

Minnesota Department of Agriculture

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12-25-B-0931

Final Performance Report

November 19, 2012

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Project A - Minnesota Food Association – Big River Farms Growing Farmers Growing Farms

I. Project Name

BIG RIVER FARMS – GROWING FARMERS, GROWING FARMS

Minnesota Food Association (MFA) Big River Farms Program December 2009 – November 2010

Dated: December 8, 2010

Minnesota Food Association was awarded a grant of \$30,935 from the Minnesota Department of Agriculture through the FY 2009 USDA Specialty Crop Block Grant Program for the Period of December 1, 2009 – November 30, 2010 (Grant contract #: B36371).

II. PROJECT SUMMARY

Minnesota's population is becoming increasingly diverse. Minnesota has the largest population of Somali immigrants and large populations of other East Africa immigrants, the largest concentration of Hmong immigrants/refugees in a single city, and some of the fastest growing communities of Karen/Burmese and Bhutanese refugees in the nation. The existing immigrant and refugee resettlement programs do not address agriculture as a legitimate educational or career opportunity. Sustainable farming is a legitimate and viable part time job or full time occupation whereby a farmer can earn a decent living to support his/her family. Growing food is a highly relevant and necessary business that we all depend on and as the demand for local food grows, so do the possibilities for growing a business in this field. The most recent USDA Ag Census 2007, reports the fastest growing population of farm operators are non-white. The Census shows an increase in women as the principal operators. Six of the 9 farms in our program are led by women. Ag Census also shows the number of farms increased slightly for the first time since WWII but this increase was in the very largest and the very smallest of farms. But the small-medium and medium-sized farms decreased significantly again. This is the demographic that MFA is working with – people of color farmers and/or farms in the range of \$10,000 - \$200,000 in sales annually.

Interest in sustainable agriculture and local food is growing significantly – in the general public, among established farmers, at universities, in government agencies and in nonprofit programs. MFA is on-the-land with its constituents, with excellent staff and experience in working with immigrant farmers, and is well-respected and well-networked locally, regionally and nationally. MFA not only provides relevant, culturally-adapted, and appreciated services, but also produces a product (actual local, sustainably produced food) that is in public demand and creates revenues for the farmers and the organization.

New immigrants wanting to become farmers and produce for local markets face both regular farming challenges and navigation of new language, culture, markets and systems. **The purpose of this program is to assist socially disadvantaged and limited resource farms in the Minnesota and the St. Croix River Valley in establishing and growing their organic specialty crop farm enterprises.** The focus will be on organic and sustainable methods through training and practice in classroom, field and individual sessions, and through participants beginning and operating their own initial farm production and

marketing enterprise. The participant farmers come from various immigrant communities including Latino (Mexico), East Africa (Kenya), South East Asia (Burma, Laos, Cambodia, Hmong, Bhutan), and two Caucasian women. Many of these farms are led by women. **The objectives of this project are that all farms will complete organic certification, will complete food safety training and GAP certification, will have their own business plans in place, and will have increased skills and knowledge in new marketing strategies, including having at least 2 types of marketing outlets. These will be key components towards operating and enhancing the competitiveness of their own independent vegetable farm enterprises, which directly impacts the specialty crop industry.**

This project builds on the previous SCBGP grant in 2008-9009 by strengthening the training component of the program and the marketing aspects. We now have a more concrete set of training sessions to be conducted in the winter and during the season in the field. We are also further developing our market relationship brokering where we are moving beyond just brokering produce for the farmers but developing direct relationships between the buyers and our farmers. We then turn over the market directly to the farmer who works directly with the buyer and we help in communication and understanding.

III. PROJECT APPROACH

MFA worked directly with 9 farms in 2009, about 30 farmers, and reached over 200 farmers in different regards in 2009; all are low-income and considered socially-disadvantaged by USDA criteria (people of color, low income, and women). MFA had 10 farms signed up, but one farm principal operator lost his job and had to move away to find jobs before the season started. We conducted 10 winter workshop sessions, 10 in-field training sessions during the season, numerous individual field walks and consultations, and visited a few conferences and conducted our own conference. We also conduct regular 'farmers forums' to get feedback from the farmers about the program and how their operations are going. Each "farm" was 1/4 – 3 acres, produced 3 – 12 or more types of vegetables, and 2nd and 3rd year farmers sold to MFA's Big River Farms CSA and/or wholesale distribution, together with their own other markets (farmers markets, restaurants, community events). MFA also provided support to about 50 "gardeners" annually, usually elderly who garden for physical and mental health reasons and to grow the food they like from their homeland.

