

Note: We updated the Annual Performance Report template in October 2018. These report examples do not match the updated report format. Please use the updated Annual Performance Report template to complete your report.

ANNUAL PERFORMANCE REPORT

DATE SUBMITTED

12/1/2017

REPORT TYPE

1ST ANNUAL REPORT

PROJECT TITLE

Developing RNA Vaccines to Manage Pepino Mosaic Virus

FEDERAL PROJECT EXPENDITURES TO DATE

EXPENDITURES

Cost Category	Amount Approved in Budget	Actual Federal Expenditures (SCBGP Funds ONLY)
Personnel	\$27,000.00	\$10,000.00
Fringe Benefits	\$9,585.00	\$0.00
Travel	\$1,608.00	\$0.00
Equipment	\$5,000.00	\$4,500.00
Supplies	\$14,830.00	\$6,000.00
Contractual	\$0.00	\$0.00
Other	\$0.00	\$0.00
Direct Costs Sub-Total	\$63,523.00	\$20,500.00
Indirect Costs		
Total Federal Costs	\$63,523.00	\$20,500.00

PROGRAM INCOME

Program income will not be incurred from this project.

ACTIVITIES PERFORMED

FIRST QUARTER (NOV. 2016 – DEC. 2016)

Preparatory experiments were conducted to get this project underway. Tomato plants were germinated and grown in a growth room, and were subsequently inoculated with three isolates of Pepino mosaic virus (PepMV). Symptom development and naturally acquired resistance were observed and recorded. However, no natural recovery phenomenon has been observed in these experiments, contrary to previously held beliefs.

PepMV was purified from infected tomato tissues and the viral genomic RNA was isolated from the purified virus. These RNA preparations would be used to make full-length infectious cDNA clones that are required for the development of an attenuated PepMV strain. Additional tomato plants were inoculated and will be used to determine if RNAi is involved in the naturally occurring resistant to this virus.

SECOND QUARTER (JAN. 2017 – MARCH 2017)

In this quarter, we continued several experiments to study the symptom development caused by three isolates of PepMV. In these experiments, symptoms caused by PepMV were similar to what had been reported in literature; however they appeared more severe in the tomato varieties we used. Again, infected tomato plants did not recover from the PepMV infections. Based on consistent data from the repeated experiments, we conclude that PepMV infected tomato plants do not naturally recover from PepMV infections.

Experiments were also initiated to clone the 5'terminal and the 3'terminal of the genomes from three PepMV isolates. Published genomic sequences of 20 different PepMV isolates were collected from GenBank and aligned with the ClustalX alignment program. Four pairs of primers were designed, according to the conserved regions in the aligned sequences. Three pairs were intended for detection of PepMV, and one pair was intended to amplify the full-length PepMV genome. Initial experiments indicated that the primers worked well to amplify regions of PepMV by reverse transcription (RT), followed by polymerase chain reaction (PCR).

THIRD QUARTER (APRIL 2017 – JUNE 2017)

In this quarter, we completed the follow-up experiments on PepMV symptom development and switched emphasis to molecular characterization of the viral isolates and determination of the 5'terminal and the 3'terminal regions of the viral genomes. Forty-six cDNA clones were obtained and sequenced. Although there were substantial sequence variations between different isolates, the sequence of each isolate exhibited little changes. These sequences allowed us to refine the primer design that would increase the likelihood to amplify and clone the full-length PepMV infectious cDNA clones, and eventually to engineer an attenuated strain for vaccination.

FOURTH QUARTER (JULY 2017 - SEPT. 2017)

An isolate of PepMV was collected from the Sunlit Farm (SF) and inoculated to greenhouse tomato plants in the laboratory. Since the goal of this project was to provide an attenuated PepMV strain as a vaccine in Arizona, characterizing a local isolate and using it to develop an attenuated strain is vitally important. Experiments were conducted to determine the 5'and 3'terminal sequences of the SF PepMV isolate. Over 35 clones of the PepMV terminal regions were obtained by RT-PCR and sequenced. There was little sequence variation among the clones, indicating that the PepMV isolate contained a pure strain. Sequence analysis suggested that the Arizona PepMV isolate was most closely related to strains originally reported in Europe, suggesting a possible European origin of this isolate. These baseline data are crucial to the construction of the infectious PepMV cDNA clone and the engineering of a vaccine strain with attenuated virulence.

A pair of oligonucleotide primers was subsequently designed according to the newly generated sequence for amplification of the entire PepMV genome as the first step to make an infectious cDNA clone of the virus. Each primer was tested in combination with another set of internal primer and was shown to bind to and amplify viral cDNA. The optimum annealing temperature for each of the primers was subsequently determined by temperature gradient PCR. We attempted to amplify the entire PepMV genome by long-range RT-PCR using the optimized PCR conditions, but the yield of the expected DNA fragment was low and inconsistent. Amplification of a long DNA fragment of more than 6.5 kb is much more difficult than a DNA fragment of 1 to 2 kb, but we should be able to optimize the conditions to complete this task in the next reporting quarter.

