Specialty Crop Block Grant Agreement No. 12-25-B-1260

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Table of Contents

PROJECT 1:	Enhancing the Competitiveness and Sustainability of Organic Apple Production in Vermont (Previously Accepted)	2
PROJECT 2:	Increasing the Competitiveness of Vermont Certified Organic Specialty Crop Producers (Previously Accepted)	6
PROJECT 3:	Providing Food Safety Training for Vermont Produce Growers (Previously Accepted)	12
PROJECT 4:	Growing a Community that Feeds Itself (Previously Accepted)	16
PROJECT 5:	Capacity Building for Specialty Crop Growers in the Mad River Valley ((Previously Accepted)	21
PROJECT 6:	Growing a Sustainable Hops Industry for New England (Previously Accepted)	24
PROJECT 7:	Pick for your Neighbor	32
PROJECT 8:	~~Wiggle Weeder Pilot Production~~	
PROJECT 9:	New Markets for Specialty Crops in Schools (Previously Accepted)	37
PROJECT 10:	Growing Better Beekeepers (Previously Accepted)	44
PROJECT 11:	Vermont Wine Industry Marketing and Education support (Previously Accepted)	49
PROJECT 12:	Good Agricultural Practices Audit Cost Share Program	52
PROJECT 13:	Harvest Health Nutrition Incentive Program and Farmers Market Universal Currency Initiative	55

PROJECT 1: Enhancing the Competitiveness and Sustainability of Organic Apple Production in Vermont (Previously Accepted)

PROJECT SUMMARY

Apples are an important part of Vermont's diversified agriculture. Vermont has approximately 2,698 acres in apple production which generate $8.9 million in annual cash receipts and $12.8 million in value-added products. However, out of the approximately 85 commercial orchards in Vermont, very few commercial apple orchards are certified as organic. This does not reflect the significant interest in organic apple production; it does reflect the difficulty of growing apples organically in Vermont. Currently planted apple varieties are susceptible to a major fungal disease of apple, Apple Scab, and this is a significant constraint to sustainable and profitable organic apple production

Vermont apple growers need research-generated information on the feasibility of new apple varieties that are disease-resistant to enhance the competitiveness and sustainability of organic apple production in Vermont. Growers want to know what the potential is for sustainable and profitable organic apple production with the newer apple varieties since the older varieties, such as McIntosh, pose significant challenges to sustainable organic production because of their susceptibility to Apple Scab. Current organic disease management requires multiple applications of

organic fungicides to control this disease on McIntosh and other susceptible varieties that are planted in organic orchards. Previous research has shown that the organic fungicides (i.e., sulfur, lime sulfur) used for Apple Scab disease management have negative impacts on the trees (reduced photosynthesis) and beneficial organisms in the ecosystem. Incorporating disease-resistant apple varieties into organic production systems will allow for a significant reduction in organic fungicide use. Since the 1940's, numerous apple varieties resistant to Apple Scab have been bred and released but few have gained acceptance with U.S. apple growers or marketers. In the past, growers have cited uncertainty with the horticultural requirements of growing these varieties and consumer reluctance to buy new apple varieties as reasons for not adopting scab-resistant varieties on a large scale. However, in recent studies, trained taste panels have identified scab-resistant varieties that potentially are more acceptable to consumers, and consumers in general appear to be more willing to buy new varieties. While disease-resistant varieties offer the potential for organic apple production to be more sustainable and profitable, growers need information on which disease-resistant varieties are best suited for Vermont conditions. In addition, with the impending discontinuation of antibiotic use in organically-certified apple orchards, it is important to provide growers with information regarding the susceptibility of these new varieties to Fire Blight, a potentially devastating bacterial disease. This new information would be of significant value to growers since Fire Blight can potentially kill a tree in one growing season and can rapidly destroy a whole orchard if severe. Currently, there are no alternatives as effective as the standard antibiotic in managing this serious disease and growers would be significantly increasing their disease risk by planting apple varieties susceptible to Fire Blight.

An organic orchard containing the most promising, new apple varieties that are disease resistant is being established to research their potential for enhancing the sustainability and competitiveness of Vermont organic apple production. This is a long-term project and grant funds were used to support the second year of orchard establishment and research data collection.

PROJECT APPROACH

In 2011, an organic orchard was planted at the University of Vermont (UVM) Horticultural Research Center and contains eight of the most promising disease-resistant apple varieties: Crimson Crisp, Crimson Gold, Crimson Topaz, Williams Pride, Winecrisp, Querina, Galarina, and Liberty. This modern, high density orchard has 96 trees of each variety on M.26 rootstock at a tree spacing of 4 x 15 feet and is being trained using a tall pyramid system. This high density orchard system, which is being used in other apple regions, has the potential to produce some fruit in Year 2, with marketable production in Year 3, and full production by the fifth year of growth. In other words, the trees come into production much sooner than traditional orchard systems. Cumulative yield is significantly greater compared to traditional orchard systems, with generally greater fruit quality and reduced labor, materials, and land costs per unit of fruit produced. Therefore, this high density system can be highly profitable and is becoming popular in the northeastern U.S. This type of orchard system is relatively new to Vermont. The research orchard will not only provide new information on the potential of disease-resistant apple varieties grown using organic guidelines but also grown under this new high density system

Funds from this grant were used to support the second year of orchard establishment and research data collection. The Work Plan for the project was followed for the time period indicated in the grant proposal: Oct. 1, 2011- September 30, 2012

•**Fall 2011/ Winter 2012**: Collect growth data on study trees, including trunk cross-sectional area, terminal shoot length, and canopy volume. Perform orchard maintenance practices including groundcover maintenance such as mulching, alley mowing, and leaf shredding; and tree pruning and training.

•**Spring/Summer 2012**: Perform horticultural practices such as tree training, fertility, irrigation, and pollination. Monitor the orchard ecosystem at least weekly and implement IPM models to accurately select and time appropriate organic pest management practices. Collect data on incidence and severity of foliar disease and insects. Special emphasis was given to scouting of the orchard for Fire Blight symptoms during the growing season and any incidence was recorded. Fire Blight infected branches were removed and destroyed to prevent spread of the disease. Potential for Fire Blight was forecasted using MaryBlyt (Version 7.0, University of Maryland, 2009) and NEWA (Network for Environment and Weather Applications, NYS IPM Program, Cornell University, 2009) software. Information was distributed to growers.

•**Fall 2012:** Collect tree growth and yield data. Harvest fruit and collect yield data including mean number and weight of fruit per tree. Perform orchard maintenance practices including groundcover maintenance such as mulching, alley mowing, and leaf shredding.

Data have been analyzed and are in the process of being summarized. Information was presented to growers at the Vermont Tree Fruit Growers Association Annual Meeting in February 2013 held in cooperation with the University of Vermont Apple Team. Data will become part of the long-term assessment of the potential of new disease-resistant apple varieties for enhancing the sustainability and competitiveness of organic apple production in Vermont.

GOALS AND OUTCOMES ACHIEVED

The goal of the overall project is to research the potential of new disease-resistant apple varieties to enhance the sustainability and competitiveness of organic apple production in Vermont**.** This grant helped to support the second year of orchard establishment and research data collection. The research is part of a long-term project. The expected research life of this orchard is approximately 15 years, with data expected to be collected, analyzed, and reported annually. Data from 2012 are an important component in the overall assessment of disease-resistant apple varieties grown organically and within a modern, high density orchard system. Observations and information were distributed during the 2012 growing season via a newsletter ("Orchard Observations") to the approximately 105 growers who are members of the organic apple listserve and were archived on the UVM organic apple website (http://www.uvm.edu/~organica/ListservesBlogs/listservesblogs.html) where the information was additionally accessed by over 400 viewers. The following are the publications in which information was shared with growers:

●Berkett, L.P. 2012. Orchard Observations. April 11 issue. 5 pp.

http://www.uvm.edu/~organica/ListservesBlogs/OrchardObservations04112012.pdf
●Berkett, L.P. 2012. Orchard Observations. April 25 issue. 7 pp.
http://www.uvm.edu/~organica/ListservesBlogs/OrchardObservations04252012.pdf
●Berkett, L.P. 2012. Orchard Observations. May 9 issue. 3 pp.
http://www.uvm.edu/~organica/ListservesBlogs/OrchardObservations05092012.pdf
●Berkett, L.P. 2012. Orchard Observations. May 24 issue. 4 pp.
http://www.uvm.edu/~organica/ListservesBlogs/OrchardObservations05242012.pdf
●Berkett, L.P. 2012. Orchard Observations. June 11 issue. 6 pp.
http://www.uvm.edu/~organica/ListservesBlogs/OrchardObservations06112012.pdf
●Berkett, L.P. 2012. Orchard Observations. June 26 issue. 3 pp.
http://www.uvm.edu/~organica/ListservesBlogs/OrchardObservations06262012.pdf
In addition, a publication with background information about the organic apple orchard (which is designated as Orchard 4 at the UVM Hort. Research Center) was written and posted on the UVM organic apple website in March 2012 and has received 815 visits:
http://www.uvm.edu/~organica/OrganicOrchardInformation/Horticulture/PlantingOrchard4.html

Research results from the 2012 growing season were presented at the Vermont Tree Fruit Growers Association Annual Meeting in February 2013 which had approximately 65 attendees. All survey respondents reported the meeting overall had educational value and provided new information. Growers cited that research and outreach on the development of disease-resistant varieties are important to their farm's profitability and sustainability and survey respondents strongly agreed (100%) that the UVM apple research which was presented is relevant to their orchard operations.

BENEFICIARIES

The beneficiaries of the research project are Vermont apple growers and other Vermonters and visitors to the State who would like to grow and/or purchase sustainably grown Vermont organic apples. Sustainable and profitable organic apple production in Vermont has been a long-existing goal of organic farming in Vermont and the region. Many more apple growers are interested in producing apples organically than is reflected by the small number of certified organic orchards. In addition, it is envisioned that Vermont grown, certified organic apples would be in high demand among consumers in Vermont and beyond. Research conducted at the University of Vermont (Want et. al., 2010) concluded that a significant, unmet market exists for locally grown, organic apples. Therefore, research that addresses the feasibility and profitability of organic apple production in Vermont could significantly enhance the competitiveness and sustainability of current and prospective Vermont organic apples producers.

LESSONS LEARNED

Agriculture is a risky venture. Unfortunately, there was significant loss of fruit buds in early spring which severely impacted yield this year. The exceptionally warm weather in March advanced bud

development well beyond what would be "normal" for that time of the year. A three-night frost event from April 28-30, 2012, when the fruit buds were in the late Pink to Early Bloom Phenological Stage, had a major impact on bud survival. Since no yield was expected, no pesticides where applied during the growing season. Yield data were collected but fruit quality was not assessed because of the negative impact of the extraordinary environmental conditions that had occurred. This underscores the importance of multi-year research projects because of the variable weather conditions and the negative impact unusual weather can have in a specific year.

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PROJECT 2: Increasing the Competitiveness of Vermont Certified Organic Specialty Crop Producers (Previously Accepted)

PROJECT SUMMARY

The initial purpose of the project was to enhance the competitiveness of certified organic fruits and vegetables by re-valuing certified organic specialty crops in the marketplace and in the farming community. Vermont Organic Farmers (VOF), the certification program of the Northeast Organic Farming Association of Vermont (NOFA-VT), was motivated to submit this proposal due to several needs that had been expressed by certified organic specialty crop producers, due, in large part, to the growth in the demand for local food. The project was developed to address the following problems: 1) Growth of strong alternative labels that can compete with market demand of the organic label (eg. local, humanely raised, all natural, etc.), and 2) Consumers who don't trust the "corporate organic" label and question the integrity of the national organic certification program. The growth of certified organic is threatened by the broad criticism of organic products marketed by multinational food corporations and those who publicly question the integrity of the USDA national organic standards. In response to these concerns, the objectives of the project were to 1) develop a strategic marketing and outreach campaign to increase consumer awareness and purchases of certified organic fruits and vegetables in the marketplace; and 2) Increase the value of the certified organic brand to both new and veteran organic farmers resulting in increased pride and ownership of the brand, and an increase in the number of farmers who are marketing their specialty crops as certified organic.

PROJECT APPROACH

The following activities were proposed (in bold) in our grant proposal work plan, followed by a summary of the activities performed.

• **Develop a VOF Marketing Plan**.

Activies performed: A marketing plan was that detailed the strategies and tactics for achieving project goals. The plan was developed with the help of marketing consultant Nicole Fenton and a marketing committee consisting of a representative of the Intervale Center Food Hub, Vermont Agency of Agriculture and Markets, and 4 specialty crop producers.

• **Finalize revisions of new Vermont Organic Farmers certification logo**

Activities performed: A new logo was designed and a ballot was sent to all certified organic farmers and processors asking them to approve or reject this new image to represent their certified organic products. The paper or on-line ballot closed on January 13, 2012 with 89% of the certified organic farmers approving the logo.

• **Conduct 2 farmer focus group meetings**

Activities performed: Two farmer focus group meetings were held, one on December 5 in Brattleboro, and one on December 12 in Richmond. We heard from producers about their marketing challenges and how VOF could assist them in educating consumers about the importance of being certified organic. The main points from the meetings are as follows:

- There is confusion for consumers about what it means to be an organic farmer/producer. In addition, there is confusion for consumers about local and organic and certified organic. One farmer said, *"There is a lot of confusion going on with customers about what is organic. Local and organic are all mish mashed together, and people don't know what is what. Whatever kind of campaign we come up with here has to include some education component. It can't be done in a logo."*
- Certified farmers fear that they will alienate or make enemies out of fellow farmers who aren't certified organic if they are diligent about promoting their own certification/organic practices.
- Community is one key benefit to consumers in buying organic that maybe we (NOFA/VOF) haven't thought about yet. *"There is a social aspect of knowing where your food is from, of going to the market and being part of a CSA. People in our communities are actively community building. It's a political move."*
- Producers want to do a better job of getting their products beyond the confines of the farmer's market—to lower income residents, immigrants, the house bound, etc.
- GMO-free is an important part of the organic process that should get more focus from producers/farmers and consumers.
- Farmers want more help from NOFA/VOF. *"We need basic bullet points that are clear and simple as possible that customers can take with them and that farmers can bring to the markets, and that can be put up at markets and co-ops throughout the state."*
- Farmers want to be empowered with information about what it means to certify organic so that they can communicate more effectively with consumers.

• **Collect baseline data from retail outlets on annual gross sales of certified organic fruits and vegetables.**

Activities performed: We did not complete this activity because it is a bigger research project than we could accomplish in this project. Many of the retail establishments do not have systems to track certified organic specialty crops from Vermont producers. We did get sales data from one of our pilot outlets, and they reported that their "FY11 organic produce sales totaled just over $3,196,000 or 63.31% of that department's sales. As our sales have been increasing each year, you may want to consider looking at the % of sales number rather than just the $ figure itself." We concluded it

would make more sense, in a future study, to track retail sales before and after a marketing campaign at a small number of retail establishments that have record keeping abilities.

• Survey certified organic specialty crop producers to determine the gross sales from certified organic specialty crops.

Activities performed: For 2012, gross sales from certified organic specialty crop producers was $15,333,242. Although this serves as a good baseline, we don't feel as if it is a good measure of the success of a marketing program due to the many variables involved, and the inability to track the benefits of a marketing campaign across so many producers.

• Hold meeting of certified organic farmers to provide input into the marketing plan and certification logo.

Activities performed: We held an annual meeting of the Vermont Organic Farmers on January 25, 2012. Consultant Nicole Fenton presented the draft marketing plan and then facilitated a discussion about the components of the plan and the new brand. We heard from the specialty crop producers that they need easy, consistent messaging for marketing. They want to all be on the same page to really strengthen the VOF brand. Nicole presented the results of the first step of the plan to revise the VOF logo to be more distinguishable and make an identity for VOF products. Nicole outlined that the next steps will be to strengthen the base; to provide marketing materials to producers who are on the front line, directly marketing VOF and VOF certified products.