In 2009, MFA reduced the CSA to 118 members in order to focus on quality and membership retention and relationship building. This year was the best CSA year for us ever. MFA also reduced the wholesale / retail marketing and focused on 4 larger wholesale accounts as H Brooks, Chipotle, Lunds, and Whole Foods, and a number of smaller retail accounts like Savories, Marine General Store, River Market Coop, Scandia Café, Butter Bakery, Concordia Language Village and other local outlets. The quality was excellent. However, acting as a produce broker still required a huge amount of staff time. We handed over the Marine General Store and Scandia Café market to Cala Farms directly. We will pursue more of this in 2010.

In 2010, the Big River Farms comprehensive training program included 9 "farms" totaling about 25 people. The farmers came from Kenya, Cambodia, Mexico, Hmong and Burma (Karen). This intensive production farming training included 10 off-season classroom sessions, conferences and farm field visits, 12 – 18 one-on-one individual sessions between MFA staff and each farm, and 10 in-field training sessions including planning, production, harvesting, marketing, distribution, etc. Each "farm" is allocated 1/4 – 3 acres, produces 5 - 15 or more types of vegetables, and 2nd and 3rd year farmers sell to MFA's Big

River Farms CSA and/or wholesale distribution, together with developing their own other markets (farmers markets, restaurants, community events).

In 2010, MFA increased the CSA size from 118 to 162 members and maintained excellent quality and efficiencies. MFA also sold wholesale to River Market Coop, Savories, Stillwater Residence (senior assisted living facility), Open Arms of MN, Emergency Food Shelf Network, Whole Foods, Wholesale Produce and even The Dave Matthews Band. About 80% of the produce for these markets and the CSA comes from the farmers in training, thereby providing income for them and training in producing for and distributing to different markets. However, acting as a produce broker still requires a huge amount of staff time, so in 2010, MFA reduced the its direct sales to these accounts and worked with the farmers and buyers to establish their own direct relationships. This is allowing them to develop their own long-term relationships and build direct markets for the new farmers.

MFA operates its program and office from the Wilder Forest, May Township, Washington County. This land is leased at market value from Amherst Wilder Foundation. MFA has a 5-year lease due to expire, or renew, in December 2014.

Project Partners

The following constitute some key organizations that partner with MFA in carrying out the Big River Farms Program.

USDA Farm Service Agency, St. Paul, MN: FSA and MFA collaborate through, linking land owners with immigrant farmers seeking farm land, outreach to the Immigrant farming community, in co-organizing the annual Immigrant Farming Conference in MN, and in connecting immigrant farmers to the various programs of the USDA. FSA also contributes funds to the Annual Conference.

USDA NCR SARE: MFA worked closely with SARE and two farm participants in our training program to apply for and receive SARE Farmer/Rancher grants in 2008 to develop hoop house/season extension, traditional herbs and produce projects. SARE also sponsored one MFA staff person to attend the annual National Organic Conferences by MOSES in Feb 2010, which allowed MFA to re-allocate its own funds to support farmers to attend the conference.

USDA NRCS: MFA and NRCS have developed a Conservation Plan contract on the EQIP Program that will begin in 2011. NRCS also conducts a workshop and has a resource table at the annual immigrant farming conference. MFA and NRCS also look to work together on the Hoop house / Season Extension Program in 2011, likely to be facilitating our participant farmers in applying to the program.

Minnesota Department of Agriculture: MFA works closely with MDA on their Organic Cost Share Program and their *Minnesota Grown* Program. MDA presents each year at the annual immigrant farming conference and a number of our farmers have signed up to be part of the MN Grown program because of this. MFA collaborates with MDA on their annual Specialty Crop Block Grant program.

University of Minnesota, Department of Horticulture, Organic Agriculture: MFA will continue to collaborate with the department in the areas of training in soil improvement and conservation and the use of hoop houses in extended seasons and marketing.

University of Minnesota, Agriculture Safety and Health Program: They will continue to provide training in the areas of food safety and GAP/GHP practices. They are, in organizing the annual Immigrant farming Conference and other public events and in identifying new resources, partners, and immigrant farming communities.

Association for the Advancement of Hmong Women in Minnesota: MFA and AAHWM collaborate through linking land owners with immigrant farmers seeking farm land, outreach to the SE Asia community and reaching low income families and communities, and in co-organizing the annual Immigrant Farming Conference in MN. AAHWM also facilitates a number of Hmong and Karen growers to participate in the workshops even though they are not enrolled in the full BRF program.

