County Community College (SCCC) Specialty Crop Incubator Program will provide space, training, and technical support for 16 incubator plots for specialty crop apprenticeships, with the intent of helping to kickstart small specialty crop businesses. Incubator plots will include access to high tunnel space and hydroponic production. The program will also include many educational components with an eye towards encouraging more specialty crop production and more consumption of locally grown foods. Education efforts will feature a conference geared towards the business management side of growing alternative crops, a workshop aimed at increasing knowledge of and enthusiasm for specialty crops in agriculture education and life science teachers, classroom presentations and beginning school gardens to increase knowledge of specialty crops and vegetable/fruit consumption by school children, and Prime Pickin’s mini-workshops for members of the community to learn about growing vegetables and fruit, and picking their own produce to encourage more vegetable/fruit consumption. Through surveys and observation, data will be collected to measure the success of the project, which has as its overall goal to encourage and increase specialty crop production in Kansas.
- The Enhancing Specialty Crops Production and Profitability through Conservation Practices Project will research best management and conservation practices that improve soil health, system productivity, and reduce purchased inputs, and provide that information to Kansas specialty crop producers to improve production and profitability. Specialty crops present Kansas farmers and ranchers a growing market opportunity. Information is missing or challenging to access about how best management conservation practices can not only improve production but reduce costs, thus improving the producer's bottom line. Growers rely on practices such as extensive tillage and cultivation, and purchased inputs for fertility and pest management. However, cultivation can be detrimental to overall soil health, thus increasing the need for added inputs, reducing water infiltration, and more. Pesticide use can be expensive and damage populations of beneficial insects. A number of best management practices promoting soil health, system productivity, and fertility are available. These include cover crops, extensive crop rotations, Integrated Pest Management (IPM), and providing habitat for beneficial insects. The purpose of this project is to research available practices to determine suitability for Kansas farms, determine potential economic costs and benefits, and provide education to specialty crop growers to implement on their farms. The goal is to find strategic management and conservation practices that will enhance the profitability and productivity of Kansas specialty crop producers. The success of the project will be evaluated by surveying the number of targeted conservation practices added by growers and additional acreage managed with conservation practices in 2017.
- Specialty crops are a growing industry in Kansas. The Kansas Department of Agriculture recognizes there are insufficient learning opportunities available to Kansas growers. The Great Plains Growers Conference, held each January, will provide Kansas specialty crop growers with an opportunity to learn and discover valuable tools and resources that will help them be more competitive and discover new opportunities. The beneficiaries of this project will learn more about topics such as: high tunnel production, pest management, farmers markets, marketing and agritourism, food safety, Good Agriculture Practices (GAP), technology, soil health, etc. This project will financially assist Kansas specialty crop growers in attending the Great Plains Growers Conference and increase their knowledge base. Specialty crop growers will also be able to develop a plan of action to incorporate knowledge gained into their operations. The specialty crop growers benefiting from this project will complete three surveys throughout the duration of this grant to measure and evaluate learning outcomes, implementation, and end results (e.g. increase in yields, increased efficiency, access to a new type of market, increase in sales, implementation of new technologies, etc.)

- The Viticulture and Enology program at Highland Community College seeks to accelerate growth of the grape and wine industry in Kansas. There are many obstacles to opening any business, and in the case of a vineyard finding labor to plant the vines is a major obstacle. In the case of a winery, the largest obstacle is the immense capital investment to purchase property, a building, equipment, and retail space. The Highland Community College Wine Business Incubator (WBI) will have a tractor, tilling implement, and vine transplanter available for vineyard entrepreneurs to begin or expand existing vineyard operations. This equipment will allow the vineyard owner to plant vines with significantly reduced labor and time versus the traditional auguring of holes and planting vines while refilling the holes by hand. For the winery entrepreneur, the WBI will have a building with 4-6 stalls available for lease. Each stall will be equipped with wine tanks and storage space for bottled, finished wine. Each WBI winery client will have access to winemaking equipment and a shared retail sales space at the front of the facility. Having these items in place for lease will alleviate the need for immense capital expenditure prior to making the first bottle of wine. Highland Community College’s Viticulture and Ecology staff will be available for mentoring the incubator clients as well as offering classes, workshops, and individual consultation to members of the Kansas grape and wine industry and the general public seeking to learn more about Kansas grapes and wine.
- Produce safety is an issue of growing importance for specialty crop farmers in Kansas. Kansas State Research and Extension (KSRE) will meet this need with training and resources for Kansas fruit and vegetable producers on produce safety, particularly related to the FDA Food Safety Modernization Act (FSMA). KSRE personnel will undergo a certified FSMA train-the-trainer workshop where they will become certified FSMA trainers. KSRE will provide certified FSMA training to produce growers, which is a regulatory requirement for growers not exempted from this new Federal regulation. This will enable Kansas fruit and vegetable growers to comply with food safety regulatory requirements, allowing them to continue their farm business and avoid regulatory enforcement actions. Finally, we will carry out farm visits to assist interested growers in documenting their on-farm food safety plans, which is needed for farmers to become Good Agricultural Practice (GAP) certified. Becoming GAP certified can provide additional marketing opportunities for fruit and vegetable producers, leading to increased farm income from specialty crops. We will record the number of producers that obtain certification of FSMA training, as well as the number that become GAP certified and those improving their food safety practices. This project will complement other ongoing produce safety education work that provides produce safety training and resources for all Kansas fruit and vegetable farmers to help them to raise produce as safely as possible, thus increasing customer confidence in Kansas-grown produce and reducing product liability for farmers.
- 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.

Kentucky

Recipient:	Kentucky Department of Agriculture	Award Amount:	241,245.31
		Number of Projects:	7

- Western Kentucky University, supported by Kentucky Office for refugees, and Community Action of Southern Kentucky, will enhance the competitiveness of specialty crops through increased sales, access, and increased consumption, will provide educational opportunities for both students (through hands-on learning experiences) and refugees (through translated words), and will increase incomes among local farmers. We will create new competitive market opportunities, promote production, and increase consumption of Kentucky specialty crops among refugees by developing a translated four-sided A4-size marketing brochure and distribute it through refugee-serving organizations, refugee community/opinion leaders, and points of refugee meetings. Specific outcomes include: 1) the marketing brochures will be designed in English and then translated in 12 most popular languages among refugees; 2) distribution of at least 2,000 marketing brochures; 3) increased awareness for KY specialty crops; 4) increased consumption of specialty crops to improve nutrition among refugees and increase incomes in local economies; and 5) improved learning experiences through hands-on learning opportunities for 30 students taking the agricultural marketing course. The brochures will also serve as a learning tool to the beneficiaries (refugees). Furthermore, this project produces an important marketing tool that could be customized and used in other States to promote specialty crops nationwide (indirect Goal).

- The Kentucky Hop Growers Alliance (KHGA) will further the production of hops in Kentucky by purchasing hop-specific machinery for collaborative use by Kentucky hop farmers; establishing platforms for new farmers through the dissemination of knowledge, best practices, and hop-specific skills; and expanding the market for Kentucky-grown hops within the local and regional craft beer industries through networking initiatives, state wide quality studies, and the establishment of industry standards. Throughout the project, the KHGA will work in conjunction with the Kentucky Department of Agriculture, Kentucky universities and research institutions, the Kentucky Guild of Brewers, and interested growers throughout the Commonwealth to achieve the project goals.
- Increase consumption and knowledge of specialty crops by building awareness of Kentucky-grown specialty crops among Kentucky consumers.
- This project will increase demand for Kentucky fruits, vegetables, nuts, and herbs by increasing child and adult nutrition knowledge and consumption of specialty crops. The Plate it Up! Kentucky Proud project links the expertise of University of Kentucky faculty with nutrition students, Extension agents, and producers to market Kentucky specialty crops. We will maintain a consumer focus for this grant period with an emphasis on healthy and economical recipes based on the 2015-2020 Dietary Guidelines for Americans. Developed recipes will meet Dietary Guidelines for Americans recommendations for sodium, saturated fat, and/or added sugars. The project will develop, disseminate, and demonstrate new recipes featuring local seasonal specialty crops to market Kentucky foods as part of a healthy lifestyle.
- Kentucky orchards produce 500,000 to 700,000 bushels of apples each year, but bitter rot disease causes annual losses of 10 percent to 50 percent. Some apple cultivars such as the popular ‘Honey Crisp’ suffer losses of 50 percent to 100 percent. During the past decade, yield losses from bitter rot have increased. Recent research and field surveys indicate that the bitter rot pathogen(s) may also be the same pathogen that causes anthracnose fruit rots of blueberry, peach, and strawberry. This leads us to hypothesize that mixed orchards may be suffering higher apple disease losses as a result of cross infections from these early-harvested fruit. The first half of this project utilizes research collaborations, student scientists, and modern molecular tools to investigate pathogen biology in mixed orchard systems. Close examination of the pathogens will help determine whether they are related (indicating cross infection) or whether they are the same species but not related (not moving from one host to the next). Our results will directly influence disease management strategies that better protect fruit and minimize losses. The second portion of the project is an outreach component that will present our new recommendations directly to growers. New spray guides and management publications—in both print and electronic formats—will be created and distributed during the second half of the grant cycle. Grower trainings and outreach will assure understanding and proper implementation of our recommended methods, and educational sessions will be held at grower conferences and orchard field days.
- The University of Kentucky Center for Crop Diversification will create and update science-based specialty crop marketing and production resources to help meet Kentucky farmers’ needs. This project will evaluate the needs of the specialty crop growers in Kentucky and provide relevant information on crop varieties, production practices, crop budgets, and Kentucky prices for specialty crops in multiple marketing channels. All resources will be made available in print and online.
- The University of Kentucky will evaluate the suitability of commercially available hops for Kentucky production. New hop yards will be established in eastern and central Kentucky. Production characteristics will be refined, insect and disease issues will be evaluated, and there will be more hops growers and the existing growers will be more knowledgeable and profitable at the conclusion of the project.

Louisiana

Recipient:	Louisiana Department of Agriculture and Forestry	Award Amount:	314,533.45
		Number of Projects:	5

- 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.
- The LSU AgCenter will conduct applied research to assess the microbial safety as well as quality of strawberries right after flooding and during shelf-life. This project is a collaborative effort among Dr. Kathryn Fontenot at the School of Plant, Environmental, and Soil Sciences, Dr. Melissa Cater in the Department of Agricultural and Extension Education and Evaluation, and Dr. Wenqing Xu at the School of Nutrition and Food Sciences. By bringing together the food microbiologist, plant expert, as well as a program evaluation specialist, the proposed project will yield useful scientifically-based information necessary for LSU AgCenter Agriculture and Natural Resources (ANR) field agents and local growers to develop management strategies to produce safe fruits and vegetables.

- Produce farmers that utilizing open surface irrigation water are at a higher risk for pathogen contamination of crops and are in need of a non-expensive and non-chemical way to remove pathogenic bacteria from irrigation water. The LSU Ag Center plans on developing a deep-bed zeolite filtration device capable of reducing microbial food safety risks of irrigation water used for high risk vegetables. Zeolite is a mineral rock that can be modified to enhance the removal of pathogenic bacteria from irrigation water. The objective of the study is to optimize a deep-bed filter using modified zeolite capable of reducing E. coli O157:H7 and Salmonella levels from irrigation water and test the effectiveness of the filtration system in an actual farming environment. Generic E. coli which is non-pathogenic will be used as an indicator to evaluate the performance of deep-bed zeolite filter on reducing food safety risk associated with surface irrigation water used for irrigating strawberry. The deep-bed zeolite filter system will provide growers with a method to reduce pathogens in irrigation water and comply with the proposed Food Safety Modernization Act (FSMA) produce safety rule, agricultural water requirements.
- The LSU AgCenter will increase Louisiana Specialty Crop Growers' understanding and implementation of Farm to School/Institution programs, and associated business functions for marketing their produce to grocery stores, restaurants, and other direct markets as well as wholesale buyers. This 2-year project will assist specialty crop growers to retain their current markets, to expand their markets by addressing the challenges these growers perceive and face in their efforts to satisfy their customers and the potential regulations and opportunities associated with farm to institution marketing through the implementation of an educational program (MarketReady). In addition, Louisiana school food service staff, managers, directors, buyers, and other stakeholders will receive information through a Specialty Crop Institution Marketing and Procurement Tool Kit, comprised of MarketMaker user tutorials, Harvest of the Month implementation recommendations and materials, and other appropriate resources, in order to source product from local farmers and meet the increasing demand for fresh, local product in their institutions while promoting the items consumption.
- Commercial vegetable production in Southern States is a growing and diverse industry. With the enactment of the Food Safety Modernization Act (FSMA) produce safety rule, many specialty crop growers are required to take preventive control measures to reduce the risk of foodborne diseases. As required, the waiting period between irrigation and harvesting or during storage will depends upon the survival of generic Escherichia coli on the surface of the crops. The rule is flexible such that the producers can apply science-based alternatives to treat their crops during post-harvest processing for pathogen risk reduction and to shorten the waiting period during storage or harvesting. Chlorine dioxide is an effective sanitizing agent against a broad spectrum of microorganisms such as bacteria, spores, viruses, protozoa, and algae. It is a 2.5 times stronger oxidizing agent than chlorine, which limits the likelihood of microbial regeneration. This project will be conducted in the LSU AgCenter and will evaluate chlorine dioxide as an antimicrobial intervention to reduce the food safety risk associate with Louisiana- produced specialty crops such as strawberries, blueberries, and sweet potatoes. It is expected that the results of the study will help Louisiana specialty crop growers' comply with FSMA Produce Safety Rule requirements and increase the shelf life and quality of their fresh produce. The results from this study will be disseminated to Louisiana specialty crop growers through Dr. Adhikari's ongoing food safety training, LSU AgCenter extension outreach programs, and presentations during Louisiana Fruit and Vegetable Growers Association meeting.

Maine

Recipient:	Maine Department of Agriculture, Conservation, and Forestry	Award Amount:	549183.74
		Number of Projects:	10

- This State project will promote more cost-effective nutrient management on potato fields in the Aroostook River watershed to reduce producer input costs and improve water quality
- This partnership with the University of Maine Cooperative and the Maine Agricultural & Forest Experiment Station will determine the suitability and best production practices for hops in Maine by developing a variety trial of hops.
- This partnership with AgMatters, LLC, will enhance the competitiveness of specialty crops by providing assistance to growers as they prepare for GAP/GHP or Produce Harmonized audits during the 2016-2018 grant cycle.
- This partnership with the Maine Landscape and Nursery Association (MELNA) will increase the public's support of local growers, nurseries, garden centers, and landscapers through an awareness campaign of the benefits of planting specialty crops for landscape and garden.
- This partnership with AgMatters, LLC, will provide assistance to Maine specialty crop growers with implementation of FSMA's Produce Safety Rule by informing growers of the requirements of the Rule, participation in Produce Safety Alliance grower trainings, and assisting growers each year as they implement the food safety assurances required by the law.

- This partnership with the Wild Blueberry Commission of Maine will prevent grower losses and sustain value-added economic activity by: evaluating herbicides with different modes of action and identifying the best material and timings that will effectively control resistant weed species; evaluating fungicides with different modes of action to control mummy berry and how they fit with fungicide rotation; and identifying new materials and timings to improve control of leaf spot diseases.
- This partnership with the Wild Blueberry Commission of Maine will increase understanding of the mummy berry disease by developing a model of the disease and new control strategies.
- This partnership with the Maine Potato Board will enhance the competitiveness of Maine Seed Potato Industry and develop more sustainable, diverse and resilient specialty crop systems by conducting a Maine seed potato survey for the pathogen Dickeya and by increasing the disease testing capacity of the Maine Seed Certification Lab.
- This partnership with the University of Maine Cooperative Extension Potato Integrated Pest Management Program (IPM) seeks to develop a potato disease decision support system that will provide growers with current information on specific and timely pest management strategies in order to minimize pesticide applications and maximize potato yield. The program will employ 10 seasonal aides, maintain 200 specialized insect traps, and coordinate a Maine-specific network of satellite weather information (Skybit) sites to aid in disease forecasting, and survey 75 potato fields on a weekly basis.
- 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.

Maryland

Recipient:	Maryland Department of Agriculture	Award Amount:	376,230.65
		Number of Projects:	7

- Chesapeake Farm to Table will leverage the producer network of its food hub operation to develop a low-cost, shared infrastructure system for food-safe, post-harvest handling and storage of winter crops in order to expand the economic opportunities of winter produce sales directly to restaurants for Maryland growers.
- Grow & Fortify, LLC, will work with project partners to develop a State and county-level regulatory matrix that will provide a clear outline of the permits and processes required for specialty crop producers to sell and market raw agricultural products, as well as value-added specialty crop products, to improve the State's overall economic vitality. This matrix - which will be publicly available on the Grow & Fortify website - will save producers both time and money. To provide additional context to the regulatory matrix, specialty crop producer success stories from around the State will be showcased on the website. The matrix will be updated on a regular basis to guarantee informational accuracy and timeliness.
- The Maryland Department of Agriculture Food Quality Assurance Program and the University of Maryland will partner to provide training, certification of compliance with food safety practices, food safety technical assistance, and cost share funds for implementation of food safety practices to assist specialty crop producers and packers transition from voluntary food safety programs (GAP/GHP) to compliance with the Food Safety Modernization Act Produce Rule.
- This project will fund seasonal promotions of Maryland specialty crops through mass media, www.marylandsbest.net, direct partnership with Maryland specialty crop producer associations, and other strategic promotional avenues. This will stimulate consumer demand for local specialty crops and assist farmers in accessing market channels. Demand for local specialty crops has been steadily increasing in this past decade, as measured in Maryland by the University of Baltimore's Schaefer Center. In 2012, 78 percent of Marylanders say they would prefer to purchase and consume fruits and vegetables identified as having been grown in Maryland, up from about 55 percent in 2003. This project is designed to continue to reinforce that preference for local through effective, timely advertising, promotional events, and direct-to-consumer marketing. This project will also connect Maryland specialty crop producers with retail buyers at annual buyer-grower meetings and the annual Produce Marketing Association convention.
- The Maryland State Horticultural Society, in cooperation with the National Peach Council and industry stakeholders, will develop a social media platform and marketing "toolbox" for peach marketers that will increase consumer awareness of: 1) locally and regionally produced peaches' and 2) the nutrient and dietary value through promotion/display materials (toolbox) for the retail and farm market segments throughout the season.

- The University of Maryland, in collaboration with farmer participants, will evaluate how on-farm management practices (i.e. carrier water volume, sprayer type, and canopy density) influence spray coverage and efficacy in red raspberries. Findings will be used to aid in the development of new recommendations to help small fruit growers manage spotted wing drosophila more sustainably and at a lower cost.
- 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.

Massachusetts

Recipient:	Massachusetts Department of Agricultural Resources	Award Amount:	347,503.03
		Number of Projects:	10

- This partnership with the Cape Cod Cranberry Growers' Association will help growers identify heat stress and encourage the development of new tools for growers to utilize when employing in-day cooling through studying the use of in-day plant cooling via sprinkler irrigation in order to lower cranberry vine canopy temperatures during the growing season and prevent scalding of developing berries.
- This partnership with Community Harvest Project will introduce youth and adults to new varieties of apples and growing systems through nutrition education.
- This partnership with Northeast Organic Farming Association will enhance the competitiveness of specialty crops through educating farmers on high tunnel techniques and practices that use certifiably organic methods.
- This partnership with the University of Massachusetts will increase the production of specialty crops through building a greater capacity via value-added production, thus serving to improve the economic value of specialty crops.
- This partnership with the Sustainable Business Network will increase access to Massachusetts and New England specialty crop products through eliminating barriers that are preventing buyers and sellers from doing business, thereby increasing sales of specialty crops across Massachusetts and New England.
- 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.
- This partnership with Community Involved in Sustaining Agriculture, Inc., will increase the understanding of on-farm food safety threats through personalized education to western Massachusetts produce farmers about food safety threats and requirements.
- This partnership with Hilltown CDC will increase access and delivery of local food and increase sales through stronger business relationships and contract growing, by facilitating a series of community meetings as follow up to a year-long planning process that resulted in a Hilltown agricultural plan.
- This partnership with Massachusetts Farm to School will increase the competitiveness of Massachusetts-grown specialty crops by influencing school procurement practices with a combination of outreach, training, and technical assistance.
- This partnership with Plant Something MA will build the State's green infrastructure and enhance the competitiveness of specialty crops through a targeted social media campaign to reach the next generation of horticulture consumers.

Michigan

Recipient:	Michigan Department of Agriculture and Rural Development	Award Amount:	1887408.29
		Number of Projects:	20

- This partnership with Celery Research, Inc., will determine if washing celery at packaging to eliminate a pathogen is maintained throughout the celery's storage shelf life by demonstrating antimicrobial effectiveness to control biological pathogens on fresh celery.
- This partnership with Kalamazoo Valley Community College will increase sales and competitiveness of specialty crops by developing and documenting operations and food safety protocols for a demonstration Food Hub that lightly processes and distributes Michigan specialty crops to institutions in the Kalamazoo area.

