Rhode Island Department of Environmental Management
Division of Agriculture (RIDAG)

FINAL REPORT
Specialty Crop Block Grant
14-SCBGP-RI-0044

September 30, 2014 – September 29, 2017

Grant Request $ 255,543.19

CONTACT

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Food Safety: From Farming to Direct Marketing

Project Director: Lori F. Pivarnik, Ph.D.

Award No./Total Award 14-SCBGP-RI0044/$37,752.00

Project Award: April 1, 2015 to September 30, 2017

Project Summary – Background, Importance

The overall project goal was to expand and help maintain RI agricultural viability through the following specific objectives: 1) offering Good Agricultural Practices training to RI farmers, with an outreach effort emphasis that also target those that may not be interested in official certification; 2) continuing official RIGAP certification and yearly recertification program; 3) offering advanced programming to current RIGAP farmers to meet buyers requirements; 4) updating farmers regarding new food safety regulations and their impact; 5) continuing to engage farmer's market managers in food safety training to enhance safety specialty crops sold; 6) beginning to engage farmer's market produce vendors regarding safe produce handling and hygienic practices and 7) implementing an on-line, knowledge based survey to RI farmers regarding on-farm food safety practices. The importance of these objectives are self-evident as the issues related to produce safety has continued, buyers are demanding assurances of on-farm food safety practices, regulatory requirements are being enacted through phased-in implementation and the "buy local" movement continues to gain popularity.

The project work plan not only included efforts to attract new growers to the RIGAP program and recertify current growers but to strongly encourage RI farmers to use GAP training as an opportunity to enhance food safety on their farms. Many RI farmers direct their marketing efforts to consumers through on-farm retail (roadside stands) and/or pick-your-own operations and local farmer's markets. While the majority of farmers engage in direct sales to the consumers through these venues, RI farmers also engage in a variety of marketing opportunities including regional/local grocery stores, restaurants school food service operations and wholesale/distributors– requiring a variety of food safety assurances. Outreach efforts to encourage participation in GAP training and engage RI farmers in implementing food safety practices must be a priority. Most of RI farmers will probably be exempt from the Produce Safety Rule (PSR) produce safety standards that were promulgated by the FDA Food Safety Modernization Act (FSMA) (combination of gross sales, sales radius and degree of direct marketing to qualified end users). RI farmers could continue to focus their direct marketing efforts to roadside stands and farmers market. However, any wholesale and/or direct marketing to venues like restaurants, grocery stores or schools will require food safety knowledge and implementation of on-farm food safety strategies. Some buyers may require PSR "compliance" even if the farmer has a qualified exemption per the regulation. Awareness

of regulatory requirements and potential buyer expectations would be key to growth, as well as implementation of on-farm food safety strategies. Therefore, RI farmers will be offered "advanced GAP" training in an effort to enhance awareness of potential regulatory impacts and buyer requirements.

Finally, produce food safety training does not begin and end on the farm but is from "farm to fork". With Farmers' Markets gaining in popularity as part of the local food movement, food safety outreach training would need to include market vendors. Efforts should be made to target this audience to ensure the safety of RI locally grown crops.

This project complimented and enhanced previous work. While the project continued to expand its GAP training to new farmer participants, it expanded its objectives to enhance produce food safety. The outreach efforts continue to all farmers in Rhode Island. The RI GAP program was enhanced by reaching out to all existing trained farmers with advanced information. In addition, a new audience, farmer specialty crop vendors was targeted for outreach efforts to continue the food safety "chain" from growing to direct marketing with new resources created. Per objectives, this also included updating farmers about the new FSMA Produce Safety Regulations

Project Approach

The RI GAP program and outreach to farmers and other audiences has been successful due to the on-going partnership between URI and RI DEM/Division of Agriculture. This collaboration for implementation of RIGAP has been in place for 14 years. Responsibilities are shared equally with URI administering training and outreach efforts and RI DEM managing the on-site audit and issuing yearly certificates. The project partners have met at 1-2 times/year to review the status of the program and the program resource materials – including the RIGAP audit and to address any issues of concern. In addition, updates regarding the status of growers during the growing season are made regularly by the RIDEM RIGAP inspector via telephone, e-mail or in person. Members of the project team communicate on a regular basis about project activities. The agricultural specialist is available for on-farm visits and consultations and interfaces with other target audiences (e.g. market managers, market vendors) to communicate the importance of produce safety practices. In addition, collaboration with the University of Connecticut Food Safety Extension Specialist has added greater depth to the Rhode Island training efforts. This approach of communication, education and collaboration has served this partnership well and resulted in an extremely successful program to help growers and sellers of specialty crops ensure the safety of locally grown produce..

This project was very successful in accomplishing all the activities/tasks that were delineated in the proposal. The following work and results were accomplished:

- Advisory group meetings were conducted.
    - The audit and guidelines were reviewed and modified annually to reflect a more rigorous approach to some key critical issues. Current RI GAP farmers were mailed new audit forms each year, with detailed explanation of changes, in preparation for the current year's audit.

- As previously reported and illustrated, a "rack card" that was designed was manufactured and distributed to all RI GAP farmers. This proved to be popular as it integrated the messages of a RI GAP certified grower with that of food safety is everyone's responsibility – grower, government and consumer. The card also had suggestions to consumers on how could keep their farm fresh produce safe at home.

- In addition to announcements of RI GAP and food safety plan workshops, farmer outreach efforts were on-going. The Agriculture Specialist spent time expanding farmer outreach through multiple mailings to the entire farmer community and to trained and certified growers as well as on-farm assistance.

GAP Training offered 2 times and advanced GAP training and beneficiaries of training:

- Following RI GAP and food safety plan trainings and curriculum revisions were completed as well as advanced programs and updates during this reporting period:
    - Revisions to the RI GAP curricula were ongoing. The biggest change was implemented toward the end of the project when key RI GAP curriculum components were integrated into the Produce Safety Alliance training for Produce Safety Rule compliance. All farmers – those that need compliance with the rule and those only interested in RI GAP certification – participate in the same training with key components targeted at the farmers desiring GAP certification. The audiences were combined to 1) facilitate training and 2) fulfill the objectives of this project as to educating the RI GAP farmers about regulatory expectations.

    - RI GAP training (#1) – Scheduled training took place March 23, 2016. The 12 attendees included 5 farmers (representing 4 RI farms), 4 people from RI Department of Health/Division of Food Protection, 2 people from the RI Incubator Kitchen, and 1 person from Food Service purveyor. Evaluation of overall understanding was rated 4.15 out of a Likert scale of 1 to 5 (strongly agree) (N=10). Evaluations explained in detail in project proposal.

    - RI Training for development of on-farm food safety plans (advanced GAP) was completed on March 30, 2016. There were 9 attendees that included 5 farmers (representing 4 farms), 1 person from the RI Incubator Kitchen and 3 people from RI Department of Health/Division of Food Protection. Evaluations on understanding key concepts as 4.35 on a Likert scale of 1 to 5 (N=9).

    - FSMA Update workshop was offered on March 15, 2016. Presentations included FSMA updates on both the FDA Produce Safety Rule and the FDA Preventive Controls Rule. There were 63 attendees that included

farmers, state government regulators, farm-related operations and processors.

- A joint PSR/RI GAP training **(#2)** took place on March 22-23, 2016. Of those that attended (N=31; farmers, regulatory), 11 had not attended GAP or produce safety training previously. As a result of this training, three (3) of Rhode Island's larger farms are now part of the RI GAP certification program. Evaluations indicated an increase in knowledge surrounding the key produce safety concepts (4.14 out of 5, with 5 reflecting strong agreement in knowledge gain).

- Finally, the comprehensive e-mail list of farmers and mailing labels, as well as the RI GAP farmer listserve, was continuously updated for efficient communication efforts that included announcement of trainings and other information and updates – particularly regarding FSMA and PSR compliance.

GAP Certification and recertification and beneficiaries of certification:

- Yearly recertification for RI GAP certified farms was completed in each year of the project with the fall of 2017 for the 2018 growing season just concluded as of the reporting period. There was a loss of 4-5 farms due to sale of a farm (to a RI GAP grower) or simply opting out of the program due limited growing for sales. Currently there are 34 RI GAP certified farms but this group now contains most of the larger growers in RI. The Agriculture specialist completed pre-inspection visits to new farms prior to official certification inspections by RIDEM/Division of Agriculture personnel.

Market Manager and Vendor Training designed and implemented

- Market manager and vendor outreach.
  Presentation to market vendors regarding safe produce handling and hygienic practices was completed and offered, along with as second market manager training, on June 23, 2016. Training was announced at the annual RI Farmer's market meeting. Unfortunately, there were only a few attendees. However, expansion to the vendors was not as successful as hoped.
  - The presentations were recorded and posted on a new landing page created by Ms. Lanterman off the main URI Food Safety website were managers and vendors could stream food safety presentations. Since there were only a few attendees, these recordings were posted at the request of members of the target audience.
  - Additional resources were created and also posted on the website http://web.uri.edu/foodsafety/food-safety-for-farmers-market/:
    - Decision Making Tool: What Licensure Do I need at a RI Farmer's Market?

        - Guidelines for food safety practices as farmers' markets.
        - A Food safety Assessment Tool for RI Farmer's Market Managers -checklist
    - In an effort to attract vendors, Ms. Lanterman will be working with Farm Fresh RI, a large RI food hub, to help get the website information to the vendors and to offer another face-to-face presentation to vendors and managers and attracting more vendor interest/participation. In addition, Ms. Lanterman has communicated that she would be willing to work one on one with individual markets versus a larger forum.

Farmer Survey – modification from original objective

- On-line survey.
  As stated in a previous project report, one of the objectives regarding the survey of RI farmer knowledge was not implemented through this program. After the Specialty Grant was written, a second larger grant was submitted with the entire NE region. This was funded after the Specialty Grant was already in place. This larger grant included a needs assessment survey for farmers in the region and included knowledge, attitude and economic assessments. Of the respondents, 37 out of 300 NE regional respondents were from RI. It was our judgement that a second, much smaller survey that was part of this project was not warranted. The larger initiative had 43 knowledge-based items with average score of 77% for the region and 77% for Rhode Island participants. It appears the food safety GAP outreach program has had a significant impact. In its place, project director and agricultural specialist decided to do a survey of RI GAP certified growers concerning the resources we provide – signage, thermometers, marketing – and their usefulness as well as the impact of the RIGAP program on their business. The survey was sent to the current 35 RI GAP farmers February 2017. Of those that responded (N=8 or 23%), all indicated that the RI GAP program had benefitted their business. Fifty percent or more indicated that the program increased sales, allowed sales to RI schools and/or restaurants. Other choices included new customers, ability to sell to supermarkets and retention of existing customers. Furthermore, at the time of survey implementation, 85% of those that responded indicated their interest in attending a 2 day workshop that would fulfill the FDA-FSMA/PSR requirement for training. Finally, as a RI GAP farmer, a variety of consumer marketing and on-farm resources were provided. Respondents found the RI GAP sign, handwashing signage, RI GAP kitchen magnet, produce handling magnet and refrigerator thermometer the most useful.

Goals and Outcomes Achieved

With the exception of the on-line survey, all goals and outcomes identified in the project narrative were achieved as written. The farmer outreach program has had significant impact, as delineated in this final report and will continue. With regard to the on-line survey, the information targeted by this objective was able to be gathered by

another project (as explained) and another on-line survey, revealing important information for programming, was implemented and data analyzed. Programming and resources for market vendors were developed but not as successful as hoped. The project director and agricultural specialist will continue working to reach this audience. Initial market managers training had begun under a previous a Specialty Crop project and expansion did not attract many additional managers. URI personnel may have communicated with the majority already.

Beneficiaries

The potential beneficiaries of this program include farmers, school food service directors and, ultimately school children. In addition, by expanding outreach to farmers' markets, RI consumers benefit from an expanded network of food safety practices – from farm to table. There were approximately 130 beneficiaries that were impacted by completion of specific objectives of this project.

Lessons Learned

The lessons learned from previous projects have helped to successfully expand the RI GAP program. The success of this project – particularly targeting farmers and regulatory personnel – only succeeded due to the collaborations with RIDEM/Division of Agriculture and the support of RIDOH/Center for Food Protection. However targeting additional audiences, Farmer's Market Vendors, specifically, will require new partnerships if expanded programming is to be successful.

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Final Report

NOFA RHODE ISLAND

Via Electronic Mail

Outreach, Education, and Technical Assistance to Increase Production and Consumption of Certified Organic Specialty Crops in Rhode Island

USDA Specialty Crop Block Grant Program
RI DEM, Division of Agriculture 14-SCBG-RI-0044
(NOFA /RI Contract #011-022)
April 1, 2015 – September 30, 2017

Revised Submittal January 22, 2018 by
Northeast Organic Farming Association of Rhode Island (NOFA /RI)

Project Title: Outreach, Education, and Technical Assistance to Increase Production and Consumption of Certified Organic Specialty Crops in Rhode Island

Final Report

Project Summary

This project enhanced the competitiveness of certified organic specialty crops in Rhode Island by providing assistance and support to farmers, while also putting into action an outreach and education program for the public on the benefits of buying and eating organic specialty crops.

A growing number of Rhode Island farmers are interested in increasing the yields and value of their crops while reducing their reliance on chemical inputs, but lack the experience and knowledge to do so. NOFA/RI worked to fill this gap by providing technical support to farmers in a range of areas including building soil quality with cover crops, whole farm planning, and pest control management. This project consisted of using local farm advisors to provide this technical support, links to sources for organic materials needed on the farm, and information to help farmers certify their specialty crops as organic or transition to using organic methods on their farms.

Furthermore, to increase consumer awareness of the benefits of buying organics and increase demand for organic specialty crops, NOFA/RI conducted a multi-tiered approach of publicity, outreach and education. Our publicity /outreach approach involved direct contact with consumers at Farmers Markets and other venues, as well as email newsletter, Webpage links, print formats and participation in events. Activities and efforts for publicizing specific programs for SC farmers were functionally combined with consumer outreach and education efforts.

Also, of note, the Farm Advisor program element builds on previously funded projects NOFA/RI conducted from 2010 through 2017 through a series of Specialty Crop Block Grants. This project complimented and enhanced previous work specifically by providing assistance in the organic certification process and supplementing the approach to assistance to include on-call and on-line resources as well as farm advise partnerships.

Project Approach

NOFA implemented four elements designed to help farmers gain organic certification or adopt organic methods and to educate on the benefits of buying organic and where to buy organic and thereby increasing consumption of organic specialty crops in Rhode Island.

The four elements included an Advisor Program to provide technical support to farmers, access to On-call Advisors (intended to address specific questions that don't require a site visit or ongoing mentor relationship), compiling an Organic Material Source list as a resource highlighting approved organic materials and sources for farm and garden use, and a Publicity, Education & Outreach component to reach out to farmers and consumers of specialty crops.

Table 1: Overview of Program Elements and Actions

Program Element	Program Actions
Advisor Program.	✓ Contracted an Advisor Coordinator ✓ Contracted 6 Experienced local Farm Advisors ✓ Program publicized on webpage, e news, press release, and print. ✓ Web-page specific to Farm Advisor program ✓ Web-page updated with Organic Certification links from RI DEM ✓ Web-page updated with Organic Certification help from USDA
On-Call Advisors.	✓ 6 Farm Advisors (above) available to provide free assistance to farmers for short term assistance. ✓ Publicized as above.
Organic Materials Source Listing	✓ A list of sources for organic materials was compiled. ✓ Web-page: specific page for organic material sources.
Publicity, Education & Outreach To promote benefits of buying and eating Organics and to inform crop farmers of relevant SC programs and to promote RI Organic SC farms.	✓ Contracted publicity coordinator ✓ E news, email campaigns, Facebook and twitter to promote SC ✓ Web-page: specific page for consumers to locate organic farms ✓ Web-page: specific links to organic farms CSAs and farm stores ✓ Web-page: blog to highlight RI organic farm news and events ✓ Direct consumer contact at Farmers Markets, RI Ag Day, Washington Co. Fair ✓ Various Print and Flyer formats: Buy Local, Buy Organic Pocket Guide, post cards, flyers, and presentations. ✓ Buy Organic – promotional cotton bags purchased to be distributed

Note: Publicity was functionally combined with Education & Outreach to avoid duplication of tasks.