AfroEco: AfroEco is one of 4 partners implementing a current community food assessment in 2 St. Paul neighborhoods through a USDA CFP Planning Grant. The four partners are AfroEco, MFA, Community Design Center of MN and The Minnesota Project (see below).

Community Design Center of Minnesota: MFA works with CDC in bringing good, local food into low income communities and in the community food assessment initiative mentioned above.

The Minnesota Project: The MN Project Local Foods Program works with MFA in their Heartland Food Network initiative to connect local chefs with local growers. This is another avenue in which we can connect our farmers with new market venues. MFA also works with The MN Project in the community food assessment initiative mentioned above.

World Relief and Karen Organization of Minnesota (KOM): MFA works with these two organizations in outreach to the new Karen community (from Burma) and in identifying potential Karen farmers to enter the program. In 2008, we had two Karen in our food farmer program. WR and KOM and MFA have developed a plan to support Karen immigrants in our training program and to expand current gardening programs for Karen elders. We had one Karen "farm" with 6 participants enrolled in our training program for 2010 of which the coordinator for this group works with KOM.

Farmers Legal Action Group: FLAG acts as an advisor to MFA and provides interpretation and information on legal issues affecting immigrant and socially-disadvantaged farmers. FLAG is a key partner in organizing the annual Immigrant Farming Conference. FLAG has been instrumental in giving our farmers advice on farmer's markets rules, other food distribution rules and on farm land leasing contracts and potential land and capital loan agreements.

Family Assets for Independence in Minnesota (FAIM): One farmer in the MFA program connected with FAIM last year and has started a savings program. FAIM and MFA will work together to assist other farmers to set up IDAs and develop solid business plans that support the use of their IDA funds to advance their farm enterprises. FAIM allocates 5 – 10 spaces each year for socially-disadvantaged farmers in their savings program.

Institute for Agriculture and Trade Policy: IATP and MFA have partnered for over 10 years on various policy issues related to sustainable agriculture and local foods. Two years ago, IATP started a Community and Local Foods Program that is working corner store markets and mini-farmers markets as ways to get more fresh local food into lower income neighborhoods in the Twin Cities. Some MFA farmers have participated in these and more a planning to do so in the future. This fits well with our plans to develop more direct markets for the farmers in the MFA program.

Land Stewardship Project: LSP and MFA have been partnering for over 25 years since the inception of both organizations in 1983. MFA partners with LSP through their New farm Beginnings Program, the Buy Fresh Buy Local campaign project, and in various advocacy actions related to serving socially-disadvantaged farmers and promoting small-scale sustainable farming families. MFA and LSP also share workshops for each other's program participants. In previous years, a few farmers in the MFA program have also enrolled in the LSP training program as well. We will continue to share workshops and will work together on the improving farmland access to new farmers. One MFA staff is part of the St Croix Valley Buy Fresh Buy Local Campaign which is led by LSP. In another new initiative, MFA is working together with a network a CSA farms to develop a CSA support network with information for new farmers, new CSA consumers, and mentoring program pairing experienced CSA farmers with new CSA farmers.

Midwest Food Connection: MFC and MFA partner each year in bringing 3 – 4 elementary school classes on farm visits to MFA's farm annually.

Minnesota Institute for Sustainable Agriculture (MISA): MISA supports MFA with many written materials on marketing and directories that we pass on to farmers and they support our annual immigrant farming conference.

National Immigrant Farming Initiative: NIFI is a key partner of MFA in linking MFA programs and farmers to national issues affecting immigrant farmers and in sharing our lessons and successes with other farmers and organizations in different regions of the country. NIFI was a key collaborating partner in co-organizing the 3rd annual Immigrant Farming Conference in MN in March 2008. NIFI acts a key resource for MFA in receiving information for and disseminating information from the organization and the farmers in MFA's program. MFA Executive Director, Glen Hill, is on the NIFI Board of Directors since 2008.

Growing Power and the Growing Food for Justice Initiative: One MFA staff and a few farmers have attended the Growing Power agriculture training in Milwaukee. Growing Power conducted a workshop at MFA's farm site on building a hoop house and MFA seeks to continue to work with Growing Power on farmer training workshops, including aquaculture. MFA plans for more farmers and staff to attend Growing Power workshops in 2011.

