

Specialty Crop Block Grant Program—Farm Bill

Massachusetts Department of Agricultural Resources

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FY 2011 Final Performance Report

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Point of Contact

Mary Jordan; Director of Agricultural Markets
Phone: (617) 626-1750
Email: mary.jordan@state.ma.us

Point of Contact

Alexander Gill
Contract Administrator
Department of Agricultural Resources
Phone: (617) 626-1765
Email: alexander.gill@state.ma.us

Point of Contact

John Rosa
Accountant III
Department of Agricultural Resources
Phone: (617) 626-1730
Email: john.rosa@state.ma.us

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- 7. University Of Massachusetts, Amherst**
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- 8. Massachusetts Nursery Landscape Association; Massachusetts Flower Growers' Association (lead organization) and the Massachusetts Flower Growers Association (MNLA & MFGA)**
Green for Life

- 9. Massachusetts Farm Bureau Agricultural Preservation Corporation**
The Worcester Kindergarten Initiative: Our Next Generation of Specialty Crops Consumers

- 10. The Boston Public Health Commission**
Boston Supplemental Nutrition Assistance Program Farmers' Market Project

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Growing a Sustainable Hops Industry for New England (HOPS)

12. New England Apple Association

Building a Fresh-Sliced Apple Market through Food Service (NEAA)

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Franklin County Community Development Corporation Extending the Season

Final Performance Report

Applicant: Franklin County Community Development Corporation

PROJECT SUMMARY

- a) Background of the initial purpose of the project, including the specific issue, problem or needs that were addressed by the project.

The purpose of the project was to extend the season for MA growers to provide local, fresh, healthy fruits and vegetables to low and moderate-income young people throughout the year. Direct Farm to School activities have increased in recent years, however, in Massachusetts the schools operate between September and mid-June, while the New England climate favors vegetable and fruit production between June and October, leaving a gap in the ability for Massachusetts growers to provide fresh Massachusetts crops to students during the school year. This Extended Season, Farm to Institution project, worked with growers to lightly process specialty crops in order to provide year-round Massachusetts grown vegetables to institutions while providing a fair price to growers. In particular, this project helped the Western MA Food Processing Center (FPC) increase its capacity to purchase, process, freeze, store and distribute vegetables which will serve growers and institutions for many years.

- b) Description of the importance and timeliness of the project.

This project was important and extremely timely because both parents and the USDA are now asking that schools provide more fruits and vegetables in their meals. This year, USDA changed its requirements and schools are searching for more vegetables and many prefer local but there is very little supply of local vegetables after September. In addition, while schools are interested in a year round source for healthy local products, they don't have additional funds so the local vegetables have to be affordable. This project helped the FPC become more efficient at processing and distributing local vegetables in order to keep the cost down for the schools and make it easier for them to achieve their goal while providing Mass. growers access to a newly expanding market. The importance and timing of this project is also vital because there is an undeniable need for improved nutrition among our young people, where there are high rates of obesity and limited access to healthy foods.

PROJECT APPROACH

- * The FPC purchased vegetables from five farms in Massachusetts.
 - * 80,000 lbs of Mass. specialty crops were efficiently processed and frozen at the FPC.
 - * Five institutions purchased Mass. specialty crop products and distributed them to over 200 schools and institutions.
 - * 15,000 Massachusetts students will consume Massachusetts-grown specialty crops as part of a regular meal during the fall and winter.
 - * The project provided \$60,000 for MA growers and \$20,000 for MA employees.
 - * The FPC developed a Grower and institution friendly information tracking and labeling systems.
 - * The project was featured in the media 3 times.
 - * The FPC documented & implemented Good Manufacturing Processes, HACCP & safety procedures for 4 specialty crop products.
- 2) If the project benefited commodities other than specialty crops, indicate how the Contractor ensured that grant funds were used only to enhance the competitiveness of specialty crops.

N/A – This project worked with broccoli, peppers, carrots and parsnips.

3) A summary of the contributions and roles of project partners

- Massachusetts Farm to School Program helped match the FPC with additional growers through referrals and meet and greet opportunities.
- The University of Massachusetts Center for Agriculture and Food Science Department provided advice and equipment throughout the course of the project.
- Communities Involved in Sustaining Agriculture (CISA), and Pioneer Valley Grows (PVGrows) helped market this project to both growers and institutions and the public as a way to let people know that extending the season of local production is possible and potentially beneficial for both growers and consumers.

GOALS AND OUTCOMES ACHIEVED

- 4) A description of the activities that were completed in order to achieve the performance goals and measurable outcomes

In addition to the activities completed on the work plan, Franklin County CDC staff participated in the following events as part of the outreach for the Vegetable Freezing Project:

- New England Fruit and Vegetable Growers Conference in Manchester NH. - Dec. 2011
- NOFA-Vermont Annual Conference in Burlington, VT. Feb. 2012
- Easthampton Elementary School – March 2012
- Western MA Food Bank, Farmer Meet and Greet, Hatfield, MA, March 7, 2012
- Chartwells Dining Service Buyer meeting, Worcester, MA – March 2012
- MA Farm to School Convention, Sturbridge, MA March 15, 2012
- Performance Food Group, Springfield, MA - April 2012
- Pioneer Valley Grows' Semi-annual Forum. May 2012
- National Good Food Network Food Hub Convening in Chicago. May 2012
- National Good Food Network Webinar - June 2012
- Slow Living Summit, Brattleboro VT – June 2012
- Chartwells Dining Service Annual meeting, Foxboro, MA - July 2012
- Farm To Cafeteria Conference, National Farm to School, Burlington, VT – Aug. 2012
- Connecticut Governor's Council for Agricultural Development, Meriden, Ct Nov. 7, 2012.

- 5) If the outcomes measured are long term, summarize the progress that has been made toward their achievement

This project had some short-term outcomes – vegetables purchased, processed and distributed to institutions – as well as long term outcomes – operational efficiencies, equipment and facility improvements, relationships made with growers, distributors and consumers as well as market awareness which will increase supply and demand in the future. Demand for extended season products and interest in the role this project is playing in rebuilding regional food systems has grown rapidly. This will increase future product demand. The operational efficiencies learned are making this project more competitive so it will be able to compete on price, as well as quality and “localness” in the future. Behind the scenes information management and data tracking systems were improved and institutionalized which are not as visible as “bricks and mortar” infrastructure, but are equally important in improving efficiencies. Developing relationships and completing documentation with corporate distributors to get into the system takes time but will expand marketing channels rapidly in the future.

- 6) A comparison of actual accomplishments with the goals established for the grant period

Original Goals	Actual Accomplishments
8 new farms in Massachusetts will enter the wholesale extended season value chain and sell up to 200,000 lbs of specialty crops to Massachusetts Schools and Institutions.	5 farms 100,000 pounds of vegetables
200,000 lbs of Mass. specialty crops efficiently processed at FPC and delivered to Mass institutions.	80,000 pounds were processed and available for sale to institutions
10 institutions purchase Mass. specialty crop products via Extended Season value chain.	5 institutions purchased, and several of them distributed to numerous institutions. Approximately 75 institutions received frozen vegetables.
15,000 Massachusetts students and 2,000 hospital patients consume Massachusetts-grown specialty crops as part of a regular meal during the fall and winter.	Over 15,000 MA students were served vegetables processed through this project. Pick up is anticipated for hospitals and over 2,000 hospital consumers will be served vegetables processed through this project.
Project will generate \$220,000 in revenues (\$120,000 for growers, \$50,000 for employees)	Project generated \$100,000. \$60,000 paid to growers and \$25,000 to workers
Grower and institution friendly information tracking and labeling systems in place.	Grower and institution friendly information tracking and labeling systems in place.
4 earned media mentions featuring project & participating growers and institutions.	3 earned media mentions featured the project & participating growers and institutions.
Documented & implemented GMP & safety procedures for 9 extended season specialty crop products.	Documented & implemented GMP & safety procedures for 4 extended season specialty crop products.

7) Summarize the major successful outcomes of the project in quantifiable terms

- ✓ Over 80,000 lbs of local produce was purchased from 5 Massachusetts farms and they were paid approximately \$50,000.

- ✓ Solid relationships were made with 5 farmers which will be expanded to other farmers in future years.
- ✓ Operational efficiencies were developed and refined for processing vegetables.
- ✓ Internal tracking and accounting systems were refined for and institutionalized.
- ✓ Pioneer Valley Frozen Vegetables have been certified as a vendor by several major distributors and Dining Service Companies and independent schools have placed orders and already picked up some product.
- ✓ The Franklin County CDC learned enough to make a decision to expand the Vegetable Freezing operation and secured a \$300,000 loan for USDA and has contracted with a General Contractor that has already begun the work.

In addition to the previously mentioned outcomes that were achieved, this project has also been successful in securing funding from other sources to ensure it is well capitalized to expand.

- The Community Foundation of Western Massachusetts provided \$12,000 in 2011 and another \$6,000 in 2012.
- The Franklin County CDC raised \$5,239 from Whole Foods Market 5% Day Corporate Community Support Donation.
- The Wallace Center at Winrock International, Healthy Urban Food Enterprise Development Grant provided \$50,000 over two years.
- USDA Rural Development provided a low-cost loan of \$300,000 through the Community Facilities Program for the installation of a large freezer and other equipment to expand the vegetable freezing operation.
- USDA National Institute of Food and Agriculture awarded the FCCDC \$65,000 as part of a 284,000 grant to the Growing Together project that involves 4 organizations in Franklin County.
- The John Merck Foundation awarded \$30,000 to FCCDC to be the lead on a Processing Community of Practice in New England.

The MA Specialty Crop Grant helped the FPC learn and expand which was critical to enable the FCCDC to apply for and receive the above funds.

BENEFICIARIES

- 8) A description of the groups and other operations that benefited from the completion of this project's accomplishments

We worked with institutions to develop informational and educational materials for students, patients and their families and for the public in general. Materials will include information

about the source of the crops, and will have the added benefit of promoting the local growers, encouraging an increased demand through their other distribution channels.

- 9) State the number of beneficiaries affect by the project's accomplishments and / or potential economic impact of the project.

Students: 15,000 students were served local fresh healthy vegetables well after the growing season in Massachusetts. In addition many of these students received educational information about the farms and farmers where the vegetables were grown. This has been proven to increase the likelihood that the young people will eat more vegetables throughout the rest of their life.

Farmers: Five local growers benefited from selling vegetables to the FPC by receiving a fair price. In addition the farmers also mentioned the following benefits:

- ✓ Saved money on boxes because the FPC accepted product in returnable watermelon bins instead of expensive boxes;
- ✓ Transportation costs were low because the farmers drove less than 20 miles to drop off product and they could drop large quantities at one time thereby saving multiple trips;
- ✓ Farmers received their payment in a timely fashion;
- ✓ Farmers were able to sell more of their crop because the FPC accepted more stem on the broccoli than stores, the FPC accepted small, misshapen and sun-tanned peppers which the stores usually do not;
- ✓ Farmers appreciated the recognition because the FPC put their names on every carton of vegetables from the farm and invited them to participate in Farm to Institutions events where they were the stars;
- ✓ The Working Agreements (non-binding contracts between the grower and purchaser made early in the season) provided for a fixed price throughout the year so the farmers didn't have to accept a lower price when there was excess produce on the market.

The Western MA Food Processing Center: The FPC benefited from learning how to improve operations and received more recognition for our work, which increased funding and increased demand for future sales.

Workers: The FPC employed 12 seasonal production staff this year and they benefited from working more hours and receiving fair payment.

LESSONS LEARNED

Specialty crops grown by Massachusetts growers are often sold either in small quantities direct-to-consumer, or wholesale. As the demand for locally grown produce increases, new product channels for these specialty crops are becoming available, allowing grower's access to new markets. However, the cost of entry to these new markets is often too high for individual growers.

Through this project we learned that growers can receive fair prices from the institutional market, which has usually been dominated by large corporation that transport product from long distances. With the processing infrastructure of the Franklin County CDC along with the staff to deal with the tracking and documentation issues required of institutions, Massachusetts growers can sell their produce to the Food Processing Center in a convenient manner and receive a fair price. Volume and efficiencies still need to be improved, but at this point the Franklin County CDC feels comfortable enough to have taken a large loan to expand this venture. This is an important step in improving the value-based food system we are rebuilding here in our region.

Contact Person:

John Waite
Executive Director
Franklin County CDC
Western MA Food Processing Center
324 Wells Street
Greenfield, MA 01301
413-774-7204, ext. 102
johnw@fccdc.org

ON LINE RECORD KEEPING

Final Performance Report

Applicant: Cape Cod Cranberry Growers' Association

Project Summary

The purpose of this Specialty Crop grant was to create an Internet-based system where growers can track their inputs of fertilizers, pesticides, and other on-farm inputs and create reports for handlers and regulatory agencies. This program has made it possible for growers to assemble data about those practices and conditions that they need to account for to regulators, to the world markets and to retailers. As part of this grant, we were able to create a cost-share arrangement to provide discounted tablet computers to growers for their use at the bogs so they can collect real time data and not rely on memory or scattered notes.

There are several benefits of the grant for cranberry growers. Recordkeeping will be simpler and more accurate, eliminating scattered notes. The pesticide use reports will be simpler and faster to produce for MDAR and handlers, saving time and resources. Growers will have better documentation for regulatory challenges about their practices and also the possibility to determine areas in which they can reduce costs on inputs and still maintain sustainable yields. The handlers will benefit from having more reliable recordkeeping from their growers, helping to attain regulatory compliance. In addition, the processors will have improved documentation for their buyers when selling internationally or to large domestic retailers. The environment, water bodies and communities will benefit from growers having better information about their inputs and other cultural/horticultural measures, such as water use, IPM records, tissue/soil tests, etc.

The final proposed benefit for this grant project is to promote the competitiveness of specialty crops. Cranberry growers in Massachusetts operate under certain disadvantages due to the age and designs of their bogs. The bogs are not laid out in efficient blocks and irrigation and pesticide applications must be managed within uneven boundaries. Neighbors live right along the boundaries of many bogs, and because the crop is grown in high-water areas, run-off of chemicals and nutrients is a concern. In order to survive the demands of regulators, the fears of neighbors, and the requirements of international buyers, the growers must move into electronic systems to track their applications of mainly pesticides but in some instances, nutrients. This recordkeeping program has the potential to assist all the growers in Massachusetts and it could be modified for other cranberry growing regions in North America to accommodate their regulators, pesticides, weather, soil, etc.

Project Approach

The initial approach for the grant project was to determine the correct Information architecture for the program. A detailed architecture was created, combining the skill sets of CCCGA staff and Fishnet NewMedia, the application developer. After the development of a conceptual wire frame of data flow, grower feedback was solicited. A group of growers was convened on 2 separate occasions to attain critical feedback and direction. After completion of the conceptual wire frame, development of the program was initiated by Fishnet NewMedia. They first created an administrative backend and then began work on the grower front-end interface. CCCGA created a design for the site by establishing a simple, professional look and feel for the web site. The design was intended to be professional, yet inviting and user friendly. Once the administrative functions were released, CCCGA began to populate the application with relevant data, such as pesticide label requirements, user restrictions and industry recommendations for optimal use, efficacy and environmental considerations.

In late March 2012 the application was released to selected growers for testing. CCCGA staff and growers extensively tested the system. All feedback was then analyzed by CCCGA and delivered to Fishnet NewMedia in order of priority. The testing process uncovered some items not considered and other ideas for improvement or future consideration.

In April 2012, the application, now named the “*BOGS Online Grower System*”, was ready for full-release and use by the growers. Two grower training/education sessions were held to expose potential users to the benefits of the system. The first meeting was held in April 2012 at the Carver Public Library and the second in May 2012 at the UMass Cranberry Station.

Approximately 25 growers attended each session. An additional training/communication session was held at the Plymouth Sheraton in June 2012 with approximately 35 growers attending. This program was targeted to Independent growers, at the suggestion of the major Independent cranberry processors. The processors sponsored the program.

CCCGA held an informal training/feedback session each week throughout the 2012 growing season at the CCCGA office. These training sessions were an opportunity to have user questions answered, solicit feedback, and provide grower to grower communication. The sessions were very popular, with several growers attending each week, not wanting to miss a session. There were always 2-3 growers present, sometimes as many as 7-8 attended, which is a great size for small-group, personalized education. Each week a different topic was covered at the training and then the meeting was open to general questions or feedback. The final session was held in late August 2012 and covered how to file pesticide use reports with the various cranberry handlers.

Grower training was provided for the 2013 growing season. Formal training sessions were held at the CCCGA March Winter Meeting, at the training facility of the Plymouth Area Chamber of Commerce in May 2013 as part of an introduction to computer training session conducted by the chamber and then more sessions in June 2013 at the offices of CCCGA. Technical support was also provided to growers via phone, email and on site.

Grower feedback continued throughout 2013 and will be an integral component of BOGS going forward. During the winter of 2013, modifications to BOGS were made, based on grower input, to deliver enhancements to the application. The enhancements were conducted by the application developers, Fishnet NewMedia, who have been an integral component of the project, providing thoughtful insight along with technical expertise. These enhancements helped growers achieve improved on-farm efficiencies, satisfy handler commitments and support marketplace requirements. This same process for improvements will be repeated in 2014 and beyond, driven by grower needs and developer vision.

Goals and Outcomes Achieved

The following are the Expected Measurable Outcomes as found in the original grant project:

1) Better informed decisions based on historical data;

The initial goal was that 95-100% of the growers signed-up to use BOGS would have at least logged-in and tried the tool. Of those growers, we would expect that 55-65% of the growers would use the tool regularly as part of their management decision making process and 30-35% would use the system occasionally. 100% of the growers that signed up for BOGS have used the system, with more than 50% using it regularly. During the active growing season (May-August), growers averaged 298 visits per month. We expect that these figures will grow over time as more growers utilize the system and become comfortable with the application. To date, we have 50 growers signed up for the application, representing more than 25% of the acreage in Massachusetts.

2) Quantifiable documentation that can be sorted and manipulated to reveal opportunities to reduce inputs or make other changes;

BOGS is able to store individual records over time. These records include management decisions involving pesticide and fertilizer use, water management, etc. Growers are able to query their own results and see what did and did not work. These data can be shared with industry groups such as the CCCGA or the research staff at the UMass Cranberry Station. Management decisions will vary from season to season and need to be thoroughly vetted over time for consistency purposes. As data points increase, within the next 2-3 years enough information can be gathered and analyzed to potentially see cause and affect results. This information can be disseminated through workshops, presentations, newsletters, etc. We cannot accurately estimate what and how much inputs will be lowered but we can be assured that more accurate record keeping coupled with management decisions, will help to direct change.

3) Reduced costs in the time it takes to do Record-Keeping;

Utilizing the BOGS Online Grower System is fast and convenient for growers. More formal user survey results are needed to quantify savings in time by the use of BOGS. The initial estimate was projected to save on average 50 hours per season per grower, with a grower's cost calculated at \$45/hour. This would equate to \$2,250/grower/year. Based on anecdotal information from users, the savings in time is difficult to quantify, especially during the growing season, Growers have raved how fast and efficient it is to submit their annual pesticide use reports to the handlers and state, as well as NPDES compliance reports. At this time, it is estimated that users of BOGS

are saving in excess of \$1,000 per year in time savings. A more detailed analysis will be performed this winter, since harvest was just completed as of the writing of this report.

4) Revised BMPs to reflect findings from the data about the timing, weather, volumes, etc. and how they affect the results;

As we survey grower participants going forward and collect stored data directly from the application, this information, in conjunction with research from the UMass Cranberry Station will allow the industry to modify and create appropriate BMPs. BMPs will be created as results become clearer. BMPs take time to develop as replication and consistency are required in order to avoid year-to-year anomalies. We would expect that in 3-5 years, at least 1-2 new BMPs would be created or existing BMPs would be modified to reflect new learning.

5) Reduced use of some inputs on some bogs;

If growers are making better management decisions, the belief is that inputs will go down. Inputs will take time to change, based on the requirements for a given year and what natural elements are involved. It can be expected that over a 3-5 year window, grower inputs will decrease over current standards. Applying a measurable amount to this decrease is unrealistic but expected areas of reduction are plant nutrition, specifically phosphorous, water use and fungicides.

6) Access to international markets and retailers;

As growers make better informed decisions, international (and domestic) markets will be easier to penetrate. Many of these markets require documentation of grower practices, attaining particular pesticide residue levels, etc. It is difficult in the short-term to identify markets that have been specifically opened due to the use of BOGS. However, there have been clear examples of handlers obtaining better data and growers generating reports to satisfy client needs. All of the major cranberry handlers are encouraging their growers to utilize electronic record-keeping applications for sending in their annual pesticide use reports, prior to delivery. The handlers need to know what chemicals have been applied to their incoming fruit. It is particularly critical for export fruit markets where the use of certain EPA registered products are not allowed in some foreign markets. Two of the handlers have established a monetary reimbursement for any of their growers using BOGS. Another handler is providing support for direct connectivity between BOGS and their business system, allowing for seamless transmission of data. Having electronic data is enabling handlers to be more receptive to regulatory and marketplace requirements, in real-time. In addition, one of the BOGS grower users sells fruit direct under his own brand and to foreign markets. He needs reports to demonstrate his pesticide use to several of his key clients. He is able to utilize BOGS to create these reports and email the information to the client. Finally,

it's not a marketing directive but one of the major farm insurance companies has instructed their grower clients to use a particular report in BOGS to satisfy one of their insurance compliance needs. Now these growers are able to email their data to the insurance office, saving time and keeping them in compliance.

Beyond the planned goals and outcomes as defined in the project's original scope, several other accomplishments have been obtained as a direct result of this grant.

Integrated Pest Management

Integrated Pest Management (IPM) is an integral component of cranberry agriculture. Although not originally scoped, there was strong interest by the grower group providing direction to include a component of IPM into BOGS. There was a scouting report created that listed all of the insect pests for Massachusetts cranberries. Growers could then select the pests; record the numbers found and create a report right in the field for what they found. The program summarized and calculated the individual pest pressures, helping the growers determine the economic thresholds for when to treat.

Work Orders

An additional management tool not initially planned for was the creation of pesticide and fertilizer work orders. Work orders allow for the creation of a report that can be used for planning purposes, calculating amounts, bringing to the supply house as an aide when purchasing farm chemicals/fertilizer or to send/print a report to a worker with explicit directions as to what is needed to be done, where, when and how. The work orders also provide a valuable check on a grower's decision to treat prior to the application being made. There are warnings and triggers built into the work order report that will flag any potential misapplication before the actual application is made. As an additional feature of the work order is the nutrient management component. This aspect enables a grower to calculate the amount of fertilizer required but also contains a warning for applications that will result in excess of 20 pounds of phosphorous/acre, which is the maximum recommended under the UMass Cranberry Station's Best Management Practices.

GAP Certification

Good Agricultural Practices (GAP) is an important aspect of many cranberry grower's operations, especially fresh fruit growers. For some, they have attained third-party certification of their operation, a critical component of their success in the fresh fruit market, especially foreign. For these growers, they need to be able to document the reason for all pesticide applications. This process starts with a scouting report, then work order creation and finally the

pesticide application itself. There needs to be a clear process that ties these 3 tasks together, with some sort of labeling or numbering system. We created such a process in BOGS that automatically creates a number that can be used to tie these separate tasks together. This satisfies the certification requirements for these growers.

Beneficiaries

The primary beneficiaries of this grant project are the cranberry growers of Massachusetts. To date, 50 growers are using the BOGS Online Grower System, representing more than 25% of the cranberry bog acreage in the Commonwealth. Through the use of BOGS, growers are able to enjoy numerous advantages over conventional (paper and pencil) pesticide record keeping. These advantages include:

- increase on-farm efficiencies by having the ability to enter pesticide data and create reports quicker
- capabilities for real-time recording of applications
- more accurate data
- one-source for all pesticide/fertilizer records, including historical
- identify potential mistakes before applications are made
- stay in compliance

Cranberry growers that market their own fruit and cranberry handlers/processors attain advantages through the use of BOGS as well. This group has access to the timely and accurate reports, enabling pesticide use data to be more reliable and organized. BOGS has the capabilities to integrate directly into company's existing databases, speeding up data entry and eliminating mistakes. This data can then be used to determine any potential issues with pre-harvest intervals on fruit delivery or loads that need to be separated due to marketplace restrictions based on chemicals used. The reports generated can also be used to satisfy the regulatory requirements of clients or the marketplace. This increases the effectiveness of cranberries as a specialty crop in the marketplace, helping to differentiate Massachusetts cranberries.

Potential future beneficiaries include cranberry growers from other growing regions and other commodity groups. New Jersey cranberry growers have inquired about BOGS and CCCGA staff travelled to this region to explain what BOGS is and how it works. Interest continues and with minor modifications to the interface, use in New Jersey or other growing regions is possible. In addition, other commodity groups have inquired about BOGS. Specifically, UMass Extension has been given a demonstration to determine if this application may have use in apples or other tree fruit.

Lessons Learned

Through the support of this Specialty Crop Block Grant project, Massachusetts cranberry growers are able to attain numerous advantages on their farm, with their handler and in the marketplace. To date, 50 growers have utilized the BOGS Online Grower System on their farms. This number will only increase as more growers learn the benefits of this tool. The project was grower directed which eliminated potential pitfalls and delivered a product that was immediately user friendly and efficient. Without grower involvement, this project would not nearly be the success it has attained from the onset.

It's important to build an application that has scalability and can be modified to meet growing needs. BOGS is built on a database platform that can be easily adjusted and adapted by the application developers. There are administrative functions built in that allow for basic updates of the information contained within the system, such as pesticide related data, cranberry varieties, etc. by non-technical staff. This feature allows for nearly instantaneous updates of data based on user needs.

The tablet computer reimbursement aspect of the grant project was popular amongst the growers. For many, this was a reason to purchase a mobile device when they may have been reluctant to up to this time or that they now have a reason to consider such a device. The portability of tablet computing enabled growers to use BOGS in the field, creating real-time data. For some growers, their IPM scouts would record their inset sweep results in the cranberry bogs and send the data back to the office, where treatment decisions could be made. The grower could then generate a work order, send it to the scout, who could then purchase or make an application without having to return to the office. The tablets also allowed grower to bring these into the chemical supply shops to help them calculate how much product to purchase or visually explain what they intend to purchase. The mobility of tablets allowed recordkeeping to become real-time for the first time in the industry, short of paper and pencil.

Holding weekly training sessions during the first growing season was highly effective in gaining user support of the program but also to attain critical feedback. This weekly feedback mechanism allowed for errors to be discovered and changed and planning for future enhancements. By having improvements grower driven, further buy-in was attained. This support will help to continue momentum and encourage growers to try BOGS on their farm.

It is clear that the initial success of BOGS has been tremendous but further outreach is required to attain more users. The "If you build it, they will come" mentality is not going to work by itself. Marketing, educational workshops, grower testimonials and more are all needed to help convey the positive message for BOGS and to further strengthen the reach of this dynamic application.

Contact Information:

Brian Wick
Director, Regulatory Services
Cape Cod Cranberry Growers' Association
P.O. Box 97
1 Carver Square Boulevard
Carver, MA 02330
P: 508-866-7878 ext. 14
bwick@cranberries.org

Southeastern Massachusetts Certifiably Organic Grower Education Project

Final Performance Report

Applicant: NOFA/MASS (Lead) and the Southeast Massachusetts Agricultural Partnership (SEMAP)

I. Project Summary

The Southeastern Massachusetts Certifiably Organic Grower Education Project was developed to address a significant gap in educational opportunities focusing on organic production techniques targeting specialty crops producers in Southeastern Massachusetts. Producers often receive premium prices for organic production which return above and beyond the increased production costs, thereby increasing the financial viability of their operations. Furthermore as our region continues to grapple with the environmental impact of commercial fertilizer loads and the possibility of regulation of nutrient applications in coastal environments, it will become increasingly important that our agricultural community has the knowledge and skill base required to produce specialty crops which are grown with environmentally sound practices.

The scope of the fall 2012 Advanced Growers Seminar, focusing on season extension, was clearly well timed as there has been a large increase in high-tunnel production in the region, thanks in part to funding efforts by NRCS. Clearly an ever increasing number of producers are working to take advantage of the mild winters and extend the growing season for specialty crops in Southeastern Massachusetts. Through our collaboration we were able to leverage SEMAP's tremendous capacity to reach specialty crop producers in Southeastern Massachusetts with NOFA/Mass's legacy of sharing deep organic production knowledge among growers.

Through the efforts of this specialty crop grant, we have built a solid foundation for future educational efforts emphasizing organic production methods targeted toward specialty crop producers in Southeastern Massachusetts. In 2012, we completed a significant expansion of educational workshops and events targeted toward certified organic producers and those considering a transition toward organic production in Southeastern Massachusetts. Building upon the success of our efforts in 2012 there has been a continuation of organic educational programs targeted toward specialty crops producers in Southeastern Massachusetts in 2013 and plans are underway to continue these efforts in 2014.

This project did not specifically build upon a previously received Specialty Crop Block Grant.

II. Project Approach

The scope of this project was broken down into three primary activities:

- Integration of a new “Organic-Track” series of workshop into SEMAP’s annual one-day farm conference; held annually in February/March at Bristol Agricultural High School/Greater New Bedford Voc-Tech.
- A series of 7 twilight meetings held throughout the 2012 growing season at various locations in Southeastern Massachusetts.
- A capstone event, the hosting of a NOFA/Mass Fall Advanced Growers Seminar; held November 2012 at Stonehill College in Easton, MA.

Prior to 2012, SEMAP’s annual one-day farm conference didn’t include a specific “organic track”. The aim of including a new organic track at the one-day conference was to attract an audience of growers who previously didn’t take advantage of the event, and also to provide educational programming focusing on organic production at a time of year when vegetable crop producers are available to attend.

Three workshops were included in the Organic Track at the 2012 Ag & Food Conference:

- Interpreting Soil Tests and Developing Organic Fertility Recommendations – presented by Derek Christianson, Brix Bounty Farm

- Specialty Crop In Focus: Growing Organic Carrots & Organic Weed Control – presented by Kofi Ingersoll, Bay End Farm
- Actively Aerated Compost Tea – presented by Carl Brodeur, Arborcare Ropes & More - 22 participants

The Twilight meetings started in April 2012 and ran through October 2012. The schedule for the twilight meetings was:

- **APRIL 2nd – Organic Seed Starting & Propagation, 6:00-7:30pm.**
 - Eva Sommaripa & Derek Christianson (Brix Bounty Farm)

For decades Eva has been the go-to for Cambridge chefs seeking year-round unique greens, herbs and flowers. Derek will start the program with organic seeds preparation, with Eva discussing cuttings and division of plant material for a productive start to the season.

- **MAY, 7th – Selling to Specialty Markets, 6:30pm – 8:00pm**
 - Frank Albani, [Soule Homestead Farm](#), Middleboro & Pam Denholm, [South Shore Organics](#), Duxbury

For the past 3 seasons farmer Frank Albani has found a home for his organic produce with Pam Delholm of SouthShore Organics - see how their relationship works so that residential customers receive weekly deliveries of fresh locally grown organic produce.

- **JUNE, 4th – Berry Production (Blueberries!) - 6:30pm – 8:00pm**
 - Stan Ingram, [Coonamessett Farm](#), East Falmouth - Coonamessett Farm, 277 Hatchville Rd., E. Falmouth

Over the past 4 years Stan has worked creatively to increase the health and productivity of their 1-acre blueberry patch, including incorporating fowl, irrigation and OMRI approved sprays.

- **JULY, 2nd – Specialty Crop: Garlic, 6:30pm – 8:00pm**
 - Dave Purpura, [Plato's Harvest Organic Farm](#), Middleboro

Dave is an Italian who takes his garlic seriously! Learn pointers on planting the perfect patch, harvesting, best varieties and methods. Join us in celebrating Dave's birthday as well!

- **AUGUST, 6th – Organic Cranberries - 6:30pm – 8:00pm**
 - Fred Bottomley & Bonnie Kavanagh, [Fairland Farm](#), Flag Swamp Rd., Dartmouth, MA

One of the very few organic cranberry producers in Southeastern MA! Owner Fred Bottomley will discuss basic cranberry production and specifically the challenges and opportunities attributed with organic production. Learn more on organic weed/pest management, harvesting, marketing and the global business of cranberries. Fairland Marketing expert, Bonnie Kavanagh will educate us on the amazing medicinal side of cranberries as well as how Fairland markets their fruit locally, connecting with local farmers markets, processors and value-added producers including local wineries.

- **SEPTEMBER, 10th – Cut Flower Production - 5:30pm – 7:00pm**
 - Hannah & Ben Wolbach, [Skinny Dip Farm](#), Westport

Skinny Dip Farm has developed a following for their beautiful crops, particularly their cut flowers! Learn more about varieties that flourish in Southeastern MA in the fields as well as at the markets.

- **OCTOBER, 1st – Cover Crops, Season Extension - 5:30pm – 7:00pm**
 - Christy Raymond, [White Barn Farm](#), Wrentham

Winter cover crops are the main topic for this session as a staple organic growing practice. Farmers Christy and Chris will discuss their farm's process and purpose for using such methods. We will also sneak a peek at season extension techniques used on the farm.

The Fall Advanced Growers Seminar provided our most substantial impact. On Monday November 5th, we hosted Paul & Sandy Arnold of Pleasant Valley Farm in Argyle, New York for a day-long workshop at Stonehill College in Easton, Massachusetts. Stonehill was chosen as a workshop location because of its central proximity to Bristol, Norfolk, & Plymouth counties in SEMAP's service area.

Paul and Sandy are well known presenters within the organic agriculture arena and have presented workshops at the MOSES conference, ACRES-USA, and New England Veggies conferences. It had been nearly 10 years since they have presented to an audience in Massachusetts. Attached is an overview of the information included in Paul & Sandy's presentation.