To ensure that SCBG funds are expended on activities and costs that solely enhance the competitiveness of the of eligible specialty crops, hours expended and project costs are documented for all program elements and reviewed by the NOFA/RI Board members to be in accordance with grant guidelines. In addition, the NOFA/RI Board and Farm Advisor Coordinator approves the participating farms and advisor partnerships are producers of specialty crops.

Goals and Outcomes Achieved

This project succeeded in meeting all of the targeted goals and outcomes with the exception of expected number of on-call advise calls.

The Advisor program had successful partnerships and outcomes as documented by evaluations. The evaluations indicated that the participating farmers planned to use the techniques learned to increase or improve specialty crop production. Two farmers responded that they will use methods learned to begin commercial specialty crop production. All farmers responding indicated they felt the program was very valuable.

Table 2: Outcomes Achieved

Accomplishment	Relative to objectives, Outcome and or Indicator
Advisor Program Working with 4 Farmers • Warren Community Farm • Brent DeRosier, beginning farmer • Urban Edge Farm • Jamestown Community Farm	✓ Met target of 4 Partner relationships ✓ 2 farmers responded they plan to use techniques learned to increase or improve specialty crop (SC) production. ✓ 1 farmer responded they plan to use techniques learned to begin commercial SC projection.
On- Call Advise (Call or Email) • RI Mushroom Co. • Greenvale Vineyards	✓ 6 of 15 Calls for assistance / advise (goal was revised to 15 in December 2015 report) ✓ 1 responded will plan to use techniques learned to begin commercial SC production.
Organic Materials- Resource List	✓ Completed and posted. Original target of mailing to 12 individuals was revised to on-line posting available to all.
Publicity, Education & Outreach	✓ Publicity coordinator hired for web based and traditional formats. ✓ Used range of formats to publicize SC programs to farmers and public ✓ Exceeded over 200 consumer contacts at numerous events ✓ 876 Followers on Facebook ✓ 80 visits average per day on website ✓ 289 average views on monthly e news.

Another indicator showing the effectiveness and continued need for projects like this is the increased number of specialty crop farms in RI that are certified organic or listed as "chemical free", "some organic", or "IPM" (integrated pest management). This indicator was tracked based on a review of the Farm Fresh RI website which documents such data for RI farms. The table below shows a continued increase (+19%) in the total number of farms using chemical free, some organic or IPM methods.

Table 3: RI Specialty Crop Farms Certified Organic /Free or Partial Chemical / IPM

Year	2010	2011	2013	2015	2017
Chemical Free	18	50	69	74	91
Certified Organic	Data not available	25	20	22	22
Some Organic	Data not available	8	8	9	8
IPM	6	14	18	20	24

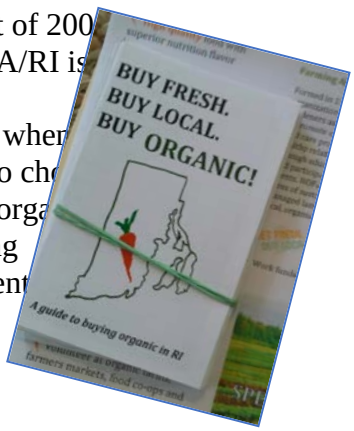
In regards to reaching goals in education and outreach, this project has helped Rhode Island consumers connect the dots between what they eat and their health and where to purchase organic specialty crops in RI (as tracked by number of website hits to "Looking for a CSA" and "Farmer's Markets Guides"). Polling trends report that the number one reason people go organic is to avoid pesticides and chemicals. This reflects a population educated on the benefits of eating organics. In fact, Rhode Islanders are eating more organic food than ever as documented by several studies, including the recently released USDA National Agriculture Statistics Service (NASS) 2016 Certified Organic Survey Report documenting increases in RI sales of organic specialty crops as well as organic farms and acres of cropland.

The USDA reports that organic products have shifted from being a lifestyle choice for a small share of consumers to being consumed at least occasionally by a majority of Americans (USDA Economic Research Service 2017). According to the Organic Trade Association 88% of RI households purchase organic products, with food accounting for the vast majority of those sales. This is also supported by data that show 80% of organic farms sell directly to consumers, through CSAs, farm stands and farmers markets.

Beneficiaries

This project benefits Rhode Island specialty crop farmers using or transiting to organic methods and RI consumers of organic specialty crops. The Farm Advisor and On-Call Advisor program provided technical support and advise to Rhode Island farmers, specifically 6 farms participated and were beneficiaries of these programs. In addition, dozens of farmers and growers used the Organic Material Source list to purchase organic supplies through the NOFA/ RI bulk order program.

The education and outreach elements of the program reached well over the target of 200 direct face to face consumer contacts. In addition, NOFA/RI is poise to distribute reusable canvas shopping bags to 100 consumers for use. Results from a recent study indicate when shoppers brought their own bag, they were more likely to ch organic products–from milk to yogurt to kale–over non-orga probably because the bag makes people think about being "green" or "good," and buying organic food is a consistent choice to make.



Webpage visits at nofari.org average 80 per day and our Facebook page has 876 followers. We often post two webpage blogs per month as well as two e news campaigns per month with relevant information for farmers and consumers. (see Additional Information for a sample of blog topics). Our Enews audience list grew from 718 emails at the start of the project to 1034 emails with an average open rate of 28.1 % (which is above the industry average of 20%).

Lessons Learned

A long term, multi-faceted approach is needed to meet the challenges in supporting farmers seeking to move from traditional farming to organic methods, as well as influencing consumer buying and eating habits in favor of organic specialty crops.

In the early phases of the project, we identified some challenges with some of our targets and approach and adjusted accordingly.

Table 4: Lessons Learned Summary

Program Element	Lessons Learned
Advisor Program	We found our on-farm workshops were a great venue to connect with farmers and promote this program. We continually sought various avenues to advertise so farmers would be aware of the program and also worked to overcome traditional channels of getting advice from friend's neighbor farms.
On- Call Advisors	As above, it was challenging to motivate farmers to seek assistance through a structured program especially when reaching out for quick answer or support. We revised goal from 30 calls to 15. In addition, for calls that we did address, the questions were too specific and not suitable to use on website as FAQs as we had originally planned.
Organic Materials Source List	Original scope was to only print and mail to 12 individuals. This wasted resources & limited our ability to reach a larger number of individuals by having the list on line. A change was made to post on line and not mail.
Publicity, Education & Outreach	In May, 2016 we requested a shift in outreach efforts to refocus the majority of our activities to on-line content, while still engaging in some direct face-to-face contact. A no-cost extension was requested March 2017 in order to complete on-going outreach activities.

In regards to the Advisor Program, the evaluation responses have shown the merit, worth and significance of this program to farmers. However, despite the clear benefits of the program, we struggled with getting farmers to sign up for or even inquire about the program. We changed some of our marketing from a "Need Help" approach to promoting a "farmer to farmer" partnership. We also found a better response when we engaged famers directly at our on-farm workshops and promoted the Advisor program.

However, we noted direct engagement did not work in all settings. At a larger venue, such as of our Winter Conference there was not a single inquiry.

In regards to lessons learned for consumer outreach we feel we have only begun to tap into avenues and opportunities to educate and engage the consumers with the benefits of eating organics and thereby increasing demand for organic specialty crops. While many consumers feel good "buying local", many are still unaware they may not be buying certified organic, or "chemical free" produce and we feel strongly that continued outreach is needed to educate on this important distinction.

In conclusion, the effectiveness of this program and of similar programs demonstrate the benefits to providing support to RI specialty crop farmers interested in increasing the yields and value of their crops while reducing their reliance on chemical inputs. In addition, while more Rhode Island consumers than ever are buying organic food, and the organic market has grown, it still has large growth potential. Continued consumer education and outreach programs are needed to increase consumer awareness of the benefits of buying organics and increase demand for organic specialty crops.

Grant Administration

Advisor Program	$510.29
On- Call Advise (Call or Email)	$142.50
Organic Materials- Resource List	$1452.
Education & Outreach	$5868.19
Publicity	$1583.17
Indirect	$800
TOTAL	$10,356.15

Contact Person

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Additional Information

Advisor Program and On-Call Advisor Program Farm Partnerships

- Warren Community Farm, grows produce for donation and sale to the food-insecure community, received assistance in whole farm planning and prepared a new field to begin productions.
- Brent DeRosier, a landowner, received assistance in evaluating his land for potential to produce specialty crops.
- Urban Edge Farm, an incubator farm, received assistance in preparing neglected fields for production and building soil quality with cover crops.
- Jamestown community Farm, grows produce to be donated to organizations that distribute it to the food-insecure community, received assistance with building soil quality with cover crops.
- The RI Mushroom Co. called for advice on organic cleaning agents and certification.
- Greenvale Vineyards call for advice on soil quality and composting, and for questions on hops growing, as well as follow ups with cover crops, beekeeping and cut flower production.

NOFA/RI Webpages with Support Links for Organic Material List and Information to help farmers transition to or certify as organic:

Organic Farm Advisors:
http://nofari.org/organic/organic-farm-advisors/#.WamiHa0-Ick
Organic Materials Resource List:
http://nofari.org/organic/organic-resource-guide/#.Wa9dL60-Ick
Organic Certification:
http://nofari.org/resources/ri-organic-certification-program/#.Wamida0-Ick
RI Organic Certification References:
http://nofari.org/organic/organic-certification-guides/#.WamiUa0-Ick

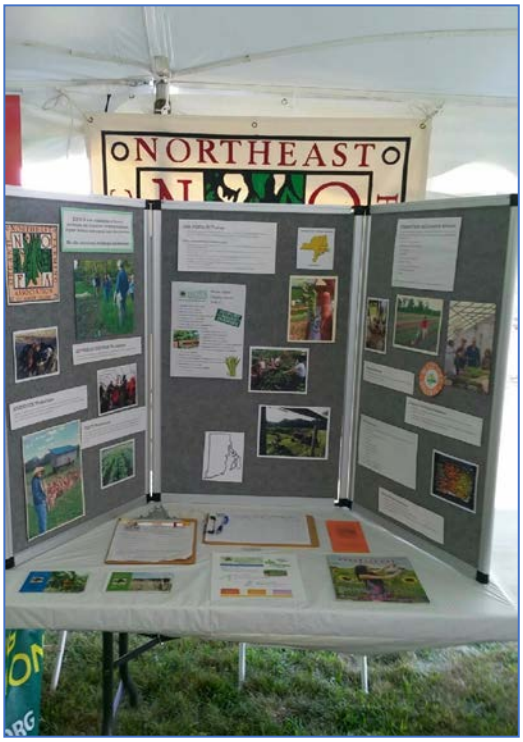
NOFA/ RI Webpages for Consumers to Find Organic Farms and Buy Organics

RI Map to Organic Farms and Buy Local/Buy Organic Guide
http://nofari.org/organic/organic-farms-map-pocket-guide/#.Wamh6q0-Ick

Sample of Blog and enews Articles Published during Project:

- Farmer to Farmer (promoting the Farm Advisor Program)
- Looking for a CSA
- TV Series Harvesting Rhode Island Spotlights Organic Farms
- NRCS Financial & Technical Assistance Available
- LT. Governor 39 Farm Tour Highlights Organic Farms

- Promoting Rhode Island Agriculture Day
- Organics & a Healthy You
- RI Certified Organic Farms Map

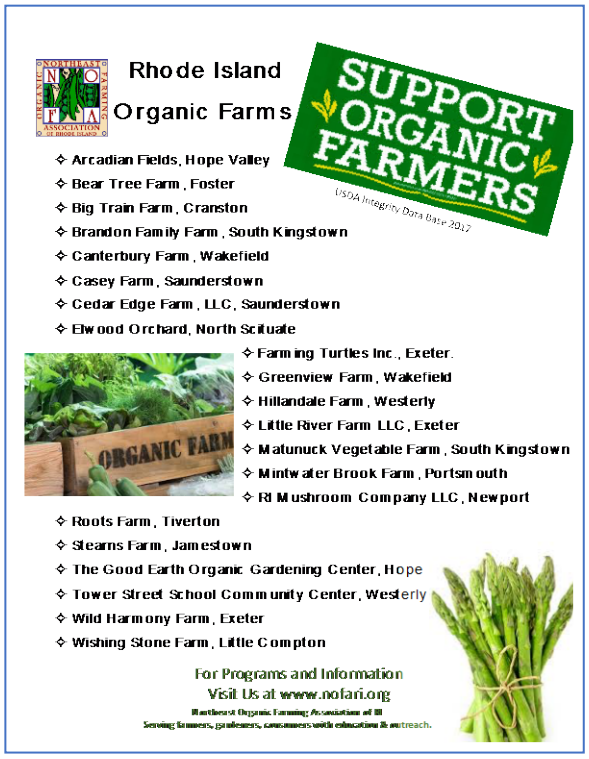


Consumer Outreach Venues with Direct Face-to-Face or Talk time Contact:

- Agriculture Day at the RI State House May 2015
- Agriculture Day at the RI State House May 2016
- Agriculture Day at the RI State House May 2017
- Washington Co. Fair August 2015
- Washington Co. Fair August 2016
- Farmers Market – Pawtucket Farmers Market (Distributing Buy Local / Buy Organic Guides)
- Farmers Market – Hope & Main (promoted on 8/17 Facebook)

Example of NOFA/RI Display (Left). Buy Fresh, Buy Local, Buy Organic Guide compiled and distributed by NOFA/RI at events (below).

EXAMPLES OF PRINT PROMOTIONAL OUTREACH MATERIAL



Research Documentation supporting distributing reusable grocery bags:

Reusable Grocery Bags Make You More Likely To Buy Organi
By Adele Peters, Fastcompany. 4/14/2015
When shoppers in the study brought their own bag, they were more likely to choose organic products–from milk to yogurt to kale–over non-organic, probably because the bag makes people think about being "green" or "good," and buying organic food is a consistent choice to make.
The research, from Uma Karmarkar, an assistant professor at Harvard Business School, and Bryan Bollinger, an assistant professor at Duke University's Fuqua School of Business (2014, BYOB: How Bringing your own shopping bags leads to treating yourself, and the Environment. HBS).

Americans Are Eating More Organic Food Than Ever, Survey Finds

Americans are buying more organic food and household products than ever, according to a new survey.

USDA 2015 Certified Organic Survey - released September 15, 2016

Americans' views about and consumption of organic foods - Pew Internet

www.pewinternet.org/.../americans-views-about-and-consumption-of-organic-foods/

Organic food sales soar as shoppers put quality before price ...

https://www.theguardian.com › Environment › Organics

Feb 19, 2017 - ***Demand*** for ***organic*** food is at its highest for ***more than a decade***

Apr 29, 2017 - **Demand** for **organic** food sales continues to **increase** ... that is why we **have** focused on expanding our line of **organic** products like the **organic** ...

demand for organic food sales continues to increase | The Packer

www.thepacker.com/marketing.../organic.../demand-organic-food-sales-continues-inc...

The 10 American Cities Most Obsessed With Eating Organic Food

By Kate Bratskeir

http://www.huffingtonpost.com/section/taste

Providence, RI number 3 on the list.

Grant Report
for
State of Rhode Island and Providence Plantations
Department of Environmental Management

Final Report

New Urban Farmers
569 Main Street - Warren, RI 02885

GRANT REPORT FOR RIDEM Contract # 014-022

Grant Period April 1, 2014 – September 31, 2016

Project Title:
"BRIDGE TO HEALTH/EL PUENTE A LA SALUD"

□ **Provide a background for the initial purpose of the project, which includes the specific issue, problem, or need that was addressed by this project.**

New Urban Farmers (NUF) provided various programing with a three pronged program strategy to promote the use of specialty crops to help address obesity and diet related issues amongst the population we served. NUF provided various hands on demonstrations and workshops promoting the use of specialty crops, because eating local specialty crops makes both a healthy person and healthy farm economy. We did this by way of a pop-up farmer's market to make specialty crops available from farm-to-table, workshops and demonstrations where people could learn about preparing meals using specialty crops and helping people access to community gardens space to further promote the integration of specialty crops into their daily diets. The expected outcomes from our outreach and programing are (1) increased awareness of specialty crops, (2) increased use of specialty crops in people's daily diet, (3) increased access to specialty crops, (4) expansion of a pop-up farmer's market, and (5) decreased rates of obesity and diet related issues amongst participates over time.

Our major programing consisted of pop-up farmer's market, educational workshops and demonstrations, and connecting residents to community gardens and support on how to grow food which we called the Bridge to Health.