Develop test marketing materials utilizing new logo.

Activities performed: Based on the input from the specialty crop producers at the focus groups in December and the January meeting, marketing consultant Nicole Fenton and the VOF staff tested the following marketing materials: brochure and poster topics outlining the five main reasons why consumers purchase organic products, tag line options based on suggestions from the focus groups, and price card options. The brochure and price cards are attached.

• Farmer and consumer surveying to get input on the test marketing materials.

Activities performed: Consumer and farmer surveying took place on July 9th at a food festival attended by 750 people, and July 19th, and August 6th 2012 at on-farm NOFAvore socials. The consumers were asked what their top reasons for choosing organic were and for feedback about the tagline. The farmer and consumer participants at the farm socials were asked to review different price cards and vote on size and color, respond to the tagline options, and review other products that would help market the brand (eg. t-shirt, hat). NOFA's mobile oven was used at the on-farm socials to prepare a summer meal featuring the certified organic produce from the host farm, and showcase the organic products from area farms. Approximately 36 consumers filled out the survey and 28 farmers participated in the on-farm discussions. We received feedback regarding the sizing and style of price cards, important words to include in a tag line and the most compelling reasons why consumers purchase organic products. The suggested taglines were: Local and Organic, Tastes Great Together; The Best Organic is Local, and Certified Organic, Locally Grown. We then put these taglines up on our facebook page on August 13, and the tagline of Certified Organic, Locally Grown received the most votes. A vote was also taken to determine the most compelling reasons to purchase organic, which were then used as headers for the brochure. The headings that received the most votes, in descending order, were: Healthier for You and Your Family, Supports Local Farmers, Better for the Earth, Supports Your Local Economy and Tastes Great. Based on this feedback, the marketing materials were revised in preparation for our retail pilot during national organic month.

• Pilot marketing materials at retail outlets during national organic month.
Activities performed: We partnered with 3 natural food cooperatives: Putney Co-op, Upper Valley Co-op and City Market/Onion River Co-op. The coops printed or were provided with 11x17 posters (attached), we tabled in City Market and conducted consumer surveys, a promotional article was submitted for the pilot stores' newsletters, the certification director was interviewed on TV, using the talking points that were generated for the brochure development, and print/radio ads were placed in Vermont Public Radio, Burlington Free Press Savorvore, Vermont's Local Banquet, Seven Days, and Rutland Area Farm and Food Link publication.

Project partners: NOFA-VT relied on many partners to make this project successful, as follows:
• The Vermont Agency of Agriculture and Markets was instrumental in program planning, and served on the marketing advisory group.
• The farmer members of the marketing committee, and those who participated in the focus groups and attended the farmer socials to give input into the marketing plan and materials.
• The food cooperatives that partnered with us to pilot the marketing materials and evaluated our marketing campaign.

GOALS AND OUTCOMES ACHIEVED

The outcomes that were anticipated for the project are in bold print below, accompanied by the progress made.
Expected outcome: The number of certified organic specialty crop producers using the Vermont Organic Farmers certification logo on their products will increase.
Progress towards goal: We anticipated that, because of the project, 85% of the certified organic fruit and vegetable producers will use the logo. During the period of performance, 100% of the certified organic specialty crop producers received a metal sign displaying the logo. Whereas some of the farmers are still switching their artwork from the old logo to the new logo, 100% of the farmers are either using the new logo, or are in transition to using the new logo, exceeding our projections.

Expected outcome: The retail stores that carry certified organic products will prominently display a sign with the VOF logo on it to market to their customers the fact that they carry Vermont certified organic products. As a result of this project, 50% of the food cooperatives that sell Vermont certified organic products will commit to display the VOF logo, which will be measured by a retailer survey.
Progress towards goal: Since we piloted our marketing materials at 3 food cooperatives, we surveyed the stores in November to ask, if they would be interested in displaying a sign with the new logo that says (tentatively) "Vermont Organic Farmers products sold here. Certified Organic, Locally Grown." All of the coops said they are interested in using the sign, but one coop thought an 8x8 sign would be too big, and they questioned whether it was window cling, or an outdoor, waterproof sign? Given their interest, but desire to evaluate different display methods, we will mock up the different options before we do a comprehensive retailer survey. In the evaluation of the retailer pilot, we also asked: what types of marketing materials can make the most impact in your store to community with customers? Would you be willing to display and distribute brochures that outline 5 benefits to choosing local and organic? Are there materials that we did not provide that you think would be useful to promote local and organic products? Of the artwork you displayed, what messaging or visuals did your customers best respond to? Overall, the pilot retailer

locations were very positive about the test market, and want to continue to work with us to make the messaging work year around. We will follow up with a survey to all of the food cooperatives this winter to share the results of the retail pilot, and to assess their interest in displaying the VOF logo.

Expected outcome: the gross sales of Vermont certified organic specialty crop producers participating in the pilot marketing campaign will increase 10% over the period of this project, measured by a survey of gross sales before and after involvement in the pilot.
Progress towards goal: Although one of our activities was to pilot the marketing and outreach project with farmers during national organic month, we ended up only testing the marketing materials with the 3 retail coops. We have questions about the ability to measure sales changes during one month and attribute that to a marketing campaign.

Expected outcome: Consumers will increase their knowledge about certified organic specialty crops and the value of certified organic food due to the marketing and outreach campaign. We will utilize the Vermonter poll and purchase 2 questions annually to measure if there is a shift in consumer knowledge.
Progress towards goal: VOF and Skillet Design & Marketing conducted consumer surveys to members of City Market and Putney Co-ops—one before the month-long marketing campaigns began in the co-ops and one after the campaigns were complete. The goal of the survey campaign was to increase consumer awareness of organic products in Vermont and to help consumers gain a better understanding of the value of certified organic food. We hoped that speaking to consumers twice would allow us to gauge how customer purchasing patterns and awareness had changed (if at all) as an effect of the marketing campaign.
General Analysis: When asked where they spend the majority of their food-purchasing dollars, respondents' answers moved only within 5 percentage points between surveys. Local, Organic and Local and Organic each got about 1/3 of a share of the responses. The majority of pre-campaign respondents (73.1%) said that they look for the USDA organic certification logo to know if food is organic. The answers were more equally split for post-campaign respondents. Only 47.8% of post-campaign respondents said that they look for the USDA organic certification logo (down 25.3% from the first survey). 52.2% of post-campaign respondents said they look for the VOF logo, up 9.9% from the first survey. *This could be a sign of increased awareness of the VOF logo.*
Although we proposed to utilize the Vermonter poll, we thought the City Market poll would be an efficient way to measure consumer knowledge, since we had partnered with them on the retail pilot. We now recognize that the Vermonter poll will offer a broader sampling pool, and may be a better choice, moving forward.

BENEFICIARIES

The primary beneficiaries of this project are the certified organic speciality crop producers in Vermont. In 2010, at the time of writing this proposal, there were 142 specialty crop producers, with 117 organic vegetable producers, 13 fruit producers and 12 growing horticultural crops in greenhouses. These growers were managing 1,396 acres organically. In 2011, there were a total of 157 specialty crop producers, growing on 1,485 acres, with an accompanying increase in gross sales. This represents a 10% growth in the number of specialty crop producers from 2010 to 2011.

We have not yet completed our analysis for 2012. In our proposal, we estimated that there would only be a 2% increase in the number of certified organic specialty crop producers. Due to the fact that our marketing campaign was only tested during the period of the grant, and not rolled out into a comprehensive program, we can assume that our project helped, but was not the causal factor of this increase.

LESSONS LEARNED

Overall, this was a very successful project – we were able to accomplish our projected work plan, developed a strategic marketing plan, and now have many of the tools in place needed to implement the plan. We received a second year of funding from a Specialty Crop Block Grant to make farmers aware of the marketing materials developed, provide training in direct marketing, and develop marketing videos. In addition, we applied for a SARE Community Partnership Grant to forward our marketing partnership with certified organic specialty crop producers. As a result of completing this project, we identified the following lessons learned by project staff:

• Shifting consumers purchasing decisions takes a long time, and there will need to be continuous marketing outreach to make subtle shifts. With many of the farmers still transitioning to the new logo, there was confusion trying to evaluate the value of the new brand. Consumers are bombarded with marketing messages, logos, etc… So, for a new logo to penetrate their consciousness, it will require consistent messaging, and other opportunities, such as meeting farmers, viewing videos that tell the farmer story, etc…

• Expand the marketing materials to address issue of price. Consumers need to understand why local & organic products cost more. Speak to the values of the farmers and the consumer to communicate why the product is more expensive. Perhaps develop an arm of the campaign that puts the issue front and center. I think addressing the issue head-on would be a refreshing change for consumers.
• Increase the locations that showcase the marketing materials, including all co-ops statewide. In addition, reach out to smaller, local grocery stores that carry organic products and offer marketing materials to help communicate the value of local & organic products. I.e. Harvest Market in Stowe, Mac's Market statewide, The Village Market in Waterbury, etc.
• Develop a plan to build relationships with larger grocery store chains to showcase marketing materials. Start with a smaller grocery chain in Chittenden County that has expressed interest in increasing their local and organic offerings. Set up a meeting to discuss how NOFA/VOF and the store can work together to communicate benefits of local & organic products.
• Many of the farmers at the focus groups mentioned their desire to reach audiences that they do not currently reach to the extent they would like – for example low-income consumers and youth. Moving forward, this will be important to address.

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ADDITIONAL INFORMATION

- VOF price card
- Rack card/brochure
- Promotional poster used in pilot marketing campaign during national organic month

PROJECT 3: Providing Food Safety Training for Vermont Produce Growers (Previously Accepted)

PROJECT SUMMARY

Knowledge of food safety practices is becoming an increasingly important part of doing business for specialty crop growers in Vermont. While a limited percentage of Vermont's produce growers will choose to become GAPs certified to meet buyer's requirements, or will be subject to the FDA's pending regulations because of the size of their business, all of Vermont's approximately 800 produce growers should be aware of basic food safety practices, be utilizing them on their farms, and be able to discuss their practices with their customers. This is especially true of farmers who sell to schools, hospitals, and other institutions that serve vulnerable populations. The challenge is that GAPs were initially designed for large scale operations producing one or a few commodities. Therefore, very little educational and training materials exist for the small, mid-scale, and diversified farms that predominate in New England and form the basis of our local food system.

UVM Extension's Center for Sustainable Agriculture was granted $22,000 to develop a dual-track training program to help Vermont's produce growers implement food safety practices on their farms. In our grant application, we stated that one track was intended for farmers pursuing GAPs (Good Agricultural Practices) certification, and the other was intended for farmers interested in improving on- farm food safety practices, but who are not currently considering GAPs certification. This project built on needs identified during a previous SCBG grant to NOFA-Vermont to provide GAPs training to Vermont farms.

We proposed a curriculum that would consist of:

1) **A manual** that takes farmers through the process of assessing the risks for microbial contamination on their farm and developing strategies for addressing those risks;
2) **Day-long workshops** on how to write a food safety plan, and **farm tours** demonstrating on-farm food safety practices
3) Development of **website materials** consisting of much of the information in the manual and links to other useful resources geared towards small and mid-sized farms and diversified farms.

The bulk of the funds went towards paying a program assistant with a background in public health to research the science behind the risks of food borne illnesses and produce safety and to develop and disseminate instructional materials on how food safety practices can best be implemented on small and medium sized and diversified farms.

PROJECT APPROACH

We initially proposed conducting two GAPs workshops and Twilight Tours in addition to two Practical Produce Safety Workshops. As outlined in requests for change to the SCBG submitted by

Ginger Nickerson to Chelsea Lewis (see Appendices for Request for Change of Scope), due to lack of interest in GAPs certification, we focused our efforts on the Practical Produce Safety track, and instead of having twilight tours we incorporated an on-farm tour component to the day-long practical produce safety plan writing workshops.

Activities performed included: 1) completion of the Practical Produce Safety Manual (see Attachments 1 and 2) and factsheets, 2) three day-long Practical Produce Safety workshops that included both classroom time and on-farm components with prior gradates of the program demonstrating how they implemented practices from the program on their farms, and 3) posting educational materials and resources developed through the project period on the Center for Sustainable Agriculture's Produce
Safety webpages:
http://www.uvm.edu/~susagctr/?Page=whatwedo/producesafety/gapresources.html

In addition, after being asked by the Agency of Agriculture to conduct research on wash water quality, we also added an additional deliverable, 4) a factsheet summarizing the results of this study for a farmer audience:
https://www.uvm.edu/~susagctr/whatwedo/producesafety/GAPsResources/PSWashWaterStudySumma ryJan13.pdf Information from this study is also being shared through the Vermont Vegetable and Berry Growers Association.

We periodically consulted with other project partners, including the Vermont Vegetable and Berry Growers Association and staff at the Northeast Organic Farmers Association- Vermont, about how to meet the specific educational needs of Vermont growers, identifying overlaps and consistencies for certified organic growers, and information on wash water quality and rinsing produce. Other stakeholders that we consulted with during the project included the Vermont Agency of Agriculture, the Vermont Department of Health, and Highfields Institute.

We held three Practical Produce Safety Workshops: April 10, 2012: Richmond, VT and Jericho Settler's Farm; February 12, 2013: Ascutney, VT and Deep Meadow Farm, and April 11, Vergennes, VT and Bella Farm. Each workshop included 1) a presentation covering basic microbiology and epidemiology of foodborne illness and produce safety practices, 2) time and assistance for drafting a farm-specific produce safety plan using a provided template, and 3) a visit to a farm of a graduate of an earlier PPS workshop, to see how they implemented produce safety practices.

The primary reason given for attending the workshop (81.6% of respondents) was to improve food safety practices in general (as opposed to being asked about food safety by a buyer or preparing for GAPs certification). Workshop participants that responded to evaluations immediately after the workshops consistently gave the workshops high ratings for satisfaction, and 92% of respondents from all of the workshops indicated that they intend to make changes on their farms based on the workshop. Follow-up farm visits to a sample of 10 farms from the first two workshops indicate that farms are prioritizing these actions and implementing them in phases, usually beginning with improvements in either employee training, improvements in produce cleaning, or management of harvest containers and other contact surfaces.

The manual was reviewed by two farmers (Rich Bonanno of Pleasant Valley Gardens, http://pleasantvalleygardens.com/ a produce operation in Methuen MA, that sells primarily wholesale; and Megan Baxter, production manager at Cedar Circle Farm http://www.cedarcirclefarm.org/about/farm-crew/profiles/meganbaxter/. Rich is a plant pathologist who also provides GAPs outreach for UMASS Extension, and Megan developed one of the first GAPs plans for a diversified farm in Vermont, and has done a great deal of training with the employees at Cedar Circle farm on produce safety. Other reviewers included other produce

safety and GAPs
Extension educators: Luisa F. Castro, Farm Food Safety Coaching Program, College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa; James R. Hollyer, Farm Food Safety Coaching Program, College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa; and Michele Schermann, R.N. M.S., Agricultural Health and Safety Research Fellow, Bioproducts and Biosystems Engineering Department, University of Minnesota.

The manual was created to function both as a complete document that growers can use as a guide to developing their own produce safety plans, and as individual factsheets on specific issues that can be downloaded as needed. The Extension-based reviewers were impressed with the utility of the manual for the audiences that they serve and have asked to post links to it, or portions of it on their websites.

Factsheets were shared with farmers throughout the project as they were developed. We printed 100 copies of the manual that will be shared with farmers through Practical Produce Safety workshops.