Meanwhile, we continued to observe PepMV-infected plants for symptom development and induced resistance of the SF PepMV isolate. The Mariachi variety of tomato used in the experiment has displayed very severe symptoms and has not shown any signs of recovery from infection.

ACCOMPLISHMENTS

Estimate the Total Percentage (%) of Work Completed on the Project.....32%

List your accomplishments for this period of performance and indicate how these accomplishments assist in the fulfillment of your project's objective(s), outcome(s), and/or indicator(s).

Accomplishment	Relevance to Objective, Outcome, and/or Indicator
<p>Tomato plants were germinated and grown in a growth room, and were subsequently inoculated with three isolates of Pepino mosaic virus (PepMV).</p> <p>The symptom development study caused by three isolates of PepMV was performed. An isolate of PepMV was collected from the Sunlit Farm (SF) and inoculated to greenhouse tomato plants in the laboratory.</p>	<p>Outcome 5: Enhance the competitiveness of specialty crops through more sustainable, diverse, and resilient specialty crop systems.</p> <p>Indicator 4. Number of new diagnostic systems analyzing specialty crop pests and diseases.</p>

CHALLENGES AND DEVELOPMENTS

Provide any challenges to the completion of your project or any positive developments outside of the project's original intent that you experienced during this period of performance. If those challenges or developments resulted or will result in corrective actions and/or changes to the project, include those in the space below.

Challenges or Developments	Corrective Action and/or Project Change(s)
<p>Delayed starting date because funds were not available.</p>	<p>The timeline for the project has been amended (see updated timeline below)</p>
<p>Even with the delay, a substantial amount of baseline data has been generated to allow the project to move rapidly forward in next year.</p>	<p>With the preparatory experiments done and critical sequence data from the SF PepMV isolate gathered, we are confident that the revised activities outlined below will be completed by the amended termination date for this project.</p>
<p>New time line developed.</p>	<p>Develop an attenuated PepMV strain: July 2016 – May 2017</p> <p>Test the efficacy of the immunization vector: August 2016 – May 2017</p> <p>Test the protection of tomato plants using the attenuated PepMV strain: June 2017 – September 2017</p> <p>Draft survey for growers to complete after presentations to measure their interest in using the developed vaccine: July 2017</p>

SOLELY ENHANCING THE COMPETITIVENESS OF SPECIALTY CROPS

If the project has the potential to benefit non-specialty crop commodities, describe the activities that were conducted to ensure that grant funds were used to solely enhance the competitiveness of specialty crops.

This project's focus is on tomatoes, a specialty crop.

ANNUAL PERFORMANCE REPORT

DATE SUBMITTED

12/1/2017

REPORT TYPE

1ST ANNUAL REPORT

PROJECT TITLE

Farm-to-School: Building New Markets for Specialty Crops in Schools

FEDERAL PROJECT EXPENDITURES TO DATE

EXPENDITURES

Cost Category	Amount Approved in Budget	Actual Federal Expenditures (SCBGP Funds ONLY)
Personnel	\$124,000.00	\$26,926.77
Fringe Benefits	\$31,000.00	\$8,975.00
Travel	\$8,000.00	\$2,412.00
Equipment	\$0.00	\$0.00
Supplies	\$3,000.00	\$1,000.00
Contractual	\$23,000.00	\$0.00
Other	\$61,000.00	\$0.00
Direct Costs Sub-Total	\$250,000.00	\$39,313.77
Indirect Costs		
Total Federal Costs	\$250,000.00	\$39,313.77

PROGRAM INCOME

Program Income will not be incurred under this project.

ACTIVITIES PERFORMED

HIRE 1 FTE TO COORDINATE GRANT ACTIVITIES

A full time coordinator for the grant project was hired in March and started work on April 1, 2017.

PLANNED FOR GAP/GHP OUTREACH ACTIVITIES, ASSESSED BENCHMARK DATA ON GAP/GHP CERTIFICATION AND CONDUCTED ON-FARM EVENT

On April 6th-7th, the State Department of Agriculture (SDA) Farm-to-School program collaborated with the State University (SU) Small Farms Team to host the Small Farms Team retreat. The retreat included a workshop on growing farms to successfully manage Farm-to-School and Food Safety. Following the retreat, the SDA Farm-to-School Program continued work with SU Extension and the SU Small Farms Team to develop an On-Farm Mock Audit for farmers to learn about the GAP certification process, and to integrate Farm-to-School into the

SU GAP Symposium trainings. An auditor from the SDA Fruit and Vegetable Inspection Program participated in the project planning for the On-Farm Mock Audit. The planning team met again on July 13th to do a run-through of the on-farm event taking place on July 26th.