□ **Describe the importance and timeliness of the project.**

The Bridge to Health project was an important project in which we worked directly in the community creating both access and education opportunities to teach about specialty crops. Specialty crops are vital and by having a project solely based around specialty crops allows for higher consumption and a better outlook towards the use and access of specialty crops. Another importantfactor to the Bridge to Health project is that it used varied programing to reach people of all ages in regards to specialty crops by way of access or education. The Bridge to Health project finished in a timely manner fulfilling the goals intended for the project period.

□ **If the project built on a previously funded project with the SCBGP or SCBGP-FB describe how this project complemented and enhanced previously completed work.**

The Bridge to Health project/grant was not built with any previously funded funds with the SCBGP or SCBGP-FB programs(s).

PROJECT APPROACH

□ **Briefly summarize activities and tasks performed during the entire grant period. Whenever possible, describe the work accomplished in both quantitative and qualitative terms. Specifically, discuss the tasks provided in the Work Plan of the approved project proposal. Include the significant results, accomplishments, conclusions and recommendations. Include favorable or unusual developments.**

Pop -up farmer's markets are mobile markets

Pop-up farmer's market 2015 season:

New Urban Farmers' pop-up market was held on-site at a senior housing community at the Warren Housing Authority. The pop-up market was held at the Warren Senior center on a weekly basis that was an extension of the summer seasonal market for early winter season market from October to November Fall markets in the 2015 season. The market allowed for direct access to locally grown specialty crops to senior citizens, a group which can typically have a more difficult time getting to and from grocery stores or farmer's markets. New Urban Farmers saw a large increase in senior citizens shopping the market over the course of the the pop-up market 2015 season. The pop-up markets where typically 2 hours long at the Senior Center. The first market had 62 individual sales made and the peak amount in mid-summer was 102 individual sales.

Pop-up farmer's market 2016 season:

New Urban Farmers' pop-up market was held on-site at a senior housing community at the Warren Housing Authority. The pop-up market was held at the Warren Senior center on a weekly basis starting in July and ran into October for 12 markets in the 2015 season. The market allowed for direct access

to locally grown specialty crops to senior citizens, a group which can typically have a more difficult time getting to and from grocery stores or farmer's markets. New Urban Farmers saw a large increase in senior citizens shopping the market over the course of the the pop-up market 2015 season. The pop-up markets where typically 2 hours long at the Senior Center. The first market had 62 individual sales made and the peak amount in mid-summer was 102 individual sales and then leveled off to an average of about 80 individual sales per pop-up market in the fall/winter season.

Educational workshops and demonstrations 2015 and 2016 seasons:

Bridge to Health Projects: New Urban Farmers held various educational workshops, demonstrations and youth programming focused on specialty crops. With the varied programing we facilitated in the period from April 2015 to September 2016 it allowed us to reach 100's of people whose ages ranged from toddlers to those in their 90's. Our programing reached a huge array of people in Rhode Island who learned more about specialty crops and how to incorporate them into their diets by way of education and access. We created education and access focused on specialty crops by a diverse and hands-on approach. With Food Tastings, recipes and education for seniors in partnership with the Warren Senior Center and Warren Housing Authority using prepared specialty crops. As well as live and hands-on workshops of specialty crops at the Hope and Main Schoolyard Market and within the Hope & Main Demonstration kitchen. We also held various youth programing from Pawtucket to Warren. By creating varied avenues for the people of Rhode Island to learn more about specialty crops and how to cook with them, it will create a direct link to their increased use in their diets. Having both a positive change for farmers who grow specialty crops but also in the broader health of the individuals incorporating into their regular diet. We at New Urban Farmers also believe that starting education on growing and eating specialty crops as part of youth groups is an important way to improve youth's understanding and knowledge on fresh produce. People of all ages can benefit from education based around the growing, eating and accessing of specialty crops.

Workshop information:

Date	Title of workshop	Number of people
Oct 4	Cooking and growing workshop: Eat your Greens (Kale, mustard greens, swiss chard and arugula)	15
Oct 11	Cooking Demo - Cooking like its 1916! Using local farm goods to cooking classic 100+ year old recipes	26
Oct 18	Gardening Workshop: Planting and growing Garlic and Shallots	6
Oct 24	Gardening Workshop: Extending the growing season and winter garden soil care	8
Nov 21	Guest Speaker: Jean-Martin Fortier, farmer and author of The Market Gardener	75 +
Nov 22	Meet Your Maker Cooking demo	18
Dec 8	Cooking Workshop - Roasting Fall Vegetables (turnips, beets, and cabbage)	12

Dec 20	Meet Your Maker Cooking demo	22
Dec 22/29/30	Holiday Youth Programing: Holiday Cooking/baking Class - Cooking Class (Harry Potter themed) - Holiday Foods and Crafts	14
Jan 7	Cooking Workshop - Wintertime Tamales	8
Jan 24	Meet Your Maker Cooking demo	18
Feb 16/21	Winter Recess Youth Programs: Cooking Class (Harry Potter themed)- Joyful Eaters	12
March 5/6/7	Hugh Lovel - 3 day guest speaker on growing	34 each day
March 20	Meet Your Maker Cooking demo and garden walk through	24
Apr 6	Garden Demo - Getting started in Spring	18
Apr 17	Meet Your Maker Cooking demo and garden demo	16
May 7/8	Plant Sale and Garden Demo	200 +
May 22	Meet Your Maker Cooking demo and garden tours and Q and A	12
May 25	Eat your Greens (Kale, mustard greens, swiss chard and arugula)	15
June 25/26	Guest Speaker: Sandor Katz, fermentation Guru - one day workshop and farmers market demo	53

Date Title of workshop Number of people

July 26	Eat your Greens (Kale, mustard greens, swiss chard and arugula)	39
Aug 2	Tomatoes! (Three recipes with tomatoes)	43
Aug 16	Summer Farm stand Favorites (sweet corn, sweet pepper, tomato)	65

Aug 30	Eggplant! (classic eggplant, white eggplant and Japanese eggplant)	38
Sep 6	Cooking Different Winter Squash (Acorn, Delicata and Butternut)	52
Sep 20	Roasting Fall Vegetables (turnips, beets, and cabbage)	61

Work Plan Charts from Bridge to Health

"Bridge to Health" - April 2015 to September 2016 Work Plans with Measurable Outcomes:

PROJECT GOAL	OUTPUT	MEASURE	BENCHMARK	BENCHMARK	TARGET
Increase people's knowledge of "healthy eating" and specialty crops with educational programs and workshops	Workshops, demonstrations, community social events	Email sign-ups, program activities, reports and testimonials	people can improve their "healthy eating" knowledge and greater use of specialty crops in their daily diets	Interviews, surveys, and staff observations	Having hands-on workshops and educational programs which are open to all will allow people to learn and taste how to cook and eat specialty crops and therefor increasing specialty crops use in their diets
Establish a pop-up farmer's market at the Warren Housing Authority for Senior citizens and tie in programing around the cooking and eating of speciality crops	Established pop-up market times weekly at public housing sites, and create access to information about other local farmers markets	Staff logs, surveys, reports	Residents utilize the pop-up market, evidencing an increased understanding of healthy eating habits and knowledge of specialty crops; residents demonstrate increased knowledge of "healthy foods" available locally	Interviews, surveys and participant count	demonstrate a 50% increase of seniors shopping at the pop-up market of specialty crops, and then the utilization of crops in daily diets, and improved "healthy eating" habits
connect people of all ages to community gardens access that	Build gardens, host	Informational meetings, staff logs,	integrate garden space to community	testimonials, interviews and hosting opening	Access to community garden creates direct access to specialty crops

support efforts efforts to eat healthy and increase their use of specialty crops in their diets	programs at existing gardens, maintain existing community gardens and connect people to those gardens	testimonials Host garden program during summer program at Boys and Girls Club in Pawtucket and a 4 week service learning program with the Gordon School	members so that grown specialty crops can be incorporated into their daily diet and have increased knowledge of healthy eating habits when shopping locally	garden times	and will create an increase of their use in participants diets

□ **If the overall scope of the project benefitted commodities other than specialty crops, indicate how project staff ensured that funds were used to solely enhance the competitiveness of specialty crops.**

This project by NUF was solely based on the promotion, use and benefit of specialty crops. This was ensured by the project and grant program itself; it was designed to support the local community to buy, use, and eat more specialty crops. The programing that NUF created was based on access, education and use of specialty crops. This was done by facilitating Educational Programing, Farmer's Market Access, and Community Garden Access.

□ **Present the significant contributions and role of project partners in the project.**

Major Partners in the Bridge to Health Project:

Boys and Girls Club of Pawtucket: Our partnership with the Pawtucket Boys and Girls Club was tied with gardening program that NUF provided for a summer program they called “Let's Get Growing” The grant only had to cover a small part of the program staff needs to complete this partnership as the Boys and Girls helped cover staff time during the actual summer programing. The Boys and Girls have an amazing state of the art facility right on the banks of the Blackstone River which housed our summer program. There existed previously established raised beds garden to host programing and grow food with the students. They also had garden supplies like gloves, hand tools, benches, and a tent for shade to use for our program. It was a great partnership and a successful summer program which they have asked us to continue as a partner for the 2016 summer program.

Youth in Action in Providence: Our partnership with Youth in Action is tied to helping high school aged students in the city of Providence who are part of their after-school programing explore food, especially local farm produce. We brought in fresh produce to have a flavor taste test with, we talked about each flavor: sweet, salty, bitter, and spicy. Youth in Action has a whole three floor space

which houses their programing, their space includes a full kitchen and a large meeting space room which aides in facilitating dialogue and discussion with the students. Youth in Action had 35 high school students come in and enjoy our flavor tasting program and cooking demonstration. We look forward to hosting our remaining programs at Youth in Action in the future.

Senior Center at the Warren Housing Authority: Our partnership with Senior Center at the Warren Housing Authority has been going on for four years now. We are happy to see that our partnership has grown and we now host a full function pop-up farmers market and integrated educational programs based on cooking and more specifically, using specialty crops. We have been able to set up our market right inside the Senior Center on hot summer days and also set up outside on more temperate early summer and fall days. As we continue these pop-up markets for Senior Citizens to have direct access to specialty crops we plan to host them all inside which will allow all seniors easier access. Some seniors have mobility, health or other conditions which access to farmers markets, grocery store and other outlets with fresh produce is difficult or near impossible. This partnership helps build a bridge to senior citizens and food access. Also offering programing specifically for Senior Citizens based on cooking demos of specialty crops with ease, and handing out recipes during the pop-up markets.

Hope & Main: Our partnership with Hope and Main allowed New Urban Farmers to host workshops and classes held at the Schoolyard Markets and other times. We held workshops that were open to the public and were a part of the Schoolyard Market. We averaged 50 people per workshop.

The significant contributions and roles with project partners and NUF for the Bridge to Health project (broken down by category):

Youth Programs:

- *Boys and Girls Club of Pawtucket:* NUF taught gardening as part of a larger summer program of Pawtucket students in grades 4th to 8th at the Boys and Girls Club. Students were Latino, African and Caucasian. The summer program is called “Let's Get Growing”. In the Let's Get Growing program the student participants are divided into three cohort groups. Each group receives the same activities and curricula, but moves through activities at different times of the days. For this program the Boys and Girls Club partnered with a variety of providers to enrich the hands-on learning of the youth in the summer learning program. Partners for this summer program include Urban Gardeners the New Urban Farmers, Education in Action, Rhode Island Museum of Science and Art (RIMOSA), the Pawtucket Public Library, and a local yoga academy called Shri Yoga. The group met throughout the spring to develop the program. A new component to the summer program was developed to have a peer mentoring model that is being piloted in the Hasbro Summer Learning Initiative (HSLI). A group of young people who were campers in last year's summer program, were selected to participate in the Let's Get Growing program as peer mentors. It was

great to have peer leaders to aid in the garden and to be leaders when we had to break down into smaller groups. The groups consisted of about 12 to 15 students and there were three groups for a total of about 42 students, as well as their peer leaders. The program was a huge success and here are experts from the report by the Boys and Girls Club and the Hasbro Summer Learning Initiative based around the gardening program:

- "Staff/teachers engage youth in an intentional process of reflecting on what they have done, sharing progress, or feelings about the experience as youth reflect on yoga poses, share progress during Claymation, and reflect on key concepts after gardening."
- "Program space and furnishings accommodate the activities as there is an outdoor garden, fields for games, indoor gym, and various other rooms used for activities."
- "Healthy food and drinks are provided both for lunch and through healthy snacks prepared by and for the youth."
- "The activities involve youth in engaging with (creating, combining, reforming) materials or ideas, or improving a skill through guided practice as youth learn how to plant and tend a garden"

- *Youth in Action in Providence:* New Urban Farmers and Youth in Action have partnered to offer a unique and hands-on programing based around local fresh farm food. We created a program that would be offered once a quarter for the whole school year. The program will be exploring local flavors and foods, it will consist of tastings and meal making with specialty crops as the focus. We wanted to build a program that would be interesting and engaging with the youth of Providence in a fun and open after school environment. Students were made of of Latino and African ethnicity. About Youth in Action: Youth in Action is an organization all about young people – their capacity to lead, their natural ability to innovate, and their desire for positive change. From its start, Youth In Action has been a partnership between youth, adults, and community members. In 1997 Karen Feldman in partnership with a number of local youth laid down the foundation for Youth In Action. The founding members together designed a program that integrated youth into all levels of decision making, program design, and political action. Building and cultivating community is the binding agent to Youth In Action's success in the youth of Providence. Youth in Action is housed at 672 Broad Street in Providence. Youth in Action's mission: Youth In Action, where youth share their stories, practice leadership, and create change in their communities. Youth in Action's Vision: A world where young people are at the forefront of creating positive social change.

NUF's first program at Youth in Action which fell in the first quarter of the students school year was perfect timing as September has great crops which reflect the end of summer and the start of Fall specialty crops in Rhode Island.

- The *Gordon School:* New Urban Farmers partnered with the Gordon School to provide a 4 week program for 6 middle school students to have hands-on, real life, skill building community service learning program. The 6 middle

school students came every school day morning all 5 days for four weeks in a row for the month of May. Students helped the New Urban Farmers establish the garden at Hope & Main. The whole 4 week program was centered on growing specialty crops of creating space for them to be grown in community garden and farms.

Community garden access:

-*Created access to community garden space:* New Urban Farmers partnered with Hope & Main to build a garden space in the back of their space at 691 Main Street in Warren, RI. The garden space was a former playground that had become fallow and all that remained was an open green space which was primarily weeds and brush. Our goal was to have raised garden beds built and garden spaces carved out of the ground. We raised specialty crops, planted apple trees as well as other perennial food crops like raspberries and hops.

- *Coriliss School:* Students of the Corliss school assisted NUF with weeding, planting and harvesting crops raised within the garden. Founded in 1982 The Corliss Institute is a unique and innovative community based agency located in Warren, RI. Corliss provides services for adults with developmental and other disabilities, with specialization for those who are deaf or with hearing loss and/or those with varying modes of communication. They also have a garden on-site at their institute were specialty crops are grown.

- *Touisset Summer Garden Classes:* The New Urban Farmers provided two separate programs during their summer camp program, as well as maintained garden access to the neighborhood community garden. The two classes included children aged from 3 to 16 and focused on the growing and eating of specialty crops. The first program focused on compost and feeding what specialty crops were already growing in the garden and planting more specialty crops from seed such as winter squash, radishes, kale, beets, beans and more. The second program focused on the harvesting of the specialty crops growing in the garden which where for example: green beans, yellow beans, strawberries, raspberries, kale, swiss chard, collard greens, ginger, tomatoes, summer squash, cucumbers and more. We also included honey tasting in the first program and painting vegetable signs for the community garden in the second program. Our first program day was well received and 35 kids in attendance and on the second day of programing we also had a large group at 26 kids participating.

- *Barrington-School Farm Project:* The New Urban Farmers assisted Tim Faulkner, garden manager, of the Barrington- School Farm project with consulting, crop planning and over two thousand seedlings which all fell under the specialty crop umbrella. We also gave time for technical assistance to the farm space by way of tilling, planting, and organically feeding the soil.