- This partnership with Michigan Bean Commission will identify and mitigate yield reductions associated with white mold and Root Rot in dry beans by conducting research to assess the impact of strategies to prevent loss.
- This partnership with Michigan Potato Industry Commission will develop genetic markers for indirect selection of efficient tuber wound healing in breeding lines of potato, conduct variety trials, and use a “fast track” strategy to quickly produce certified mini-tubers by conducting research to identify and develop assessment tools to help the breeding and selection of superior potato varieties for the potato chip-processing industry.
- This partnership with Michigan Agritourism Association will provide customers with a more satisfying experience at pick-your-own farms and increase the likelihood of return visits and increased sales revenue through development of a baseline dollar value of pick-your-own specialty crops in Michigan, offering webinars to educate producers and designing print materials for use at pick-your-own specialty crop operations.
- This partnership with Michigan Integrated Food and Farming Systems (MIFFS) will create a user-friendly database documenting vetted examples of on-farm food safety practices and linking them to associated best practices for complying with the Food Safety Modernization Act standards, GAP certification, conservation of natural resources, and USDA cost-share opportunities.
- This partnership with Michigan Farmers Market Association will increase Michigan families’ awareness of the abundance of Michigan specialty crops available at farmers markets and other retail venues to ultimately increase sales and consumption through marketing, promotion and consumer education.
- This partnership with Cherry Marketing Institute will enhance the competitiveness of tart cherries by educating and motivating ingredient decision makers to choose U.S.-grown Montmorency tart cherries, one of Michigan’s largest specialty crops.
- This partnership with Hop Growers of Michigan will establish, for the first time in Michigan, a quality system specific to hops through establishing Recommended Operating Procedures, an education program to train farmers, and a two-level voluntary verification program.
- This partnership with MBG Marketing will reduce loss of processed fruit to contamination by the galls caused by wasps, reduce yield loss and infestation of blueberry fields, and increase grower ability to prevent infestation by developing and implementing best management practices for Michigan blueberry growers to mitigate the effects of the resurgent blueberry stem gall wasp.
- This partnership with Michigan Apple Committee will build on past work and improve the competitiveness of fresh Michigan apples by building online engagement with consumers to drive a deeper connection between social media involvement and in-store activity.
- This partnership with Michigan Asparagus Advisory Board will investigate the use of mycorrhizae as part of a root rot management program to limit disease losses in asparagus, optimize irrigation systems to minimize drought and temperature stress, and develop fertility management strategies that complement irrigation systems and mycorrhizae applications by conducting a research study.
- This partnership with Michigan Carrot Committee will increase carrot yield, quality, and farmer profitability; reduce pesticide and fertilizer use and environmental impacts through investigating the effects of nitrogen fertilization, exploring the potential role of foliar disease, diagnosing leaf hopper infectivity levels, and evaluating novel in-row cultivation tools.
- This partnership with Michigan Onion Committee will combat bacterial leaf blight in onions through monitoring thrips population and bacterial pathogens, evaluating N management tradeoffs, developing mitigation strategies, and extending research findings to onion growers, packers and shippers.
- This collaboration with the Cherry Marketing Institute, Michigan Bean Commission, Michigan Apple Committee, and the Michigan Potato Industry Commission will promote specialty crops domestically and internationally through participation in trade shows, conducting export research and conducting a trade mission to increase sales and exports of specialty crop commodities.
- This partnership with Michigan Tree Fruit Commission will make Michigan fruit crop production more economically competitive and environmentally sustainable through the development, application and widespread use of new Enviro-weather web-based decision support tools.

- This partnership with Michigan Cherry Committee will conduct applied research and outreach programming to help cherry growers manage spotted wing Drosophila.
- This partnership with Michigan Nursery and Landscape Association will reduce the biomass of invasive weeds in Michigan by surveying participating nurseries and conducting random field samples.
- This partnership with Michigan State Horticultural Society will develop a Maximum Residue Limit (MRL) recommendation system that will afford growers with up-to-date, critical information necessary to make close-to-harvest management decisions targeting both invasive and domestic pests in Michigan apple and cherry production through conducting residue analysis of field trial samples.
- 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.

Minnesota

Recipient:	Minnesota Department of Agriculture	Award Amount:	1,184,822.50
		Number of Projects:	17

- The Good Acre (TGA) food hub in partnership with the MN Farm to School Leadership Team, is applying for SCBG funding to help small-scale farms increase sales of specialty crops by providing food safety training to member farms as well as aggregation, distribution, and logistical services that would enable them to access wholesale markets; develop plans that all small-scale farms can use to add necessary infrastructure to become GAP certified; and to develop food safety curriculum and industry models that will be shared around the State.
- This project will partner with the Minnesota Grown Promotion Group, Inc., to increase sales and competitiveness of Minnesota specialty crops through sponsored search advertising, increased exposure for specific specialty crops in the printed Minnesota Grown Directory, and development and distribution of new promotional materials for vegetable growers.
- The purpose of this project is to partner with Sweetland Orchard, LLC, to assess the suitability of growing 12 cider apple varieties on 2 different rootstocks at 8 geographically and climactically distinct locations in Minnesota. The demand for cider apple varieties is increasing more rapidly than their supply. However, Minnesota growers are reluctant to plant cider varieties that are untested in our various apple-growing areas. The results of this project will help growers in the region determine which cider apple varieties they can plant with greater confidence.
- This project will assess their distribution of pests as well as incidence/abundance and help growers monitor for them to mitigate losses. The Minnesota Department of Agriculture will work with growers to monitor for priority pests at high risk sites, and will work with the University of Minnesota to produce and distribute outreach materials including management recommendations.
- This project will partner with Jim Gehrke and the Minnesota Valley Action Council to protect the investment already made in existing food hubs by facilitating the rapid growth necessary for each to reach a self-sustaining level of development. A key step to making Minnesota food hubs financially viable is extending the period during which they have produce to sell. This project will establish demand from existing and likely customers to support developments that efficiently expand the sales season.
- This University of Minnesota project develops research-based management programs for Colorado potato beetle that exclude neonicotinoid insecticides. These programs will incorporate defoliation-based thresholds, new scouting methods, and resistance management tactics.

- This project will provide research-based information to specialty crop producers regarding the benefits of legume cover crops in rotation with vegetable crops, and extend this information to immigrant farmer communities. Immigrant specialty crop producers in Minnesota are a growing and often overlooked segment of the State's agricultural economy, and face significant barriers to success. Cover cropping, or the planting of non-harvestable plants in rotation with cash crops, is well understood to improve soil quality and nutrient supply on farms, thereby reducing off-farm inputs, increasing long-term efficiency, and sustaining productivity. Through this project, the University of Minnesota will develop experiments to evaluate the potential of summer legume cover crops to increase farm sustainability and economic viability through increased soil nitrogen and reduced weed pressure. In collaboration with the Latino Economic Development Center, on-farm field trials and targeted educational programming will increase the efficacy of University of Minnesota's outreach to immigrant farmers and associated organizations. Through dynamic collaboration, this project directly enhances the competitiveness and sustainability of specialty crops by developing new and improved biological innovation models (cover cropping) and networks (immigrant farmer community and University partnerships) for specialty crop entities. Finally and importantly, this project enhances the competitiveness of specialty crops through enhancing or improving the economy as a result of specialty crop development by targeting beginning and socially disadvantaged immigrant farmers. While educational programming targets immigrant farmers, this project is designed to provide critical research-based information for all specialty crop growers in Minnesota who are eager to use legume cover crops to enhance farm sustainability.
- The Department of Entomology, University of Minnesota, proposes to greatly improve the competitiveness and sustainability of Minnesota fruit producers by developing an improved pest alert warning system for the highly damaging economic pest, the Spotted Winged Drosophila (SWD). *Drosophila suzukii* is a somewhat typical small fruit fly that can be attracted to various fermenting fruit or yeast-based volatiles. What makes this fly unique is its ability to attack young berries, whereby females use their "saw-toothed" ovipositor to lay multiple eggs per berry (Lee et al 2011). The eggs hatch into small maggots that may go undetected until after harvest. Consequently, SWD continues to be one of the most damaging invasive pests throughout most of the U.S. fruit growing regions. It was first detected in Minnesota in 2012 and has caused considerable damage since (Asplen et al. 2015), including losses in raspberry, blueberry, and strawberry, but particularly fall raspberries. As a result, conventional and organic berry producers have been faced with unexpectedly high losses and/or substantial increases in insecticide input costs during the past three growing seasons.
- The University of Minnesota is leading the development of novel tomato varieties and hybrids to meet the need of growers who reside in north and short season locations, providing locally grown fresh tomatoes to these areas. Tomato plants are damaged by frost at above-freezing temperatures. Short season areas such as those found in Minnesota, Wisconsin, and North Dakota, pose a challenge for commercial producers and gardeners growing many of the available tomato cultivars. Even if the tomato plants survive, their fruit quality may be poor due to failure to ripen or low yield. In attempts to maximize fruit quality, tomato cages or other structures are used to support growing branches. The installation and maintenance of the cages require additional labor and production cost for growers. The obstacles of environment, available cultivars, and maintenance costs have discouraged home gardeners and commercial growers from pursuing tomato production. Building on the success of breeding Ground Jewel and Ground Dew for growers residing in short season locations, this project will test the feasibility of growing these new tomato varieties at different locations around the State.
- The University of Minnesota Regional Sustainable Development Partners (RSDP) will lead a new collaboration among a cross disciplinary team of University of Minnesota (UMN) researchers, farmers, culinary professionals, food processors, and food/agricultural businesses to build supply chains to increase access to University of Minnesota's new or improved specialty crops [edible dry beans, organic potatoes, and hazelnuts]. Over the course of this grant, RSDP will develop an online directory of internal and external supply chain resources, host four cross-disciplinary networking events for UMN researchers, host three events to convene regionally located supply chain entities, and, at the conclusion, evaluate the usability of resources and the value of the networking and convening events.
- The University of Minnesota Extension's Regional Sustainable Development Partnerships will increase awareness of and demonstrate Deep Winter Greenhouse (DWG) technology. DWGs are a low-tech, fuel efficient, affordable way for specialty crop producers to increase their profitability and sustainability. This project will produce an online training manual and deliver seven workshops to demonstrate DWGs and provide training in winter crop production. Up to 175 producers including Hmong American and White Earth Reservation farmers will participate in the training.

- Market development and new market exploration outside of local channels are revenue-intensive activities, especially when sales calls are made one at a time. Participation at trade events has been a cost-effective strategy for expanding market reach, spurring new sales and distribution. The Minnesota Department of Agriculture (MDA) hosts Minnesota Pavilions at national food tradeshows; staff recruit Minnesota companies and organizations to exhibit at discounted rates, and help with other tasks. Those events have been very successful, with the latest (Natural Products Expo West (NPEW) 2016), producing a projected return on investment of more than 16:1 for exhibitors, including estimated 6-12 month sales of more than \$1.6 million, new buyer contacts that exceeded 1,000 and 179 new distributor relationships. Specialty crop producers have options to market produce locally, but where can they go when those segments are saturated? Unfortunately, specialty crop-eligible entities (farms and small food companies) have been not well represented at the national food trade events at which MDA works to promote MN food products, to date. With SCBGP support, MDA hopes to change that by expanding pavilion space and reserving a portion/giving preference and price breaks in addition to current discounts to specialty crop eligible companies and organizations. Designating booth space in a Minnesota Pavilion at trade shows such as NPEW and National Restaurant Association (NRA) would help ensure participation by specialty crop-eligible entities, creating new sales and demand for those specialty crops and food products. Interest has been communicated by various value-added specialty crop-based food companies, including a potato grower association, sunflower and popcorn-based snack food companies, jam-makers, and others.
- Central Lakes College Ag and Energy Research Center will evaluate the cost savings and effectiveness of in-furrow fungicide and starter fertilizer and top dress applications of nitrogen to increase seed yield and quality of dry edible beans. The products applied in-furrow will be the fungicide pyraclostrobin (Headline) and the starter fertilizer Aventine Complete.
- This project will partner with the University of Minnesota to improve potato production sustainability in the Midwest through validation of biochemical markers to predict sugar end development under field conditions for better storage management. The effects of nitrogen management and cultivar selection on biochemical markers and storability will also be evaluated.
- 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.
- The University of Minnesota will develop sustainable mechanisms to harvest ginkgo seeds for medicine and food, thereby preventing the removal of mature female ginkgo trees that produce malodorous seeds in the urban environment.
- Latino Economic Development Center will develop a pilot project to guide immigrant farmers in the efficient production of salad mix using specialized equipment and high-tunnel production for sale to chef-driven restaurants. The grant period proposed is 12 months.

Mississippi

Recipient:	Mississippi Department of Agriculture and Commerce	Award Amount:	336,946.96
		Number of Projects:	11

- This partnership with Mississippi State University will examine the competitiveness of specialty crop production and processing as a cluster of economic activity in Mississippi and identify areas of future growth as well as the economic contribution of the cluster's contribution to Mississippi's economy.
- This partnership with Mississippi State University will provide effective control of problematic weeds in sweet potato production by developing weed suppressive sweet potato cultivars.
- This partnership with the Alliance of Sustainable Farms (Alliance) will help enhance the competitiveness of farmers of local sustainably grown specialty crops through the provision of a comprehensive training program; and demonstrating and promoting the adoption of critical agricultural practices and technologies.
- This partnership with Farm Families of Mississippi will develop and implement a promotional campaign that educates the public about the benefits of buying and consuming Mississippi-grown sweet potatoes. We will establish a baseline sales figure for the 2015 crop year, produce and air a television spot Statewide, and feature a billboard that promotes buying Mississippi sweet potatoes. We will then compile sales figures for the 2016 crop year to compare with the baseline sales figure.

- This partnership with Mississippi State University will increase the sustainability of soil health, cover crop benefits, and vegetable yields and quality by developing scientifically-based novel measures to implement the use of biochar soil amendments and disseminating results to stakeholders through grower meetings and field days.
- 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.
- This partnership with Mississippi State University will collaborate with tea growers to develop sustainable production strategies for successful establishment of young tea plants in the field by investigating the potential of using different colored shade cloth. Results will be disseminated to stakeholders through direct farmer contacts, meetings, field days, and publications.
- This partnership with The Mississippi Nursery and Landscape Association (MNLA) will expand the Garden Extravaganza program to include activities in the Biloxi area. An indoor marketplace will be set up where consumers can come to see and purchase what Mississippi has to offer.
- This partnership with Mississippi State University will develop two specialized farm implements designed to efficiently harvest sweet potato foliage from plant beds and production fields for potential use in livestock and industrial markets. Results will be disseminated to producers via field days and on-farm demonstrations.
- This partnership with Mississippi State University will develop management practices suitable for the state of Mississippi to reduce the occurrence and severity of *Macrophomina phaseolina* on impatiens and potentially other landscape bedding plants.
- This partnership with the Mississippi Department of Agriculture and Commerce will create and implement a promotional campaign for Mississippi Christmas tree growers. This project will increase consumer awareness and education of Christmas trees grown in the State through advertising and promotion of the farms in the State.

Missouri

Recipient: Missouri Department of Agriculture

Award Amount: 327,335.36

Number of Projects: 10

- This partnership with the University of Missouri seeks to educate Missouri producers about adopting specialty crops and enhancing their farms' diversification through an online educational platform.
- 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.
- This partnership with Lincoln University Cooperative Extension (LUCE) seeks to mitigate the threat of economic losses due to foliar and soil-borne diseases faced by Missouri high-tunnel producers.
- This partnership with University of Missouri seeks to appraise and aide the potential of a hops industry for Missouri and the Great Plains environment.
- This partnership with Missouri State University seeks to determine the optimum planting date in Southwest Missouri for three garlic cultivars, and educating our growers on optimum production methods including pest identification and control.
- This project will continue to offer children an educational resource that increases knowledge, intention to eat, and consumption of Specialty Crops. We expect our continued project to improve the healthy eating habits of Columbia's youth, influence purchasing habits, increase Specialty Crop vendors' overall sales, and for the program as a whole to be a useful resource to other markets interested in providing Specialty Crops-based education to youth.
- This partnership with the University of Missouri Extension seeks to provide certified Food Safety Modernization Act training to Missouri produce growers, which is a regulatory requirement for growers not exempted from this new regulation. Produce safety is an issue of growing importance for specialty crop farmers in Missouri.
- This partnership with Happy Hollow Farm seeks to coordinate research efforts to develop specialty cut flower production methods for small-scale farmers in Missouri, a realistic and viable opportunity for generating significant increased income of specialty cut flowers through increased production and quality during the cold winter months, using covered structures and minimal heat sources.

- This partnership with the University of Missouri Center for Agroforestry (UMCA) will explore the novel uses of the black walnut (*Juglans nigra*) and its byproducts (e.g., shells, kernels, husks collected from orchard waste and processing plant) in cosmetic, personal care products, and pharmaceutical industries by systematically examining their health-promoting compounds.
- This partnership with The University of Missouri seeks to enhance the development of behavior-based Integrated Pest Management (IPM) approaches (such as mass trapping) that could lead to effective Spotted Wing *Drosophila* control with reduced insecticide sprays.

Montana

Recipient: Montana Department of Agriculture

Award Amount: 1,292,444.15

Number of Projects: 13

- The Community Food and Agriculture Coalition and the Montana Department of Agriculture (MDA) will enter a cooperative agreement to launch a program assisting new and beginning farmers in entering the specialty crop industry. The project will focus on introducing beginning farmers to support resources and education opportunities on farm creation and development. The outcome of this project will be an increase in the number of farmers entering the specialty crop industry.
- Montana State University Extension will contract with KUSM TV (Montana PBS) in Bozeman to develop a series of high quality educational videos on growing small fruit and tree fruit in Montana as well as highlighting the research and results from previous projects using SCBGP grants. The spring, summer, and fall of 2016 and 2017 will be spent collecting video, conducting interviews, reviewing, and editing the educational series. The series will feature small fruit and tree fruit research that is being conducted in Montana, showcase established and start-up growers in Montana, and elaborate on cold-hardy fruit production and research in the United States and parts of Canada. The final videos will be made available to the public and used in educational programming starting the fall of 2018. The videos will concentrate on orchard and farm establishment and production systems including: planting, pruning, irrigation systems, integrated pest management systems, distribution, and cultivar selection. The videos will showcase current cold-hardy fruit research in Montana, Canada, and Minnesota. The videos will be made public through several avenues including PBS, YouTube, local County and Reservation Extension offices, co-ops, Montana Department of Agriculture (MDA), and farmers groups.
- Montana is the largest producer and exporter of peas in United States. A major constraint to pea production are diseases which can reduce yield, lower seed quality, and limit seed exports due to phytosanitary restrictions. Control and management of pea diseases involves identification of the pathogens and characterization of the variability within the pathogen populations. In 2015, Montana State University proposed gathering baseline data on pea diseases in Montana for 3 years because the State has not been surveyed for diseases and their causal agents, and to capture diseases that might be expressed within 3 years of favorable weather. Montana State is now requesting for the second year of funding for a 2017 disease survey, a continuation of the same multi-year project.
- The Potato Lab at Montana State University will evaluate a new diagnostic technique named Loop Mediated Isothermic Amplification (LAMP) that utilizes the same principles of polymerase chain reaction (PCR) but amplifies DNA at one constant temperature. It requires less expensive equipment and has lower reagent costs. This technique will be tested both as a laboratory technique and as an on-farm diagnostic. We will first develop the protocols for pathogen testing in the lab and compare them to enzyme-linked immunosorbent assay (ELISA) and PCR for potential as a high throughput testing method. Once the technique has been optimized, project partners will test it for suitability as a field pathogen identification method. If results are consistent and reproducible, it will provide a more sensitive assay than ELISA with similar high throughput potential which could revolutionize our summer testing program and our ability to accurately identify pathogens in the field.