Many of the factsheets and resources developed during this project are on our website. We are in the process of revising the produce safety program webpages and will be incorporating additional materials from this grant as those updates progress.

GOALS AND OUTCOMES ACHIEVED

We identified two goals in our funding proposal:

1. **Increase the number of Vermont produce farms obtaining USDA GAPs certification** (GOAL) from the current 20 to 50 in one year (TARGET) measured by the number of farms receiving GAPs certification (PERFORMANCE MEASURE).

This goal was not met, largely because the vast majority of produce farms in Vermont do not sell to buyers who are requiring GAPs certification. Those that do sell to these buyers have already received GAPs training, written their plans, and been successfully audited by the end of 2010. Although some of the participants in the workshops indicated that they are considering becoming GAPs certified in the future, because of the considerable costs associated with a GAPs audit, they are moving slowly in their preparations.

2. **Increase the number of new produce farms who have written and implemented on-farm food safety plans** from the current 20 (BENCHMARK)) to 40 (TARGET) in one year.

Despite the hesitancy about seeking GAPs certification, Vermont's produce growers are very interested in learning about produce safety principles and practices, and we were able to surpass the target for this goal. Because we provide considerable one-on-one guidance to participants during the day-long workshops as they work on their plans, we tried to keep the registration cut-offs to 15 farms per workshop. Each farm is encouraged to bring multiple representatives however, in order that as many people as possible on the farm have in-put into the plan and to make it easier for them to educate
others on the farm about food safety principles. At the beginning of this project, 20 farms had drafted on-farm food safety plans through participation in the pilot PPS workshops. By completion of the project, an additional 37 farms have completed on-farm food safety plans, bringing the total to 57, or 17 over our initial target.

In order to measure progress towards implementation of plans, we conducted a six-month post-workshop survey of previous cohorts of the workshop, reviewed farm plans from nine farms that had gone through the program, and conducted follow-up farm visits with eight farms. Of

the eight farms that received follow-up visits, none has implemented all of the actions that they identified on their plans, but all had successfully implemented the actions that they identified as highest priority.

BENEFICIARIES

The intended beneficiaries of this program were Vermont's approximately 800 produce farms consisting of at least 494 vegetable farms, 305 fruit tree orchards, and several farms specializing in berry production.[1]

Fifty-three farmers and farm workers from Vermont and New Hampshire attended the workshops and completed initial drafts of on-farm produce safety plans. We cannot determine exactly how many additional farms accessed the educational materials on the website during the grant period, in part because we can't identify who is downloading information from the website, and also because during two months of the project we were unable to collect Google stats because of changes to our website design, but visits to the produce safety resource webpage have averaged at least 250 visits per month over the last few months.

[1] Vermont Sustainable Jobs Fund (2011) Farm to Plate Strategic Plan: A 10-Year Strategic Plan for Vermont's Food
System. Executive Summary p. 15.

LESSONS LEARNED

At each workshop, over 50% of the participating farms have livestock, have on-farm visitors, and are certified organic. It is our belief that this is indicative of the type of produce operation that predominates in Vermont. As such, it is important to recognize that these farms have different needs and different risks for microbial contamination than might occur on a large-scale conventional operation that does not have on-farm visitors, and only grows a few types of crops, and tailor educational content appropriately. Because many of the farms also sell to schools, hospitals and other institutions, we are considering incorporating a section on working with institutions in future factsheets/editions of the manual.

The six month follow-up survey indicated that the top five practices that most commonly changed on farms after participation in the workshop were: handling of harvest containers (90%), employee training in produce safety (80%), expanded produce safety plans (i.e. they returned to their plan after the workshop and added to and improved it) (75%), installed hand-washing stations (60%), and improved record-keeping (55%). This indicates to us that graduates of the program are most likely to make changes that are easy (harvest containers), and low-cost (employee training and record keeping), but that can also make a significant difference in reducing the risk of microbial contamination.

In general, participants in the workshop were eager to learn about how to improve food safety on their farms – probably a selection bias since they volunteered to spend a day at the workshop. They were most appreciative about practices that could improve their organization, employee management and efficiency. However, there are some practices that participants challenged as not appropriate for small scale farms – for example, covering produce as it moves from the field to the pack house, and the need to add disinfectant to rinse water –as they are especially concerned with practices that may slow production times down. It would be helpful to have more scientific research on the risks of food-borne illnesses associated with produce from small scale diversified farms, and on how to adapt good agricultural practices to small scale operations - particularly, how

to monitor the efficacy of disinfectants in dunk tanks.

CONTACT

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ADDITIONAL INFORMATION

1. Pdf version of Practical Produce Safety Manual
2. Cover of Manual
3. Practical Produce Safety Workshop PowerPoint
4. Request for Change of Scope

PROJECT 4: Growing a Community that Feeds Itself (Previously Accepted)

PROJECT SUMMARY

The *Growing a Community that Feeds Itself* project is a collaboration between the Center for Sustainable Agriculture (CSA), UVM Extension and the Saint Johnsbury Area Local Food Alliance (St J ALFA).

Health and food security are issues of great concern in Caledonia County, Vermont. According to the Vermont Campaign to End Childhood Hunger, 1 in 5 children in this County are food insecure and 50% or more households qualify for free or reduced-price meals with the percentage of households in poverty exceeding the state average at 11.8% . This project was particularly timely given these levels of food insecurity and the recent draconian cuts to food stamps. Education related to food choice and nutrition can help alleviate food security as well as diet-related diseases. Hands on lessons which encourage garden-scale food production can help increase the effectiveness of nutrition education goals while creating consumer demand for local, fresh food. The important aim of this project was two part; one that education focusing on fresh vegetables, specifically fresh and dried beans, will increase low income Vermonters ability to access underused sources for healthy food, and two that this local food demand will create new opportunities for Vermont farmers to diversify their crops through bean production.

The **three objectives,** which the project team achieved, were to:
1. Provide low income residents of Caledonia County educational opportunities related to nutritious and healthy food choices, growing, cooking, and food preparation.
2. Explore the connection between garden scale bean production and participant knowledge of

healthy food choices.

3. Provide an opportunity for experienced bean growers in the Northeast Kingdom to present their work to both workshop participants and other professional growers who do not yet grow dry beans.

PROJECT APPROACH

Over the project period from 2012 to 2103, seven workshops were held focused on home-scale food production, healthy eating and cooking with residents of the Northeast Kingdom. Four workshops were organized in the first year and three in the second year. (See photos in Appendix).

The workshops combined discussion and working activities, starting with group discussion, then working in the garden, followed up with tastings, new recipes using beans, and recipe sharing. Lessons were adapted from the "Growing Connections" curriculum.

During the fall 2013, the program of three consecutive community workshops was held at Lyndon Town School in October and November where families attended to learn how to cook healthy meals with beans for their families. The workshops were targeted to food insecure populations. As an incentive to attend all three workshops, families, who were able to make this commitment, received a food package including bean ingredients for at least three meals, recipes, and a crockpot at the end of the course program. 10 families were rewarded with this incentive. When surveyed, participants' comments were very positive; "It was fun to experience the hands on harvest of the beans. And the recipes were great!" and "It was fun to cook with the young people." (See photo in Appendix)

Two events were held for commercial growers at the central location of Kellogg-Hubbard Library in Montpelier. (See flier in Appendix.). In 2012, farmers shared their experiences and methods in growing beans and food purchasers shared their experiences in sourcing beans, and in 2013 the workshop covered growing beans at different scales and focused on getting beans to market from growing to processing requirements to selling at different volumes. The speakers were Jack Lazor of Butterworks Farm in Westfield, VT; Joseph Bossen III, owner and manager of Vermont BeanCrafters based in Moretown, VT, and Lynda Primm, technical advisor at NOFA. Jack Lazor has been growing dry beans for local and regional markets since 1995. Joseph Bossen uses locally and regionally sourced dry beans in his vegetarian products. Lynda Prim has experience in organic farming and growing and processing heirloom varieties.

<u>Significant contributions and role of project partners in the project</u>

The primary project partners were the Center for Sustainable Agriculture (CSA), UVM Extension and St J AFLA. Rachel Schattman and Suzy Hodgson represented CSA and UVM Extension, while Heather Burt represented St J ALFA. Rachel and then Suzy were responsible for project team coordination, project management, and hosting the growers' events.
Heather Burt was responsible for coordinating the workshops, and her significant contributions were adapting the curriculum to meet local community needs, selecting the relevant sites, recruiting and incentivizing participants, and teaching the workshops so that participants achieved the key learning outcomes of growing and eating healthy foods with beans to improve their food

security. In addition to Heather Burt, collaborators on the workshops included Elizabeth Kenton from UVM Extension, Emily Keith from Gilman Housing, and Janet St. Onge, a teacher at the LEARN school in Lyndon. The workshops were held at the North Church in St. Johnsbury and at Lyndon Town School (LTS) for both LTS students and community members. LTS is a high poverty school with over 75% students qualifying for free and reduced lunches. The workshops were delivered with the help of Kingdom Community Services in Saint Johnsbury, the South Church, Gilman Housing Site in Saint Johnsbury, LEARN (Lyndon Educational Alternative Resources Network) School in Lyndon, and at the St J ALFA community farm in Saint Johnsbury.

GOALS AND OUTCOMES ACHIEVED

Target	Goals and Outcomes
1. Up to 33 low-income Saint Johnsbury residents per year (**64** total over 2 years) will be enrolled in workshops. These participants will be equipped with the skills to grow, purchase, and prepare local, fresh, and healthy dry beans. In the long term, this will positively impact the level of food insecurity and diet related diseases in Caledonia County.	The target of residents reached was exceeded by 30%. Over the two-year project period, **83** participants were enrolled in seven workshops. These workshops met the learning outcomes of equipping participants with skills to grow and cook healthy bean recipes. It is more difficult to measure the long term impact of food insecurity in Caledonia County, but feedback from the education and the enjoyment of healthy affordable eating indicates that these workshops will help increase food security.
2. Up to **15** farmers that do not currently grow dry beans will attend workshops given by an experienced local commercial bean grower. The workshops will cover best growing practices, barriers and opportunities for growing dry beans in Vermont.	This farmer target was exceeded by at least 100%. Altogether, **61** farmers and growers attended the two workshops. About half the attendees grew dry beans at a home or commercial scale and the remainder were interested in starting to grow beans, and/or and finding out about processing requirements for different bean varieties and markets.
3. Increasing access of low-income Caledonia County residents access to healthy food	St. J Alpha Community Farm harvested approximately **1,200 pounds** of food from its garden including about 300 lbs of fresh and dry beans in 2013

Outcomes and goals achieved beyond those set at the start of the project included multiple community events and an additional commercial growers meeting to discuss shared needs and cooperative arrangements for exchanging information in the future.

The community planting events were held at Lyndon Town School and at the North Church. Heather Burt estimates that 10,000 hours of people power went into the garden as volunteer work including St. J Academy volunteering 1000 hours this past season. This volunteer work included planning, planting, weeding, harvesting, and putting the garden to bed.

BENEFICIARIES

Groups	Benefits
Farmers and growers	Better understanding of growing & processing requirements for dry beans
Farmers and growers	New contacts for sharing best practice and experience
St. Johnsbury, NEK low-income residents	Improved food security - Gardening skills for growing own home and new cooking skills, recipes, and cooking equipment
St. Johnsbury school age children	Life-long skills about growing food and healthy eating
St. Johnsbury Foodshelf	Locally grown food donations, stronger connection with community, improved food security
St. J Alpha Food Hub	Stronger links with school, residents, and community garden
St. J Academy students	Community service – garden work for community
Lyndon Town School, Lyndon	Healthy eating and improved knowledge of nutrition and diets
LEARN	Community gardening knowledge, skills, and capacity building

Benchmark associated with Goal 1: In Caledonia County, the proportion of households, which are food insecure exceeds the state average of 1 out of 8. According to Hunger Free Vermont, 1 in 4 children in Caledonia County are food insecure.

Benchmark associated with Goal 2: According to the United States Department of Agriculture 2007 Census, there were 7 farms in Vermont that grow grains, oilseeds, dry beans and/or dry peas. The publication of the 2012 USDA agricultural census is delayed and its release date has not yet been set. When it becomes available, the new number of Vermont commercial growers producing grains, oilseeds, dry beans and/or dry peas is likely to be a significantly greater number.

The 2013 commercial growers' event focused on the equipment and processing needs of scaling up production of dry beans and how different types of beans have different growing and processing requirements. Several future needs were identified including access to more efficient processing equipment, better exchange and sharing of market information, and the need for regionally adapted sources of bean seeds.

The participation in the workshops on food production and healthy eating was high, though it is difficult to measure the long-term impact. By designing a three-course program with a meal and cooking package incentive, Heather Burt was able to maintain strong participation throughout the workshops.

LESSONS LEARNED

A transition in project staff meant that more time was needed to develop new working relationships for the project team in year two. Hence, a face-to-face planning meeting for project management, planning topics and approaches was held as soon as possible. The need for such meetings was also identified from the first year especially for the start of a new project team and any transition. With the challenges of growing beans at a community level, the project team decided to focus more of its community efforts on cooking with dry beans and enjoying the garden experience of growing beans without unrealistic expectations of producing high volumes.

The unexpected outcomes were both positive and negative. On the positive side, more participants, both farmers and residents were reached than originally anticipated. On the negative side, the experience of growing beans in 2012 was quite different than 2013 due to extreme weather events. Surprisingly, some new growers had better luck with yields on a small scale than some more experienced farmers. The wide variation in yields over the project period underscored the importance of having conservative expectations of crop performance. At the community scale, one bean crop was decimated by deer, and at the commercial scale, several bean farmers had to abandon the bulk of their bean plantings due to saturated soils. These experiences at both the community and commercial scales reinforce the lesson that growing beans or any vegetables in Vermont is never a certainty and that selecting different varies of beans with different growth behaviors can reduce risk and improve food security.

Insights into lessons learned

1. Workshops tailored to meet the community's needs in **enjoying** cooking, preparing recipes, ***and eating*** tasty food were more effective in conveying information about nutrition and diet and ultimately should help strengthen a community which feeds itself (ie improve food security).

2. Face to face planning meetings between project partners are essential to both kick-off a new project as well to ensure milestones are met from one project year to the next.

3. Being part of the community and working closely with community partners who already have established relationships with target population e.g, the Department of Health's WIC program helps reach mutually-shared goals more quickly.

4. Incentivizing participants throughout a workshop program helps increase attendance and active participation. The hands-on cooking component is key to embedding learning outcomes about growing and preparing healthy food, that is, participants can learn a lot about growing but without some cooking ideas, the growing becomes less meaningful.

This project exceeded the specific quantitative targets set for participation. It is likely that this project helped improve food security. In Caledonia County, though the long-term impact is difficult to assess. The growers' events and following discussions with bean farmers showed a dynamic, growing demand for dry beans, but constrained supply of Vermont-grown dry beans. A number of barriers to further expanding the Vermont market for beans were identified including availability and efficiency of processing equipment, price variability in beans, and weather impacts. The summer of 2013 was not an easy season for growing beans with heavy June rains and saturated soils during planting and seed germination stages which limited yields. Despite these barriers, a significant result of this project was the continued enthusiasm of bean farmers to continue to work together and share information on growing, harvesting, processing, and selecting bean seeds so that they can increase their yields. Recent discussions with food cooperatives point to a growing demand for Vermont-grown beans and underscore the importance of this project in helping farmers share best practices to improve their dry bean yields in coming years and contribute to increased food security in Vermont.