GOALS AND OUTCOMES ACHIEVED Last Modified: 3/14/13

□ **Describe the activities that were completed in order to achieve the performance goals and measurable outcomes identified in the approved project proposal or subsequent amendments.**

- Increase people's knowledge of "healthy eating" and specialty crops with educational programs and workshops
- Establish a pop-up farmer's market at the Warren Housing Authority for Senior citizens and tie in programing around the cooking and eating of specialty crops
- connect people of all ages to community gardens access that support efforts to eat healthy and increase their use of specialty crops in their diets

Please see the work plan above for more detail on these goals.

The Bridge to Health was a successful project in which the goals and outcomes came together to serve a large and varied population. By connecting the Bridge to Health project with other local organizations/groups the target audience was able to grow and the project was able to have a larger reach. The project served people of all ages from youth groups to the senior center and all ages in between, no one was excluded from this project and being involved as a participant.

□ **If outcome measures were long term, summarize the progress that has been made towards achievement.**

The one major long term outcome to come from the Bridge to Health project is the creation of varied outlets for the access of specialty crops in our program area. There are now permanent Farmer's Markets in the town of Warren when there was previously not. Also the creation of permanent community garden spaces which people and families will be able to use throughout our program area. By the permanent creation to specialty crops and therefore more use and need of specialty crops was a major achievement in the Bridge to Health project.

□ **Provide a comparison of actual accomplishments with the goals established for the reporting period.**

If you compare the actual accomplishments with the goals for the Bridge to Health project it shows great success at connecting the two. The Bridge to Health project was created to build more education programs and access towards specialty crops in our program area and did so in its programing. NUF focused on these goals from our outreach and programing which (1) increased awareness of specialty crops, (2) increased use of specialty crops in people's daily diet, (3) increased access to specialty crops, (4) expansion of a pop-up farmer's market, and (5) decreased rates of obesity and diet related issues amongst participates over time. The last goal of decreasing rates of obesity and diet related issues is a long term goal, while the others we could see have effect in the reporting period. The Bridge to Health project was able to bring education and access to specialty crops to 1000s of people over the course of the grant

period. This was done through the varied programing done through the Bridge to Health work plan and project.

□ **Clearly convey completion of achieving outcomes by illustrating baseline data that has been gathered to date and showing the progress toward achieving set targets.**

Outcome/Goal	**Before**	**After**
Increased awareness of specialty crops	Both Warren and the youth programs we worked with had some awareness to specialty crops before the Bridge to Health program	The Bridge to Health program brought an increase of specialty crops awareness through educational programs and community garden programing to 100s of youths in Providence, Pawtucket and Warren
Increased access to specialty crops	Data was gathered from the Warren Senior Center Pop-up Farmers Market - Before the Market there was less access to locally grown specialty crops	After the Pop-up Farmers Market was established during the growing season at the Warren Senior Center access to locally grown specialty crops increased to all residents
Increased use of specialty crops in people's daily diet	In Warren there was no Pop-up Farmers market at the Warren Senior Center or open access education opportunities for residents to learn how to incorporate specialty crops in their diets	The Bridge to Health grant paved the way for permanent for a Farmers Market in Warren It also helped bring permanent access and education of specialty crops by the establishment of community gardens
expansion of a pop-up farmer's market	The Bridge to Health created pop-up farmers markets to bridge the gap in access to locally grown specialty crops to both senior aged and all residents of Warren	There is now a permanent Farmers Market seasonally in the town of Warren (which the Bridge to Health program hosted educational events/classes during in the 2016 season)

*Goal 5 was “decreased rates of obesity and diet related issues amongst participates over time” which is a long term goal to the increase use and access to specialty crops.

□ **Highlight the major successful outcomes of the project in quantifiable terms.**

The major successful outcomes from the Bridge to Health project in quantifiable terms would be the number of people we served. 1000s of people of all ages were served in this project to bring access and awareness to specialty crops. The Pop-up Farmers Market at the Warren Senior Center focused on an underserved population, our elders, and we severed an average of 70 seniors each market.

BENEFICIARIES

□ **Provide a description of the groups and other operations that benefited from the completion of this project’s accomplishments.**

A major component to the Bridge to Health project accomplishments was working closely with other groups to reach more people by ways of access and education of specialty crops. By working closely with other local groups and organizations we were able to do more with the project by sharing space, community/farmers market table space, community garden access, workshops and conferences, and more. The three major organizational partners for the Bridge to Health were: The Boys and Girls Club of Pawtucket, The Warren Senior Center and Hope & Main. Each organizational partner benefited in different ways when collaborating with the Bridge to Health project. The Boys and Girls Club of Pawtucket was a major youth summer program in the first half of the grant reporting period and benefited mostly with community garden programing (access to growing specialty crops) and educational programs (based on eating specialty crops and farming/growing food). The Warren Senior Center was a very strong partner throughout the project and benefited mostly by the Pop-up Farmers Market and educational programing (based on cooking and using more specialty crops in diets). Hope & Main was also a very strong partner throughout the project and benefited mostly by educational programing (based on cooking and using more specialty crops in diets and gardening/farming). All three of these groups worked closely to Bridge to Health project and worked to support the projects successfully to its completion. Beyond the three major groups we worked with other groups such as: Youth in Action, The Gordon School, Barrington- School Farm, Corliss School, Touisset Summer Camp, and many farmers and community members from the project area.

□ **Clearly state the number of beneficiaries affected by the project’s accomplishments and/or the potential economic impact of the project.**

The number of beneficiaries affected by the Bridge to Health project in the 1000s. From the Pop-up Farmers Markets to educational programing from the youth programs to the community garden access the Bridge to Health project reach many people and created permeated changes for more positive support of

specialty crops. The Bridge to Health project hosted workshops that drew in at least 1000 community members who were: families, senior citizens, youths, farmers, gardeners, and people looking to eat and grow more specialty crops. Our Pop-up Farmers Markets and open table workshops/educational programing saw 1000s of people over the course of the project period. The Bridge to Health had a goal of reaching people of all ages within its project period and did so with youth programing to a Pop-up Farmers Market for the Warren Senior Center. The project ensured that the beneficiaries came from varied forms of programming within the project, and by doing so reaching more people of all ages. The Bridge to Health also had beneficiaries that came from underserved populations.

LESSONS LEARNED

□ **Offer insights into the lessons learned by the project staff as a result of completing this project. This section is meant to illustrate the positive and negative results and conclusions for the project.**

The biggest lesson gleaned from this project is that working with partners allows for better outcomes and allows you to reach your project goals and do more with your project goals and funds. The Bridge to Health was able to make a difference in the project area by working closely with groups already there doing other needed work. Partnering with the Warren Senior Center allowed us to work with an underserved community who needed both access and education based around specialty crops. Also partnering with nonprofits like the Boys and Girls Club of Pawtucket and Hope & Main in Warren allowed us to reach a wider population of all ages but also help support their missions. By partnering the Bridge to Health was able to be a successful project.

□ **Describe unexpected outcomes or results that were an effect of implementing this project.**

The only major unexpected thing to came about in this project came early in the grant when a partner organization who signed on to be partners in the early planning part of the project changed their mind and could not commit to space or support of the project. But that ended up not being an issue as we were able to locate a great replacement partner in the project and still serve the intended project location and reach the project goals.

□ **If goals or outcome measures were not achieved, identify and share the lessons learned to help others expedite problem-solving.**

The goals and/or outcomes of the project were achieved within the Bridge to Health project, working with varied partner organizations was the best way to expedite both goals and any problem-solving when needed. The mobile market to transport specialty crops to the two public housing complexes in Pawtucket was not completed due to scheduling issues. We plan on accomplishing this in the future.

□ Lessons learned should draw on positive experiences (i.e., good ideas that improve project efficiency or save money) and negative experiences (i.e., lessons learned about what did not go well and what needs to be changed).

PROs	CONs
● **Working with Partners saves time and money which allows you to do more with your project** ● **Working with as many populations as you can allows you a larger reach within your project** ● **Do not reinvent the wheel: use resources you have in your reach. Such as the internet, local library, community centers/groups, farmers, community gardens, etc.**	● **Working with partners can be hard when schedules or shared space conflicts** ● **There will always be an issue from planning, partners, or budgets: so be prepared and ask for help when needed**

CONTACT PERSON

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FINAL REPORT
THE RI FARM TO CAFETERIA PROJECT AND FARMFRESH.ORG RI FARM GUIDE

Farm Fresh Rhode Island
1005 Main St Unit 8130
Pawtucket, RI 02860

May 17, 2015

PROJECT SUMMARY

The RI Farm to Cafeteria Project is a collaborative program led by Farm Fresh RI. It is designed to bring RI institutional buyers, such as school, hospitals, state agencies and worksites, together with RI farmers for the development of sustainable purchasing agreements. This project built on the success of the RI Farm to School Program, taking best practices and techniques and applying them to other types of large-scale food buyers. Work included educating food service buyers and chefs on local specialty crop availability and use through the development and dissemination of a "Harvest of the Month" print marketing campaign to promote local specialty crops in cafeterias, and enhancing the Market Mobile program to serve more institutional purchasers.

PROJECT APPROACH

In order to achieve the project purpose of building demand for and raising awareness of local specialty crops, we developed a "Harvest of the Month" local specialty crop marketing/promotion campaign for use in cafeterias. This campaign served as a vehicle to increase the demand and purchase of specialty crops by food service buyers and chefs as well as cafeteria patrons. *Outreach centered on highlighting two seasonal specialty crops in September and one monthly from October through February.* We created the campaign in advance of the growing season so that we had ample time to plan with growers. We also engaged cafeteria purchasers in advance of the season, asking them to commit to purchasing the specialty crop item at least twice each month in exchange for the marketing materials. Purchasers were given printed posters and stickers, assistance in sourcing and celebrating the highlighted products and newsletters that included source, serving and recipe tips.
The original goal of two specialty crops per month was not achieved because of the dynamics of the growing season for Specialty Crops in Rhode Island. Very few specialty crops are harvested from October – April, due to the climate. Thus, the amount that was possible to promote was only 1/month during the October – February period.

Farm Fresh staff also provided supplementary educational activities in classrooms and cafeterias, offering samples and printed materials related to the highlighted specialty crop upon request by "Harvest of the Month" implementers.
In keeping with our work plan, the Farm to Cafeteria Coordinator met with specialty crop farmers, food service purchasers and distributors to facilitate program planning,

implementation, promote working relationships and overcome obstacles to local purchasing. An annual Farm to School Stakeholders Meeting was held in April 2015 to update everyone on Farm to School activities and begin planning Harvest of the Month. We have had multiple smaller group meetings as well as one-on-one meetings throughout the year that addressed the same subjects.

The Farm to Cafeteria Coordinator participated in the following recurring meetings to promote the Farm to Cafeteria Harvest of the Month project in the community:

- Monthly meeting with the Healthy Hospital Initiative (H2ERI) work group (April – December)
- Monthly meeting with the Sodexo Providence Wellness Coordinator
- Bi-monthly meeting of the Providence Healthy Communities Advisory Council
- Bi-monthly meeting with a representative of the RI Healthy Schools Coalition
- Regular meetings with the Chartwells District Manager for RI East Bay schools
- Annual meeting with the Aramark RI Food Service team
- Scheduled meetings of RI school district Wellness Committees

GOALS AND OUTCOMES ACHIEVED

The RI Farm to Cafeteria Project had a goal of increasing the purchases of RI Grown specialty crops served in RI cafeterias. We measured that performance by tracking the number of cafeterias participating in Harvest of the Month activities.

Every public school district in Rhode Island signed up to participate in Harvest of the Month as well as three private schools, so we were able to exceed our target with K-12 schools.

Three out of 7 Rhode Island hospitals participated in Harvest of the Month and 3 out of 12 college and universities participated.

There are actually 16 hospitals in Rhode Island, so the number 14 from the proposal was a typographical error. The initial proposal for this program alluded to “the seven hospitals currently involved” in local purchasing, a subset of the total number of hospitals in the state. Of these 7 hospitals, three participated in the Harvest of the Month promotion program. While 7 of 14 hospitals’ participation in the Harvest of the Month program was a target, hospitals have been a very challenging sector for local agriculture advocates to impact. Very tight food safety and cost restrictions discourage hospital food service management companies from veering from very traditional sourcing practices, which do not allow for many locally sourced specialty crops. Additionally, hospitals are evaluated and promoted based on patient care, not by quality of food, and thus food choices are not highly valued by the hospital administration, and few resources are allocated to promoting specialty crops. For these reasons, and probably more, this program was not able to reach its goal of 7 hospital participant. Luckily, the program was able to exceed its goals in other sectors.

We were able to exceed our goal for engaging 29 senior congregate meal sites by reaching 9 additional centers. Thirty-eight centers participated in Harvest of the Month by serving the featured local specialty crops.

Forty-two cafeteria purchasers from K-12, Hospital, Senior and Campus Dining enrolled in Harvest of the Month. Harvest of the Month items were served in 368 cafeterias across Rhode Island. The number of cafeteria purchasers who completed the required surveys varied on a monthly basis, with an average monthly response rate to the survey of 75%

On average, 87% of survey respondents reported purchasing and serving Harvest of the Month items on a monthly basis. The highest reported participation was in November, when 100% of respondents reported purchasing apples.

Survey respondents reported sourcing from 21 identified specialty crop growers, spending a total reported amount of $103,192.39 on those specialty crops.

42% of survey respondents reported that their participation in Harvest of the Month resulted in an increase in the purchase of the featured item. 39% also reported that participation in the Harvest of the Month campaign stimulated the purchase of additional locally grown specialty crops. 56% reported that Harvest of the Month increased interaction with diners around the subject of local food. This proves that Harvest of the Month was successful in raising awareness of local specialty crops.

As a complement to the marketing campaign, Farm Fresh RI offered nutrition education programming as well as resources to participants to present nutrition education programs on their own. 42% of respondents reported that Harvest of the Month catalyzed an increase in nutrition activities at their facility. An additional 39% were not sure.

We had a goal of sending interested stakeholders a regular newsletter. Farm to Cafeteria newsletters are created and distributed to over 850 stakeholders. Newsletters continue to be an effective way to publicize specialty crop availability and share best practices for serving and celebrating RI Grown in school meals. We have a newsletter for general Farm to School stakeholders that is distributed on a quarterly basis as well as monthly Harvest of the Month newsletters specific to school, senior dining, college and hospital purchasers. We also have a Harvest of the Month newsletter specifically for teachers and school administrators that identifies educational resources specific to specialty crops. 75% of survey respondents reported that newsletters were helpful, listing “useful”, “on-time”, “accurate”, and “informative” as attributes of the communication.

Harvest of the Month participants reported an average satisfaction rate with the program of 4 out of 5 stars.

Finally, we identified a goal of understanding institutional needs and desires around specialty crop purchases. Early in the project period, we compiled data gathered from a survey of institutional purchasers to understand their demand for specialty crops. The data was published alongside results of surveys from specialty crop growers and

businesses that lightly process those specialty crops. The data and resulting report has helped us understand the desire among Rhode Island institutional purchasers for specialty crops, as well as the capacity of local growers and processors to meet that demand.

See attached: Rhode Island Farm to Institution Report.

BENEFICIARIES

In addition to our print marketing campaign, the Farm to Cafeteria team conducted the following activities to promote RI Grown Specialty Crops in RI cafeterias:

Chef demonstrations, showcasing RI Grown produce, took place during Farm to Senior and Farm to Healthcare education programs. We utilize locally grown produce and Farm Fresh RI's "Veggie Box" for these promotions as an outreach strategy to build demand among senior diners and hospital community members. Between April 1, 2015 and March 31, 2016, 17 local food activities directly benefitting 245 seniors were held at senior centers and 3 local food cooking demonstrations for outpatient groups and 3 cafeteria promotions for local foods were held at Rhode Island hospitals directly benefitting 194 participants.

A total of 139 education programs that integrate local agriculture and nutrition into existing classroom curricula, after-school programming and school garden programming were offered at schools and preschools to over 2200 students between April 1, 2015 and March 31, 2016. Additionally, Farm to School hosted 33 school cafeteria lunch events with activities and presentations to over 13,300 students that highlighted local agriculture alongside the serving of RI-grown specialty crops in the meals. Nine groups of students, a total of 649 students, attended field trips to RI farms between April, 2014 and March, 2015.

