

FY 2014 SPECIALTY CROP BLOCK GRANT PROGRAM – FARM BILL

XXX STATE DEPARTMENT OF AGRICULTURE 

1st ANNUAL REPORT 

AMS Agreement: 12-25-B-XXXX 

PROJECT COORDINATOR 

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Activities Performed

First Quarter (Nov. 2014 – Dec. 2014)

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. 2015 – March 2015)

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' termini and the 3' termini 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 2015 – June 2015)

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 2015- Sept. 2015)

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.

Problems and Delays

The funds for this project did not become available until the end of October, 2014. Therefore, the project did not get underway as originally planned. Due to the delay in the starting date and the seasonal nature of the research project, the timeline for the project has been amended (see updated timeline in the *Future Project Plans* section below).

Even with the delay, a substantial amount of baseline data has been generated to allow the project to move rapidly forward in next year. 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. 

Future Project Plans

Develop an attenuated PepMV strain – July 2016 – May 2017

Test the efficacy of the immunization vector – August 2016 – May 2017

Test the protection of tomato plants using the attenuated PepMV strain – June 2017 – September 2017

Draft survey for growers to complete after presentations to measure their interest in using the developed vaccine – July 2017

Results Presentation at APS where attendance will be measured and survey conducted – August 2017



Results presentation and dissemination at AC field day where attendance will be measured and survey conducted – September 2017

Funding Expended To Date 

\$20,547.42 out of \$63,523 budgeted has been expended as of September 30, 2015.

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

Annual Report 

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, 2015.

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 2014 – October 2015 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 (Outcome #2). 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 2015-2016, and in 2017. 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, 2015, 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 2015.

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 2015 and January 2016. 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 2015/16 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 2015.

Baseline data about farm and school participation in Farm-to-School exists from a survey conducted in 2012 by SU Prince County Extension. The 2012 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 2012 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 2017 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 2016.

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. 

Problems or Delays

Hiring of Project Coordinator

- The hiring of the Project Coordinator was scheduled for February. While the hiring was completed at this time, the official start date did not occur until April 1st, due to the 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 2016.

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 2015. An informational video will require more planned footage, and will take place in 2016.

Future Project Plans



The following activities will be performed in the upcoming grant year:

- In partnership with SU Extension and potentially with a contracted professional video producer, SDA Farm-to-School will review the On-Farm event footage, shoot additional footage, and create an informational GAP video.
- SDA Farm-to-School will complete and analyze a survey of all school districts and of farmers who have expressed interest in Farm-to-School.
- SDA Farm-to-School will develop and conduct 3 farmer and 3 school foodservice training events. SDA will reach out specifically to minority and socially disadvantaged farmers to draw them into these training sessions.
- In partnership with SU Extension and the SU Small Farms Team, SDA Farm-to-School Program will host a second On-Farm GAP/GHP event.



Funding Expended To Date



\$39,313.77 out of \$250,000 budgeted has been expended to date. Although it may appear that we are behind schedule in our expenditures, this is partially due to the fact that our video and web design contracts are payable upon delivery of the final product. In addition the delays in hiring the program coordinator pushed some of the personnel costs to a later date. Given the labor-intensiveness of conducting and analyzing the survey and running training workshops, we anticipate we will be able to expend all grant funds on approved and allowable expenses by the end date of the grant.



Measuring Irrigation Water Quality on Fruit and Vegetable Farms

Annual Report 

Activities performed: 

Objective 1: Sample irrigation water throughout the production season to assess the presence and persistence of E. coli

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. 

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.

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.

States B, C, D, and F

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.

Objective 2: Train Extension professionals and producers in irrigation water quality assessment and management

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.

Training materials (factsheets) are currently being developed to cover irrigation water quality assessment and management.

- a) Water Sampling – supplies that are needed and proper technique.
- b) Water Testing – what to test for and how to interpret results.

Mitigation Strategies – if coliforms are present what are the options for managing them.

States E and G

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 educating

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.