CONTACT

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PROJECT 5: Capacity Building for Specialty Crop Growers in the Mad River Valley (Previously Accepted)

PROJECT SUMMARY

Opened in October 2011, the Mad River Food Hub L3C (MRFH) is a new facility focused on supporting food producers along the Mad River. The MRFH provides food processing and cold storage incubator space; food aggregation and distribution network. The facility, located in Waitsfield, includes USDA & State licensed meat processing rooms and vegetable kitchen plus dry, refrigerated and frozen storage.

Agricultural waste is a common occurrence for local vegetable and fruit producers due to inconsistent demand, lack of storage opportunities, and seasonal variability. The same concerns also contribute to under-planting, resulting in loss of potential revenue. The goal of the project is to increase farmers' salable crops by reducing wastage.

The Mad River Food Hub addressed these storage concerns and increase demand opportunities through the provision of a small blast freezer to assist farmers in balancing the demand and developing value-added solutions for any excess crops.

Farmers are able to access the blast freezer to freeze specialty crops (vegetables & fruits) that are harvestable, ripe and remain unsold. Frozen produce will also be offered to the Valley's four local schools and the Mad River Food Shelf.

PROJECT APPROACH

The project timetable was delayed due to Tropical Storm Irene. The storm destroyed all the crops on the valley floor in August 2012. The blast freezer was purchased and installed in the Kitchen room in January 2012. Since that time the room has been in use for 116 days (approx. 1,000 hours) and the blast freezer has been in operation on 59 of those days.

Specialty crops comprising of Herbs, Fruits and Vegetables have been processed by farmers and value added producers. Over 13,800lbs of specialty crops have been frozen using the blast freezer. MFRH has contacted gleaning organizations such as the Vermont Food Bank and Salvation Farms offering the facility to freeze gleaned produce but neither organization or their local affiliates are ready to use it yet.

Knoll Farm's blueberry income increased just under 3% in the first year of use. Screamin Ridge Farm increased their revenue by approx. 30%.

The blast freezer is located in the kitchen, which is also used for some ready to eat meat-based products. The blast freezer has been used for both vegetable and meat soups – it should be noted that the meat soups also contain some specialty crops. However, the total out-of-pocket costs for

the blast freezer were over $20,000, funded 75% from the grant and 25% from the grantee. The percentage of outside funding used for the blast freezer is greater than the meat components processed in the blast freezer.

MRFH is assisting new and existing farmers through four core programs:
1. Aggregation and Distribution throughout Washington County to institutions (in collaboration with Foodworks Farm to Table)
2. Logistical support of a Washington County CSAthat aggregates products from local support.
3. Provision of year round cold storage facilities
4. Provision of processing rooms for the farmers to use, or for value added processors (who purchase local crops from the farms.

The primary method of marketing our facility is through conference workshops:
- Farm to cafeteria – August 2012 Burlington
- NOFA VT – February 2013 Burlington
- VAAFM/SODEXO – November 2012 Burlington

MRFH will also be leading a Farm to School initiative to get more local farm products into our local schools starting January 2013.

GOALS AND OUTCOMES ACHIEVED

- Goal: To increase each farmer's revenue from specialty crops by up to 5% over a 12 month period.
- Outcome: Two farmers have used the Blast Freezer – Knoll Farm and Screamin Ridge Farm. The goal has been partially achieved (see lessons learned below)

- Goal: Increase the competitiveness of farmers in regional markets through providing for the availability of frozen specialty fruits and vegetables on a year round basis, which in turn will create broader wealth.
- Outcome: This goal has been achieved directly with two farmers and indirectly with multiple farmers through third party value added production.

- Goal. Assist new farmers in the Mad River Valley become profitable at an earlier stage in their life cycle.
- Outcome: In progress.

- Goal: Support existing farmers expand production of specialty crops on their farms.
- Outcome: In progress.

The installation of the blast freezer at the MRFH has been successful in providing alternative ways to process specialty crops primarily as value added produce. We expect that over the next 24 months we will see an increased use of the blast freezer by our customers. The radius for produce

has been increased to cover farms as far as the Intervale in Burlington – multiple times this year we have collected excess produce from Intervale Farmers for value added processing for Burlington School District.

BENEFICIARIES

The access to the blast freezer has clearly benefitted the organizations providing value added produce that have used the MRFH. Two organizations have purchased excess crops from local farms and frozen either raw produce or value added produce for use in production out of season.

One farm was introduced to the local Co-op, which assisted them on pricing and sizing of fruit (berry) products. The farm is now branding and selling frozen fruits to the Co-op.

We have also reached out to the following farms:

- Gaylord Farm – MRFH currently aggregates and distributes crops for Gaylord Farm, they have not used the food hub for processing in 2012.
- Santa Davida Farm – MRFH currently aggregates and distributes crops for Santa Davida Farm; they have not used the food hub for processing in 2012 but have expressed interest for 2013.
- Kingsbury Market Gardens (Vermont Food Bank) - MRFH currently aggregates, stores and distributes crops for Kingsbury Market Garden; they expressed strong interest in 2013 but did not follow through.
- Neill Farm – Despite very strong interest at the start of the project MRFH has not worked with Neil farm yet. In 2012 Neil Farm decided to transition from a dairy farm to crop. We plan to meet with them in the spring.
- Bliss Ridge Farm – MRFH has not worked with Bliss Ridge Farm yet.

A number of the farms provide crops to our value added food processors who use the MRFH.

- Knoll Farm – MRFH piloted a program with Knoll farm in 2012 for Blueberries but the season finished early. We met with Knoll Farm this month and they will be using the facility in 2013.

LESSONS LEARNED

At the outset of the project we had every indication that Farmers would make direct use of the blast freezer to freeze excess crops. Twelve months on we realize that the goal of gleaning, processing and marketing is beyond the scope of many farmers.

What we are seeing is the requirement for value added producers to act as the middlemen between the farmers and the customers (retail, wholesale and end user). In additional research we have learned that other similar organizations to the MRFH have become co-processors to fill this role however the MRFH is committed to incubating businesses to fill this role.

The MRFH is a new organization and the expectation that we could be successful with this project in the first 12 months of operation was optimistic. The MRFH has been building trust with our local farmers who were initially unclear on all the services that were being offered and whether they would ultimately be delivered. What we have achieved is a network of farmers and value added

producers who are talking to each other on a regular basis and our belief is that their use of the MRFH will increase over time.

For 2013 we will again reach out to gleaning organizations and farmers to avoid excess produce being wasted and continue to foster value added producers using local produce.

CONTACT

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PROJECT 6: Growing a Sustainable Hops Industry for New England (Previously Accepted)

PROJECT SUMMARY

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

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

As hops are a continuing emerging crop in the region, there must be continued research and outreach. The UVM Extension Northwest Crops and Soils Team (NWCS) receives numerous calls and emails with questions on how to best grow hops, including building a hopyard, and from brewers looking to source local hops. Thanks to funds previously received through Specialty Crops

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

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

PROJECT APPROACH

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

HOP OUTREACH AND EDUCATION

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

Several bulletins on hops fertility management, hop trellis construction costs, organic fungicides in hops, and pest and beneficial insect updates have all been published on the UVM Extension Crops and Soils webpage.
UVM Extension Crops and Soils Program Hops Page: www.uvm.edu/extension/cropsoil/hops

- 2012 Organic Hop Variety Trial Report: Results from Year Two - (Darby, H, R. Madden, H. Harwood, E. Cummings, and S. Monahan. 2013. Available at

http://www.uvm.edu/extension/ cropsoil/wp-content/uploads/ Hops_Variety_Trial_Report_2012.pdf (verified 17 November, 2013)).

- 2013 Hops Production Diary. (Miller, S and Darby, H. 2013. Available at http://www.uvm.edu/extension/cropsoil/wp-content/uploads/2013-Hops-Diary.pdf (verified 17 November, 2013)).
- Hop Aphid in Northeastern Hopyards Fact Sheet. (Calderwood, Lily. 2013. Available at http://www.uvm.edu/extension/cropsoil/wp-content/uploads/Hop-Aphid.pdf (verified 17 November, 2013)).
- June 2013 Hops Scouting Report. (Lewis, Scott. 2013. Available at http://www.uvm.edu/extension/cropsoil/wp-content/uploads/Hops-Scouting-Report-June-2013.pdf (verified 17 November, 2013)).
- Nitrogen Management in Hops. (Darby, H. 2013. Available at http://www.uvm.edu/extension/cropsoil/wp-content/uploads/N-management-in-hops-2013.pdf (verified 17 November, 2013)).

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

UVM Extension Crops and Soils YouTube Channel: http://www.youtube.com/user/cropsoilsvteam

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

Other related videos of importance for this report include:

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

The UVM Extension hops blog "What's Hoppening", hosted on the UVM Extension Crops and Soils website, 149 subscribers, and 44 posts from November 2011 to November 2013. UVM Extension Crops and Soils hops blog "What's Hoppening": http://www.uvm.edu/extension/cropsoil/whats-hoppening

Topics blogged included upcoming conference events, updated research reports, rhizomes information, an early season checklist, frost seeding, hops data collection booklet, hops crowing

video link, downy mildew alert, plant/insect diagnostic clinic information, pest scouting in your hopyard, the 2013 hops scouting report, mobile hops harvester summary for the 2013 summer, and an announcement for hops quality analysis now available by our team at the UVM lab.
Following are some key blog postings since November 2011:

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

The Northwest Crops and Soils Team were in the following two hops related UVM Extension "Across the Fence" videos:
http://www.uvm.edu/extension/atfence/

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

This paragraph was in another report so I kept it as is -
In 2012, the UVM Extension Winter Hops Conference was held at the Sheraton Hotel in South Burlington, VT with **137 attendees.** At the conference, a farmer panel discussed their successes and setbacks that they've encouraged on their hop farms. Daniel Sharp from Oregon State University joined us to discuss the aroma compounds of hops, and how they can be affected by mismanagement at harvest. Ann Hazelrigg from the UVM Plant Diagnostic Clinic discussed how to identify problems in Northeastern hopyards and the basics of pesticide rules and regulations. She also discussed the different spray equipment available to hop growers, and how to calibrate them. Students from the UVM School of Engineering who had designed two small-scale hop balers gave short presentations on their models. Roger Rainville gave a presentation put together by Chris Callahan, who was unable to join us due to illness. Chris Callahan and Roger Rainville were largely

in charge of designing and fabricating the small-scale hop harvester. Video footage of the harvester in action was shown and questions fielded from the audience. 96.8% of grower respondents stated that the hop conference met their expectations, with one participant stating "Well done- as a new grower I have tried different things and it was good to hear other's experiments (success and failures)." 100% of brewer respondents said the conference met their expectations. 95% of grower respondents stated that the UVM Extension Hops Program has helped them start or expand their hopyard, and 73% stated that the research and outreach performed by UVM Extension has helped them improve their yields. One grower respondent stated: "Very helpful and informative as always." 100% of brewer respondents stated that the work done by UVM Extension has increased their knowledge and awareness about hops grown in the Northeast. 76% of grower respondents stated that the work done by UVM Extension has helped them find markets and/or connect with brewers, and 83% of brewer respondents said that the conferences and workshops hosted by UVM Extension have helped them connect with local growers. 90% of brewer respondents stated that they have noticed a difference in the supply of regionally-produced hops because of the research and outreach performed by UVM Extension. 97% of grower respondents intend to expand their production. One participant stated: "This is a great conference. Can't wait 'til next year!" Another said "Keep the info and excellent projects coming. You have really done a great job promoting this crop & market." Another remarked: "Thank you so much. An incredibly helpful program." 89% of brewers stated that their brewery intends to buy or continue buying local hops if the supply exists. 100% of brewers stated that they were satisfied "for the most part" with the quality of the local hops that they have been presented with, but noted the lack of brew analysis as a hindrance. Quality parameters were a serious barrier to purchasing locally-produced hops to 63% of brewers, and a noticeable barrier to 37%. 100% of brewer respondents stated that post-harvest processing and packaging were a barrier to purchasing locally-produced hops. 62.5% stated that the scale of what is available locally is a serious barrier to purchasing locally-produced hops. Harvesting and pelletizing were both independently noted as serious barriers. 100% of brewers stated that they expect that the demand for beer made with local hops will increase, and intend to respond to that demand. One brewer said "The conference has provided a fair amount of information and piqued my interest in Eastern grown hops. My full support is your way. Anything I can help with I'm happy to do so." Conference proceedings can be found at http://www.uvm.edu/extension/cropsoil/hops.

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

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

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

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

A field day was held at Addison Hop Farm in Addison, VT, in August 2012 with **89 attendees**. Hop trellis design, the economics of hops production, harvest timing, harvest machinery, drying techniques, packaging, and storage were all discussed. 100% of respondents stated that the field day met their expectations. 100% of respondents stated that The UVM Extension hops program has helped them start or expand their hopyard and improve their yields. 100% of respondents also stated that the research and outreach performed by UVM Extension has helped them improve the quality of their hops. 60% stated that the work done by UVM Extension has helped them find markets and/or connect with brewers. 100% also stated that eh work done by UVM Extension has helped them implement sustainable practices in their hopyard.

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

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

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

Thirty on-farm visits were conducted in MA and VT. **One hundred and twenty phone calls** were fielded from hop growers and those interested in growing hops in MA and VT over the project period. Over **300 emails** were answered with hops questions from growers, brewers, and other interested parties. Questions answered included a broad range of categories including but not limited to pest management, fertility management, pest identification, feasibility, harvest moisture determination, drying, and hop production basics.

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

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

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

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

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

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

GOALS AND OUTCOMES ACHIEVED

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

Now offering hops analysis at our UVM lab.

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

BENEFICIARIES

The several hundred attendees at hop related events, and the several thousand viewers of hops YouTube videos and visitors of the UVM Extension Crops and Soils Hops Page are the beneficiaries of this project. The Northeast Hops Alliance and the New England chapter of the Northeast Hop Alliance are also beneficiaries as they have had the opportunity to access regionally based hops related research, and have had a hand in guiding the research conducted by UVM Extension. These beneficiaries include potential, new, and established hop growers throughout the US and Canada. Additional beneficiaries include other agricultural professionals such as Extension staff, University professors, and US or state government employees. The brewers of Vermont and Massachusetts have also been and will continue to be important beneficiaries as they now have broader access to locally produced hops.

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

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

LESSONS LEARNED

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

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

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

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

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

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PROJECT 7: Pick for your Neighbor

PROJECT SUMMARY

The purpose of the Vermont Foodbank (VFB) Pick for Your Neighbor (PFYN) Program is to source locally grown apples for distribution to the more than 153,100 food-insecure Vermonters who access our network of frontline hunger relief agencies each year. The PFYN also supports Vermont apple growers by increasing visibility of and participation in "You Pick" programs statewide. Launched in 2009, the PFYN is a partnership between the VFB, the Vermont Agency of Agriculture, and the Vermont Tree Fruit Growers Association.

The PFYN Program not only helps ensure that all Vermonters, regardless of income level, have access to locally grown, fresh-picked nutritious apples during the season; it also helps to bolster business at Vermont orchards by drawing new customers through program promotion and by encouraging regular customers to purchase additional pounds of apples for their neighbors in need.

The PFYN Program addresses the economic hardships faced by Vermonters and by Vermont orchards around the state. The recently released "Hunger in America 2014" study reveals that at least 153,100 Vermonters (one in four) access the 270 VFB partner agencies each week. Programs like PFYN help to ensure that these food-insecure families and individuals are not forced to sacrifice

good nutrition. In 2008, the VFB began to increase its focus on establishing relationships with the multitude of farms in the state and has implemented several agricultural food sourcing programs, including PFYN. This program not only helps ensure that all Vermonters—regardless of income level—have access to locally grown, fresh-picked nutritious apples during the season; it also helps to bolster business at Vermont orchards by drawing new customers through program promotion and by encouraging regular customers to purchase additional pounds of apples for their neighbors in need.