LESSONS LEARNED

The challenges we faced implementing the project have helped guide future work planning. The project team encountered two obstacles in our work to promote the purchase of locally grown specialty crops. The first is the difficulty some Harvest of the Month participants had sourcing locally grown specialty crops through their preferred vendors. We worked diligently to confirm with vendors that they would source local products, however the timeline of our project was such that we would confirm that information 6 weeks in advance of the month. The vendors were not always able to follow through on the information previously provided. Sometimes the vendors would advertise and provide "local" specialty crop, but they weren't able to tell customers where exactly it was from. That made it difficult for cafeteria operators to properly promote the local produce and in some cases even know for sure if the produce they were getting was from a local farm. That obstacle contributed into our second challenge, which was obtaining accurate data from purchasers. Some of the purchasers were just not diligent about responding to the required survey, however a few of them had a difficult time obtaining source information from their vendors as well as total amounts of local

specialty crops purchased. The problems have helped us identify areas of focus for our work going forward. We are planning to dedicate efforts to building demand with a focus on encouraging diners to look for specific information on the farm the items were sourced from. Our future goals with a regional collaborative include developing "Point of Sale" marketing materials for cafeterias that highlight New England specialty crop growers known to grow for the institutional market. Our intent is to make the materials available to cafeteria purchasers, encouraging them to request that specific farm grown produce from their vendor. We believe that this will encourage an overall shift in the amount of information the cafeteria purchaser demands and comes to expect from their produce vendor.

Another important lesson learned was due to our inability to engage as many colleges and hospitals as we targeted. We did identify strategies for engaging more of those institutions in the future as we work to achieve our goals. Going forward, we will target sustainability officers and students on campuses to build demand for local foods. Our current Americorp VISTA has identified new social media strategies to engage college students as well.

To increase our engagement with hospital communities we recently began an outreach program to outpatient populations in an effort to build demand among hospital visitors to cafeterias. We have seen success already, with the popularity of these programs catching on. 7 hospitals have participated in cafeteria and outpatient activities now. We have regularly scheduled cooking demonstration visits to diabetes and other outpatient groups with a goal of raising awareness and building demand for local specialty crops.

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ADDITIONAL INFORMATION

Harvest of the Month materials can be found on Farm Fresh RI's website at http://www.farmfreshri.org/about/schools/harvest.php

Project Title

R.I. DEM GET FRESH BUY LOCAL Campaign
Final Report

Project Summary

This program was built on the previous projects and enhanced our commitment to increase demand and consumption of RI Grown Specialty Crops. Or motivation is to enhance the marketing of Fruits and Vegetables in the State for over 200 farmers. This is needed to help slow down the loss of Agricultural Land to development by making farming of Specialty Crops viable in Rhode Island.

The Rhode Island Division of Agriculture working with specialty crop growers throughout the state expanded on its "Rhode Island Get Fresh Buy Local" buy local initiative by conducting produce preparation demonstrations featuring local celebrity chefs at all RI farmers market and participating roadside stands. The Division also updates its RI Agricultural Display on an annual basis. The Division also uses SCGF to enhance its marketing program by making point of purchase advertising material available to farmers. The need for this project is to help keep Specialty Crop Farming Viable in Rhode Island. Since Rhode Island has such a short growing season it was critical for us to get Specialty Crop Farmers (Fruit and Vegetable Growers) the logo material.

Project Approach

Through our efforts of purchasing new graphics for our display and doing shows throughout the State we increased demand for RI Grown Specialty Products (fruit and vegetables). We also expanded our farmers' market program by using wireless EBT technology at our farmers markets. At the market we increased sales for Rhode Island Specialty Crop Farmers by the use of these EBT machines.

Our partnership with Rhode Island Specialty Crop Growers has served over 400,000 Rhode Island residents by bringing the locally grown fruits and vegetables. Working with over 50 farmers markets we have increased outlets for the sale of locally grown Specialty Crops. Fruit, Vegetables, Nursery Stock and Honey are now in demand more than ever.

We also held cooking demonstrations in partnership with Johnson and Wales University at 6 farmers markets throughout the State. Customers were taught how to prepare fruit and vegetables that were being sold at the farmers market. Over 700 people saw these demonstrations.

We also hired two summer interns to work at the farmers markets to help Specialty Crop Farmers sell their products. The interns job was to help specialty crop farmers display their products. The intern's job was to give out information about specialty crops and answer any customer's questions. Also the intern would interview specialty crop farmers to see if our efforts increased their sales. In interviewing farmers we have seen a 2% increase in sales of Specialty Crops over last year. We interviewed 50 Specialty Crop farmers at farmers markets

and asked if they have seen any increase in sales due to our marketing efforts. Due to the added demand we now have 6 winter farmers markets.
To ensure Specialty Crop Funds were only used for Specialty Crops the DEM/Division of Agriculture contributed over $50,000 dollars of State funds to cover non Specialty Crops that have benefited from this program. Over 80% of the Agricultural Crops sold in RI are Specialty Crops.

Goals and Outcomes Achieved

By expanding our marketing efforts by purchasing of display material and doing shows throughout the State we have increase demand for RI Grown Products. Also by expanding our farmers' market program and introducing wireless EBT technology into additional markets we have increased sales for Rhode Island Farmers. These sales were documented by bank statements showing sales of fruit and vegetables that were processed through the EBT machines. There was sales of $13,000 processed on the EBT machine for Specialty Crops. We also measured the increase sales of RI Grown Specialty Crops by speaking and surveying farmers to see if their sales have increased. We know as in the past informing the public about RI Grown Specialty Crops increases demand for such products.

EBT Program was supplemented by 20% of State funds to compensate for the sales of non-Specialty Crop items. It has been determined that 20% of products being sold at our farmers markets are not Specialty Crops.

The goals we achieved for the season are:

-Set up and operate EBT systems at 16 farmers markets. The EBT systems are critical to the increase of sales of Specialty Crops at farmers markets.

-Re-Certified 42 farms for GAP compliance for sales to school districts

-Had cooking demonstrations at farmers markets throughout the season at 6 farmers markets over 6000 people learned how to prepare fresh fruits and vegetables. This was a partnership we have with Johnson and Wales University that is very popular.

-Gave out information to 50,000 citizens promoting RIGrown at shows

-Point of purchase material is critical to educate the public as to what products are RI Grown Specialty Crops. These point of purchase materials also let the farmer help customers identify which are Rhode Island Grown Specialty Crops. We will measure the outcomes of our actions through the surveying of farmers to see if our efforts have increased demand for their products.

-Of the 50 Specialty Crop Farmers Surveyed. All responded that our efforts have helped them in some way to stay viable as a Specialty Crop Grower in RI. They all have seen an increase in sales.

-We created two new farmers markets, but we closed one farmers markets that were not performing to our expectations. The new markets we opened operate November through April.

- We held Agriculture Day at the Rhode Island State house May of 2016 and over 40 Specialty Crop Farmers were able to give out information about the crops the grow and were there establishments are located. Over 2,300 people attended the event. There was also a proclamation from the Governor for Agriculture Day in Rhode Island. Two local media outlets were contacted and covered the event**.**

Also during the season two media stories ran about corn in season the Christmas

-Sales for Specialty Crops in RI have been increased as documented by the New England Agricultural Statistics Census taken for RI. www.nass.usda.gov by_State/New_England_includes/Publications/Annual_Statistical_Bulletin/CashRec2013.pdf

Using previous years as benchmarks it is clearly seen the increase in sales of Specialty Crops on an annual basis.

-OUR MARKETING EFFORTS HAVE LEAD AGRICULTURE TO BE THE ONLY SEGMENT OF THE RHODE ISALND ECONOMY THAT IS PROSPERING. We have achieved our goals for this grant cycle.

Beneficiaries

The beneficiaries of the project are all the citizens of Rhode Island and Specialty Crop Farmers. Our efforts have increased the availability of fresh fruits and vegetables for the citizens of Rhode Island. Over 70 Specialty Crop Farmers have benefited from this grant.

Lessoned Learned

We have learned that marketing of Fruits and Vegetables and other Specialty Crops is critical to increasing sales and keeping farming viable in Rhode Island

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Rhode Island College

Specialty Crop Grant Final Report

Project Title: Protecting Honey Bees from the Small Hive Beetle in Rhode Island

Project Summary: Honeybees are the major pollinators for approximately 1/3 of all agricultural food crops including berries and cucurbits, major specialty crops in Rhode Island. Honeybee populations have been declining over the last 50 years and low hive numbers and extensive die-offs threaten crop production. Threats to honeybees include viruses, fungal and bacterial infections, pesticide use and invasive species which thrive inside honeybee hives. Collectively, these stressors result in 20- 30% of colonies lost per year.
The Small Hive Beetle (SHB) is a relatively new invasive pest of the European Honeybee. The SHB arrived to the US from Africa in 1996 and established breeding populations in southern states. Recently (beginning in ~2010) the SHB was reported in Rhode Island and other New England states. By 2013-2014, multiple members of the Rhode Island Beekeepers Association (RIBA) reported seeing SHB adults or larvae in hives. In some cases these observations came in the spring when hives were opened, or after inspecting hives which failed. Overall, about 20% of beekeepers reported SHBs in a 2013 meeting.
Most of the information regarding the presence of the SHB in New England came from observations of bee keepers rather than any systematic study throughout the region. To begin to address the potential threat posed by SHBs, we conducted the first study in Rhode Island to systematically monitor SHB populations across the state. With these efforts, we also tracked outcomes of bee populations among the hives monitored, and enhanced outreach efforts to promote beekeeping and educational outreach. The information collected as a result of this grant will serve as baseline data so that we can track the health of bee populations in the state in future years. Specifically, the objectives for this initial study were:

- Conduct educational outreach and promote beekeeping through an advocacy campaign directed at both prospective beekeepers and students.
- Document and map the size, locations, and diversity of bee colonies and SHBs in the state. The resulting data will allow us to establish a baseline for tracking bee populations and help us understand the threat posed by SHBs.
- Assess mitigation strategies and disseminate this knowledge to RIBA.

This topic is extremely significant and timely given the overall decline in Honeybee and native bee populations. During his last term in office, President Obama established a "Pollinator Health Task Force" resulting in the 2016 release of the "Pollinator Partnership Action Plan". One main objective within this plan is to 'reduce honey bee overwintering colony losses to no more than 15% within 10 years. Furthermore, the report advocates for a 'pollinator plan' for each state. The results described within this report can help inform a plan for Rhode Island.

Project approach

The activities performed as part of this grant can be divided into two main categories: an *advocacy campaign* to raise awareness about the critical role of pollinators and to promote beekeeping in Rhode Island; and a *census* to collect data on the presence of the SHB in RI and

track the health of honeybee colonies. The tasks performed within each category are described in more detail below along with significant results, conclusions and recommendations.

1. Pollinator Advocacy Campaign

Beekeeping School

One major initiative was to promote participation in hobby beekeeping. Advertising for the Bee School (taught by RIBA members and held at RIC) produced increases in the number of students from 120 before the grant to 152 and 145 for 2015 and 2016.

This beginning beekeeping class directly impacts the number of hives in the state as many students start their first apiary after taking this class. We estimate this increasing enrollment meant about 50 additional hives in the state, an increase of 14% over the approximately 350 apiaries registered at DEM previously. Although it is unlikely that all beginning hives survive, this number is comfortably above our target 5% goal listed in the initial grant. Thus, meeting a 5% increase in hives could increase crop sales by approximately **$1.8M**. In 2015-16 information was presented on the SHB as part of the class.

Bee Education Center

The RIC hives and Bee Education Center have been a focal point of beekeeping education and outreach serving students ranging in age from 4 to adult. The education center raises awareness about the critical role bees play in plant reproduction in general. This includes pollinating crops necessary for agriculture and flower industries.

In 2015, more than 300 students attended classes. Schools included the Henry Barnard School, Davisville Middle School (North Kingstown), Elizabeth Baldwin Middle School (Pawtucket), The Children's Workshop (Bristol), and the RIC Cooperative Preschool.

In 2016, more than 600 students attended classes. This number represents a **200% increase** in participation over the previous year. Schools included the Henry Barnard School, Davisville Middle School (North Kingstown), and the 4H Club of Providence.
In addition to the Bee Education Center, beekeeping outreach was conducted at Rhode Island Flower Show.

2. SHB Census

Monitoring SHBs in RI

Adult SHB levels were monitored in a sample of thirty-five domestic honey bee hives across Rhode Island. To accomplish this task, screened bottom boards with mineral oil-containing trays were installed below each of the sample hives, followed by a 10-week monitoring period in which the insect-trapping oil was collected and analyzed on a biweekly basis for each hive, for a total of five monitoring visits per hive. During post-collection analysis, we quantified the total number of adult SHBs trapped in the oil. Using these data, SHB infestation levels and prevalence were examined as a function of human population density, assumed to be positively correlated with honey bee hive density.

The 2015 spring and summer seasons were characterized by an unusually late thaw

followed by hot and dry weather. Working with beekeepers who volunteered to participate in the study, we completed a survey of SHB numbers and distribution throughout the state. Volunteers were from RIBA or from the beginner's bee school held at Rhode Island College in the spring. For the 35 volunteers, Freeman traps were installed in their hives at the beginning of June. Every two weeks the contents of all the traps were collected and analyzed at Rhode Island College for the presence of Varroa mites and SHBs.

These monitoring efforts showed that SHBs were more pervasive in RI than thought initially, with 60% of all hives monitored showing presence of the beetle by the end of the summer (Fig. 1). Furthermore there was a progress upwards trend in the percentage of affected hives over the course of the summer. This observation is consistent with multiple generations of SHB occurring over the course of a single summer, which has also been seen by other groups.

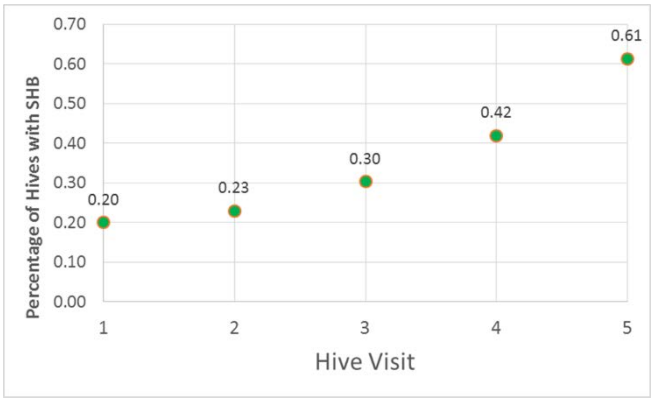

Figure 1. Incidence of SHBs in RI apiaries
Hives containing ≥1 SHB were tallied and the fractional incidence is reported among all hives monitored. Incidence of SHBs increased steadily throughout the summer. Twenty percent of all hives were infested at the beginning of June and by the end of August, ~60% of hives contained SHBs

In hives containing SHBs, the average number collected in the Freeman traps was relatively low on a biweekly basis (Fig. 2).

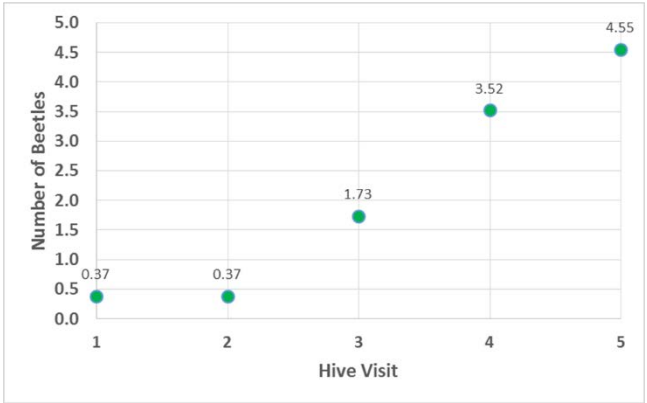

Figure 2. Average number of SHBs per hive collected over a two week period. Average numbers ranged from .37 to 4.55 from early June to late August respectively.

While these numbers may indicate that SHBs are not a significant pest generally, only the SHBs collected from traps were reported and it is quite likely that the total number of SHBs per hive is much greater. Significantly, > 50 SHBs were collected in 4 hives. In these cases, SHBs negatively affected honey production and hive fitness based on reported outcomes from the volunteers. Thus, approximately 10% of all hives appeared to be impacted by SHBs.

The distribution of SHBs throughout the state was not uniform. Our collected SHB survey data were plotted using Geographic Information Systems (GIS) and as show in the map below, areas with the highest numbers of SHB roughly correspond to areas with the largest populations or highest population density in the state (Figure 3). This is an important finding because urban beekeeping is on the rise and our data indicate the SHB may be a more significant threat to these hives.