During the planning period prior to the event, the SDA Farm-to-School Program Manager and the Project Coordinator also attended the National Farm-to-Cafeteria Conference May 17th-19th to participate in workshops on food safety certifications required for farms entering the school and institutional marketplace, GAPs & GHPs, and USDA Commodity foods purchasing. In conjunction with gathering resources from these events, the SDA Farm-to-School Program reviewed sample resources from organizations throughout the country and began to develop resources where information gaps existed.

On July 26th, the SDA Farm-to-School Program, in partnership with State University (SU) Extension, the SU Small Farms Team, and T Producers, hosted an On-Farm Mock GAP Audit for farmers to learn about the GAP certification process and institutional market opportunities. An auditor from the SDA Fruit and Vegetable Inspection Program presented at the event and performed the mock audit. The SDA Farm-to-School Program developed resources on product traceability, mock-recalls and 'What to expect the day of an audit.' SDA Farm-to-School also worked with the State Potato Commission and another State Farm-to-School program to include their resources in the event handouts. All farm walk participants received a resource handbook, a CD of sample Standard Operating Procedure templates and a DVD of proper hygiene and hand washing practices for farm employee viewing. There were over 40 people in attendance at the On-Farm Mock Audit, and 38 attendees completed the survey, 24 of which were farmers and 14 were non-farmers (agricultural professionals, students, future farmers, etc.). Seventy-one percent of participants indicated their knowledge of Good Agricultural Practices 'greatly increased', and 73 percent indicated their knowledge of GAP 3rd party certification 'somewhat' or 'greatly increased.' Additionally, over 75 percent of respondents reported their knowledge of selling to institutions 'somewhat' or 'greatly increased.' When asked 'Do you plan to make changes on your farm as a result of today's farm walk?' respondents identified pest management, sanitation, food safety record keeping and marketing as areas where they will make changes. Three farms indicated that they intend to work toward the GAP certification within the next 3 years.

Farms expressed skepticism and concern about the feasibility of GAP certification for smaller, more diversified farms. When asked to comment about working towards GAPs, one survey respondent requested to "have farmers who are GAP certified (besides SU) come and talk about their experience" because the SU farm did not seem like a relate-able operation to their own farm. Others indicated that their farm was "too small," and one stated that they will "probably be forced to get certified." Farmers were also asked an open-ended question of what GAP-related services they would like to see offered. Seven farmers indicated a need for funding support for the certification process, and three farms stated a need for assistance and organizing for small farms, requesting a separate certification and a template for growers who have diversified crops.

These concerns were not a surprise, and were part of the reason (along with an awareness of Farm-to-School market requirements for certification) that the SDA Farm-to-School Program sought to provide GAP education through this grant. Next years' event, along with the coming GAP educational video, will address and explore the concerns in more detail. Due to media coverage of the On-Farm GAP event, the SDA Farm-to-School Program received requests from the USDA Farm-to-School Team, individual Farm-to-School program staff from other states, and the National Farm-to-School Network for information about and materials from the event, as they hoped to share the resources and/or implement similar events in their states.

The USDA GAP/GHP Audit Verification Program report for October 2016 – October 2017 shows that 184 farms in the state are GAP/GHP certified. At this time, one farm from this list successfully completed the audit after attending the on-farm mock audit and is receiving support services from the SDA Farm-to-School Program. That farm is currently selling blueberries to schools. The target is for 50 new farms to become GAP/GHP

certified. Footage for a video on GAP requirements was shot during the On-Farm Mock Audit including question and answer time with the auditor. The multiple shorter topic segment videos (i.e. hand washing, crate washing, water testing, etc.) from the event footage are partially completed.

PLANNED FOR FARMER AND FOODSERVICE TRAININGS

The SDA Farm-to-School Program has been preparing for the training events it is planning to conduct for farmers and schools in late 2016-2017 and in 2018. The target of the trainings is to increase the number of farmers and the number of schools who have increased awareness on how to do business with one another by 100 (Outcome #3). The program has been preparing for these events by reviewing existing resources from colleagues throughout the state, the region, and the country. They have reviewed sample workshop models from Farm-to-School programs in two other states. On May 5th, 2017, the SDA Farm-to-School team met with the Farm-to-School staff from another state's Departments of Education and Agriculture to discuss goals for trainings and sharing resources. That state's Department of Education Farm-to-School coordinator scheduled 4 trainings for school food services workers between May and October and the SDA Project Coordinator will be attending the session in October 2017.