2012 Advanced Growers' Fall Seminar: Profitable Year-Round Farming and Marketing

November 5, 2012 - 8:30am to 5:30pm

NOFA/Mass and [SEMAP](#) present the 2012 Advanced Growers' Fall Seminar With Paul and Sandy Arnold

This one-day Advanced Growers' Seminar will show how small-scale farming practices and organic systems can be used to make a livelihood throughout the year. Learn ways to make your farming operation more economically robust with well-designed farm systems, innovative techniques for extending the productive season throughout winter, intuitive methods for tracking farm productivity and expenses, and marketing techniques for success.

Seminar Outline

This seminar will be conducted as a lecture accompanied by power point slides to illustrate the core ideas. Each registrant will receive a handout. Paul and Sandy will cover the following topics.

1. Start-up through Good Business and Record-Keeping: Paul and Sandy purchased land in 1988, which was the beginning of Pleasant Valley Farm, and they built it up quickly to be a profitable farm by treating it as a business. Their presentations with many power point photos/charts will start by showing the progression of their farm from just land to a full operating farm. Tips and tricks for running a good farm will be discussed such as accounting, deciding what to spend money on, and how to manage expenses. Their simple record-keeping techniques will show what to grow to make the most per square foot and how to manage a farm so that it becomes profitable.

The Arnold's presentation was grounded in specific accounting numbers from their CSA/direct market (farmers market) operation which focuses on year-round vegetable production. The discussion during this first section was focused on harvest tracking, accurately monitoring yield per bed feet, and estimating costs of production for specific crops i.e. greenhouse spinach planted in Sept/Oct and harvested Jan-May. Benchmarks for necessary values per square foot for vegetable production were shared with participants.

2. Labor Efficiencies to Maximize Profits: How to manage workers on a farm, have them make you money, and rules of managing employees will all be discussed, including many labor saving techniques to improve labor efficiencies. The Arnold's utilize farm interns on their farm, as well as hourly workers, mostly homeschooled teenagers and local college students.

During the 2nd section of the Arnold's presentation they took us through a virtual tour of a harvest day on their farm (actually beginning with harvest bins placed in key points in the fields the night before), the breakdown of specific tasks in the field, transportation techniques and engineering of wash rooms to maximize efficiency. For example building their root washer used to wash specialty crop potatoes (multi-color & heirloom varieties) with a simple winch system to adjust the transport time through the washer for different levels of field dirt removal. The discussion further involved the role of winter production in developing their vegetable staff to be efficient across the spectrum of production.

3. Production from Greenhouse to Field: The Arnolds will discuss their systems for producing all their transplants for the farm in their Rimol polycarbonate greenhouse which has radiant-heated, rolling benches and automatic venting. Greenhouse seeding production using various trays (Speedling, Winstrips), homemade soil mixes, biological control of diseases, and methods/tips of transplanting/seeding out by hand and with various seeders will all be discussed.

4. Mulching, Soil Management, and Weed Control: Pleasant Valley Farm has utilized hay, straw, and chopped mulch for years to increase organic matter, hold in moisture, and help with weed control, and they have been used more recently in conjunction with Biotello, a cornstarch based black plastic. The full system of mulching with a flail-chopper and bedding chopper, transplanting crops with a Buckeye Water Wheel transplanter, and all the tractor systems of cultivation/weed control as well as the many hand tools and tricks for weed management will be discussed to show how a strict "no weed" policy can be managed. Soil fertility, calculation of amendments and fertilizers, and many new and exciting developments/results of their Nutrient Dense trials during 2012 will be reviewed.

5. Post-Harvest Handling of Crops and Storage: Post-harvest handling is important for long-term quality of all crops, both fresh for markets and for long-term storage. Paul and Sandy will show how their employees are trained for weekly market harvests, and also go through a whole season of many crops to show how they are harvested, cured and stored in various facilities, including a root cellar with modern cooling/humidity controlled equipment to have product for winter and spring sales.

6. Season Extension with Fieldhouses (low tunnels) and Row-Covers: Paul and Sandy have been practicing season extension on their farm, which is in zone 4, since 1992, utilizing home-made field houses (14'x100') in the spring, fall, and winter in order to extend the season and have an abundance of product for sales at their farmers' market table. Row covers are used extensively in 3 seasons to protect plants from the cold, increase growth and germination, and enable crops to be available earlier in the spring and late into the fall.

7. Year-Round High Tunnel Production and Marketing: The first high tunnel was built by Paul and Sandy in 2006, the second in 2009 and the third one in 2012. They will go through each month of detailed production systems in their high tunnels (30'x 144') to produce summer crops like tomatoes, basil, squash, spinach, and beans and also winter/spring crops such as spinach, lettuce, mesclun, Asian greens, arugula, kale, mustards, turnips, broccoli raabs, broccolini, and

Swiss chard. Using various row-cover and hoop techniques, their 2 unheated tunnels yield over \$1,200 per week in produce for the winter weekly farmers' markets. Varieties as well as organic insect and disease controls will be discussed. Marketing is very critical to the success of any farm and the Arnolds will show how they approach their only means of marketing to make a living at farming - 3 weekly farmers' markets, two which operate year-round. Displays, products, presentation, employees, and the variety/diversity of products all need managing for details to keep customers happy and coming back.

Paul and Sandy Arnold own Pleasant Valley Farm in upstate New York and have been farming for 24 years; they have two teenage children who are home-schooled and help run the family farm. Over 40 varieties of diverse fruit and vegetable crops are grown with organic methods on about 8 of their 180 acres of land, and they grow a diverse range of crops in two high tunnels. The Arnolds make their living selling their produce year-round at 2 to 3 area farmers' markets each week; they specialize in season-extension and profitability, and enjoy utilizing renewable resources such as solar for hot water and electric. Although neither came from a farming background, they have enjoyed farming as their sole source of income for the past 20 years and have also enjoyed the great lifestyle it offers.

This event is part of an educational collaboration between SEMAP and NOFA/Mass, supported in part by the USDA Specialty Crops Program through the Massachusetts Department of Agricultural Resources.

SEMAP realized income, through registration fees for the Twilight Growers Education Series of \$2,150.00; which was slightly higher than the \$1,750 expected in our original budget. This surplus was reinvested in SEMAP educational programming efforts, including the 2013 Southeastern Mass. Ag & Food Conference.

Specifically in 2013 the Agriculture and Food Conference continued to include an Organic Track including 2 workshops focusing on organic specialty crop production: a) Nitrogen Dynamics in Organic Cropping Systems presented by John Spargo of University of Massachusetts and b) Organic Cucurbit Production – Grower Panel featuring Derek Christianson of Brix Bounty Farm, Kofi Ingersoll of Bay End Farm, and Skip Paul of Wishing Stone Farm.

Plans are currently underway for the 2014 Agriculture & Food Conference, to be held Saturday March 22nd, 2014 at the Greater New Bedford Voc-Tech and will once again include an Organic Track for Specialty Crop Producers

NOFA realized income of \$6,240.00 from registration fees for the Fall Advanced Growers Seminar; which was greater than the \$2,500.00 originally budgeted. This increase in income was partially due to the seminar attracting farmers from beyond Southeastern Massachusetts. Total expenses for the event were also higher due to the increased attendance (greater food costs, etc.)

The surplus from this budget line item has been used for ongoing NOFA/Mass educational efforts targeted toward farmers in Southeastern Massachusetts. Specifically income gained from

the successful 2012 Fall Advanced Growers Seminar allowed NOFA to offer a Winter Greens Workshop in Southeastern Massachusetts held on March 16, 2013 which built upon the information presented by Paul & Sandy Arnold in their Advanced Growers Seminar held in November 2012.

Furthermore, NOFA/Mass recently held their 2013 fall Advanced Growers Seminar featuring Michael Kilpatrick of Kilpatrick Family Farms (“Farm Profitability: Season Extension and Marketing for the Small Farm”) which while taking place in Barre, MA continued to attract a number of specialty crop producers from Southeastern Massachusetts (commercial growers from SE Mass in attendance included farmers from Second Nature Farm in Norton, Kettle Pond Farm in Berkley, Round the Bend Farm in Dartmouth, New Urban Growers in Swansea, Brix Bounty Farm in Dartmouth – totaling 13% of the population of the ~60 seminar attendees).

The following parties contributed to the successful implementation of this project:

- NOFA/Mass staff, including executive director, Julie Rawson, seminar coordinator, Ben Grosscup, website manager, David Pontius, public relations director, Mindy Harris, and administrative director, Kathleen Geary.

NOFA staff played an integral role in overall project management, including financial oversight and cooperative development of goals, actions, and project deliverables. Ben Grosscup was the lead coordinator for the successful Fall Advanced Growers Seminar.

- SEMAP staff and contractors, including executive director, Bridget Alexander, program manager, Sarah Cogswell, and Ag & Food Conference coordinator, Jessie Gunnard.

All staff members from SEMAP were involved in the planning and implementation stages of this grant. Jessie Gunnard stepped in as the Ag & Food Conference coordinator after Katie Cavanaugh’s departure from SEMAP. Sarah Cogswell oversaw the production of the twilight workshop series, registration, volunteer management, and data collection from those events.

- Project Coordinator, Derek Christianson of Brix Bounty Farm

Derek acted as the coordinator for this project; coordinating communication and development of the project throughout the season. He also coordinated the collection of data and reported on progress toward the project’s target goals.

III. Goals and Outcomes Achieved

To date we have successfully completed the following deliverables:

One (1) Farms Forever Conference – renamed Southeaster Mass Ag & Food Conference with Organic Track

One (1) day-long advanced grower’s workshop – NOFA/Mass Fall Advanced Growers Seminar

Seven (7) stand alone on-farm workshops – Twilight Grower Education Series

Two-Page PDF workshop sheets were developed for each of the on-farm workshops; these have yet to be posted online (hard copies were presented to workshop participants). SEMAP has been re-developing their website for the better part of 2013 and currently has the launch of a new website on hold pending future developments within the organization, it is still hoped that the two-page pdf workshop sheets will be archived on the new SEMAP website in 2014. Additionally, the 2-page information sheets may be “marketed” throughout the coming growing season by incorporating them into ongoing SEMAP blog posts and communications to growers.

Power Point presentations from the SEMAP February Conference and Fall Advanced Growers Seminar: power-point presentations were made available to workshop participants when available; but were not posted online as it was deemed these presentations were not sufficient as standalone information, i.e. out of context of presentation.

Our initial outcome goal included the following objective: 20% of the farmers will make a substantial change to their growing practices based on the information they learned. Although anecdotally we feel we have surpassed this number; we are unable to confirm the actual % of commercial producers who have implemented substantial change in their growing practices at this time. Surveys collected at the Ag & Food Conference and after the Twilight Series did show

more than 50% of the farmers intended to implement a change in the practices as a result of their attendance. Qualifying this change as “substantial” is a bit more difficult.

One additional outcome goal which was not fully met and subsequently adjusted during the progress of the project focused on Soil Testing & Mineral Balancing. Originally we stated the following as a goal of the project “All farmers will show improvements in cation exchange capacity (CEC) numbers and base saturation balancing, toward a goal of ~75% calcium, ~15% magnesium, 5% potassium, 0.3-0.5% sodium, and improved trace mineral levels”. This final item was most relevant to a specific workshop on soil testing presented at the Ag & Food Conference in February 2012. Follow up conversations with workshop attendees and analysis of soil tests (more than 40% of the workshop attendees included “complete more soil tests” as a change in their farm management going forward) confirms that while attendees did undertake expanded soil testing on their operations; we are unable to confirm they are or will be following a BCSR (basic cation saturation ratio) balancing in their soils in the near future. Quite plainly, many growers in SE Mass may be better suited following a SLAN (strategic level of available nutrients) approach to soil nutrient levels due to their relatively low CEC numbers due to the relatively large number of producers cropping “sandy” soils. There have been ongoing reports from growers who are carrying out soil testing procedures and addressing mineral deficiencies experiencing better crop health and heavier yields, but a full detailed analysis of the reasons for these promising results is beyond the scope of this project.

Providing high-quality educational opportunities focusing on Organic Production techniques for Specialty Crop Producers in Southeastern Massachusetts was our greatest accomplishment and outcome of this project. More than 50 commercial farmers in Southeastern Massachusetts and more than 100 farmers from New England and 40 gardeners from Southeastern Massachusetts participated and benefitted from this project. Furthermore, the successful completion of this project has helped to establish educational opportunities focusing on organic specialty crop production as a routine element in the full scope of technical assistance provided by SEMAP to farmers in Southeastern Massachusetts.

IV. Beneficiaries

The primary beneficiaries of this project were existing and prospective commercial vegetable growers in Southeastern Massachusetts. Additional beneficiaries include hobby growers and backyard gardeners in Bristol, Plymouth, & Norfolk counties as well as a much broader geographical cohort of commercial farmers who benefitted from attendance at the November 2012 Advanced Growers Seminar.

Organizationally, both NOFA/Mass & SEMAP have benefitted through the development of a stronger partnership which will continue to yield ongoing collaborations. Furthermore both organizations have gained valuable insights into the needs of farmers in Southeastern Massachusetts as they relate to organic production; these insights directly stem from the experiences and knowledge gained through the implementation of the Southeastern Massachusetts Certifiably Organic Grower Education Project.

Number of Beneficiaries Impacted

The addition of an “Organic-Track” to SEMAP’s annual one-day farm conference (now known as the Southeaster Mass Ag & Food Conference) was a qualified success. Overall, attendance for the conference was at 189 participants in 2012; this was an increase of more than 30% from 121 attendees in 2011.

Three workshops were included in the 2012 Organic Track: a) Interpreting Soil Tests and Developing Organic Fertility Recommendations – Derek Christianson, Brix Bounty Farm - 27 participants, b) Specialty Crop In Focus: Growing Organic Carrots & Organic Weed Control – Kofi Ingersoll, Bay End Farm - 36 participants and c) Actively Aerated Compost Tea – Carl Brodeur, Arborcare Ropes & More - 22 participants.

Attendance at the twilight workshops was varied; depending on both the topic presented, time of the growing season, and weather conditions. Total attendance for the 2012 series was as follows:

April – 37 May – 17 June – 15 July – 27 August – 11 Sept – 30 Nov – 16

Although we were pleased overall with the attendance numbers; we were disappointed we weren’t able to attract a larger portion of commercial growers. On average about half of the participants in the twilight workshop series were backyard gardeners or hobby farmers.

Attendance at the Fall 2012 Advanced Growers Seminar exceeded our stated goal of 50 participants; actual attendance was 122 farmers and growers from throughout the region.

In summation, more than 100 specialty crops producers benefitted from this project, however due to the large geographical draw of the Advanced Growers Seminar held in November 2012, the number of specialty crops producers from Southeastern Massachusetts impacted by this project (through the Ag & Food Conference, Twilight Sessions, and Advanced Growers Seminar) was approximately 55 producers. There were more than a dozen farms which

participated in all 3 elements of the project, signaling a deep and sustained impact for a select number of farms in the region.

Through informal conversations all of the farms who benefitted from these educational efforts have increased specialty crop production income from 2011 through 2013. However we wouldn't be able to attribute a specific amount of increased income directly attributable to their participation in this project, as the increased incomes are quite likely a factor of continued market development, infrastructure investment and more generally increased production scale of their operations.

v. Illustration of Lessons Learned (as a result of completing this project)

While all three parts of the project were deemed a success; it was clear that reaching our target audience of commercial producers was better accomplished by the two events (SEMAP one-day farm conference, and NOFA/Mass Fall Advanced Growers Seminar) held during the shoulder season (February & November respectively).

In general, it is clear that during the high-production months (May-August) it is difficult for commercial growers to leave their farm and sacrifice daylight hours away from their fields. This observation gleaned during the 2012 twilight series was confirmed with attendance levels at the 2013 Twilight Workshop Series produced by SEMAP

In 2013 SEMAP continued to produce Twilight Workshops in Southeastern Massachusetts including:

- a May workshop focusing on Herb Production hosted by Eva's Greens in South Dartmouth,
- a June workshop focusing on Starting Root Vegetables hosted by Chris Clegg of Fourtown Farm in Seekonk,
- a July workshop focusing on Tractor Safety, Operation & Maintenance (highlighting Farmall cultivation tractors and Kubota utility tractors utilized by small vegetable farms) hosted by Sharing the Harvest Community Farm in Dartmouth,
- And a September workshop focusing on starting a CSA hosted by Kettle Pond Farm in Berkley.

Similar to results from our 2012 workshop series, Attendance was highest at the May & June and September workshops.

Our conclusion leads us to believe we will enjoy better future success attracting commercial growers to on-farm events in the periods of March-May and September-November. We may continue with a pared down set of twilight workshops, complimenting those produced by UMass extension, perhaps be holding 2 or 3 twilight workshops in SE Massachusetts each year.

As planning for the 2014 Ag & Food Conference is well underway we are excited to continue to include a focus on organic specialty crop production with plans to include a crop or family specific workshop/grower panel each year (2012 – carrots, 2013 – cucurbits, 2014 – fall brassicas) which will continue to provide ongoing learning opportunities for both existing and new commercial producers.

Contact Person:

Derek Christianson, Project Manager
(508) 992-1868
derekchristianson@gmail.com

Supporting Garden-Based Education for Massachusetts Schools by Providing Resources, Curriculum Connections, Training, and Garden Mentoring

Final Performance Report

Applicant: Massachusetts Agriculture in the Classroom (MAC)

2. Project Summary

The Project “Supporting Garden-Based Education for Massachusetts School by Providing Resources, Curriculum Connections, Training and Garden Mentoring” came about as a direct result of the growing interest in school gardening in Massachusetts. As teachers and school administrators came to realize that garden-based education offered real benefits academically, developmentally and in terms of health and nutrition, they looked to incorporate more garden-based education opportunities into their curricula. Recent research supported the benefits of garden-based learning and drove their requests for more-and-more information and assistance related to developing school garden programs.

Massachusetts Agriculture in the Classroom (MAC) has a long-history of supporting agriculture and garden-based learning in schools through our mini-grants, workshops, conferences and written garden-based education materials. As interest in school gardening increased in recent years, MAC responded with available resources to more and more requests from educators in nearly every community across the state. They were all asking for additional

information on how to garden, curriculum connections, workshops, training, on-site technical assistance and, of course, the funds to support these garden-based.

Through this project MAC, in collaboration with project partners, built on our long history of providing garden-based education to develop an expansive garden-based resource that included five new initiatives that support Massachusetts teachers by providing the tools and training that enable them to initiate new school gardens or expand existing programs. The five initiatives that are now completed are: A) Directory of School Garden Resources; B) How-to-Guide for Getting Started in the School Garden; C) Curriculum Connections for Garden-Based Education; D) Garden-Based Education Workshops for Teachers, and E) School Gardening Mentoring.

The interest and participation in MAC's developing garden-based education resources by Massachusetts educators throughout the past two years has been immense, as more and more school gardens are started across the state. More than four hundred teachers directly benefitted from professional development workshops held during the year 2012 and twenty schools received direct support through garden mentoring. These twenty schools represent an exponential number of teachers and students as the school garden program develops, expands and advances into future years. The three web-based resources have been on-line since 2012 and are being utilized by teachers across Massachusetts and elsewhere, as well as after school educators and other youth educators who garden with students.

3. Project Approach

Through this project, Massachusetts Agriculture in the Classroom (MAC), in cooperation with project partners, developed the tools and training to provide Massachusetts educators with inspiring, garden-based educational resources, lesson plans with curriculum and cafeteria connections, professional development, and garden mentoring, with the goal to support and empower school gardening initiatives across the state that offer engaging and relevant learning experiences for youth. The work encompassed five new initiatives. The first three initiatives are accessible on the MAC website creating a one stop source for school gardening resources in Massachusetts. The last two initiatives directly supported school garden educators across the state with training and technical support for garden-based learning. The five completed initiatives are: A) Directory of School Garden Resources; B) How-to-Guide for Getting Started in the School Garden; C) Curriculum Connections for Garden-Based Education; D) Garden-Based Education Workshops for Teachers, and E) School Gardening Mentoring.

Initiative A: Directories of School Garden Resources:

Massachusetts Agriculture in the Classroom developed three on-line Directories of School Garden Resources and posted them on the MAC website, along with questionnaires that will allow for expansion of each of the three lists. These directories are now being used by school garden educators as they read about what other schools are doing, seek educational resources and look for materials from local nurseries, garden centers, greenhouses and farm businesses where they can find plants and products for their school gardens.

Directory of Massachusetts Schools with School Garden Programs: The first of the three garden-based directories is a list of Massachusetts Schools with School Garden Programs. More than 80 schools agreed to be listed during the first year. Each provided information about their school gardens, including when each garden was started; the months the garden is in operation; how the garden is used, the grades reached and the lead educators. Those school gardens with websites, blogs, U-tube uploads or facebook have also provided links. We noticed that a third of the school gardens listed began in 2011 or 2012 and expect that there will be a similar increase in future years, as more and more schools develop new garden-based education programs. To increase the participation in this Directory of Massachusetts Schools with School Garden programs, MAC provided a **“Tell Us about Your School Garden”** link on our home page and on each of the garden-based lessons and how-to guides that were produced through this grant. We also included the link in all of our e-mail communications to educators.

In 2013, MAC continued to promote the Directory of School Gardens and have updated the directories regularly. As in 2012, we continued to find that with direct request to teachers to complete an action receive the best results. Now that MAC has completed our 2013 Season of Conference, workshops and other events. We are sending direct requests by e-mail to each of the educators that participated in our garden mentoring, workshops, days of garden skills and our three conferences, with a request that they complete the survey and join our School Garden Directory. Five hundred and ninety eight educators who participated in at least one educational training in 2013 and an additional 20 schools received school garden mentoring. We know that many of these schools have successfully started a school garden and are now working to add them to the directory.

Directory of Garden Based Education Resources: The second garden-based directory is a list of educational organizations and individuals who provide training, educational materials, curriculum, links and other resources that support garden-based education.

More than 90 school garden education providers, farm-based education organizations, horticultural organizations, nutrition educators, local farm-based product resources and other educational non-profits are included in this directory, along with their contact information, websites and a description of the services that they are able to provide.

We have continued to promote the Directory of Garden Based Resources during 2013 through the following channels: on our home page and school garden resource pages on the MAC website; through our new school garden blog; in all e-mail communications, in our newsletters; and during each workshop and conference. We have updated the directories as any new resources were added.

Directory of Nurseries, Garden Centers, Greenhouses and Farms That Provide Products For the School Garden: The last garden-based directory is a list of nurseries, garden centers, greenhouses and farms that provide the products needed for the school garden such as seeds, seedlings, plants, shrubs, trees, tools, hoses, soil and more. More than 200 local farm businesses are now included in this directory, along with the contact information, phone number and websites and a description of services.

MAC has continued to promote the Directory during 2013 through the following channels: on our home page and school garden resource pages on the MAC website; through our new school garden blog; in all e-mail communications, in our newsletters; and during each workshop and conference. We have updated the directories as any new resources were added.

Website Link: A new addition to the drop down menu on the Massachusetts Agriculture in the Classroom was added in 2013 to showcase all of our new School Gardening Resources. These resources were formerly listed under: For Educators on the Drop Down Menu and now have their own home at School Gardens. **To view the three Garden Based Directories** and the on-line questionnaires developed for this resource at their new location on the MAC website, visit:

http://aginclassroom.org/School%20Gardens/School-Gardening_Directories/Directories.html.

Project Objectives and Timeline Met for the School Garden Directories Initiative: MAC met the objectives by developing and posting on-line the three on-line School Garden Directories with listings of more than 370 resources in 2012, more than equal to

the number of cities and towns in Massachusetts. To develop these three web-based directories, MAC formed an advisory committee, developed on-line questionnaires for each of the three lists and posted the questionnaires on-line. MAC then communicated with collaborating organizations such as the Massachusetts Department of Education, The Massachusetts Garden Club Federation, the Massachusetts Nursery and Landscape Association and the Massachusetts Flower Growers Association to get the word out about the questionnaires. We also communicated with educational organizations and teachers throughout the year. The questionnaires went live in the spring of 2012 and the resulting directories were posted on-line soon afterwards.

MAC has continued to promote the Directories in 2013 and updated the guides as new information was provided. We are now directly contacting the 598 educators who attended our workshops and conferences in 2013 and the twenty schools involved in mentoring this year to request permission to add those with school gardens to the directory. Updating will continue regularly.

Initiative B: Thirteen How-To-Guides for Getting Started in the School Garden

Massachusetts Agriculture in the Classroom dedicated a great deal of time during the year 2012 researching and writing thirteen comprehensive How-To-Guides for Getting Started in the School Garden, working in collaboration with project partners and school-garden educators. The guides were researched, written, reviewed, edited and posted on-line on the MAC website in both HTML and printable PDF format. Each How-to-Guide offers an overview of the topic with extensive background information and then provides guidelines to assure successful implementation. The thirteen How-to Guides for Getting Started in the School Garden include:

1. School Garden Startup Guide and Budget
2. Siting the School Garden
3. Soils Resource Guide for the School Garden
4. Building the Garden Beds for the School Garden
5. Gardening in Containers
6. Selecting Plants for the School Garden

7. Seeding Resource for the School Garden
8. Transplanting Resources for the School Garden
9. Watering Resource for the School Garden
10. Composting Resources for the School Garden
11. Mulching for a Successful School Garden Resource Guide
12. Cover Crops Resource for the School Garden
13. Theme Garden in the School Garden

A new addition to the drop down menu on the Massachusetts Agriculture in the Classroom was added in 2013 to showcase all of our new School Gardening Resources. These resources were formerly listed under: For Educators on the Drop Down Menu and now have their own home at School Gardens. **To view the thirteen How-to-Guides for the School Garden** at their new location on the MAC website, visit: http://aginclassroom.org/School%20Gardens/How-To-Guides_For_School%20Gardening/How-To-Guides.html

Project Objectives and Timeline Met for the How-To Guides for Getting Started in the School Garden Initiative: MAC met the objectives for our first year by developing the thirteen How-to-Guides for the School Garden and by posting them on-line on the MAC website. All thirteen guides are now being used by teachers across the state and by those who work in after school programs and with other youth groups. MAC promoted the garden-based How-to-Guides for Getting Started in the School Garden throughout the year 2013. Three new how-to-guides were added to the MAC website and video clips were added to the how-to-guides to increase learning as part of the 2013 Specialty Crops Grant.

The feedback from educators regarding the How-to-Guides for the School Gardens has been overwhelmingly positive. Many teachers tell us they are using these guides as their first steps in planning for the school garden, while other are using them to expand the school garden or troubleshoot. We have received numerous e-mails praising these guides from educators and parents looking to start a school garden in Massachusetts as well as from other states. The following recent message from a parent in Connecticut is representative:

“My name is Jennifer S----. I am an elementary school parent who has just completed Connecticut's Master Gardener program. I am compiling resources to help the elementary schools in my town (West Hartford, CT) to better use their garden spaces. It is exciting to have discovered your group and its resources! The "How-To Guides" were dreams-come-true for a number of the garden teams.

One strategy that we are pursuing to strengthen the connection between the gardens and classroom learning is that I am beginning to work with local groups in town to create a program to fund and award scholarships to a small number of interested elementary school teachers to encourage them to attend your annual school garden conference. I believe that their participation will help build excitement, commitment, and momentum.

I hope to gather more ideas for how our town's elementary school teachers and gardens can benefit from the resources that your organization provides. Thank you so much for your attention and support.”

In 2012, an on-line feedback form was added to each of the How-to-Guides for Getting Started in the School Garden to collect data on how the guides are being used. It asks who is using the web resources and how they are being used as well as additional resources and skills that school gardeners are seeking. This method of data collection met with some limited success, as only a few educators filled out the forms voluntarily. Their feedback was useful in providing ideas for new resources and guides that would be useful to new school garden educators. However, not all respondents were new to school gardening, and the input was often incomplete.

To improve and standardize our data collection, MAC reached out to 40 additional educators with whom we had worked through our school garden mentoring, workshops and conferences. All were newly developing a garden-based education program at their elementary school. We asked each to review one of the How-to-Guides for the School Garden and give us feedback as to the clarity of the guide, its usefulness to them, and ideas for expansion and improvements. The feedback has been very valuable.

In addition, we asked each of these forty educators to provide a measurement of increased comfort level with gardening skills, after reading one or more of the guides. The scale was in 5 point increments. Results ranged from 50% (1 response) to 100% (3 responses), with an average of 81%.

(50% - 1; 60% - 2; 65% - 5; 70% - 6; 75% - 5; 80% - 6; 85% - 4; 90% - 5; 95% - 4; 100% - 3)

We will continue to collect data on our new guides in 2014. As we learn how these web resources meet the needs of garden educators, and how they have been adapted, we will expand and update the current guides and also plan for new How-to-Guides.

Initiative C: Garden-Based Lessons for Grades 1 through 4:

Massachusetts Agriculture in the Classroom put together an advisory group of grade 1 through 4 teachers who have established school gardens to review the Massachusetts Curriculum Frameworks and identify the strongest areas of connections from the garden to the classroom. Based on this review and the feedback from project partners, MAC then worked with these teachers and garden educators to develop and review twenty garden based lesson (5 for each grade). Once written, reviewed and tested by educators, the 20 Lessons were edited, formatted for the web and posted on the MAC website in both HTML and printable PDF format. Each provides an overview, objectives, tips for engaging students, materials, step by step instruction, time line, assessment, enhancements and connections to the Curriculum frameworks for the specified grade. The twenty garden-based lessons include:

Grade 1 Lessons:

- Soils Lesson: Soil Soup
- Garden Map and Charting Lesson: Sunflower Power
- Pollination Lesson: The Reason for a Flower
- Seed Lesson: What Is a Seed?
- Nature Journaling Lesson: Leaf Sorting & Journaling

Grade 2 Lessons:

- Soils Lesson: Soil Pets
- Garden Map and Charting Lesson: Garden Meal
- Pollination Lesson: Busy Bees
- Seeds Lesson: What's Inside a Seed?
- Nature Journaling Lesson: Leaf Matching & Journaling

Grade 3 Lessons:

Soils Lesson: Soil Beasts

Garden Map and Charting Lesson: Potato Proliferation

Pollination Lesson: Look inside a Flower

Seeds Lesson: Traveling Seeds

Nature Journaling Lesson: Who's Eating My Leaf? & Journaling

Grade 4 Lessons:

Soils Lesson: Soil Shake

Garden Map and Charting Lesson: Crop Harvesting Chart

Pollination Lesson: Who's the Pollinator?

Seeds Lesson: Saving Your Seeds

Nature Journaling Lesson: Leaves Are Cool! & Journaling

A new addition to the drop down menu on the Massachusetts Agriculture in the Classroom was added in 2013 to showcase all of our new School Gardening Resources. These resources were formerly listed under: For Educators on the Drop Down Menu and now have their own home at School Gardens. **To view the Twenty Garden-based Lessons** at their new location on the MAC website, visit:

http://aginclassroom.org/School%20Gardens/School_Gardening_Lesson_Plans/School_Gardening_Lesson_Plans.html.

Project Objectives and Timeline Met for Garden-Based Lessons for Grades 1 through 4:

MAC met the first objective for 2012 by developing the twenty new garden-based lessons connected to the Massachusetts curriculum standards and the cafeteria (five for each of grades 1-4), reviewing the lessons and posting them on-line on the MAC website. All twenty lessons are accessible to teachers across the state and to those who work in after-school programs and with other youth groups.

As a component of the lesson development, MAC enlisted five educators to review each of the twenty lessons and utilize them with their students to provide useful feedback for a total of one hundred educators using the lessons with their students. MAC updated the lessons as recommended and has also added agricultural background extensions to each lesson and

supplemental activities. An on-line feedback was added to each of the twenty lessons for additional review and data collection to meet project objectives. The form will help us collect information on who is using these lessons, how they are being used, what adaptations are made, suggestions for expanding and improvements and ideas for additional lessons.

The feedback for the Lessons has been very favorable. Teachers are looking for these easy to use connections from the classroom to the school garden. They have provided lots of additional ideas for lessons that we might develop in the future. We will continue to collect data on our lessons and new agricultural extensions in 2014.

To improve and standardize our data collection and to meet the requirements of Objective # 7. (A 75% increase in comfort level with gardening skills for teachers who are new to the school gardens and are using the new web-based garden resources), MAC again reached out to 40 elementary educators with whom we had worked through our school garden mentoring, workshops and conferences. We knew that each was in the process of developing a garden based education program at their school. We asked each to review one of the Lessons feedback as to the usefulness of the lessons, adaptations they made and suggestions for improvement and improvements. The feedback has been very valuable and some has already been used in the agricultural extensions.

In addition, we asked each of these forty elementary educators to provide a measurement of increased comfort level with gardening skills, after reviewing one of our garden-based lessons and carrying out the activity with their students. The scale was in 5 point increments. Results ranged from 40% (1 response) to 95% (2 responses), with an average of 75.75%. (40% - 1; 50% - 1; 55% - 2 - 60% - 2; 65% - 3; 70% - 4; 75% - 7; 80% - 8; 85% - 4; 90% - 6; 95% - 2)

Massachusetts Agriculture in the Classroom promoted the garden-based Lessons throughout the year 2013. In addition, a new project for 2013 included adding agricultural background content and a new activity for each of the twenty lessons. In the future, we would also like to add additional lessons for grades 1 through 4 as well as other grades, and will provide connecting links between the text in the current Lessons and other guides and lessons to maximize the usefulness of these garden resources.