In recent years, VFB has implemented agricultural food sourcing programs (e.g., the statewide gleaning program) that result in an annual yield of 450,000 pounds of vegetables from local farms. However, as summer turns to fall, vegetables become scarce and we seek other produce to supplement our distribution. Apples are perfect for filling this need, because: a) they are harvested in autumn; b) there are a large number of apple orchards in Vermont, with many orchards offering a "You Pick" option for customers; and c) apples are a very familiar and popular fruit, making it more likely that VFB agency clients will take them home.

PROJECT APPROACH

The three-year award from the Agency of Agriculture supported promotional items and project management during the grant period. This support helped us to build program awareness and momentum in Vermont communities, and enabled the VFB to build relationships with new orchards and fine-tune its operation (including receipt and distribution efforts).

Other partners in the project include the Vermont Agency of Agriculture, which provided funds through the Specialty Crop Block Grant; the Vermont Department of Tourism and Marketing facilitated the Apples for iPods Program at orchards (helping to draw more customers to the program and incentivize participation); the Vermont Fruit Tree Growers Association, which officially signed on as a program sponsor in 2011 and helped with orchard recruitment and program promotion; and VFB network partners, who received the picked apples for distribution and, in many cases, helped to directly collect harvested apples from participating orchards. Vermont Hard Cider Company has emerged as a key partner for the program going forward.
In addition to the orchards participating in the program, corporate partners sponsored their employees to pick and purchase thousands of pounds of apples as part of their corporate giving initiatives aimed at boosting the local agricultural economy and supporting hunger relief efforts in the community. Civic groups also sponsored their members to participate. Below is a year-by-year rundown of these partnerships and contributions:

Goals and Outcomes Achieved (updated from September 29, 2014 report)
Over the period of this grant (our 2012, 2013, and 2014 fiscal years), the VFB's originally stated objectives for the PFYN Program included:

- GOAL: Increase the amount of apples received by the VFB by 25 percent in the FY2012 season, and a 25 percent increase each year thereafter until 2014;

- OUTCOME: Despite dips in the 2011 harvest (due to the effects of Tropical Storm Irene on the state's growers) and the 2014 harvest (due to many trees being forced into a biennial cycle by the 2013 record crop, resulting in lower yields for 2014), year-to-year increases were predominantly well above the 25 percent goal, with an overall (2009:2014) increase of 84 percent.

Vermont Foodbank Pick for Your Neighbor Program Harvest Results 2009-2014							
Year	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Pounds	2,232	7,719	8,380	12,189	18,751	14,285	**63,556**
% change over previous year	n/a	+71%	+8%	+37%*	+35%	-24%	**84%¥**

* Increase over 2010 yield (as 2011 yields were unavailable at the time of the original application)
¥ Increase from 2009 to 2014

- GOAL: Increase the number of participating orchards from 18 to 20 in FY2012, and maintain this level of 20 consistent participating orchards every season to ensure that interested groups—including socially responsible companies, church groups, youth groups, and families—have access to a participating orchard within a reasonable distance
  - OUTCOME: In 2011 and 2012, 16 orchards participated in the program. Due to our outreach and promotion efforts, that number increased significantly to 23 orchards in 2013, with a slight dip to 21 orchards in 2014. (This was due in part to the lower crop yields in 2014.)

- GOAL: Through enhanced promotional efforts of the PFYN Program, simultaneously increase competitiveness and financial sustainability of participating orchards by creating increased visibility among returning customers, active community groups interested in purchasing apples only for donation, or first-time customers who are drawn by the advertising and only purchase apples for themselves.

  - OUTCOMES 2011: Sixteen orchards located in nine different Vermont counties participated in the PFYN program. The increased business at these orchards due to their participation in the program resulted in more than $6,000 in additional revenue.

  - OUTCOMES 2012: Sixteen orchards located in eight different Vermont counties participated in PFYN. Vermont Hard Cider Company sponsored 20 employees to pick 4,156 pounds of apples at Champlain Orchards. Seventh Generation sponsored 7 employees to pick 2,964 pounds of apples a Shelburne Orchards. These 7,120 pounds represents 58 percent of the total apples gathered through the program in 2012 and twice as many apples picked by corporate partners as last year. The increased business at these orchards due to their participation in the program resulted in more than $9,000 in additional revenue.

- OUTCOMES 2013: Six corporate partners participated and included Vermont Hard Cider Company, King Arthur Flour, Waitsfield and Champlain Telecom, Stowe Mountain Lodge, Vermont Federal Credit Union, and Eating Well. In total, employees picked a total of 8,225 apples; a 15% increase over 2012, and 44% of the total apples picked through the program in 2013. Twenty-three orchards took part in the 2013 PFYN program. The increased business at these orchards due to their participation resulted in more than $14,000 in additional revenue.
- Six civic/community group partners picked a total of 775 pounds of apples for donation. They included Episcopal Action Teens, Greenwood School, Townsend 4-H group, Twinfield School group, Brattleboro Union High School group, and Globemed (a small group of Middlebury students). We believe that other civic/community groups participated, but we were only able to collect data for the groups that reported their numbers.

- OUTCOMES 2014: Total weight of picked apples for the 2014 PFYN season was 14,285 pounds, a decrease of 4,466 pounds from 2013. Several factors contributed to this decrease, including lower yields from many participating orchards (due to many trees being forced into a biennial cycle by the 2013 record crop) and slightly fewer corporate partners (some, such as King Arthur Flour, chose a different nonprofit partner for this year's volunteer participation). Twenty-one orchards located in ten different Vermont counties took part in PFYN this year. The increased business at these orchards due to their participation resulted in more than $10,000 in additional revenue.
- Nine corporate groups participated in the 2014 harvest. In total, employees picked 7,500 pounds; a 9% decrease over 2013, and 53% of the total apples picked through the program in 2013. Participating companies included:
    - Comcast
    - Dealer.com
    - Eating Well
    - Morgan Stanley
    - Rainforest Allianace
    - Seventh Generation
    - Sunrise Management
    - VT Hard Cider
    - Waitsfield and Champlain Telecom

The total weight of apples picked by civic groups in 2014 increased by 24%, to 1,025 pounds. Seven civic groups participated in this year's harvest:

- Globemed at Middlebury College
- Bradford Church Group
- St. James Episcopal Church, Arlington
- Harwood Union School, Duxbury
- Townshend 4-H Group
- Greenwood School, Brattleboro

- Montpelier Main Street Middle School

BENEFICIARIES

Through creative food-sourcing programs like Pick for Your Neighbor (PFYN) and collaborations with partnering organizations, the VFB is finding ways to increase the amount of fresh, locally grown food that it distributes to its agencies to ensure that these thousands of struggling Vermonters are not forced to forego good nutrition in their lives.

The primary beneficiaries of the PFYN are these thousands of low-income individuals living in Vermont who—during the harvest season (late August–early November)—gain access to fresh, locally grown apples distributed through VFB to the food assistance agency in their community; and the many participating Vermont apple producers located throughout the state.

The participating orchards also benefit through bolstering the visibility of their participation in "You Pick" programs statewide. By increasing statewide awareness of the PFYN Program—through promotional efforts supported in part by Agency of Agriculture funding—orchards have seen an increase in their customer base and revenue. This enhanced program promotion—specifically promotion that targets and incentivizes groups and businesses to participate—has resulted in more customers for the orchards, more bushels of apples being picked and purchased, and thousands of dollars in annual revenue for specialty crop producers.

This program is also an attractive way for Vermont companies and civic groups to give back to the community through employer- and group-sponsored volunteer picking. Local Vermont companies like Vermont Federal Credit Union, Stowe Mountain Lodge, King Arthur Flour, and Seventh Generation have all taken part in the program, organizing groups of employee volunteers as picking groups. Active community organizations and clubs, including church groups, youth clubs (such as girls and boys scouts and 4H Clubs), and businesses for social responsibility, have contributed to the effort, donating their time and money for the program. These groups are attracted to the PFYN program benefits of helping to feed fellow Vermonters in need while also supporting the local specialty crop economy.

LESSONS LEARNED

The Pick for Your Neighbor program follows a decidedly different model from the VFB's other programs. The partnerships, advertising efforts, and "business model" that was created has and will continue to provide staff, other food banks, and the public with inspiration for other efforts. Some of the important achievements in this vein include:

- Taking time to personally meet each grower and visit each orchard in the first two years was critical to the success of the program. The growers are now fully invested in the program and have made it a part of what they do every year.

- Engaging the VFB Development team to build on our corporate connections and relationships helped to mobilize a larger volunteer base of support. The Development team also incorporates PFYN as a Hunger Action Month (September) activity.
- Channeling additional VFB resources into branding and advertising the program, creating professionally designed printed materials, and other marketing efforts helped create brand recognition among the general public and raise the level of the program overall in the eyes of growers and our corporate partners.

We were surprised by the many corporate and civic groups around the state that were eager to become involved. We focused on this during our second year as an opportunity for significant program growth.

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PROJECT 9: New Markets for Specialty Crops in Schools (Previously Accepted)

PROJECT SUMMARY

The USDA Fresh Fruit and Vegetable Program (FFVP) was created to increase children's fruit and vegetable consumption thereby improving their present and future health. The program ensures low-income children have increased access to fruits and vegetables by providing participating schools with funds to purchase and serve a variety of free fresh fruits and vegetables to all students during non-meal times.

The FFVP also encourages schools to develop partnerships with local and regional fruit and vegetable producers. Of the 55 participating Vermont schools for the 2009-10 school year, 49% reported no or very limited local purchasing. Food service personnel reported that they lacked the time to find the local farms from which to purchase directly, lacked an understanding of what would be available and, particularly, were unsure how to present what was available to students. In addition, the FFVP encourages schools to conduct nutrition and cooking activities once a week with students to further engage them. Only a few of the participating schools took advantage of this option.

The purpose of this project was to increase schools' purchasing and consumption of and education about Vermont fresh fruits and vegetables through the implementation of the USDA Fresh Fruit and Vegetable Program (FFVP). The project involved conducting trainings for foodservice directors and staff on how to purchase and prepare local fruits and vegetables and the development of food and

nutrition lessons and other classroom resources to educate students about the benefits of eating these foods.

This project built on the 2010 SCBG received by the Northeast Organic Farming Association of Vermont, a VT FEED partner, entitled *Local Purchasing Best Practices,* focused on sharing best practices among school food service providers and other community partners to increase student consumption of specialty crops. It was accomplished through four regional trainings in Vermont. The established outcome and evaluation of these trainings informed the training needs for this project.

PROJECT APPROACH

This project had three components as follows:

- Training for FFVP recipients on how to access and use local fruits and vegetables through a webinar.
- Resource development for school staff, students, and parents related to using seasonal and local produce, recipes, and agricultural and nutritional information.
- Developing, piloting and disseminating materials and nutrition education lessons using VT fruits and vegetables to school teams who applied to receive nutrition education training and mentoring.

The programming (interventions) that were completed for this evaluation included: a training webinar attended by 25 recipients of the FFVP for 2011-12 school year; an application process to become pilot schools in which to test the training and materials, and a training workshop, mentoring and classroom cooking/taste test for the 2 chosen pilot schools. The first training took place in early April with additional interventions conducted in May and June. Pre- and post-training interviews were conducted as well as analyses of school FFVP purchasing records.

This project was a unique partnership of the Department of Education Child Nutrition Program which oversees the FFVP for Vermont, the University of Vermont Center for Rural Studies providing evaluation and analysis expertise, and Green Mountain Farm to School and Vermont FEED providing the expertise on working successfully with schools on local purchasing and nutrition education.

GOALS AND OUTCOMES ACHEIVED

The two goals of this program were to:

1. Increase purchasing and use of Vermont fruits and vegetables by schools in the USDA FFVP and
2. Increase the number of schools participating in FFVP implementing nutrition and cooking education activities.

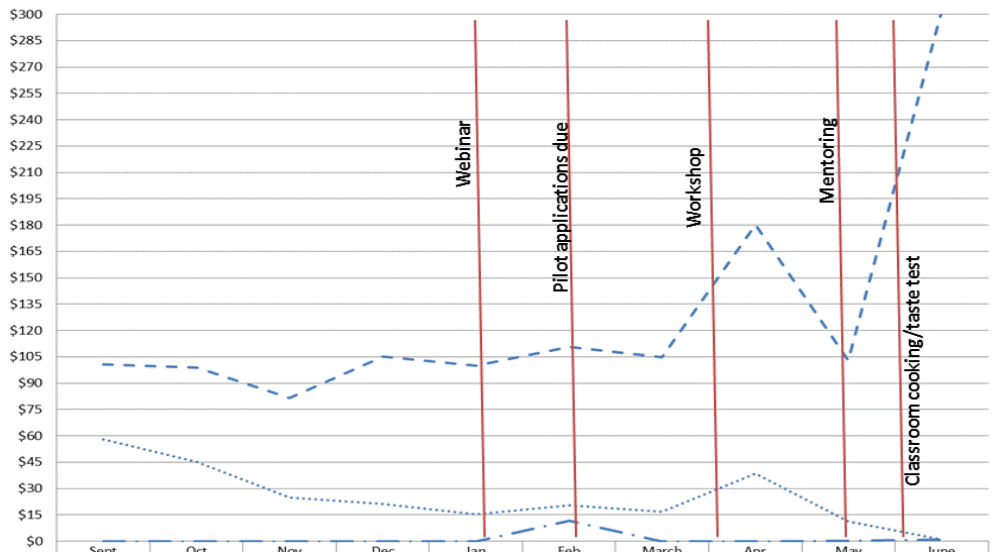
Out of 100 potential FFVP schools, we scaled back from 10 to 3 schools, and one dropped out part way through the training period. It was a more complicated process than anticipated changing the state recording system for the FFVP so that local products could be recorded. By the time this was accomplished, it was January when schools are not purchasing much local produce (as the following data will show). The target for 2012 was that 50% of the FFVP schools would have 10% purchased Vermont produce. This target was not met, but our data confirms an increase from the 2010-11 to the 2011-12 school year. The following analysis of data collected shows that our interventions were successful and our general goals were met.

In order to assess the success of this pilot and the various interventions, a mixed methods approach was created to evaluate the FFVP pilot program. Three schools were selected to participate in the pilot program, however, only 2 school teams made the full commitment to the program which included teachers as well as food service staff participation in the training and mentoring of the use of the materials created.

Quantitative data was obtained through the reimbursement records of the two schools participating in the pilot, as well as an additional 4 schools who participated in the FFVP but did not participate in the pilot program. The 6 schools reimbursement records were tracked from September 2011 through June 2012 by the Vermont Department of Education, a partner in this pilot program. The Vermont Department of Education made the reimbursement records available to the Center for Rural Studies at the University of Vermont for program evaluation purposes.

In addition to these pre- and post-qualitative interviews, school records submitted for reimbursement through the FFVP were used to analyze fruit and vegetable purchase trends. Figure 1 shows the total dollar amount submitted for reimbursement of purchase of fruits and vegetables by the 2 pilot schools over the course of the school year. Figure 1 shows a generally upward trend in the dollars spent on produce for FFVP. However, the local fruits and vegetables purchased remained just a small portion of the total spending.