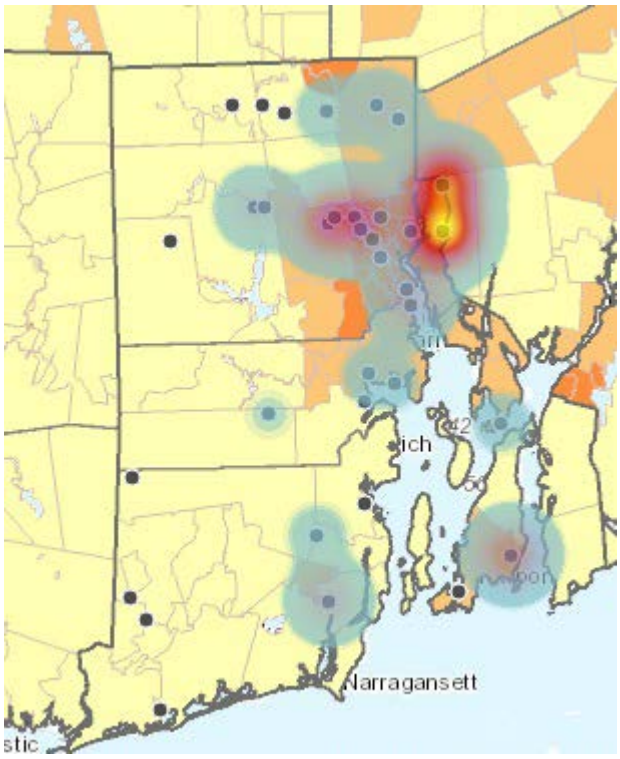

Figure 3. Heat map depiction of SHB incidence throughout RI during the 2015 growing season. Each of the 35 black dots represents the location of a hive monitored in the study. Red and blue indicate the highest and lowest levels of SHBs respectively.

While distribution in northern vs. southern and eastern vs western regions were not significantly different, a strong association of SHBs with urban/suburban areas was found (Figure 4). While this data was initially very surprising, the observations make sense given that SHBs have a relatively short flying radius as adults. Therefore, migration during the summer is limited especially when there are many hives in the local vicinity of adult beetles. If one female beetle lays eggs in an urban/suburban hive, the offspring of the beetle are free to infect adjacent hives. The rural hives remained relatively free of SHBs because these hives are more isolated and outside the typical adult SHB flight radius.

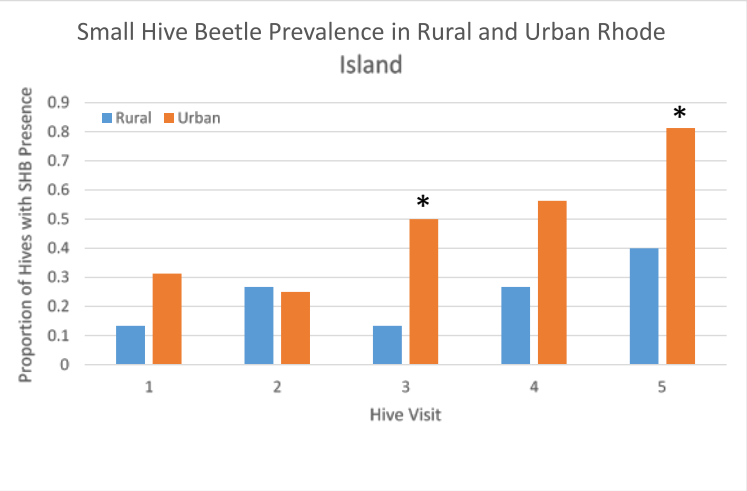

Figure 4. SHBs are concentrated in urban/suburban areas. The final three visits display a general upward trend in SHB prevalence for both rural and urban hives. Proportion of urban hives with SHB presence significantly higher than rural hives for hive visits 3 and 5. Asterisks designate significant differences in proportions for rural vs. urban hives ($P < 0.05$).

Our initial plan included monitoring for Varroa mites, a ubiquitous pest of honey bees and quantifying numbers of these pests in hives. During data analysis we began counting mite numbers but all hives had several hundred to more than 3,000 mites collected during a single two week period. Based on these initial findings we concluded that Varroa mites were such a prevalent pest that it would not be significant and would be too cumbersome to follow the numbers of this pest for the duration of the project. We therefore focused exclusively on the SHB.

In addition to monitoring SHB numbers, we also initiated a haplotyping project to track the genetic origins of SHBs in RI and use DNA analysis to help understand how SHBs spread. Although this task was not specified explicitly in the proposal, the work was a logical follow-on to the census data and led to stronger conclusions about the spread of SHBs in Rhode Island. The SHB is native to Africa and since immigrating to the US in 1996, two mitochondrial DNA haplotypes have been identified in southern SHB populations and both haplotypes are unique to North America. These haplotypes are NA1 and NA2 and differ at 6 nucleotide positions (Table 1).

Table 1. Nucleotide differences between NA1 and NA2 haplotypes in SHBs. Haplotype is determined by DNA sequencing of the mitochondria Cytochrome Oxidase I gene first performed by Jeff Pettis' lab at the USDA.

Haplotype	Polymorphic Loci (bp)					
	228	276	597	606	684	768
NA1	G	A	T	T	C	G
NA2	A	T	C	C	T	A

Haplotyping SHBs in RI hives allows us to better understand their migration patterns. We obtained haplotype information from 39 beetles which we could link to hive location and collection time (Visit 1-5) as shown in Table 2. A striking result of this analysis was that significant mixing of SHBs occurred in urban and suburban hives. This is illustrated in Table 2 where both NA1 and NA2 haplotypes are seen in the same hive at the same time. In contrast, the rural hives only ever showed a single haplotype indicating that a single female infected a rural hive and therefore all the offspring have the same haplotype. While this dataset is relatively small, it provides important baseline data to use for comparison in future years.

Table 2. SHB haplotypes in different regions of Rhode Island.

Human Population Density	Hive Number	Visit 1		Visit 2		Visit 3		Visit 4		Visit 5		TOTALS		
		NA1	NA2	NA1	NA2	NA1	NA2	NA1	NA2	NA1	NA2	NA1	NA2	Both NA1 and NA2
Urban	1	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
	3	**0**	**3**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**5**	**5**
	Subtotal	0	4	0	1	0	0	0	1	0	0	0	6	6
Suburban	31	**1**	**0**	**0**	**0**	**1**	**5**	**1**	**2**	**4**	**3**	**7**	**10**	**17**
	32	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**3**	**5**	**3**	**8**
	Subtotal	1	0	0	0	1	5	1	2	9	6	12	13	25
Rural	25	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
	29	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**6**	**0**	**7**	**0**	**7**
	Subtotal	0	0	0	1	1	0	0	0	6	0	7	1	8
TOTALS		1	4	0	2	2	5	1	3	15	6	19	20	39

Assessing mitigation strategies

Three main strategies exist for protecting bee colonies from SHB infestations: chemical control using insecticides, mechanical control including removing honey and use of in-hive traps, and biological control using soil-dwelling nematodes that infect pupating SHBs. During our study, RIBA members experimented with in-hive beetle traps (Beetle Blaster traps). While these traps did collect beetles, albeit not as effectively as the Freeman bottom board traps, it was clear that these traps did not eradicate an infestation. The only chemical control agent approved for SHB in a hive is Checkmite+. Treating with this agent can only be done when honey supers are removed and remain out for 14 days. Given that SHB levels are highest in late summer and possibly the fall, Checkmite+ treatments performed during this time will reduce honey amounts recovered and

potentially affect winter honey stores. We believe that further research needs to be performed to determine the best control mechanism.

Role of Project Partners

We are extremely grateful for the support and volunteer help from the Rhode Island Beekeepers Association, particularly Ed Lafferty who was instrumental in recruiting volunteers and providing hands-on support for the project. We are also indebted to Jim Lawson who provided advice and hands-on help for all aspects of the monitoring project. Jim and Ed were instrumental in helping to recruit volunteers, advise on bottom board selection and SHB collection. RIBA members were also a majority of the volunteers for the study who allowed us to monitor their hives on a bi-monthly basis.

Dr. Carolyn Fluehr-Lobban was instrumental in establishing the beehives at RIC and along with Jim Murphy led educational outreach activities resulting in improvements and increased attendance to the Bee Education Center. Furthermore, Dr. Fluehr-Lobban publicized SHB information in talks at RIBA and in apiary news articles.

Conclusions and recommendations

Based on the activities performed as part of this grant, we can draw the following conclusions and make the following recommendations:

- Outreach and education successfully promotes beekeeping in Rhode Island. The Bee School is an excellent starting point for enhancing the health of pollinators in the state. Additional funds aimed at advertising Bee School programs, promoting RIBA and promoting the merits of beekeeping would attract additional hobby beekeepers in the state. The outreach activities fostered under this grant with the help of interested stakeholders such as RIBA should be encouraged and incentivized at the state and federal level.

- SHBs are much more pervasive in Rhode Island than initially anticipated. Based on observations from RIBA in 2013, we initially predicted about 20% of hives would contain SHBs. Our data shows that 60% of all hives in RI had SHBs by the end of the summer. Furthermore, it was clear that ~10% of hives failed, in part due to high SHB numbers (>50 adults). Future monitoring efforts in future years will be needed to determine whether SHB populations have stabilized or are on the rise. Future monitoring efforts will help us track honey bee populations and allow us to better assess current threats.

- Apiaries in urban/suburban areas are disproportionately impacted by SHBs. Adult SHBs have a relatively short flying radius and hives in high density areas may be more prone to infection. The SHB haplotype data supports this idea because increased mixing of SHB populations was seen in urban and suburban areas, while no mixing occurred in rural areas. Our observations are particularly concerning because there has been a focus on urban/suburban beekeeping at a national level. It is likely that threats to hives are different based on location. We recommend that further monitoring is conducted to assess the relative threats posed to hives urban, suburban or rural areas.

Goals and Outcomes Achieved

Activities completed in order to achieve perform goals and measurable outcomes:

Education/Outreach was conducted in a number of ways including the Bee School representing a partnership between RIBA and RIC. Jim Murphy, a member of our research team, coordinates this program for the college and RIBA members teach the material. Over the past two years the number of students taking the bee keeping class increased from 120 to 150 students at RIC alone. This increase would produce about 14% more hives in the state if every beekeeping student started their own hive. While this assumption may not be realistic, the numbers suggest we likely met our modest goal of a 5% increase which would result in approximately $1.8M in revenue due to increased crop yield (assuming no effect of weather or drought).
Advertising for the bee education center was quite successful and saw a dramatic 200% increase in number of visitors in 2015-16. While pollinator education does not necessary produce a short-term benefit, the increased awareness of the critical role of pollinators for agriculture will pay off in the future. Further outreach efforts involved discussing SHB data at RIBA meetings and pollinator awareness at the Southside Land Trust and other interest groups were conducted by Carolyn Fluehr-Lobban and Geoff Stilwell.
Census was conducted to determine the presence of the SHB in RI and assess the potential threat posed by this invasive species. Extensive monitoring efforts tracked SHB populations in RI using a network of volunteers who allowed us to install bottom boards in their hives and collect SHBs on a bi-weekly basis. To complete this task, we developed a monitoring plan, recruited volunteers, collected data from 35 hives, completed data entry and mapped SHB locations and numbers over time and established genetic haplotype information. Our efforts establish baseline dataline which can be used for comparison in the future. Surprisingly, SHBs were seen in 60% of all hives monitored and 10% hives failed due in part to SHBs. SHBs were more prevalent in urban and suburban hives and larger populations were seen in late summer. Additional efforts mapped haplotypes of the SHBs in Rhode Island. Although not specified in the original proposal, this work was completed within the existing budget and timeframe. These efforts showed that SHBs mix in urban and suburban areas consistent with relatively large numbers of beetles and high hive density. Rural hives were impacted less by SHBs and when present, the SHBs resulted from a single egg-laying female since all the offspring in a rural hive had the same haplotype.
Actual accomplishments are compared to goals established in the initial proposal in the table below:

Goal	Accomplishment
Education Outreach	
Increase awareness of the role of pollinators	200% increase in the number of participants at the bee education center. Additional outreach efforts conducted in conjunction with RIBA at various venues throughout the state.
Increase the number of beekeepers and thus hives in the state	Increased the number of participants in the novice beekeeping class by 14%
Census/Monitoring	
Determine the extent of SHB populations in the state	Completed. 60% of all hives contained SHBs by late summer. Additional details about SHB populations are described above.
Assess mitigation strategies	Beetle blaster traps did not eradicate SHBs from hives. Other strategies need to be tried and/or developed.
Survey bee packets	SHBs were found in 33% of packets assessed.

Beneficiaries

The beekeepers in Rhode Island benefit directly from the knowledge gained as a result of our work. Some of these bee keepers run family-owned businesses selling honey and wax. The information about SHBs coming from our work may have a direct impact on their business.

Furthermore specialty crops which are pollinated by bees including berries, vegetables, and cucurbits benefit from increased numbers of hives and increased pollination. Over 70 Specialty Crop Farmers have benefited from the program.

Lessons Learned

The results from this project and economic impact are described above in Conclusions and Recommendations and Goals and Outcomes Achieved. More broadly, a major lesson learned from our work is that a project of this type, which has both research and educational aims requires the cooperation of a diverse array of people with different expertise and agendas. Such a diverse group is necessary to address the widespread problem of pollinator decline. This is a problem which does not have one cause or likely one solution. Therefore a large number of interested parties must be involved for success. The logistics of managing such a group can be difficult at times and a major lesson learned is that future efforts need to involve a carefully crafted communication plan. Moving forward, we plan to write for additional funding to continue monitoring honey bee populations in Rhode Island and possibly scale-up the project. In this case, a plan to manage a large group will be essential for success of the project. Furthermore, while we had trouble recruiting a large number of volunteers (our initial goal was 50), I believe publicizing our work conducted as a result of this grant will reduce the barrier to recruiting volunteers in the future. Over the course of this grant, we have made strong connections with a number of stakeholders who may be interested in participating in future projects. Potential partners include Whole Foods, RIBA, The Southside Community Land Trust, and the Fruit and Vegetable Growers Association.

In summary, we have established a robust educational forum for raising awareness of the problems facing pollinators and have helped to grow beekeeping classes. In addition, we have established baseline data on the health of the honey bee population in Rhode Island, the first study of its kind to the best of our knowledge. This information will serve as baseline data so that we can better track the health of bee populations throughout the state in the future.

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Additional Information

I have included additional Geographic Information Service maps and data from the bee census. The data shown here are summarized in the report above but provide more detail on the specific findings.

Small Hive Beetle Population Dynamics

The following maps show how SHB prevalence and numbers vary across space and time. SHB infestation levels from each hive were plotted in their respective locations for each of the five hive visits. Each of the five following heat maps displays both the geographical distribution and infestation levels of the small hive beetle across Rhode Island for a particular monitoring period (Figures A-E). Areas in red indicate relatively high small hive beetle density and those in blue indicate relatively low (but greater than zero) small hive beetle density. Black dots indicate study hive locations, red dots indicate dead hives and the blue dot indicates a hive that was prematurely withdrawn from the study.

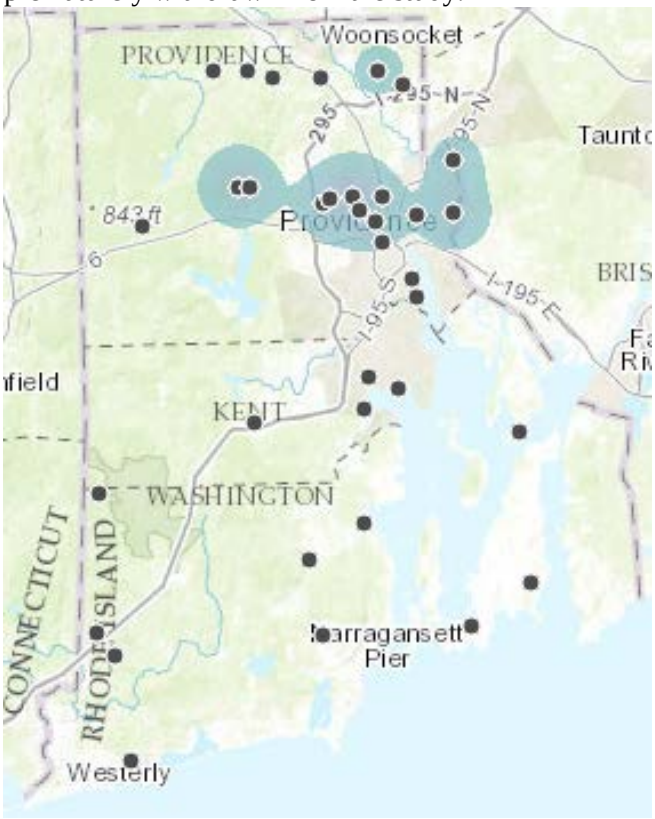

Figure A. Small hive beetle heat map for first monitoring period (June 15th - June 28th). Small hive beetle presence was limited to the northern portion of the state, particularly in the Providence area.