Initiative D: Garden-Based Education Workshops for Teachers

Massachusetts Agriculture in the Classroom is pleased to report, that during the year 2012 twelve Garden-Based professional development workshops were conducted for Massachusetts educators reaching a total of 427 educators. Four of the garden-based workshops were held during our winter “Growing Minds through Massachusetts Agriculture” Conference on March 10, 2012, which reached a total of 135 educators. An additional four workshops were conducted during our Fall “Greening the School” Conference on November 10 which reached 132 educators. During both of these conferences, additional sessions also covered garden-based topics

Two full day garden education workshops were held as part of our Summer Workshops on the Farm. One workshop covered Pollination and School Gardening and the 2nd workshop covered Food Processing and Food Safety. Additional summer workshops also covered topics related to the school garden such as soils, composting, botany, nurseries and more. During the spring and fall, MAC organized two full Days of Garden Skills Workshops and Demonstrations for School Garden Educators held on farms. Each day offered hands-on demonstrations conducted by farmers and school garden educators, with a different workshop or demonstration starting each half hour. These full days of garden workshops and demonstrations were free to all garden educators and were very popular, with teachers coming from across the state to each Session

The twelve Garden-Based workshops conducted during the year 2012 included:

March 10 4 Workshops conducted during the Winter “Growing Minds through Massachusetts Agriculture”

Conference at the Paul R. Baird Middle School in Ludlow (24 workshops total were presented during the day; 135 participants)

Workshop 1: Edible Landscaping for the Schoolyard

Workshop 2: Vegetable Garden Basics

Workshop 3: Using a Worm Bin to support Science Standards

Workshop 4: Composting at the School

April 21 Day of Garden Skills Workshops and Demonstrations for the School Garden held at Tranquil Lake Nursery in Rehoboth. 9:00 a.m. to 3:p.m. (13 workshops total; 60 plus participants)

July 12 Pollination and Gardening at the School at the Cambridge Friends School; 9 a.m. to 3 p.m.

July 31 Food Safety, Food Processing and Adding Value to Agriculture at the Western Mass. Food Processing Center in Greenfield; 9:00 a.m. to 3 p.m.

October 13 Day of Garden Skills Workshops and Demonstrations for the School Garden held at the New England Small Farms Institute in Belchertown 9:00 a.m. to 3:00 p.m.

(13 workshops total; 70 plus participants)

November 10 Four Workshops conducted during the Fall “Greening the School” Conference held at the Clay Science Center of the Dexter and Southfield Schools in Brookline.

(20 workshops total; 132 participants)

Workshop 1: Composting Activities Across the Curriculum

Workshop 2: Starting a School Garden

Workshop 3: Pollination in the Classroom and School Garden

Workshop 4: Compost Tea Workshop

Project Objectives and Timeline Met: MAC met the first objective for 2012 by developing and conducting the twelve garden-based professional development workshops. MAC worked with school garden educators and project partners to plan the twelve workshops. Each workshop was taught by an experienced school garden educators or farm/horticulture educator. More than 36 different school garden educators assisted MAC with these garden-based workshops and conferences, connecting with other educators to share their knowledge.

In total the twelve workshops reached 427 educators. To develop these garden-based workshops, MAC formed an advisory committee of school garden educators and project partners. We also communicated with educational organizations and teachers throughout the year. MAC conducted pre-and-post assessment at each workshop held during conferences and our summer workshops on the farm, using a quiz with ten true and false questions regarding materials that would be taught during the workshop. Participants were asked to complete the test before each workshop began and again afterwards. One problem that occurred in our sampling, resulted because we did not collect the pre-tests from participants before the workshop began. Based on erasing and cross outs it seems that some people may have changed their pre-test results during the session. We also conducted traditional evaluation to determine the effectiveness of each workshop.

The following are the results of the pre and post testing for the ten conference and summer workshops.

Workshop #	High Pre	Low Pre	High Post	Low Post	
Average Change	Range of Change				
Winter Workshop 1 10 to 50 points	90	40	100	80	30.7 % improvement
Winter Workshop 2 5 to 20 points	100	45	100	65	8.2 % improvement
Winter Workshop 3 10 to 60 points	90	20	100	60	24.7 % improvement
Winter Workshop 4 10 to 30 points	80	50	90	60	16.0 % improvement
Summer Workshop 1 20 to 40 points	80	40	100	80	30.7 % improvement
Summer Workshop 2 20 to 60 points	70	20	90	65	38.6 % improvement

Fall Workshop 1 improvement	30 to 40 points	90	50	100	70	13.7 %
Fall Workshop 2 improvement	16 to 40 points	92	52	100	76	28.5 %
Fall Workshop 3 improvement	10 to 60 points	90	10	100	70	34.0 %
Fall Workshop 4 10 to 30 points		92	52	100	76	13.0 % improvement

For the two days of garden skills workshops pre and post testing before each workshop session would have been difficult, as workshop times overlapped and participants moved from session-to-session at will based on their interests and needs. However, each participant had registered by e-mail or had provided their e-mail on the day of the workshops in order to gain the professional development. We used the e-mail lists to ask participants to rate the overall effectiveness of the day of workshops and presentations on a scale of one to ten in terms of increasing their garden-based knowledge.

April 21 Day of Garden Skills Workshops and Demonstrations for the School Garden

60 plus participants. 34 responded to the e-mail request to scale the effectiveness of the day in terms of increasing their garden based knowledge.

The responses ranged from 40 to 90 percent increase with an average rating of 67 % increase in

Garden based knowledge.

October 13 Day of Garden Skills Workshops and Demonstrations for the School Garden

70 plus participants. 45 responded to the e-mail request to scale the effectiveness of the day in terms of increasing their garden based knowledge. The responses ranged from 30 to 100 percent increase with an average rating of 73 % increase in

Garden based knowledge.

Based on the 2012 trial for workshop Pre and Post testing, we now know that we need to administer the tests in a different fashion and also be more consistent in order to provide the best results. In 2013, MAC administered pre-tests and collect the tests from participants prior to the workshop session, so that answers could not be changed or filled in during the session. A separate post test was handed out after the workshop, and collected from all before they left the room. In addition, in 2012 a few of the instructors chose to add a few additional test questions, which changed the scale from a ten point scale. In 2013, we standardized the pre and post tests, and limited each to 10 questions. We also added an additional 10 point scale measurement to the post test, asking each participant to rate the workshop in terms of increased knowledge. For the garden skills days, we distribute a pre test and post test as well as a questionnaire at the end of the day, asking participants to fill out a rating for increased knowledge. These were administered prior to providing the form to be filled out for professional development. With these changes during 2013, the information collected was more useful and quantifiable.

Initiative E) School Gardening Mentoring

The most exciting, but also the most challenging, initiative that Massachusetts Agriculture in the Classroom undertook during 2012 was that of the School Garden Mentoring. We knew that the need was great because of the many requests we have received over the years. So many teachers who are very comfortable in the classroom are unsure of their gardening skills. This uncertainty holds them back from starting the school garden. Our goal was to provide them with a guide who would be there to provide advice and technical knowledge to assist them with their horticultural and garden knowledge.

In the spring of 2012, MAC tested our pilot garden mentoring program in eight schools. We linked garden mentors who had excellent horticulture and gardening skills and who were also closely affiliated with our organization to eight schools that were looking for assistance. These test mentors were asked to record the questions that arose and to provide feedback to MAC about what the needs are and how the mentoring process should begin. To support their efforts, we conducted a spring mentor training in conjunction with our April 21 Day of Garden Skills workshop. A draft mentoring manual was developed during the summer using MAC's How-To Guides and other educational Resources, and MAC conducted two additional garden skills training sessions for volunteers and potential mentors during the summer. Our final garden mentoring workshop was again combined with our day of garden skills workshop in October.

Many of these volunteers made connections with their own local schools to offer support, and we have a group of potential garden mentors ready going forward as we further develop the model.

The feedback from our initial garden mentors and from the teachers that they mentored showed us that the needs for school garden mentors were enormously varied. Some schools did not yet have a school garden, and thus required a huge amount of time from their mentors in meeting with administration and staff and helping to outline the whole school garden year. One very skilled mentor put together a slide show for the principals of all the schools in the town of Walpole. Another mentor spent the whole year working with a school system to determine how the school garden would fit with the curriculum. Yet, other school garden educators were doing fairly well with their gardens, and just need technical help from their mentors with weeds, crop rotation, suggested plantings, mulching and more. One garden-based education teacher found she needed to be out of school the month of May for surgery, and sought help in managing the garden during this key growing month. We delivering several bales of salt marsh hay to help her manage the weeds and watering. Another garden educator was starting an ancillary garden at the Senior Center and needed advice for mixing the two generations. Others were looking for ideas for summer maintenance

With the feedback from our spring pilot garden mentoring in hand, we realized that we would need to revise our school garden mentoring plans for the fall. All of the schools had such different and varied needs, that a great deal of initial work would be needed in getting each school garden started and providing the necessary skills for the educators. The variety of needs and problems showed us that we would not be able to come up with one single model for volunteer garden mentoring. By the late summer, MAC reviewed the Garden Mentoring project with our mentors, teacher advisors, board members and project partners and made a new plan for the Fall Garden Mentoring.

For the fall, MAC identified twelve new schools with garden mentoring needs. We hired an additional garden mentor and assigned this new garden mentor or our program associate to all but one of the twelve schools for the initial garden mentoring process through the fall. (One school had very specific skilled horticultural and design needs, and landscape designer Warren Leach agreed to mentor that school. He actually spent one afternoon at the school pruning with the staff in addition to providing design advice.) Our two paid garden mentors each worked with 5 - 6 schools throughout the fall. By the end of 2012, these schools are now ready for the next step, which is connection to mentors for long term local support. MAC continued mentoring support for most of these twenty schools into 2013, and is now working with each

school, the local community, farms and garden clubs to identify and train a long-term garden mentor for each school garden.

Project Objective and Timeline Met: Based on our 2012 School Garden Mentoring Pilot, our two paid garden mentors, along with MAC Board member, are continuing to work to provide an outline for the model school garden mentoring program that we will utilize to build a more sustainable School Garden Mentoring Program in future years. For 2013, a second Specialty Crop Grant funded sustained mentoring for the 2012 school gardens and the mentoring of twenty new school gardens. This work will continue in 2014 with additional grant funds and garden vouchers so schools can buy goods at local farms and nurseries.

The School Garden Mentoring Pilot Program was one of the most challenging aspects of the work conducted in the 2011/2012 Specialty Crops Grant, however it provided the research and experience that helped us to develop a stronger garden mentoring program for 2013. While we were unable to successfully collect data and assessment review from teachers and students in 2012, the mentoring pilot provided what we needed to develop these assessment tools in 2013 and to make sure that they were implemented.

In 2013 the school garden mentoring manual was reviewed and expanded to provides as much support and guidance as possible to assist garden mentors and help them succeed. The manual is now in its final stages of editing and will be posted on line. Additional and varied trainings for potential long-term mentors was conducted throughout the year 2012 and continued in 2013.

We now have an on-line application form on our website that teachers are encouraged to use to apply to be a mentored school. This form establishes a base-line of work from developing a committee to siting the school garden, to making connections to the classroom, that must be accomplished before a school can be accepted as a mentored school. In 2014, mini-grant vouchers for local farms, nurseries and greenhouses will also be provided as startup funds for the twenty new schools accepted for mentoring by MAC. This application form has really helped us to facilitate the garden mentoring process.

The funded portions of the project only benefitted educators and specialty crops commodities. No other commodity educational resources or trainings were conducted using Specialty Crops grant funding.

Massachusetts Agriculture in the Classroom was the lead organization in the development of these five Garden-Based Initiatives. During the initial planning phases and throughout the project MAC sought connections to school garden and insights, feedback and review from project partners: the Massachusetts Department of Elementary and Secondary Education and the Massachusetts Garden Club Federation. MAC also relied on its network of 13,000 Massachusetts educators to partner with us in identifying school garden programs and in assessing the need for school garden resources. A small sub-group of these educators was recruited as project consultants and training instructors. MAC sought additional assistance from school principals, superintendents, school nurses, garden and nutrition educators, master gardeners and others. Additionally MAC reached out to the Massachusetts Nursery and Landscape Association and the Massachusetts Flower Growers Association to assist in identifying nurseries and greenhouse resources for school gardening resources.

4. Goals and Outcomes Achieved

- 1.** A new comprehensive on-line tool of school gardening resources, assistance and garden materials for Massachusetts educators. **Outcome:** The requirements for this objective were met in 2012 with the development of three new garden-based directories that were posted on-line on the MAC website. Massachusetts Agriculture in the Classroom promoted the garden-based on-line directories, how-to guides and lessons throughout 2013. Directories were updated, three new how-to-guides were added to the MAC website, the twenty garden lessons were enhanced with agricultural connections and new activities and video clips were added to the how-to-guides to increase learning.
- 2.** An on-line how-to- gardening manual to help Massachusetts educators get started with their school gardening efforts. **Outcome:** The requirements for this objective were met in 2012 with the development and review of thirteen new How-to-Guides for the School Garden that were posted on-line on the MAC website. Massachusetts Agriculture in the Classroom promoted the garden-based How-to Guides for Getting Started in the School Garden throughout the year 2013. Three new how-to-guides were added to the MAC website and video clips are being added to the how-to-guides to increase learning.
- 3.** Twenty new garden-based lessons connected to the Massachusetts curriculum standards and the cafeteria (five for each of grades 1-4) shall be developed, reviewed and

posted on-line **Outcome:** The requirements for this objective were met in 2012 with the development and review of 20 new garden-based lessons for Grades one through four that were posted on-line and available to educators across the state.. Massachusetts Agriculture in the Classroom promoted the garden-based lessons throughout 2013. Each of the twenty lessons was also enhanced with agricultural background content and new activities.

4. Twelve garden-based professional development workshops shall be conducted reaching 300 educators. **Outcome:** The requirements for this objective were met in 2012 with twelve workshops conducted reaching 427 educators. In 2013, Massachusetts Agriculture in the Classroom conducted an additional twelve garden-based professional development workshops in 2013 reaching more than 500 educators, funded by a 2013 Specialty Crops Grant. The 2012 experience with pre-and-post testing improved our data collection results in 2013.

5. Twenty school garden programs shall measure pre-and post attitudes of students towards gardening, nutrition and locally grown fruits and vegetables. **Outcome:** The School Garden Mentoring Pilot Program was one of the most challenging aspects of the work conducted in the 2011/2012 Specialty Crops Grant, due to the variety of needs and levels of development of the school gardens. Some were already underway, while others are still in development phase. However the mentoring pilot from 2012 provided the research and experience that helped us to develop a stronger garden mentoring program for 2013 and provided what we needed to develop these assessment tools in 2013 and to make sure that they were implemented as part of the 2013 Specialty Crops Grant.

6. Twenty garden mentors shall be trained in gardening practices and shall steward school gardening efforts at 20 Massachusetts schools. **Outcome:** MAC provided training for more than twenty volunteers during the year. However due to the challenges of the varied needs of the schools and needs to further develop the garden mentoring model, many of those trained took what they learned back to local schools but did not work under the direction of MAC. The School Garden Mentoring Pilot Program from 2012 provided the research and experience that helped us to develop a stronger garden mentoring program for 2013. Twenty new schools were mentored in 2013, with support continuing for the 20 schools that were mentored in 2012. One of our main goals in 2013 was to locate and train long term mentors for these twenty schools from 2012, which as of the end of 2013, we have mostly achieved.

7. A 75% increase in comfort level with gardening skills for teachers who are new to the school gardens and are using the new web-based garden resources. This shall be shown through an assessment tool. **Outcome:** In order to complete the assessment required in the 2011-2012 Specialty Crops Grant, in December of 2012 MAC added an on-line feedback form to each of the How-to-Guides for Getting Started in the School Garden to collect data on how the guides are being used and to measure increase in comfort with gardening skills for those who are new to school gardens. This method met with some limited success, as a few educators filled out the forms voluntarily. Their feedback was useful in providing ideas for new resources and guides that would be useful to new school garden educators. However, not all respondents were new to school gardening, and the input was often incomplete.

To improve and standardize our data collection, MAC reached out to 40 additional educators with whom we had worked through our school garden mentoring, workshops and conferences. All were newly developing a garden-based education program at their school. We asked each to review one of the How-to-Guides for the School Garden and one garden-based lesson to give us feedback as to the clarity of the guide, its usefulness to them, and ideas for expansion and improvements.

For the How to Guide they reviewed, we asked each other these forty educator to provide a measurement of increased comfort level with gardening skills, after reading one or more of the guides. The scale was in 5 point increments. Results ranged from 50% (1 response) to 100% (3 responses), with an average of 81%. (50% - 1; 60% - 2; 65% - 5; 70% - 6; 75% - 5; 80% - 6; 85% - 4; 90% - 5; 95% - 4; 100% - 3)

For the Garden-Based Lesson reviewed, we asked each of these forty elementary educator to provide a measurement of increased comfort level with gardening skills, after reviewing one of our garden-based lessons and carrying out the activity with their students. The scale was in 5 point increments. Results ranged from 40% (1 response) to 95% (2 responses), with an average of 75.75%.

(40% - 1; 50% - 1; 55% - 2 - 60% - 2; 65% - 3; 70% - 4; 75% - 7; 80% - 8; 85% - 4; 90% - 6; 95% - 2)

8. A 50% increase in garden-based knowledge for all educators (those new to school gardening as well as teachers with experience in the school garden) who participate in professional development garden-based workshops. This shall be demonstrated through an assessment tool. **Outcome:** Pre and post test assessment was administered during the ten winter, summer and fall workshops. Some problems occurred because we did not collect the pre-test from participants prior to the workshop, allowing them to change previous answers. The average increase shown by these pre and post tests for these ten workshops was 23.81 and the average change for our two garden skills days was 70%.

Massachusetts Agriculture in the Classroom conducted an additional twelve garden-based professional development workshops in 2013 reaching more than 500 educators, funded by a 2013 Specialty Crops Grant. The 2012 experience with pre-and-post testing improved our data collection results in 2013, as we collected the pre-tests prior to each workshop and then distributed new post tests at the end of the session.

9. An 80% increase in positive attitudes and knowledge towards gardening, fruits and vegetables, and nutrition by students who participate in the school gardening programs with mentoring support. This shall be demonstrated through an assessment tool. **Outcome:** The School Garden Mentoring Pilot Program was one of the most challenging aspects of the work conducted in the 2011/2012 Specialty Crops Grant, however it provided the research and experience that helped us to develop a stronger garden mentoring program for 2013. While we were unable to successfully collect data and assessment review from teachers and students in 2012, the mentoring pilot provided what we needed to develop these assessment tools in 2013 and to make sure that they were implemented.

10. An 80% increase in positive attitudes and knowledge of Massachusetts agriculture and locally grown fruits and vegetables. This shall be demonstrated through an assessment tool. **Outcome:** The School Garden Mentoring Pilot Program was one of the most challenging aspects of the work conducted in the 2011/2012 Specialty Crops Grant, however it provided the research and experience that helped us to develop a stronger garden mentoring program for 2013. While we were unable to successfully collect data and assessment review from teachers and students in 2012, the mentoring pilot provided what we needed to develop these assessment tools in 2013 and to make sure that they were implemented.

11. On-line garden-based lessons plans for teachers in Grades 1-4 shall be used by at least 100 educators in the first year. **Outcome:** The requirements for this objective were met in 2012 when each of the twenty garden lessons was sampled and reviewed at that time by 5 educators for a total of 100 educators using the lessons with their students. MAC updated the lessons as recommended and has also added agricultural background extensions to each lesson and supplemental activities in 2013. Each Garden-Based Lesson now has a link so that teachers can continue to tell us how they are using these resources.

12. One or more school garden resources and one or more nursery, garden center or local farm resources for each of the 351 communities in Massachusetts. **Outcome:** The requirements for this objective were met in 2012, with the listing of a total of 370 garden resources in the three directories, equal to more than the number of communities in Massachusetts. (80 schools with school garden programs; 90 garden education resources and more than 200 nurseries, garden centers, green houses and farms that sell products useful for the school garden. MAC continued to promote the Directories in 2013 and updated the guides as new information was provided. We are now directly contacting the 598 educators who attended our workshops and conferences in 2013 and the twenty schools involved in mentoring this year to request permission to add those with school gardens to the directory. Updating will continue regularly.

13. Sixty educators who are new to garden-based education shall establish a new school garden education program for their classrooms, utilizing the new web resources, curriculum, workshops and garden mentoring. **Outcome:** We are aware of seventy four educators who worked with MAC during the year utilized MAC's Garden-Based Resources during the year 2012 and have developed a garden program in 2012 or in the spring of 2013. There are likely many additional new school gardens that have been supported by MAC workshops, educational manuals, garden-based lessons and more. In 2013, MAC has continued to support new school garden development through workshops, conferences, mentoring and access to our -on-line resources.

14. Thirty educators who are experienced with garden-based education shall develop collaborations with one or more teachers who are new to garden-based education. **Outcome:** 36 different school garden educators assisted MAC with these workshops and conferences and development of garden lessons, connecting with other educators to share their knowledge. Many other connections and networking opportunities were provided during MAC's workshops and conferences. MAC conducted an additional twelve

garden-based professional development workshops in 2013. More than 40 school garden educators assisted MAC with these workshops and conference, continuing the collaborations between experienced school garden educators and those who are new to the school garden

5. Beneficiaries

The Project “Supporting Garden-Based Education for Massachusetts School by Providing Resources, Curriculum Connections, Training and Garden Mentoring” directly support classroom teachers and their students across the state by providing tools and training to assist in developing and enhancing their garden-based education programs. These tools include web-based resources that are available to all educators: such as sources for plants and materials, how-to-garden guides and garden-based lessons with curriculum connections and activities. In addition, this project supports the Massachusetts nursery, garden center and greenhouse industry as well as the farmers who grow vegetable seedlings for market. School gardens across the state will have access to a list of local vendors who can provide plants, seedlings, seeds and garden materials such as compost, soils, garden tools, hoses and more.

More than four hundred teachers directly benefitted from professional development workshops held during the year 2012 and twenty schools received direct support through garden mentoring. These twenty schools represent an exponential number of teachers and students as the school garden program develops, expands and advances into future years. The three web-based resources are available to all teachers in Massachusetts and elsewhere, as well as after school educators and other youth educators who garden with students.

As more garden-based education programs are developed across the state, this project will also indirectly support the fruit and vegetable industry throughout the Commonwealth by building an awareness of the value of fruits and vegetables and the agriculture that supports these crops. As children increase their knowledge and consumption of fresh fruits and vegetables, as well as the connections to locally grown foods, they will learn to make choices about the foods that they eat at home and at school. They will also take these lessons home to their parents. Since these new attitudes about eating fresh fruits and vegetables can last a lifetime, there is potential to build an ever stronger interest and market for locally grown fruits and vegetables.

6. Lessons Learned

2012 was a very busy year for Massachusetts Agriculture in the Classroom (MAC), as we worked in cooperation with project partners and school garden educators to develop the

programs and resources that provided and will continue to provide useful garden-based tools and training for Massachusetts educators. The development of these five initiatives was a massive undertaking for our small organization that kept us busy throughout the year. The project built on our long history of providing agriculture and garden-based education and training and utilized the talents and knowledge of many people who care about Massachusetts Agriculture in the Classroom and School gardening to produce garden-based directories, lessons, how-to-guides, workshops and garden mentoring that would be truly useful to educators seeking to start a school garden. We are very proud of the substantial and timely resources that were developed as a result of the grant project.

The interest and participation in MAC's developing garden-based education resources throughout the year 2012 and also in 2013 has been immense. We received overwhelmingly positive response from teachers across the state. The garden-based lessons have helped them to make the connections from the garden to the classroom. The thirteen How-to-Guides for the School Garden have been essential for those teachers who have little garden experience, offering background information, step-by-step instruction and troubleshooting. The three Garden directories have helped teachers to connect with other local teachers who have been successful with school garden, and with educational resources or the local businesses that can provide plants, seeds, tools and other supplies for the school garden. In addition, the garden-based workshops and provided garden mentoring provided direct support to school garden-educators giving them useful information and a chance to connect and ask questions.

Because the development of the web-based resources took all of 2012, MAC was unable to collect data until the following year. We attempted to do so through voluntary web-assessment tools. We found this method limiting because very few teachers took the time to fill out the surveys. Those who did were not necessarily new to school gardening or even from Massachusetts. Knowing teachers as we do, and understanding how busy they are, we realized that we would have to develop a more direct plan for data sampling. We approached 40 educators directly, limited our pool to the target audience of Massachusetts teachers who are new to school gardening and teach the elementary grades. These are teachers with limited school garden experience, who have attended MAC workshops and conferences, received mini-grants from MAC to support school gardens or who were mentored by MAC during the year 2012 or 2013. We asked each teacher to review and use one garden-based lesson and one how-to-guide and then provide feedback. The teachers were happy to help and provided us with the feedback needed. We also used this direct approach for our school garden directory and will continue to do so with the teachers who attended workshops, conferences and were mentored in 2013.

In 2012, our data sampling for workshops was affected by our sampling method. Throughout the year, we distributed the pre-test and post-test for each workshop together at the beginning of the workshop. The pre-test sampling was corrupted because the tests showed that participants had changed their answers during the course of the workshop, crossing out and erasing previous answers. In 2013, we distributed pre-test and collected them prior to the educational phase of each workshop to make the results more relevant.

The most exciting, but also the most challenging, initiative that Massachusetts Agriculture in the Classroom undertook during 2012 was that of the School Garden Mentoring. However it provided the research and experience that helped us to develop a stronger garden mentoring program for 2013. While we were unable to successfully collect data and assessment review from teachers and students in 2012, the mentoring pilot provided what we needed to develop these assessment tools in 2013 and to make sure that they were implemented.

The original grant request had provided for small mini-grants of \$300 that would be awarded to each mentored school to help them purchase garden materials. These mini-grants were not funded through the Specialty Crops Grant and we were unable to secure other funding to allow us to make the mini-grants. We had hoped to use the mini-grants as an incentive to ask teachers to produce final reports of the mini-grant and mentoring experience and to ask for standardized reporting.

MAC used the year 2012 to pilot School Garden Mentoring and we really learned a lot about the varied needs of teachers and about the different issues of working within the school system. In the spring, we assigned eight experience board member gardeners or horticulturist volunteers to eight schools to gather as much information as we could and provide as much assistance as possible. We found that all of the schools had such different and varied needs, that a great deal of initial work would be needed in getting each school garden started and providing the necessary skills for the educators. The variety of needs and problems showed us that we would not be able to come up with one single model for volunteer garden mentoring. By the late summer, MAC reviewed the Garden Mentoring project with our mentors, teacher advisors, board members and project partners and made a new plan for the Fall Garden Mentoring that involved two paid garden mentors who would initially work with each school to review their needs and get them started.

As we go forward, we now know that MAC must supply a great deal of initial support to each mentored school and that this must be done in a standardized format by our paid garden mentors.

We also developed an application process that requires that each mentored school, must have certain criteria in place before we accept them for mentoring. This includes a school-garden committee, a plan for connecting the school garden to the classroom and a resource for long-term garden support. For 2014, we have also established a garden voucher program that will give each school a small stipend for garden materials purchased at local farms. With these school garden vouchers, the new mentoring application, and pre and post tests for teachers who are being mentored as well as the students involved in these school gardens, MAC will be much more successful in collected data in future years.

Contact Person:

Debi Hogan
Executive Director
Massachusetts Agriculture in the Classroom
P. O. Box 345
Seekonk, MA 02771
508-336-4426
massaginclassroom@earthlink.net
www.aginclassroom.org

Helping Specialty Crop Producers Access the Boston Public Market
A Feasibility Analysis and Business Plan

Final Performance Report

Applicant: *Community Involved in Sustaining Agriculture (CISA):*

An outline of the Issue, problem, interest, or need for the Project.

When this grant was awarded, Boston, Massachusetts had been working on creating a new year-round farmers market whose focus is on promoting food and agricultural products from the state and surrounding states. This project was designed to help specialty crop producers assess the feasibility of selling product at that market.

Early estimates guessed that the Boston Public Market could provide farmers in the state with a new sales venue in the heart of Boston, with access to over 15,000 shoppers a day. This represents a significant new market for farmers in Massachusetts. But, we anticipated that there

would be only a few farmers who have sufficient volume of year-round product and the management capacity to open a new off-site sales operation, and thus, many specialty crop producers would be unable to access this market without some form of collaboration or the development of less rigorous vending options.

Specialty crop farmers were interested in support in assessing the business opportunity of vending at the Boston Public Market so that they were making the sound business decisions. CISA's original proposal and timeline for a business plan and analysis of a specialty crop shared vending space in the Boston Public Market was delayed due to a delay in identifying an operator for the Boston Public Market, CISA requested and had approved a no cost extension until December 31, 2013. The below timeline is a reflection of our revised timeline submitted to MDAR on 3/1/13.

How the issue or problem was approached via the Project.

This grant was designed to provide support to specialty crop farmers interested in vending at the Boston Public Market via financial templates, business plan assistance, and design work.

However because this grant was awarded while the market was still in development, the actual deliverables and timeline of the grant changed to best respond to the needs of specialty crop farmers in light of the evolving ownership and structure of the Boston Public Market. For instance, in collaboration with farmers, MDAR, and the Boston Public Market, we did not spend as much money on design work, because the specs on the available space at the market were not ready. Instead, farmers and the Boston Public Market expressed an interest in additional financial templates that would be flexible enough to allow a single farm to assess vending at the market on short-term or long-term basis.

This project was designed to provide farmers with tools to assess vending at the Boston Public Market and to support their planning for such participation.

Throughout the course of this project, special attention was paid to ensure that the funds were used solely to enhance the competitiveness of specialty crop producers. The templates were designed for use by specialty crop producers and intermediaries selling specialty crops and they were tested exclusively by specialty crop producers.

How the goals of the Project were achieved.

Through this project we surveyed farmers to understand the questions and concerns they would be weighing when considering a stand at the Boston Public Market and we worked closely with MDAR and The Boston Public Market Association to get clarity on the options farmers would have.

We then developed two financial templates that would support decision making by specialty-crop farmers. One template was designed for farmers that would be selling only their own product on more of a short-term basis (the final Boston Public Market has opportunities for seasonal vendors in ad hoc farmers' market-like stalls or in rotating seasonal stands) and a second template designed for a stand where product was bought in (and, if desired, sourced from their own farm).

The final templates included financial pro forma summaries per our original scope of work, design considerations, and allowed for two governance and management options (single ownership, single farm source and single ownership, multiple product sources) to reflect the options most likely to be considered by specialty crop producers (per our initial survey). Instead of one template the final product includes two templates that spell out various considerations necessary to be included in a business plan and provided farmers with access to a business plan template.

Beneficiaries

The templates developed in this work were publicized 550 specialty crop producers across the state and were made available to the Boston Public Market Association for additional outreach to specialty crop producers.

Those farmers that tested the templates found that it gave them some data by which to better assess the value of getting a stand at the Boston Public Market. Orchard fruit and winter vegetable producers found that to be profitable they would need to sell 50,000 lbs a year and our cut flower tester needed to sell just under 23,000 lbs per year to reach profitability. Larger, more mixed specialty products stands had higher costs and needed to sell closer to 100,000 lbs of product to reach profitability. One farmer who tested the templates has become a seasonal vendor at the outdoor farmers' market that started this summer at the Boston Public

Results, conclusions, and lessons learned for the Project.

As a result of this project, farmers now have several valuable tools to help them assess participation in the Boston Public Market as a vendor. Farmer input has allowed CISA to draft sample financial plans as well that demonstrate that participation in the Boston Public Market can be financially worth-while for farmers, under the current most-likely thinking.

We have learned also, that farmers are interested in the Boston Public Market as an additional outlet for their products, but wary about the risk that they might undertake to participate. Our initial farmer survey showed that of the 28 farmers surveyed only 25% are considering a stand at the Boston Public Market themselves and that 80% would consider selling product to another vendor at the Boston Public Market at wholesale prices.

How progress has been made to achieve long term outcome measures for the Project.

The long term outcome measures identified in the original proposal and agreed to in our proposal were that the products developed be useful to specialty crop farmers. Progress has been made on that front – as the products were designed with input from specialty crop farmers, vetted with specialty crop farmers and then made available to them.

We believe that the true outcome measure for this project, however, is that specialty crop farmers increase their profitability over time by making sound business decisions to support the financial sustainability of their farm business. Our templates will support that effort and we hope to know once the market opens in 2015 whether the templates were accurate and provided good guidance. We believe that even if the assumptions made in the templates do not pan out once the market is open the templates can be adjusted to reflect on-the-ground numbers and thus can be useful in supporting farmers that are considering a stand in future years.

- **Additional information available (i.e., publications, websites, etc.).**
 - Single-sourced product financial template – with assumption data.
 - Multiple-sourced product financial template – blank.
 - Multiple-sourced product financial template – with assumption data.

Activities Performed

CISA has developed two financial templates – one designed for a vendor who purchases specialty crops in from multiple farmers and the second for farmers who directly sells their own specialty crops. These templates were developed by our financial consultant Kate Hayes and tested by CISA staff. We have advertised these templates with all of our Buy Local partners and have tested out the template with three potential farm vendors. We have also reviewed the template and the assumptions that inform the template with staff at the

Boston Public Market. We believe that individual conversations with specialty crop producers interested in the market is a better way of getting feedback for the Boston Public Market than a broad based survey because farmer participation in the Boston Public Market depends on many complicated and differing factors. Having more in-depth conversations and walking through of the draft templates has allowed farmers to better understand the opportunities at the market and allowed us to better understand the factors that are critical to their decision to participate.

*Activities in blue have been reported already.