In addition to reviewing and observing trainings conducted by other programs to plan for training events, the SDA Farm-to-School Program is soliciting feedback from farmers and school food service workers regarding what information and skills will be most useful in the trainings.

Surveys with questions about trainings are currently being sent to all farms and schools participating in our statewide Taste Day event. Questions about trainings are also included in biennial surveys that are being sent to all school districts and to those farms that have expressed interest in Farm-to-School. The Taste Day and biennial surveys will be fully administered and analyzed between October 2016 and January 2017. SDA Farm-to-School has drafted outlines for one and two-day trainings, including a draft with farmers and schools having trainings together, and will adjust the schedules as needed based upon the feedback received from farms and schools.

SDA Farm-to-School team has reached out to an additional partner in the Fresh Fruit and Vegetable Program at the State Office of the Superintendent of Public Instruction (OSPI), who will also be conducting trainings for food service workers. The two have been discussing goals of their trainings to see where there is potential collaboration for the events. OSPI is assisting in reaching out to schools regarding the SDA Farm-to-School trainings. The 2016/17 trainings will be scheduled to take place between October and May based on the requested dates of farmers and schools, schedule availability of partners, and host spaces available.

WEBSITE SET-UP FOR FOODSERVICE TOOLKIT

SDA Farm-to-School is creating an educational specialty crop web-based toolkit for school purchasers (located at www.abcfarmtoschool.com) based on the toolkit for food service created by the University of M Extension and the Institute for Sustainable Agriculture, which was provided as an in-kind match for the grant. Initially, it was anticipated that the code for the M toolkit would be used as the foundational code for the SDA Farm-to-School web-based toolkit. The coding, however, was not easily transferable or conducive to efficiently maintain and administer the toolkit as it expands. The M toolkit and resources will still be adapted and used as a guide, yet there will be more extensive coding and restructuring needed to provide a user-friendly database interface for a SDA Farm-to-School toolkit. Through consultation with the University of M toolkit developer and the SDA Information Technology Department, it was advised that the SDA Farm-to-School Program create the toolkit website separate from the official SDA website. Because of the required backend database development for the site, it was also advised that the program hire a contractor to develop the SDA Farm-to-School web-based toolkit for food service workers.

The SDA Farm-to-School Program developed a project description for development of the toolkit, solicited requests for proposals and contracted with Web Solutions Inc. through a personal services contract. The completed project will include: the creation of a backend database, a backend administrative tool, and a user interface, as well as website design and structure to house the toolkit, which can also be used as our main program website. To date, we have received from Web Solutions, Inc. the graphic design for the website, with toolkit and subpages; the administrative tool to create pages, subpages, and input the nutrition and preparation information for locally grown specialty crops; and a beta version of the user interface of the website that updates as information is input into the administrative tool. The creation of an SDA Farm-to-School website is a great opportunity to establish a website framework for the overall program with the foodservice toolkit as a centerpiece. The anticipated launch date for the SDA Farm-to-School website is January 2016.

PLANNING FOR PROCESSING, FARM AND SCHOOL SURVEYS

The SDA Farm-to-School Program is developing a survey for schools and farms to measure performance of grant activities, and to be conducted on a biennial basis to gather data on Farm-to-School participation and needs in the state over time. Questions from this survey will also be used following the grant period to continue program evaluation. The SDA Farm to-School program will review the previous SU surveys and sample surveys from around the country and adapt them to create surveys for distribution in December 2016.

Baseline data about farm and school participation in Farm-to-School exists from a survey conducted in 2013 by SU Prince County Extension. The 2016 survey was sent to approximately 295 school districts with 90 responses received. Of those received, 17 school districts indicated they had purchased food directly from local farms, which is less than 6 percent of school districts statewide. Forty-three survey respondents, nearly half of the total districts responding, said they would purchase food directly from a local vendor, as long as price and quality were competitive and a source was available. Only 8 of the 90 respondents, and less than 3 percent of total districts state-wide, indicated that they promoted locally purchased foods in the menu or cafeteria as coming from local farms, suggesting that Farm-to-School as an educational component was not a focused intention of school meal program.

While survey results from 2016 indicate that 17 districts had purchased from a farm, questions on frequency and volume were not included in the survey. Consistent with the baseline data, current SDA Farm-to-School experience suggests that few districts are directly purchasing local food on a regular basis. The survey created for this project will ask more in depth questions to learn about the frequency and volumes of local purchasing to get a more accurate assessment of Farm-to-School participation. The target by 2018 is for at least 30 districts, 10 percent of districts state-wide to be purchasing local food directly from farms on a regular (seasonal) basis. (Outcome #1)

The SDA Farm-to-School Program is also creating a survey for food processors to assess processing capacity and opportunity in the state. Data collected in the biennial survey of farmers and schools will further inform the processing survey by providing information on: crops grown and production capacity of individual farmers; product use and preferences of schools; current processed product types and processing capacity; interest in co-packing and other processing and packaging options. In preparation for this project, SDA Farm-to-School met with the SDA Food Safety Program on August 25th to assess what baseline data the agency currently collects, and to collaborate on the development of the survey. On September 1st, the SDA Farm-to-School Program met with the Food Processors Association and the X State Department of Agriculture Farm-to-School Program to plan for development and dissemination strategies for the survey. The food processing survey will be distributed in fall of 2017.