Figure 1. Pilot schools' cumulative fruit and vegetable spending per school day

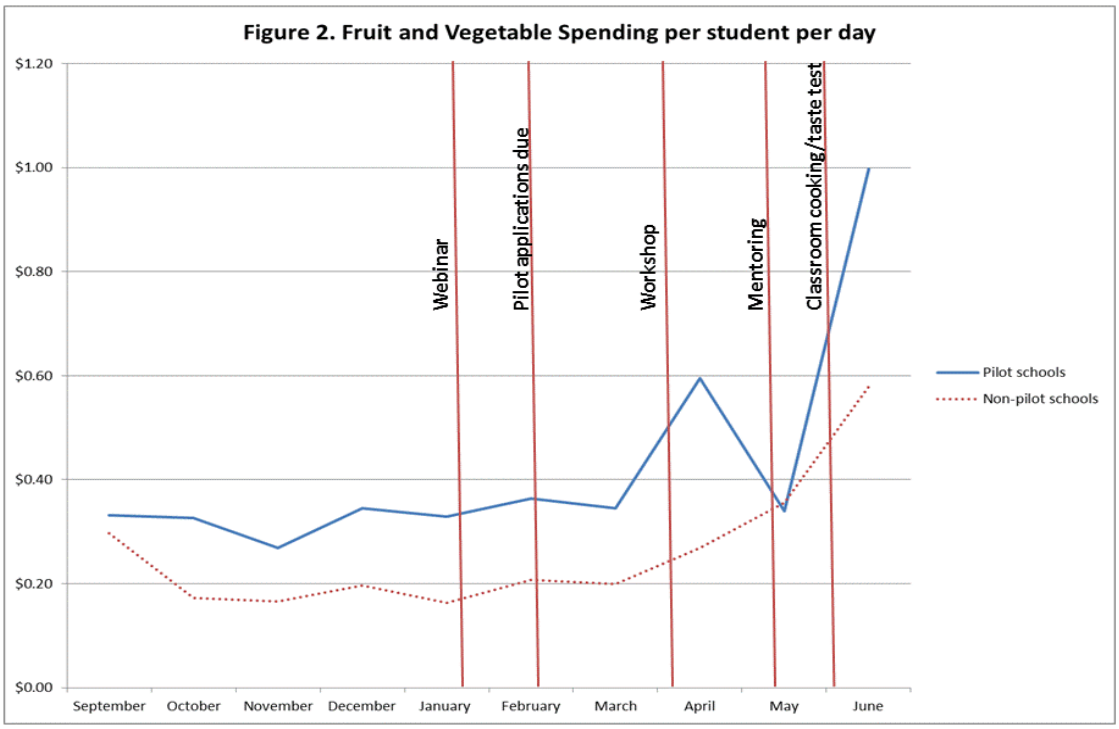


	Sept	Oct	Nov	Dec	Jan	Feb	March	Apr	May	June
total	100.5636842	98.97952381	81.62789474	104.97	99.85666667	110.6142857	104.689	180.31625	102.7871429	302.1325
possible	57.93210526	45.24714286	24.79089474	21.04928571	15.42761905	20.38857143	16.785	38.645625	11.29761905	0.99
actual	0	0	0	0	0	11.46	0	0	0.380952381	0.99

Figure 1 also shows when each pilot intervention occurred. This provides the context to see the impact that the interventions had on the purchase behavior. Several months of increased spending on fresh fruits and vegetables occurred after the interventions began. It should be noted that schools only had an opportunity to indicate "local" beginning in January.

Fresh fruits and vegetables are often challenging to procure from Vermont sources during winter and spring months. For this reason, the 2 pilot schools purchase patterns were compared to 4 schools not participating in the pilot. Per capita (student) spending is calculated based on Department of Education enrollment figures and the schools' FFVP reimbursement records. Daily figures, rather than average monthly figures, were used to compare to control for months with different numbers of school days.

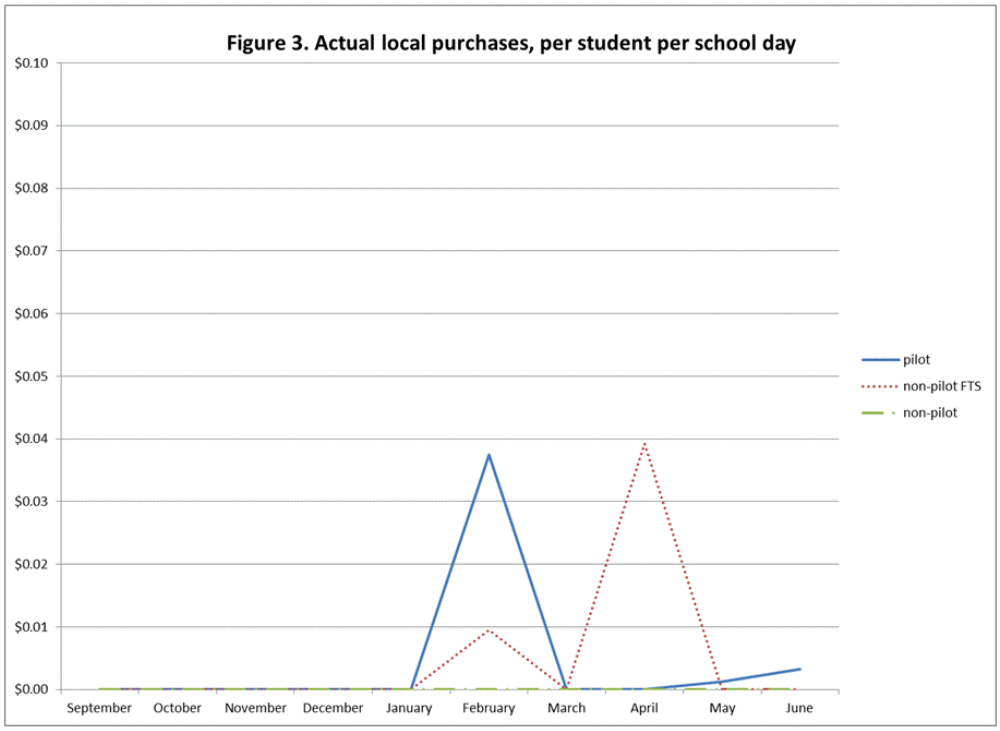
Figure 2 below shows that on a per capita basis, pilot schools and non-pilot schools (all of whom received some Department of Education training during summer 2011), showed an increase in FFVP reimbursements since the pilot began. It also shows that the pilot schools have higher per student spending on fruits and vegetables for the FFVP than the non-pilot schools, even before the pilot began. This points to one intervention (training) that we surmise leading to the school's purchasing more fruits and vegetables.



Goal One of this project was to increase school spending on local produce for the FFVP. Figure 3 below shows that the pilot schools increased spending on local produce in February and then a small but more sustained increase was observed in May and June.

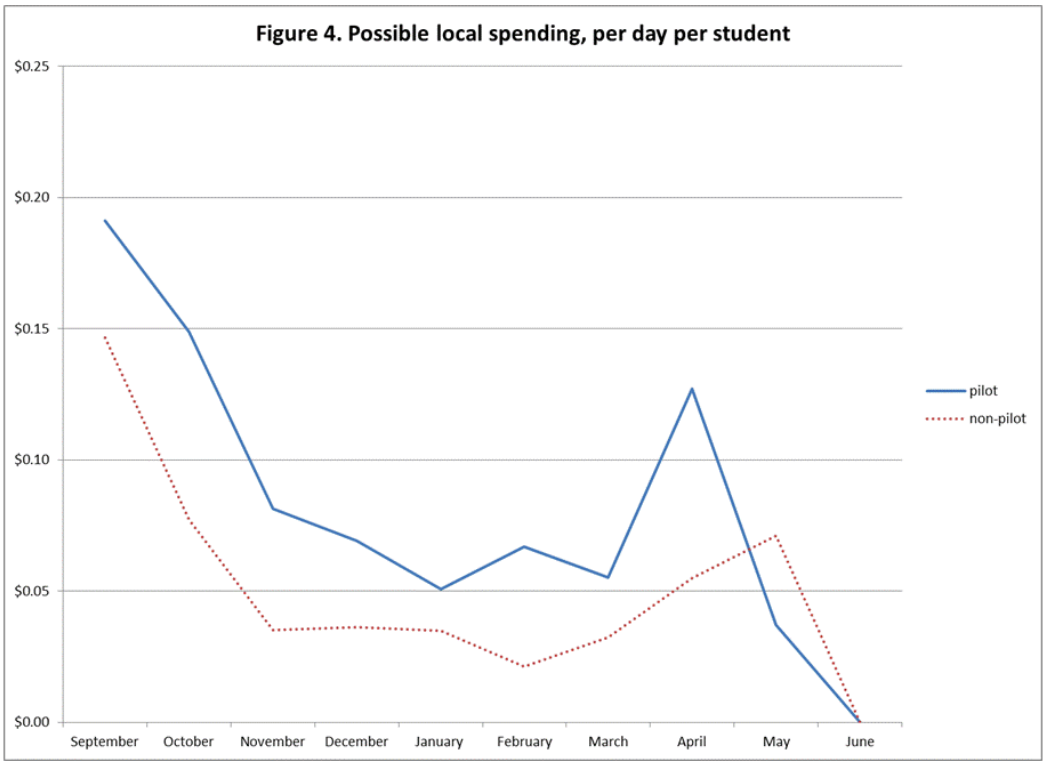
Both pilot schools are, coincidentally, recent recipients of Vermont Farm to School grants. In order to try to "control" for the effect that this grant may have had on the pilot schools' local purchases, two of the non-pilot schools were selected because they had also recently received a Vermont Farm to School grant. Figure 3 shows the comparison between the two pilot schools who were also Farm to School grantees, two Farm to School schools and two schools that were neither in the pilot nor received a Farm to School grant.

While the amounts are very small, there is a noticeable increase in local purchases among both the pilot schools and Farm to School schools, though the pilot schools showed what could be a small but steady increase at the end of the school year.



To better understand the opportunity for increases in local purchasing of fresh fruits and vegetables, this evaluation also presents the purchases made on products that could have been purchased locally during that month, whether or not the products were purchased locally. As shown in Figure 4, the highest spending per day per student took place at all schools in September and declined from there, with an increase in April for the pilot schools and a smaller increase for potentially local products among non-pilot schools in May.

Goal Two of this pilot project was to increase the number of schools that implement nutrition and cooking education activities as part of their FFVP. What was unique about the pilot project was that school teams had to include the food service director, at least 2 teachers, and an administrator. From our work in schools over the years, we knew that lasting school food change would only occur if staff from these different sectors were involved in the experiences together.



After the initial workshop, food service directors and teachers/administrators from the two pilot schools were asked about the effect of the workshop on their understanding of FFVP and the student experience. Teachers/administrators particularly noted the opportunity to work with food service to improve the student experience through nutrition and cooking education activities. One teacher commented:

"I loved teachers and food service cooking together – it helps show us how easy this really is/can be. It is extremely helpful to have specific recipes, activities and information available on hand to implement an activity in the classroom."

At the completion of the pilot, food service directors described how the pilot project had affected nutrition and cooking education activities that they conducted as part of the FFVP. Each of the two schools had somewhat different experiences. One school team described a hands-on cooking activity that they had tested during the pilot and planned to roll out during the 2012-2013 school year.

"We're going to take off and try to monthly do a featured local fruit and vegetable…[During the pilot] older kids made parsnip chips and younger kids made bean dip, to combine an educational component with local foods for the FFVP…we also used the recipe we learned for spinach "roll ups" at a special event for families. This helped get recognition of local foods and FFVP to promote nutritional

foods…we found key teachers who are on board through the pilot. They will do education in the classroom, promoting with parents and in the classroom."

BENEFICIARIES

Of the 100 Vermont schools who were recipients of the 2011-12 FFVP, 25 food service staff attended the training webinar. Purchasing records were analyzed from the 6 schools included in this evaluation: 2 schools as pilot participants with a FFVP program and a Farm to School program; 2 schools not in this pilot, but with a FFVP program and a Farm to School program; and 2 schools with only a FFVP program.

At each of the schools (Bethel and South Royalton) there were 70-80 student beneficiaries during the first month and 150 the second month.

After the pilot program was completed, food service directors were interviewed to gain a better understanding of how well the pilot had met its goals. While both directors were already using some local produce in their FFVP, they wanted to use more as a result of participating in their school team. One of the directors commented:

"I use a lot more local produce…I will continue to buy the same amount of fruits and vegetables but I will keep my eyes open to buy more local food. The kids prefer it."

Beneficiaries were not only the school teams that participated in the pilots, but the students in those schools who were part of the nutrition lessons. One food service director reported:

"I started cooking in the classroom. It was great. The kids can see that the salsa we are making is made with local tomatoes. Last year the feedback I got from the kids was that they were more interested in trying things. I was not expecting that outcome. Now that we are implementing the program it is easy. I thought that it was going to take a lot of extra prep time, but it hasn't. I also thought that I wouldn't be able to get the food in the classroom and the kids wouldn't eat the food. But they did."

LESSONS LEARNED

While it took longer than expected to develop a project team with the partners, it was well worth it. For instance, rather than creating a separate local produce purchasing sheet for the food service directors to fill out along with their monthly FFVP report, we incorporated the recording into the monthly report and, together with the Department of Education, trained the recipients on how to fill out the report. In addition, every state does annual training for the FFVP, and in this partnership, we were able to include more information about local purchasing options. Having UVM do the evaluations and data analyses greatly improved the quality of the program and our ability to report changes due to our intervention. For instance, we realized we needed to check in with the 2 pilot schools to see how their plans were going as well as contact the other FFVP schools to offer additional support and materials on a periodic basis.

Piloting the materials we made for the schools at the 2 pilot schools was important. We learned how teachers and food service staff would use these materials and how they needed them to be organized. Many Farm to School programs around the country are developing 'harvest of the month' materials which highlight one seasonal vegetable a month for schools to purchase, serve, and use for classroom activities. Based on input from the school teams, we organized our materials differently:

- Monthly Newsbites: highlighting monthly celebrations common in schools, such as national breakfast week, or hunger awareness month
- Seasonal vegetable or fruit facts: history, botany and uses—not limited to one a month—so that whatever is available, can be used in the month the food service director has procured it (particularly useful for storage crops so that schools are not restricted to use beets, for example, only in February)
- FFVP acceptable recipes easy to make in a classroom that meet food program guidelines
- Educational activities relating to local fruits and vegetables

Teachers also asked that these be organized on the schoolmealsvt.com website so that they can mix and match months with produce and activities.

We learned that having schools apply for free training and mentoring does help, but does not ensure that there is a team behind the application. We found with the one school that dropped out that one industrious person applied hoping, if she got picked, that she could convince other teachers and the food service to participate and this did not work.

Requiring the school teams to be composed of the food service director, some teachers and an administrator was essential for the adoption of the nutrition education activities and paring those with what the food service director was doing with the FFVP.

CONTACT PERSON

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ADDITIONAL INFORMATION

To review the 3 months of materials created for this project, please go to this link: http://schoolmealsvt.com/summer-after-school-and-ffvp/the-fresh-fruit-a-vegetable-program

PROJECT 10: Growing Better Beekeepers (Previously Accepted)

PROJECT SUMMARY

Raising bees and producing Vermont honey is increasingly difficult due to increased threats of disease, poor nutrition, parasites, difficulties with over-winter survival and other stressors. Besides the production of honey, bees also provide critical pollination services for other specialty crops.

Due to the threat of Colony Collapse Disorder and a renewed interest in local agriculture, the urge to raise bees and produce honey among ordinary citizens is at an unprecedented high. The grant sought to increase the success of beekeepers who are struggling to have healthy bees that will over-winter (i.e. live in the hive from the fall until the spring during that time when food is not available). Many Vermonters are eager to start keeping bees, but quickly realize that desire without proper education means that many fail in their first year and never keep bees again.

In the past from 2003 to 2010, membership in the Vermont Beekeepers Association (VBA) grew from 150 to 470. An upside of Colony Collapse Disorder is that it has created a groundswell of people interested in getting bees and producing honey. We hoped to take advantage of the huge upsurge in people interested in keeping bees and a public that is thirsty for knowledge about beekeeping by providing them with solid tools to ensure success. Beekeeping is no longer a passive hobby. It requires education and knowledge to be keeping bees alive from year to year and to produce marketable honey. The VBA wanted to ensure that education is proximate, affordable and of the highest quality available. The Vermont Beekeepers Association (VBA) saw a need to provide exceptional classroom, hands-on and in-hive education to ensure a statewide cadre of successful beekeepers, pollination services and ensure that honey is available to market.