<i>Activities</i>	<i>Completed?</i>	<i>Notes</i>
By February 28, 2012 the Contractor will have:		
1. Identified stakeholders and advisors to include in the process.	Yes	CISA has identified stakeholders and advisors including: <ul style="list-style-type: none"> • Greg Melnik • Michael Wissemann • Ann Burke • Rus Peotter
By April 30, 2012 the Contractor will have:		
1. Invited stakeholder/advisor participation.	Yes	Advisors have agreed to sit on meetings.
2. Organized first stakeholder/advisor meeting.	Yes	The advisory group met 7/2/12 with Kate Hayes to help direct the business planning process.
By July 2012, the Contractor shall have:		
2. Finalized contracts with consultants.	Yes	CISA finalized agreements with Fair Food Philadelphia to provide expertise and comparable data and with Kate Hayes for a business and financial plan. CISA has identified our design feasibility consultant and will have a signed agreement this week.
By September 2012, the Contractor shall have:		

1. Held second stakeholder meeting.	Yes	The advisory committee met on 8/31/12 with Ann Karlen of Fair Food Philadelphia and Kate Hayes to review comparable data, further refine business plan assumptions, and review the Fair Food model of ownership.
By May 2013, the Contractor shall have:		
1. Developed Market feasibility; Financial pro forma TEMPLATES for collective farm stand managed by one entity (income statement, balance sheets, 10 year cash flow),	Yes	Working with consultant Kate Hayes, we developed a draft pro-forma template. Over the summer we tested the form and worked to populate all the fields with reasonable estimates for a “model” version that would be completely filled out.
By July 2013, the Contractor shall have:		
2. Developed Market feasibility; Organizational capacity (assessment of governance and management options);	Partially complete Yes	Based on farmer feedback and a review of existing models, CISA identified two governance/management options: private, farm owned stand and “non-profit” where a not-for profit owns the stand and purchases specialty crops for resale. CISA ran the financials for both models and believe that both have potential for profitability.
3. Developed and distributed survey to assess needs and interests of specialty crop producers.	Yes	CISA completed an initial assessment of select specialty crop producers in western MA to test out the level of detail and types of questions that would inform the process best. We determined that to understand a farmer’s interest in

		<p>participating in a shared retail space, farmers need to know more specifics about return on investment. We propose distributing a survey after the first draft of a business plan.</p> <p>CISA worked with all of our Buy Local partners and the Boston Public Market Association to invite farmers interested in the Boston Public Market to contact CISA staff to run through the Business Plan and answer questions.</p>
<p>By August 2013, the Contractor shall have:</p>		
<p>1. Collect and analyze surveys.</p>	<p>Yes</p>	<p>CISA completed three template review conversations with farmers and fielded additional inquiries from three farmers. We anticipate completing an additional three template conversations before the final versions are published.</p>
<p>2. Initiated any additional research needed to finalize feasibility or to inform business plan.</p>	<p>Yes</p>	<p>CISA completed research on cost of labor, administration costs, and collected pricing data to inform the feasibility and business plan. In addition, CISA staff and our consultant met with Boston Public Market staff to review additional questions about rent, parking, storage etc. and to review our assumptions about electricity and other data.</p> <p>Based on our conversations with potential specialty product vendors</p>

<p>3. Determine if additional business TEMPLATES are warranted based on farmer survey instead of a Design feasibility (given that the market may not be ready for design stage work).</p>	<p>Yes</p>	<p>we determined the need for a farmer-owned stand template, which was completed and tested over the summer. Due to savings from bringing business planning work in house, we will also be completing the design feasibility (expected in November 2013).</p>
<p>By September 2013, the contractor shall have:</p>		
<p>4. Reviewed draft business plan (values and vision of a collaborative sales venue, farm stand overview, market analysis, marketing strategy, and implementation guide).</p>	<p>Partially complete Yes</p>	<p>Over the summer we developed a draft business plan outline and reviewed the components with the Boston Public Market Association (Business plans are expected to be required by potential vendors- so we wanted to make sure our plan addressed the major areas that the Association would be looking to see.)</p> <p>Because the models that we ended up pursuing each had only one owner (specialty crop producers, unlike wine and cheese producers in the state, were not interested in a jointly OWNED stand), the business plan is way less complicated than it would be if a stand were managed by multiple owners. The Boston Public Market staff developed a business plan outline that incorporated many of the elements that were included in our own draft version.</p>
<p>5. Designed feasibility (retail and storage design</p>	<p>Yes</p>	<p>Financial templates were developed</p>

drawings, equipment list, mechanical and electrical drawings) OR financial templates for a second ownership option.		and tested over the summer. We will be completing the design feasibility over the next month.
By December 2013, the Contractor shall have:		
1. Finalized all documents for publication, published feasibility and business plan.	Yes	Drafts finalized by November 15, 2013. Printed/electronic copies available by December 2013. (We will make copies available on our website and also on USB data drives for use by specialty crop producers.) Documents have been made available directly to farmers on request, to MDAR, and to the Boston Public Market for sharing with potential vendors.
2. Held Final stakeholder meeting.	Revised	CISA did not hold a final stakeholder meeting, due to the timing of the grant completion – we did however send out a mass email to farmers and partners (to share with farmers) to make them aware of the Boston Public Market templates and ensure they had a contact for questions and additional information.

Financial Accounting

A complete accounting of expenses attached.

Contact Person:

Kelly Coleman, Program Director
Community Involved in Sustaining Agriculture (CISA)
www.buylocalfood.org
1 Sugarloaf Street
South Deerfield, MA 01373
(413) 665-7100

Growing the Massachusetts wine industry through consumer awareness, market opportunities and continuing education

Applicant: The Massachusetts Farm Wineries and Growers Association

Final Performance Report:**PROJECT SUMMARY:**

1. Boston Public Market Feasibility Study - The purpose of this feasibility study was to ascertain the best way for the Massachusetts winemaking industry to participate in and have a permanent presence at the new Boston Public Market. The study investigated and determined the legal organizational, financial and operational issues involved in such participation and propose steps required to address those issues.
2. Continuing Education - Educational programs continue to improve the support system for the relatively new agricultural business of winemaking and grape growing by enhancing the wine making and vineyard management capabilities of those involved in the industry.

PROJECT APPROACH:**1. Boston Public Market Feasibility Study**

Boston Public Market Feasibility Study's primary purpose was to explore the possibility of expanding the Massachusetts wine industry through consumer awareness, market opportunities and continuing education. In 2012, Massachusetts Farm Wineries and Growers Association (MFWGA) established a working committee to work with the MFWGA Admin to evaluate and select a market consultant. Despite delays in the release of the final guidelines for the Boston

Public Market (BPM) vendors MFWGA continuously monitored the status of the Boston Public Market Association activities, receiving several briefings from MDAR and Governor's office staff to keep up on the latest developments until the vendor information became available. The RFP for a market Consultant was then immediately released. In 2013 MFWGA retained a contractor whose initial responsibility was conducting primary research and producing a report of findings. The working committee and MFWGA Admin provided monthly oversight and input to the process which resulted in a preliminary presentation at the MFWGA annual meeting. The attached plans for a Massachusetts Wine Shop at the Boston Public Market which were the result of this project are the culmination of years of research and collaboration. The BPM Wine Shop will open in mid 2015 with the participation of 75% of MFWGA members. The remaining 25% of Members are fully in support of the project and are working to increase their production of Massachusetts wine to meet the anticipated demand of this new market.

2. Continuing Education:

In 2012 The 5th Annual MFWGA meeting was held on February 7th in Sturbridge. Fifty one members and guest were in attendance. Topics included: Labeling, Packaging and Pricing Massachusetts Wine, New Winery Round Table, Sensory Identification of Wine Flaws, Managing Spotted Wing Drosophila. Project partners from MDAR and UMASS Extension staff, as well as the twenty six member wineries and vineyards of MFWGA, contributed significantly to the success of the project. All partners had an opportunity to provide input and feedback on the selection of industry experts. The success of any event is measured in part by the number of registered guests. Allowing for direct input from industry professionals has created a series of workshops that are highly desirable to the current membership, as well as those considering entering the field of professional wine making which is reflected in the high attendance.

Coastal Vineyards in South Dartmouth served as the host for the June 7th twilight meeting. Wayne Wilcox, Cornell University, shared his expertise with the twenty nine individuals in attendance. He discussed the nuts and bolts of spray programs for disease management. Meeting attendees were able to take an active role in the discussion, bringing up topics specific to their operation for Wayne to share his recommendation. The Wine Fault Seminar was presented on November 7th by Chris Gerling and Anna Katherine Mansfield. Nineteen individuals participated in the hands on style workshop. The day long program focused on the detection of visual, aroma and flavor defects in wine. Participants learned how to recognize wine flaws in various concentrations, how they arise and how they can be prevented and corrected.

GOALS AND OUTCOMES ACHIEVED

1. Boston Public Market Feasibility Study -

The extensive work done by the Boston Public Market Consultant and his affiliated legal team has resulted in a viable and legally feasible business plan which includes 3 years of financial projections, initial investment requirements and procurement plans, income and expense projection, insurance needs, floor-plan and build out recommendations which addresses storage space, security, retail/tasting space and liability concerns as well as full explanation and recommendations regarding permitting options. All aforementioned legal concerns and questions were thoroughly researched and the Association was presented with the benefits and challenges of each permitting option. The BPM Consultant provided leadership and support for drafting an equitable approach to startup investment for the project that would be inclusive of all Association members. The new administrator for MFWGA has worked extensively with the Executive Board, the BPM Consultant and the MDAR to ensure that the projects supported by this Specialty Crop Grant are realized to their fullest potential. The attached plans for a Massachusetts Wine Shop at the Boston Public Market which were the result of this project are the culmination of years of research and collaboration. The BPM Wine Shop will open in mid 2015 with the participation of 75% of MFWGA members. The remaining 25% of Members are fully in support of the project and are working to increase their production of Massachusetts wine to meet the anticipated demand of this new market.

2. Continuing Education –

Data has been collected tracking the number of newly licensed wineries. Follow up surveys were sent to track the number of new licenses granted, in progress or development on hold. Entries for the New England Wine Competition were tracked for performance results. A comparison of 2012 to 2013 and 2014 results determined that the overall quality of Massachusetts wine has increased substantially as evidenced by a 70% increase in silver and gold medals awarded to Massachusetts wines. As a result of the funding received through the Specialty Crop Grant, The Massachusetts Farm Winery and Growers Association (MFWGA) has provided necessary educational opportunities to its statewide membership. Through the speakers and presenters at annual meetings and the additional educational experiences provided by Twilight Meetings MFWGA members have reported a 60% increase in their knowledge of wine making and wine grape growing processes in follow-up interviews conducted post workshops with participants. The positive impact of this education and of the camaraderie experienced through the networking and community learning opportunities can be seen in the 10 % increase of wine produced in Massachusetts monitored through the Massachusetts Department of Revenues Alcoholic Beverage Gallons Reports as well as the substantial increase in wine quality which is articulated in the aforementioned awards MFWGA Member Wineries have won for

their Massachusetts made wine in competitions at the Regional (Eastern States Exposition Wine Competition) and National (American Wine Society Commercial Wine Competition) levels.

BENEFICIARIES

The direct beneficiaries are the Massachusetts winemakers and grape growers, both those currently in production and those who may want to do so in the future. This project has facilitated an increase in knowledge to help present and future winemakers and growers sustain and expand their existing enterprises and has resulted in a significant increase in marketing opportunities through the expansion of sales opportunities into the Boston market. As a result of this project, 75% of MFWGA members are committed to selling their wines at the wine shop at the Boston Public Market. The remaining 25% of MFWGA members are committed to increasing their production of Massachusetts wine to meet the anticipated demand of this new market. Once it opens its doors in July, the MFWGA Wine Shop at the Boston Public Market is expected to sell an estimated 20,000 bottles of wine in 2015. In 2016 that number climbs to over 24,000 bottles. The wine shop will generate a total of 3 new jobs in 2015 and expand an existing position from part time to full time.

Additional beneficiaries are those living and working in proximity of the Boston Public Market/MFWGA Wine Shop. The Boston Public Market/MFWGA Wine Shop location is a half mile radius of Boston's North End, West End and large sections of Beacon Hill. This trade area has an estimated 11,000 households with a high average household income of \$100,000. More than 102,000 employees are estimated to work in the 7- minute radius of The Boston Public Market/MFWGA Wine Shop. A population of this size is estimated to spend, on average, \$25 million during lunchtime alone. Development plans for the area include more than 2 million square feet of new office space. The Boston Public Market/MFWGA Wine Shop is located along the Freedom Trail— which sees 1.7 million visitors annually— and one block from Faneuil Hall and its 17 million annual visitors. Additionally, the State has relocated the new Boston Registry of Motor Vehicles to the floor directly above the market. With more than 30,000 monthly transactions, the RMV will bring 360,000 annual visitors directly into the building. Located below ground within the Boston Public Market building is the Haymarket T station, on the Orange and Green lines. More than 8,600 commuters use the station weekly. North Station and its 40,000 commuters is a short walk away and the Haymarket bus hub is next door. Additional indirect beneficiaries of the growth of Massachusetts' wine industry include:

- Consumers with more local product choices

- Local communities that will preserve open space and agricultural land

Local communities where tourism is or can be an important economic driver

Government via additional revenues in real & personal property taxes, sales & excise taxes.

LESSONS LEARNED:

Due to circumstances beyond the control of MFWGA, the release of the final guidelines for the Boston Public Market (BPM) vendors was delayed. As a result, the Market Consultant portion of the project was placed on temporary hold until more information became available. This delay resulted in the RFP for the Consultant being released in mid 2013. Several issues requiring extensive work arose in the Business Planning Process for the Boston Public Market Project. Additional time was needed from the Consultant and the MFWGA Administrator in order to fully address the concerns that arose. These concerns included legal issues surrounding the sale of alcohol in a location that is owned by the state and leased to a non-profit, determining the appropriate means of licensing the Wine Shop {Farm Winery permit/package store license/license to pour etc} and the important challenges around the need to be as inclusive as possible in order to ensure a diverse range of products representing all areas of our Commonwealth. As a result, additional funding was required to complete the business planning process to cover the costs associated with legal research on behalf of the Consultant. The additional Admin time and the change in the season during which this work was taking place resulted in less availability for some of the smaller Continuing Education opportunities as originally planned. The Boston Public Market Project consumed the available off farm time of our Association Members which made scheduling the few remaining CE programs impossible. This combined with the timing of the staff transition and the performance challenges that resulted in the change of staff some of the Continuing Education funds were redirected to the Boston Public Market project to ensure its success.

In early 2014 MFWGA Board of Directors experienced concerns with the commitment, efficacy and leadership of their administrator. After lengthy discussions it was mutually agreed upon that the administrator would resign and MFWGA would seek a replacement. The hiring process was lengthy and complicated due to the timing and the extensive work that MFWGA was involved with {including the Boston Public Market Feasibility Study} and the reality that MFWGA is a member run organization with the ability to support only one staff person at a time. A new administrator was hired at the end of July 2014. The staff transition caused disruption in the workflow of the organization. Many of the initial timelines and goals for this project, though a top priority of the incoming administrator, were further delayed. The staff transition at MFWGA created specific challenges which affected the timely completion of this project. Notably, gaps in the transfer of information from the previous administrator resulted in extensive forensic work

for the incoming administrator in order to obtain the information and documentation necessary to fulfill reporting requirements. MFWGA is grateful for the support and assistance of the Massachusetts Department of Agriculture staff in clarifying the process and articulating the information necessary to accurately depict the valuable and productive work that has been done on these projects. MFWGA has implemented recording systems for information and processes for information sharing which will prevent these challenges from reoccurring.

MFWGA continues to work diligently to expand the market for Massachusetts wine through the opportunities made possible by the USDA Specialty Crop Grant Program. We are working to raise the level of awareness of this dynamic locally made product and to increase the financial impact of these crops on our communities across the Commonwealth. On behalf of the Massachusetts Farm Wineries and Growers Association, thank you for your support of our valuable work.

Contact Person:

Kate Levin
Executive Director
Massachusetts Farm Wineries and Growers Association
PO Box N145
Westport, MA 02790
508-454-5631
MAFWGA@gmail.com

DEVELOPING MARKET DEMAND FOR MCINTOSH APPLES FOR LATIN AMERICAN MARKETS

Final Performance Report

Applicant: UNIVERSITY OF MASSACHUSETTS, Stockbridge School of Agriculture, Amherst

1. Project Summary

The major goal of this project was to enhance the opportunities to market McIntosh apples in Latin America. This included determining pricing for the long-term success of exporting McIntosh apples to Central American markets. Determination of pricing was needed to evaluate the costs of sending McIntosh from New England to Central America, as well as to understand the market structure and determine how apples sales are likely to respond to price. Since apple quality is one of the major concerns in exporting McIntosh to Central America, this project also evaluated McIntosh fruit quality-retention in the value chain from Massachusetts to Central America. This postharvest analysis focused on the handling practices used in export

logistics, transportation, distribution, and retail, and how these practices affect the quality at the final destination.

2. The project Approach

It has been developing the market for McIntosh apples with a variety of approaches, including educational material regarding uniqueness of McIntosh and its various uses, and a connection between farmers in New England and buyers and consumers in Central America. This project also developed a proposal to ensure quality maintenance through a best-management-practices educational program for all aspects of transport, handling, and consumption. It also determined the wholesale price that markets in Central America are willing to pay for McIntosh apples. In addition, this project promoted and sold McIntosh apples in Central America.

Presentation of the significant contributions and roles of project partners in the project.

We worked closely with the New England apple industry in order to achieve the goals of this project. Different wholesalers and growers were part of this process: in Massachusetts J.P. Sullivan Company and Carlson Orchards; in Connecticut Blue Hills Orchard; and in Maine Ricker Hill Orchards. This project also worked with the MDAR and the US Apple Export Council (USAEC) to support the reverse trade mission from Central America in Massachusetts to promote apples from New England. As a result of this project, Ricker Hill Orchards and J.P. Sullivan Company already have supplier codes for Wal-Mart Centro America and Mexico and McIntosh apples were sold for the first time in Central America.

3. Goals and Outcomes Achieved

Goal 1: Establish best management practices (BMPs) for handling McIntosh apples.

To develop best management handling practices for McIntosh apples, it was determined the most important issues affecting fruit quality. In order to address these issues many interviews were conducted with different growers, shippers, marketers, and consumers. These interviews were performed with the participation of Massachusetts apples growers, wholesalers in Massachusetts and Central America, and supermarket chains in Massachusetts and Central America. Consequently, the results of these interviews were compiled, and we reviewed the current research literature regarding apple storage and handling. BHPs in English, and Spanish were developed in various formats to be used to educate all links in the transport, sales, and consumption chain. The result of this research is a manual called Best Handling Practices of McIntosh from Harvest through Consumption.

Goal 2: Develop information of McIntosh apples in Spanish and Portuguese to be used in educational and promotional activities.

Promotional and educational information of McIntosh apples in Spanish and English was developed by the project team. As part of this effort, the project team worked closely with the apple industry and market professionals, locally and internationally (Central American and Mexico), to identify specific information needed.

As part of promotional activities, relationships with buyers in Central America and Mexico were developed. It was visited many apple import companies and supermarkets in Mexico and Central America to promote the export of apples from New England to Mexico. This project also promoted McIntosh apples in the Latin American communities in the Northeastern US (New England) to evaluate strategies to use in Latin American countries and possibly with those communities.

Goal 3: Establish the prices that markets in Central America are willing to pay for apples from New England.

New England apples have not been sold previously in Central America; therefore this project used a pricing strategy referred to as *pricing at the market*, which all it requires is setting price equal to other sellers. For New England apples, this is a good starting point to understand the apple market structure in those countries due to the Central American market is dominated by two larger competitors (WA State and Chile). The importance of this price policy is that the price represents how the competitors see the market, their cost, and their view of how customers will respond, not New England apple growers. A better approach is to look at these same items in light of New England apple Growers' costs and so on, and see how customers respond as it be discussed on the below sections.

For purposes of providing the best recommendation to the producers of New England, a practical costing exercise was conducted during the logistic process of the first exportation from Massachusetts to El Salvador. The logistics costs to transport a container (980 cartons) of apples from the eastern US to El Salvador included phyto-sanitary permits, pallets, temperature record, container, inland freight, ocean freight, and inspection. The total transportation cost via container ship was \$5,980. In El Salvador, local costs included fees for inspection, import license, customs services, labor manual cost and total about \$402.55. In El Salvador, pricing at the market was at a FOB Price of \$26.40 per 40-pound bushel. This value was also similar to the higher priced apples in El Salvador. The table 1 provides an estimation of a bushel of McIntosh apple from the Western of Massachusetts that is sold in at a supermarket in El Salvador.

Table1. Estimate of the price of a bushel of McIntosh apple from the Western of Massachusetts that is sold in at a supermarket in El Salvador

No.	McIntosh's apple production	Range	Marketing bill
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Cost in Massachusetts						
	Category	Unit	from	to	Average – Cost	
1	Cost of production	Bushel	7.5	10	8.75	
	Cost of production - Total		7.5	10	8.75	14%
2	Cost of packing					
2.1	Packing charges	Bushel	3	3	3	
2.2	Carton	Bushel	2.25	3.5	2.88	
2.3	Smart Fresh charges	Bushel	0.5	0.75	0.63	
2.4	Storage charges	Bushel	0.75	1.25	1	
	Sub Total		6.5	8.5	7.51	
3	Commission charges	Bushel	1.6	2.5	2.05	
4	Total Packing costs	Bushel	8.1	11	9.56	15%
5	Total Cost-growers (1+4)	Bushel	15.6	19.5	17.55	
6	FOB¹ Price	Bushel	26.4	26.4	26.4	
7	Profit - Growers	Bushel	10.8	6.9	8.85	20%
8	Cost of Transportation				6.4	12%
8.1	Sea Freight and insurance (From MA to El Salvador)	Bushel	6	6	6	
8.2	Import tariff	Bushel	0.4	0.4	0.4	
8.3	CIP - Price for Importer (6+8)	Bushel	32.8	32.8	32.8	
11	Taxes	Bushel	4.264	4.264	4.264	
	Final Retail price and importer price difference		21.2	25.464	25.464	39%
12	Consumer price	Bushel	54	54	54	
	Total					100%

Source: Personal communication with growers, shippers, marketers and consumers (2011, 2012). Invoices obtained throughout each level of the vertical channel from Massachusetts to El Salvador (Nov, and Dec 2012)

Since the 2012 apple season, the FOB McIntosh prices were higher domestically than the FOB price that buyers were willing to pay in Central America, giving a result that did not favor the profits of the apple growers if they had exported to Central America in 2012 only (figure 1). However, it was found that the FOB price of \$26.40 per bushel, which was discovered by this research, is profitable for New England growers, as it can be seen in table 1. In addition, this

¹ FOB price resulting from the research conducted under the strategy price at the market, Alvarado, 2012

price is also consistent with the price of the 2013 apple season in Massachusetts, as it can be seen in the figure 1.

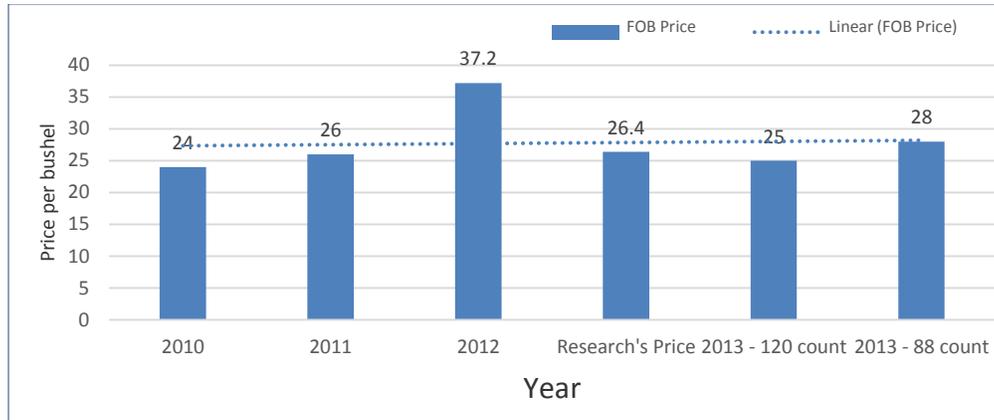


Figure 1: FOB Price, Harvard, MA

Goal 4: Implement promotional campaign for apples grown in Massachusetts to be sold in Central America.

An advertising campaign focused on fall and the Christmas season to promote McIntosh’s “Christmas colors,” red and green, and as a perfect “Christmas apple” was developed by the Project Team. Also, personal contacts with the principal buyers in Central America were established.

Goal 5: Export apples from New England to Central America.

Through this project, we worked with buyers in Guatemala, Honduras, El Salvador, Costa Rica, and Mexico. The project promoted McIntosh with the main supermarkets chains in Central America. Although in 2012, an unexpected weather situation reduced the crop of many apple orchards in New England, a shipment of McIntosh was exported to Central American marketplace to study sales performance, quality and potential pricing during the Christmas season of 2012 (November and December).

According to the results of this project, the main factors that Massachusetts Apple Growers saw as difficulties in exporting to this new market were: 1) relatively few growers have the facilities to prepare high quality apples for a wholesale market. 2) Growers or wholesalers who have packing facilities, CA rooms, and administrative procedures for exporting have a recognized domestic market and do not see the Central America Region as an option yet. 3) Lack of supply in the last 3 years did not encourage apple growers to make this new path of exporting apples to Central America. 4) In addition to lack of supply, growers were afraid of different

currencies that Central America has in some countries, except El Salvador whose currency is the USA currency, and growers believe that it could affect their revenues.

Despite these difficulties, this opportunity is attractive when there is too much supply in the New England region, especially for apples of small and medium sizes, the preference of Central American consumers. Regarding the government role in getting the paperwork ready to export during this project, it was observed that they were very effective and no significant obstacles were experienced in the U.S., but this could not be said of El Salvador government.

Goal 6: After project completion. Measurement of project outcomes.

This project will maintain contact with Massachusetts shippers and Central American buyers to determine if market development resulted in enhanced sales of McIntosh in Central America

Comparison of actual accomplishments with goals established for this reporting period

Goals established	Actual accomplishments
Establish best management practices (BMPs) for handling McIntosh apples.	Completed.
Develop information on McIntosh apples in Spanish and Portuguese to be used in educational and promotional activities.	Completed
Establish the prices that markets in Central America are willing to pay for apples from New England.	Completed
Implement promotional campaign for apples grown in Massachusetts to be sold in Central America.	Completed
Export apples from New England to Central America.	Completed.

Summarize the major successful outcomes of the project in quantifiable terms.

- 1) Ninety growers and shippers in the U.S. and 31 produce handlers and managers in Central America were trained in BMPs for McIntosh handling
 - a. USA:
 - i. The New Apple Association was the main entity benefited. It has about 75 grower members. The training was provided through educational and promotional materials. In addition, information about the export research to Central America is publicly accessible.
 - ii. Wholesale suppliers of New England apples: There were 15 people, who participated directly in the packing, inspection, export and shipping processes.
 - b. Central America:

- i. Nine import companies, 17 people who were working in supermarkets, 5 customs officers, and more than 700 consumers were trained as to the handling and use of McIntosh apples.

4) Beneficiaries:

This project is benefiting apple growers from all six New England states by providing an additional, growing, and possibly lucrative market for McIntosh apples. BMPs developed and disseminated from this project are helping enhance market quality and potentially increase domestic markets as a result.

One commercial container of McIntosh apples was shipped to Central America on November 12, 2012.

- a. No commercial containers were shipped prior to this project. This is the first time McIntosh apples were exported commercially to Central America and Latin America in general
- b. McIntosh apples were promoted in 5 Latino countries, and 7 Latino communities in New England.

This project proved McIntosh apples treated appropriately with 1-MCP retain quality even when there are temperature mishandlings throughout the supply chain.

5) Lessons Learned:

Even when apples have been one of the fruits most studied globally, especially in apple-growing countries, research of marketing is still needed in the apple-consuming countries. It is necessary to study marketing issues in these countries in order to support the New England apple industry.

It is also suggested that at least the first two commercial containers exported by any wholesaler from New England should be facilitated, with support provided to address language issues and logistic costs.

Other Massachusetts and New England, varieties along with McIntosh, should be introduced and could have potential in Central American markets, since buyers required diversity.

The positive response of Central American consumers to McIntosh apples has increased the interest of the New England Apple Industry. However, it is necessary to work with apple growers in New England to help them exporting apples broadly.

It is recommended to start negotiating with firms which have good reputation in the marketplace. It is also suggested to hire a sales person that represents the New England apple growers' interests in those countries.

On the other hand, when negotiations are made between buyers and sellers, it is strongly suggested to negotiate FOB Price for the Central America markets. Using FOB Price, Massachusetts growers minimize the risk for any mismanagement that may arise along the way.

Contact Information:

Wes Autio
Stockbridge School of Agriculture, University of Massachusetts
205 Bowditch Hall, Amherst, MA, 01003
(413) 545-2963
autio@umass.edu

Green for Life

Final Performance Report

Applicants: Massachusetts Nursery Landscape Association; Massachusetts Flower Growers' Association (lead organization) and the Massachusetts Flower Growers Association

PROJECT SUMMARY

1) A Project Summary consisting of the following information:

a) Background of the initial purpose of the project, including the specific issue, problem or needs that was addressed by the project

The Massachusetts Nursery and Landscape Association (MNLA) and Massachusetts Flower Growers' Association (MFGA) represent greenhouse growers, turf growers, nurseries, and growers of indoor and outdoor vegetable and herb plants and flowers. We proposed a promotional campaign to reframe how the public thinks about trees, flowers, bushes, house plants, vegetable plants, et al, via a campaign called "**Green for Life**". We focused on building the state's green infrastructure by creating an environmental movement that will lead to additional revenues for the specialty crops industry in Massachusetts.

People think of the landscape as an "add-on for beauty" or a luxury. We want to change their opinion to one that thinks of the landscape as a real, tangible, environmental benefit, with economic incentives, that are essential to a healthy planet, healthy people and our ecosystem.

b) Description of the importance and timeliness of the project

All components of the project worked toward the central goal of increasing the competitiveness and long term sustainability of specialty crops. There is a national wave toward "green" solutions and shopping locally. The specialty crops sellers and growers need to capitalize on this wave if they are to stay economically viable. The housing crash and cuts in government and university building projects have had a big negative economic impact on the green industry.

Projects like "**Green for Life**" help to build upon the slow growth we are experiencing now to sustain the industry over the long term to replace the kind of growth we had in our business during the housing boom. Experts seem to agree that we will not see that kind of housing boom for a decade, but the environmental issues of CO₂, global warming, reducing energy costs, and providing habitat to bees, birds and other wildlife are things that we can tap into now - and if we are not growing, we are dying. We cannot be static. The traditional gardeners are aging and unless people under 40 can be brought around to value plants and trees, the future of these our crops will be dim. Without a new direction, the industry will slowly wither.

c) If the project built upon a project that previously received Specialty Crop Block Grant, describe how the project complemented and enhanced previously completed work

This was a new initiative. Funds had not been received from other sources prior to the beginning of this project.

A brief summary of activities performed and goals and / or targets achieved throughout the entire grant period. This should represent the activities/ goals and targets specified in Attachment B: Work Plan

- Establishment of 10 member Plant Something Task Force
- Hired contract staff to assemble background information for campaign
- Adopted the Plant Something Campaign. This campaign is currently in use by ten states, and growing.
- Developed the website www.plantsomethingma.com website. The site serves as a portal for consumers to find a local garden center, grower, certified horticulturist and landscape professional.
- Identified standards, techniques, and product specifications for roadside green infrastructure. Contacted the relevant state agencies, environmental organizations and industry partners to create relationships and partnerships to advance the Roadside Project.
- Hired a media consultant to develop social media campaign including: a Facebook page, website efforts and social media workshop.
- Held a social media workshop for more than 200 members. This was held at New England Grows with more than 13,000 industry professionals in attendance. This effort was enhanced with follow up articles in *Pro Grow News*.
- Launched “Kick-off” Campaign in 2012 using *Pro Grow News* and MFGA publication.
- Held Summer Conference with workshop on “Plant Something” aka Green for Life Campaign.
- Completed the research survey by UMASS Dartmouth, Nora Barnes. Held several outreach meetings that shared the results and how members can use these findings to sell more plants. In addition, an article was drafted using the findings for *Pro Grow News*. There were 5 research meeting held for a total of ~650 attendees.
- Developed marketing materials and participated in the MBTA campaign with MDAR in May and June 2012 showcasing the value of plants and directing consumers to the website to find a local grower

3) If the project benefited commodities other than specialty crops, indicate how the Contractor ensured that grant funds were used only to enhance the competitiveness of specialty crops

The program, “Green for Life” is entirely about specialty crops. All of the materials and promotions were about buying plants, trees and shrubs.

4) A summary of the contributions and roles of project partners

Contributors of the project include the memberships of MNLA and MFGA. Members invested in purchasing signage and promotional items to direct traffic to the www.plantsomethingma.org website. Media also contributed their outreach efforts throughout the spring for the campaign. Campaign partners included elected officials like Governor Patrick with a planting in the spring at a school in Boston and Representative Dykema who planted a tree in Holliston in the fall. The Governor also established May as Flower, Nursery and Landscape Month.

PROJECT APPROACH

5) A description of the activities that were completed in order to achieve the performance goals and measurable outcomes

- Establishment of the Plant Something Task Force. The task force is comprised of four members of each Association, plus both Directors. The task force voted to adopt the Plant Something campaign, which was developed by the Arizona Nursery Association. This national initiative has expanded to ten states and continues to grow.
- Hired a contract staff person to assemble background information for campaign. Researched what has been done elsewhere and assembled that information.
- Began the development of the www.PlantSomethingMA.com website. The site serves as a portal for consumers to find a local garden center, grower, certified horticulturist and landscape professional. Website propagation included hiring a web-designer and garden writer. It has been produced to share our members’ skills and knowledge to help the consumer learn about plants, how easy it is to add them to their home and why it is important to the environment and to their health to do so.
- Identified standards, techniques, and product specifications for roadside green infrastructure. Contacted the relevant state agencies, environmental organizations and industry partners to create relationships and partnerships to advance the Roadside Project.