ACCOMPLISHMENTS

Estimate the Total Percentage (%) of Work Completed on the Project.....15.72%

List your accomplishments for this period of performance and indicate how these accomplishments assist in the fulfillment of your project's objective(s), outcome(s), and/or indicator(s).

Accomplishment	Relevance to Objective, Outcome, and/or Indicator
Hired a Project Coordinator	This individual will lead the project in order to achieve both indicators selected in our accepted project proposal: Outcome 4, Indicator 3c and Outcome 6, Indicator 3.
Conduct grower trainings to assist specialty crop producers in selling to institutional markets.	Outcome 6, Indicator 3: Number of individuals who learn about prevention, detection, control, and intervention food safety practices and number of those individuals who increase their food safety skills and knowledge
Develop resources and hold events to help farmers to understand and prepare for Good Agricultural Practices (GAP) certification	Outcome 6, Indicator 3.

CHALLENGES AND DEVELOPMENTS

Provide any challenges to the completion of your project or any positive developments outside of the project's original intent that you experienced during this period of performance. If those challenges or developments resulted or will result in corrective actions and/or changes to the project, include those in the space below.

Challenges or Developments	Corrective Action and/or Project Change(s)
The hiring of the Project Coordinator was delayed until April 1 st , due to coordinator relocating from out-of-state.	The delayed start time pushed back the initial timeline targets for the toolkit set-up and planning for the GAP outreach as indicated in the work plan, though it did not delay the activities themselves
Developing the Web-based Toolkit	Slight planning delays occurred due to the delayed start date of the coordinator. More significant delays came from identifying that the coding and a backend database would need to be developed for the toolkit to be functional in the long-term. This also implied that the toolkit would be built offsite from the SDA website, and would require database expertise outside the agency. Creating the toolkit off-line provided the opportunity to design a Farm-to-School website framework and toolkit within the same budget initially intended for creating just the toolkit. - Further delays occurred because the process of developing a website and toolkit required hiring a contractor and creating a personal services contract for the amount of \$10,000, the amount initially budgeted for the toolkit. These steps were successfully completed. - The website and toolkit is scheduled to be launched in January of 2018.
GAP/GHP Video	Segments of footage from the On-Farm GAP event are usable. However, in order to make the final video of professional quality, the SDA Farm-to-School

	Program is exploring working with a professional video production company. The video was initially planned to be completed by December of 2016. An informational video will require more planned footage and will take place in 2017.
--	---

SOLELY ENHANCING THE COMPETITIVENESS OF SPECIALTY CROPS

If the project has the potential to benefit non-specialty crop commodities, describe the activities that were conducted to ensure that grant funds were used to solely enhance the competitiveness of specialty crops.

Because this project has the potential to include and benefit non-specialty crops, the Farm-to-School program is providing matching funds in proportion to these items. To date, \$15,000 of matching funds have been provided, which is significantly more than the 2 percent of project funds being expended on non-specialty crop related activities.

ANNUAL PERFORMANCE REPORT

DATE SUBMITTED

11/30/2017

REPORT TYPE

1ST ANNUAL REPORT

PROJECT TITLE

Measuring Irrigation Water Quality on Fruit and Vegetable Farms

FEDERAL PROJECT EXPENDITURES TO DATE

EXPENDITURES

Cost Category	Amount Approved in Budget	Actual Federal Expenditures (SCBGP Funds ONLY)
Personnel	\$9,480.00	\$5,605.00
Fringe Benefits	\$3,792.00	\$2,203.00
Travel	\$9,000.00	\$3,600.00
Equipment	\$0.00	\$0.00
Supplies	\$1,750.00	\$1,200.54
Contractual	\$22,960.00	\$11,264.00
Other	\$3,050.00	\$1,000.00
Direct Costs Sub-Total	\$50,032.00	\$24,873.54
Indirect Costs		
Total Federal Costs	\$50,032.00	\$24,873.54

PROGRAM INCOME

Program Income will not be incurred under this project.

Source/Nature (i.e., registration fees)	Amount Approved in Budget	Actual Amount Earned
Total Program Income Earned		

ACTIVITIES PERFORMED

Address the below sections as they relate to this period of performance.