To achieve these objectives we proposed two specific and distinct actions:

> 1) Hosting the Eastern Apicultural Society (EAS) conference in 2012 which is five days of lectures and hands-on workshops. EAS is the largest beekeeping conference on the east coast and features national experts. The expertise of EAS far exceeds any that Vermont could ever offer on its own. A portion of the grant covered a portion of tuition costs for VBA members.
>
> 2) Implementing a "Mobile Mentor" Program that allowed VBA to provide to its members cost-sharing for the services of one of five expert Vermont Certified Beekeepers to visit their homes/beehives and teach them – hands-on – about what they are seeing: disease prevention and detection, good beekeeping practices and ensure that they have the knowledge and confidence to be successful at raising bees and producing honey.

This project strategically built on two previous grants funded by the USDA Specialty Crop Block Grant Program: one to train beekeepers to raise queen bees and one to fund start-up costs for new beekeepers. The first grant selected a small number of experienced beekeepers and provided guidance and training to teach them to raise queen bees. Given the success of that program, we recently requested funding from another source to offer this program to a new cadre of potential queen bee breeders. The second grant provided funds to new beekeepers for the start-up equipment costs for beehives. Participants were required to purchase bees at their own expense and keep a log of their experiences and document what they learned. This current grant that is the subject of this report was a logical next step for our organization to offer our members: they have gotten started and now will be provided with in-depth, hands-on educational opportunities to ensure their success.

PROJECT APPROACH

As previously mentioned, this grant consisted of two parts: the Eastern Apicultural Society grant and the Mobile Mentors Program.

Eastern Apicultural Society Conference 2012

The Eastern Apicultural Society of North America, Inc. is an international nonprofit educational organization founded in 1955 for the promotion of bee culture, education of beekeepers, certification of Master Beekeepers and excellence in bee research. EAS is the largest noncommercial beekeeping organization in the United States and one of the largest in the world. The Eastern Apicultural Society held its annual conference on August 13 – 17, 2012 at the University of Vermont. Volunteers were led by Bill Mares, former President of the Vermont Beekeepers Association. The core group of 10-20 volunteers spent more than two years working with the EAS Executive Committee on hosting the conference. We are extremely proud of our success:

- Total individual attendance was over 750 – the largest number in decades, possibly ever
- Over 50 vendors brought their wares for purchase and discussion
- 191 Vermont beekeepers attended the conference
- Over 70 Vermont beekeepers volunteered their time
- Over $10,000 was raised for bee research and education through live and silent auctions

The conference was kicked off with a press release (attached) that went to over 150 media outlets. The conference generated a lot of media attention and some of those print pieces are also attached. During the week of the conference, Channel 3 WCAX had "bee week" with a daily segment on the conference, interviews with VBA members, etc. Some 20 hives were brought to the green near the Fleming Museum at UVM for demonstration during the conference. Over 60 speakers presented research, tools, and education and trade discussions. A busy room provided space for beekeepers and vendors to discuss new products, answer questions, and purchase new beekeeping equipment and art. Author Rowan Jacobsen provided a thought-provoking keynote speech on the *terroir* (sense of place) of honey. Guests were indulged in a barbecue at Shelburne Farms – indeed, each evening provided some post-conference bee gathering.

Our first goal for this portion of the grant was to increase by at least 100 Vermont beekeepers the number of EAS attendees in 2012. We almost doubled that goal with 191 Vermont beekeepers attending.

Our second goal for the project was to increase the knowledge of Vermont beekeepers in a measurable way. For the conference portion of this grant, we utilized a survey required of all who received grant funds. Our goal was that 95% or more beekeepers would indicate that their knowledge has increased as a result of the opportunities provided by both parts of this grant. Based on the survey results (attached), we found that 100% of those receiving reimbursement under the grant found that " I gained valuable knowledge from the information offered at EAS2012". As evident in the survey results, Vermont beekeepers found this conference to be tremendously valuable. Surprisingly, only 63% of those receiving the money said that they "strongly agree" or "agree" that the grant funds influenced their decision to attend – a number that we believe speaks to both the esteem to which EAS is held and to the dearth of educational opportunities in Vermont: beekeepers are hungry for information and willing to take time off of work to learn about bees. Also noteworthy is that 98% strongly agreed or agreed that attending EAS was a good use of their time. The survey results quantitatively demonstrate an achievement of our goals.

VBA believes that a third, unanticipated benefit of the EAS Conference was the development of stronger relationships with beekeepers, researchers and vendors in other states. A conference like EAS2012 takes a tremendous amount of work and the mostly volunteer Executive Committee of EAS provided historical perspectives for the Vermont conference organizers. As a result of this conference, approximately 20 Vermonters attended the 2011 conference in Rhode Island to better prepare for our conference. We met nightly to debrief about what we saw and how Vermont might do it better. The results of this collaboration extend beyond hosting the conference: 11 VBA members traveled to EAS2013 in Pennsylvania and we are making travel plans for EAS2014 in Kentucky. These relationships are beneficial for so many reasons, not the least of which is the opportunity to further expand our own knowledge and share questions and solutions with other beekeepers. One of our former presidents, Mike Palmer, serves as the Vermont state board member for EAS and another former president, Bill Mares, co-chairs the EAS Education Committee.

Mobile Mentor Program 2013

While most new beekeepers can and do read a plethora of printed material prior to starting with bees, a perennial struggle is to understand what is happening in the actual beehive. Having a knowledgeable person to explain what the new beekeeper is seeing and to ask questions of provides infinitely more knowledge than even the best book on beekeeping.

The second component of this grant was our Mobile Mentor Program. This program trained five Vermont Certified Beekeepers (a certification program of VBA) who then visit the hives of new beekeepers to explain what they are seeing, answer their questions, explain how to avoid problems, and most importantly, describe how to improve their practices to ensure ongoing success. To set up the program, we solicited members who were interested in serving as Mobile Mentors. From these applicants, we selected five based on geographic distribution. Rutland, Addison, Chittenden, Franklin, and Windham counties were provided coverage based on the home location of the Mobile Mentor volunteers. Steve Parise, State Apiculturist, provided a full day of classroom and in-hive training for the Mobile Mentors to ensure that all had similar knowledge. The names and contact information was then posted on our website and members directed inquiries to the Mobile Mentors to assist them.

Beekeepers/hive owners who utilized the service of these expert beekeepers were requested to make a donation to the Mobile Mentor of $25 to ensure an appropriate commitment from the hive owner. Our goal was to increase by 25 the number of (mostly new) beekeepers who have access to one of the five experts to assist in their own beehives during the summer beekeeping season of 2013. We provided training to the Mobile Mentors and asked that they visit a minimum of five hives each and to track the number of bee yards visited.

The success of this program is measured by surveying those who received in-hive visits from the Mobile Mentors. Surveys were mailed to the grant implementer and compiled – a summary of the results in attached. We expected that 95% or more beekeepers would indicate that their knowledge has increased as a result of the opportunities provided by this grant. Our survey results showed: 100% of beekeepers indicated their knowledge has increased as a result of the information provided by the Mobile Mentor.

GOALS AND OUTCOMES ACHIEVED

Goal	Actual	Goal Met?
Increase by at least 50 Vermont beekeepers at EAS in 2012	190 Vermont beekeepers attended (750 total)	Exceeded by almost 400%
Increase by 25 the number of beekeepers who have access to one of the five experts to assist in their own beehives	Approximately 30 different apiaries; 80 hives; and 35 beekeepers	Exceeded by 30%
Increase the knowledge of Vermont beekeepers in a measurable way. Success measured as 95% or more beekeepers indicating an increase in knowledge as a result of this grant.	EAS: 100% of those receiving reimbursement under the grant found that " I gained valuable knowledge from the information offered at EAS2012" Mobile Mentors: 100% strongly agreed, "I have gained valuable information from the visit from the Mobile Mentor". 100% strongly agree or agree that "As a result of this visit, I will be a better beekeeper"	EAS: exceeded by 5% Mobile Mentors: exceeded by 5%

BENEFICIARIES

Clearly Vermont beekeepers gained valuable knowledge as a result of this two-part grant. However, many other beekeepers from around the country also benefited from the program put together for the EAS2012 conference. By hosting the conference, we were able to shape the agenda (the theme of the conference was Bees and Beyond, tying into many facets of local agriculture) in a way that benefited Vermont beekeepers, and brought them together with beekeepers from many other states to share ideas, frustrations and achievements.

The Mobile Mentor program beneficiaries are twofold: those who provided the mentoring and those who received the mentoring. While not a primary objective of the grant, by providing the Mobile Mentors with a full day of training with the State Apiculturist, the education of those providing the mentoring was increased. Undoubtedly (as indicated by the survey results), the mentorees who were able to spend time with a Mobile Mentor have gained valuable knowledge that they will keep – and practice – as long as they are beekeepers.

LESSONS LEARNED

EAS Conference: The big lesson learned for this component of the grant is to create a strong, dedicated team to disperse the work of planning a conference of this magnitude. Having a dedicated group leader who kept all the various tasks on course as well as a large group to actually do the work made the conference an easier accomplishment that also allowed for fun (e.g. potluck dinners during and after the event).

Mobile Mentors: This component, while a much smaller project, provided more challenges than the two-year planning effort for the EAS conference. First, there was difficulty finding Mobile Mentors in geographically disperse areas. This indicates that beekeeping support circles such as local clubs are not as strong in some areas of the state as in others – providing VBA an opportunity to work to strengthen the clubs in those weaker areas.

We were surprised that many would-be mentorees hesitated to contact a Mobile Mentor. Many expressed reticence to "waste" the time of the Mobile Mentor. Several mentorees stated that a plea from VBA officers at our summer meeting helped them to overcome this reticence. This information helps us to understand what motivates or discourages beekeepers from calling on more experienced beekeepers for help.

We also received feedback that requiring mentorees to be VBA members was a deterrent for some – primarily because the service was "hidden" on our website and available in the "members only" section. We rectified this issue by moving the information to open-access areas of our website but still requiring mentorees to join VBA before the Mobile Mentor visited their hives.

These three lessons have left us exploring how we can create a more welcoming atmosphere to new beekeepers to help them to realize that we are here to help them.

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PROJECT 11: Vermont Wine Industry Marketing and Education support (Previously Accepted)

PROJECT SUMMARY

The young Vermont wine industry is in need of two things: improvements in the quality of viticulture around the state and greater awareness of Vermont wine among the residents of and visitors to Vermont. With growing interest among landowners in planting grapevines and an increasing number of wine producers in the state, both of those needs are at the forefront of the Vermont Grape and Wine Council's goals.

PROJECT APPROACH

The two major projects were the annual conference (education) and the tasting room passport (marketing). The conference held in June 2012 was a success—well-attended and with timely speakers and workshops. Among the topics covered were selecting and planting cold-hardy grapevines; white wine making, brand differentiation, and positioning in the East Coast wine industry. One of the most valuable workshops was one recognizing, diagnosing, and avoiding faults in winemaking.
The VGWC built on its winery passport from previous years, producing a high-quality directory to Vermont tasting rooms with information on the wine made in the state and where to find it. We increased the printing numbers in 2013 and have distributed many more than in previous years. Though not all completed passports have been turned in yet (they're due Dec 31, 2013 for the prize

drawing) we confidently project an increase in completed passports in 2013. The listed wineries reported that they received good business from customers visiting with the passport. The passport could not have been produced without Nichole Wolfgang, who volunteered her time to design the improved passport.

GOALS AND OUTCOMES ACHIEVED

Goal: Increased publicity of Vermont wines and wineries

The Council opted to leverage the marketing assets already in place: 20 members with tasting rooms open to the public. The passport was distributed at events (see below) and regional visitor centers but its biggest success was in driving traffic between wineries and throughout the state. The council printed 16,000 passports this year, and a survey of members indicates that nearly all of them have been given away. With no paid staff person and volunteer members with limited resources, print media was a much more effective use of resources than venturing into the world of social media. However, individual members did promote the passport on their own social media outlets.

Goal: Support for consumer-focused events

A council representative and/or council members attended many events in 2012, including the Vermont Cheesemakers Festival, the Lake Champlain Maritime Festival, the Vermont Life Wine & Harvest Festival, the Middlebury Summer Fest, the Pocock Rocks Festival, and Shelburne Orchard's Small Food Fest, among others. At each of these events, we handed out passports and talked with festival-goers about the growing Vermont wine industry. The passport provided interested people with specific information and resources to learn more and try Vermont wine.

Council members hosted another successful Open House Weekend in August of 2012. An informal survey of visitors showed that the ads we placed on WCAX and VPR with grants funds did drive traffic to the vineyards that weekend. We did successfully achieve our goal of attending at least 5 events and promoting the Open House Weekend in 2012.

Goal: Convening an expanded educational conference for 2012:

The council produced a very successful conference in June 2012, meeting several of its goals to provide in-state viticulture and enological workshop, include a focus on getting started with grapevines, and introducing the full range of topics a mature business must consider to be successful.

Speakers included:

- Cameron Hosmer, owner of Hosmer Winery in Ovid, New York. Recognized consistently over the years at both regional and international competitions for his award winning wines, the vineyards produces 20 thousand gallons of wine annually. Cameron provided a valuable perspective on the business and marketing issues faced by a boutique East Coast winery
- Andy Farmer, owner of Northeastern Vine Supply in West Pawlet, VT. Since 2002, Andy has been providing licensed wholesale and retail offerings to northern grape grower. His extension knowledge of the propagation of northern viticulture has helped to establish Vermont as one of the premiere growing regions of cold hardy hybrid grapevines
- Chris Gerling, Cornell University– session on options for Small Winery Laboratories
- Anna-Katherine Mansfield, Cornell University – spoke in depth on a wine makers options for optimizing white wine aromas. Separate but affiliated with the conference, on day two, Anna-Katherine hosted an extensive, well received and sold out wine faults workshop.
- Label World Representative – introduced attendees to the endless options of winning digital print technology and what to consider when trying to differentiate your winery's brand from those on the shelf alongside your brand.

- Vermont grape/fruit grower panel discussion about the benefits and challenges of growing grapes in the northeast.

We met our objective for the annual educational conference to increase the number of attendees by at least 10%, and added a sold-out second day on wine faults. We did not include a speaker on organic viticulture because it is complete impractical to grow grapes organically in a climate like Vermont's, and established grape-growers did not recommend it as a topic.

Goal: Development of educational resources for prospective and established wineries and vineyards

In our effort to increase interest in growing wine grapes and other wine fruit in Vermont, members of the Vegetable and Berry Association and the Tree Fruit Growers associations were invited and attended the VGWC annual conference as well as the on-vineyard/in-the-winery workshops held in 2012. We were unable to complete a lending library.

BENEFICIARIES

Wineries and vineyards already established in Vermont benefitted from the work of this project. Those who attended the conference in June 2012 all reported that they learned a great deal, especially in the wine faults workshop that we were able to expand to a second day with funds from this project. Winery tasting rooms also reported receiving traffic from tourists and local who came specifically because they had the VGWC passport, or because they had heard the ads for the August Open House Weekend. Those tasting rooms also reported that most visitors did buy wine during their visits.

LESSONS LEARNED

The project, on the whole, was successful for the growing wine industry in Vermont. Spreading the word that wine grapes can be grown and wine can be made in Vermont is a steady but not speedy process—one taster at a time who enjoys her experience will spread the word to more wine drinkers and wine tourists.