- Hired a media consultant to develop social media, a Facebook page, website efforts and social media workshop. Held a social media workshop for more than 200 members. This was held at New England Grows with more than 13,000 industry professionals in attendance. This effort was enhanced with follow up articles in Pro Grow News.
- Launched “Kick-off” Campaign in 2012 using “Pro Gro” News and MFGA publication. Held Summer Conference with workshop on “Plant Something” aka/Green for Life Campaign.
- Completed the research survey by UMass Dartmouth, Nora Barnes. Held several outreach meetings that shared the results and how members can use these findings to sell more plants. In addition, an article was drafted using the findings for Pro Grow News.
- Developed marketing and participated in the MBTA campaign with MDAR in May and June 2012 showcasing the value of plants and directing consumers to the website to find a local grower.
- All marketing materials can found at www.PlantSomethingMA.com.

6) If the outcomes measured are long term, summarize the progress that has been made toward their achievement

All of the outcomes are long term. This is an ongoing project that will have many phases and levels of activity. Moving ahead, the partner organizations have hired a Marketing Coordinator as well as a new Project Coordinator, establishing their commitment to the longevity of the Plant Something program. In 2013 there will be a campaign named “Don’t just stand there...Plant Something!”. Our goal is to have every city and town in Massachusetts plant something on May 15th.

7) A comparison of actual accomplishments with the goals established for the grant period

The accomplishments are numerous and exceeded the goals of the grant.

We have produced a campaign “Plant Something”; built a website www.plantsomethingma.com; marketing and outreach on the MBTA program with MDAR and developed outreach tools and materials for the membership of MNLA & MFGA. Completed the consumer research with UMass Dartmouth and have since provided several educational workshops that focused on social

media and the resulting research. The program has been highlighted in national industry publications, websites, MNLA's *Pro Grow News* and MFGA's publications.

GOALS AND OUTCOMES ACHIEVED

8) Illustration of baseline data that has been gathered to date and the progress towards achieving set targets

There was no consumer program for flower and nursery growers previously. In 2012 a consumer website www.plantsomethingma.com was developed with more than 760 participants.

9) Summarize the major successful outcomes of the project in quantifiable terms

- Produced the website www.plantsomethingma.com that showcases 300 MNLA Members, 160 MFGA Members and 300 MA Certified Horticulturists to the consumer.
- Sponsored the MBTA Marketing program with MDAR to promote the campaign. MDAR has collected data to illustrate the number of commuter rail riders exposed to the campaign materials.
- Developed outreach tools and materials for the membership of MNLA & MFGA.
- Completed the consumer research with UMASS Dartmouth and have since provided several educational workshops that focused on social media and the resulting research.
- We have produced a campaign "Plant Something"
- Completed the consumer research with UMass Dartmouth and have since provided several educational workshops that focused on social media and the resulting research.
- All components of the program were highlighted in *Pro Grow News*, as well as MFGA's publications.

Between March 1, 2012 and December 14, 2012, we have tracked the following website activity:

- 227 people
- 401 visits
- 1,790 page visits

10) A description of the groups and other operations that benefited from the completion of this project's accomplishments

There are numerous groups who benefited directly and indirectly from the success of Plant Something in addition to the diverse nursery and landscape industry. With the connections now available online at www.plantsomethingma.com and www.plant-something.org the resources are endless and will prove invaluable to the consumer, state government, garden writers, garden clubs and educational institutions. We look forward to more partnership benefits as we expand the consumer website.

- More than 200 individuals attended the Plant Something workshops
- We measured that people are aware and educated about the program through the number of members that are signed up. More 50 companies participated in the roll out of Plant Something - these companies purchased marketing materials to promote Plant Something. This is a baseline number. We expect that this will increase in the years to come.

BENEFICIARIES

11) State the number of beneficiaries affect by the project's accomplishments and / or potential economic impact of the project.

The consumer website and research survey were baseline projects. The ultimate potential of the projects success will be the number of referrals from the website that resulted in increased sales by flower and nursery industry business owners as well as the increased number of landscape installation projects. Potential economic impact will be able to be measured over time as the full campaign continues to grow in the coming years.

The social media workshop assisted more than 200 members. This was held at New England Grows with more than 13,000 industry professionals in attendance. This effort was enhanced

with follow up articles in Pro Grow News. *Additionally, MNLA Pro Grow News has a circulation rate of 1,200 per issue (6 issues a year)*

LESSONS LEARNED

12) Illustration of the lessons learned as a result of completing this project.

The project illustrated several lessons:

- We learned that to build a statewide program, developing partnerships to leverage grant and association resources is invaluable.
- We learned that creating a program from scratch was not the best use of either association's resources or specialty crop funding.
- Adopting an established nationwide program allowed us to tap into marketing materials and strategies that had already been vetted in ten other states.
- Using the data generated from the UMASS Dartmouth survey, the national campaign was adopted to fit the needs of Massachusetts producers.
- We have also learned about the possibility of partnering with other specialty crop producers on future projects and marketing initiatives. #1

Contact person:

Rena Sumner, MNLA Executive Director

P.O. Box 387, Conway, MA 01341

mnlaoffice@aol.com

413-626-3373

Final Performance Report

Applicant: Massachusetts Farm Bureau Agricultural Preservation Corporation

1) Project Summary

a) Background of the initial purpose of the project

Most U.S. children are not eating the kinds of food they need to grow up healthy; in particular, they do not consume enough fruits and vegetables. The reason for this dearth of healthy produce in their diets can be tied to multiple issues for children living in low-income urban areas: lack of nutrition education (for children and caregivers); lack of information on where to find local, healthy products; and a lack of a connection to local farmers. Childhood obesity has become a national concern. At the same time, specialty crop producers struggle to stay in business. In 2010, in response to this challenge – and opportunity – the Massachusetts Farm to School Project and the Worcester Public Schools, with Specialty Crops grant support, launched the Worcester Kindergarten Initiative.

The KI is a comprehensive nutrition education program that currently uses Massachusetts specialty crop snacks, take-home packages, farm visits, and family cooking demonstrations to teach young students about healthy eating and where their food comes from. It is a multi-sensory approach that combines a nutrition-focused curriculum with seeing, growing, preparing, and tasting local specialty crops.

b) Description of the importance and timeliness of the project

The students and families who participate in the KI live in some of the lowest-income and most food insecure neighborhoods in Worcester. The schools we work in have an average of 90% of their student population eligible for free or reduced-price school lunch, meaning that approximately 90% of families at KI schools earn equal to or less than 185% of the Federal Poverty Level. And while the students are receiving healthy, locally sourced meals at school, in their lives outside of school local specialty crops are often not available.

But access to local specialty crops is increasing. Since the first year of the KI, farmers markets have popped up in Worcester in many of the neighborhoods where students in the Kindergarten Initiative live—there is even one that is mobile. As local, healthy food becomes more available to the families involved in the KI, the time is right to help

increase their level of nutritional knowledge and ensure their connection to their local farmers.

By connecting all of the dots from the production of locally grown specialty crop products to the sale of these products to how to prepare them to their nutritional value to the fresh taste and enjoyment of locally grown fruits and vegetables, we will be able to educate not just the very young students involved in the Kindergarten Initiative, but their teachers, parents, and caregivers as well, creating multiple generations of devoted and knowledgeable local specialty crop consumers.

c) If the project built upon a project that previously received Specialty Crop Block Grant, describe how the project complemented and enhanced previously completed work

The 2010-2011 Kindergarten Initiative pilot opened a new chapter in nutrition and local agriculture education for Worcester, and all stakeholders – Mass. Farm to School, the Agricultural Preservation Corp., local specialty crop farmers, and the Worcester Public Schools—are committed to consolidating and strengthening the Initiative for the next school year. New relationships and habits were forged and the program is ready for a new “crop” of kindergarteners. The pilot program demonstrated that principals, teachers, cafeteria staff, and school administrators in Worcester are eager to use specialty crops as groundbreaking nutrition teaching tools. It also showed us that specialty crops farms in Worcester County are very interested in working with kindergarteners and in providing food for kindergarten snacks. The Worcester KI team is committed to building on the success of the pilot program, and we do not want to lose our momentum.

For the 2011-2012 school year the Mass. Farm to School Project built upon our work with Massachusetts specialty crop producers during the pilot program by tightening the synergies between local food served in the Worcester Public School cafeteria, specialty local food classroom snacks, and the field trip destinations. Students visited farms that are already selling produce to the schools for school lunches, making stronger connections between their local specialty crop producers, what they grow, and where the students encounter it in their daily lives. The specialty crop taste-tests came from farmers that sell produce at farmers markets in Worcester, creating another connection for KI students and their families not only to local food in general, but to specific specialty crop producers to deepen all possible connections between producers and students in order to support farmers now, and foster future customers for specialty crop growers.

2) The Project Approach

a) Activities performed and goals/targets achieved

The original work plan for this Specialty Crops Grant, The Worcester Kindergarten Initiative: Our Next Generation of Specialty Crop Consumers went from December 15, 2011 through June 30, 2012 but was extended through December 31, 2012. This means that activities for school year 2011-2012 (Year 2 of the KI) were completed as a result of

this grant, as well as many of the beginning activities for the 2012-2013 school year (Year 3 of the KI).

During Year 2 of the KI, approximately 335 kindergartners participated in: multiple specialty crop in-class taste-tests, regular in-class nutrition and local food lessons, farm field trip to specialty crop farms, and cooking demonstrations with their families featuring local specialty crop products. Students also received take-home packages of local specialty crops throughout the school year.

During Year 3 of the KI, approximately 425 kindergartners participated in the activities listed above, as well as: visits from the mobile farmers market bringing local specialty crops to students and offering more for sale to their families, information for their families on where to find local specialty crops in Worcester and how to prepare them

During both Years 2 and 3, KI staff coordinated extensive evaluation of the program, held meetings with the teachers involved for feedback and check-ins, and handled all of the logistics of working with the schools and the local specialty crop farmers to source snacks, plan field trips, and more.

For a more extensive description of the activities performed and goals achieved, please see Section 3 below.

b) How the Contractor ensured that grant funds were used only to enhance the competitiveness of specialty crops

Kindergarten students involved in the KI were exposed to local dairy and local grains, in addition to specialty crops, through in-class lessons and, in some cases, a visit to a Massachusetts dairy farm. But no Specialty Crop funds were used for any dairy-related events or activities—funding for all related in-class activities, taste-tests, and farm visits came from non-Specialty Crop sources.

Discussions of local dairy and grains were used in conjunction with discussions of local specialty crops when teaching students about the importance of supporting our local agricultural economy and enjoying locally produced foods. They were also used as part of activities about MyPlate and the various food groups we eat to keep ourselves healthy.

c) A summary of the contributions and roles of project partners.

The primary project partner for the Kindergarten Initiative is the Worcester Public Schools. Throughout the period of this Specialty Crop funding, they have been incredibly supportive of and excited about the KI. The KI Coordinator has met with grant writers at the schools and other administrators to discuss funding going forward and how we can tie together our fundraising efforts. The schools have expressed excitement about expanding the program to additional schools and kindergartners and have worked with Mass. Farm to School to create a Memorandum of Understanding to ensure we are all on the same page.

Fertile Ground continued as our evaluation partner through this program year. Their evaluation report for the school year 2011-2012 served as a valuable tool for adapting the curriculum, adjusting materials and activities, and working with teachers on implementation.

As we began Year 3 of the KI, the Worcester Regional Environmental Council emerged as a valuable partner organization. They maintain a network of school gardens throughout Worcester (two KI schools have schools gardens built by the REC) and worked with them to grow our relationship and integrate the school gardens into the Kindergarten Initiative. Their mobile farmers market (housed in a renovated WRTA van and stopping in ten locations throughout Worcester on a weekly basis) was a great tool for teaching students about buying local produce—it was also fun for parents, family members, and school employees at each of our stops to see the market, purchase produce, and learn about where else in Worcester they can regularly buy local specialty crops.

The farmers that host farm field trips and sell produce for taste-tests, take-home packages, and cooking demonstrations continued to be integral partners in the KI. Wonderfully, many of the farms that students visit through the KI also provide produce for KI activities or sell to the Worcester Public Schools. During this grant period, the KI interacted with 15 specialty crop farms in Massachusetts in different ways (see Section 3.a. below for lists of specialty crop farmers). While we strive to create additional avenues for income for these farms, they also provide an invaluable service to us by being excited to interact with very young students, allowing them onto their farms, explaining to them the benefits of local healthy eating, and even visiting students in their classrooms.

3) Goals and Outcomes Achieved

a) Activities completed to achieve the performance goals and measureable outcomes identified in Attachment B

The original work plan for this Specialty Crops Grant, The Worcester Kindergarten Initiative: Our Next Generation of Specialty Crop Consumers went from December 15, 2011 through June 30, 2012 but was extended through December 31, 2012. This means that activities for school year 2011-2012 (Year 2 of the KI) were completed as a result of this grant, as well as many of the beginning activities for the 2012-2013 school year (Year 3 of the KI).

During the 2011-2012 school year, there were approximately 335 students served by the KI in 14 classrooms in 4 very low-income, urban public schools in Worcester, Massachusetts.

Throughout the year, students had four in-class taste-tests, four take-home packages of local specialty crops, and each classroom had two deliveries of classroom materials.

Students made ten separate field trips to six different specialty crop farms in the Worcester area: Breezy Gardens in Leicester, Clearview Farm in Sterling, Brigham Hill Community Farm in North Grafton, Heirloom Harvest Community Farm in Westborough, KE Farm in Sturbridge, and Tougas Farm in Northborough.

Students tasted specialty crops from seven different Massachusetts farms: Brookfield Farm in Brookfield, Clearview Farm in Sterling, Czajkowski Farm in Hadley, Fairland Farm in North Attleborough, Farmacy Gardens in Belchertown, Many Hands Organic Farm in Barre, and Oakdale Farms in Rehoboth. Products were used for in-class taste-tests, take-home packages for families, and cooking demonstrations.

For Year 3, the 2012-2013 school year, there were five schools, for a total of seventeen classrooms and approximately 425 students.

During the first half of Year 3 (the period in which Specialty Crop funding was used), each school received a visit from the mobile farmers market that brought take-home packages of apples from Meadowbrook Orchards in Sterling for each student and offered produce from Schultz Farm in Rutland for sale to families, teachers, and other school employees.

Each school visited either Clearview Farm in Sterling or Breezy Gardens in Leicester, and each student went home from their farm visit with a sugar pumpkin to share with their family.

The students all taste-tested local roasted pumpkin seeds (from either Clearview Farm or Breezy Gardens, depending on which farm which school visited) and carrots in three different colors (from Red Fire Farm in Granby).

They brought home informational materials on the farms and farmers they visited, the specialty crops they tried and where to buy them in Worcester, and nutrition and recipe information. Cooking demonstrations were held at two schools and featured produce from Breezy Gardens in Leicester, Bolton Orchards in Bolton, and Green Roof Sugar House in Rutland.

These activities primarily worked toward our Measurable Outcome B, as identified in Attachment B, around demonstrating an economic benefit to local specialty crop producers as a result of the KI. Please see Section 3.e. below for more information on this Measurable Outcome.

Our activities aimed at Measurable Outcome A, as identified in Attachment B, are slightly less obvious. While the former KI Coordinator, who ran the program during the first three-quarters of KI Year 2, began initial talks with the Worcester Public Schools around expansion of the program and funding, those talks did not lead to any noticeable

change during her tenure with the program. As the new (and current) KI Coordinator came on in April 2012, she began these discussions anew, and started to look more critically at how to hone the program and increase its effectiveness.

Her primary activities in support of this Measurable Outcome were multiple meetings with WPS Administration personnel during the spring and summer of 2012 to discuss expansion of the program to new schools, coordinated funding of the program with the Mass. Farm to School Project and the WPS, and their feelings about her making changes to the program to increase its effectiveness and efficiency.

She also met with personnel at one additional school and worked with them to expand the program to them for Year 3. Between school years she spent significant amounts of time reflecting on the program and its curriculum, reviewing previous evaluations, and adapting the program to make it more effective for the students, more cost-effective, and more focused on working with specialty crop producers who sell or would like to sell in Worcester and to the Worcester Public Schools. Please see Section 3.e for more information on the results of this Measurable Outcome.

c) A comparison of actual accomplishments with the goals established for the grant period

Goal	Deadline	Accomplishments
One delivery of classroom materials completed	12/15/11	Teachers and schools had enough materials remaining from the first year of KI to not necessitate a delivery of new materials during the first half of Year 2.
One KI Team meeting conducted	12/15/11	The KI Team met in September to have a teacher training (including local specialty crop snacks) with Fertile Ground.
One local classroom taste test snack served to all students	12/15/11	Student's taste-tested apples from Brookfield Farm in Brookfield in September.
Two take-home specialty crop produce packages sent to all students' families	12/15/11	Packages of dried cranberries from Fairland Farm in North Attleboro were sent home to each household in November. Students who attended the cooking demo at North High School in December also received take-home packages of winter squash and onions from Clearview Farm in Sterling.
Two chef cooking demos featuring local specialty crops held at two different schools	12/15/11	Instead of two separate demos, one joint chef demo featuring local specialty crops (carrots & parsley from Many Hands Organic Farm in Barre; kale, onions, potatoes, winter squash, & apples from Clearview Farm in Sterling) was held at North High School in Worcester for students, teachers, and parents from Belmont Community School and Elm Park School.
At least one specialty crop farm field trip taken by each class	12/15/11	City View School and Elm Park Community School each visited Breezy Gardens in Leicester in October and Belmont Community School visited Tougas Farm in Northborough in October. Woodland Academy did not take make a fall farm visit because of scheduling difficulty.
Midyear report completed	1/15/12	The mid-year report was compiled by the Kindergarten Initiative Coordinator.
One delivery of classroom materials completed	2/28/12	In January, each classroom received a window box kit for growing herbs in their classroom and a mushroom growing kit.
One KI Team meeting conducted	2/28/12	Because of staffing transitions, the mid-year KI Team meeting was canceled.

One local classroom taste test snack served to all students	2/28/12	Students taste-tested dried cranberries from Fairland Farm in North Attleboro in November.
Venue for year-end, all-school field trip selected	2/1/12	Brigham Hill Community Farm in North Grafton, run by the Community Harvest Project, will host all of the KI students for year-end farm visits. Each school will visit separately. They will go into the fields, plant seedlings, learn about a community farm that produces specialty crops, and learn about the nonprofit that runs this volunteer-based farm that donates its produce to the Worcester County Food Bank.
One delivery of classroom materials completed	4/15/12	In April, each classroom received a dehydrator for in-class activities and for making snacks.
Two KI Team meetings conducted	4/15/12	Due to the transition of Coordinators, these KI Team meetings did not take place. The new Coordinator did have individual meetings with the Team Leader at each KI school, as well as with the Early Childhood Coordinator and Nutrition Services Director for the Worcester Public Schools to discuss the 2011-2012 school year and to help plan for the 2012-2013 year.
One local classroom taste test snack served to all students	4/15/12	In April, each classroom made kale chips using their new dehydrators and kale from Clearview Farm in Sterling. Each student also tasted raw kale to compare the chips to their natural state.
One take-home specialty crop produce packages sent to all students' families	4/15/12	Due to scheduling difficulties, this take-home package was pushed to June. In early June, all students took home a pint of strawberries from Joe Czajkowski Farm in Hadley.
Two chef cooking demos featuring local specialty crops held at two different schools	5/15/12	In May, City View Discovery School held a very well-received breakfast cooking demo featuring asparagus frittata made with asparagus from Joe Czajkowski Farm in Hadley. More than 40 family members watched a demonstration of how to make this simple meal, got to try a piece, and went home with a bundle of local asparagus and a recipe for the frittata. After trying very hard to fit a cooking demo into a spring schedule filled with rained-out events, Woodland Academy did not end up having a cooking demo.
At least one specialty crop farm field trip taken by each class	5/31/12	In March, City View Discovery School visited KE Farm in Sturbridge to watch maple syrup being made. In May, Elm Park School visited Heirloom Harvest Farm in Westborough to tour the fields and

		greenhouse, learn about different seeds, and transplant tomato seedlings. In May, Belmont Community School visited Clearview Farm in Sterling to learn about bees, see the orchards and fields, and check out the cider press. After trying very hard to fit a spring field trip into a scheduled filled with rained-out events, Woodland Academy did not end up having a spring field trip.
Post-curriculum evaluation begins	5/31/12	The post-curriculum evaluation materials were finalized and produced by Fertile Ground and the KI Coordinator in late May and dates were scheduled with the schools to do the in-class portion of the post-evaluations in June. Evaluations of taste-tests, farm trips, and cooking demos happened at each event – students and parents responded to questions about what they were learning and whether their habits had changed because of the KI.
MOU between Mass. Farm to School Project and Worcester Public Schools for 2012-13 year	5/31/12	The WPS Early Childhood Coordinator the KI Coordinator discussed edits to the existing MOU for the 2012-2013 school year in mid-May. The MOU was finalized in June.
Year-end, all-school field trip to area farms completed	6/15/12	Each school, with the exception of Woodland who were unable to reschedule a visit date that was rained out, visited Brigham Hill Community Farm, run by the Community Harvest Project, in North Grafton in May or June.
Survey of local farms that participated in the KI completed	6/30/12	An informal survey of farmers was completed by the KI Coordinator.
Planning for Year 3, including addition of fifth school, completed	9/1/12	Meetings were held with Chandler Elementary, the newly added fifth school, in June and planning decisions were made. The KI Coordinator revamped information for teachers and schools, updated curriculum, planned for new activities for Year 3, met with School Nutrition Services Director and WPS Early Childhood Curriculum Facilitator, and completed initial training with new fifth school.
Beginning of Year 3 KI Teacher Team in-service conducted	9/15/12	The Year 3 Kickoff Training and meeting were held in September. Teachers and schools received their updated information and curriculum, attended training on the program and local food systems, offered ideas for the year going forward, and networked with each other.
One delivery of classroom materials to each Year 3 classroom	9/15/12	The curriculum materials given to each teacher at the Kickoff Training (including all worksheets and pieces for KI activities) were the first materials delivery. The new school also received dehydrators for

		each classroom (the first four schools already have those).
Pre-curriculum evaluation completed at two schools and one non-KI school	9/30/12	In conjunction with the WPS and Fertile Ground, our evaluation partner, we decided to conduct pre-curriculum evaluations at three KI schools and one non-KI school for Year 3. Those evaluation sessions were conducted in September.
One specialty crop taste-test snack distributed to each Year 3 classroom	10/1/12	Each classroom was given a pumpkin and a buttercup squash from the farm where they took their fall field trip (either Clearview Farm in Sterling or Breezy Gardens in Leicester), along with instructions for “roasting” squash seeds in their classroom dehydrators. The students got to participate in preparing the seeds and ate the seeds as their taste-test snack.
One delivery of classroom materials delivered to each Year 3 classroom	11/15/12	Sets of recipe cards in English and Spanish were produced by the Community Harvest Project and distributed to all classrooms in early October for use in their Food Day classroom activity.
Two take-home produce packages sent to each Year 3 family	12/1/12	Each student received a bag of apples from Meadowbrook Orchards in Sterling, delivered by the mobile farmers market during the mobile market visits in September and October.
One farm field trip taken by each Year 3 school	12/1/12	Each school visited either Breezy Gardens in Leicester or Clearview Farm in Sterling for their fall field trip in October.
Two cooking demos completed – one at each of two Year 3 schools	12/15/12	Cooking demos featuring squash pancakes made with Breezy Gardens squash, cider from Bolton Orchards, and maple syrup from Green Roof Sugar House in Rutland were held at Woodland and Chandler in December.
One specialty crop taste-test snack distributed to each Year 3 classroom	12/15/12	Students at all schools taste-tested yellow, purple, and orange carrots from Red Fire Farm in Granby as part of their Colorful Carrots activity in November.
Mid-year KI Teacher Team meeting – Year 3	12/15/12	The Mid-Year Meeting was held in January (rescheduled from mid-December due to illness). Teacher surveys were filled out in advance of the meeting to ensure feedback from every classroom. Team Leaders and a handful of other interested teachers met to discuss the results of the teacher survey and other mid-year check-in items about logistics, communication, events, and the curriculum.

e) Summarize the major successful outcomes of the project in quantifiable terms

Measurable Outcome 1: After the 2011-2012 school year is complete (June 30, 2012), we expect that the Kindergarten Initiative will be ready to expand into ten to twelve total elementary schools in Worcester. The number of expansion schools is ultimately the decision of the district, and our goal is to be ready for up to a dozen additions when the time comes to select new participating schools.

As discussed above in Section 3.a., we have not entirely met this measurable outcome.

In Year 3, the KI did add a fifth school to the original four pilot schools, increasing the total number of students involved in the KI by slightly more than 25 percent (from 335 total to 425). There was a great deal of work done during the summer on streamlining the curriculum, updating the classroom materials, defining and describing implementation of the KI in new schools, and outlining expectations for both the schools and the Mass. Farm to School Project. With these changes, and with input from teachers and administrators throughout Year 3, we feel confident that, should the Worcester Public Schools be interested and sufficient funds raised, the KI could double the number of schools in school year 2013-2014, for a total of up to ten participating Worcester schools.

Performance Measure: 2011-2012 surveys of teachers, farmers, families, and students

Data from Parent/Guardian and Teacher Surveys-Fertile Ground's KI Evaluation 2011-12

Parent/Guardian Survey Data and Comments

We used a combination of Rapid Market Dot Survey, informal interview, and table surveys to gather parent impressions at two cooking demonstrations – fall and spring. Sample size was 25.

The majority liked the food at the cooking demonstrations, 40% said they would try to cook it at home. All interviewed noted that the children had lasting memories from the farm visits. Many did not know about the Kindergarten Initiative or about the fresh fruit and vegetable snack program.

What we learned:

- Out of 25 total surveys (spring and fall), 15 people liked the food, 6 said it was OK and 4 did not like it.
- 10 said they would try to cook it at home, 9 said maybe, 6 said they would not.
- Farm visits and eating fresh fruits and veggies are a very important part of the KI program and leave a lasting impression on kids, teachers, and parents.
- Most participants do not have gardens of their own.
- Quality and freshness (27), local (9) and price (8), were ranked most important when buying food.
- Survey participants believe Worcester needs more affordable fruits and veggies in supermarkets and more farmers markets to increase health in their communities.

- Parents want to know where they can buy affordable fresh, healthy foods. They would like to have a list of the Farmers' Market hours, dates and locations.

Teacher Survey Data and Comments

Fertile Ground designed an online survey to gather information on teacher experiences with curriculum integration, snack foods, and farmer engagement. Teachers also had the opportunity to give written feedback. This survey was emailed to teachers once before the end of school to request their feedback on the Kindergarten Initiative with the intention of making improvements for future years. Due to time constraints (field trips, cooking demos, tastes tests were all at end of school year) we were unable to release survey before the very end of the year.

10 Teachers/IAs participated out of a possible 24. 8 completed the survey. The survey sample size is small - Belmont (5), Woodland (0), City View (2), Elm Park (3) - thus making it difficult to determine whether results reflect any more than individual experience. Overall the results of this survey strongly suggest the second year of the Kindergarten Initiative in Worcester was a success.

Q1. Where do you teach? N=10

Woodland	0.0%	(0)
City View	20.0%	(2)
Elm Park	30.0%	(3)
Belmont	50.0%	(5)

Q2. Do you feel that this program fulfills the goals of the Initiative, which are to help children make healthier food choices, to understand the source of their food, and share that message with their families? N=8

Yes	87.5%
No	12.5%

- “While I think that the ideas behind the program are positive, I do not feel that there is a realization of the lives these children live. Many do not have access to cars to enjoy the programs visited out of school, the money to buy the fresh fruits and vegetables they try or the resources to do such things as dehydrate foods. I also believe there is not a good understanding of what goes on in the K classroom in regards to implementing many of these activities.”
- “The kids are excited about local food, vegetables and growing food, and I hear them talk about it to their siblings. And when given the choice between fruit, vegetables or other snacks, MOST of my students choose the fruit or vegetables.”

Q3. Did you feel MA Farm to School Kindergarten Initiative staff...N=8

Answer Options: Strongly agree-Agree-Neutral-Disagree-Strongly Disagree

Helped you integrate nutrition concepts into curriculum: 3 2 3 0 0

Checked in with you enough through email and in person: 3 0 3 1 1

Provided sufficient notice for classroom visits: 3 1 1 1 1

Provided information in a timely fashion: 3 1 1 2 1

What would you have liked more help with?

- “This person should contact ALL teachers at the school not just one. This way everyone is on the same page and not just getting part of the information.”
- “Sometimes the Farm staff doesn't realize all that is needed to prepare on the school/teacher end. For trips there are forms that need to be filled out and approved, and parent info etc. etc. More time is needed on the teacher's side when planning things.”
- “Nothing, I felt that this year we did more.”

Q4. For materials next year would you prefer Price Chopper cards or to have the materials delivered? N=8

Price Chopper Cards 37.5% (3)

Materials Delivered 37.5% (3)

Both 25.0% (2)

- “Some things cannot be bought at price chopper, like local yogurts and such. And it's hard to find the time to go to price chopper as a mother of three kids, with a husband who works opposite shifts.”
- “Then we can make things throughout the year. For example, vegetable soup, pumpkin pudding, and many others that are in the binder.”

Q5. Do you have other comments about the quality of support that the MA Farm to School staff offered?

- “It has been wonderful for our kids to be able to experience farm trips and food samples they otherwise may not.”
- “I believe they did a wonderful job. The children had a fun time going to the farms. They learned a lot.”

Q6. Did you use the KI curriculum provided by MA Farm to School Project? N=8

Yes, a lot 12.5%

Yes, a little 62.5%

No 25.0%

“I totally took some lessons that were good and used them, but mostly used family living center (some people call it kitchen, home living, housekeeping) and put things in that center to do. Like sort fruit and vegetables, get a lunch tray and put a healthy meal on it, etc. etc. And I LOVE to do window sill gardening so I did a lot of that, both from the curriculum and from my own ideas.”

“We tried to use it weekly, but were only able to use it every other week.”

Q7. Which activities from the curriculum did you use most?

- “Windowsill gardening things, and activities that could be adapted to a center activity.”
- “fruit and vegetable sort paper”
- “The cooking activities. We also experimented (using all our senses) with the fruits and vegetables that were delivered.”
- “The field trips were most helpful.”

Q8. Please indicate on a scale of 1-5 how easy or difficult it was for you to integrate the Kindergarten Initiative nutrition education concepts into your regular curriculum (1= very easy, 5= very hard). N=8

Answer Options	1 - Very Easy	2	3	4	5 - Very Hard	Rating
Integration	2	3	3	0	0	Avg: 2.13

- “It’s hard to find the time for long, full lessons, but now knowing the lessons, and having adapted some into centers or science activities has helped a lot.”
- “We have a lot of new expectations that have been put on us this year. We had to work around that.”

Q9. Have you created or adapted the curriculum to teach nutrition concepts? Please give an example. N=8

Yes 75.0%

No 25.0%

- “I use windowsill gardening to show that plants need soil, water and sun to be healthy. And they see that plants don’t grow if they don’t have those things. We plant some things purposely to show that they won’t grow under certain conditions. We compare that to people and how if the soil isn’t good, soil, the plant will get sick, or if there’s no sun, no water, or if we use soda, or something else instead of water, the plant gets sick and talks about the same with people. We can drink soda once in a while, but we will get sick like the plant if we don’t drink water, and milk. Or if we eat junk only etc. etc.”
- “We require the children to try everything. We also discuss how each item is good for you.”

Q10. Do you and the other K teachers in your school share curriculum and strategies to support discussions about local and healthy choices? N=7

Yes, often 42.9%
Yes, sometimes 42.9%
Occasionally 14.3%
No, never 0.0%

“Some teachers do, others do not. The teachers that do share, share often. The ones that don't, never do.”

Q11. MA Farm to School provided the lunch tray and map games for the classrooms. How did the children play with them? N=6

Part of directed classroom activities 0.0%
Children migrated to them on their own during choice time 33.3%
A little of both 50.0%
We did not display them 0.0%

Children did not interact with them 50.0%

- “I did not get them.” (City View)
- “We did not receive them.” (Elm Park)

Q12. MA Farm to School provided mushroom kits and dehydrators. How often did you use them? N=8

Often 50.0%
Sometimes 50.0%
Never 0.0%

- “We grew the mushrooms, then sautéed them in olive oil and garlic and put them on our pizza. We grew the herbs and put them on our school lunches as well! The dehydrator was only used for kale and apples, but I am looking forward to experimenting with it more next school year. We just got them towards the end of the year.”
- “Kale, oranges, apples”
- “Kale, apples and pineapples”
- “Mushrooms yes, dehydrators were done in one class and shared with the others.”