- This 3-year-long project will support specialty crop farmers by bringing together a multi-disciplinary group of faculty and students from Montana State University to develop new, value-added products based on what the specialty crops farmers are already selling. The cross-listed Farm to Market course (CAA 490R.001, BMKT 491, and NUTR 491) will leverage the professional experiences and backgrounds of 3 professors and the enthusiasm and talents of 18 undergraduate and graduate students to solve real-world problems for specialty crop farmers in Montana. The course will meet each fall for 3 consecutive years and will collaborate with a minimum of six different farmer partners each year. In each partnership, an interdisciplinary group of students will study the farm's issues and opportunities and deliver solutions to the challenges faced. At the end of each fall semester, for each farm challenge students will develop a replicable user-tested recipe for a market-viable value-added product, as well as a naming, branding, and packaging strategy for that product. The solutions will also be posted prominently on a dedicated website (farmto.markets is an available domain) as well as on social media, so any Montana farmer interested in these solutions will have access to the knowledge discovered as a result of these courses.
- Montana State University seeks to initiate a project that will provide support for specialty crop producers and food manufacturers. Specifically the project will develop human and laboratory resources to provide technical assistance to specialty crop producers who intend to add value to their crops, and to food manufacturers who utilize specialty crops. Project outcomes include: 1) Provision of start-up and continuing technical assistance and guidance for Montana's food manufacturing groups and individual specialty crop producers who intend to add value to their crops; 2) Creation of an internship program to allow MSU students to support and learn from Montana's food manufacturing entrepreneurs; and 3) Creation of a laboratory infrastructure to develop food product prototypes and conduct sensory testing and evaluation of new and existing value-added specialty crops. With the approval of the Hospitality Management and Culinary Arts degree programs by the Montana University System Board of Regents, a tenure-track food/culinary scientist will be recruited and hired. Funding from the Specialty Crop Block Grant Program will ensure that the teaching, research, and outreach components of this faculty member's workload assignment will be dedicated to a) Food Enterprise curriculum development; b) outreach and assistance for food manufacturers and value-added specialty crop producers; c) research and product development utilizing Montana's specialty crops; d) developing an internship program for Food Enterprise students; and e) planning and implementing a product development and testing laboratory in space allocated to MSU's Hospitality Management/Culinary Arts degree programs.
- This research seeks to determine if special imaging cameras can reliably detect diseases in the pulse crops: dry pea, lentil, and chickpea, as well as seed potato prior to the development of visible symptoms. To this end, a hyperspectral camera will be used to image healthy plants, plants infected with a variety of economically important diseases, and plants undergoing environmental stress. These cameras are capable of detecting reflectance outside of the range visible to the human eye. The plants will be imaged under growth chamber, greenhouse, and geographically diverse field conditions across the State to determine when, and how accurately disease can be detected, and whether or not disease can be distinguished from other environmental stresses. This preliminary research will generate data determining the feasibility of multispectral imaging as a diagnostic technique, with the ultimate goal of developing drone-based (unmanned aerial vehicle, (UAV)) systems to capture field-level images in production areas to detect disease presence. UAV-based monitoring using hyperspectral imaging could allow for rapid disease detection, which could be accomplished more quickly and with less manpower than traditional scouting methods. Using this data, producers could diagnose problems in the field and apply targeted, cost-effective disease management for specialty crops. This project will be performed by Montana State University's Extension Potato and Pulse Pathology Laboratory.
- The mission of the Season Extension Research Program (SERP) lead by Dr. Mac Burgess in the Department of Plant Sciences and Plant Pathology at Montana State University is to address market gardeners' concerns regarding the production of high value specialty crops in protected cultivation systems. The specific goals of the present proposal are: 1) Identify sowing dates for spring and fall production of six cold season vegetable species that will allow time for subsequent warm season crop production in both stationary and moveable high tunnels; 2) Determine the influence of poly spun row covers when utilized inside a high tunnel; and 3) Develop and test improved end walls for moveable tunnels that provide increased durability and ventilation performance compared to standard designs that have sometimes proven inadequate for Montana weather conditions.

- The project will partner with Lake County, MT, to ensure the viability of the sweet cherry industry in Lake and Flathead counties by facilitating the effective control of the western cherry fruit fly pest and preserving the markets for this specialty crop. Project Outcomes will be: 1) increased awareness of residents and growers of the impact of the western cherry fruit fly on the cherry industry; 2) reduction in the number of orchards infested with western cherry fruit fly; and 3) reduction in number of feral cherry trees that are reservoirs of western cherry fruit flies. Project tasks will be to: 1) educate the public about the fruit fly pest through one-on-one conversations, brochure distribution, website information, and newspaper articles; 2) identify and resolve locations of fruit fly infestation; and 3) remove or kill at least 300 feral cherry trees within the pest management area each year.
- To profit from new market opportunities for small-scale orchards and cider production, growers need information concerning: 1) which varieties can be grown in the State; 2) the end use qualities of these varieties; and 3) orchard management including on-farm food safety. The proposed research and outreach project with Montana State University-Western Agricultural Research Center will meet these needs by: 1) identifying well-adapted apple varieties and their market qualities based on the experience of growers in the region; 2) establishing long-term research trials aimed at optimizing cider apple production; and 3) increasing management expertise among growers by providing annual workshops. In addition, this project will educate buyers about the excellent apples grown in Montana through traditional advertising and tasting events.
- The Growing for Success project is a collaborative effort of the National Center for Appropriate Technology to increase the sale of specialty crops to Montana institutions. This project builds on the materials created and the lessons learned in the current school-based Montana Harvest of the Month program, where participating schools promote one locally grown item each month by serving it in a meal, offering a taste test, and doing educational activities in classes and the cafeteria.
- 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.
- The long-term goal of the SCBG program research led by Dr. Michelle Flenniken at Montana State University is to improve honey bee colony health and mitigate colony losses by understanding the effects of viruses on bee health. Honey bees are a specialty crop with dual roles in agriculture: honey production and crop pollination. Montana is an important beekeeping state, which ranked second in the United States for honey production in 2013 (\$30 million value) and provided over 150,000 colonies for pollination services. Beekeepers generate much of their revenue through pollination services and colony rental fees are dependent upon colony health.

Nebraska

Recipient:	Nebraska State Department of Agriculture	Award Amount:	620889.32
		Number of Projects:	16

- This partnership with the University of Nebraska – Lincoln (UNL) will expand commercial specialty hop production with local growers by providing educational resources and an annual conference focused on growing, harvesting, and processing of hops.
- This partnership with the University of Nebraska – Lincoln (UNL), Panhandle Research and Extension Center will breed for disease resistant dry beans which will lead to less chemical use by identifying sources of common bacterial blight pv. Fuscans by screening the National Plant Germplasm System (NPGS) U.S. dry bean collection and current great northern and pinto bean cultivars grown in western Nebraska to Xapf.
- This partnership with the University of Nebraska – Lincoln (UNL) will reduce losses to sunflower growers due to Phomopsis stem canker by integrating the use of disease tolerant hybrids with fungicide efficacy and timing evaluations and sharing research results with stakeholders through written publications, field days, grower meetings, and research forums.
- This partnership with the University of Nebraska – Lincoln (UNL) will identify pea varieties and production practices for high seed protein content in western Nebraska through replicated yield trials.
- This partnership with Hilger Agri-Natural Popcorn will evaluate the feasibility of cover crop usage in conjunction with the primary crop of popcorn through soil and plant analysis.
- This partnership with the University of Nebraska – Lincoln (UNL) will identify peppermint and spearmint varieties to promote commercial mint production through manual planting as replicated yield trials to examine emergence of new growth, rate of growth until row closure, flowering, biomass, and oil yield.

- This partnership with the University of Nebraska – Lincoln (UNL) will reduce the use herbicides in vineyards by replacing them with native grass and legume groundcovers through investigating the effects of planting permanent groundcovers in the weed-free strip beneath grapevines.
- This partnership with the University of Nebraska – Lincoln (UNL) will evaluate the sustainability of dry bean production in dryland production systems of western Nebraska through growing dry bean cultivars under different levels of soil moisture to determine which cultivars are best suited for use in dryland systems and the amount of soil moisture required to successfully produce a satisfactory crop.
- This partnership with Mac’s Creek Vineyards & Winery will develop an environmentally preferable disease control practice that has a less harmful effect on human health and the environment through spraying specialty crops with ozonated water to determine whether the method will control disease and reduce or eliminate pesticide usage and enhance root growth as well as pesticide usage.
- This partnership with the University of Nebraska – Lincoln (UNL) will examine the practicality of extending the growing season of table grapes by growing grapes in high tunnels.
- This State project will document the presence or absence of Japanese Beetle in Nebraska and provide certification to facilitate out of State shipments of Nebraska- grown nursery stock through a coordinated, comprehensive survey.
- This State project will maintain Nebraska’s Potato Cyst Nematode (PCN) pest-free status by requiring official soil surveys of potato fields to confirm the presence or absence of PCN in Nebraska.
- This State project will maintain Nebraska’s Columbia Root Knot Nematode (CRKN) pest-free status through conducting comprehensive soil surveying throughout Nebraska to confirm the presence or absence of CRKN in Nebraska.
- This State project will enhance the competitiveness of walnuts by conducting a survey for walnut twig beetle and confirming compliance with the Nebraska Thousand Cankers Disease of walnut quarantine through inspections.
- This partnership with the University of Nebraska – Lincoln (UNL) will promote pollinator health and increase honey production in honey bee colonies located near agricultural fields by enhancing landscapes with pollinator-friendly harvestable specialty crop plants to provide diverse nectar and pollen sources that will boost honey bee nutrition and reduce agricultural pesticide exposure.
- 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.

Nevada

Recipient:	Nevada Department of Agriculture	Award Amount:	250400.81
		Number of Projects:	10

- This partnership with the Western Nevada College, Specialty Crop Institute will increase new and advanced growers’ knowledge on specialty crop specific topics. This will improve their program through 3 Nevada Small Farms Conferences which will incorporate 18 sessions geared at enhancing specialty crop production in Nevada.
- This partnership with Edible Reno-Tahoe will enhance the competitiveness of specialty crops through creating a Farmers’ Market and Community Supported Agriculture (CSA) Guide as a printed insert highlighting farmers producing Nevada specialty crops.
- This partnership with the Desert Farming Initiative of the University of Nevada, Reno, will provide increased protection from pests and winter weather for lettuce through replicating a study which tests the viability and success of multiple types of crop covers for field lettuce production.
- This partnership with Healthy Communities Coalition of Lyon and Storey Counties will enhance Nevada’s capacity to cultivate new organic farmers and increase the competitiveness of organic specialty crops through outreach to organic farmers, promotion of organic farming, and hands on education of young people about organic farming.
- This partnership with Fallon Food Hub will raise awareness through an integrated content campaign through creating and implementing a specialty crop marketing plan.

- This partnership with the Desert Farming Initiative of the University of Nevada, Reno, will support vineyards and wine industry expansion through a trial developing new varieties of grapes appropriate for high altitude climates.
- This partnership with the Desert Farming Initiative of the University of Nevada, Reno, will bring additional attention to Nevada melons as a high-quality specialty crop through build a brand and story by using both print and online resources.
- This partnership with Nevada Community Prevention Coalition, Inc., will educate Clark County School District students in sustainable farming methods, food safety, and trade enhancement by exploring the possibility of building a Food Education Hub in Moapa Valley.
- This partnership with Canyon Gardens, LLC, will address food safety, quantify the costs of the Food Safety & Modernization Act, create a venue for beginning and small farmers, and improve the economic viability of specialty crop operations through a case study of a business model for healthy convenience stores.
- 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.

New Hampshire

Recipient:	New Hampshire Department of Agriculture, Markets and Food	Award Amount:	169948.66
		Number of Projects:	4

- The New Hampshire Department of Agriculture, Markets and Food (NHDAMF) will continue a successful partnership with the New Hampshire Division of Travel & Tourism Development to promote the purchase of local New Hampshire specialty crops via a targeted internet and social media advertising campaign. This new program will build upon previously established efforts to market New Hampshire specialty crops.
- Small and Beginner Farmers of New Hampshire is partnering with Merrimack County Conservation District on a project to increase access of specialty crop growers to freeze drying and flash freezing equipment. The project will include workshops to educate growers on safe handling of food, equipment, and technology.
- Vital Communities' Valley Food and Farm program will partner with five New Hampshire farmers markets and three farm stands to pilot an annual 8-week kid- and family-focused Power of Produce Club program. Over two summers, we will benefit up to 30 specialty crop producers and educate 600- 800 youth and families about the importance, availability, origins, and use of specialty crop products.
- 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.

New Jersey

Recipient:	New Jersey Department of Agriculture	Award Amount:	633,996.94
		Number of Projects:	11

- New Jersey remains in the Nation's top five States in blueberry production. Last year, New Jersey blueberry growers produced over 65 million pounds. Each year, acreage devoted to cultivated blueberries continues to increase, both domestically and internationally. This increase in competition has made it necessary for the New Jersey Blueberry Growers Association to find ways to maintain existing market share, as well as increase new markets. We believe that given our resources, a radio campaign would maximize our assets most efficiently, and enable us to reach consumers throughout our marketing area.
- New Jersey wines are being recognized nationally for their excellence in renowned wine competitions and the industry has seen tremendous growth with over 50 licensed wineries now operating in the State. The Garden State Wine Growers Association's (GSWGA) ongoing mission has been to increase the awareness, appreciation, and quality of wines produced in New Jersey. The GSWGA has regularly driven traffic to its New Jersey wine tasting rooms through its Wine Trail Weekends, Wine Festivals, and our Passport Book and App. These marketing efforts have both been funded through previous Specialty Crop Block Grants and Wine Industry Grant Project funding awards. However, there are still thousands of New Jersey residents who have no idea of this flourishing industry because they are not focused on festivals and have not realized wineries exist in their regions. To reach this broader audience, the GSWGA would like to launch a year-long video programming and advertising series.

- The Mercer County Board of Agricultural recognizes that region-specific postharvest sanitation best management practices paired with quality food safety education are important for all types of specialty crop growers. Education and outreach will focus on all New Jersey specialty crop growers including, conventional, organic, beginning, and socially disadvantaged producers. Human pathogen contamination on the farm level is a complex issue that demands region-specific research and outreach. New Jersey specialty crop producers have indicated a need for assessment and validation of postharvest sanitation options. The 2012 USDA Agricultural Census indicated that there are 1127 vegetable farms, 569 orchards, and 531 berry farms in New Jersey. This project seeks to: assess and validate postharvest product contact surface sanitation practices; assess and validate postharvest recirculated water sanitation practices; assess postharvest equipment for ease of sanitation; educate growers on USDA third party audit standards and Good Agricultural Practices; and educate consumers on produce safety from purchase to consumption. Participant satisfaction, knowledge gain, changes made to their operations, and future educational needs will be evaluated through the use of paper and online surveys.
- The New Jersey Agricultural Society (NJAS) will increase awareness and consumption of specialty crops among elementary students through agricultural and nutrition education. Our project has two parts. First, we plan to publish a children's picture book about New Jersey specialty crops for use in the fourth grade curriculum. We will distribute this book free to all 2,000 public elementary schools in the State. The book will highlight New Jersey's top 10 agricultural products, including seven specialty crops: blueberries, tomatoes, bell peppers, peaches, cranberries, sweet corn, and greenhouse and nursery plants. It will also emphasize fresh produce as an integral part of a healthy diet and feature New Jersey community farmers and roadside markets as a source of this produce. There is currently no published resource for children on New Jersey specialty crops. By educating the youngest consumers on the nutritional value and availability of Jersey Fresh produce, our goal is to increase the consumption of fruits and vegetables by the children, and ultimately, their families. We will measure the project's success through student pre- and post-tests and questionnaires completed by teachers who use the book in their curriculum. The second component of this project will be to continue the work begun with the NJAS 2016 Specialty Crop Block grant to increase consumption of fruits and vegetables through school gardening. We will measure the success of this project with surveys of teachers in the school gardening program and of parents of their students.
- Over the past 10 years or so, the market share of fresh, real Christmas Trees has been steadily falling due to the changing tastes of consumers as well as the rising popularity of artificial Christmas trees. Recent USDA data indicates a 7 percent drop in sales between the last two surveys. This trend must be reversed in order to retain the viability and economic health of New Jersey's Christmas tree industry. An immediate and all-out effort must be undertaken to make consumers aware of the benefits of purchasing real Christmas Trees. The use of radio and television media marketing is an efficient means of reaching large numbers of consumers in an effort to generate increased sales of real Christmas Trees in New Jersey. The resulting increased income will help assure the continued health of the industry. The success of this effort can be evaluated and monitored through the use of promotional codes in conjunction with point of sale surveys.
- The New Jersey Council of Farmers and Communities (NJCF) is an organization comprised of 27 farmers who service 27 community farmers' markets. Working together the farmers bring Jersey grown produce directly to families in these towns. All of the participating farmers are specialty crop growers. With a NJCF grant award, the following activities will enhance the competitiveness of specialty crops: 1.) Advertise specialty crops through the community markets with an NJCF 50 percent matching fund mini grant; 2.) Train market managers to effectively highlight specialty crops sold at their markets; 3.) Dedicate the NJCF website to specialty crop marketing and shopper resource; and 4.) Create specialty crop signage to be utilized at NJCF markets promoting specialty crops availability at those and other NJCF markets on different locations and days. The success of this project can be measured through reported sales data from the growers and through surveys of farmers' market statistics both prior to implementation and after the first and second years to quantify the success of these activities.
- The purpose of this project is to increase the overall effectiveness of the marketing of all specialty crops in New Jersey through the continuation of the proven successful efforts of the Jersey Fresh program. This will be accomplished using print, television, radio, point of sale, and outdoor advertising.

- For the past 66 years, the New Jersey Peach Promotion Council (NJPPC) has conducted successful and changing promotional campaigns for the orderly marketing of the New Jersey peach crop. Our success in the last few years has been in promoting the quality and availability of locally grown, nutritious, and delicious Jersey Fresh peaches; compiling the NJ Peach Buyers' Guide and distributing it to consumers retail, grower retailers and shippers, institutional and wholesale buyers, allied industry; planning and staging various media events; consumer and produce merchandising contests, coordinating retail promotional events; providing education and information to consumers, buyers, and the media via print advertising, website, and other social media, and personal contacts and via audio and video methodology; and conducting new peach variety and other product and handling research. Every area could be expanded with increased financial and qualified human resources. The focus of this project is to have a media and promotional presence in the New Jersey metropolitan area including Philadelphia and New York, New England, and possibly beyond this geographical territory. There are more than enough consumers in New Jersey to utilize the entire New Jersey peach crop but not enough informed buyers to know why they should buy and utilize New Jersey peaches.
- Strawberries play a vital role in the specialty crops industry of New Jersey, especially for direct market growers utilizing Pick-Your-Own (PYO) marketing methods. Preliminary data from previous research has suggested that these growers are interested in extending the production season and having a larger selection of strawberry varieties to choose from. In particular, growers are interested in new strawberry cultivars that have superior flavor along with other important traits such as favorable yield and disease resistance. Over the past 15 years, the Rutgers research team has been working on developing new strawberry selections to meet this demand. These selections have been cultivated specifically for growing conditions in New Jersey. Currently, the team is finalizing patents on three research selections, including 'Rutgers Scarlet' which is currently available on the market. Media exposure associated with the release of this selection has generated positive feedback from the public. To help get new varieties in the hands of growers, crosses will be made in the New Jersey Agricultural Experiment Station (NJAES) greenhouse and these new selections will be examined in observational field trials. Day-neutral crosses will be included in the selection process along with the June-bearing varieties. Growers will provide input on the observational trials to help guide future breeding and demonstration trials. Hopefully this research can provide insight into the possibility of extending the harvest season of strawberries in New Jersey.
- Bell pepper is the second most important vegetable grown in New Jersey with a production value of \$34,335,000 in 2015. Bacterial Leaf Spot (BLS) (*Xanthomonas campestris*) is the second most important disease after Phytophthora Blight (*Phytophthora capsici*) and has become more of a concern over the last 10 years. There are at least 10 races of Bacterial Leaf Spot, but not all are present in New Jersey. Through preliminary field screening races 1-6 and possibly 10 have been identified in parts of the State. There are few resistant varieties that incorporate all 10 races and none of these have been tested in New Jersey. They were developed for the Southern United States and Florida. Many times varieties developed for the South do not produce well the North. All released varieties and advanced breeding material need to be evaluated in non-biased trials so all New Jersey growers have the best recommendations. Combined with the need for new varieties is the problem with wooden stakes used for trellising pepper plants. Most bell peppers grown in New Jersey are grown on black plastic and trellised to improve fruit quality and yields. The stakes can become contaminated with bacterial diseases. Since bacterial diseases have become more prevalent, growers are concerned that the stakes may be contaminated with bacteria. It is common to re-use stakes and since they are in contact with plant material there is a significant probability that the stake surfaces become infested with bacteria. If untreated, the stakes can spread bacteria into a new field the following year. Grower's options are to treat the stakes or purchase new stakes each year. Purchasing stakes is not a viable option due to the expense. Growers have had varying results when treating stakes. This is partially due to method and possible chemical used to treat the stakes. Unless new varieties and methods to sanitize stakes are developed, New Jersey growers will find it increasingly difficult to grow peppers profitably.
- 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.

New Mexico

Recipient:	New Mexico Department of Agriculture	Award Amount:	495628.39
		Number of Projects:	10

- This State project will increase access to New Mexican specialty crops and specialty crop producers on all levels of distribution and retail through organizing and running two New Mexico specialty crop grower, processor, retailer, restaurant, and distributor business to business events.