ACCOMPLISHMENTS

Estimate the Total Percentage (%) of Work Completed on the Project.....50%

List your accomplishments for this period of performance and indicate how these accomplishments assist in the fulfillment of your project's objective(s), outcome(s), and/or indicator(s).

Accomplishment	Relevance to Objective, Outcome, and/or Indicator
<p>In 2014-15, irrigation water was sampled on 12 farms across East and West, with a total of 28 irrigation water sources, including 12 surface water sources, 14 wells and two municipal water sources. Eight of these farms grew tomatoes exclusively. Three other farms grew a mixture of vegetables and one farm grew strawberries. Samples were taken three times throughout the production season.</p> <p>Originally, it was planned to sample 30 farms per year; however, multiple irrigation sources on most farms had not been taken into account. Therefore, 12 farms with multiple irrigation sources were sampled for a total of 28 samples. Additionally, it was planned to sample each farm four times throughout the cropping season. Farms were sampled three times before crops were removed for the season.</p> <p>Analyses included quantified generic E. coli, specific conductance, turbidity, and pH. Of all 84 samples taken, only one sample was above the allowable limits for cfu/ 100 ml of E. coli, and this sample was taken from a surface water source shortly after a heavy rain event. The results from all samples were added to the National Irrigation Database to be used to help shape future irrigation water quality standards.</p> <p>States B, C, D, and F</p> <p>States B, C, D, and F have worked together over the previous reporting period to effectively collect irrigation water samples from a variety of farms that lie within the seven states that make up this multi-state project. Specifically, they have gathered data from approximately 49 farms (B: 12, C: 9, D: 5, E: 16, F: 10, and G: 8). These States collected four samples throughout the 2015-16 production season, which totals 196 samples. The data collected by these States was added to the National Irrigation Database, which was developed by the National GAPs Program at Cornell University.</p>	<p>Objective 1: Sample irrigation water throughout the production season to assess the presence and persistence of E. coli</p> <p>Outcome 7, Indicator 1: Increased understanding of fecal indicators and pathogens</p>
<p>In year 1 of the project, sampled growers had one-on-one instruction with Dr. Doug Smith and his assistant on proper water sampling and interpreting the test results.</p> <p>Training materials (factsheets) are currently being developed to cover irrigation water quality assessment and management.</p>	<p>Objective 2: Train Extension professionals and producers in irrigation water quality assessment and management</p>

<p>a) Water Sampling – supplies that are needed and proper technique.</p> <p>b) Water Testing – what to test for and how to interpret results.</p> <p>Mitigation Strategies – if coliforms are present what are the options for managing them.</p> <p>States E and G</p> <p>Over the previous reporting period, States E and G were actively engaged in the quality analyses to ascertain qualified generic E. coli, specific conductance, turbidity, and pH. This information has been used to develop workshop materials and factsheets for water sampling, testing, and mitigation strategies to reduce microbial load while growers and farm managers about the importance of on-farm irrigation water management. To date, State E and G have conducted a total of 20 one-on-one training sessions for water sampling with individual growers.</p>	
--	--

CHALLENGES AND DEVELOPMENTS

Provide any challenges to the completion of your project or any positive developments outside of the project’s original intent that you experienced during this period of performance. If those challenges or developments resulted or will result in corrective actions and/or changes to the project, include those in the space below.

Challenges or Developments	Corrective Action and/or Project Change(s)
<p>Most farms sampled contained more than one irrigation source so sampling of each farm has taken longer than expected.</p>	<p>In order to accommodate the multiple irrigation water sources for each farm we reduced the overall number of farms sampled from 30 to 12. The total number of irrigation samples was 28 and included multiple samples from separate sources on a single farm. Additionally, farms were each sampled three times before crops were removed as opposed to four times as a result of this.</p>

SOLELY ENHANCING THE COMPETITIVENESS OF SPECIALTY CROPS

If the project has the potential to benefit non-specialty crop commodities, describe the activities that were conducted to ensure that grant funds were used to solely enhance the competitiveness of specialty crops.

N/A – All farms sampled exclusively grow specialty crops.