Q13. Would you have liked more advance notice about what the taste-tests were? N=8

Yes 37.5%
No 62.5%

Q14. On a scale of 1-5 please indicate how pleased you were with the quality of the snacks that were provided by the KI during the year. (apples, dried cranberries, goat cheese, kale chips, strawberries) (1= Very pleased, 5= Not pleased) N=8

Answer Options	1 - Very Pleased	2	3	4	5 - Not Pleased	
Quality	6	0	2	0	0	Avg: 1.5

Q15. On a scale from 1-5 please indicate how much you feel your children enjoyed the snacks provided by the KI (apples, dried cranberries, goat cheese, kale chips, strawberries). (1= A lot, 5=Not at all) N=8

Answer Options	1 - A lot	2	3	4	5- Not at all	
Enjoyment	5	1	2	0	0	Avg: 1.63

- “90% of the children enjoyed them”

Q16. Do you think the snacks listed above impacted your students and helped to get across the program goals to make healthy choices and to understand and appreciate your local or neighboring farmers?N=8

Yes 87.5% (7)

No 12.5% (1)

Q17. On a scale from 1-5 please indicate how much you feel your children enjoyed the snacks provided by snacks provided by Worcester Food Service via the Fresh Fruits and Vegetable Program. (1= A lot, 5=Not at all) N=8

Answer Options	1 - A lot	2	3	4	5- Not at all	
Enjoyment	6	2	0	0	0	Avg: 1.25

Q18. Did your cafeteria staff tell you when the snacks were locally sourced? N=8

Yes 25.0% (2)

No 62.5% (5)

Other (please specify) 12.5% 1

Q19. Are you able to incorporate the whole snack experience into your lessons about nutrition, wellness, what grows in MA [local foods]? N=8

Yes, always 37.5% (3)

Yes, sometimes 62.5% (5)

No, never 0.0% (0)

Other (please specify) 0.0% (0)

Q20. Did you go on a farm field trip this year? N=8

Yes 100.0% (8)

No 0.0% (0)

“THANK YOU!”

Q21. Please rank farm visits you liked most/least on a scale of 1(most enjoyable and informative) to 6 (least enjoyable/informative). You may leave blank farms you did not attend. N=7

Breezy Gardens	3	1	0	0	0	0	Avg: 1.25
Tougas Farm	2	0	1	0	0	0	Avg: 1.67
KE Farm	1	0	1	0	0	0	Avg: 2
Clearview Farm	0	2	0	1	0	0	Avg: 2.67
Heirloom Harvest	0	0	0	1	1	1	Avg: 5
Community Harvest	5	0	1	0	0	0	Avg: 1.33

- “Tougas was great, but most of the kids just remember the playground. The community harvest farm was great because the kids actually got to plant. They LOVED that.”
- “Hierloom Harvest should not be used again.”

Q22. Do you think the farm trips impacted your students and helped to get across the program goals to make healthy choices and to understand and appreciate local or neighboring farmers? N=8

Yes 75.0% (6)

No 0.0% (0)

I don't know 25.0% (2)

Q23. Did you receive feedback from parents about the Kindergarten Initiative, what children have learned about healthy choices and where their food comes from? Please explain. N=8

Yes 25.0% (2)

No 75.0% (6)

- “The parents enjoyed eating the healthy foods with their children.”

Q24. Have you heard parent feedback about the take-home produce (cranberries in the fall, winter squash at the Elm Park cooking demo, asparagus at the City View cooking demo, kale and strawberries in the spring)? N=8

Yes, I have heard a lot of positive feedback 0.0% (0)

Yes, I have heard some positive feedback 25.0% (2)

Yes, I have heard a lot of negative feedback 0.0% (0)

Yes, I have heard some negative feedback 0.0% (0)

No, I haven't heard any feedback 75.0% (6)

Q25. Did you attend any of the Community Cooking Demonstrations? N=8

Yes 62.5% (5)

No 37.5% (3)

- “The event was awesome, but the parent/family participation was lacking.”
- “Conflicting times”

Q26. Do you think the Cooking Demonstrations impacted your students and their parents and helped to get across the program goals to make healthy choices and to understand and appreciate local or neighboring farmers? N=7

Yes 57.1% (4)

No 42.9% (3)

- “No one came. Afterschool/nighttime is not ideal for our families.”
- “No, only because student's from my class and their families did not attend.”

Q27. When do you think is the best time of day to hold a cooking demo? N=7

Before school 14.3%

After school 42.9%

Evening 14.3%

Around holidays 0.0%

Other (please specify) 42.9%

- “As part of the school day? Maybe in the morning before lunches?”
- “During school day”
- “Arrival time”

Q28. Do you want the Kindergarten Initiative in your classroom again next year? N=8

Yes 87.5% (7)

No 12.5% (1)

- “YES PLEASE!”

Q29. What recommendations/ideas do you have to improve the KI for next year?

- “If trips are planned for us (such as Brigham Hill, it would be helpful to know what students will be doing there ahead of time in order to plan accordingly.”
- “More deliveries of different kinds of fruits and vegetables to try.”
- “I think that the program needs someone familiar with the classroom and a working knowledge of the students involved with the program. While the students enjoyed all aspects in which they were involved, I do not believe that they or their families make a lasting connection between these foods and local farming.”

Student Evaluation Data Overview

During the 2011-2012 school year pre-curriculum and post-curriculum assessments were administered to 93 KI students and 22 students in a control (non-KI) group.

Sorting Sometimes/Anytime foods

Activity: The goal of this activity is to get a general sense of the groups' understanding about "sometimes" (less healthy, processed foods) and "anytime" (healthy and good for your body) food. Students describe "sometimes" and "anytime" foods. Students then attempt to sort food pictures into correct categories by voting thumbs up for anytime food (apple, broccoli, chicken, rice, water, yogurt), thumbs down for sometimes foods (Cheetos, chicken nuggets, coke, cupcake, hotdog, lollipop).

Trends:

- 85% correctly sorted by post KI students vs. 52% in pre evaluation
- 33% increase in correct answers from pre KI to post KI evaluation
- 85% post KI group vs. 79% correctly sorted by post control group
- 85% correct by 2012 KI group vs. 81% correct responses by 2011 KI group

Notes: Evaluators noticed significant differences between the beginning of year results and the end of year results in the KI group. Students recognized foods as sometimes/anytime more accurately, and were more familiar with the terminology practiced by their teachers during the school year.

Lunch Tray Sometimes/Anytime Food Choices

Activity: The goal of this activity is to assess what choices students will make when asked to create a healthy balanced lunch. Students choose from cut out pictures of "sometimes" (Cheetos, chicken nuggets, coke, cupcake, hotdog, lollipop) and "anytime" (apple, broccoli, chicken, rice, water, yogurt) food to create a lunch. They are asked to glue their choices onto a picture of a lunch tray: "Using what you know about sometimes and anytime foods, your job is to create a healthy, balanced lunch that will help you grow big and strong."

Trends:

- 88% selection of anytime foods by post KI students vs. 47% in pre evaluation
- 41% increase in anytime foods from pre KI to post KI
- 88% post KI group vs. 71% correctly sorted by post control group
- 88% correct by 2012 KI group vs. 83% correct responses by 2011 KI group

Notes: There was a 41% improvement from the beginning of year to end with this activity. Students seemed more familiar with which foods "make your body healthy" and which were just treats. Some were tempted to glue on "sometimes" foods they desired, but most KI students understood that they can want/like something that is not necessarily healthy to eat all the time. Students in the control group exhibited a greater weakness in

this area. Some students were also able to notice unhealthy eating habits in their family members.

Sorting Fruits and Vegetables

Activity: The goal is to assess if students know the difference between fruits and vegetables. Students are asked to sort pictures of fruits and vegetables by voting.

Trends:

- 86% correctly sorted by post KI students vs. 71% in pre evaluation
- 15% increase in correct answers from pre KI to post KI evaluation
- 86% post KI group vs. 94% correctly sorted by post control group
- Post KI group had 8% FEWER correct responses than control group
- 86% correct by 2012 KI group vs. 83% correct responses by 2011 KI group

Notes: KI students improved by 15% over the year. Group pressure was less of an issue at the end of year and students were more confident in their choices. KI students showed familiarity with almost all of the fruits and vegetables shown but showed 8% lower scores than the control group in voting. One student astutely noted “fruits have seeds,” but most only knew fruit vs. vegetable from familiarity with the foods themselves, from having their teachers go over it in class, on field trips, and while eating their farm snacks. The difference with the control group could have to do with the curriculum used by the teachers (we did not interview them), group dynamics in all groups, or the general knowledge of the control group as a whole.

Sorting Local/Non Local

Activity: This activity is designed to assess the success of the local foods lesson plan in the KI curriculum. Children are asked to think about farms they have been to. They are then shown pictures of a map of Massachusetts and asked to identify it. Students are then shown pictures of local and non local food and asked to identify which foods could be local. Local foods are placed inside the picture of the state; non local foods are placed outside.

Trends:

- 89% correctly sorted by post KI students vs. 57% in pre evaluation
- 32% improvement: post KI compared to pre KI
- 89% post KI group vs. 74% correctly sorted by post control group
- 89% correct by 2012 KI group vs. 62% correct responses by 2011 KI group

Notes: Almost every KI student had memories from farm field trips and could describe their experiences. Strongest recollections were not plants but animals, farm machinery, and bugs. It was clear that many teachers had been playing the map game and explaining things like weather conditions that could make the difference for growing conditions in Massachusetts and outside of the state. The majority of KI groups were familiar with all

the foods shown, even the avocado and the yogurt, where the control group was not. KI students could make the connection between yogurt and milk. Post KI Students also understood the map concept at the end of the year, and that this abstract picture represented the place they lived. There was a 27% improvement between 2011 and 2012. 2012 KI Students reported having worked with the map tool throughout the school year, which likely improved their performance.

Farmer Survey Data

Of the farmers involved in the KI during school year 2011-2012, 10 farmers answered informal survey questions (see questions below). The farms students visited all felt that the visits were successful, if sometimes a bit hectic, and that they were fairly compensated for their time and effort during the visits. Of the farmers surveyed, all but one expressed interest in working with the KI again in future school years (the one who did not want to, was a farm that felt there were too many students in each class/school for comfortable visits to their farm). All of the farms that sold to the KI during school year 2011-2012 were pleased with their sales and felt that it was easy and profitable for them. All expressed interest in selling again specifically to the KI in future years and three expressed interest in selling more to the Worcester Public Schools (two of those three farms already sell to the schools but were interested in greater volume and one had not previously sold to the schools).

For snacks purchased by MA Farm to School:

Was the order-taking process easy for you and your farm?

Please rate your selling experience to MA Farm to School: Excellent, Fair, Poor

Are you available to sell your products to another participating Kindergarten Initiative district during the 2012-2013 school year?

For Fieldtrips Hosted:

How many field trips for Worcester kindergarteners did you host?

Were the children well-behaved?

Were you fairly compensated for your time and access to your farm?

Were there enough chaperones for the field trip?

Were the group sizes (of students) appropriate for your farm?

Are you interested in hosting KI field trips again during the 2012-2013 school year?

Measurable Outcome 2: We expect that after the 2011-2012 school year is complete (June 30, 2012) we will be able to demonstrate the economic benefit to specialty crop farmers of hosting Kindergarten Initiative field trips, and how to maximize their revenues further by selling their crops to the district.

During Year 2, the Kindergarten Initiative directly spent more than \$4,500 on purchasing local specialty crop products from Worcester-area farmers for snacks, cooking demonstrations, and take-home packages. Another \$6,100 was spent on entrance to specialty crop farms for field trips. That is more than \$10,000 direct dollars to specialty crop farmers as a result of this program. In the beginning of Year 3, just under \$2,500 was spent on local specialty crops for taste-tests and take-home packages, and field trips scheduled for October 2012 resulted in more than \$2,500 in entrance fees to specialty crop farms.

The Worcester Public Schools, during the first half of the 2011-2012 school year, spent ~\$10,000 at Clearview Farm, Sterling; ~\$53,000 at Czajkowski Farm, Hadley; ~\$1,500 at Cournoyer Farm, Paxton; and ~\$24,000 on local products from assorted other farms through New England Produce Company. We do not have exact numbers for the remainder of the 2011-2012 school year but have been told by WPS that their purchases for the second half of the year were similar to the first.

List of Participating Farms in the Worcester KI for School Year 2011-2012: Breezy Gardens, Leicester; Clearview Farm, Sterling; Brigham Hill Community Farm, North Grafton; Heirloom Harvest Community Farm, Westborough; KE Farm, Sturbridge; Tougas Farm, Northborough; Brookfield Farm, Brookfield; Czajkowski Farm, Hadley; Fairland Farm, North Attleborough; Farmacy Gardens, Belchertown; Many Hands Organic Farm, Barre; Oakdale Farms, Rehoboth

4) Beneficiaries

The beneficiaries of this project are many and include:

- Approximately 335 (enrollment fluctuates slightly throughout the school year) kindergarten students in four of the lowest-income schools and neighborhoods in Worcester during Year 2, and 425 kindergarten students in five of the lowest-income schools and neighborhoods in Worcester during Year 3
- The more than 700 parents, caregivers, and family members of these students that will be involved in aspects of the program or indirect beneficiaries of what their students are learning
- Staff of the Worcester Public Schools: teachers, aides, food service personnel, and principals at each KI school, as well as food service and curriculum personnel and administrators
- Local farmers: Students visited six area specialty crop farms; snacks, cooking demonstration ingredients, and take-home package produce were purchased from twelve area farms; see Section 3.e. above for more detailed information on financial benefits to local specialty crop farmers
- Local farmers market farmers: There farmers markets in Worcester every day of the week except Sunday (including the mobile market stops) and each has at least three area farms represented—increased knowledge about local products should equal increased demand for those products

5) Illustration of the lessons learned as a result of completing this project

Important lessons were certainly learned during 2011-2012 about scheduling many different activities at multiple schools in a very busy school district. We have made efforts to schedule events as far in advance as possible to make sure that dates and times work for everyone involved and to encourage as much parent/family participation (where appropriate) as possible.

All teachers, principals, and administrators received a new document at the beginning of Year 3 outlining the year to come, what the KI is offering, and what the individual schools and teachers are responsible for. Anecdotally, teachers and principals said that this document makes it significantly easier on them to plan both their schedules and their larger events better and farther in advance.

Through observation (and as recent research shows), we have clearly seen that tactile experiences, the activities where students have an opportunity to learn in a hands-on way about produce or farms, have the most impact on student knowledge and understanding.

We have learned many lessons about the benefits of partnering with other organizations and how working with an organization like Cooking Matters, whose explicit focus is on activities such as cooking demonstrations, can allow us to focus our energy in the most appropriate places—coordinating logistics, communicating with the schools, and working with farmers for the benefit of them and the Kindergarten Initiative.

Even though the Worcester Public Schools remain very supportive of and enthusiastic about the Kindergarten Initiative (and there are multiple schools in the city very interested in being the next sites for the KI's expansion), their interest in joint fundraising or in taking more ownership of the program seems more limited than originally anticipated.

Through meetings with Worcester Public Schools administrators, the KI Coordinator the Mass. Farm to School Project has been able to make some headway in sorting out the continuing relationship of the KI to the WPS. The KI Coordinator has met with grant writers for the WPS and discussed how to collaborate on upcoming grants—at the moment the grants will ultimately be written, submitted, and administered by the Mass. Farm to School Project, but the schools are interested in talking about funding in Worcester, assisting with data and research, and offering support for fundraising. This is a positive step toward creating long-term sustainability for the continuation and expansion of the KI, regardless of where most of the financial burden falls.

Contact Person:
Lauren Wetherbee, KI Coordinator
Massachusetts Farm to School Project
413-253-3844
lauren@massfarmtoschool.org

Boston Supplemental Nutrition Assistance Program Farmers' Market Project

Final Performance Report

Applicant: The Boston Public Health Commission

Project Summary

The Boston SNAP farmers' market program seeks to address two issues: (1) need for increased sales by specialty crop farmers at Boston farmers' markets; and (2) limited access to fruit and vegetables by SNAP clients in Boston.

Boston has 30% fewer supermarkets per capita than the national average². Existing supermarkets are unevenly distributed leaving low-income communities underserved. Limited supermarket access has particularly impacted the neighborhoods of Roxbury, Mattapan, Dorchester, South Boston, and East Boston. The lack of full-service supermarkets has limited access to specialty crops, like fruits and vegetables, for many residents.

Small farmers' markets have been started in each of the above-mentioned neighborhoods to address the limited access to fruit and vegetables. In addition to supporting new markets in these neighborhoods, The Boston Collaborative for Food and Fitness (BCFF) operates a double value coupon program (Boston Bounty Bucks) to increase market affordability for low-income residents without reducing farmer income. Sales at these markets afford specialty crop farmers the ability to retain 80% of the retail dollar as opposed to 20% of the retail dollar at supermarkets.³ These dual benefits make farmers' markets a winning solution for both SNAP clients and specialty crop farmers.

² Manon, M. and Harries, C. (2010). *Food for every child: The need for more supermarkets in Massachusetts*. The Food Trust. Philadelphia, PA.

³ Griffin, M.R. and Frongillo, E. A. (2003). *Experience and perspectives of farmers from Upstate New York farmers' markets*. *Agriculture and Human Values* 20: 189-203.

Since 2008, multiple non-profit organizations have worked with city agencies to increase availability of SNAP at Boston farmers' markets. Over the last three years, word has spread about the ability to use SNAP benefits at markets and to earn matching dollars through the Boston Bounty Bucks program (BBB). The program provides a dollar for dollar match, up to \$10, each time a SNAP client shops at a participating market. This project aimed to seize the developing momentum around SNAP at farmers' markets and expand its reach to more low-income households and increase sales for market farmers.

This project also aimed to increase the sustainability of SNAP at Boston farmers' market. Limited sales have made it difficult for markets to justify the expense of wireless electronic benefit transfer (EBT) terminals necessary to accept SNAP.

Project Activities

1. Farmers' Market Coordinator:

Funding from this grant made it possible for BCFF to hire the first farmers' market coordinator for the Boston markets. The coordinator was able to work with the 17 markets in Boston that accept SNAP benefits. The coordinator's primary duties included: technical assistance regarding SNAP and EBT terminals, outreach and advertising, recruiting new produce vendors, and administration of the double value coupon program.

2. SNAP Survey:

The coordinator developed a survey for implementation with SNAP clients that do not shop at markets. The survey was administered at both Department of Transitional Assistance offices in Boston. A total of 123 SNAP clients that do not shop at markets were surveyed. They were asked about barriers to shopping at markets as well as current grocery shopping habits. The survey was complemented by a survey of SNAP clients that shop at farmers' markets, funded by The Boston Foundation.

3. Administration of SNAP at Boston Markets:

Funds from this grant were used to pay wireless service and batch out fees for EBT terminals at farmers' markets. Assistance with these fees was necessary for some of the smaller markets to enable participation in the program.

4. Public Awareness Campaign:

BCFF placed a large focus on raising awareness about the farmers' markets in Boston with a specific focus on the ability to use SNAP at markets. This included the development of a name, logo and byline under which all Boston markets are now unified. These marketing tools were then used on postcards, posters on subways and busses and in advertisements in local newspapers and magazines (see Appendix A for example materials). Additionally, BCFF was able to promote the markets through radio spots and a feature story on a local news channel.

Outcomes

Table 1. Projected and Achieved Outcomes		
Activity	Projected Outcome(s)	Achieved Outcome(s)
Hire a Boston farmers' market coordinator.	Hire a full-time position to provide technical assistance to market managers and coordinate a city-wide strategy for the future role of farmers' markets.	A full-time market coordinator was hired in October of 2011. Additional funds have been raised through the WK Kellogg Foundation to maintain this position in 2013 and beyond.
Recruit additional specialty crop growers to markets with fewer than three farmers.	Ensure that all markets have at least three specialty crop farmers.	The number of specialty crop growers selling at markets increased from an average of 86 per week in 2011 to 96 per week in 2012. However, there were still multiple markets that had only two specialty crop growers on most weeks.
Administer survey at DTA offices to assess barriers to shopping at Boston farmers' markets for SNAP clients.	1) Adjust outreach plan to increase awareness of SNAP at farmers markets. 2) Adjust administration of program at markets to increase ease of use for SNAP clients.	A survey was developed and implemented. The study will be analyzed during the winter months and will be used to address access barriers in the 2013 season.
Administer SNAP at 21 Boston farmers' markets.	1) Increase sales to specialty crop growers by \$1,000 each year. 2) Increase the number of SNAP clients who shop at markets.	17 markets accepted SNAP in 2012. The number is lower than expected is due to a combination of market closings and the decisions to stop accepting SNAP. 1) The total SNAP and double value coupon program sales increased by \$46,521 from \$120,101 in 2011 to \$166,622 in 2012. This is equivalent to an increase of \$339 in sales per vendor.

		2) The number of SNAP transactions increased by 1,619 from 8,139 in 2011 to 9,758 in 2012. 1,251 SNAP customers reported shopping at a farmers market for the first time in 2012.
Administer city-wide awareness campaign of SNAP at farmers' markets. This will include: posters on busses and trains, flyers through low-income neighborhoods, tabling at DTA offices, presentations at community events, letters to families of students receiving free and reduced lunch, and additional opportunities as they arise.	1) Increase sales to specialty crop growers by \$1,000 each year. 2) Increase the number of SNAP clients who shop at farmers' markets.	1) The total SNAP and double value coupon program sales increased by \$46,521 from \$120,101 in 2011 to \$166,622 in 2012. This is equivalent to an increase of \$339 in sales per vendor. 2) The number of SNAP transactions increased by 1,619 from 8,139 in 2011 to 9,758 in 2012. 1,251 SNAP customers reported shopping at a farmers market for the first time in 2012.

Baseline Data

In 2001 and 2012 BCFF collected data, on a weekly basis, on the following variables to assess growth in the SNAP farmers' market program: number of participating markets, number of participating farmers, SNAP transactions, number of new SNAP customers, SNAP sales, and double value coupon program incentives issued and redeemed. BCFF will continue to collect this information in 2013 and beyond.

	Participating markets	Participating farmers	SNAP transactions	New SNAP customers	SNAP sales	DVCP issued	DVCP redeemed
2011	19	86	8139	1615	\$63,615	\$57,497	\$56,486
2012	17	96	9758	1251	\$94,757	\$74,321	\$71,864
Change	-2	+10	+1619	-364	+\$31,142	+\$16,824	+15,378

This data demonstrates that the number of farmers participating in the program has increased over the last two years, as has the number of SNAP clients shopping at markets. The increase in number of new clients and total transactions by SNAP clients has resulted in an increase in SNAP sales.

The original goal was to increase sales to specialty crop growers at markets by an average of \$1,000 per season. We did not achieve this level of sales; however, there was a positive change in sales. There was an average increase of \$339 per farmer from combined SNAP and incentive dollars. BCFF will work to increase sales to specialty crop growers from SNAP benefits in 2013.

BCFF also aimed to increase the number of specialty crop growers selling at markets so that every farmers' market has a minimum of three growers. Most markets saw an increase in the average number of vendors from 2011 to 2012. However, there are still numerous markets that have fewer than three specialty crop vendors. Table 3 demonstrates the number of specialty crop growers at Boston markets in 2011 and 2012 and highlights the change in the number of vendors. This goal will be re-evaluated and adjusted based on the sales at each market to ensure that there is a sufficient sales base to support growers participating in the market

Market	Specialty Crop Vendors in 2011	Specialty Crop Vendors in 2012	Change in Number of Specialty Crop Vendors
Allston Village	Not in operation	3.30	+3.3
Ashmont/Peabody	3.8	4.80	-1
Boston City Hall Plaza	9.4	10.30	+0.9
Boston Public Market at Dewey Sq.	10.8	12.20	+1.4
Bowdoin Geneva	2.3	2.70	+0.4
Codman Square	1.9	1.80	-0.1
Copley Square	18.1	19.60	+1.5
Dorchester House	1.7	1.90	+0.2
Dudley Town Common Market*	1	1	0
East Boston	4.3	3.30	-1
Fields Corner	1.6	2.80	+1.2
Hyde Park Main Streets	2.7	2.50	-0.2
Mattapan	1.3	2.90	+1.6
Mission Hill	2.7	1.90	-0.8

Roslindale	11.3	20.70	+9.4
South Boston	3.2	3.10	-0.1
ReVision House*	1	1	0

* Farm stand, expected to host only one vendor.

In 2012, BCFF also conducted a brief survey of SNAP clients that do not shop at farmers markets. The purpose of this survey was to better understand the perceived barriers to use of markets for SNAP clients. 123 surveys have been completed; however data has not yet been analyzed. Analysis will be conducted during the winter months and will be used to influence program strategies in 2013.

Overview of Survey Results

Over half of SNAP clients who did not shop at farmers markets reported that they bought fruits and vegetables at least once a week, while 22% reported that they purchased produce once a month or less. Approximately 52% of those surveyed spent between \$10 and \$20 on produce each week while only 6% spent more than \$40 a week. Not surprisingly, there was an inverse relationship between the frequency with which an individual purchased produce and the amount that they spent on produce each week ($R = -0.163$, $P = 0.012$).

Over 93% of SNAP clients who did not shop at farmers markets reported that they purchased fruits and vegetables at a supermarket. When asked why they did not shop at farmers markets a variety of reasons were provided. The most prominent reasons were because they did not know where the market was located (39%) or because the location was inconvenient (29%).

Reasons SNAP Customers Do NOT Shop at Farmers Markets	
	Percent (N)
Too Expensive	7% (17)
Type of Products	5% (5)
Hours are Inconvenient	14% (14)
Location is Inconvenient	29% (29)
Don't Know Location	39% (39)
Uninterested	3% (3)
Not conducive for children	6% (6)
Other	12% (12)

When asked about their familiarity with the Boston Bounty Bucks program only 6% of those surveyed at the DTA offices were aware that the program existed. However, once informed about the program 71% stated that it would increase the likelihood that they would try shopping at a farmers market.

Major Accomplishments

There were three major accomplishments that resulted from this project: the hiring of a full-time coordinator, the development of an awareness campaign, and the resulting increase in SNAP sales at markets.

The farmers' market coordinator was hired in October 2011. This position enabled the SNAP farmers' market program to proceed. The coordinator provided technical support to market managers and assisted with challenges related to the operation of SNAP at markets. Additionally, the coordinator worked with market managers and marketing consultants to develop and launch an awareness campaign which aided increased market sales.

BCFF worked with The Williams Agency, a consulting firm, to develop a marketing campaign to promote farmers markets. Market managers were consulted to develop a unifying name and logo for all Boston farmers markets. This brand was then used to develop promotional materials that were distributed throughout the city. 20,000 postcards were printed and distributed to the participating markets in July of 2012. Additionally, every market was given a 3 x 4 banner to promote the individual market and identify it as part of the city-wide market coalition. Advertisements were also placed in a variety of outlets that collectively promoted all Boston markets. This included a full-page advertisement in Edible Boston Magazine, 12 quarter-page advertisements in The Boston Herald, and an announcement through Yelp! Further, 30 advertisements were placed on the back of busses and 200 were placed inside Boston subway cars. Lastly, BCFF worked to garner attention from the media that resulted in coverage by the Boston Globe, Edible Boston, The Bay State Banner, Spare Change, and Channel 5 news.

Lastly, BCFF counts the increase in SNAP sales among the major accomplishments of this project. In 2011, there was a total of \$120,101 in SNAP and double value coupon program sales, in 2012 sales rose to \$166,622. This is an increase of \$46,521 or 38% over just one year.

Project Beneficiaries

There are two main groups of individuals who benefit from this project: specialty crop vendors and SNAP clients. A total of 96⁴ specialty crop growers sold at Boston markets during the 2012 season. On average growers earned \$1,735 as a result of this program. This was an increase of \$339 per grower from 2011.

SNAP clients conducted a total of 9,758 transactions at farmers markets in 2012. Collectively they spent \$94,757 in SNAP benefits and earned an additional \$71,864 in double value coupons. Therefore on average each time a SNAP client shopped at a farmers market they spent \$9.70 and received an additional \$7.30 in healthy produce. This made it more cost effective for SNAP clients to procure the healthy, specialty crops they desired.

⁴ Growers were recounted for each market at which they sold.

Project Partners

Every farmers' market in Boston is independently operated. BCFF partnered with 16 different organizations that manage the 17 markets that accepted SNAP. Each organization hired or recruited a volunteer market manager to operate EBT terminals on the market day. Additionally, these individuals made the final decisions regarding which vendors were allowed to sell at market. BCFF also worked with these organizations to promote the markets. Postcards and other materials were provided to the market managers and they worked to distribute these materials throughout their community. For the full list of managing organizations please see Appendix B.

In addition to the market organizations, BCFF worked with The Williams Agency, a consulting firm, to develop promotional materials. BCFF also partnered with the Boston Office of Food Initiatives to improve ease of operations for farmers markets. This included working with the City of Boston around permitting for issues such as food sampling, sound permits, and use of public space.

Lessons Learned

1. There is Interest in Farmers Markets by SNAP Clients, but There are Barriers:

Surveyed SNAP clients were asked about barriers to shopping at farmers markets. Only three surveyed individuals reported that they were uninterested in purchasing their food at market. Others cited expense of food, inconvenient locations, and lack of knowledge about market locations as the main barriers to shopping at markets.

The double value coupon program aims to address the expense of farmers markets, reducing this barrier for SNAP clients. 75% of those who did not know about the program said that they are now more likely to use markets. Outreach and awareness campaigns can help to address the issue of limited knowledge around market locations. The inconvenience of some market locations is slightly more difficult to address as there are many challenges to finding an affordable location for markets.

2. The Double Value Coupon Program Increases Sales for Farmers:

The Boston Bounty Bucks program appears to be a driver increasing use of farmers' markets by SNAP clients. This increases access to two pools of money for farmers: federal benefits and incentive dollars. As a result we have found that specialty crop growers earned an addition \$339 during the 2012 season.

3. Need for Improved Outreach:

In 2012, many traditional outreach outlets were used to raise awareness among SNAP clients. This contributed to 1,251 SNAP clients shopping at farmers markets for the first time. However, our survey of SNAP clients that do not shop at markets only seven were aware that they could receive an incentive for using their benefits at a farmers' market. The low level of program awareness among SNAP clients tells us that there is still much work to be done raising awareness about the double value coupon program and ability to use SNAP at farmers markets.

In 2013, we will reach out to new community groups that work with SNAP clients to reach out to a broader spectrum of SNAP clients. Additionally, we will work with the Department of Transitional Assistance to better target our outreach efforts directly at SNAP clients. This work will be in addition to the outreach and public awareness efforts that are aimed at the general public.

Appendix 1. Sales of Specialty Crop Products

A total of \$151,407.33 in SNAP and incentives was spent at Boston-based farmers markets in 2012. Of this, 77.5% or \$117,365.58 was spent on specialty crop products including fruits, vegetables and nuts. Table 1 below indicates the amount in combined SNAP and incentive dollars spent on each category of products sold at the farmers markets.

Table 1. SNAP and incentive dollars spent on products sold at farmers markets	
Product Type	Total Sales
Baked Goods	\$10,926
Dairy	\$1,034
Fish	\$3,033.25
Meat	\$2,303
Nuts	\$867

Produce	\$116,498.58
Value Added	\$16,745.5
Total	\$151,407.33

The Boston Collaborative for Food and Fitness is able to ensure that Specialty Crop Block Grant funds were spent only on specialty crop items because less than 77% of the funds for this project were provided by this grant. Total cost of this project was \$85,801, of which \$25,000 (or 29%) was provided by the SCBG. Therefore, we can assure that these funds were used to cover the expenses related to specialty crop items and matching funds were used to cover expenses related to other items sold at Boston-based farmers markets.

Contact Person:
 Karen A. Spiller
 Project Director
 Boston Collaborative for Food and Fitness
 1010 Massachusetts Avenue, 2nd Floor
 Boston, MA 02118
 T: 617-534-2647
 F: 617-534-2372
kspiller@bphc.org

Growing a Sustainable Hops Industry for New England

Final Performance Report

Multi-state project

Applicant: University of VT, Extension

PROJECT SUMMARY

This project focused on developing a viable hops industry in Vermont has continued to expand upon past research and outreach/education SCBGP received over the past 4 years. The primary work through continued funding has gone to build an experimental hopyard to be able to conduct a variety of hop research including a variety trial and cover crop trial. Since hops are a perennial

crop that does not reach mature production for three years it was important to secure funding for a longer duration to obtain adequate results. This project has been able to identify hop varieties that are able to research viable yields and quality in this region. In addition, to the research trials the SPCBG supported the development of a hop harvesting machine and drier that were appropriate scale for our region. These pieces of equipment through further funding have been tested and now available to farms throughout the region. At least 6 machines have been developed that follow this original design. Lastly through this project a large quantity of resources have been developed to assist farmers with producing hops. This includes a number of videos, blog posts, informational bulletins, and research reports. Information has been distributed through a website created and maintained through SCBGP funds. Lastly a farmer advisory board and network was created through this continued funding and met at least once a year to identify needs of the industry. Needs are being further addressed through other resources leveraged through USDA OREI grants, Agriculture Experiment Station Funds, USDA SARE funds, Northeast IPM Center Funds, and EPA funds.

New England is home to many high-quality microbreweries. With the popularity of the local food movement reaching into the beverage market, many local breweries have expressed interest in encompassing local ingredients in their beers. As hops haven't been commercially grown in this area for over a hundred years, the purpose of this grant was to provide high-quality local research and technical assistance to farmers looking to diversify with hops. It is projected that in the upcoming year, the number of microbreweries across the nation will increase by 25%. The craft beer industry is highly competitive and brewers are always looking for something that will give them an edge over the competition. Brewing beers with *terroir* is one of these ways. In these tough economic times, diversifying in agriculture is a good way to ensure economic stability. Hops sold locally have a high economic return, grossing between \$10,000 and \$20,000 per acre, and providing an excellent new market. However, the vast majority of hops research and outreach has been developed for the arid Pacific Northwest, where 99% of commercial hops are produced. The applicability of this research is limited in the humid Northeastern climate, fostering the need for locally relevant, high-quality research based information and a source through which that information can be distributed as it is developed.

Significant interest in local hops has been demonstrated by both growers and breweries in Vermont and Massachusetts. Issues identified by local growers included hopyard fertility, weed management and harvest readiness. Barriers to increased local hops usage identified by local breweries included quality analysis on pelletized local hops. When we started this project, there were no local hops quality testing facilities in the Northeast and no growers in New England are producing pelletized hops. In addition to continuing research and outreach, UVM Extension also planned to do a product evaluation and comparison on packaging methods to preserve hop quality and to determine best management practices that will preserve quality while pelletizing hops. UVM Extensions motivation for this project was to expand their Hops Program while working collaboratively with both growers and the brewing industry to develop an economically viable and environmentally sustainable hops industry in New England.