- This partnership with New Mexico State University will develop a cultivation method which would reduce wild-harvesting pressure on osha and give New Mexico growers a valuable new crop through performing chemical analysis to compare levels of medicinal constituents in cultivated plants to those in the wild.
- This partnership with Northern New Mexico Specialty Crop Collaborative will build demand for, increase yields and consumption of lettuce, asparagus, tomatoes, kale, and Swiss chard through providing education, access, training, and implementation assistance related to healthy eating and sustainable production.
- This partnership with the New Mexico State University Sustainable Agriculture Sciences Center will address late frost and stone fruit losses through testing stone fruit production in high tunnels
- This partnership with New Mexico State University Sustainable Agriculture Science Center will evaluate the effect on bee health and nutrition by determining the phytochemicals present in the nectar of *Monarda fistulosa* var *menthifolia* and in honey originating from its flowers.
- 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.
- This partnership with Not Forgotten Outreach will expand beginning farmers' knowledge and improve pollination by teaching beginning veteran farmers maintenance of honey bee colonies and hives.
- This partnership with New Mexico State University Food Safety Laboratory will identify the heat treatments required to ensure a safe, pathogen-free product is produced by evaluating the processes used during the manufacture of dried red chile peppers and demonstrate their efficacy at reducing salmonella.
- This partnership with Rio Grande Community Farm will provide access to economic opportunities that are present due to the aging farmer population, specifically those small scale farmers who are producers of local food, through a farmer training and incubator program for the high desert of New Mexico.
- This State project seeks to address the general lack of awareness of pecan health benefits and nutritional characteristics through concentrating efforts on one national trade show, providing the New Mexico pecan industry means to connect with new and existing buyers.

New York

Recipient:	New York State Department of Agriculture and Markets	Award Amount:	1,153,198.65
		Number of Projects:	9

- Farm to School is the promotion and use of foods produced by local farmers in meals served in cafeterias of K-12 schools. Associations between farms and schools through the cafeteria and classroom can enhance the quality of food served. With over 700 school districts in New York State (NYS), there is an opportunity to foster relationships with local farmers, food hubs, producers, processors, and distributors to benefit school-age children. Where increases in childhood obesity rates are presenting challenges to communities, a statewide Farm to School Implementation Grant Program offers a solution to improve the nutritional quality of the meals consumed by students in schools through a competitive grant process that awards funding to select schools for farm to school infrastructure and personnel to form a bridge between schools and farm producers. The farm to school infrastructure will improve the school's ability to procure and/or process New York-grown specialty crops which will not only improve school nutrition, but also increase children's exposure to and consumption of NYS fruit and vegetables which may ultimately increase awareness of and demand for NYS specialty crops. The funding from this project will complement a \$250,000 farm to school funding from the NYS general budget.
- Cornell University will evaluate other water testing methods and extended hold times to determine if they are equivalent to the water testing method and hold time allowed in the Food Safety Modernization Act Produce Safety Rule for agricultural water. Currently, water-testing labs are not available in all growing regions in New York and many labs do not offer the method outlined in the regulation. Water samples will be collected from different growing regions in New York and analyzed for generic E.coli using several different methods and hold times. Alternative methods and hold times would make it more practical and affordable for fruit and vegetable growers to comply with regulatory requirements.
- 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.

- Cornell University will identify ways to reduce or eliminate the use of the antioxidant diphenylamine, used to control a serious skin browning disorder in the marketplace known as superficial scald, by developing models to predict risk of scald at harvest so that only fruit at risk will be treated and by investigating a non-chemical storage method known as dynamic controlled atmosphere storage.
- Stemphylium leaf blight of onion in New York, caused by the fungus Stemphylium vesicarium, has recently emerged as a major disease in New York onions. Cornell University will investigate whether fungicide resistance is a factor in the emergence of Stemphylium, identify cost-effective fungicides and the best time of application, and investigate varietal resistance and agronomic practices which can be employed in an integrated management strategy.
- Cornell University Cooperative Extension will reduce the negative impact of Fusarium diseases on the garlic industry by conducting a series of field trials evaluating cultural and chemical controls of the disease and disseminating results to growers through field days, newsletter articles, and at winter grower meetings.
- Cornell University will promote the development and adoption of new market- and field-tested kale hybrids and open-pollinated genotypes. The development of breeding lines and cultivars will create new opportunities for specialty crop producers, small-farm sustainability, and value-added fresh market products. Efforts will involve consumer and grower research, education, and outreach. The project will result in a better understanding of current kale production in New York and expanded varietal options for kale markets across the State.
- The Christmas Tree Farmers Association of NY, Inc. (CTFANY) will collaborate with the State University of New York – College of Environmental Sciences and Forestry (SUNY-ESF) to conduct research that will determine actual moisture content (%MC) of fir trees supplied to the retail market from both local and distant sources, using oven dry testing of main stem, branch, and needle specimens and an electrical resistance wood moisture meter. Results are anticipated to illustrate the average and range of moisture in both freshly harvested trees and in trees when they are presented at retail to consumers.
- The Cornell Small Farms Program enhances the profitability of log-grown shiitake mushroom farming by developing production training and business planning tools and providing outreach utilizing online modules and regional group meetings with farmers and extension educators. A subset of committed farmers will participate in one-on-one business mentoring from experienced growers and extension educators to develop personalized enterprise plans that collectively inform a market channel assessment for five regions in New York State.

North Carolina

Recipient:	North Carolina Department of Agriculture and Consumer Services	Award Amount:	1,042,727.16
		Number of Projects:	12

- This partnership with Altapass Orchard seeks to plant a selection of Lee Calhoun's Heirloom Apple Trees with plaques detailing the rich history of its origin. Thirty varieties will be planted -- one semi-dwarf and one full size tree of the same variety. Visitors will experience the taste of apples grown in their parents' backyard.
- This partnership with the Carolina Farm Stewardship Association launched the Local Produce Safety Initiative in 2012 to help small diversified specialty crop growers pass a USDA Good Agricultural practices audit.
- This partnership with the North Carolina Christmas Tree Association (NCCTA) seeks to use targeted promotional efforts to increase demand for North Carolina Christmas trees. Based on recommendations generated by the UNC Chapel Hill Kenan-Flagler School of Business STAR team, the NCCTA seeks to establish creative partnerships to expand its social media campaign to target parents of young families to influence more of them to buy a North Carolina Fraser Fir Christmas Tree. The NCCTA also plans to further develop the NCCTA website to include material for specific target audiences.
- This partnership with the North Carolina Sod Producers Association seeks to administer the project by working to drive sales and build awareness for sod producers and sellers in North Carolina. The Association will work in coordination with Capitol Broadcasting Company to continue marketing efforts previously developed and proven to be successful for the digital media platform. In addition to working with Capital Broadcasting Company.
- This partnership with the North Carolina Sweet Potato Commission seeks to increase consumption of North Carolina sweet potatoes through a marketing campaign targeting Hispanics. The campaign will include multiple restaurant promotions held during a specified month highlighting the use of sweet potatoes in their created dishes.

- This partnership with North Carolina State University seeks to evaluate Biochar use in peach fields planted in sandy soils. The outcome and goal of this research is to determine if biochar use can increase the soil nutrient holding capacity and the moisture holding capacity, and minimize the incidence of peach tree short life.
- This partnership with North Carolina State University seeks to breed new hop (*Hunulus lupulus*) varieties for North Carolina growers.
- This partnership with North Carolina State University (NCSU) seeks to conduct applied and basic research to mitigate the development of single-site fungicide resistance and promote sustainable chemical management in *Colletotrichum* pathogens responsible for *Glomerella* leaf spot and bitter rot of apple.
- This partnership with North Carolina State University (NCSU) seeks to increase plant growth, reduce production times, and increase profits for ornamental plant producers by designing systems to improve the source water quality that ornamental producers use for irrigation. Impacts from this simple systems approach will be disseminated at on-nursery workshops, at grower meetings, through existing websites, and by new extension documents.
- This partnership with North Carolina State University (NCSU) seeks to develop a genetic linkage map for Fraser fir showing the location and putative functions of genes. These comparisons will allow identification of Fraser fir genes similar to genes in other plant species for traits that are important for Christmas trees such as control of branching, pest resistance, and abscission (postharvest needle retention).
- This partnership with the Forest Restoration Alliance (FRA) at NC State University seeks to restore hemlocks to the North Carolina nursery and landscape industry that, previous to HWA, was valued at \$10 to \$15 million annual farm income. In addition, this project will place the North Carolina nursery industry in a position to provide seedlings for reforestation of the thousands of acres of hemlock stands killed by HWA.
- 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.

North Dakota

Recipient:	North Dakota Department of Agriculture	Award Amount:	2,560,312.23
		Number of Projects:	28

- Anthracnose in dry beans, caused by the fungal disease *Colletotrichum lindemuthianum* (Sacc. & Magnus) Lams.-Scrib., can cause yield losses up to 80 Percent. The North Dakota State University will determine the level of disease tolerance to anthracnose infection in 16 partial resistant dry bean (*Phaseolus vulgaris* L.) lines for the purpose of germplasm enhancement. North Dakota State University will also evaluate seed health after anthracnose infection, as well as a reduced fungicide spray regime for the partial resistant dry bean lines.
- North Dakota State University will evaluate several different rootstocks for commercial tree production to increase the diversity, survivability, and profitability of ornamental woody plantings across North Dakota. Several different species (oak, magnolia, dogwood, and maple) will be evaluated and the results will be disseminated to specialty crop beneficiaries through website publications and field days.
- North Dakota State University will evaluate the potential of cider apple cultivars for commercial cider production in North Dakota. Cultivar (variety), rootstock, and best management practices will be evaluated and the results will be disseminated to specialty crop beneficiaries through website publications and field days.
- The North Dakota Trade Office (NDTO) will increase market visibility of the upper Midwest's specialty crop sector in the Philippines by working with the Foreign Agricultural Service to introduce companies to pre-qualified buyers, distributors, and importers of specialty crops, resulting to an increase in export sales of specialty crops to this target market. NDTO has developed a reimbursement program for approved participating companies in the 2016 Specialty Crop project to offset the high cost of identifying and developing international markets.

- The pulse lab in the Plant Pathology Department at North Dakota State University will determine the genetic diversity within and among populations of *Aphanomyces euteiches*, the causal agent of *Aphanomyces* root rot, collected from North Dakota and other field pea growing regions in the United States. *Aphanomyces* root rot is an extremely devastating disease that nearly eliminated fresh pea production from Wisconsin, Iowa, Southern Minnesota, and some regions in France. *Aphanomyces* root rot was first identified in North Dakota in 2014. Survey results indicate that the pathogen was present in pea roots from over 50 percent of the fields in 16 field pea growing counties in North Dakota. Recent studies have reported that pathotypes I and III of *A. euteiches*, the dominant pathotypes found in the United States, display a high level of genetic diversity across regions in the western United States. Several research studies have indicated that isolate origin and genotype tend to be related to aggressiveness, while pathotype generally does not. Given this previous research, we aim to characterize *A. euteiches* genotypes using next generation sequencing technology and evaluate unique pathogen genotypes for aggressiveness on a set of host genotypes with varying genetic backgrounds and levels of resistance under greenhouse conditions. The outcome of this research will be to enhance the competitiveness of pulse crops using the innovative technology of next generation sequencing to drastically improve our understanding of the genotypic and phenotypic diversity in *A. euteiches*. This research is a very important first step in deploying resistance to this devastating pathogen.
- Funding is requested for application technology research needed to develop foliar fungicides as a tool for managing *Sclerotinia* head rot, a disease that causes significant yield and quality losses for confection sunflowers in North Dakota and Minnesota. No management tools are currently available for the disease; resistant hybrids are not available, crop rotation is ineffective, and traditional fungicide application methods confer insufficient fungicide deposition to the front of sunflower heads for disease control. Producers have inquired about applying fungicides through drop nozzles mounted on a high-clearance sprayer. Preliminary research conducted in 2015 demonstrated that the use of drop nozzles can result in very good fungicide deposition to the front of sunflower heads. However, improvements in fungicide deposition did not confer control of *Sclerotinia* head rot. Possible reasons for the lack of disease control include lack of fungicide movement between disk flower buds that received droplets of fungicide and adjacent buds that did not, poor efficacy of the selected fungicide against this disease on sunflowers, and inappropriate fungicide application timing. The North Dakota State University Carrington Research Extension Center seeks to conduct field trials to: 1) identify strategies to further improve fungicide deposition to the front of sunflower heads and increase the proportion of disk flower buds receiving spray droplets; 2) evaluate the use of spreader adjuvants to facilitate the movement of fungicides between disk flower buds that receive fungicide product and adjacent buds that do not; 3) assess the comparative fungicide efficacy; and 4) identify optimal fungicide application timing.
- North Dakota State University agronomists will identify optimal agronomic practices for faba bean production in the northern plains. Faba bean (*Vicia faba minor*) is a legume crop historically grown in the Mediterranean region, Europe, Australia, and more recently in Canada. There is strong interest in growing faba bean in the northern plains and potential markets have been identified. Faba bean has about 7 percent higher protein than peas and a pleasant flavor. New uses for the protein, starch, or whole seed have been identified, thus creating greater demand for faba bean. Faba bean agronomic benefits are said to include flooding tolerance, deeper rooting, excellent N fixation, leaves more N in soil than peas, grows well in no-till stubble, can cut higher than peas, not shatter-prone, good lodging resistance, can be straight cut or swathed, and has higher protein than other pulses. Faba bean has been grown by a limited number of North Dakota growers and research is needed to help optimize production practices in the northern plains. This research project will focus on best management practices for planting date, planting rate, and weed and disease management. This research will also provide data for potential new herbicide or fungicide labels. This project will provide growers with knowledge and tools to grow faba beans more efficiently and profitably.

- The North Dakota State University (NDSU) land grant mission includes improving crop production within the State and region. Lentil production in North Dakota is challenged by the crop's inherent lack of competitiveness with weeds. Compounding this fact is that lentil is tolerant of few post emergent applied herbicides. In fact, no post emergent herbicides are labeled for use in lentil that adequately control most broadleaf weeds. Sulfentrazone can provide good residual control of kochia and wild buckwheat. CDC Sedley has been observed to be tolerant to sulfentrazone in field conditions when applied pre-emergence. It is assumed that this tolerance is genetic and therefore can be exploited in a breeding program; but to do this, reliable, rapid screening methods must be optimized. Laboratory and greenhouse sulfentrazone screening techniques have been developed at the North Central Research Extension Center. These techniques will be used to accomplish the primary objective of this project which is the breeding of sulfentrazone tolerant germplasm. Crosses will be performed between CDC Sedley and five NDSU breeding lines in order to bring CDC Sedley's tolerance, or newly discovered tolerance into more adapted breeding lines. The availability of a sulfentrazone-tolerant lentil would be a welcome tool for weed control for lentil producers who currently have few. The objective of this project is to develop sulfentrazone-tolerant breeding lines and confirm this tolerance using optimized greenhouse and laboratory screening methods.
- The North Dakota State University potato breeding program will aid in management of Potato Virus Y (PVY) in certified seed and commercial potato fields utilizing the new technology of remote sensing by demonstrating the reflectance curves for genotypes infected with PVY versus those suffering from a nutrient deficiency. Results will be disseminated to stakeholders via research reporting conferences, field day events, and article(s) in the Valley Potato Grower magazine and the American Journal of Potato Research.
- North Dakota State University will investigate the impact of biofertilizers on plant growth and floral traits relevant for beneficial insects, such as pollinators and natural enemies, using three types of specialty crops (confection sunflower, edamame, field peas). We will partner with local organizations that support specialty crops to share educational information and research results at conferences/meetings or via printed/online media.
- North Dakota State University (NDSU) will determine methods to improve tuber set, uniformity, and quality of potato cultivars to reduce production costs and improve returns. The information will be disseminated to stakeholders in North Dakota through grower meetings, field days, the Valley Potato Grower magazine, and the NDSU Potato Extension website and social media outlets.
- Pulse pathology researchers at North Dakota State University will conduct research to identify and characterize a previously uncharacterized pathogen, likely a variant of Pea Seedborne Mosaic Virus (PSbMV). This research will be conducted in collaboration with virologists at the University of Idaho with extensive experience characterizing viruses in the same family as PSbMV (Potyviridae). PSbMV was recently detected in North Dakota, however, during evaluations over the past 3 years, plants with symptoms indistinguishable from PSbMV tested negative for the virus. Using resources from the 2014 SCBGP, we identified and developed a diagnostic tool for one new variant of PSbMV. This new variant was found in 16 percent of 117 seed samples tested from 2013 and 2014. The outcome indicator of the current research will be development of two diagnostic assays for detection of the pathogen / PSbMV variant. The tasks to complete this outcome include identifying and characterizing the pathogen / PSbMV variant as the cause of the PSbMV-like symptoms and determining of the frequency of the pathogen in North Dakota field samples. This will be accomplished via viral amplification, sequencing, and greenhouse bioassays. Seed-testing and the use of resistant cultivars are the best known ways to manage PSbMV. The lack of detection of all variants of PSbMV make seed testing ineffective and the development of varieties resistant to all variants virtually impossible. The inability to detect all variants of PSbMV could be devastating to the field pea industry in North Dakota.
- The North Dakota Department of Agriculture (NDDA) will help increase the access of specialty crops to schools and communities by offering competitive grants to these groups for building and maintaining orchards and gardens in their community. The NDDA will create resources that will help connect current and new specialty crop growers to those schools and communities. The NDDA will help increase access of specialty crops to people with food insecurities by providing them with educational tools to grow and preserve specialty crops. The NDDA will also educate specialty crop producers on food safety in two ways: by creating a North Dakota Specialty Crop Good Agricultural Practices Manual along with online resources and by organizing speakers to talk about food safety at different events across the State.
- Burnt Creek Nursery will increase the availability and public awareness of North Dakota hardy woody plant material by growing North Dakota State University (NDSU) - released tree and shrub species in a controlled environment and disseminate results to stakeholders and beneficiaries through grower meetings, State and local professional publications, and Arbor Day plant material donations.

- North Dakota State University Weed Scientists and agronomists will determine the effect of simulated glyphosate and dicamba drift on crop yield and seed quality of several crops (potato, dry pea, lentil, dry bean, and edamame). Adoption of this technology is expected to be high to combat the increasing glyphosate-resistant weed problems. Dicamba inherently poses a high risk for off-target crop injury due to volatility after spraying and potential spray tank contamination, even with very low quantities of left-over product. The study will consist of three glyphosate rates, three dicamba rates, and a combination of glyphosate + dicamba applied just prior to flowering or after flowering. Data will be collected on crop injury, yield, test weight, seed germination, and seed vigor. The study will help determine the effect of spray drift on the current crop as well as any residual effects on saved seed.
- Dakota Prairies RC&D Council, the applicant organization, will partner with Sioux County Extension Service to conduct a Cultural Plant, Harvest and Preserve (PHP) project on the Standing Rock Reservation in North Dakota and South Dakota. This multi-State project will provide specialty crop access and education for about 1,000 underserved and socially-disadvantaged children and adults of the Standing Rock Reservation. To increase specialty crop production, access, and consumption on this reservation, this project will: sustain a program that includes school and community gardens and farmers markets in Fort Yates and Cannon Ball in North Dakota; create a multi-State project by creating new school gardens at McLaughlin, Bullhead, and Little Eagle, SD; assist with the farmers market at McLaughlin; continue the in-classroom education at Cannon Ball; and provide educational materials at three South Dakota schools (McLaughlin, Bullhead and Little Eagle) and the Fort Yates Elementary School in North Dakota.
- Sunflower downy mildew (DM) is the most economically important disease of sunflower worldwide. The disease threatens the sustainability of the U.S. sunflower industry by severely damaging the crop, rendering it unharvestable. The use of resistant hybrids, where available, is the most efficient method of controlling downy mildew in sunflower, and marker-assisted selection (MAS) is the best strategy to deliver resistant sunflowers in the shortest time. The proposed project aims to apply genomic tools for efficient identification of DM resistance (R) genes to increase the efficiency of sunflower breeding, enhance yield and quality, and reduce chemical use. The National Sunflower Association will integrate genetic and genomic approaches to determine the genetic basis of the DM resistance, and identify candidate genes that can be used for sunflower improvement. We will analyze the allelic relationship of the DM R gene PI17 with a new gene Plann, conduct high-resolution genetic and physical mapping of the three DM R-genes, PI17, PI18, and Plann, identify candidate genes for DM resistance, and develop user-friendly 'perfect' markers suitable for marker-assisted selection. Molecular tags for the DM resistance genes will be valuable tools for more accurate selection and pyramiding of multiple resistances and increasing selection efficiency in sunflower breeding programs. The DM resistant confection hybrids combined with superior agronomic characteristics will enhance the sustainability of sunflower production and profitability for the U.S. confection sunflower industry.
- North Dakota State University will evaluate woody plant cold hardiness by differential thermal analysis, (DTA) a scientifically based procedure to determine ice formation in plant tissues with electronic devices that measure the heat generated when water within the plant tissues freeze. Assessing cold hardiness is key to the development of woody plant material for North Dakota, especially during periods of unpredictable climatic conditions. Grapes and other woody plant material suffer winter injury during acclimation in the late fall as well as deacclimation during periodic warm conditions in the late winter. This procedure will enable researchers to determine the acclimation and deacclimation patterns of stem and bud tissue without conducive field conditions. Acclimation and deacclimation patterns will be determined for potential parent material as well as accessions considered for advanced selection. Results will assist breeders in the selection process and will provide growers with much needed information on cold hardiness of cultivars potentially planted or recently released. Information obtained from this grant will be disseminated to stakeholders through grower meetings and field days.