ANNUAL PERFORMANCE REPORT

DATE SUBMITTED

11/15/2017

REPORT TYPE

1ST ANNUAL REPORT

PROJECT TITLE

Enhancing Sustainable Specialty Crop Production

FEDERAL PROJECT EXPENDITURES TO DATE

EXPENDITURES

Cost Category	Amount Approved in Budget	Actual Federal Expenditures (SCBGP Funds ONLY)
Personnel	\$0.00	\$0.00
Fringe Benefits	\$0.00	\$0.00
Travel	\$0.00	\$0.00
Equipment	\$0.00	\$0.00
Supplies	\$17,800.00	\$500.00
Contractual	\$5,000.00	\$2,000.00
Personnel	\$0.00	\$0.00
Direct Costs Sub-Total	\$22,800.00	\$2,500.00
Indirect Costs	\$0.00	\$0.00
Total Federal Costs	\$22,800.00	\$2,500.00

PROGRAM INCOME

Source/Nature (i.e., registration fees)	Amount Approved in Budget	Actual Amount Earned
Specialty Crop Workshop Series registration fee (\$50 per each of the 65 participants)	\$2,500.00	\$3,250.00
Apprenticeship Program (\$70 per registrant with 28 participants)	\$2,240.00	\$1,960.00
Total Program Income Earned	\$4,750.00	\$5,210.00

ACTIVITIES PERFORMED

Address the below sections as they relate to this period of performance.

The Specialty Crop Workshop Series was completed in March 2017. The Specialty Crop Workshop Series was an 8-week workshop series that included topics on whole farm planning, transplant production, business planning, enterprise development, cash flow statements, farmers markets, weed management, drip and micro-irrigation, general soils, soil fertility, cover crops, and record keeping. It was held January-March on Wednesday evenings. This series of workshops was particularly successful with an attendance of 65 specialty crop producers. Each participant was evaluated through pre- and post-workshop assessments. The data has been compiled and will be analyzed over the course of the next reporting period. However, preliminary analysis and anecdotal reporting has revealed a sharp increase in participant knowledge of specialty crop issues.

Over the previous reporting period, we also contracted with a mentor farmer to provide a farmer-link to apprentices. There were 11 farm enterprises that participated in the apprenticeship program in 2015 with a total of 28 apprentices. The specific duties of this mentor farmer included the provision of timely guidance for specialty crop production activities and advice on interventions for disease and weed issues. The mentor farmer also served as a liaison for program administration, coordinated on farm learning activities, and helped to plan infrastructure improvements.

In addition, the Farm Extension & Research Center hosted two workshops and one site meeting. The two workshops discussed energy sustainability as it relates to specialty crop production and season extension, while the site meeting emphasized the construction of hoop houses for specialty crop production. Each of these training sessions was advertised through a county general agricultural listserv, the Specialty Crop Workshop Series alumni, and a regional small farm listserv. Weather during the hoop house site meeting was unfavorable, but attendance still reached 20 individuals. However, the other two workshops boasted attendance rates of 32 (Season Extension) and 37 (Energy Sustainability). The workshop participants' backgrounds ranged from new specialty crop farmers to local tobacco farmers seeking diversification opportunities. In the case of each workshop, participants were evaluated through pre- and post-workshop assessments. This data has been compiled and will be analyzed over the course of the next reporting period.

A preliminary review of the evaluations indicates that at least five of the participants expressed interest in or plan to create a new enterprise at the Farm Enterprise program. The team plans to continue to provide these participants with the necessary support to achieve their goals over the next reporting period.

ACCOMPLISHMENTS

Estimate the Total Percentage (%) of Work Completed on the Project.....15%

List your accomplishments for this period of performance and indicate how these accomplishments assist in the fulfillment of your project's objective(s), outcome(s), and/or indicator(s).

Accomplishment	Relevance to Objective, Outcome, and/or Indicator
8-week specialty crop workshop series completed - 65 specialty crop producers	Objective 1; Outcome 2, Indicator 2a
Pre- and post-workshop assessments completed	Objective 1; Outcome 2, Indicator 2a
11 farm enterprises that participated in the apprenticeship program in 2015 (28 apprentices)	Objective 1; Outcome 2, Indicator 2a

Farm Extension & Research Center hosted two workshops and one site meeting	Objective 2; Outcome 2, Indicators 3 & 4
--	--

CHALLENGES AND DEVELOPMENTS

Provide any challenges to the completion of your project or any positive developments outside of the project's original intent that you experienced during this period of performance. If those challenges or developments resulted or will result in corrective actions and/or changes to the project, include those in the space below.

Challenges or Developments	Corrective Action and/or Project Change(s)
The project experienced a delay in the purchase of supplies for the hoop house; however, this did not hinder the completion of the project's goals and objectives. The delay was caused by a lack of access to a secure location to store the project's supplies.	Our staff is investigating a variety of alternatives and is currently making efforts to resolve the issue associated with supply storage. A temporary building provided by State University has been brought to the site and professionally leveled. Electricity will be connected to this site in the coming month. The project's targets and goals are still realistic and attainable; however, the timeline must be modified. The work plan timeline is currently being modified to ensure that all project goals and targets are attained within the duration of the grant. The complete revised work plan will be provided to the State Department of Agriculture. However, for the purposes of this report, we have provided a brief estimated timeline in the Future Project Plans section.