Problems and delays:

As mentioned in the Activities Performed section, the project proposal stated that we would sample 30 farms in each year; however, most farms had more than one irrigation water source. Consequently, we reduced the number of farms in order to accommodate the multiple irrigation water sources for each farm. No problems have been reported in the other States.

Future Project Plans

Objective 1: Sample irrigation water throughout the production season to assess the presence and persistence of E. coli

In 2016, 30 additional water samples will be collected from farms in the middle and western regional areas. This data gathering exercise will take place throughout the production season (April to September 2016).



Data will continue to be added to the National Irrigation Database and users of the Database will be required to complete a short survey indicating who they are and what they intend to use the data for.

States B, C, D, and F

In 2016, 5 additional water samples will be collected from farms in each state. This data gathering exercise will take place throughout the production season (April to September 2016).

Objective 2: Train Extension professionals and producers in irrigation water quality assessment and management

Workshops will be offered for Extension professionals through train-the-trainer sessions and for growers in each of the 3 regions, covering proper irrigation water sampling, choosing the proper sanitary water tests, interpreting the test results and selecting mitigation strategies. Training materials will be developed both for hard-copy and web dissemination. Presentations will be developed for the workshops and available to the Extension professionals for use in their home counties. These trainees will have the opportunity to utilize and share the factsheets and training materials developed during the previous reporting with producers in their own counties. Participants in the training sessions will complete a survey on the increase in their knowledge and the likelihood that they will apply what they learned to their operations. (March to September 2016)

States E and G

An additional 6 one-on-one training sessions for water sampling with individual growers will be conducted in States E and G.

In the final months of the project, data from the in-person surveys and the on-line surveys will be analyzed and aggregated to demonstrate the benefit of the project to the specialty crop industry.

Funding Expended to Date

XXX State Department of Agriculture Funding

Student Assistant	\$ 5,605.00
Student Benefits	2,203.00
Travel	3,600.00
Supplies	1,200.54
Lab analysis	11,264.00
<u>Indirect costs</u>	<u>2,342.00</u>
Total Expended to Date	26,214.54
Remaining XXX Budget	<u>28,361.46</u>

Enhancing Sustainable Specialty Crop Production

Annual Report

Activities Performed

The Specialty Crop Workshop Series was completed in March 2015. 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.

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. 

Problems & Delays



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.

Actions Taken to Address this Delay

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.

Targets and Goals

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.

Future Project Plans 

Considering that the delay of supply storage is in the process of being solved, the main goal for the next reporting period is to purchase the necessary equipment that was not purchased during the previous reporting period.

Equipment purchase, Ongoing through August 2016
Hoop house set up, March 2016

Both these activities will be discussed at the Specialty Crop Workshop Planning Committee meeting. Dr. Smith will be the contact person for implementation, supported by close communication with Dr. Brown, County Extension Director.

Over the course of the next reporting period Dr. Smith will also analyze the data gathered from the pre and post assessments for each of the workshops.



Data Analysis Completion, July 2016

The project also generated enough program income (mentioned below) to expand the number of independent workshops to include two additional workshops for interested specialty crop producers. Dr. Brown will host additional hoop house demonstration and energy sustainability workshops over the course of the next reporting period.

Hoop House Demonstration, September 2016
Energy Sustainability Workshops, June 2016

Funding Expended to Date 

As of September 30, 2015 the project had spent \$2,500 of its allotted \$22,800. Although it may appear that we are behind in our expenditures, this is primarily a result of the delays described in the *Problems and Delays* section above. With the update to our timeline in the *Future Project Plans* section, we anticipate we will be able to expend all funds on approved, allowable costs by the end date of the grant. 

Program Income:

- The Specialty Crop Workshop Series generated program income equal to **\$3,250** through its registration fee (\$50 per registrant with 65 workshop participants).

- The Apprenticeship Program generated program income equal to **\$1,960** through its registration fee (\$70 per registrant with 28 apprenticeship participants).