- *Dickeya dianthicola* (previously *Erwinia chrysanthemi*), is an aggressive emerging bacterial pathogen pest in the US. Like other soft rotting species, including *Pectobacterium carotovora*, it can be found in potato fields, greenhouse settings, and storages. As a bacterial pathogen, it is difficult to detect prior to planting and prediction of disease occurrence in the field is hampered by dependence on environmental conditions. The Departments of Plant Sciences and Plant Pathology at North Dakota State University will develop procedures to screen potato varieties for resistance to the soft rot bacteria *Dickeya* and *Pectobacterium* and a protocol based on molecular techniques to screen potato seed lots for the presence of these bacteria. Identifying infected seed lots to prevent the entry of bacteria and identification of resistant varieties will mitigate the impact of these pathogens on the productivity and competitiveness of potatoes grown in North Dakota and Minnesota. In collaboration with the North Dakota State Seed Department Potato Program, we will develop a management strategy for certified seed producers to mitigate potential exposure. Results will be disseminated to stakeholders via research reporting conferences, field day events, and article(s) in the Valley Potato Grower magazine and American Journal of Potato Research.
- North Dakota State University and North Dakota State University Williston Research Extension Center will partner to utilize a previously funded Specialty Crop Block Grant “Hop Selections for North Dakota”. This project is completely new, but will utilize previously planted hop cultivars to conduct an in-depth study on how training dates and techniques affect crop yield using cultivars that survive or even thrive under North Dakota environmental conditions in order to recommend practices that optimize production. This project will examine training date and number of vines trained to a string at two locations (east and west North Dakota) to help growers understand the importance of training date and the number of vines trained. Field days will enable stakeholders to see how cultivars respond to training date and vine number for growing conditions similar to their own. This research is fundamental for grower success and to demonstrate to growers how different production practices will be compared to the Pacific Northwest with a specialty crop that has very high startup costs.
- The Department of Plant Sciences at North Dakota State University will be studying the production of leafy green vegetables under controlled environment conditions. Research emphasis will be placed on identifying superior cultivars of leafy green crops for hydroponic culture, preventing such physiological disorders as leaf margin burns on lettuce, reducing tissue concentration of nitrate, use of artificial lights for winter production, and modification of nutrient solution and cultural systems. Outcome of this research will enhance year-round supply of fresh leafy green vegetables for local and regional consumption as well as the understanding of plant growth and development under an intensive production system.
- 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.
- North Dakota State University will determine if the current levels of *Verticillium* wilt resistance in French fry potato cultivars are a practical and sustainable means to manage this disease, negating the need for soil fumigation, an environmentally hazardous and economically expensive disease control practice.
- North Dakota State University will breed and develop new cultivars of tomato, peppers, and selected cucurbit crops including squash, pumpkin, and melons. Research focus will be on genetic improvement in these crops for earliness, disease resistance, and higher nutritional quality. The ultimate goal is to develop and release new cultivars of selected vegetable crops that are suited for northern climate. Success of this research will enhance local production and consumption of vegetables in the northern plains region.
- *Sclerotinia* (white mold) is a critical production constraint for dry beans in North Dakota. Fungicides are widely employed to manage the disease, but optimal fungicide application timing is poorly understood. While some producers apply fungicides at early bloom initiation, others target full bloom and initial pod development, and it is unclear which approach may be superior. Results from field trials testing fungicide application timing in pinto beans in Carrington, ND, in 2015 suggest that considerable latitude may exist relative to the timing of the first fungicide application when two sequential applications are made; in pinto beans seeded to both narrow and wide rows, applications at bloom initiation performed equivalently to applications at full bloom and early pod. In this project, the North Dakota State University Carrington Research Extension Center, with collaborators at other locations in North Dakota, will rigorously assess how much latitude exists relative to the timing of fungicide applications for *Sclerotinia* control when a single fungicide application targeting white mold is made and when two sequential applications are made. Testing will be conducted on pinto, navy, and black beans seeded to narrow rows and to pinto beans seeded to wide rows. Supplemental irrigation will be utilized to simulate the economics and optimal fungicide application timing and frequency (zero, one, or two applications) of fungicide applications under different rainfall patterns.

- The Northern Pulse Growers Association (NPGA) is a producer organization representing producers and processors in North Dakota and Montana. The mission of the NPGA is to provide leadership for a sustainable and profitable pulse industry through research, market development, and education. The objective of the proposed project is to increase the usage of regional peas and lentils by providing strong evidence of pulse as a low glycemic index ingredient. This is a continuous project of the specialty block grant in Fiscal Year 2014-2015. The proposed project is expected to provide in depth perspective of pulse ingredients on the glycemic index lowering effect. This study will cover the ingredients and applications in depth to further provide stronger evidence on the glycemic lowering effect of pulse ingredients. As a result, the expected outcome is to increase awareness of pulse as a healthy ingredient to health professionals, as well as food companies. The study will be conducted in an acceptable manner through clinical journals and promotional activities such as seminars for health and clinical professionals.
- North Dakota State University will develop an application for iOS and android interfaces for potato farmers to receive severity updates and alerts for potato late blight and early blight to improve sustainable potato production in North Dakota. Training on the use of this application will be given to stakeholders during winter meetings, field days, and one-on-one consultations.
- North Dakota State University (NDSU) will evaluate and demonstrate organic production of raspberry and blackberry by developing soil nutrient and weed management strategies. Field trials will examine two organic nutrient sources at two levels with three organic weed control methods under the environmental conditions in North Dakota, while monitoring for insect and disease differences. The results will be disseminated to growers and stakeholders interested in small fruit production through NDSU Extension Service field days and spring garden meetings, professional meetings, and direct visits with growers.

Northern Mariana Islands

Recipient: Commonwealth of the Northern Mariana Islands Department of Lands a **Award Amount:** 210,664.16
Number of Projects: 1

- Growing specific varieties of specialty crops year round in the Northern Mariana Islands has been a tremendous challenge for many local farmers and other vegetable growers. Our 2016 Specialty Crop Block Grant proposals cover three areas – agricultural outlets, community outreach, and brand marketing. The “Tinanom AgriCenter” project will erect high-tunnels on the islands of Saipan, Tinian, and Rota to be used for the cultivation of specialty crop seedlings, as well as, a community agri-resource center for beginning agricultural enthusiasts. The “Gualu Community Outreach” project urges communities to practice subsistence farming within the confines of the private dwellings. The program will host community outreach sessions wherein experts on various home gardening / farming themes will be sharing their approach to community gardening. Project “Buy Local” is a marketing campaign that aims to create product awareness and help launch local produce brands. The intended goal of the campaign is to build trust between the consumers and producers. “Buy Local” believes that the more trust people have on the local agriculture providers the more they will likely avail of their products and services.

Ohio

Recipient: Ohio Department of Agriculture **Award Amount:** 527,624.47
Number of Projects: 10

- Ohio State University scientists will identify value of juice of new and existing Ohio-grown apple varieties for artisanal hard cider, collaborate with the Midwest Apple Improvement Association to select unique Midwest cider varieties, and facilitate networking opportunities among Ohio apple growers and cider makers enabling local connections in the burgeoning craft cider industry.
- The Ohio Department of Agriculture will plan, coordinate and execute specialty crop farm tours for food service and retail buyers to educate them about Ohio's specialty crop industry. These farm tours will create awareness and develop new and existing relationships between buyers and growers. Media will also be invited to participate on the farm tours so news articles/stories can help educate consumers about Ohio's specialty crops.

- Ohio State University South Centers will help new and existing blueberry growers expand their acreage, improve harvest efficiency, extend harvest season, and boost nursery production by conducting a statewide testing of grafted blueberry “trees,” high soil pH tolerant cultivars, and the best blueberry production practices, and disseminating research results to stakeholders through social media, growers meetings, field days, and development of educational materials.
- 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.
- Dr. Francesca Peduto Hand, the Ohio State University (OSU) specialist for ornamental pathology, has teamed with Ohio nursery growers and the OSU’s C. Wayne Ellett Plant & Pest Diagnostic Clinic to pinpoint research-based approaches to solving a disease of Winterberry holly that is reducing yield of saleable plant material, income, and opportunities for market expansion. Building upon previously funded research, this project aims to complete our understanding of the epidemiology of the fungal pathogens associated with the disease in order to identify appropriate, well-timed, cost effective management strategies that could be easily implemented by Ohio nursery growers. The outcomes of this research may also allow new or smaller growers who have not previously grown Winterberry, to expand their markets by adding this crop to their production.
- The Center for Innovative Food Technology (CIFT) is dedicated to the advancement of technology, innovation, and novel business approaches to enhance the food and agricultural sectors of the economy and develop strategies for increased food accessibility. Staff has more than 25 years of experience in food processing, value-added product development, and food safety protocols. In addition, for the past 6 years CIFT has engaged in urban agricultural initiatives in an attempt to present options for food security and address food deserts within neighborhoods. This has been primarily through production of fresh product for immediate consumption. This project would address two different goals by providing improvements in the aggregation and distribution of specialty crops as well as diversification and expansion of production and processing through a value-added product. In alignment with the integrated mission of the Mid-Ohio Foodbank (MOF) and the Food Innovation Center of The Ohio State University, an innovative product line has been developed that utilizes seasonal produce from the MOF core list to reduce the loss of produce with limited shelf-life. The product line Ohio Sourced and Sauced (OSS) integrates fresh local produce, such as broccoli, tomatoes, squash, zucchini, apple and orange, with traditional spices as shelf-stable sauce formulations.
- The Ohio Department of Agriculture (ODA) will provide Produce Safety Training to growers who are exempt from FDA’s Produce Safety Rule. While some growers don’t need to meet the requirements of the rule they should still be using the science-based practices laid out in the rule to produce a safer product. This project will reach out to those exempt growers to provide trainings throughout the state. Terri Gerhardt, the chief of the Division of Food Safety will lead the project. Jodi Taylor, the assistant chief of the Division will directly manage the project. The training program will be the same program that is required for the regulated growers.
- Ohio State Beekeepers Association will support Ohio’s bee industry, provide technical and direct support to beginner beekeepers, and help reduce colony loss due to pests and disease by creating a monitoring management system to include a portable lab, and instructors for local association meetings. The grant will provide direct support in the form of an Apiary Diagnostic Kit for up to 700 new beekeepers who have graduated from local beekeeping associations, and educators who will visit up to 30 local associations (68 percent of total associations in Ohio) to provide training in monitoring for pests and diseases.
- The Ohio State University will conduct research and outreach programs to reduce the impact of soilborne diseases on production of locally grown, high-value vegetable crops. Two disease management strategies, anaerobic soil disinfestation and grafting, will be optimized for Ohio farms, farmers will be educated on these technologies through specially designed workshops, and a new soil diagnostic testing service will be developed to identify key soilborne diseases.
- The Foodbank, Inc., of Dayton, OH, will further efforts to increase access to specialty crops among low-income food insecure residents of Montgomery, Greene, and Preble counties of Ohio through the addition of vertical garden fruit bushes and vines. Additionally, a hoop house will be utilized to extend the organization’s growing season and provide the tools necessary to source locally grown fresh produce beyond the spring and summer months.

Oklahoma

Recipient: Oklahoma Department of Agriculture, Food, and Forestry

Award Amount: 468,173.97

Number of Projects: 9

- This partnership with Oklahoma State University's seeks to build a collaborative infrastructure in Oklahoma to support Food Safety Modernization Act (FSMA) training and technical assistance as it relates to the produce industry. The project team will lead, manage, and coordinate programs to provide training, education, and technical assistance to owners and operators of small and medium-sized farms, beginning farmers, and socially disadvantaged farmers
- This partnership with Oklahoma State University seeks to improve food safety in melon supply chains by making whole chain traceability accessible for small- and mid-size producers, combined with intensive food safety training programs for food handlers.
- This partnership with Oklahoma State University seeks to develop best management practices for zoysiagrass management and sod production in Oklahoma for promotion of drought tolerant alternatives to tall fescue in shaded landscapes. Stakeholder discussion groups will be utilized to identify hurdles to adoption of zoysiagrasses in regards to production and consumer preference. Results will be disseminated through field days, professional association meetings, and extension programming.
- This partnership with Oklahoma State University and The Samuel Roberts Noble Foundation seeks to identify and prioritize areas in pecan orchards that are likely to receive damage from feral swine (*Sus scrofa*). In addition to assessing damage, potential for depredation of pecans or loss of pecans during harvest, because of damage from feral swine, will be studied.
- This partnership with the Oklahoma Department of Agriculture seeks to set up 1/10 acre test plots on 10 farms across the State to determine varieties of strawberries that flourish on plastic in Oklahoma soils and growing conditions. The trial will demonstrate how to prepare the field, utilize cover crops, and look at 5 different varieties of strawberries (Flavorfest, Florida Strawberry Festival, Stella, Carmine, and Chandler) to ascertain how they will thrive in Oklahoma's unique growing conditions.
- This partnership with Oklahoma Agritourism seeks to help producers educate consumers about proper u-pick practices, food safety and handling, nutritional value, and value-added possibilities of specialty crops. These goals will be accomplished by creating and distributing an interactive booklet targeting consumers and creating the awareness of these educational opportunities.
- 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.
- This partnership with Oklahoma State University seeks to assess the potential for production of cumin (*Cuminum cyminum* L.) as a new spice crop in Oklahoma. Aspects of production and handling to be addressed include germplasm performance, crop establishment, nutrient and water requirements, integrated pest management strategies, and harvesting and handling technologies
- This partnership with the Choctaw Nation of Oklahoma's Department of Agriculture will conduct cover crop research and evaluate its effect upon soil health and tree performance in a non-producing pecan orchard located in Garvin, OK, and a young, producing pecan orchard located at the Noble Foundation in Ardmore, OK.

Oregon

Recipient: Oregon Department of Agriculture

Award Amount: 1,613,440.74

Number of Projects: 16

- This project will build a digital educational platform that will generate awareness of specialty crops and the regions that they are grown and processed in the State of Oregon. The project will produce educational video materials designed to enlighten buyers and consumers about the diversity of Oregon specialty crops and their unique growing regions.
- The Oregon Bee Pilot Project seeks to: increase the knowledge of Oregon specialty crop-pollinator associations; to educate the public, growers, and grower organizations about important Oregon pollinator species and the roles that Oregon crop diversity and specialty crops have in maintaining their overall health and abundance; and to promote stewardship of native and domesticated bees while providing value-added incentives to growers of specialty crops.

- This project will re-establish and maintain market access for *X. fastidiosa* host plants shipped as plants for planting to the European Union. Sufficient samples will be collected and tested to provide a 99 percent confidence of detecting ≥ 1 percent disease incidence, which matches the sampling rate criterion set forth by European Plant Protection Organization (EPPO) for establishing a pest-free area.
- This partnership with Adelante Mujeres seeks to provide training and producer-consumer connections for Latino farm owners who participate in the organization's Sustainable Agriculture Program. The goal is to provide increased market access for Latino immigrant specialty crop farmers and to enhance the competitiveness of their specialty crops.
- This partnership with La Creole Orchards seeks to raise awareness among institutional consumers (culinary professionals, food buyers) about the existence of a pioneering group of olive growers/producers of extra virgin olive oil in Oregon as well as to expand the potential market for Oregon extra virgin olive oil.
- This partnership with Mid-Columbia Economic Development District to work with the Columbia River Gorge Cider Society seeks to support development of the growing hard cider industry in the region. This work will focus on: collective marketing for the region's cideries to support increased growth; education about hard cider for locals and visitors; creating opportunities for cideries to connect through the Gorge Cider Society; and supporting these businesses as this industry cluster continues its growth.
- This partnership with the Oregon Museum of Science and Industry (OMSI) and specialty crop industry partners will increase public awareness of science and technology behind bringing Oregon specialty crops from farm, to shelf, to table by offering family programs at county fairs, OMSI's Harvest Festival, and other events in 2017-18.
- This partnership with the Oregon Processed Vegetable Commission (OPVC) seeks to facilitate mechanical harvest of broccoli and cauliflower by: developing seed production capacity for exerted head broccoli hybrids; having plant architecture adapted for mechanical harvest; and by developing, manufacturing, and field testing improved mechanical harvester prototypes.
- This partnership with the Oregon Raspberry & Blackberry Commission seeks to expand markets and encourage long-term sales viability for Northwest caneberries by interacting with and educating Specialty Food manufacturers on caneberry qualities and uses for this market at The Fancy Food Show, a major industry trade show.,
- This partnership with Oregon Tilth seeks to help Oregon specialty crop producers make successful transitions to certified organic production and access growing opportunities in high-demand organic markets. Project activities will include farmer workshops, field days, an online information and support network for transitioning producers, and an assessment of needs for education on the economics of transition.
- This partnership with the Oregon Wine Board seeks to expand and deepen the relationship of the Oregon wine industry with members of the Institute of Masters of Wine to sell more Oregon wine internationally and nationally by educating and evangelizing this important channel of elite wine influencers who play a vital role in recommending wine purchases to discerning consumers of premium wine.
- This partnership with Oregon State University seeks to evaluate a food grade edible biofilm that may be applied using water as a carrier to coat whole trees in the field. This biofilm will cover the leaves and fruit and will reduce the amount of water required to produce a crop.
- This partnership with the Oregon State University Christmas Tree Extension program seeks to develop seed orchards to assist producers in maintaining national leadership in quality Christmas tree production. This continues the trend away from wild seed collection to more consumer- focused tree selection opportunities with improved post-harvest quality.
- This partnership with Oregon State University and Oregon's vegetable and berry growers seeks to characterize agricultural water sources used on Oregon specialty crop farms. This project will involve several types of data collection and analysis at multiple scales in hopes of categorizing water sources and use by likelihood of compliance with the water standards of the Produce Rule.
- This partnership with Pear Bureau Northwest seeks to increase consumption of USA Pears/NW Pears through a global health and nutrition promotion/consumer outreach campaign that will announce and celebrate the specific health benefits of pears in the United States, Mexico, Canada, India, and the United Arab Emirates -- markets with the highest U.S. Pear consumption and receptiveness to health and nutrition education.

- 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.

Pennsylvania

Recipient: Pennsylvania Department of Agriculture

Award Amount: 924726.24

Number of Projects: 21

- This partnership with Strategic Contracting, Inc. will host an event at the Pennsylvania Farm Show to increase consumption of specialty crops by promoting locally grown specialty crops through cooking demonstrations and distributing information from specialty crop commodity representatives.
- This State project will enhance the competitiveness of specialty crops and increase grower access through providing cost sharing support for successfully completing USDA Good Agricultural Practices (GAP) or USDA Good Handling Practices (GHP) annual audits.
- This partnership with the School District of the City of Erie will provide elementary students with outdoor, experiential educational activities that extend their current science curriculum through designing and implementing five school gardens over a 2-year period in response to the growing need for the availability of fresh fruits and vegetables to the residents of the City of Erie.
- This partnership with Serman Masser, Inc., Lehigh Valley Potato Growers Association, and Twin Maple Farms will increase specialty potato production in Pennsylvania and benefit potato producers through conducting field and laboratory evaluation trials to evaluate and select colored-flesh and medium-sized potatoes with high qualities under Pennsylvania conditions.
- This partnership with Pennsylvania Farm Link will enhance the competitiveness of specialty crops and provide assistance to farmers through developing an online specialty crop resource hub available 24/7 with specialty crop resource material.
- This State project will increase food safety practices by specialty crop farmers throughout Pennsylvania by providing free outreach events on USDA GAP audits and information on FDA's FSMA Produce Rule as it relates to USDA GAP.
- This partnership with the LEAF Project will deepen knowledge and connection to specialty crops by providing an engaging produce partnership with two area preschools serving low-income populations. This will include weekly delivery of diverse specialty crops, hands-on education at the LEAF Home Farm, and hands-on cooking lessons hosted at the preschools.
- This partnership with the Center for Agricultural and Shale Law will help specialty crop producers understand their legal obligations and enhance the competitiveness of specialty crop producers through conducting educational workshops to teach producers about the variety of Federal and State labor laws that have potential application to their individual specialty crop operations.
- This partnership with the Pennsylvania Vegetable Marketing and Research Program will enhance the competitiveness of specialty crops through livestreaming and videotaping of several grower education events to allow additional growers who are unable to attend the actual event benefit from them through online viewing.
- This partnership with Chester County Economic Development Council, Temple University's Fox School of Business, Penn State Extension, and Lundale Farm will identify and disseminate best practices for community-supported agriculture and direct-to-consumer business models that are profitable and sustainable for small produce farms in Southeastern Pennsylvania.
- This partnership with Penn State University will enhance the competitiveness of specialty crops and reduce pest damage to tomatoes and peppers by developing scientifically based methods of seed treatments combined with organic soil amendments.
- This partnership with Penn State University will conduct research to further identify methods for reducing listeria risks, by exploring the use and effects of select antimicrobials on listeria populations on whole apples.
- This partnership with the Pennsylvania Maple Syrup Producers Council will help gain a greater share of the maple syrup industry in Pennsylvania and grow the market overall by gathering information about maple syrup consumers within Pennsylvania to develop a comprehensive market plan.