As hops are a continuing emerging crop in the region, there must be continued research and outreach. The UVM Extension Northwest Crops and Soils Team (NWCS) receives numerous calls and emails with questions on how to best grow hops, including building a hopyard, and

from brewers looking to source local hops. Thanks to funds previously received through Specialty Crops Block Grants (SCBGP), UVM Extension was able to film the construction of their research hopyard and turn it into a three part YouTube series, which has been seen by over 48,555 viewers as of November 19, 2013. Another two part YouTube series that continues to receive many views is Growing Hops, which has been seen by over 41,351 viewers as of November 19, 2013.

Since the start of this grant in November 2011, NWCS has developed 7 instructional videos that have had just under 5000 combined views. SCBGP funds were also used for the creation of our hops website (www.uvm.edu/extension/cropsoil/hops), as well as our “What’s Hoppening” hops blog, which 149 subscribers. Our Facebook page has 345 fans. SCBGP funds also allowed us to form an advisory committee and contract an engineer to help us design and build a small-scale hop harvester, hop dryer and a hop baler.

PROJECT APPROACH

The objective of this program is to develop local and relevant research and outreach applicable to hops production in the Northeast. Through this project research on hops production has been initiated and numerous educational materials and programs have been delivered to stakeholders. Specific deliverables are outlined below.

HOP OUTREACH AND EDUCATION

The Hop Page is host to the Brewer Survey, a continuation of Rosalie Wilson’s work on collecting data from New England brewers on their needs and wants from local hops producers. The Hop Page also hosts the Grower Survey, which surveys visitors on their hop production methodologies. The purpose of the Grower Survey is to continually collect data on the most common hop production practices in the Northeast, and identify problem areas and areas that are in need of improvement. This ongoing survey for growers and brewers was initiated in 2010. Following are some survey results from the 77 grower and 6 brewer responses received from November 14, 2011 to present: the majority of responses were from Vermonter’s and 31.6% of the growers were from Massachusetts, the average arable land was 32.47 acres, 65.8% of the responders are currently growing hops, the remaining were planning to start this season or were gathering information, 67.6% currently harvest by and 10.3% use machinery, 77.6% vacuum pack their hops and 59.2% freeze them, and 43.5% use the hops for themselves, 38.7% sell to home brewers, 61.3% sell to local breweries, 14.5% sell to brew shops, and 3.2% just can’t seem to sell them. We asked what they felt was the best way for our group to communicate and received the following responses (they could check all that applied) 83.1% email exchanges, 66.2% workshops or outreach events at farms or breweries, 46.5% yearly face-to-face meeting, 40.8% social networking sites and 26.8% blog. Some responses to our question of how can we help you grow hops included, benefits of organic certification vs. non-organic production, current information about issues as they happen, proper spray schedules, and access to our continue research. For our brewer responses, 80% would prefer to use dried (whole) local hops, while 40% chose wet or pelletized and all respondents were interested in buying hops locally.

Several bulletins on hops fertility management, hop trellis construction costs, organic fungicides

in hops, and pest and beneficial insect updates have all been published on the UVM Extension Crops and Soils webpage.

UVM Extension Crops and Soils Program Hops Page: www.uvm.edu/extension/cropsoil/hops

- 2012 Organic Hop Variety Trial Report: Results from Year Two - (Darby, H, R. Madden, H. Harwood, E. Cummings, and S. Monahan. 2013. Available at http://www.uvm.edu/extension/cropsoil/wp-content/uploads/Hops_Variety_Trial_Report_2012.pdf (verified 17 November, 2013)).
- 2013 Hops Production Diary. (Miller, S and Darby, H. 2013. Available at <http://www.uvm.edu/extension/cropsoil/wp-content/uploads/2013-Hops-Diary.pdf> (verified 17 November, 2013)).
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- June 2013 Hops Scouting Report. (Lewis, Scott. 2013. Available at <http://www.uvm.edu/extension/cropsoil/wp-content/uploads/Hops-Scouting-Report-June-2013.pdf> (verified 17 November, 2013)).
- Nitrogen Management in Hops. (Darby, H. 2013. Available at <http://www.uvm.edu/extension/cropsoil/wp-content/uploads/N-management-in-hops-2013.pdf> (verified 17 November, 2013)).

Seven YouTube videos were produced from November 2011 to November 2013 that had a total combined views of just under 5000.

UVM Extension Crops and Soils YouTube Channel:

<http://www.youtube.com/user/cropsoilsvteam>

- Steam Weeding for Weed Control in an Organic Hopyard (939 views) - <http://www.youtube.com/watch?v=E71TRCQg5us&feature=c4-overview&list=UU7sh59UG2pKqfmPMfaVxpbA>
- Crowning Hops for Downy Mildew Prevention (465 views) - <http://www.youtube.com/watch?v=aL37fkvxmdU&list=UU7sh59UG2pKqfmPMfaVxpbA>
- Determining Hop Harvest Moisture and Ideal Storage Dry Matter (1127 views) - <http://www.youtube.com/watch?v=TfUYXu4-0-s&list=UU7sh59UG2pKqfmPMfaVxpbA>
- Hops – Here They Grow Again on Their Own (482 views) - <http://www.youtube.com/watch?v=LQm72yHu8Qc&list=UU7sh59UG2pKqfmPMfaVxpbA>
- Scouting a Hopyard for Insects and Diseases (1128 views) - <http://www.youtube.com/watch?v=iZ2FbHPSCBI&list=UU7sh59UG2pKqfmPMfaVxpbA>
- UVM Extension Hops Conference: Low-Trellis Hops Production (466 views) - <http://www.youtube.com/watch?v=2J-IWUIFP3I&list=UU7sh59UG2pKqfmPMfaVxpbA>
- 2011 Vermont Hops Conference Roger Rainville(398 views) - <http://www.youtube.com/watch?v=tg5FOcfniIA&list=UU7sh59UG2pKqfmPMfaVxpbA>

Other related videos of importance for this report include:

- The Mobile Hop Harvester (6395 views) – <https://www.youtube.com/watch?v=2iZIkdozeXo>
- Organic Hopyard Variety Trial Year 2 Spring checklist (3095 views) – <https://www.youtube.com/watch?v=lxxBuCvAsuc>
- UVM Extension and the Wolf Harvester (3433 views) - <https://www.youtube.com/watch?v=LMxRcN2mTF0>

The UVM Extension hops blog “What’s Hoppening”, hosted on the UVM Extension Crops and Soils website, 149 subscribers, and 44 posts from November 2011 to November 2013. UVM Extension Crops and Soils hops blog “What’s Hoppening”:

<http://www.uvm.edu/extension/cropsoil/whats-hoppening>

Topics blogged included upcoming conference events, updated research reports, rhizomes information, an early season checklist, frost seeding, hops data collection booklet, hops crowing video link, downy mildew alert, plant/insect diagnostic clinic information, pest scouting in your hopyard, the 2013 hops scouting report, mobile hops harvester summary for the 2013 summer, and an announcement for hops quality analysis now available by our team at the UVM lab.

Following are some key blog postings since November 2011:

- UVM Hops Baler (Jan 2012): <http://blog.uvm.edu/hoppenin/2012/01/09/uvm-hops-baler/>
- Rhizomes! (April 2012): <http://blog.uvm.edu/hoppenin/2012/04/23/rhizomes/>
- Small-Scale Hop Harvester and Hop Baler Designs Made Public (April 2012): <http://blog.uvm.edu/hoppenin/2012/04/24/small-scale-hop-harvester-and-hop-baler-designs-made-public/>
- Small-scale hops baler, design 2 (May 2012): <http://blog.uvm.edu/hoppenin/2012/05/22/small-scale-hops-baler-design-2/>
- June Scouting Report (June 2012): <http://blog.uvm.edu/hoppenin/2012/06/18/june-scouting-report/>
- Hop Harvest Readiness (August 2012): <http://blog.uvm.edu/hoppenin/2012/08/24/hop-harvest-readiness/>
- Hop Harvest Readiness Calculator (August 2012): <http://blog.uvm.edu/hoppenin/2012/08/27/hop-harvest-readiness-calculator/>
- 2013 Rhizomes (February 2013): <http://blog.uvm.edu/hoppenin/2013/02/25/2013-rhizomes/>
- It’s Hops Season! Early Season Checklist (April 2013): <http://blog.uvm.edu/hoppenin/2013/04/17/its-hops-season-early-season-checklist/>
- Hops Crowning Video (May 2013): <http://blog.uvm.edu/hoppenin/2013/05/13/hops-crowning-video/>
- Hops Quality Analysis available not at UVM Lab (September 2013): <http://blog.uvm.edu/hoppenin/2013/09/26/hops-quality-analysis-available-now-at-uvm-lab/>
- 2013 UVM Mobile Hops Harvester Summary (October 2013): <http://blog.uvm.edu/hoppenin/2013/10/25/2013-uvm-mobile-hops-harvester-summary/>

The Northwest Crops and Soils Team were in the following two hops related UVM Extension “Across the Fence” videos:

<http://www.uvm.edu/extension/afence/>

- The Vermont Hops Project, November 22, 2011 - <http://www.uvm.edu/extension/afence/?m=20111122>
- Research and Education on Growing Grains and Hops in Vermont, March 12, 2012 - <http://www.uvm.edu/extension/afence/?m=20120312>

This paragraph was in another report so I kept it as is -

In 2012, the UVM Extension Winter Hops Conference was held at the Sheraton Hotel in South Burlington, VT with **137 attendees**. At the conference, a farmer panel discussed their successes and setbacks that they've encouraged on their hop farms. Daniel Sharp from Oregon State University joined us to discuss the aroma compounds of hops, and how they can be affected by mismanagement at harvest. Ann Hazelrigg from the UVM Plant Diagnostic Clinic discussed how to identify problems in Northeastern hopyards and the basics of pesticide rules and regulations. She also discussed the different spray equipment available to hop growers, and how to calibrate them. Students from the UVM School of Engineering who had designed two small-scale hop balers gave short presentations on their models. Roger Rainville gave a presentation put together by Chris Callahan, who was unable to join us due to illness. Chris Callahan and Roger Rainville were largely in charge of designing and fabricating the small-scale hop harvester. Video footage of the harvester in action was shown and questions fielded from the audience. 96.8% of grower respondents stated that the hop conference met their expectations, with one participant stating "Well done- as a new grower I have tried different things and it was good to hear other's experiments (success and failures)." 100% of brewer respondents said the conference met their expectations. 95% of grower respondents stated that the UVM Extension Hops Program has helped them start or expand their hopyard, and 73% stated that the research and outreach performed by UVM Extension has helped them improve their yields. One grower respondent stated: "Very helpful and informative as always." 100% of brewer respondents stated that the work done by UVM Extension has increased their knowledge and awareness about hops grown in the Northeast. 76% of grower respondents stated that the work done by UVM Extension has helped them find markets and/or connect with brewers, and 83% of brewer respondents said that the conferences and workshops hosted by UVM Extension have helped them connect with local growers. 90% of brewer respondents stated that they have noticed a difference in the supply of regionally-produced hops because of the research and outreach performed by UVM Extension. 97% of grower respondents intend to expand their production. One participant stated: "This is a great conference. Can't wait 'til next year!" Another said "Keep the info and excellent projects coming. You have really done a great job promoting this crop & market." Another remarked: "Thank you so much. An incredibly helpful program." 89% of brewers stated that their brewery intends to buy or continue buying local hops if the supply exists. 100% of brewers stated that they were satisfied "for the most part" with the quality of the local hops that they have been presented with, but noted the lack of brew analysis as a hindrance. Quality parameters were a serious barrier to purchasing locally-produced hops to 63% of brewers, and a noticeable barrier to 37%. 100% of brewer respondents stated that post-harvest processing and packaging were a barrier to purchasing locally-produced hops. 62.5% stated that the scale of what is available locally is a serious barrier to purchasing locally-produced hops. Harvesting and pelletizing were both independently noted as serious barriers. 100% of brewers stated that they expect that the demand for beer made with local hops will increase, and intend to respond to that demand. One brewer said "The conference has provided a fair amount of

information and piqued my interest in Eastern grown hops. My full support is your way. Anything I can help with I'm happy to do so.” Conference proceedings can be found at <http://www.uvm.edu/extension/cropsoil/hops>.

Our 2013 Winter Hops Conference was held on Friday, February 22, 2013 in Essex, VT. We had 191 in attendance at this conference. Proceedings from this conference are available on our website at www.uvm.edu/extension/cropsoil/hops. Graham Ollard, Agrimanagement, Inc. hops consultant from Yakima Valley in Washington spoke on fertility and pest management. Rich Andrews, a Colorado organic hop farmer presented on his innovative solar hop and herb dryer design. Maine Aroostook Hops owners Krista Delahunty and Jason Johnston shared the results of their Northeast SARE Farmer grant which evaluated the impact of cover crops and irrigation on hop yields. Local growers Kris Anderson and Bill Powell and the UVM College of Engineering and Mathematical Sciences student provided an equipment update and demonstrated the hops drying calculator. The UVM Extension Northwest Crops & Soils team presented information on recent research results from the variety trial and new pest scouting and management information. From our program survey with 40 responses, 100% found the UVM Extension NW Crops and Soils Team’s presentations informative and educational. 11.4% indicated this was their first season in hop production and 31.4% were still in the planning stages. There were 22 hop varieties noted that growers had with the highest (85.2%) being Cascade. Nugget was the next highest at 59.3% and Willamette followed at 48.1%. These varieties were selected by growers equally, at 46.7%, because of brewer demand and being disease resistance. One responder noted they chose them because of UVM Research. On average, 57 wet pounds and 22.55 dry pounds of hops were produced by this survey group.

Five on-farm field days were held in Vermont and Massachusetts from November 2011 to November 2013 with more than **700 attendees**.

The UVM Extension hopyard was showcased in the annual Crops and Soils Field Day on August 9th, 2012 at Borderview Farm in Alburgh, VT to **286 attendees**. The hop variety trial was discussed, as were Integrated Pest Management practices.

On August 14, 2012, a field day was held in Gilbertville, MA at Steve Prouty’s Cloverhill Farm, with **34 attendees**. Pest management, harvest timing, and post-harvest handling were discussed. 100% of survey respondents stated that the field day met their expectations. 100% stated the UVM Extension Hops program has helped them start or expand their hopyard and 50% stated that it helped them improve their yields. 63% stated that the research and outreach performed by UVM Extension has helped them improve the quality of their hops. 90% of respondents stated that the work done by UVM Extension has helped them find markets and/or connect with brewers. 80% of respondents stated that the work done by UVM Extension has helped them implement sustainable practices in their hopyard.

A field day was held at Addison Hop Farm in Addison, VT, in August 2012 with **89 attendees**. Hop trellis design, the economics of hops production, harvest timing, harvest machinery, drying techniques, packaging, and storage were all discussed. 100% of respondents stated that the field day met their expectations. 100% of respondents stated that The UVM Extension hops program has helped them start or expand their hopyard and improve their yields. 100% of respondents

also stated that the research and outreach performed by UVM Extension has helped them improve the quality of their hops. 60% stated that the work done by UVM Extension has helped them find markets and/or connect with brewers. 100% also stated that the work done by UVM Extension has helped them implement sustainable practices in their hopyard.

Two on-farm field days were held in August 2013. The first field day was at Borderview Research Farm in Alburgh, VT on August 1st with **173 participants**. The UVM Extension Northwest Crops & Soils team presented information during an afternoon session including yield comparison and weed control, hop pest management and hop diseases. We also had a brief steam weeding demonstration from a vendor out of Canada. On August 15, 2013, we held our 2013 Massachusetts Hops Field Day at Four Star Farms in Northfield, MA. The L'Etoile Family hosted the field day and provided presentations on growing hops including planning, budgeting, building the hop yard, picking/harvesting, drying, compacting and packaging. The UVM Extension team also provided research updates on fertility requirements, variety selection, pest management and other best management practices. There were **122 attendees** from Massachusetts, New Hampshire, New York, Vermont and Canada. Survey highlights from this field day included 53 responses and the following: 39.6% are current hop growers and 85.2% use the hops they grow while 22.2% sell them to local breweries and 14.8% sell them to home brewers. As a result of this field day, 36.2% intend to start growing hops, 29.8% intend to increase their hops production, and 74.5% feel they have better access to information. Changes made since attending another workshop/field day include 38.5% increased acres of hops production, 23.1% improved weed control, 23.1% improved soil health, 15.4% improved crop yields and quality, 46.2% improved disease and pest management and 92.3% improved networking with others. A quote from one survey response included "I will be significantly informed when I do start growing hops, and much better able to discuss them with customers in our store." Topics of interest for future workshops included, cropping, starting vines, yield, harvesting, grape growing/winemaking in the Northeast, and techniques for extending the growing season.

UVM Extension Northwest Crops and Soils Team was also present at the Vermont Brewer's Festival at the request of the Vermont Brewer's Association in both 2012 and 2013, and at the Massachusetts Brewer's Festival at the request of the Massachusetts Brewer's Guild in 2012. Both events provided excellent opportunities to discuss local hops with area brewers, and to answer any questions that the brewers might have.

In November 2011, Dr. Heather Darby, with assistance from Mark Magiera, brew master for Bobcat Café and Brewery in Bristol, VT, presented to 90 brewers at the Vermont Brewers Association Sensory Analysis Conference, highlighting the advantages of local hops, and the unique brewing characteristics offered from a regional product. Base brews single dry-hopped with Vermont produced varieties were brewed by Bobcat Café and Brewery and presented to the brewers for sensory analysis.

Thirty on-farm visits were conducted in MA and VT. **One hundred and twenty phone calls** were fielded from hop growers and those interested in growing hops in MA and VT over the project period. Over **300 emails** were answered with hops questions from growers, brewers, and other interested parties. Questions answered included a broad range of categories including but

not limited to pest management, fertility management, pest identification, feasibility, harvest moisture determination, drying, and hop production basics.

Dr. Heather Darby presented at the Northeast Hop Alliance Fall Conference in November, 2011, highlighting proper techniques and considerations for soil preparation in a hopyard and fertility recommendations to over **170 interested hop growers** from all over the Northeast.

In January 2012, Rosalie Madden and Heather Darby presented at the Northeast Organic Research Symposium in Saratoga Springs, NY on organic hop yield and quality in the Northeast. The Northwest Crops and Soils Team also presented a poster on potato leafhoppers in hops in the Northeast.

Dr. Heather Darby presented at the Northeast Hop Alliance Fall Conference in November, 2011, highlighting proper techniques and considerations for soil preparation in a hopyard and fertility recommendations to over **170 interested hop growers** from all over the Northeast.

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On December 1, 2012, Heather Darby attended and presented to 300 attendees at the Northeast Hops Alliance annual meeting. She addressed common challenges to growing hops in the Northeast.

Starting in May 2013, we started contributing articles in the Northeast Hops Alliance monthly online newsletter, which has a circulation of approximately 500. Articles included information on nitrogen management in hops, hops scouting report and the hop aphids factsheet, as well as information on our events and the hops quality analysis testing now available.

GOALS AND OUTCOMES ACHIEVED

Updated 2012 Organic Hop Variety Trial: Results from Year Two with the research completed in the hopyard.

Now offering hops analysis at our UVM lab.

Development of plans (wikis) of the hop harvester, hop dryer and hop baler. Chris Callahan's blog in October 2013 of the harvester use during this past summer.

BENEFICIARIES

The several hundred attendees at hop related events, and the several thousand viewers of hops YouTube videos and visitors of the UVM Extension Crops and Soils Hops Page are the beneficiaries of this project. The Northeast Hops Alliance and the New England chapter of the Northeast Hop Alliance are also beneficiaries as they have had the opportunity to access regionally based hops related research, and have had a hand in guiding the research conducted by

UVM Extension. These beneficiaries include potential, new, and established hop growers throughout the US and Canada. Additional beneficiaries include other agricultural professionals such as Extension staff, University professors, and US or state government employees. The brewers of Vermont and Massachusetts have also been and will continue to be important beneficiaries as they now have broader access to locally produced hops.

As a result of this project as well as collaborative efforts with other organizations (NEHA, Cornell University), **15 breweries** in Vermont and **12 breweries** in Massachusetts, and numerous breweries in Maine, New Hampshire, Connecticut, Rhode Island, and New York are now purchasing local hops.

There have been 20 new commercial hop producers (New England and Eastern Canada) as a result of this project and collaborative efforts with other organizations. Based on our close interaction with these producers we have been able to assist them with production information. One of the producers commented “I have always wanted to grow hops but never felt like I would have the support or information I would need to be successful. With your program I now feel confident to implement my new crop”. Supply is still not meeting demand as hops produced on first year plants for all new farmers were quickly purchased by eager brewers. One brewer commented that he “wanted to use local hops but he wasn’t able to find any”.

LESSONS LEARNED

Lessons learned by the project staff are numerous. The best way to be able to help producers is to “do it ourselves” so we can really know the production challenges that are being faced by growers. The experimental hopyard is helping us collect valuable data but also allowing us to “experience” hops just like a grower. Through this process we are able to alert growers when pests arrive and/or share our mistakes with new growers.

Hops are a complex crop. There are significant startup costs, both economically and in time and labor. Constituents have commented how invaluable they have found the Building a Hopyard YouTube videos and construction costs fact sheets, and how much they have appreciated the opportunity to be able to visit a hopyard prior to constructing one themselves.

Variety selection is a major decision, and we are proud to be able to offer some baseline data on variety suitability through our research. Hops are very disease susceptible, particularly to downy mildew, which is a consideration that every grower should be undertaking, but other pest factors seem to be worth consideration as well. There are numerous hop pests and beneficial insects specific to the Northeast that are not found in the main hops production areas of the world. Further work is certainly needed in this domain. Further research is needed in the efficacy of organic chemical controls of pests found in the Northeast, and to determine relevant economic thresholds.

Planting varieties that don’t thrive or yield well in this climate is economically unsound. Our first year harvest data is an indicator of the potential of each of the 19 varieties trialed, however, the preliminary data from the 2012 harvest indicates that these trends don’t hold true from year to year. As hops take three years to reach peak production, further research is needed.

Small-scale infrastructure is a continued stumbling block in hops production in the Northeast. The mobile hop harvester designed courtesy of a SCBGP grant has taken steps to alleviate this issue, as has UVM Extension's work with small-scale hops balers and oasts. The future bears great promise now that these works have been completed and made publicly available.

Contact Person:

Dr. Heather Darby

UVM Extension Agronomist

(802) 524-6501

Heather.darby@uvm.edu

www.uvm.edu/extension/cropsoil

Building a Fresh-Sliced Apple Market through Food Service

Final Performance Report

Multi-State Project

Applicant: New England Apple Association

Project Summary:

The purpose of the project "Building a Fresh-Sliced Apple Market through Food Service" was to explore ways to develop a viable, year-round food service market for fresh-sliced apples, and to identify, reduce, or eliminate barriers to such a program.

The project was important and timely because the popularity of fresh-sliced apples is increasing rapidly, and is expected to continue to do so. New England apple growers, already at a competitive disadvantage with other apple-growing regions and states, risk falling further behind by failing to take advantage of this lucrative new market.

This Specialty Crop project built upon a 2009 Federal-State Marketing Improvement Program (FSMIP) grant administered by the New Hampshire Department of Agriculture, Markets and Food. Stephen Lacasse, then-chair of the board of directors of the New England Apple

Association, directed the 2009 project, “Packaging Fresh Produce for the Snack Food Market.” As part of that study, Champlain Valley Specialty (CVS) in Keeseville, New York, developed a New England apple slice bag and brand. Apples were purchased from New England growers, fresh-sliced and packaged in four-ounce bags, and sold to public school systems in Connecticut, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont, through the Department of Defense. The fresh-sliced apples were popular with children, but logistical problems and low returns to growers (\$13 to \$14 per 42-pound box) kept the program from growing after the FSMIP grant ran out. But the popularity of fresh-sliced apples with consumers (especially children) continues to grow; they are now on the menus of most fast-food chains, for example, including McDonald’s, which in 2011 began to include fresh-sliced apples in their popular “Happy Meals” for children.

A profitable fresh-sliced apple program in the private sector could help growers subsidize fresh-sliced apples in the public schools, adding a healthy choice for children’s meals and reaching out to the next generation of consumers. While the return to the grower was too low in the 2009 project, fresh-sliced apples have proven to be an effective way for children to eat more fruit.

The Specialty Crop grant project tested these assumptions about New England’s capacity to tap into this potentially lucrative business:

- 1) New England’s orchards individually are too small to supply the volume needed by large food service customers;
- 2) The infrastructure to transport and process fresh-sliced apples is lacking; and
- 3) The apple industry lacks funds for a marketing campaign to attract new business.

The New England apple industry has experienced a slow but steady contraction over the past 15 years. Average annual production dropped from more than 5 million 42-pound boxes in 2000 to about 4 million boxes in 2009 (the past three years have been even smaller, the result of weather-related losses). Meanwhile, apple production has flourished around the world and in other parts of the United States in places that have more available and affordable arable land.

But some of the slide is the result of the New England apple industry’s lack of funds to invest in long-term strategies to stabilize the industry and eventually lead to renewed growth. The export market for American apples is growing, for example, but growers in states like Pennsylvania and Virginia have been able to access new markets in Central America only after years of work to resolve a host of marketing and technical challenges.

The fresh-slice project was intended to add new food service customers in Massachusetts and New Hampshire through targeted marketing and by strengthening the network of growers, processors, and distributors required to supply them. Due to a variety of factors, the development of a viable fresh-slice program in New England will require additional time and resources

Project Approach:

As prerequisites to recruiting new food service customers, the project began by 1) publicizing the program to New England's apple growers, and evaluating their capacity and interest; 2) assessing the region's infrastructure needs; and 3) working out logistics between grower, processor, and customers.

To meet these objectives, project director Russell Powell visited nearly 50 of the region's orchards during the grant period:

Connecticut (5): Belltown Orchards, South Glastonbury; Blue Hills Orchard, Wallingford; Bussa Orchards, South Glastonbury; Lyman Orchards, Middlefield; Rogers Orchards, Southington.

Maine (7): Cooper Farms, West Paris; Greenwood Orchards, Turner; McDougal Orchards, Springvale; Pietree Orchard, Sweden; Randall Orchards, Standish; Ricker Hill Orchards, Turner; Romac Orchards, Sanford.

Massachusetts (18): Atkins Farm, Amherst; Bolton Orchards, Bolton; Carlson Orchards, Harvard; Carver Hill Orchard; Clarkdale Fruit Farms, Deerfield; UMass Cold Spring Orchard, Belchertown; Dowse Orchards, Sherborn; Honey Pot Hill Orchards, Stow; Lanni Orchards, Lunenburg; Meadowbrook Orchards, Sterling; Nashoba Valley Winery, Bolton; Nestrovich Fruit Farm, Granville; Pine Hill Orchards, Colrain; Red Apple Farm, Phillipston; Quonquont Farm, Whately; Sholan Farm, Leominster; Tougas Family Farm, Northborough; Westward Orchards, Harvard.

New Hampshire (8): Alyson's Orchard, Walpole; Apple Hill Farm, Concord; Brookdale Fruit Farm, Hollis; Butternut Farm, Farmington; Carter Hill Orchard, Concord; Gould Hill Orchards, Contoocook; Hackleboro Orchards, Canterbury; Poverty Lane Orchards, Lebanon.

Vermont (7): Chapin's Orchards, Essex Junction; Champlain Orchard, Shoreham; Douglas Orchard, West Shoreham; Green Mountain Orchards, Putney; Hackett's Orchards, South Hero; Sunrise Orchards, Cornwall; Wellwood Orchards, Springfield.

In addition, Powell attended these meetings to meet with growers and solicit their feedback:

Rhode Island Fruit Growers, March 29, 2012

Connecticut Fruit Growers, Rogers Orchards, June 19, 2012

Massachusetts Fruit Growers, UMass Cold Spring Orchard, July 10, 2012

Maine State Pomological Society, Pietree Orchard, July 19, 2012

Powell met with a number of individuals and businesses impacting the project:

Ken Ayars, Rhode Island, chief, division of agriculture, who is interested in developing new food service opportunities for growers in his state.

Annie Cheatham, president of the New England Farmers Union, to discuss NEFU's role in a feasibility study for a fresh-slicing facility in the region.

Jeremy Dygert, president of Champlain Valley Specialty (CVS) in Keesville, New York, the fresh-slicing firm that would handle new business for the foreseeable future.

Deishin Lee, a professor at Harvard Business School, and writer Jim Weber, to develop "New England Apple Slices," a case study that looks at the fresh-sliced apple supply and delivery chain

Ned O'Neill, vice president of J. P. Sullivan Apple Agents in Ayer, Massachusetts, New England's largest packer of fresh apples

Sabrina Pashtan, sustainability coordinator, Boston University Dining Services

Stacey Purslow, New Hampshire Farm to School coordinator

Professor Lee and Weber accompanied Powell to CVS in October 2011, and interviewed growers independently. Lee donated her time to the project to research and write the case study.

Dygert met with growers at the December 13, 2011, annual meeting of the New England Apple Association in Manchester, New Hampshire.

Powell further publicized the project with "The Future of Fresh Slices," the cover article in the winter 2012 edition of *McIntosh News*, the quarterly newsletter of the New England Apple Association. The story and photographs resulted from Powell's October 2011 visit to CVS's Keeseville, New York, processing plant.

As a result of these efforts and outreach, New England growers and Champlain Valley Specialty now have a better understanding of the potential of fresh-sliced apples and how they need to work together to realize it.

CVS has developed an effective system for sourcing its apples and supplying its customers. The company picks up apples directly from the orchard, brings them back to its facility to be cleaned, sorted, sliced, and packaged, and then delivers the finished product to its customers within 24 hours. This relieves growers of the burdens of finding customers, pre-sorting apples, and delivering them to the processor, and enables CVS to supply its customers with fresh products.

With a distribution system in place and strong support for a pilot food service program among New England's commissioners of agriculture in Massachusetts, New Hampshire, and Rhode Island, the way has been paved for a viable fresh-sliced program for the region's apple growers. Add to this encouraging signs from the marketplace, specifically Boston University, with more than 30,000 students, and there is reason for optimism about the fresh-sliced food service market.

But the program is on hold until there is a crop size large enough for growers to test the fresh-sliced waters. Additionally, the feedback from growers is that they still need convincing that the financial return will be great enough to supply this new market, and eventually invest in new plantings to meet increased demand. CVS's ability to eliminate pre-sorting enables them to offer growers higher prices for bins of orchard-run apples than if growers had to presort themselves, eliminating one barrier. But prices for whole fresh apples have been relatively high and stable in recent years, and these premium apples would be mixed in with lesser grades in the unsorted bins. Growers expressed skepticism that the increased return for fresh-sliced apples would be enough to offset this loss. In addition to a rebound in supply, CVS will need additional meetings with growers to convince them.

But the quality of CVS is high, they have excess capacity, and they are relatively close to the region's growers. More than that, they are willing to reduce the burden on New England's distribution infrastructure by picking up apples directly from participating orchards and delivering finished product to customers. Unless and until fresh-sliced apples become a significant revenue source for New England's apple growers, it makes greater economic sense to contract with CVS than to build a new processing facility in the region, especially since a new facility would need to be supported by a reliable transportation system for picking up and delivering the apples, further increasing the cost.

If the market for fresh-sliced apples takes off, New England will likely need a feasibility study for a processing facility to evaluate its potential.

The main components of a successful fresh-sliced apples program are 1) customers; 2) supply; 3) transportation; and 4) processing. This project affirmed the potential for customers, and a reliable and efficient means of distributing and processing apples. Remaining barriers are crop size and convincing growers of the program's financial potential.

Goals and Outcomes Achieved:

While a system for a viable food-service market is now in place as a result of the project, the stated goal of establishing at least four new food service venues — roughly one per season to create an aggregate year-round market, supplied by multiple growers, in New Hampshire and the heavily populated areas of nearby eastern Massachusetts, with a price threshold of \$15 per box — was not achieved.

As a result of project director Powell's meetings with Jeremy Dygert of CVS, the region's growers, and key players (such as Harvard University's Deishin Lee, Rhode Island Chief of Agriculture Ken Ayars, and Boston University Sustainability Coordinator Sabrina Pashtan), groundwork has been laid for a successful fresh-sliced apple program for New England, with the necessary infrastructure to support it.

But the small crop sizes combined with growers' continued skepticism about the financial return on fresh-sliced apples made several of the goals of the project moot or unfulfilled.

The 2010, 2011, and 2012 seasons all produced smaller-than-normal apple crops in New England, meaning that there were too few surplus apples available to commit to a new market. A normal or above-normal yield will be needed for growers to enter the fresh-sliced business.

Growers also remain unconvinced that selling their fruit for fresh-slices can provide a higher return than selling their fresh apples whole. The pricing system for CVS to purchase apples from growers for fresh slicing is different from the traditional wholesale or processing markets, making it difficult for growers to compare the financial return from fresh-slices. The lower supply of fresh apples and higher demand during the project years have resulted in improved prices for growers, further reducing their incentive for investing in a new and unproven fresh-sliced market (growers are getting \$20 to \$25 per box for many varieties of fresh whole apples, with some, like Honeycrisp or Gala, returning even higher prices, compared to the \$15 per box targeted in the project's measurable outcomes).

Evaluating the financial return to growers is further complicated by CVS's operating methods. Having CVS take "orchard-run" apples in bins rather than sorted boxes solves one problem for

growers but creates another. By purchasing bins directly from the orchard, CVS eliminates the costly step for growers of pre-sorting the apples, and enables CVS to use some fruit that would not make it out of the packinghouse, since the fresh-slice process can use apples with minor defects that would not be acceptable as whole apples. But the bins would include apples that could command premium prices if sold whole. Growers expressed doubt that CVS's price for the bins, while higher than the processed market, would compensate for the loss of the whole apples. Growers must be convinced that they will see a net financial gain before agreeing to CVS's terms.