As a small organization run by volunteer members—many of whom have full-time jobs in addition to growing grapes or making wine—the biggest challenge for the VGWC is finding folks who can complete projects. The conference and the passport benefitted from having dedicated volunteers who were willing to see the project all the way through. In the future, I (Sara) might recommend trying to find funding for a project manager to shepherd through all aspects of a proposal like this one.

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PROJECT 12: Good Agricultural Practices Audit Cost Share Program

PROJECT SUMMARY

The purpose of this project was to provide Vermont fruit and vegetable growers with continued access to markets. Supermarkets, distributors and institutional buyers are increasingly insisting on third-party audits of farms to ensure that Good Agricultural Practices (GAPs) are being used to minimize possible contamination by disease-causing microorganisms that reduce consumer confidence in fresh produce, and lead to considerable market disruptions, including deaths and lawsuits.

Fruit and vegetable producers in Vermont continue to seek GAPs technical assistance and audit support to meet food safety requirements of particular buyers and markets. In response to this growing market demand, the VAAFM remains committed to offering: GAPs audit reimbursements of up to $500 annually or $1,000 in a lifetime to cover USDA GAP-audit costs, educational opportunities for farmers, and support for our state GAP auditors to attend professional development trainings.

GAP audit costs range between $450 and $1,000 per audit. This does not include the extensive human and capital resources required for producers to prepare for the audit. The average size of fruit and vegetable farms is much smaller in Vermont than the national average, creating a disproportionate burden for Vermont producers to meet the audit requirements. SCBGP funds are the only funds available to help offset audit costs.

This project builds on work previously funded through previous rounds of the SCBGP. Since 2009, The VT Agency of Agriculture, Food and Markets (VAAFM) has been leveraging SCBGP funds to assist growers with GAP requirements. SCBGP funding, during the 2012-2014 growing seasons, was the only source to reimburse farm audit costs and ensure current training levels for auditors.

PROJECT APPROACH

Goal 1. Increase participation in voluntary GAP audit program from 27 to 39 over the course of the grant period.
Goal 2. Train two additional VAAFM staff to conduct GAP audits.

VAAFM supported grower participation in the USDA GAP audit program by providing reimbursement of up to $500 per farm during 2012-2014. Vermont growers were eligible to receive reimbursements of up to $500 for two years of USDA GAP audit participation. The maximum allowable reimbursement for any one grower or farm is $1000. Each grower completed a USDA Audit Agreement Form as well as a USDA Audit Request Form. These forms were returned and recorded by the VAAFM auditor. The VAAFM/USDA auditor contacted the grower to schedule a specific date and time to conduct the audits. GAP audits typically begin in July and run through early November, including the initial audits as well as unannounced audits. The Auditor and the Business

Office at the VAAFM maintained a database of completed, billed and paid audit expenses. The VAAFM/USDA GAP Auditor monitored the growers that participated in the program.

At the completion of an audit, a billing invoice was issued to the grower by the VAAFM/USDA GAP Auditor. The grower returned a copy of the invoice with payment to the VAAFM Business Office. The Business Office recorded the payment and entered the appropriate information into the USDA GAP Grower Database. Reimbursements payments were paid as appropriate.

The participation requirements were that the grower must specifically request a USDA GAP & GHP audit; complete the USDA Audit Agreement Form and the USDA Audit Request Form; and successfully pass the USDA GAP & GHP Audit. Additionally, the grower must pay in full any and all billed audit expenses before any reimbursement from the GAP Audit Cost-Share Program is authorized.

VAAFM auditors maintained their USDA accreditation by continuing to participate in required training programs. Two additional VAAFM staff were brought on during this period as USDA GAP auditors. VAAFM staff continued to monitor state and national produce industry activities to determine future requirements of farmers to maintain access to local, regional, national and international markets.

Quantitative Results

Growing season	# GAP audits conducted	# farms served	# GAP audit reimbursement payments
2012	40	20	8
2013	41	20	2
2014	39	19	3
Total	**120**	**59**	**13**

GOALS AND OUTCOMES ACHIEVED

Forty audits were conducted on twenty farms during 2012; forty-one GAP audits were conducted on twenty Vermont farms during the 2013 growing season; and thirty-nine GAP audits were conducted on nineteen farms during 2014. Thirteen farm operations were eligible for audit reimbursements of up to $500 annually or $1,000 in a lifetime to cover GAP audit expenses.

GAP audit trainings were scheduled for VAAFM's one auditor-in-training and our two certified auditors during 2013. VAAFM's auditor-in-training attended GAP audit training school in Athens, GA during February 2013. VAAFM's two trained auditors attended a two-day class in Albany, NY during March 2013.

This additional training, initially unanticipated, was a result of distributors and retailers pushing for GAP certification anticipating the industry's trend to require USDA GAP auditors to become trained in Harmonized GAP audits. Although similar, the Harmonized GAP audits require additional travel

and trainings. These slightly different requirements will translate into additional literacy training for growers who will need to meet new reporting and record keeping requirements.

Cost Category	**Original Budget**	**Amended Budget**	**Actual Expenses**
Other Operating Expenses			
GAP audit cost-share payments to producers	$12,000.00	$7,500.00	$5,500.00
GAP auditors training & expenses	$1,000.00	$5,500.00	$7054.00
Amount unexpended in the project budget			**$446.00**
Total SCBGP Funds	$13,000.00	$13,000.00	$13,000

BENEFICIARIES

This activity had the potential to benefit 243 apple growers and 739 vegetable and berry growers in Vermont, producing crops valued at over $50 million. We anticipated that twenty-four producers would achieve GAP audits during the 2012-2014 growing seasons. We were able to provide audit support to twenty-five different producers over 2012-2014 growing seasons but only thirteen actual audit reimbursements.

LESSONS LEARNED

Of the twenty-five producers went through the audit process with VAAFM during the 2012-2014 seasons, only thirteen were eligible for audit reimbursements. The lower number of reimbursement eligible operations that received GAP audits during the project period was likely a reaction of new operations' reluctance to invest in GAP certification in anticipation of the Food Safety Modernization Act (FSMA) regulations. This affected the project budget, resulting in only fourteen audit reimbursements, over three years. We suspect that the prospect of food safety requirements changing as a result of FDA's pending FSMA may be a reason why fewer producers were willing to engage in the audit process. The concern that FSMA food safety requirement may not be well aligned with GAP audit expectations could deter producers from making the investment until the relationship is made clearer.

As producers and service providers become more comfortable with the expansive FSMA implementation timeline (final rules released in fall of 2015, compliance expected by 2017-2019) and intentions by FDA and USDA to align GAP audit expectations with FSMA food safety requirements, more producers will hopefully participate in GAPs. VAAFM, in collaboration with other statewide technical assistance organizations, will continue to identify GAPs as a market access tool aiding in the competitiveness of specialty crop producers.

Additional GAP trainings were required and fewer GAP audit reimbursement payments were made than anticipated during 2013. The additional training was a result of distributors and retailers pushing for GAP certification in anticipation of the industry's trend to require USDA GAP auditors to become trained in Harmonized GAP. Although similar, the Harmonized GAP audits require

additional travel and trainings- hence the addition in auditor training expenses. These slightly different requirements will translate into additional literacy training for growers who will need to meet new reporting and record keeping requirements.

Overall this project provided the financial seed-support needed by producers entering the wholesale marketplace, requiring GAP audits. This program was also an opportunity for VAAFM auditors to connect with the specialty crop industry, understand their standard operating procedures and provide support in meeting new market outlets. The training resources have been helpful in creating a state-level team of training GAP auditors that are capable of meeting USDA certification. This will prove helpful as VAAFM moves into developing a produce safety regulatory program. Our knowledge of needs and opportunities as well as established relationship with the specialty crop industry is improved as a result of this project. VAAFM is better positioned to move ahead in meeting the industry's produce safety needs in the light of new FSMA regulations.

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PROJECT 13: Harvest Health Nutrition Incentive Program and Farmers Market Universal Currency Initiative

PROJECT SUMMARY

With the support of this Specialty Crop Block Grant, we promoted and implemented the use of Harvest Health Coupons (HHC) to incentivize SNAP benefits usage at 41 markets in 2012, 45 in 2013, and 42 in 2014. In 2012, we evaluated the use of HHC at ten markets. In addition, we collaborated with the State on a study to assess the feasibility of merging various food benefit programs and incentive coupons with the card technology systems that currently allow farmers' markets to accept debit and EBT cards, and feasibility of adopting a different technology option for processing EBT at Vermont farmers' markets.

PROJECT APPROACH

Significant Results, Accomplishments & Conclusions:

- From 2012-2014, we worked with 11 new markets to accept EBT and HHC.

- Our evaluation of Harvest Health Coupon users at 10 Vermont farmers' markets in 2012 indicated that for 86% of users, HHC were "Very important (user wouldn't have come without them)" or "Moderately important" to them spending their food stamps at the farmers' market

instead of elsewhere. Only 5% of those surveyed noted that the HHC were "Not at all important" (user would have come without them) in them spending their food stamps at the farmers' market instead of elsewhere.

- 98% of users evaluated "Strongly agreed" or "agreed" that as a result of shopping at the farmers' markets, it was easier for them to buy fresh fruits and vegetables. 49% of respondents stated that the amount of fresh fruits and vegetables they had eaten has "Increased greatly" and 35% stated that it had "Increased some".

- The feasibility study completed in March 2013 indicated that developing a universal currency would still require market-level tokens and bookkeeping systems which will continue to be taxing on many of Vermont's volunteer run markets. In addition, the study concluded that the continued use of Point of Sales (POS) terminals may still be the most cost effective system for Vermont to use because of the increased sales required to make new smart phone technology financially reasonable.

GOALS AND OUTCOMES ACHIEVED

The goals of this SCBG project were to:

- Increase VT SNAP sales at farmers' markets and therefore progress in improving local food access across all socioeconomic segments of VT's population.

- Continue to fund the Harvest Health Coupons, a "double value coupon" that incentivizes the use of SNAP benefits at farmers' markets.

- Examine the potential for a "universal currency" for use at Vermont farmers' markets that would combine multiple supplemental nutrition benefits and incentive coupons in one mechanism, making the process more streamlined for market managers, and easier to track for government and nonprofit partners.

All of these goals were accomplished. Please see the details below summarizing the accomplishments.

Outcomes

1. *Increased number of farmers' markets accepting HHC from 25 to 35, expanding market share for at least 50 specialty crop producers.*

Year	**Number of markets accepting HHC**
2012	41
2013	45

2014	42

Harvest Health Coupons were available at all but one of these summer markets (all but the downtown Burlington market). In 2012-2014, we worked with 11 new markets to accept EBT and HHC.

2. *Increased SNAP benefit redemption by over 5% from the 2010 summer market season from $18,870 to $20,000.*

Year	**Annual EBT Sales**	**Summer EBT Sales**
2011	$68,661	$55,950
2012	$77,534	$61,139
2013	$86,824	$66,346

2014 EBT sales data will not be available until early 2015. This data was provided by the State of Vermont EBT Director.

3. *Complete a feasibility study resulting in 2 new technology suggestions and a proposed universal currency program to be implemented at a minimum of five pilot farmers' markets.*

NOFA VT collaborated with the Vermont Agency of Agriculture, Food and Markets (VAAFM) on this feasibility study. In October 2012, the VAAFM hired Darlene Wolnik, an independent consultant, to work on this project. NOFA VT worked closely with Darlene through the study to provide guidance and support. The study was completed in late March 2013 and can be found here: http://nofavt.org/sites/default/files/VTCurrencyReport_Wolnik.pdf. The feasibility study indicated that developing a universal currency would still require market-level tokens and bookkeeping systems which will continue to be taxing on many of Vermont's volunteer run markets. Therefore, the development of a new universal currency was not recommended at this time. In addition, the study concluded that the continued use of POS terminals may still be the most cost effective system for Vermont to use because of the increased sales required to make new smart phone technology financially reasonable. This conclusion has held true for the majority of markets in Vermont. In 2014, the Food and Nutrition Service has partnered with the National Association of Farmers' Market Nutrition Programs to develop the MarketLink program, providing EBT through iPhone technology. This technology was currently more expensive than our current POS system for all the new markets we worked with this year.

Performance Measures

1. *Contribute $8,000 toward Harvest Health "double value coupon" that incentivizes the use of SNAP benefits at farmers' markets.*

Year	HHC Redemptions
2012	$8,252
2013	$15,404
2014	$19,000 *anticipated
Total	$42,656

From 2012-2014, $42,656 in HHC were redeemed with $8,066 of coupon redemptions coming from SCBG funds (19%). * The 2014 summer HHC season ends October 31. We have started reimbursing markets for this year but will continue to reimburse markets as they submit requests over the next two months.

2. *Promote, implement, and evaluate the use of Harvest Health Coupons at five new markets, to expand to 35 markets statewide that accept SNAP-EBT by the end of the 2013 summer market season.*

HHC were available at all but one of Vermont summer markets with EBT service (all but the downtown Burlington market). All participating markets received promotional materials and support/technical assistance in implementing this program. EBT service was expanded to four Vermont farmers' markets in 2012, an additional 4 in 2013, and an additional 3 in 2014. Each of the new participating markets received a short evaluation about their Harvest Health Coupon Program participation, which were used to modify the program. In 2012, markets noted reporting requirements to be a challenge so these requirements were changed to make it easier for markets to participate. In addition, when markets noted the need for additional outreach support, we partnered with Hunger Free Vermont to provide individualized technical assistance to help these markets.

In 2012-2013, we piloted Harvest Health Coupons at winter markets. There were 18 winter markets in 2012-2013 that accepted EBT and 16 of them participated in the winter Harvest Health Coupon program. The winter coupons were valid from November 1, 2012 – April 30, 2013. Only $962 in coupons were redeemed and we decided to not continue to offer coupons at winter markets in 2013-2014, instead focusing on offering more coupons for summer markets which could always use more than we have funding for.

3. *Collaborate with the State on a feasibility study.*

See report on feasibility study above under Outcome #3.

BENEFICIARIES

The average farmers' market in Vermont has 28 vendors and based on markets reported annual agricultural sales, it is estimated that over half of them sell specialty crop items. Therefore, a

conservative estimate is that 14 vendors per market benefitted from this project – between 574 and 630 vendors in all (note: some vendors vend at multiple participating markets but this number does not take into account that possible duplication). This project used $8,066 in SCBG funds to leverage an additional $34,590 in HHC income for participating vendors. In addition, the $42,656 in HHC matched $42,656 in SNAP income for participating vendors. This project also incentivized SNAP sales at farmers markets, which continue to increase every year. From customer surveys, we understand that HHC are very important to SNAP users choosing to spend their benefits at farmers' markets vs. other retail venues. EBT participants that responded to our survey also noted that HHCs greatly increased the amount of fresh fruits and vegetables they were able to purchase.

LESSONS LEARNED

Harvest Health Coupons contribute to SNAP shoppers using their benefits at farmers' markets and their ability to purchase more fresh fruits and vegetables. Every year, as more markets accept EBT and offer HHC, we see EBT sales grow. We have yet to reach a tipping point, though, where for many of Vermont's small, volunteer-run markets the EBT and HHC sales justify the additional work for implementing this federal program (staffing, outreach, administration, etc.). Growing our HHC budget to incentivize increased EBT sales at all markets will help tip this balance. We had several markets that either reached the maximum allotment for the season or wanted more coupons towards the end of the season, but could not receive any because we had run out.

The feasibility study indicated that our current POS system is the most financially feasible system for the majority of Vermont's markets to accept EBT. This was a surprise as we assumed that new technology would lower current costs. We hope that as the technology ages, and competition from other providers enters the marketplace, these new technologies will become more affordable for Vermont's markets.

CONTACT

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ADDITIONAL INFORMATION

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