- This partnership with Penn State Extension will enhance the ability of the Pennsylvania specialty crop industry to increase the number of growers and support more economical and sustainable methods by the next generation of fruit and vegetable producers through development of bilingual educational programming.
- This partnership with the National Peach Council will increase consumer awareness of locally/regionally produced peaches and their nutrient and dietary value by developing a social media platform and marketing “toolbox” for peach marketers.
- This partnership with Fair Food will enhance the competitiveness of specialty crops through targeted marketing, promotion, and education at Philly Farm and Food Fest, an annual event held in Philadelphia for consumers and wholesale buyers.
- This partnership with the Pennsylvania Winery Association will increase the volume of and engagement with timely and inspiring content regarding Pennsylvania grape growers, vineyards, and wineries by developing a “PA Wines Publishing” section on a re-designed PennsylvaniaWine.com.
- 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.
- This partnership with the American Mushroom Institute (AMI) will create a new standard, new supporting materials, become compliant with FSMA, and have more farms pass GFSI-benchmarked audits by creating MGAP 2.0 to bring the industry’s Mushroom Good Agricultural Practices (MGAP) program into compliance with the requirements of the Produce Rule of the Food Safety Modernization Act (FSMA) and standards benchmarked under Global Food Safety Initiative (GFSI)-recognized auditing programs.
- This partnership with Ladisdale Farm and Dickinson College Farm will improve the competitiveness of organic vegetable crops by reducing soil disturbance and compaction, decreasing weed competition, improving biological soil activity, and enhancing crop yield and quality.
- This State project will develop a standardized pesticide toxicity test protocol for alternative pollinators by developing an artificial diet for the Japanese Orchard Bee (JOB) that can be impregnated with orchard pesticides and tested on developing larvae to determine both acute toxicity and long-term chronic sublethal effects such as delayed mortality or development, as well as reproductive and behavioral effects.

Puerto Rico

Recipient:	Departamento de Agricultura de Puerto Rico	Award Amount:	490,055.63
		Number of Projects:	11

- 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.
- Plenitud Iniciativas Eco-educativas will train and educate beginning farmers (under the age of 35) and youth in Puerto Rico in a specialty crop production system known as ‘Organopónicos’ by executing a series of workshops, a school garden partnership program, and a mentorship program. The project will give youth farmers and aspiring growers the tools to initiate or improve commercial or domestic production of specialty crops in a sustainable way while also stimulating demand for locally grown specialty crops and promoting awareness of their nutritional value.
- This project is based on a previous institutional program proposed to establish locally grown iceberg lettuce. The Department of Agriculture is looking forward to establishing open field iceberg lettuce production to provide access to local farmers. Once this project has taken its course, the Department will be able to share its data and results with additional farmers.

- The Department of Agriculture of Puerto Rico has created the “Mercado Familiar y Mercado Institucional para Comedores Escolares” (Family Market and Institutional Market for the Public School Lunch Program). This program intends to increase the production of local vegetables and fruits, including lettuce and green vegetables (like broccoli and spinach), in order to replace the imported products with local fresh produce. This project includes a seed plan of various tomatoes, and a coordinator for direct interaction for market analysis available for farmers/producers and Department of Education School Lunch Program officials. Organizational and other educational aspects will be complemented by FIDA and Puerto Rico Department of Agriculture’s work with producers, to encourage and assist in the program as well as to incorporate experiential nutrition education activities that could encourage the participation of school students in farm and garden based activities through the “Huerto Casero Escolar” (School Garden). This will allow FIDA as well as the Public School System to benefit from an educational and nutritional standpoint.
- Several products with export potential have been identified and previous efforts in international trade shows have given positive results. Coffee, for example, is being exported from Puerto Rico thanks to efforts made in the United States, Canada, and Europe. In this project, the main item promoted would be specialty coffee, which is differentiated by specific industry standards. These standards are separate from organic, shade grown, sun dried, or fair trade. With this project, local producers aim to place a highly rated lot of coffee into the high-end market at a high price.
- FIDA and the Puerto Rico Department of Agriculture will promote avocado production by establishing seeding in an off regular season strategy in order to promote local fruit and to ensure food security.
- The education of local producers is one of FIDA’s and the Department of Agriculture’s main goals. FIDA and the Department of Agriculture are dedicated to pursuing market access for local production, which is why they have embarked toward the safety and quality standards development. The Department of Agriculture and FIDA have previously initiated efforts in farmer capacity building, and this project consists of giving continuity to previous efforts directed to specialty crops producers that have been carried out using both State and Federal funds in recent years. Through this project, FIDA wishes to continue the major work carried out using both State and SCBGP funds.
- The agricultural public policy of the Commonwealth of Puerto Rico, as visualized, planned, and implemented by the Department of Agriculture of Puerto Rico (DAPR), states that the DAPR has to become the primary organizer, promoter, regulator, and auditor of agricultural businesses, taking into account special attention to the specific, particular, and immediate agricultural needs of PR. The DAPR has the task of promoting and developing the food self-sufficiency of the people of PR. The Commonwealth of PR has proposed to increase the value of agricultural production, and in this way create agricultural and agribusinesses jobs. To accomplish this, the DAPR will promote and facilitate the farmers collective marketing of products. The analysis of the immediate and urgent needs of PR agriculture suggests and advises that, to increase the agricultural production, it is necessary to create, enhance, and channel additional demand in the market for local agricultural products. The effort to place more components and increased volume of local agricultural products in the market will be effective in exposing and positioning local agricultural production thus gradually displacing imported products.
- FIDA and the Puerto Rico Department of Agriculture understand the importance of exposure to conditions and characteristics of the market through local trade show participation. This project aims to develop the capacities to achieve a participation in the high end segment of the local specialty crop market. The latest local market studies reflect an increase in a preference for locally accessible goods, so the project’s approach will consider the increasing level of awareness among consumers about the merits of local specialty crop agricultural products. The project objectives will provide additional opportunities to specialty crop producers for participation in collective promotional activities in Puerto Rico. This project also has the objective of increasing direct marketing opportunities through participation in sponsored projects and in local trade shows so that specialty crop producers can enter the market and increase sales.

- This project will partner with Proyecto Agroecológico el Josco Bravo, LLC, to generate three curricula for beginning farmers during a 3-year period focused on the development of appropriate sustainable technical skills for vegetable production. Limited local food production, decreased rural population, and agricultural GDP, along with the aging profile of average farmers pose great challenges for Puerto Rican agricultural production. Loss of agricultural knowledge and sustainable practices in Puerto Rico has severely limited the educational alternatives for new farmers. Despite the challenges, there is a growing movement in Puerto Rico, primarily among a younger generation, to make sustainable production an economic alternative. New and beginning farmers are increasing demand for farming techniques and facing a gap in educational opportunities for sustainable farming. In order to increase food security and agricultural production we have to create alternatives that increase education offerings, using both the exchange of knowledge and the development of practical experiences for new farmers. The three prospective courses are: 1) Basic Sustainable Production Course; 2) Advanced Sustainable Production Course; and 3) Animal Power in Agriculture Course. The project estimates a total direct impact on 160 students from the courses during a 3-year period and indirect impact on over 16,000 followers over social media platforms and volunteer networks.
- Semila LLC, will conduct an investigation on the development and perfection of the technique of micro-grafting of cocoa trees in the nursery. . This will help to obtain crops in less time and may have a greater availability of cocoa trees to meet the high demand for cocoa trees grafted. The primary purpose of this project is to provide research about propagation efficiency to the local cocoa industry. Project partners will focus on measuring the binding percentage, binding speed, and harvest time. For this, Semila will train the graft personnel in techniques for micro-grafting, and evaluate the percentage of successful grafts, the pattern size, and cutting, and the practices (container, humidity, grafting time and equipment). In addition, the project will evaluate the waiting time for grafting and nursery waiting time to bring the tree to the field. Everything will be evaluated once a week with visits to the nursery by the agricultural agent and once a month by the fruit specialist. They will perform three tests to confirm the results. Once the proposal ends, project partners will write a manual on cocoa spread of micro grafting. Semila will be responsible for providing the testing location and for the development and care of trees during the research. Prof. Zamora and Agricultural Agent Raul Perez will be in charge of evaluating and assessing if the investigation on micro grafting meets the proposal objectives.

Rhode Island

Recipient: Rhode Island Division of Agriculture

Award Amount: 225,523.79

Number of Projects: 7

- This partnership with Southside Community Land Trust seeks to develop and implement a Food Hub to aggregate and distribute specialty crops grown at urban farm sites in Greater Providence in order to increase the production and sales of these specialty crops in low-income Rhode Island communities.
- This partnership with Farm Fresh Rhode Island seeks to develop a Statewide network of young people empowered to advocate for increased access to fresh, nutritious, Rhode Island-grown specialty crops in schools, universities, and hospital cafeterias in their communities.
- This partnership with the Northeast Organic Farming Association of Rhode Island (NOFA/RI) seeks to enhance the viability of certified organic and beginning farmers by providing advanced technical training through a series of Advanced Grower Training Seminars, technical support provided by local Farm Advisors, and a series of On-Farm Workshops demonstrating organic techniques.
- 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.
- This partnership with RI Organic seeks to increase accessibility of high quality, organic and non-GMO, locally grown vegetable, fruit, flower, honey, and egg specialty crops to Rhode Island residents. This will be done through home delivery, a centrally located organic market, and by partnering with Organic farms in Rhode Island and nearby States.
- This project will continue to expand on its Get Fresh Buy Local Fruits and Vegetables Campaign and to promote the Get Fresh Buy Local Program by conducting fruit and vegetable cooking demonstrations featuring local celebrity chefs at all Rhode Island farmers markets and participating roadside stands.

- This partnership with the University of Rhode Island seeks to employ yield-enhancing and season extension methods to demonstrate more efficient production of several important African-origin vegetable crops on Rhode Island urban farms. Information will be shared with urban growers through cooperative workshops with city-based community grower organizations and online video.

South Carolina

Recipient: South Carolina Department of Agriculture

Award Amount: 441,764.36

Number of Projects: 10

- GrowFood Carolina seeks to enhance the competitiveness of specialty crops through a coordinated regional system and through increased sales. Efforts will enhance the competitiveness of specialty crops through increased sales and access, through increasing GAP certifications with partner producers, and by facilitating an efficient, effective regional system between the four local food hubs in South Carolina.
- This project will partner with Marion County to create, sustain, and increase marketshare for specialty crop growers through the aggregation of business practices by the Pee Dee Food Hub. Project partners want to increase the percentage of local produce consumed in South Carolina in a drastic way. The outcome of this will have a tremendous impact on local rural economic development.
- The research conducted in this project by Clemson University will: 1) select kale varieties that respond to different organic production systems without compensating losses in biomass, taste, and nutritional quality under field conditions; and 2) determine the economic feasibility of increased organic kale production under legume cover crops.
- The South Carolina Department of Agriculture (SCDA) is seeking funds to administer a new program geared for small and medium-sized specialty crop growers. This project will provide funding for a cost share reimbursement program for cold storage modification units. The program will be based on the successful cost share reimbursement programs currently offered through SCDA for both GAP certification and Organic Certification. This project will not only enable smaller growers to obtain a larger share of the marketplace, but will also create a safer fresh produce supply by maintaining the cold chain.
- Dr. Brian K. Ward with Clemson University Coastal Research and Education Center (CREC) and Dr. Gilbert Miller at Clemson University Edisto Research and Education Center (EREC) through collaboration with the USDA Agricultural Research Service, Louisiana State University, North Carolina State University and private industry, will begin to restore the sweet potato industry in South Carolina for both fresh market and the processing. The direct outcome of this project will be sweet potato varieties and cultural practices that are well suited for adoption by conventional, sustainable, and organic growers that have specific disease and insect resistance as well as increased quality and yield. Working closely with a newly hired USDA ARS sweet potato geneticist and entomologist, along with a Clemson pathologist, existing top performing sweet potato cultivars from LSU, NCSU and private industry will be evaluated under conventional cultivation at EREC and organic cultivation at CREC. After the first year and concurrently during replicated second year trials, promising lines will be placed in poly-cross breeding programs at USDA ARS Charleston to enrich the germplasm pool to be evaluated in year three. Each year we will have grower field days at each location to educate growers of current and promising cultural practices, including specific fertility and irrigation practices as well as identification of disease and insect pests, and familiarize them with the potential of these new sweet potato cultivars. Findings of this research will be disseminated to growers across the State on farm tours, on CREC and EREC websites, extension flyers, at vegetable grower meetings, and at the Southern Region American Society for Horticultural Science National Sweet Potato Collaborators Group.
- The South Carolina Peach Council is seeking grant funding to promote the South Carolina peach industry to retailers, wholesalers, and to consumers via an extensive viral marketing campaign. This campaign will incorporate print, media, and web-based advertisement to promote the health benefits of South Carolina Peaches. Our objective is to increase the consumption of peaches while providing education regarding the health benefits of the South Carolina State Fruit. Advertisements within retail produce periodicals will focus specifically on availability and quality of product directed at retail and wholesale buyers. A viral media campaign will focus on consumers by educating them on the health benefits of fresh 'SC Grown' peaches.
- The South Carolina Department of Agriculture Marketing Division will use funding from this project to augment appropriated dollars from the South Carolina General Assembly to develop an application (app) for smart phones. The app will enable users to easily locate sales outlets and restaurants that feature 'Certified SC Grown' fruits, vegetables, and other specialty crops, such as fresh herbs.

- The South Carolina Department of Agriculture (SCDA) Fresh Fruit and Vegetable Inspection Services, a part of the Agricultural Services Division, maintains the authority to award Good Agricultural Practices (GAP) Certification to specialty crop producers. The GAP Cost Share program will be advertised on the SCDA website, (www.agriculture.sc.gov), the SC Specialty Crop Growers Association meetings, newsletters, and website, Clemson Extension GAP Education and Training Workshops that will be held throughout the State, the SCDA Market Bulletin, Food Hub workshops and grower meetings, as well as one-on-one meetings between specialty crop producers and SCDA personnel/Clemson Extension Agents.
- The South Carolina Watermelon Association (SCWA) requests funds to be utilized in promotional activities and consumer educational efforts related to 'SC Grown' watermelons. By utilizing scientifically proven data that supports the "Watermelon Fuels Athletes" slogan trademarked by the SC Watermelon Association, educating consumers on the health benefits of consuming 'SC Grown' watermelons will provide increased sales, and financial support and stability to rural South Carolina communities. By promoting this specialty crop at several sporting events throughout the year, the association will effectively promote the message that watermelon and other fruits and vegetables are an excellent source of nutrients to replenish those lost while participating in sports and other strenuous activities. By effectively relaying this message to consumers the association's goal is to promote healthy, sustainable eating habits while helping to continue to grow agribusiness in rural South Carolina.
- 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.

South Dakota

Recipient:	South Dakota Department of Agriculture	Award Amount:	270374.14
		Number of Projects:	8

- This partnership with South Dakota Specialty Producers Association will expand its efforts to support specialty crop producers by connecting them with resources, customers, agri-tourism markets, networking, and educational training opportunities.
- This partnership with Cobblestone Science, LLC, will provide growers with the information they need to develop or expand their operations to include year-round production and increase their revenue through researching and documenting options to reduce operational costs of greenhouse production in a continental climate at mid-latitude.
- This partnership with South Dakota Specialty Producers Association will increase the production, promotion, marketing, sales, and consumption of fresh and value-added specialty crops through expanding education and networking opportunities at the annual South Dakota Local Foods Conference.
- This partnership with Cheyenne River Youth Project will improve the health and wellness of Lakota youth and families through making infrastructure improvements, providing sustainable agriculture and social enterprise internships to teens, diversifying and increasing the frequency of cooking and nutrition classes, and broadening the distribution of produce across the Cheyenne River Reservation.
- This partnership with South Dakota Public Broadcasting seeks to educate the public about the unique nature of the South Dakota food experience through exploring sustainable food sources, discussing locally produced commercial items and local food events by showcasing restaurants and fairs where South Dakotans and visitors can find local and creative food experiences.
- This partnership with South Dakota State University will evaluate the pollinator community visiting confection sunflowers in South Dakota and the effect of pesticide applications on this community by collecting data at two locations in South Dakota from four confection varieties.
- This State project seeks to increase the number of consumers who are exposed to and sample South Dakota wine and increase the exposure and name recognition for South Dakota wineries, thereby increasing sales by featuring their products at the State Fair.
- 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.

Tennessee

Recipient: Tennessee Department of Agriculture

Award Amount: 394501.73

Number of Projects: 12

- This partnership with Benton County Bee Association will educate youth about the importance of bees and provide them with skills necessary to establish their own hive by allowing students in a rural Strike Force zone to gain hands-on experience.
- This partnership with the Appalachian Region Wine Producers Association will attract more resources, encourage higher value grape production, and increase revenues and profits for growers by establishing the first American Viticultural Area in East Tennessee for Tennessee wine grapes.
- This partnership with Cul2vate will provide training and development opportunities for students and volunteers in specialty crop production by providing access to fresh produce to individuals in food deserts via a network of partnering enterprises.
- This partnership with Pick TN Conference will increase the knowledge of farmers for better revenue by making scholarships available for individuals to attend an annual conference of several specialty crop stakeholders.
- This partnership with Stony Creek Colors will expand awareness of indigo as a Tennessee-based specialty dye crop through development and deployment of marketing campaigns directed at domestic and international indigo consumers, ingredient branding around natural indigo in apparel, a transparency program allowing traceability of natural indigo dyes to their agricultural source, and promoting the City of Springfield and Robertson County, TN, as the leading agricultural producer of indigo.
- This partnership with the Tennessee Fruit and Vegetable Association will support Tennessee growers to implement Food Safety Modernization Act guidelines by focusing on small and micro growers who would be considered exempt under the Tester Amendment.
- This partnership with Tennessee Farm Winegrowers Alliance will update the platform, format, and usability of the current website to promote the State's vineyards and wineries, targeting key audiences to grow the awareness of the industry and increase exposure, purchasing, and sales of specialty crop products.
- This partnership with Tennessee State University will determine whether alternative concentration methods can be used to facilitate the successful recovery and early detection of Phytophthora from nursery irrigation water and provide an opportunity to monitor for P. ramorum presence in nursery irrigation water through developing a methodology for reliable screening of irrigation water for the presence of Phytophthora in the complex environment of commercial nursery operations.
- This partnership with the Upper Cumberland Produce Cooperative will increase the production and consumption of heirloom tomatoes by having farmers in the Upper Cumberland region of Tennessee produce them using high tunnels and market them Statewide and regionally through a marketing cooperative.
- This partnership with the University of Tennessee will help improve the nursery industry's long-term profitability, environmental stewardship, national and international competitiveness through developing the online Advanced Tennessee Master Nursery Producer Program (ATMNP) for Tennessee nursery operators.
- This partnership with the University of Tennessee Institute of Agriculture will further extend the growing season of organic vegetables grown in high tunnels through the testing of thermal protection methods.
- 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.