SOLELY ENHANCING THE COMPETITIVENESS OF SPECIALTY CROPS

If the project has the potential to benefit non-specialty crop commodities, describe the activities that were conducted to ensure that grant funds were used to solely enhance the competitiveness of specialty crops.

To ensure that grant funds were used to solely enhance the competitiveness of specialty crops, only specialty crop producers and potential specialty crop producers were allowed to participate in the workshop series. In addition, matching funds, in the amount of \$1,500 were provided to offset the participation of non-specialty crop producers in the Farm Extension & Research Center workshops and site meeting.

ANNUAL PERFORMANCE REPORT

DATE SUBMITTED

12/1/2017

REPORT TYPE

1ST ANNUAL REPORT

PROJECT TITLE

Establish a Super Berry Market in the State

FEDERAL PROJECT EXPENDITURES TO DATE

EXPENDITURES

Cost Category	Amount Approved in Budget	Actual Federal Expenditures (SCBGP Funds ONLY)
Personnel	\$5,000.00	\$2,450.00
Fringe Benefits	\$1,100.00	\$100.00
Travel	\$300.00	\$300.00
Equipment	\$0.00	\$0.00
Supplies	\$2,300.00	\$1,700.00
Contractual	\$0.00	\$0.00
Other	\$0.00	\$0.00
Direct Costs Sub-Total	\$8,700.00	\$4,550.00
Indirect Costs	\$0.00	\$0.00
Total Federal Costs	\$8,700.00	\$4,550.00

PROGRAM INCOME

Program Income will not be incurred under this project.

ACTIVITIES PERFORMED

Tree removal of approximately 4 acres of trees for commercial production of super berry plants and fruit tree orchard.

- Ordered and planted an additional 2,000 Aronia Melanocarpa seedlings from Spring Meadow Nursery
- Built cages for each planting to protect from deer, rabbits and other wildlife
- Harvested wild fruits (raspberries, chokecherries, mulberries, etc.) to process and test recipes for finished products
- Joined Buy Fresh Buy Local Chapter
- Established partnership with the Aronia Association <http://aroniaassociation.org/> with over 120 members across the country
- Sold and marketed high antioxidant fruits, vegetables and herbs at local farmers markets

- Worked with OC in Lincoln, NE to obtain organic certification.
- Attended Aronia festival in Missouri Valley, IA featuring seminars on planting, caring for and harvesting berries
- Toured W Vineyard in WI and the largest open air farmers' market in Madison, WI.
- Attended Sioux City, IA and Sioux Falls, SD garden shows and listened to presenters on various topics surrounding organic gardening, processing of foods and growing medicinal herbs.
- Ongoing research via books, online forums and blogs on organic gardening, production and marketing.

This year most of the work has been dedicated to the planting, caging, and caring for the plants. We have been in contact with 4 growers, who are interested in the super berry market and are working to meet our target of assisting in the establishment and development of 3 to 4 additional Super Berry producers by fall 2016.

In 2012 we planted an additional 800 superberry plants. In 2013, we added an additional 600 plantings and in 2015, with the help of the specialty crop block grant, we were able to double our superberry plantings and added an additional 2,000 plantings to our farm.

It is our understanding that, on average, a 5-year bush produces about 20 pounds per bush. On a 10-year bush, the average is 40 pounds of berries per bush. With our goal of 4,000 superberry plants, we hope to see a long term average of over 100,000 pounds of berries per year from our farm that will assist in forming alliances with other producers to obtain contracts with the health and wellness processors. We are members of the Aronia Association (www.aroniaassociation.org) where over 120 producers and vendors have come together to assist one another in planting methods as well as production and marketing opportunities.

ACCOMPLISHMENTS

Estimate the Total Percentage (%) of Work Completed on the Project.....35%

List your accomplishments for this period of performance and indicate how these accomplishments assist in the fulfillment of your project's objective(s), outcome(s), and/or indicator(s).

Accomplishment	Relevance to Objective, Outcome, and/or Indicator
Planted 1,400 superberry plants	On target to meet our goal of planting 4,000
Working with 4 growers	Objective 1: To increase the number of growers and producers of Super Berries Outcome 8, Indicator 6: There will be 4 new beginning farmers who went into specialty crop production

CHALLENGES AND DEVELOPMENTS

Provide any challenges to the completion of your project or any positive developments outside of the project's original intent that you experienced during this period of performance. If those challenges or developments resulted or will result in corrective actions and/or changes to the project, include those in the space below.

Challenges or Developments	Corrective Action and/or Project Change(s)
Record Levels of Flooding	Purchasing more superberry plants to replace those lost.

SOLELY ENHANCING THE COMPETITIVENESS OF SPECIALTY CROPS

N/A