The total amount of the **\$5,210** of program income will be reinvested into the project for the development and facilitation of additional specialty crop independent workshops in 2016.

Establish a Super Berry Market in the State

Annual Report

Activities Performed

- Tree removal of approx. 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.

Problems and Delays

Overall, it's been a very successful and fulfilling year. However, after we planted the superberries our county sustained record level flooding during the Summer and Fall of 2015. This level of flooding has never been seen before. Consequently, while we're hopeful

many of the young seedlings survived and are anxiously awaiting this upcoming Spring (2016) to estimate the damage, replant lost superberry plants, and take any necessary corrective action to plan for such flooding in the future.

Future Project Plans

- Pursue additional partnership opportunities with farmers, CSA/coop's and groups involved in organic farming.
- Obtain organic certification.
- Tour additional berry plantations and processing facilities to develop partnerships with growers.
- Continue outreach to potential berry producers in our state and provide one-on-one assistance and tours of our facilities.
- Continue to market organic, high antioxidant produce opportunities via farmers' markets, partnership opportunities and online venues.
- Publish articles on super berry marketing efforts in two publications.
- Develop online web portal with contractor to increase awareness and track website hits, provide research and wellness opportunities and network current and potential producers together in the state and surrounding regions interested in research and development

Funding Expended to Date

\$8,825.42 of \$13,390.50 has been expended to date

Training Series to Increase Local Fruit and Vegetable Production at the Local Market - Specialty Crop Extension Organization

Final Report

Project Summary

This project supported farmers that plan to convert to specialty crops by providing educational workshops and field visits to commercial vegetable/fruit farms and field trips to the State University Research and Extension Center. More than 150 producers and growers participated in these activities and 87 percent of post-activity respondents indicated that their participation in the project motivated them to consider expanding the amount of land they currently have in specialty crop production.

Project Purpose

Local farmers in the State were recently dealt an unpleasant hand when their longtime buyer, Corporation A, informed the State producers that no further contracts would be issued in the State. This created uncertainty in the establishment of a buyer willing to pay a fair price for local crops. The 2007 USDA Census of Agriculture reported that at least 25 percent of the State's crop production was to be affected by this change in purchaser. Corporation A's withdrawal will have an incredible impact on the value of agricultural production for this area of the State. Consequently, a successful transition to a comparable crop is needed to ensure that the economic well-being of these growers is preserved.

Fortunately, the growth in the number of farmers' markets and community supported agriculture ventures in this region currently outpaces the national average and local retailers and institutional buyers continue to seek locally grown fruits and vegetables. In fact, some producers are dabbling in specialty crops like sweet corn and melons, which increasingly requires a strong educational effort to inform these farmers of the challenges that they will face in their transition.

Project Activities

The first leg of the project was a series of three workshops that focused on three areas of particular importance. All three-hour workshops were held free of charge. All participants received a 3-ring binder filled with Specialty Crop Extension Guides and copies of the presentations.

- Nov 30 - Vegetable Production & Profitability – This workshop provided an overview of techniques from transplant production to harvest, including crop management, nutrient management, and pest control. Thirty-six specialty crop growers participated in this session.
- Dec 7 - An Overview of Specialty Crop Marketing Options – An in-depth exploration of marketing opportunities for fruits/vegetables. Twenty-six specialty crop growers attended.
- Dec 14 - An Exploration of Alternatives and High Tunnel Production – A study in high tunnel production and alternative products. A host of industry, university, and state agency speakers were lined up providing valuable information. Forty-one specialty crop growers and specialty crop agricultural specialists participated.

All participants in the workshops received complimentary registration for the Vegetable Growers Conference. This is one of the premier vegetable production conferences in the region, featuring day-long workshops on high tunnel production, community supported agriculture (CSA) operations, and new this year, a day looking at growing the profitability of the farm. The conference also includes two days of concurrent sessions focusing on all aspects of vegetable production including transplant production, marketing, pollination, and good agricultural practices, to name a few.