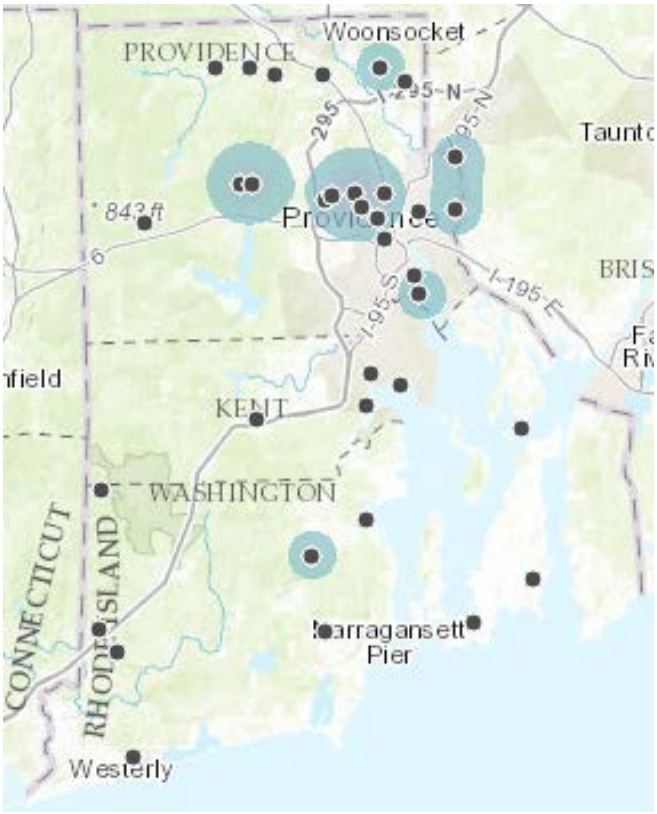

Figure B. Small hive beetle heat map for second monitoring period (June 29th - July 12th). The northern portion of the state still displays the highest small hive beetle prevalence, despite its detection in a single hive in the south of the state.

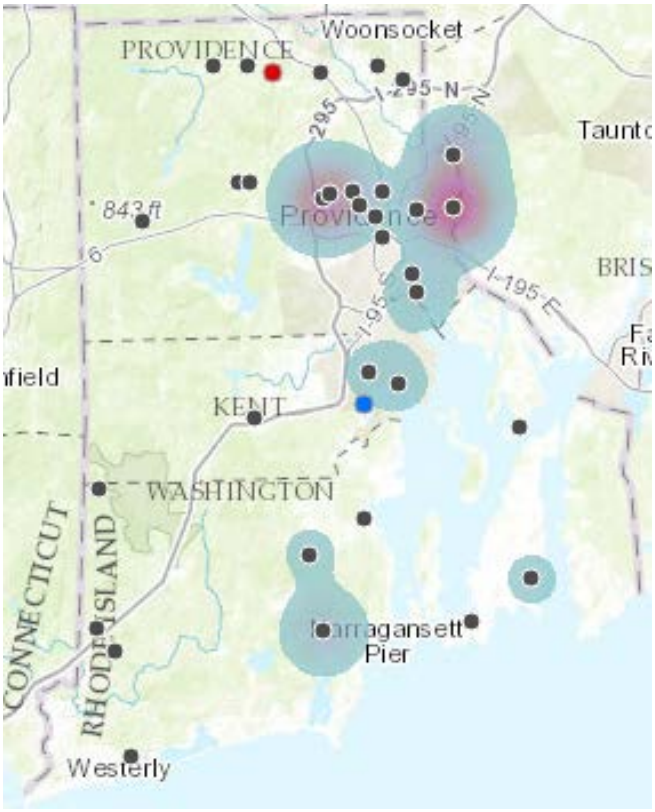

Figure C. Small hive beetle heat map for third monitoring period (July 13th - July 26th). Small hive beetle prevalence has increased in the southern part of the state and the intensity of infestation has increased in many hives in the north of the state. A single hive had collapsed and one volunteer withdrew their hive from the study since the second hive visit.

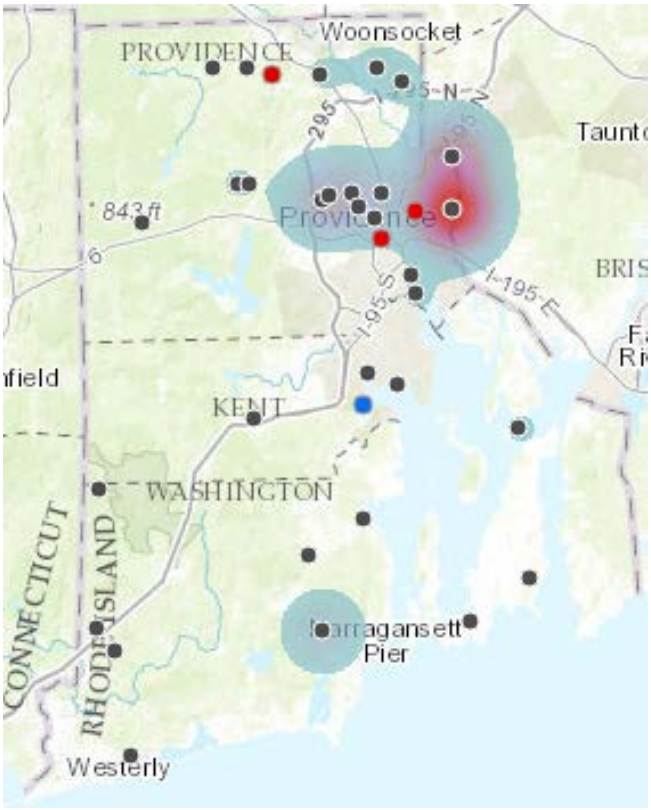

Figure D. Small hive beetle heat map for fourth monitoring period (July 27th - August 9th). Small hive beetle infestation intensity increased in the Providence area and two additional hives died since the third hive visit. Small hive beetle prevalence in the south of the state has also decreased

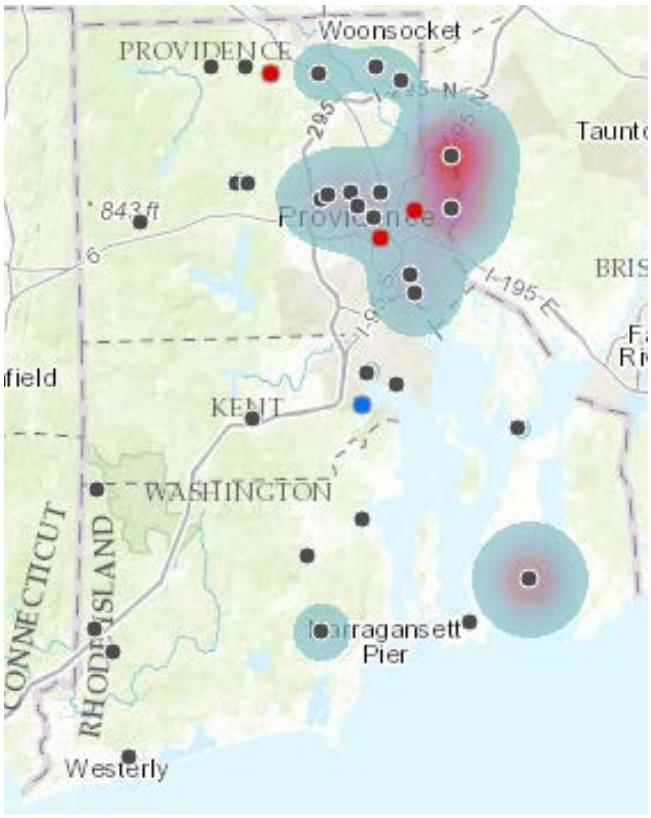

Figure E. Small hive beetle heat map for fifth monitoring period (August 10th - August 23rd). The general small hive beetle distribution has not changed since the fourth hive visit, but a heavy infestation appears in a hive in the southeastern portion of the state.

Project Title: De-Tasseling Sweet Corn to Prevent Bird Damage: An Alternative to Cannons?

Project Summary:

Birds, particularly starlings and blackbirds, are a major pest of sweet corn in Rhode Island and the surrounding region. The birds are attracted to corn in the milk stage; they shred the husks and peck exposed kernels. While birds will attack all types of corn, damage is particularly costly in fresh market sweet corn as any amount of damage renders the entire ear unmarketable. In locations and years with high bird populations, growers can lose 80% or more of their crop to birds, with crop loss occurring just prior to harvest.

Many strategies have been developed to prevent bird damage to crops, including sweet corn, but most have drawbacks that limit their utility for growers in peri-urban areas such as Rhode Island. Currently the most effective and affordable control option for farmers is propane-fueled bird cannons, which emit a sonic blast every 40 seconds to 30 minutes to frighten birds. However, corn fields in Rhode Island generally abut neighborhoods, and the constant retort of the cannons creates annoying noise pollution. It has been reported that removing the tassel from corn plants after pollination decreases bird damage, and reports from New York and Connecticut suggest it may be an effective alternative to bird cannons. The objective of this project was to evaluate the effectiveness of de-tasseling at preventing bird damage, measure its effect on corn yield and quality, and determine if de-tasseling provides sufficient benefits to growers to justify the expense.

This project is extremely timely, as conflicts between farmers and other RI residents over propane cannons are increasing. DEM Division of Agriculture employees spend significant time each summer dealing with noise complaints, and a growing movement exists to amend the Right to Farm Act to prevent the use of propane cannons in densely populated areas. At the same time, demand for locally grown produce is increasing. Profit margins are often lower for sweet corn than for other vegetables, but it is a key crop for attracting customers to farm stands. Sweet corn is also a key crop for keeping farmland in production in New England. **This project does not build on any previously funded project within the SCBGP.**

Project Approach:

We conducted two years of field trials at the University of Rhode Island Gardiner Crops Research Farm in Kingston to test effects of removing the tassel after pollination on sweet corn yield and quality, to determine whether tassel removal prevented bird damage, and to determine whether tassel removal reduced damage from corn earworm.

The primary focus for 2015 was a variety trial to determine how detasseling after pollination affected sweet corn maturity, yield, and quality. Fifty-seven varieties were included in the trial. The core set of varieties was chosen by selecting the bestselling and most highly recommended varieties from the offerings of Harris Seeds, Rupp Seeds, and Siegers Seeds. These companies were selected because they are the primary suppliers of sweet corn seed to New England growers. Additional varieties were selected by the sales representatives at the seed companies. The trial included sugary enhanced, synergistic, supersweet, advanced supersweet, and mirai types in yellow, white, and bicolor. Days to maturity ranged from 65 to 84. The sugary enhanced and synergistic varieties were in one

field, and the supersweet and mirai varieties in a different field 600 ft away to minimize cross-pollination. Within each field the varieties were grouped by color and maturity. The different colors were separated by 15 ft buffers planted with Silver Queen, which requires 94 days to mature. Each variety was replicated four times. Plots were 15 ft long and contained 4 rows, with 2.5 ft between rows. All varieties were planted at the same time. The two left-hand rows in each plot were detasseled 5-7 days after silking. Tassels were removed by hand by cutting the stalk two nodes above the topmost ear. The two right-hand rows were left intact to serve as controls.

Corn harvest began when at least half of the first ears in the plot had matured. Plots in the sugary enhanced and synergistic trial were harvested three times, with 2-4 days between harvests. The supersweet and mirai trial matured more quickly due to a heat wave; plots were only harvested twice. The entire harvest period was from August 14 to September 8. At harvest the detasseled and intact rows in each plot were harvested separately. Data were based on a standard of 30 plants per plot. Ears were weighed, counted, and graded for marketability. Two marketable ears from the first harvest for each plot were randomly selected for quality analysis. These ears were husked, and ear length, diameter, and weight were recorded. Kernals were cut from the center third of each ear and used to measure percent moisture and total soluble solids.

Detasseling had a significant effect on maturity, number of ears, and ear weight. The effect was consistent across all varieties. Detasseling resulted in slightly earlier maturity, with 65% of ears picked in the first harvest for each plot, as opposed to 59.5% of ears in the intact plots. However, detasseling reduced yield. The intact rows yielded 1.3 ears per plant, and 38 ears per 30-plant plot. The detasseled rows yielded only 1.2 ears per plant, and 35 ears per plot. This is a decrease of 8%. Percent marketable ears also differed between detasseled and intact rows, with the detasseled rows producing fewer marketable ears (84% of total, as compared to 87% for the intact rows). This resulted in the detasseled rows producing 11% fewer marketable ears than the intact rows. The ears from detasseled plants also weighed less, averaging 0.74 lbs in the husk, as compared to 0.80 lbs for ears from the intact plants. Detasseling had no significant effect on sweet corn quality, and detasseling did not reduce corn earworm infestation in the absence of insecticide.

When varieties were analyzed individually most differences were not statistically significant, due to the small sample size. However, many of the differences were large enough to be economically significant. Six varieties did show statistically significant differences, all with the intact plants yielding more than the detasseled plants. Across the 57 varieties, differences between intact and detasseled yields range from 16.7 ears to -7.5 ears. The difference was less than 1 ear in 30 plants for eight varieties, suggesting that these varieties may be better suited to detasseling. Eleven varieties actually yielded more in the detasseled plots, but none of the differences were statistically significant so they need to be confirmed by further testing.

In 2016 we conducted a second year of testing the effects of detasseling on sweetcorn yield, using the top 50% of the cultivars trialed in 2015. The cultivars for testing were chosen based on their performance in the plots that had not been detasseled, and covered the full range of responses to detasseling. We did not evaluate effects of sweet corn quality in 2016, as there was no effect in 2015 and the quality tests were labor intensive.

The summer of 2016 was unusually dry, with only 5.13 inches of rain in June, July, and August combined. Normal precipitation for the period is 12.3 inches. The lack of rain was compounded by evaporation levels 118% of normal. Our soils have a field capacity of approximately 4 inches of water in the top foot of soil, so most years it is not necessary to irrigate corn. While the corn was irrigated in 2016, our system was not able to fully compensate for the drought. Drought stress varied by location within the field; the primary effect was to reduce the number of harvestable ears per plant while increasing the size of the ears that were harvested. As expected, we found significant differences between cultivars for all traits measured. However, detasseling had no significant effects on yield in 2016. This is in sharp contrast to results from 2015, when detasseling reduced yield. We do not know the exact mechanism behind the effects of detasseling on yield. Detasseling removes significant amounts of leaf area, which can alter both photosynthesis and evapotranspiration. Corn is a C4 plant, so photosynthesis and evapotranspiration are not as tightly linked as in many plants, but drought stress does reduce photosynthesis in corn. The most probable explanation is that in 2015 detasseling reduced yields by reducing development of the second and third ears, and in 2016 drought stress reduced development of the second and third ears in all treatments

The question of whether detasseling prevents bird damage was explored in 2016 in two experiments on the URI research farm. In each experiment 1 acre of land was planted to a uniform stand of sweet corn. We used a mixture of cultivars, such that the field as a whole matured over approximately 3 weeks. Half of each field was detasseled by cutting the stalks at the third internode above the primary ear in the week following silking. The other half of the field was left intact as a control. Ears were harvested by hand as they matured, and data was collected on the percentage of ears with bird damage. Bird pressure was low, with only 2% of ears in the control blocks showing damage. In one field detasseling reduced damage to 0.2% and in the other field 1% of the ears on the detasseled plants were damaged. The effect of detasseling appears to depend in part on the species of birds causing damage. We observed a flock of crows feeding in the field with 1% damage on detasseled plants, and noticed that the crows appeared to prefer detasseled plants as the cut stalks offered a stronger perch and one from which the crows could reach the primary ears. No crows were observed in the other field; grackles and sparrows were observed in both fields.