While CVS president Jeremy Dygert expressed confidence that growers could realize the \$15 per box target, the accounting methods need to be fine-tuned so that growers can make a direct cost comparison, since the \$15 per box figure refers to whole, pre-sorted apples for the fresh market. CVS would take (and sort) apples of all grades, and CVS's payments to growers would thus blend whole fresh apple prices and less lucrative processing rates. Since the quantities of high-quality apples from the orchard-run bins would vary from bin to bin and season to season, it would be difficult to estimate their value. To attract the New England growers, CVS must develop a way to measure the relative quantities and qualities of the apples they receive, and either pay market prices for the high quality apples or return them to growers.

A third barrier after crop size and evaluating profitability is the varietal mix preferred by CVS, chiefly Empire apples. Currently there are not enough Empires in New England to support a major fresh-slice initiative. Other, less desirable varieties would have to be used in addition, such as McIntosh, which CVS has found to be less popular with children than the sweeter Empire, Idared, or Gala. To enter the fresh-slice market in a significant way, growers will need to plant more trees of the desired varieties.

One way to begin a fresh-slice program and give growers time to evaluate its success and invest in new plantings is to introduce the New England brand incrementally. CVS desires the stability of a year-round contract with their food-service clients, which New England's growers currently are not in a position to supply. One solution is to launch a new program with a promotion like "New England Apple Month," for example, when all of the fresh-sliced apples came from the region's orchards, while the rest of the year CVS would supply the client by sourcing apples from New York state or elsewhere. This would give New England's growers time to invest in new trees with the fresh-slice market in mind.

Given the small 2012 crop not just in New England but in neighboring New York as well — New York state apples normally could supplement a fresh-sliced program in New England, giving New England's growers time to build capacity — there is no purpose in pursuing fresh-

slice customers at this time. (New York State lost nearly half its crop in 2012 due to the same frost damage that impacted New England and Michigan, which suffered historic losses.)

Looking ahead to 2013 and beyond to whenever the crop is of sufficient size and growers become convinced of the financial rewards, the parts are now in place to launch a successful fresh-sliced program: 1) a high-quality processor close enough to the region, meaning that New England does not have to build a processing plant to enter the fresh-sliced market; 2) a reliable way to get fruit quickly from grower to processor to market; and 3) potential customers.

Beneficiaries:

All of New England's several hundred apple growers were beneficiaries of this project by becoming more aware of the opportunities and challenges of growing for the fresh-sliced market, and by the development of a reliable infrastructure and a viable marketing plan for private food-service clients, when growers are ready to enter this market. CVS will become a beneficiary when a fresh-sliced program is launched.

The growers that stand to benefit the most when the fresh-slice market develops are those that already are large enough (approximately 50 acres or more) to supply the program initially, and those plus smaller orchards willing to invest in new plantings.

The economic impact of fresh-sliced apples remains to be determined, but the category continues to grow nationally as evidenced by the presence of fresh-sliced apples on the menus of all of the major fast-food chains. While current statistics for fresh-slice apple volume are not readily available, "Trends in the Marketing of Fresh Produce and

Fresh-cut Products," a 2008 report by Dr. Roberta Cook of the Department of Agriculture and Resource Economics at the University of California Davis, shows that fresh-cut produce sales increased from \$3.3 billion in 1994 to \$15.5 billion in 2007 — four years before McDonald's added fresh-sliced apples to its popular Happy Meals for children.

According to the USDA's National Agricultural Statistics Service (NASS), New England's apple industry occupied 14,200 acres in 2010 and had a value for utilized production of more than \$62 million. A thriving food service business in fresh-sliced apples could provide \$6 million to \$10 million in additional farm income for the six-state region once supplies increase and grower reluctance decreases.

Lessons Learned:

A food service market for fresh-sliced apples in New England exists and is expected to grow, but the region's growers are not yet in a position to capitalize on it.

Until supplies increase, growers are unlikely to divert fruit to the fresh-slice market, as the price point for whole apples is high and there are no surplus apples to supply a new use. Even the juice market — which traditionally brings the lowest return to growers — has been substantially higher than normal in 2012 due to limited supplies.

The project sought to create an incentive for growers by attracting customers first. In hindsight, this was not an effective strategy, since there were not enough apples during the project years to supply the new market. Going forward, it will be essential to quantify the available supply before soliciting new customers.

Having said that, it is clear from discussions with Boston University and key facilitators like Agriculture Chief Kenneth Ayars in Rhode Island that potential for fresh-slice apples in New England remains high, both because of the intrinsic appeal of the product and the burgeoning “buy local” trend that has its roots in New England.

Other than price, the logistical barriers to a fresh-slice program were addressed satisfactorily by the project. There is now a reliable, high-quality facility willing to process the apples and delivery systems from orchard to processor to customer that account for the relatively small size and rural geography of New England's orchards. Even small orchards could participate in a fresh-slice program, since CVS picks up fruit at the orchard and eliminates the costly step of pre-sorting.

More discussion and experience is needed to determine the best varietal mix for fresh-sliced apples. Empires are currently favored by CVS due to their abundant supply in New York state, their suitability for fresh-slicing, their storage ability, and their flavor, which is more sweet than tart. But CVS uses other varieties throughout the year, and New England consumers might be receptive to an apple with more tartness than Empire, particularly McIntosh, which accounts for about two-thirds of the New England crop. If “Macs” are found to be suitable, growers will not need to invest heavily in new trees, but if other, sweeter apples are preferred, it will increase the

start-up costs of growers selling to this market.

Further analysis is needed to make meaningful price comparisons between orchard-run bins purchased by CVS for fresh-slicing and the relative return from the multiple uses and pricing structures of apples sorted by the orchard (whole for fresh eating, process, and juice).

Contact Person:
Russell Powell
Project Director
New England Apple Association
PO Box 41
8 Elm St.
Hatfield, MA 01038
413-247-3232; 203-891-5715
russ@newenglandapples.org

Massachusetts Bay Transportation Authority (MBTA) Marketing

Final Performance Report

Applicant—MA Department of Agricultural Resources

Project summary:

In order to reach out to a large commuting audience with opportunities to find “MassGrown” specialty crops, the Department produced and had mounted poster advertisements placed throughout public transportation vehicles (specifically the commuter rails) throughout the entire metropolitan area of Boston. To stimulate awareness for local, and to offer the Massgrown website (and [QR Code](#)) to access our “Massgrown” lists of specialty crop producers and map using the portal site, www.mass.gov/massgrown. The project goal to raise awareness of MassGrown specialty crops to large number of people, along with stimulating web traffic to the MassGrown website which posted information on specialty crops.

With respect of timeliness, it matched well with the flower growers unveiling their “Plant Something” campaign and website. We collaborated on artwork and timed the poster campaign along with an event featuring Governor Patrick planting seedlings at the Mather School in Dorchester, MA.

Project Approach

In line with the project goals, The Department contracted services with Titan360 (Titan), the specific contractor who produces and installs poster advertisements on the Boston North and South Commuter rails. The goal was to increase traffic to www.mass.gov/massgrown (MassGrown). Once on the site, it featured specialty crops pictures and links to specialty crop producers.

The \$10,000 award was split in half, for a spring campaign and a fall campaign. Originally, we were hoping for matching funds from Maple Association and others. We tailored the poster designs and targeted months with associations of specialty crops that matched funding. By splitting it in two seasons (4 months total), it enabled a higher number of posters to be purchased.

Goals and Outcomes Achieved

For the Spring, the first \$5000 was matched with \$5000 by the MA Flower Growers Association and the MA Nursery & Landscape Association. This gave us a two month contract of \$10,000 with Titan for 90 posters spread amongst the north and south station commuter lines. The 90 posters were made up of 3 different designs with one overall theme, “Plant Something” (pictures attached). The three designs were created in collaboration with the two associations so the entire budget could go for more poster production coverage. The posters were in place for the months of April and May.

Using Google analytics, we measured MassGrown web page views:

April & May

2012: 31,139 webpage views to Massgrown related pages

2011: 27,720 webpage views to Massgrown related pages

This equaled a 12% increase for those 2 months

For the Fall, the second \$5000 was matched partially by four MA associations: MA Fruit Growers (\$2500), MA Christmas Tree Association (\$600), MA Farm Winery Association (\$300), and the MA Cranberry Association (\$250) for a total of \$8650. Titan contracted with us for 95 posters for north and south station commuter line coverage for September and October for a total of 8 weeks. Two designs were created with the theme, “Time is Ripe to Visit a Farm”. The posters depicted: apples, grapes, cranberries, pumpkins, and Christmas trees (pictures attached). All poster designs included again the MassGrown website, along with the qr code that also linked to the website.

September & October

2012: 102,452 webpage views to Massgrown related pages

2011: 93,283 webpage views to Massgrown related pages

This equaled a 9.83% increase for the two month over 2011.

Via the mobile qr code 

2012: 210 scans for the two months

2011: 176 scans

This equaled a 19.23% increase for the two month over 2011.

Titan also gave us estimated ridership numbers which included 8 week impressions of 3.6 million. Multiply X 4 months = 7.2 million impressions made to passengers riding the train lines north and south of Boston of the months April, May, September, and October.

Beneficiaries:

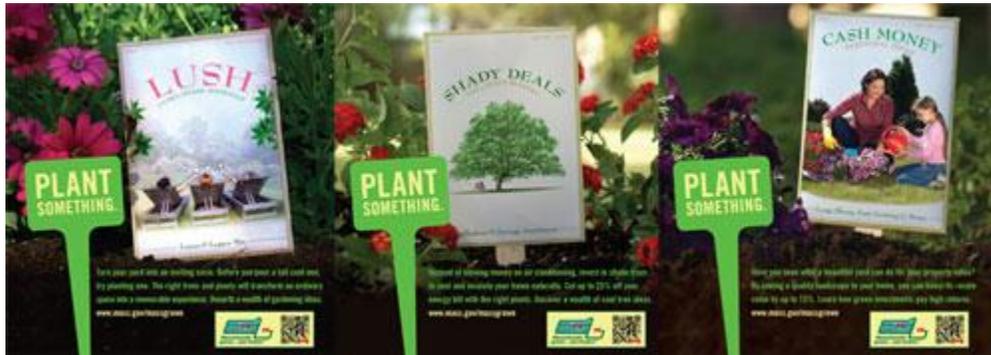
One group of beneficiaries of this program were the commuters, since they were informed about accessing specialty crops in Massachusetts. In addition to this are the many specialty crop producers / businesses that can be accessed through the website www.mass.gov/massgrown.

Web referrals: We received information from two of the associations that participated in the project to see if we increased traffic to their websites. The Flowers growers [“Plant Something” website](#) statistics from the Ag associations ranked us as the top referral (other than search engines), and the [Christmas Tree Association](#) had us 1st in November, and 2nd in December.

Lessons Learned:

There were not real difficulties with this project encountered. With collaboration and matching of funds, we were able to increase the number of posters and reached more than expected commuters seeing the messaging and focus on Specialty crops. We also learned that the QR code usage has not trended higher as much as we had thought. We can’t contribute the entire increase of webpage views to the poster campaign, but we did see a positive spike in collaboration with the “Plant Something” Governor press event.

Additional information (samples of the artwork):



2014 Extension of the Project:

We replicated the 2012 Fall campaign with “Time is Ripe” posters in the Fall of 2014.

We allocated \$10,495 for the production and installation of 160 Commuter Rail Interior Cards.

The number of riders during this period (October and November, 2014) 3,543,840 (North Line – 1,204,400, South – 2,338,040)

We again measured Google analytics for this 2nd time period:

Two different months (October and November) were measured this time. Posters in 2012 installed were installed in September, in 2014, installed in October.

2014: 63,112

2013: 61,172

This equaled a 3.17% increase for the two month over 2011.

Via the mobile qr code 

2014: 40 scans for the two months

2013: 17 scans

This equaled a 121% increase for the two month over 2013, but below the numbers from 2011 & 2012.

Final conclusions:

These attractive posters featuring Specialty Crops helped bring web traffic to the MassGrown website. Once there, the site (screen shots below) featured links to the various types of Specialty Crop farms in Massachusetts along with Specialty crop association websites. Associations confirmed that they saw increased webpage views as a result of referrals from the MassGrown website.

Mass

**Massachusetts
grown...and fresher!**

Your Gateway to MassGrown farm products, specialty foods, and fun ag-tivities!

The MassGrown Map

HOME MASSGROWN MAP LEARN MORE CALENDAR

Pumpkin Pickin' Time!

Massachusetts has over 200 farms with pumpkins and over 60 that offer PVO pumpkins. Time to take a pumpkin pie, or carve it up for Halloween!

[Map of farms »](#)

Cranberry Fun Facts

Cranberries belong to the same family as blueberries and rhododendrons. Along with blueberry and Concord grapes, they are the only fruits native to North America. Massachusetts is the second largest grower of cranberries. Inside the berry there are hollow chambers which allow cranberries to float, so most cranberries are harvested by flooding bogs and collecting berries that float to the top. Cranberries also have antibiotic properties, and are rich in Vitamin C, Vitamin K, manganese, and fiber. Map of cranberry bogs.

Recipe
of the
Month

Spotlight

Food Day

A community event celebrating all things apples in Franklin County. 2013 marks the 18th year of this event and there will be two days (November 2nd and 3rd) of orchard tours, cidermaking and tastings, workshops and much more. This is for all who love apples, fresh or hard cider, apple cuisine, apple orchards or just being in New England in the fall. Details here >

Faces and Places

Brian and Grace Alberg

Brian Alberg, Executive Chef and Director of Food & Beverage at The Red Lion Inn, is a staunch supporter of the local food movement in the Berkshires. He is President of Berkshire Grow, an organization dedicated to promoting the support of local farming and strengthening the relationships between local farmers and restaurants. Click here for more >

Quick Links

- [Farmers' Markets >](#)
- [Pick Your Own Farms >](#)
- [Fairs >](#)
- [CSA Farms >](#)
- [Agri-tourism Farms >](#)
- [Savor Massachusetts >](#)
- [FACES of Agriculture >](#)
- [Wineries >](#)

[NEWSLETTER SIGN-UP >](#)

Massachusetts Department of Agricultural Resources (MDAR)
251 Causeway Street, Boston, MA 02114 | Tel: (617) 625-1700 | Fax: (617) 625-1850
Site Follows | MDAR Home | ECEEA Home

Mass

**Massachusetts
grown...and fresher!**

Your Gateway to MassGrown farm products, specialty foods, and fun ag-tivities!

Result: 83 locations

Sort: by Name by Distance

- Aces Wild Breeding Farm
Plympton, MA
- Apex Orchards
Shelburne, MA
- Alkin's Farm
Amherst, MA
- Astume Hills Orchards
Groton, MA
- Barker's Farmstead
North Andover, MA
- Bartlett's Orchard
Richmond, MA
- Beer Swamp Orchard
Ashfield, MA
- Belton Family Lookout Farm
Natick, MA
- Berlin Orchards
Berlin, MA
- Boston Hill Farm
North Andover, MA
- Brazenzlands Orchards
Warren, MA
- Brookfield Orchards, Inc.
North Brookfield, MA
- Brookley Farm
Peabody, MA
- C.M. Smith Farms, Inc.
East Bridgewater, MA
- Carlson Orchards Inc.
Harvard, MA

[Export List](#)

HOME MASSGROWN MAP LEARN MORE CALENDAR

MASSGROWN MAP

Select Location Type: Any Distance

Crops or Activities: Boston, MA (Address, City or Zip Code)

Search by Name:

Click on the icon to get details and directions.

Farm Stands

Agricultural Fairs

Farmers' Markets

Farm Stays (B&B & Breakfast)

Dairy Farms

Christmas Trees

Green-houses / Nurseries

Pick Your Own

Equine / Fiber / Livestock

Maple Sugar Houses

Aquaculture

Wineries

Organic Farms

CSA Farms

Massachusetts Department of Agricultural Resources
251 Causeway Street, Boston, MA 02114 | Tel: (617) 625-1700 | Fax: (617) 625-1850
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Your Gateway to MassGrown farm products, specialty foods, and fun activities!

The MassGrown Map



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Apple Pickin Time!

Massachusetts has over 130 farms with apples and 79 that offer PYO apples. Find your favorite variety at your nearest orchard!

Read more >

Spotlight

15th Annual Garlic and Arts Fest



The North Quabbin Garlic and Arts Festival (Oct. 5th & 6th) is a celebration of the artistic, agricultural and cultural bounty of the region. The festival emphasizes what is homegrown, handmade and high quality, as well as what helps preserve and support the environment and the community. An engaging, fun and educational celebration for all ages. Details here >

Faces and Places

Glen and Karen Cook



Cider Hill Farm is owned and operated by Glen and Karen Cook who in 1978 bought the farm adjacent to Glen's parents' farm in Amesbury to fulfill their dream of turning it into an apple orchard. Today, three generations tend to the daily chores on their 145 acre farm. Click here for more >

Quick Links

- Farmers' Markets >
- Pick Your Own Farms >
- Fairs >
- CSA Farms >
- Agri-tourism Farms >
- Savor Massachusetts >
- Faces of Agriculture >
- Wineries >



rail interior car card // boston



TITAN

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Contact Person:
Richard LeBlanc
Mass. Department of Agricultural Resources
Richard.LebLANC@state.ma.us
617-626-1759

Exploring Opportunities to Access Specialty Crops at Massachusetts State Parks

Final Performance Report

Applicant: Department of Conservation and Recreation

Project Summary:

To provide visitors of state parks access to specialty crops as well as information on how to best use specialty crops when planning meals and snacks for outdoor recreation and vacation activities. Both DCR and DAR are committed to promoting healthy lifestyles by providing visitors with easy healthy recipes using local, fresh produce.

Background:

DCR believes in healthy parks and healthy people. As part of the agency's campaign to foster health lifestyles, we are encouraging visitors to eat fresh, local specialty crops when camping, hiking or picnicking at a Massachusetts State Park. The Outdoor Kitchen program was specifically designed to show visitors how easy it is to make healthy choices for meals and snacks. The program was originally designed as a Chef Series with professional chefs to demonstrate how to make the recipes. Unfortunately, or fortunately as it turns out, the agency received no proposals from professional chefs or culinary students. Therefore, we were forced to rethink our program and struck upon the idea of making visitors our "chefs." We realigned the budget so that money that would have been spent on chefs was reallocated to provide actual specialty crops to visitors who will have more incentive to replicate these recipes shortly after the demonstration. This approach was even better than the original proposal because of the "hands on" nature of the program.

Each event provided visitors with an overview of specialty crops, a live cooking demonstration, distribution of the recipes, and information on local farmers and crops. Also, at each event we encouraged participants to share some of their own healthy recipes. The project was completed during the summer which is a busiest time of year at the campgrounds and the perfect opportunity to showcase healthy eating and cooking.

Activities Performed and Goals/Targets achieved

The agency conducted 3 cooking demonstrations featuring several recipes with specialty crops at (3) DCR locations statewide in FY2014. Recipes featured meals for camping, picnics and

healthy snacks for hikes. The cooking demonstrations took place on August 6th and 7th at 3 premiere DCR destinations: Myles Standish State Forest in Carver, Scusset Beach State Reservation in Sandwich and Salisbury Beach State Reservation in Salisbury.

The agency purchased fresh produce through a local distributor and provided the first 20 attendees with fresh ingredients to make some of the recipes demonstrated. The agency also purchased cooking utensil kits, zippered totes and recycling bags to provide to the program attendees. Each item featured agency logos and the Outdoor Kitchen Logo.

DCR Staff conducted the demonstrations. Attendance exceeded expectations and ranged from 50-70 people at each program. Each event was very successful and received with great reviews.

A farmers' market or farm stand participated at each event to promote specialty crops and local farming. Farmers sold their produce and encouraged visitors to purchase fresh, local products featured in the distributed recipes. As a result of this grant, options for on-going farm stands or farmers' markets will be explored for these sites next season.

Beneficiaries

During the three events, 180 participants including local Farmers benefitted from the(3) outdoor Cooking Demonstrations. The visitors benefitted from the healthy recipe tips, information from farmers, and ingredients to make health recipes while camping. The Farmers benefitted from the program by informing visitors of the importance of specialty crops in our diets and also taught them about different vegetables and their benefits. The Farmers received glowing approval from our visitors and they were able to sell their crops on site. We did not collect the amount that they sold although it was a worthwhile experience.

Lessons Learned

If we were to do this next year, we would definitely utilize Social Media. We did encourage people to tweet their own creations but we would have added a prize component to the person who the most re-tweets or the first people to tweet out their cooking dish. We did make an impact on those that were in attendance but we could have made a wider impact if we utilized social media.

In addition, we would have promoted DCR parks more at the events and on all materials. We also recognize that data should have been collected demonstrating the amount of crops the farmers were able to sell, to gain after evaluation of our programs.

If we were to keep this program going we would not provide as many ingredients to the public as it was very difficult logistically to keep the food fresh and chilled.

The unexpected result was that we received rave reviews and visitors want the program to return next year. We also exceeded our expectations for the amount of visitors that attended.

Summary of Contributions and Roles of Project Partners:

MDAR provided outreach to area specialty crop growers and farmer representatives to convey the importance of local agriculture and eating healthy fruits and vegetables that are naturally grown.

DCR led the promotional campaign by promoting “Outdoor Kitchen Series” at their designated locations using promotional posters and DCR communication tools (website, Friends Groups).

DCR worked with MDAR throughout the grant period to review program specifics, budget and other details.

Measurable Outcomes:

DCR staff demonstrated cooking with Massachusetts Specialty Crop products at 3 locations and encourages visitors to make these recipes at their campsite, picnic site or home and to buy local.

A survey was developed collaboratively by DCR and DAR (Department of Agricultural Resources)

A visitor’s survey measured whether or not the cooking demonstration, availability of specialty crops at the picnic area or campground, and appropriate recipes influenced visitor’s decision to purchase and cook with specialty crops while picnicking or camping that day and in the future.

Attendees who completed the survey were eligible to receive cooking utensils with Outdoor Kitchen and agency logos (this will provide incentive for surveys to be completed).

In summary, the surveys revealed the following:

Outdoor Kitchen Evaluations Summary:

- Mostly adults attended
- Most people buy specialty crops from a farm/farmer’s market weekly
- People purchase a variety of different things
- Everyone said that they would be more likely to purchase specialty crops after the demonstration
- The most popular recipe was the grilled peaches
- Everyone said they would likely make the featured recipes
- Overall people thought the demonstration was informative and enjoyable. People liked the recipes, the bags, and the farmer’s talk.
- Lots of positive feedback!

Final Performance Report

Applicant: Massachusetts Department of Agricultural Resources (MDAR)

PROJECT SUMMARY

a) Background of the initial purpose of the project, including the specific issue, problem or needs that were addressed by the project.

Provide partial re-imbusement of costs associated with the successful conduct of a successful USDA GAP audit, required by buyers, in order to facilitate a timely and cost effective process to continue the marketing of Massachusetts' Specialty Crops.

b) Description of the importance and timeliness of the project.

This project was important and extremely timely because both the USDA and independent buyers are now asking that farms provide proof of Good Agricultural Practices (GAP) audit verification in order to accept shipments of specialty crop products in Massachusetts.

PROJECT APPROACH

a)

- * MDAR provided support to 19 specialty crop growers under the grant cycle.
- * Re-imburements facilitated several new farms to enter qualified end retail/wholesale channels increasing their annual revenue and diversifying their market channels.

- * Buyers increased their purchase of Massachusetts' specialty crop items due to increased GAP compliance.

The goal of the project was to continue to assist in USDA GAP/GHP certified audits in order to reach the projected 50 participant goal by the end of fiscal year 2013. This was assumed to be a more viable foundation to the current marketing programs currently running promotional plans, such as CQP and Mass Grown and Fresher and would act as a proactive initiative in preparing Massachusetts farmers for future industry requirements.

Applications were processed on a first come first serve basis. No reimbursement was offered for failed audits. GAP education and outreach as well as GAP mock-audit support was conducted during the grant cycle in series with GAP audit requests that are received due to the program cycle.

MDAR fell short of projections and only provided support to 19 specialty crop growers under the grant cycle. Several farms dropped out of the audit program due to falling prices and market churn and the realization of market sizing under the program never qualified.

However, re-imburements did facilitate several new farms to enter qualified end retail/wholesale channels increasing their annual revenue and diversifying their market channels. And buyers also benefitted as they were able to increase their purchase of Massachusetts' specialty crop items due to increased GAP/GHP compliance.

b) If the project benefited commodities other than specialty crops, indicate how the Contractor ensured that grant funds were used only to enhance the competitiveness of specialty crops.

Only specialty crop growers in Massachusetts benefitted from the grant.

c) A summary of the contributions and roles of project partners.

There were no project partners associated with the grant.

GOALS AND OUTCOMES ACHIEVED

a) A description of the activities that were completed in order to achieve the performance goals and measurable outcome.

In addition to the activities completed on the work plan, MDAR participated in several third party sponsored events to promulgate the GAP cost share program under the grant.

b) If the outcomes measured are long term, summarize the progress that has been made toward their achievement.

This project had some short-term outcomes, including the increased procurement of fruit and vegetables purchased, processed and distributed in Massachusetts, as well as long term outcomes, such as the modernization both in infrastructure and operational processes, to comply with GAP and HAACP procedures that has prepared farms for the complex and ever changing specialty crop market(s) requirements of the future.

c) A comparison of actual accomplishments with the goals established for the grant period.

Initially, the project expected 50 growers to sign-up for the GAP/GHP cost share program.

This target was determined based on the 350 growers that attended GAP/GHP education workshops or trainings. Several unforeseeable factors resulted in a lower than anticipated number of sign-ups.

First, buyer demand for GAP/GHP certification was lower than expected, and several buyers have provided growers with a longer time-frame to become certified.

Second, the growing season in Massachusetts delayed the number of growers applying for cost share during the 2011/12 season for USDA GAP/GHP cost shares. It is anticipated that cost share applications, submitted for USDA GAP/GHP audits conducted during the 2012/13 season, will be received during the winter months 13/14 that have drawdown the remaining funds.

Original Goals	Actual Accomplishments
50 growers to sign-up for the GAP/GHP certification during the grant cycle	19 Specialty crop growers

d) Summarize the major successful outcomes of the project in quantifiable terms

- ✓ 19 specialty crop growers were provided reimbursement assistance under the grant
- ✓ New business relationships were made with farmers and buyer networks that will increase exponentially in the short to mid-term future

BENEFICIARIES

a) A description of the groups and other operations that benefited from the completion of this

Project's accomplishments

- ✓ 19 specialty crop growers were provided reimbursement assistance under the grant
- ✓ New business relationships were made with farmers and buyer networks that will increase exponentially in the short to mid-term future.
- ✓ Buyers and specialty crop growers throughout the Commonwealth of Massachusetts benefitted from the grant.
- ✓ Infrastructure and practices were adopted and modernized in the 19 farms that participated in the GAP/GHP audit program.
- ✓ 5 buyers and 19 specialty crop growers

LESSONS LEARNED

- a. First, buyer demand for GAP/GHP certification was lower than expected, and several buyers have provided growers with a longer time-frame to become certified. It is difficult to establish patterns of uptake based on the volatility of specialty crop pricing as well as the economic necessity farms have in maintaining viable revenue models season to season.
- b. Second, the growing season in Massachusetts delayed the number of growers applying for cost share during the 2011/12, 2012/2013 seasons for USDA GAP/GHP cost shares.
- c. The Department assumed that increased education and outreach for the GAP/GHP cost share program for specialty crop producers would accelerate uptake but many specialty

crop producers adopted a “watchful waiting” approach as standards harmonized and FSMA rules were drafted and promulgated for public review.

Contact Information:

Michael Botelho
Commonwealth Quality and GAP Education Director
617-626-1721
Michael.Botelho@state.ma.us

Commonwealth Quality Promotional Starter Kits for Specialty Crop Program Participants

Final Performance Report

Applicant: Massachusetts Department of Agricultural Resources (MDAR)

PROJECT SUMMARY

c) Background of the initial purpose of the project, including the specific issue, problem or needs that were addressed by the project.

Promotional starter kits were developed to promote specialty crop products, qualified under the Departments’ CQP program, at farm stands and retail points of purchase. Growers increased the brand’s usage and consumer acceptance as new packaging and starter kit materials were developed, purchased and deployed under the grant cycle.

d) Description of the importance and timeliness of the project.

The deployment of starter kits has had a positive impact on the Commonwealth Quality Program (CQP) and its participants by identifying products grown utilizing program standards and allowing consumers to identify and purchase local specialty crop products.

PROJECT APPROACH

a) After the successful launch of the Commonwealth Quality Program in 2010 and upon the completion of participant audits during the subsequent calendar year, promotional starter kits were developed and deployed to extend brand awareness through displays at POP locations as well as labels applied directly to product packaging.

The packages connected consumers to participating farms and helped educate the public on the practices that participant farms employ that promote food safety and protect the environment.

Not only did the initiative create both immediate and long-term benefits for participating specialty crop growers, it helped maintain a sustainable market for local producers of specialty crops and educated the public on the best management practices that are being employed at specialty crop producers across the Commonwealth.

The Department will only be distributing these starter kits to those producers that are receiving the Commonwealth Quality standard for a specialty crops.

- * MDAR provided support to over 75 specialty crop growers under the grant cycle.
- * Starter kits increased brand awareness, facilitated several new farms to enter qualified end retail/wholesale channels increasing their annual revenue and diversifying their market channels.
- * Sales were increased, but any data to support this claim, in quantifiable terms, was not able to be collected or analyzed. This is an assumption based on anecdotal information obtained through interviews with program participants.
- * Many program participants were able to enter qualified end retailer channels as buyers did accept the CQP program as an alternative to the USDA GAP/GHP program for small growers. The marketing materials contained in the starter kits were helpful in marketing those specialty crop items audited under the standards of the program.
- * Starter kits increased brand awareness, facilitated several new farms to enter qualified end retail/wholesale channels increasing their annual revenue and diversifying their market channels.

e) If the project benefited commodities other than specialty crops, indicate how the Contractor Ensured that grant funds were used only to enhance the competitiveness of specialty crops.

Only specialty crop growers in Massachusetts benefitted from the grant.

c) A summary of the contributions and roles of project partners.

There were no project partners associated with the grant.

GOALS AND OUTCOMES ACHIEVED

b) A description of the activities that were completed in order to achieve the performance goals and measurable outcome.

The Department has been in constant contact with specialty crop growers who are part of the Commonwealth Quality Program (CQP) or are likely to be enrolled soon. Starter kits have been developed and have been deployed. The Department has produced 90 kits as a result of this specialty crop initiative.

In addition, a suite of practices brochures specific to CQP requirements, have been developed and deployed based on participant input that hi-light the foundations of the program. These include, but not limited to, information on food safety requirements and integrated pest management practices as additions to the starter kit components.

Specialty Crop Growers enrolled in the program are now able to communicate directly with their customers and educate them on the best management practices that they utilize to ensure their products are food-safe and grown, harvested and processed in a way that does not have a negative impact on the environment.

The kits include the following items:

1. One roll of CQP stickers including each member(s) unique serial number and a space for inclusion of each members QR code.
2. PVC price cards in both small and large sizes. (25 each)
3. Vehicle magnets (2)
4. Program Brochures (50) with brochure holders (2)
5. Posters (10)
6. CD Rom which includes promotional video, QR code, and electronic files to support integration of unique CQP label into participant's marketing materials.
7. Farm stand –Register POP/POS CQP PVC Sign (1)
8. CQP Integrated Pest Management Brochure (100)
9. CQP Food Safety on the Farm Brochure (100)
10. CQP Soil Conservation & Practices Brochure (100)
11. CQP Water Conservation Practices (100)

b) If the outcomes measured are long term, summarize the progress that has been made toward their achievement.

This project had some short-term outcomes, including the communication of food safety and best management practices currently being adopted by fruit and vegetables purchased, processed and distributed in Massachusetts, as well as long term outcomes, such as the modernization both in infrastructure and operational processes, to comply with CQP, GAP and HAACP procedures that has prepared farms for the complex and ever changing specialty crop market(s) requirements of the future.

f) A comparison of actual accomplishments with the goals established for the grant period.

All goals established under the grant request and operational cycle were completed. An analysis of deployed materials was conducted and the majority of participants were utilizing starter kit materials with their marketing channels and promotional activities.

g) Summarize the major successful outcomes of the project in quantifiable terms

The following materials were deployed to over 90 specialty crop, CQP certified growers, under the grant cycle.

1. One roll of CQP stickers including each member(s) unique serial number and a space for inclusion of each members QR code.
2. PVC price cards in both small and large sizes. (25 each)
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11. CQP Water Conservation Practices (100)

BENEFICIARIES

a) A description of the groups and other operations that benefited from the completion of this Projects accomplishments

Consumers, buyers and specialty crop growers throughout the Commonwealth of Massachusetts. In particular the 90 participants in the CQP program.

LESSONS LEARNED

Although the project anticipated a 10-15% increase in price points, the Department realized that this increase would be difficult to achieve given constraints in market pricing of specialty crops.

Furthermore, the program was not able to attract 40 additional members to the program (there are currently 97 specialty crops producers in CQP). This was mainly due to operational constraints.

In order to maintain the requirements of the program, and adequately provide support to the current membership base, program participation has not increased dramatically.

However, given the additional staff time available and presence at tradeshow and workshops, the number of participants is expected to increase in the coming seasons.

Contact Information:

Michael Botelho
Commonwealth Quality and GAP Education Director
617-626-1721
Michael.Botelho@state.ma.us