Texas

Recipient: Texas Department of Agriculture

Award Amount: 1,370,877.64

Number of Projects: 12

- J&D Produce will lead a project to improve quality and market acceptance for tomatoes grown in multiple regions of Texas, under multiple production systems. Other collaborators will be Texas A&M AgriLife Research (AgriLife), Rio Valley Canning, and six other growers around the State. Both protected (greenhouse and tunnel) and open-field production of several high-lycopene, virus-resistant cultivars from the Texas A&M AgriLife Research breeding program will be evaluated by nine growers to determine best management and marketing strategies. Anticipated project outcomes include improving consumption by enhancing product quality, improving yields and adaptation through new AgriLife cultivars, improving competitiveness of Texas tomato growers through reduced production costs and better product demand, and improved sustainability of tomato production through protected culture and stress resistant cultivars. The project will evaluate greenhouse and open-field production of elite tomato cultivars from AgriLife at up to 10 locations in south and central Texas. Field days and a symposium at multiple locations will provide outreach to current growers and attract potential new growers. Seed production of new AgriLife tomatoes will provide growers and nurseries with stock to meet the production demands and expand acreage. Processing tomato acreage will be expanded with two new virus-resistant AgriLife tomato lines to meet demands from the cannery. Extension handouts and bulletins will be distributed to interested growers and tomato enthusiasts in collaboration with AgriLife county extension agents.
- GROW North Texas and the Dallas Farmers Market will partner to implement The Dallas Wholesale Farmers Market Improvement Project to reinvigorate the long-running nighttime wholesale specialty crop farmers market at the historic Dallas Farmers Market and to support increased production and sales for regional small and mid-sized specialty crop growers. This project will include increased infrastructure for and promotion of the Wholesale Farmers Market, as well as technical assistance to area specialty crop growers who show capacity and desire to increase their production and farm viability. The project will result in increased sales of and access to locally grown fresh fruits and vegetables, benefiting small and mid-size farms as well as all of the North Texas area.
- The Nacogdoches-Nacogdoches County Economic Development Corporation (“Nac EDC”) will partner with Texas A&M AgriLife Extension and Stephen F. Austin State University (SFASU), Nacogdoches, to conduct a Texas Kiwifruit Evaluation Project. This project builds on successful crops at a small Kiwifruit planting at SFASU established in 2011 and holds the promise of introducing a new specialty crop to the Texas market.
- The East Texas Grape and Wine Producers, in partnership with the Texas A&M AgriLife Extension Service, aim to improve the productivity and quality of Texas grapes and wine through a series of research projects that include establishing a muscadine research vineyard to evaluate the feasibility of muscadine table grape production, optimizing vineyard production practices and winemaking protocols for Black Spanish and Blanc Du Bois, determining the feasibility of double cropping grapes in the Rio Grande Valley, and developing a series of educational videos and written content to support sustainable growth of the Texas wine industry.
- This project will study if there is a complementarity between Texas fruit and vegetable production and the increase of produce imports through Texas land ports of entry. The Texas International Produce Association (TIPA) represents both domestic Texas fruit and vegetable producers as well as produce importers and distributors. TIPA will establish an agreement with the Texas Department of Agriculture to study the relationship and synergies of domestic vegetable production and imports, mainly from Mexico. This project will keep track of the inflows of fresh produce from Mexico by crop to define the windows of opportunities for Texas production. Once the marketing windows are defined, field trials for vegetable crops produced in Texas will be planted to measure competitiveness and availability to supply on the previously defined marketing windows. Finally, the economic impacts of both domestic production as well as imports to the Texas economy will be measured.

- This proposal is presented by the Texas Pecan Board in partnership with Texas A&M University and with support from stakeholders of the Texas Pecan Grower Association. This study proposes to increase the sales of Texas pecans using a unique strategy of promoting the health properties of pecans among consumers and buyers using science-based digital marketing tools. Generated scientific information on health promoting properties of pecans can be used as powerful marketing tools to reach potential markets which are driven by health awareness which increases every year. These markets have been the basis for the extraordinary growth in sales of some selected specialty crops in recent years including pomegranate fruit, blueberries, almonds, and walnuts. Here in Texas efforts using only traditional media disseminating tools have been applied with limited outcomes. In this study we propose to use generated scientific information on health- promoting properties of pecans related to chronic inflammation and the metabolic syndrome (obesity, cardiovascular disease, and diabetes) and to perform studies on promotion decisions for digital marketing efforts to increase return potential of investment. These promotion decisions will ultimately decide the appropriate digital marketing activity efforts used and the overall outcome will be determined based on the impact these efforts have on sales increases at the end of the project.
- The Texas Beekeepers Association and the Entomology Departments at Texas A&M University and the University of Delaware propose to conduct a multi-stage project to assess the economic value of Texas-produced honey to help beekeepers improve marketing techniques to promote “Real Texas Honey” as a valuable specialty crop. This project will help Texas honey producers decide how to best manage their price and marketing techniques for selling honey by generating higher profit through increased consumer demand and niche marketing for “Real Texas Honey.” The project team, which includes collaborators from the Texas Beekeepers Association, the Entomology Department at Texas A&M University, and the Entomology Department at the University of Delaware will: 1) Organize a working group of leading Texas honey producers that will help assess the economic value of Texas honey production, and identify which labeling and product attributes are most important for the Texas honey market; 2) Incorporate these attributes in research using experimental economics survey techniques to elicit the consumers’ willingness to pay for honey from varying Texas geographies, production processes, and labeling types; 3) Coordinate with the project team and working group to use the results from the experimental surveys to develop marketing and pricing strategies to promote “Real Texas Honey;” 4) Create educational tools and curricula to disseminate these strategies to Texas honey producers of all beekeeping operation sizes via interactive workshops, web-based materials and popular industry publications; and 5) test honey using microscopic determination of pollen coefficients to determine regional denomination of origin for “Real Texas Honey.” Project effectiveness will be assessed by tracking producers’ financial profits before and after adopting the recommendations gathered from the surveys, economic analyses, and honey pollen coefficient studies.
- 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.
- The Texas Department of Agriculture - Marketing and International Trade Division (TDA-Marketing) will create the Texas Traveler, a marketing campaign which will target the travel and tourism sector to increase sales, recognition, and knowledge of Texas specialty crops. TDA will also work to revitalize the Texas sweet potato industry and develop international markets for this crop. In order to accomplish this, TDA-Marketing will create a balanced marketing campaign and complete export training for sweet potatoes. Expected outcomes for the Texas Traveler include an increase in sales of Texas specialty crops as well as better consumer recognition and knowledge of Texas specialty crops. Expected outcomes from the Texas Sweet Potato Industry Revitalization Project include an increase in the number of sweet potato producers in Texas and an increase in acreage of sweet potatoes produced in Texas.

- Texas Watermelon Association will lead this project in partnership with Bagley Produce, Co., Wiggins Watermelon, LLC, Prukop Farms, Pennington Melon Farms, and Texas A&M AgriLife Research. The project aims to identify varieties well-adapted for diverse growing conditions in Texas. Currently, several challenges remain in watermelon production, including identification of locally adapted varieties, improvement of seed germination, and production of high-quality, consumer-preferred varieties with high levels of health-promoting compounds. Watermelon production in Texas is rapidly growing, but production practices require continuous refinement. This study will evaluate 21 genetically diverse varieties of watermelons and test them in 4 locations to identify unique watermelon varieties that are adapted to diverse climate and soils in Texas. These varieties will also be tested for key health-promoting phytochemicals- flavor, lycopene, vitamin C, minerals, and citrulline. Moreover, these phytochemicals will be tested during storage in market-simulated conditions. Finally, to improve seed germination, project staff will test a seed-priming method using a nano-biomaterial that uses food industrial byproducts to penetrate the seed coat and stimulate germination and growth. This green nanotechnology has the potential to decrease production costs by improving germination -- a particular issue for popular triploid seedless varieties, and to improve agricultural economics by using industrial byproducts to produce value-added nanotechnology-based products. The watermelon nutritional fruit qualities will be analyzed by multi-factorial approach to examine the effects of germination, maturity, and postharvest storage. This data will provide improved priming methods for better germination and will allow the Texas A&M breeding program to deliver seeds for new flavorful, high-yielding cultivars suited for commercial production in Texas.
- The Texas Nursery and Landscape Association will enhance the Best of Texas Landscape Guide to make it the main source of marketing and product knowledge for consumers, retail garden centers, and landscape professionals for the ornamental plants that are adaptable to Texas' climate. The enhancements will include online product information produced by leading horticulture academic resources, as well as product knowledge contributions from Texas' growers of the featured ornamental plants.
- The Texas Citrus Pest and Disease Management Corporation (TCPDMC), in cooperation with USDA and Texas Department of Agriculture (TDA) will provide assistance in detection and education of quarantinable pests and diseases. These pests and diseases include Asian Citrus Psyllid (ACP), Mexican Fruit Fly (MFF), Citrus Canker, and Huanglongbing (HLB). Through scouting efforts in both commercial groves and residential areas, trap monitoring, and educational presentations for growers and residents in both English and Spanish, TCPDMC will provide a reduction of quarantines, reduce the pest populations, and report possible fruit theft.

U.S. Virgin Islands

Recipient:	U.S. Virgin Islands Department of Agriculture	Award Amount:	210,002.25
		Number of Projects:	4

- The U.S. Virgin Islands Department of Agriculture (VIDOA) will seek to create and serve as lead agency in coordinating, implementing, and reporting of the "VI Grower Collaborative Pilot Program," which will enhance the competitiveness of fresh local produce. The VI Grower Collaborative Pilot Program consists of planned agendas to facilitate the processes involved in impacting this project's outcomes. This project will implement the VI Farm to School Harvest of the Month initiative as the pilot market to test feasibility and sustainability of Farm to Institution programs in the U.S. Virgin Islands. The Harvest of the Month program initiative seeks to increase access to, preference for, and consumption of fresh fruits and vegetables by engaging students in fun and educational ways with locally grown fruits and vegetables. The VI Grower Collaborative Pilot Program will seek to pair farmers in groups of three to plant crops according to the assigned Harvest of the Month. This proposal will have a positive impact on students' awareness through access to fresh local crops. When the school purchases local produce from farmers, children gain access to nutritious, high quality, local food.
- The U.S. Virgin Islands Department of Agriculture (VIDOA) will serve as lead agency in the coordination, implementation, and reporting of activity progress of this project: "Weekly Radio Broadcast," which will seek to promote and encourage the increase of specialty crop competitiveness on the two Island Districts. The establishment of a radio broadcasting program will seek to enhance the competitiveness of specialty crops through increased access to awareness of, and consumption of locally grown fruits and vegetables. Each week, VIDOA will host a talk show on a popular local station varied listenership.

- The University of the U.S. Virgin Islands, Cooperative Extension Services (CES) and Agriculture Experiment Station (AES) is seeking to conduct research on Turmeric Production and Market Potential in the V.I. This research will develop production systems with pre-emergent herbicides and post-harvest storage and value-added products to extend the use of turmeric in the Virgin Islands, to work with farmers on St Croix in different locations, and to evaluate the potential for turmeric production and quality in our soils. Projected outcomes include: increased access to fresh turmeric, improved health of U.S. Virgin Islanders, and increased awareness of farmers and backyard gardeners on how to successfully grow turmeric.
- 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.

Utah

Recipient:	Utah Department of Agriculture and Food	Award Amount:	274,954.05
		Number of Projects:	14

- Native American populations in Southeastern Utah and tribal lands in neighboring States have largely lost their connection to agriculture, and face serious health challenges due to poor diet and limited availability of nutritious fruits and vegetables. This project seeks to restore that connection by re-establishing a traditional fruit crop. This will be accomplished by exploring historical production areas, documenting historical management practices and uses, educating local leaders and individuals on these practices, identifying historic varieties of significance, propagating and evaluating these varieties, and distributing plants back to grower cooperators, along with resources for both management and marketing of these fruit products. Much of the work will be carried out by a Utah State University graduate student with cultural connections to this population, who plans to pursue a career in teaching and mentoring native populations in agricultural opportunities.
- The Green Urban Lunch Box is a Salt Lake City-based nonprofit that promotes local farming, healthy eating, and sustainability through stable food systems. The organization began in 2011 when founder Shawn Peterson converted a 35-foot school bus into a mobile greenhouse in order to create more space for urban gardening. The Green Urban Lunch Box's overarching goal is to empower people to grow food using resources already available in their communities. Our mobile greenhouse also acts as a mobile produce cart. The Bus visits low-income neighborhoods to provide education about and access to specialty crops. In addition to the bus, we have a Back-Farms Program that unites senior-citizen homeowners with energetic volunteers to produce food on under-utilized land, a Fruit-Share program to recover fruit that would otherwise go to waste, and a Community Farm to help young and/or inexperienced farmers get established and develop crucial farming and business skills. All of our programs aim to fight hunger and promote using resources that are available in our community to grow healthy, nutritious food.
- Vegetables are a high value crop in Utah with larger farms increasing acreage to satisfy demand by local grocery stores, and many new small and urban farms start to produce vegetables for farmers' markets and CSAs. Utah State University will monitor Utah vegetable fields across the State on a monthly basis, and collect and process symptomatic plant and insect samples. New diseases and potential insect vectors will be identified by culturing, and using antibody-based and molecular (polymerase chain reaction (PCR) and DNA sequencing) tools. Utah State University will provide management options to Utah growers before diseases can spread and cause serious losses. Each year since 2012, we have identified at least two new vegetable diseases or new hosts for known diseases in Utah with increased negative economic impact on growers. The negative impact of new diseases is likely to increase for several reasons (milder winters and warmer, wetter summers as well as introduction of new pathogen through "spoiled" produce discarded by consumers and grocery stores in landfills or compost piles). Early detection of new pathogens in the State can minimize the spread to vegetable fields and allow growers to be proactive in management, thus reducing inputs and losses and increasing financial returns by increasing yields and produce quality.

- Rising costs of inputs and concerns over accidental herbicide injury, and tree nutritional deficiencies on marginal soils have raised interest among growers in organic and reduced input strategies. Use of cover crops is the logical solution to reducing nitrogen inputs, improving soil quality and tree nutrition, and managing weeds. Managing cover crops in orchards can be particularly challenging, however, in arid climates where groundcover competes with trees for water. The goal of this project is to document the benefits and or tradeoffs of reducing inputs in peach orchards in Utah as a means of improving resource use efficiency and increasing net income to growers. Six different treatments have been established to test the effect of alleyway-planted legumes with and without additional fertilizer on soil fertility, tree growth, yield, and nutrition of mature peach trees. Results from these experiments will provide new information to growers on strategies for peach tree management that manages weeds and optimizes tree growth and productivity in reduced-input and organic orchards under Utah conditions. The partner organizations are Utah State University and the Utah State Horticultural Association.
- There is a new generation of fruit growers in Utah, either children taking over family farms, or new farmers planting orchards. Many of these farmers are college-trained in marketing and business planning, but are not familiar with the latest research focused on the horticultural side of growing fruit: planting, pruning, pest management, irrigation, and nutrition. These skills are essential for success and profitability. This project will result in a five-part fruit school from November to January (to continue on a yearly basis) that will provide these skills for new farmers (and established farmers needing extra guidance) with the goal of maintaining a sustainable orchard. The project will be evaluated via short- and long-term participant surveys.
- This project is needed to increase the education and awareness of fresh fruits grown in Utah by providing education and information to school administrators and educational media for the individual schools to help educate and promote the nutritional value of fresh fruits to the students and to help increase the consumption of healthy foods. The Apple Marketing Board is also committed to educate the buyers for each school district as to the availability of high quality locally grown fresh fruits that are available from the local growers in the State of Utah. Grower members of the Apple Marketing Board represent approximately 90 percent of the apples grown in the State of Utah. Our sales information shows that about 50 percent of potential apple purchases by Utah school districts are sourced from apples grown in Utah. This allows for substantial growth opportunities for the growers along with the increased awareness of fresh fruits grown in Utah. We will evaluate the success of this program with sales information and survey feedback from district and individual school nutrition managers.
- Pistachios are a very valuable tree nut crop native to areas of central Asia. Pistachio is tolerant of dry, alkaline, and saline soils. In the United States, virtually all production is in California. The predominant cultivar in California is 'Kerman' and it is grafted to one of several rootstocks, mostly to avoid soil borne pathogens (*Armillaria* and *Verticillium*). These combinations are not hardy in northern Utah. However, the native range of pistachio includes areas with topography, soils, and climate similar to that found in northern Utah. Utah State University has obtained a collection of diverse pistachio germplasm from central Asia. This diverse germplasm needs to be further evaluated both for culinary nut production and for use as hardy and adapted rootstocks. This proposal seeks support to further evaluate existing germplasm and to develop strategies for propagating selections for further testing in Utah. The ultimate objective of the research is to create pistachio selections that could foster a successful pistachio industry in Utah.
- Utah State University will construct a demonstration farmscape at Wheeler Historical Farm and educate Master Gardeners and specialty crop producers (via hands-on trainings held at the garden) on farmscape components and ways to implement them into farm plans and backyard gardens. The farmscape concept is focused around principles of integrated pest management (IPM) that attract and retain beneficial insects to farms or gardens by building suitable habitat (food & shelter) for predators and parasites that prey upon specialty crop pests. IPM signage will also be developed and displayed for public viewing at the farmscape.

- Consumers in Utah and the surrounding region, especially those with connections to Latin America, want to purchase fresh nopales, a healthy and delicious vegetable made from *Opuntia* cactus pads, for preparing and eating in a variety of Hispanic dishes. However, most nopales available in grocery stores in the region, which are largely shipped over several days from northern Mexico, quickly degrade in quality due to the short shelf-life of the crop. Like northern Mexico, Utah has many qualities that would make it ideal for *Opuntia* crop production, including its dry climate and nutrient-poor soils. Most *Opuntia* species, however, cannot survive Utah winters. In recent research, we have found that one species, *Opuntia ellisiana*, possibly can tolerate Utah winters. We (Brigham Young University) propose to evaluate multiple accessions of *Opuntia ellisiana* over a 2-year period across a north-south gradient at three field-study sites in Utah. We plan to evaluate the tolerance of *Opuntia ellisiana* to winter conditions and spring-time freeze-thaw events. We also plan to evaluate the productivity and nutritional properties of *Opuntia ellisiana* under field conditions. If more than 70 percent of plants survive both winter temperatures and spring-time freeze-thaw events, we will consider the crop worthy of further evaluation as a crop by growers in the region. Also, if the nutritional properties of *Opuntia ellisiana* plants in our study do not statistically differ from those at a University of Nevada orchard in Las Vegas and USDA plant material center in Parlier, CA, we will consider the project a success.
- Utah 4-H seeks funds to expand the Eat, Grow, Learn, Go program to five additional counties. This project will begin or expand 4-H gardening projects for youth and their families in five counties to increase specialty crop awareness, knowledge, skills, and consumption. Currently youth in these counties have no access, limited access, or have lost access to specialty crop gardening projects. In addition, youth will learn about healthy lifestyle education, to combat unhealthy weight trends in Utah. The latest reports in Utah show a 20.8 percent (2012) incidence of unhealthy weight for youth. One finding from adult volunteers in the pilot project was that Utah youth are drinking sweetened beverages at a high rate which contributes to increased weight, so a reduction in these beverages will be included in the healthy lifestyles education. Lastly, two specialty crop 4-H guides will be developed, published, and made available online to benefit 4-H youth as a next step in the current project and to benefit other youth across Utah and the Nation.
- This project will support the International Rescue Committee in Salt Lake City's New Roots program in working with refugee and immigrant producers as they explore opening up new markets for small and moderate scale vegetable farmers through aggregation and distribution to buyers including schools and institutions. This project will help New Roots SLC collaborate with larger buyers like Westminster College and Salt Lake Community Action Project's Head Start and Early Head Start programs to identify vegetable crops that are successful in these markets, as well as best practices for post-harvest handling, quality control, aggregation, storage, and sale. The intention of this pilot will be to develop ways to efficiently connect small and moderate scale specialty crop producers to institutional buyers with the capacity to buy consistently in larger quantity in order to support the evolution of more robust and diversified markets for local farmers. In addition to assisting refugee and immigrant farmers in accessing more and diversified sales and increasing their income, New Roots will develop presentations and fact sheets outlining the outcomes of the project and will work with local partners including Utah State University Cooperative Extension and the Salt Lake County Farm to School program to disseminate best practices and evidence to Utah vegetable farmers regarding how to engage in and benefit from these markets. New Roots will also share project findings on a national scale through the National New Roots Network, the New Incubator Farm Training Initiative, and other regional and national platforms.
- Utah County tart cherry growers process between 25 and 50 million pounds of fruit annually. A byproduct of this is unused pits. Growers have tried composting, burning them, sending them to green waste, and to various landfills. Due to transport expense and the sheer volume of the pits, these disposal methods have failed or involve significant costs. Our (Utah State University Extension) proposed investigation involves grinding tart cherry pits with a hammer mill or similar, and investigating their use as a soil amendment. Utah County has over 550,000 residents who are a close potential market for the ground pits. Using funding from this grant we will determine pit nutrient levels, use ground pits as a soil amendment in raised beds in a statistically valid raised experimental design using multiple flower and vegetable crops. After this, we, with USU Extension Marketing, will develop marketing literature and packaging and sell ground tart cherry pits at a local gardeners' market. At the market, we will determine price points and engage those interested through surveying to determine how to better market the product and build public interest.
- The Utah Department of Agriculture and Food Apiary Program will conduct an outreach and education campaign regarding the best practices for protecting honey and native bees from pesticide exposure. This will be achieved by placing informational posters and other literature in establishments that sell pesticides.

- This preliminary research effort by Utah State University is focused on assessing the ability of horticultural techniques to improve production of pinyon pine nuts on marginally arable lands. General tasks include locating superior nut-producing trees in the Great Basin area, collecting scions from these superior trees and grafting them to rootstocks in a nursery environment for further evaluation, and evaluation of the potential for grafting superior scions to mature wild trees in a wildland environment.