In 2016 we expanded the scope of this project to examine the ability of low-power green laser beams to frighten birds from corn. We constructed a laser scarecrow using a wide-beam “DJ” laser attached to an Arduino-controlled electric motor to sweep the field at tassel height from dawn to dusk. This unit was tested on the URI research farm using the same split-field strategy as for detasseling. In the field where sparrows were the dominant bird species the laser had no effect – 2.1% of ears in the control plot were damaged, compared to 2.3% and 3.1% in the two laser-protected plots. However, in the field where crows and grackles were the dominant species, the laser reduced damage from 3.2% to less than 1%. The company Carpe Diem Technologies out of British Columbia sells a laser scarecrow for agricultural use, and three corn growers in RI have purchased units from Carpe Diem Technologies. During 2016 we worked with these growers to evaluate the performance of the commercial lasers. Only one grower was willing to let us collect data in his fields, and by the time he installed the laser scarecrow bird pressure was too low to obtain meaningful results. However, two growers found the units to be highly

effective at keeping starlings from entering open barns, and all three growers reported that the lasers reduced bird activity in protected fields.
Funds remaining in the project after the 2016 field season were used to purchase components to construct laser scarecrows for future research. We developed a laser scarecrow optimized for use in sweet corn and other herbaceous crops (the Carpe Diem product was optimized for use in orchards) and scaled to fit the small fields and diverse agricultural landscapes of Rhode Island. Seven functional prototypes were constructed for field use.
The results of this study were communicated to growers through project reports published on the Vegetable Production Research website http://digitalcommons.uri.edu/riaes_bulletin/24/, and a presentation at the New England Vegetable and Berry Growers Association meeting in Hudson, MA on February 6, 2017. The sweet corn work was also featured at the URI Vegetable Program Field Day in 2015. The video on de-tasseling that was proposed as a deliverable was not made, because de-tasseling was found to not be an effective practice. An estimated 50 specialty crop growers attended the meeting in Hudson, MA. Laser scarecrows were tested on 4 commercial sweet corn farms in 2017. Historical crop damage on these farms is 80 to 100% with no protection or 40% with propane cannons. The laser scarecrow kept damage below 10% of first ears.
Based on the results of this study, we do not recommend detasseling fresh market sweet corn as a method of bird control. Detasseling does not eliminate bird damage, and it may make fields more attractive to crows. Detasseling requires significant investment in labor or specialized equipment, and it interferes with the function of some sweet corn harvesters. Detasseling does facilitate harvest in hand-harvested fields, but it has the potential to reduce yields, particularly if growers harvest second ears. Preliminary tests suggest that laser scarecrows are more effective than detasseling at preventing bird damage. The scarecrows are less expensive than mechanical detasselers, require minimal labor, and have no effects on yield or harvest options.

Goals and Outcomes Achieved

The primary goal of this project was to eliminate the use of propane cannons in sweet corn fields adjacent to densely populated areas by demonstrating that de-tasseling is an effective and economically viable alternative for preventing bird damage. We were unable to achieve this goal as de-tasseling was shown to be neither effective nor economically viable. However, in the course of investigating de-tasseling for bird control we became aware of a new technology, laser scarecrows, which is an extremely promising alternative to propane cannons.
The secondary goal of this project was to determine whether de-tasseling has any negative effects on sweet corn yield and quality, and to identify positive effects in addition to reduction of bird damage that could help offset the increased costs to growers associated with de-tasseling. We achieved this goal. De-tasseling negatively affected yield in 2015, but had no effect under drought conditions in 2016. Quality was not affected. De-tasseling does improve conditions in the field for harvest workers, but this effect is valuable only when fields are hand harvested. Since detasseling does not reduce bird damage, any other effects are of limited interest.

In 2016 we changed the goal of the project to focus on developing prototypes for laser scarecrows. We were successful in obtaining funds from Northeast SARE to test the laser scarecrows during the 2017 field season. The scarecrows proved extremely effective, and we are pursuing additional funding and working on commercialization of a laser scarecrow optimized for the needs of RI growers.

Beneficiaries

The intended beneficiaries for this project were Rhode Island sweet corn producers, particularly the growers who currently use propane cannons. Because we found that de-tasseling was not effective at reducing bird damage to acceptable levels, the only benefit growers gained from this project was the assurance that they are not neglecting a useful practice when they do not de-tassel their corn. However, this project led directly to our investigation of laser scarecrows. While that research is still in the preliminary stage, it has potential to benefit sweet corn producers and other specialty crop producers. An estimated 50 specialty crop growers attended the meeting in Hudson, MA. Laser scarecrows were tested on 4 commercial sweet corn farms in 2017. Historical crop damage on these farms is 80 to 100% with no protection or 40% with propane cannons. The laser scarecrow kept damage below 10% of first ears. In RI in 2016 sweet corn yields averaged 565 dozen ears per acre, with a value of $5.95 per dozen. If a grower switched from using propane cannons to using the laser scarecrow, marketable yields would increase by ~150 dozen ears per acre, worth $890 per acre. For growers who do not currently protect their sweet corn from birds, use of laser scarecrows could prevent losses exceed $3,000 per acre.

Lessons Learned

This project was useful in building relationships between the URI Vegetable Program and RI sweet corn growers. Sweet corn operations tend to be among the largest farms in the state, and the farmers are generally older with many decades of farming experience. They often rely on agricultural chemical suppliers for advice, rather than URI Cooperative Extension.

We learned that multiple locations are important for bird control studies, because we cannot control where the birds will go. However, sweet corn producers are reluctant to allow us to test new practices unless they believe the practices will work. Once they see that something works, they want to implement the practice on all their fields, making controlled studies challenging.

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Additional Information:

Figure 2. A row of de-tasseled corn plants flanked by two rows of intact plants in the 2015 field trial.

Figure 2. Matt Crudale and Brett Davis de-tasseling corn in 2016.

Figure 3. Sweet corn with bird damage.

Project Title: De-Tasseling Sweet Corn to Prevent Bird Damage: An

Figure 4. Laser scarecrow 2016 version.

Alternative to Cannons?

Figure 5. Laser scarecrow 2016 version.

Enhancing the Competitiveness of New England Specialty Crops through Regional Collaboration

Final Report

Project Summary

Schools, hospitals, restaurants, and other institutions are more conscious about where the food they're serving is sourced from. Consumers are demanding local food and transparency about where their food is grown. State and federal contracts are including language which stress the importance of buying local or regional food before buying nationally or even internationally.

To meet those demands and requirements schools, institutions, and restaurants are looking to purchase more regional specialty crops but are struggling to do so. This is an area of purchasing which is becoming more and more important yet harder to accomplish.

From an industry perspective, producers are hungry for and always say there is a need for education and educational opportunities. Evaluations from previous HNE-sponsored conferences reinforce this desire. Direct buying and one-on-one meetings with buyers are very uncommon but are expected to be positively received by the industry.

This project broke down barriers to regional specialty crop purchases at the wholesale level by:

Component 1, Producer Education: specialty crop producers had the opportunity to better understand the wholesale buying and marketing opportunities at the 2015 and 2017 Harvest New England Agricultural Marketing Conference and Trade Show.

Component 2, Consumer Education: educating consumers during HNE Day at the 2015, 2016, 2017 Big E, New England's' largest agricultural exposition, on the importance of regional food, where they can source it, and the importance of demanding it. This was accomplished through the *Passport to New England* where consumers, both adults and children, had the opportunity to learn about New England specialty crops by engaging in agricultural trivia in each state.

This project built on previously funded projects and complimented and enhanced previous worth through the following:

Component 1, Producer Education, Harvest New England Ag Marketing Conference and Trade Show was a component previously funded by the USDA SCBG-FP program. The 2011 and 2013 conference was extremely well received. The survey conducted at the 2013 conference concluded that 78% of respondents said they had an increase in sales as a result of marketing techniques learned at the 2011 and 2013 conference. The difference between the previously funded

conference and the 2017 conference is the specific topic of focus. The focused area in 2011 and 2013 was direct to consumer sales. 2014 SCBG funds has allowed us to build upon the previously established conference and shift the focus for the 2015 and 2017 conference to wholesale marketing and marketing opportunities. New speakers, new tracks, and new seminars and workshop were developed for the 2015 and 2017 conference respectively. The 2011 and 2013 HNE Conference has had great significance to the industry, resulting in a positive impact and change, and is important to the target audience. A record attendance number reinforced the importance of the regional conference. Through continued funding, HNE had the opportunity to expand educational opportunities beyond direct-to-consumer topics and further develop and expand the conference for specialty crop producers.

Project Approach

Component 1, Producer Education, Harvest New England Ag Marketing Conference and Trade Show

In August 2014, the HNE board began planning the 2015 Harvest New England Agricultural Marketing Conference and Trade Show to be held in February 2015. The committee reached out to the Food to Institution New England (FINE) and the MA Association of Agricultural Commissions to create a conference which would work towards solely enhancing the competitiveness of New England specialty crops through wholesale channels. .

A total of 29 breakout sessions and two general sessions were provided to nearly 500 producers, which reported being a specialty crop producer, selling specialty crops or working with specialty crop producers and over 300 trade shower exhibitors and conference presenters.

The keynote speaker, Jonathan Raduns from FreshExpress presented on marketing strategies to improve sales for fresh fruits and vegetables. The general session speaker on day two discussed how to work with and think like a millennial to improve your business.

Other breakout sessions included:

- Branding your product and building a strong brand
- Breaking into the institutional market
- Merchandising and display techniques
- Establishing contracts with institutions
- Finding grant and loans
- Benefits of a marketing co-op
- Working with food hubs and processing centers
- Business succession
- Pros and cons of wholesaling to grocery stores and national chains

- What farmers need to know about selling to a distributor
- Budgeting
- Successful value-added products
- Capitalizing on the farm to table experience

The RI Division of Agriculture SCBG allocation covered the cost of the specialty crop keynote speaker.

Planning for the 2017 conference began in 2016. The planning committee thought that adding a hands-on options would be well received and two tour agendas featuring specialty crop farms were assembled and promoted. In the end, only enough participants attended to run one tour.

In December, information was released throughout the region by all of the six New England state departments of agriculture. The extent of the promotion in each state varied. Most included email distribution, information in an agency publication, on agency websites and communication to specialty crop commodity associations in each state. Information was also posted on the Harvest New England website and distributed to all previous conference attendees.

New this year, a Facebook event was developed and managed by the New Hampshire Department of Agriculture in conjunction with the registration manager that was hired. This was the first time, HNE had a presence on social media.

Again this year, scholarships were offered through ME Dept of Ag's SCBG allocation to the conference.

The keynote speaker selected was Craig Ostbo from Koopman Ostbo Marketing Communications in Portland, OR. Mr. Ostbo was the keynote speaker at the National Specialty Crop Block Grant Coordinators Conference in August 2015 and he was willing to travel to the Northeast to be the keynote and general session speaker at the 2017 HNE Conference. His presentations were all very well received and had a great response by attendees.

No funds from the RI Division of Agriculture's SCBG allocation went towards the 2017 conference.

Component 2, Consumer Education, Harvest New England Day at the Big E

The 2016 event took place on Friday, September 30th. The postcards (passports) were distributed on the front lawns of the New Hampshire and Massachusetts/Rhode Island buildings. Here, HNE staff encouraged and explained to Big E attendees how the program worked. The program ran from 10:00 a.m. to 4:00 p.m. Passport go-ers had

until 5:00 p.m. to turn in their completed passport in exchange for a reusable bag which promoted New England grown specialty crops.

HNE Day at the Big E was held again this year on September 29, 2017. It was decided the logistics of the program would remain the same as 2015 and 2016; users would pick up their passport and find the stamping location within each building. They would be asked one or two questions about specialty crops within their state to obtain a stamp. Once all six stamps were collected they would complete three additional questions on the postcard about specialty crops and redeem the passport for a reusable specialty crop-themed bag.

Originally, funds from RI were going to cover cost for the 2017 HNE Day at the Big E. After assessing the budget and what would be most financially responsible, it was determined to shift funds from the 2017 program to the 2016 program. This allowed the HNE board to purchase all necessary materials for 2016 and 2017 programs in a larger volume allowing for a lower cost per item.

Goals and Outcomes Achieved

	AWARDED	ACTUAL
GOAL	To educate specialty crop producers and provide buying opportunities between specialty crop producers and wholesale buyers to increase sales and consumption of New England grown specialty crops.	We certainly reached our goal of educating specialty crop producers and providing buying opportunities between specialty crop producers and wholesale buyers with the intention of increasing sales and consumption of New England grown specialty crops.
PERFORMANCE MEASURE	Each component will have a specific performance measure to ensure the overall goal is met. *Component 1:* Specific questions on the evaluation form asking if specialty crop producers are better aware of how to work with wholesalers and institutions and market their specialty crop products as a result of attending the conference. *Component 2:* The number of consumers who complete the passport during the 2015, 2016, and 2017 Big E and the responses to the follow up survey which ask participant to assess their change in knowledge about regionally grown specialty crops and where to source them.	*Component 1:* Questions were added to the conference evaluation specific to wholesale buying and purchasing and to measure if there was an increase in specialty crop sales as a result of knowledge gained at the HNE Conference. *Component 2:* The number of passports were counted and a follow up survey was answered by participants at the time of participation to assess their change in knowledge.
	Overall, there will be a 15% increase in the amount of New England grown product	Data provided by the National Ag Statistic Services is a challenge to compare. The 2012

TARGET	consumed and purchased.	census vs. the annual surveys do not provide data on the same categories or information on a state and regional level. Therefore it is hard to determine the actual increase in the amount of New England grown product consumed and purchased. However, based on the outcomes mentioned below, one can conclude there has been an increase in purchases and consumption of specialty crops throughout the region though that exact number cannot be determined.

Major successful outcomes in quantifiable terms:

Component 1, *Producer Education*, *Harvest New England Ag Marketing Conference and Trade Show*

According to survey respondents, the benefits of attending the 2015 and/or 2017 Harvest New England Conference are extensive including:

- 58.33% ('15) and 63.16% ('17) of people said it was a great or really great conference
- 36.08% ('15) and 42.6% ('17) of people said their knowledge improved quite a bit or even a ton as a result of attending
- 64% of people said they are better aware of how to work with wholesalers and institutions as result of attending
- 16.87% ('15) and 5.83% ('17) were socially disadvantaged farmers and 19.12% ('15) and 36.46% ('17) have been faming for less than 10 years

Component 2, *Consumer Education*, *Harvest New England Day at the Big E* On average, 95% had a change in knowledge about what a specialty crop as a result of participating in the program, 80% said they will eat and buy more New England grown specialty crops and that they now know where to buy New England grown specialty crops. Participants were from the six New England states in addition to New York, Florida, George, Minnesota, Michigan, Tennessee, Pennsylvania, California, Ohio, Texas, Hawaii, and New Jersey.

Beneficiaries

For each component of this project, the following beneficiary groups can be identified:

Component 1, *Producer Education*, *Harvest New England Ag Marketing Conference and Trade Show*

- New England specialty crop producers, aprox 750 total in 2015 and 2017.

Component 2, *Consumer Education*, *Harvest New England Day at the Big E:*

- New England specialty crop producers
- Fairgoers at the 2015, 2016, and 2016 Harvest New England Day at the Big E.

Lessons Learned

Component 1, Producer Education, Harvest New England Ag Marketing Conference and Trade Show Outreach and marketing is key to the success of the conference. In 2017, a registration manager was hired to assist with conference administration (not paid for with Specialty Crop Block Grant Funds) and it made a huge difference. HNE board members were able to promote the conference better and spend more time identifying speakers, etc. We offered a scholarship program (paid for by ME Dept of Ag's SCBG allocation to the conference) and we could have awarded more scholarships but did have enough qualifying applicants. The tours were a nice offering but didn't have the response we were hoping for.

Component 2, Consumer Education, Harvest New England Day at the Big E: The one area that HNE always falls short on is staffing and/or volunteers. HNE members worked the event with only one break throughout the day. Given it's a very outgoing and interactive job, it turns out to be a rather exhausting day. More volunteers would make it a more effective and enjoyable event for all.

The final lesson learned is to understand the resources provided by USDA NASS. It's unfortunate we were unable to truly identify the percentage increase in specialty crop consumption throughout the region because information available did not facilitate that.

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