Finally, participants took part in three field trips highlighting production and marketing techniques and tours of existing farms to see full-scale, successful production in action. These events were in May and June 2014.

- Destination Smithtown was held on May 28 and provided a charter bus to the North Produce Auction and visits to four area farms. Nineteen growers and potential growers participated.
- New Growers Equipment Workshop was held on June 14 at the University Horticulture Research and Extension Center. This project teamed with the New Growers program to expose project participants to scale-specific tools and equipment. The \$15 per participant fee was covered by the grant. Twenty-four specialty crop growers attended.
- Farmers' Market Tour held on June 26 was the final event in the series. Participants had the opportunity to speak with the City Market manager on a walking tour of the area during a high consumer volume time period. This included explanation of how the Market is set-up and the importance of market organization. We observed direct marketing of fruits and vegetables by vendors as well as their interactions with customers. Nine fruit and vegetable growers attended.

Goals and Outcomes Achieved

This project contained both short-term and longer-term expected measurable outcomes. In order to assess progress toward these goals, project managers collected data at the following at the conclusion of each of the three workshops and three field trips/farm tours as well as approximately six weeks after the conclusion of workshop series and field trips/farm tours.

Short-Term Outcomes:

As outlined in the project proposal, participants were expected to become more knowledgeable about production practices of various specialty crops, and become more aware of marketing options available for these crops.

For production practices, participants assessed their knowledge prior to participating in the series at 2.91 on a five-point scale and 4.64 after the series. This reflects an increase of 1.73 on a 5-point scale. For marketing options, participants assessed their knowledge prior to participating in the series at 2.73 on a five-point scale and 4.36 after the series. This reflects an increase of 1.63 on a 5-point scale.

Additional short-term outcomes can be assessed by viewing participant comments. Included here is a sampling of those comments:

- “The series was very helpful in learning about available markets & practices.”
- “The series provides a solid introduction to many significant aspects of specialty crop production.”
- The high tunnel information was fascinating.”

Long-Term Outcomes:

As outlined in the project proposal, long-term outcomes include an increase in the number of regional specialty crop producers and/or an increase in the quantity of land dedicated to specialty crop production in the region. As you can imagine, project managers have not been able to assess the true impact of the project on these variables. However, we did attempt to get a feel for how the project might affect the amount of land in specialty crop production throughout the evaluation process.

Eighty-seven percent of participants responding indicated that their participation in the project has encouraged them to expand the amount of land they currently have in specialty crop production. Additionally, 90 percent of respondents indicated that they were more confident about the demand for their products as a direct result of the project. At least one participant has already planted twice as much of his crop after his participation in the project led him to discover a better marketing opportunity.

Beneficiaries

Direct beneficiaries of the project activities were farmers and potential producers who participated in some or all of the various activities of the project. They benefited by learning more about specialty crop production as well as by interacting with other producers and experts in the specialty crop industry. Attendance numbers for each of the events are listed below:

Event	Date	Attendance
Workshop	November 30, 2014	36
Work Shop	December 7, 2014	26
Work Shop	December 14, 2014	41
Field Trip/Farm Tour	May 28, 2015	19
Field Trip/Workshop	June 14, 2015	24
Field Trip	June 26, 2015	9

Lessons Learned

Fulfilling the activities of this project has led to a lot of lessons learned. The incentive of free registration at the Vegetable Growers Conference helped to attract participants to the free workshops. Additionally, the myriad presenters at the workshops helped to facilitate more group discussion which helped to unite the otherwise hesitant participants. Evaluation data indicated that participants' knowledge of the subject matter and their social connection to like-minded individuals increased as a direct result of the project.

Contact Person

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Additional Information

Attached Separately:

Project Promotional Flyer

Event Report for "Destination Smithtown"
Event Report for New Growers "Equipment Workshop"

Grant Administration

Funding Expended To Date

\$13,935 out of \$27,870 budgeted has been expended as of September 30, 2015. These expenses have all been charged as indirect costs.