Vermont

Recipient: Vermont Agency of Agriculture

Award Amount: 256,872.73

Number of Projects: 8

- This partnership with Upstream Ag and Keeling Engineering seeks to design, in kit form, an affordable, food-grade and wash-down ready leafy greens spinner and improved triple wash system. Our goal is to produce an affordable greens washing kit that can be made available to small and mid-sized growers, that increases food safety, efficiency, and profitability, and that can be easily assembled on the farm.
- This partnership with University Vermont Extension seeks to conduct field studies of nitrogen release from legume cover crops on four Vermont vegetable farms in order to identify optimal management of these crops and their role in helping growers reduce reliance on compost, manure, and blended fertilizers as nitrogen sources that often add excess phosphorus the soil.
- This partnership with the University of Vermont seeks to mitigate the losses caused by the invasive swede midge in broccoli and other brassica crops by field testing whether promising semiochemicals (plant essential oils and midge pheromones) are effective as a pest control method and by holding live and videoed farmer training sessions.
- This partnership with the University of Vermont seeks to develop rearing and management techniques for wild bee species found on Vermont farms. The project, will compare pollination service from these locally adapted and disease-free bees to that of conventionally managed bees, and will share resulting technology and bee stocks with stakeholders to achieve maximum yields of pollinator-dependent specialty crops such as apple, blueberry, plum, pear, raspberry, and greenhouse tomatoes on Vermont farms.
- This partnership with the Vermont Fresh Network seeks to increase the competitiveness of Vermont wines in restaurants by facilitating discussions and developing solutions among winemakers, distributors, and culinary professionals to address the barriers to marketing Vermont wines in Vermont restaurants.
- This partnership with the University of Vermont seeks to address the problems associated with the current leek moth (LM) invasion via a three part study. This project will assess the seasonal phenology and statewide distribution of LM, while also testing both physical and cultural LM control tactics, and disseminate results via online outreach, regional workshops, and field days.
- This project will increase consumer access to and sales of local, direct-marketed specialty crops by building relationships between consumers and producers with a direct to consumer marketing program that will: collect local food pricing data; maintain a directory of Vermont farmers' markets, farm stands, and community supported agriculture (CSA) farms; and promote agricultural literacy.
- 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.

Virginia

Recipient: Virginia Department of Agriculture and Consumer Services

Award Amount: 393,740.57

Number of Projects: 11

- This partnership with Virginia Tech seeks to develop a site assessment tool for prospective hop growers in Virginia that is coupled with a hop varietal database containing flavor and aroma profiles. These tools will enhance the competitiveness of the hop industry in Virginia as well as mitigate risk by potential growers when deciding site suitability.
- This partnership with Virginia Polytechnic Institute and State University seeks to develop research-based apple processing and fermentation strategies for production of hard cider and disseminate results to stakeholders through State and regional workshops and industry-led field days.

- This partnership with the Appalachian Sustainable Development (ASD) seeks to enhance the competitiveness of fresh fruits and vegetables by providing training and one-on-one technical assistance to specialty crop farmers across Virginia.
- This partnership with Virginia Tech and Virginia Cooperative Extension seeks to improve pest management for sweet corn producers in Virginia by developing and implementing a multi-pest scouting program where Extension agents will monitor relative pest densities: corn earworm, European corn borer, fall armyworm, and stink bugs as well as monitor the presence and activity levels of pollinators and ladybeetles on the corn on 30 commercial farms.
- This partnership with Virginia Tech seeks to generate baseline information necessary to efficiently and effectively sample and monitor the presence and abundance of *Trissolcus japonicus* and its impact on the brown marmorated stink bug population.
- This partnership with Virginia Polytechnic Institute and State University seeks to provide vegetable producers with weed control solutions by developing an innovative weed management technique for broccoli, potato, pumpkin, watermelon, and general plasticulture systems.
- This partnership with Old Dominion University Research Foundation seeks to test two species of honeybees for three viral diseases from three small strawberry farms in Virginia.
- 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.
- This partnership with Virginia Polytechnic Institute and State University seeks to create and pilot test the Produce-Source Water Assessment Program, which will build capacity to assist Virginia's produce growers in meeting the Produce Safety Rule under the Food Safety Modernization Act.
- This partnership with Virginia Tech seeks to evaluate the ability of different commercial cultivars of Virginia tomato plants grown in a greenhouse to internalize *Salmonella* by root uptake.
- This partnership with Virginia Tech seeks to investigate the risk of commercial agricultural sand filtration systems to act as a reservoir and transmission vehicle for human- and plant- pathogens. The data generated will allow growers to implement targeted mitigation strategies, if necessary, when using sand filtration systems.

Washington

Recipient:	Washington State Department of Agriculture	Award Amount:	4313279.86
		Number of Projects:	22

- This partnership with Washington State University (WSU) will enhance the sustainability of potato production by generating tools and resources required for breeding potato cultivars with multiple disease resistance.
- This partnership with Washington State University (WSU) seeks to reduce losses in production and storage, identify alternative fungicide and biopesticide products, reduce the potential buildup of fungicide-resistant strains of the pathogen and potentially reduce the number of fungicide applications applied to the crop by utilizing newly developed molecular tools to examine the diversity of *Botrytis* species associated with gray mold in conifer nurseries.
- This partnership with Washington State University (WSU) will identify lentil genes and their functions associated with *Aphanomyces* root rot, and identify potential sources of resistance from international germplasm collections by conducting research.
- This partnership with Washington State University (WSU) will develop and implement a decision support system (DSS) for potato growers based on the existing WSU-Decision Air System for tree fruits through fast-tracking development process by eliminating the need to re-develop the underlying programming infrastructure and data display common to all DSSs.
- This State project will control lily leaf beetle (LLB) through implementing a classical biological control project in western Washington to establish a parasitoid wasp (*Tetrastichus setifer*).
- This partnership with Washington State University (WSU) will develop an economically viable option for sustainable pear pest management by demonstrating the successful use of softer pear pest management programs providing a beneficial scorecard to assist growers and consultants to make pest management decisions.

- This State project seeks to establish Pest Free Areas through conducting inspection, sampling and testing of both nursery stock and native vegetation of exporting counties using USDA and EU guidelines.
- This partnership with Washington State University (WSU) will generate science-based knowledge for mitigating negative impacts of virus diseases in top-grafted vineyards in Washington State through conducting trials.
- This partnership with Pike Place Market Preservation and Development Authority will connect more members of the community with fresh local produce, provide more sales for Market growers, provide educational workshops for farmers, and continue the “meet the producer” tradition through taking on the logistics associated with running a CSA by providing farmers an easy, efficient way to sell produce in bulk.
- This State project will provide technical assistance and facilitate relationships to fill missing links in regional supply chains that currently limit sales for specialty crop producers and processors to the institutional markets that demand their products. The project will activate regional networks and supply chain linkages with referrals, marketing support, and crucial on-the-ground presence and coordination in target regions.
- This partnership with the Washington State Tree Fruit Association (WSTFA) will provide access to detailed information about fruit crop plantings and trends to growers through a survey of tree fruit and grape acreage in Washington by crop, variety, age and density.
- This partnership with Washington State Nursery & Landscape Association will promote, encourage, and increase the production, sale and use of Washington’s specialty crop nursery products through promoting wholesale and retail nurseries and consumer education as a marketing strategy to increase awareness and sales.
- This partnership with the Northwest Cider Association will enhance the competitiveness of Washington apples and pears by improving the overall quality of cider being made in the Northwest, through educating members about science-based tools used widely overseas for fermenting and growing.
- This partnership with the Washington Tree Fruit Research Commission will develop a mechanistic ground sprayer model to predict spray deposition and drift using typical orchard/vineyard airblast sprayers under varying orchard and environmental conditions. This will be accomplished using new knowledge and existing information; gathering additional financial support to generate crop-specific validation data; comparing validation data with model output; and modifying the model as necessary to improve predictability.
- This partnership with Washington State University will develop a tested and validated non-pathogenic surrogate for *L. monocytogenes* in antimicrobial intervention in fresh apple packing and processing lines. This will be accomplished by evaluating appropriate non-pathogenic surrogates for *L. monocytogenes* antimicrobial interventions in the selected apple variety and validating the selected non-pathogenic surrogate of *L. monocytogenes* for antimicrobial interventions in different apple varieties.
- This partnership with Rural Community Development Resources will enhance socially disadvantaged specialty crop producers’ knowledge of food safety and implementation of the FSMA regulations to increase their production, increase the quality of their products and connect them to agricultural associations. This will be accomplished through providing outreach and services for specialty growers in Central Washington State.
- This partnership with Washington State Potato Commission will educate people as to what specialty crops are grown in Washington, where they can be purchased, their nutritional benefits, and how they can be utilized for meal preparation by providing an informational framework.
- This partnership with the Washington Blueberry Commission will develop more efficient irrigation practices for blueberry and raspberry through utilizing remote sensing technology to develop practices that will enable a user to quickly assess spatial variability in crop water status and adjust irrigation and water allocations accordingly.
- This partnership with Washington State University (WSU) will generate and disseminate knowledge and practical recommendations that will empower grape growers to mitigate the adverse impacts of heat and drought on grape production by investigating the effects of heat and drought on grapevine growth and physiology, grape ripening, and fruit quality.
- This partnership with Snoqualmie Valley Watershed Improvement District will implement identified breakthrough strategies to create new water rights by developing a water bank to bring willing buyers and sellers of water rights together.

- This partnership with Washington State University will provide practical training and education to small producers and value-added food processors by providing training and practical tools they can use to successfully integrate prerequisite programs with the preventative controls and produce rule requirements.
- 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.

West Virginia

Recipient: West Virginia Department of Agriculture

Award Amount: 239,867.54

Number of Projects: 11

- This partnership with West Virginia State University Research and Development Corporation and the WVSU Extension Service seeks to promote the production, processing, and usage of hops in West Virginia. The proposed outcomes of the project are to increase the amount of West Virginia-grown hops being used in local breweries, increasing the amount of hops being processed into pellets, and continuing to increase the total acreage of hops being grown in West Virginia.
- This partnership with West Virginia University (WVU) seeks to establish and evaluate 15 hazelnut hybrid varieties at the WVU Kearneysville Tree Fruit Station in Jefferson County, WV. The Station will serve as a research and demonstration site for evaluating hazelnut varieties in the Eastern Panhandle. Data collected will include: vigor, input costs, and harvest variables. In addition, the hazelnuts established through this project will be evaluated for postharvest quality and market potential.
- This partnership with the Blue Ridge Community and Technical College seeks to enhance knowledge of students on the importance of knowing where their food comes from and what to do with the food once harvested. By educating these students on the nutritional value of the strawberry and then learning the many recipes that can be made will hopefully encourage the students to want to eat more healthy foods and even learn to grow them for themselves.
- This partnership with the West Virginia University seeks to field test selected hybrids of 'WV 63' for consecutive 2 years (2017 & 2018) followed by artificial inoculation and re-selection of homogeneous plants from the segregated progeny.
- This partnership with the Morgantown Christian Academy's (MCA's) Nutrition and Education Garden will increase children's nutrition knowledge and consumption of specialty crops, and to enhance natural science classroom curricula with hands-on learning. The school garden will give students the opportunity to learn in a natural environment, teach them to grow their own food, and increase their consumption of locally grown vegetables.
- This partnership with the West Virginia Farmers Market Association seeks to implement "Power of Produce", a program with the goal of introducing West Virginia youth to specialty crops and developing healthy eating habits through access to locally grown fruits and vegetables.
- This partnership with West Virginia Wesleyan College, in conjunction with Aladdin Food Service, will provide appetizing, nutritious food service products in farm-to-school sourcing through constructing a high-tunnel greenhouse to create in-house, local, specialty crop production under the custodianship of West Virginia Wesleyan students and staff. This partnership will also provide nutritional and food safety education to the college students and the surrounding community in partnership with the WVU Extension Service (Upshur County), the Child Development Center (pre-K program), and the Parish House (local food pantry).
- This partnership with the West Virginia Maple Syrup Producers Association seeks to continue syrup industry development in West Virginia and to increase production opportunities that exist through development of public land access. This project will provide an educational series for producers as well as the development of a "WV Maple" brand dictated by consumer input and research.
- This partnership with the Mountaineer Food Bank (Gassaway) and the Facing Hunger Food Bank (Huntington) seeks to initiate a "Buy Local" campaign for fresh specialty crop purchases. This project will provide education and training on purchasing procedures, need, quality, quantity, and appearance standards as well as tools to enhance any supplemental funding that the program may obtain.
- 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.

- This project will provide specialty crop producer education for specialty crop growers and specialty crop product processors throughout the West Virginia. Required training includes: the FDA-mandated Better Process Control School (BPCS; for specialty crop processors); Good Handling and Good Agricultural Practices (GHP/GAP, for specialty crop growers); Produce Safety Alliance grower training (PSA; FDA-mandated specialty crop safety program with growers required to have one staff member with certification); GHP/GAP Audit Reimbursement Cost-Share Program (designed to help specialty crop growers obtain certification to meet market-driven requirements); and a technical assistance targeted course, “Writing Your Food Safety Plan” designed to allow participants the opportunity to develop and modify a customized plan for their specialty crop farm and/or facility.

Wisconsin

Recipient:	Wisconsin Department of Agriculture, Trade and Consumer Protection	Award Amount:	1184599.21
		Number of Projects:	19

- This partnership with the Guedot lab at the University of Wisconsin-Madison will describe the phenology of spotted wing drosophila in cherry orchards, evaluate the susceptibility of tart cherry varieties to spotted wing drosophila, identify the naturally occurring biological control agents affecting spotted wing drosophila, and educate cherry growers on how to identify and manage this new pest.
- This partnership with the Wisconsin Potato Industry Board and the University of Wisconsin-Madison seeks to establish improved breeding methods for potato skin set and color in the red fresh market category using image analysis to quantify these traits in 350 different varieties and relating this information to thousands of DNA markers.
- This partnership with the University of Wisconsin – Madison seeks to implement precision agriculture practices with the use of remote sensing technology and Unmanned Aerial Vehicles for the identification and mapping of problem areas within cranberry beds, specifically insect infestation, and will provide dissemination of research results through grower meetings and conferences.
- This partnership with The Wisconsin Seed Potato Improvement Association seeks to improve statewide management of potato and tomato late blight through broader dissemination of educational programs and management tools in Wisconsin’s commercial and non-commercial production communities.
- This partnership with University of Wisconsin-Madison seeks to enhance the competitiveness of wine grapes through evaluating cold-climate wine grape cultivars for resistance to common diseases and use the information to update extension resources on integrated disease management in vineyards.
- This partnership with the University of Wisconsin-Madison seeks to protect Wisconsin fruit harvests by protecting its pollinators through investigating the primary cause-and-effect relationships between floral fungicide residues and losses of native pollinators.
- This partnership with the Ginseng Board of Wisconsin (GBW) seeks to diversify markets to strengthen demand and price for their 150 growers including those in the Hmong Community by offering fresh Ginseng root to their overseas consumers in addition to the traditional dried root. The project will also develop grower strategies that effectively manage nematode and soil mold issues to comply with international guidelines that are specific to fresh Ginseng roots.
- This partnership with the University of Wisconsin seeks to determine whether common pestiferous wasp species found in Wisconsin vineyards are direct fruit pests that can damage intact grape, assess the use of attractants to manage social wasps in Wisconsin vineyards, and provide new recommendations for managing social wasps to Wisconsin grape growers.
- This partnership with the University of Wisconsin-Platteville School of Agriculture seeks to develop pro-tray based seeding, grow-bag based production of baby ginger for the economic benefit of fresh market growers with an identification of potential market outlets and lead the efforts in sustainable production and marketing of farm-fresh, local specialty product in the southwest Wisconsin.
- This partnership with the University of Wisconsin seeks to evaluate the impact of grapevine canopy management on fruit chemical composition of 10 cold-hardy grape varieties grown in Wisconsin and provide growers with practical management techniques to improve fruit quality.

- This partnership with the University of Wisconsin seeks to support the growth of the Wisconsin hops industry through evaluation of hop varieties, standardize and gain adoption of an economically sustainable system for production of pathogen-free planting stock; development of a disease assessment; and evaluation of the disease status of existing hop yard plantings.
- This partnership with Bayfield County UW-Extension seeks to develop a deep winter salad greens production system using high tunnel greenhouses through working with area school districts and commercial vegetable growers.
- This partnership with Gorst Valley Hops seeks to demonstrate that higher quality hops can be produced for the Wisconsin brewing market by establishing the relationship between drying temperature and oil/aroma retention of this ingredient by drying batches of hops from ambient temperatures up to 170F and then submitting them to chemical and human sensory analysis with an educational campaign to promote these results.
- This partnership with the Wisconsin State Cranberry Growers Association (WSCGA) seeks to create a set of web based tools for cranberry growers, researchers, and crop consultants on growing practices, accessible for tablets and mobile devices to provide ready access to critical information from their offices and in the field.
- This partnership with UW Extension seeks to address the complex training needs of beginning vegetable growers through a formally recognized apprenticeship program that combines hands-on learning guided by successful master growers and a comprehensive program of coursework designed to equip new growers for production, management, and business success.
- This State project seeks to improve the knowledge and implementation of on-farm food safety protocols for minority fresh market growers through value-added workshops and one-on-one on-farm food safety assistance.
- This partnership with the University of Wisconsin Stevens Point seeks to provide additional markets for American and hybrid hazelnuts by testing the antimicrobial properties of the oil and husk extracts for potential use as nutraceuticals and medicinal products.
- This partnership with the Wisconsin Hickory Association seeks to explore the feasibility of a Hickory-based industry in Wisconsin by engaging the UW-Whitewater Fiscal and Economic Research Center (FERC).
- 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.

Wyoming

Recipient: Wyoming Department of Agriculture

Award Amount: 302,994.31

Number of Projects: 13

- 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.
- The Wyoming Department of Education will increase the number of schools and/or Child and Adult Care Programs that have access to a garden including implementation of growing techniques such as hydroponics, vertical growing, aquaponics, and many other methods for learning, growing and harvesting specialty crop products.
- The Wyoming Department of Agriculture will award four producer/processor grants to conduct research by specialty crop producers, processors, or specialty crop organizations, in cooperation with a technical advisor that can improve specialty crop operations and be shared with others through producer/processor meetings and/or field days.
- The University of Wyoming will evaluate effects of conservation tillage and direct harvest of edible dry beans in 3-year crop rotations on soil health and crop productivity and disseminate results through a University of Wyoming Extension Bulletin, a grower/educator workshop, presentations at research station field days, and other activities.
- The Laramie County Master Gardeners will host a spring gardening and specialty crop conference at Laramie County Community College in Cheyenne, Wyoming, April 22-23, 2017, and again April 21-22, 2018. This conference will be 2 days with three or four tracks per day, a morning opening speaker, an evening speaker, and a second day lunch speaker.
- University of Wyoming Extension will conduct apple variety and rootstock research to evaluate hardiness and survival rates of seven selected varieties. As a result, specialty crop growers will choose appropriate varieties and rootstock for their apple orchards. Information will be disseminated through University of Wyoming press, University of Wyoming Extension websites, specialty crop conferences, and field days.

- Little Snake River Valley School of Carbon County School District #1 will start a school community garden to grow gardens and grow minds with the town of Baggs, WY, through a student mentor partnership that will promote sustainable food, facilitate educational outcomes through gardening, and be used to provide sustainable food sources for stakeholders and their charity organizations.
- Shiloh Valley Family Farm's proposal requests funds to support the establishment of an orchard in Sheridan County. The orchard will be managed organically, using the most current research available, to determine what pest and disease pressure exists in our area and the most successful methods to combat them to provide a more environmentally responsible and commercially attractive fruit product, in addition to protecting pollinator health.
- Laramie Rivers Conservation District (LRCD) will work with Laramie's High School staff to oversee and assist with developing the components of Phase One of The Plains: Educational and Sustainable Production Farm and provide farm training. As requested, LRCD will assist the school district in offering programs that will integrate the student farm into the district's curriculum.
- North Platte Valley Conservation District will work with local schools to: increase Goshen County students' awareness and knowledge of the history of farming in their communities; to understand basic needs for vegetable production; to discover food web interdependence, harvest requirements, and nutritional values of crops; and to promote future agriculture career opportunities.
- The Wyoming State Fair will increase the consumers' awareness of how to produce prepare and preserve specialty crops by providing specialty crop horticultural show and exhibits during the annual State Fair.
- The University of Wyoming will evaluate some promising genotypes/cultivars of chickpeas in the Wyoming environments for the phenotypic adaptability and stability for growth, yield, and quality. The study will be conducted at the University of Wyoming James C. Hageman Sustainable Agriculture Research and Extension Center under irrigation with three fertility treatments (control, half the recommended nitrogen, and recommended nitrogen selection) of well-adapted, high-performing chickpeas genotypes/cultivars that will be suitable for Wyoming and perhaps neighboring States.
- The University of Wyoming, will provide the improved techniques to: enhance knowledge; to enhance the efficient use of water resources; and to quantify and compare dry bean crop evapotranspiration (ETc), crop coefficients (Kc), crop water use efficiency (CWUE) (aka., crop water productivity (CWP)), yield response to irrigation, and plant physiological parameters under sprinkler and surface irrigation systems.