Coop Stores: MFA has worked together with a number of Co-ops in the Twin Cities. All are key supporters of local foods and new immigrant farmers. In the past few years, we have sold produce from the farmers in our program to Mississippi Market Coop, Just Food Coop, Linden Hills Coop and River Market Coop. In 2009, we focused our relationship with the River Market Co-op in Stillwater, MN since they are the closest to us and we want to build a clientele and community in the St. Croix River Valley. River Market co-organized a Buyers/Growers local food workshop in Nov 2009 with MFA and LSP, and continues to be a good customer of Big River Farms. River Market is now working with MFA to develop

direct relationships with a few of our more experienced growers as well. They will be a key educational and market partner as we connect more and more growers with their own direct markets.

Chipotle Mexican Grill: Chipotle started purchasing green bell peppers wholesale from Big River Farms in 2007. Chipotle acted as the incentive to develop our own Standard Operating Procedures for Good Agriculture Practices and to obtain GAP Certification. MFA continued to sell to Chipotle in 2008 and 2009 as a means to support out farmers-in-training and to teach about selling to large wholesale accounts. However, for 2010, we have handed the Chipotle account over to one of our farm graduates as they continue to grow their farm and wholesale distribution. We will not sell to Chipotle in 2010, but plan to continue to sell to them later in working with 2 or 3 of our more experienced farmers. Chipotle and MFA will continue to partner as an incubator program in developing and mentoring farmers who seek to develop larger wholesale markets.

Emergency Food shelf Network: MFA and EFN have been partnering for 5 years now through their *Harvest for the Hungry* Program. MFA collects contributions up to \$3,000 from its members, contributes this to EFN, and then EFN purchases double the amount, up to \$6,000 worth, of produce from MFA which primarily comes from the farmers-in-training. This is an additional, different type of market for our farmers, that helps the farmers earn more income and also acts as an outlet for “2nds” and bulk, lower-value produce (like zucchini and summer squash). EFN pays a flat rate of 1\$/lb for all produce but is willing to take lesser quality. This type of market, together with the Open Arms, teaches farmers about different markets and helps them in their marketing plans for the season.

Open Arms of Minnesota: Open Arms of MN operates a free meal service program for disabled adults and children, serving up to 5,000 meals per day. Open Arms and MFA will begin a new partnership in 2010 to bring fresher, local, organic produce into their menu program. This creates a new type of market for our farmers and an outlet for “2nds” which will be processed into meals and reach to low income families and communities in the Twin Cities.

Immigrant farmers: A core group of leading production farmers in our program is setting the trend – including individuals as Mhonpaj Lee, May Lee, Yee Yang and Mao Lee (all Hmong women running their own farming enterprises) and Rodrigo Cala, and Margarito Ramos (Latino men running their own farming enterprises) – to act as future extension agents in their communities in promoting sustainable and organic farming and local food systems. Mhonpaj’s Garden will be running its own CSA for the 2nd year in 2010, the first Hmong CSA in MN. The Cala Farms have developed their own Standard Operating Procedures for GAP and passed the GAP certification process on their own this year after MFA’s training and guidance for the past 3 years. Two other farms set up their own CSAs this season. And 4 or 5 farms will be developing their own, new direct markets with local stores, coops and restaurants with the support and coaching of MFA.

Trainers. MFA utilizes a variety of external trainers for the various training classes. Many trainers come from organizations and agencies listed in the ‘collaborating partners’ section, as well as other independents. Below is a partial list of trainers that have worked with us before and plan to continue to do so in the future.

1. Nigatu Tadesse, Outreach Coordinator, USDA Farm Service Agency. USDA FSA loan programs, crop reports, NAP crop insurance and filing Schedule F.
2. Laura Frerichs. Loon Organics Farm, Owner and Manager. Costs of Production, CSA operations and management, selling at farmers markets, farm business planning.

3. Xe Susanne Moua. Urban farmer. Urban farming and marketing, and CSA operations.
4. Jack Hedin. Featherstone Farms, Owner and Manager. CSA and wholesale marketing, land leasing.
5. Hli Xyooj. Farmers Legal Action Group, lawyer. NAP insurance and land and farmers markets contracts.
6. Mike Noreen. Burning River Farm, owner and manager. Direct Marketing, CSAs and farmers markets.
7. Danny Schwartzmann. Common Roots Café, Owner and manager. Marketing to local restaurants
8. Jim Groskopf. St Paul Public Schools Nutrition Services, Purchasing Analyst. Selling fresh produce to schools and institutions.
9. Jack Gertin. St Paul Farmers Market, Market manager. Selling at farmers markets.
10. Bud Markhart. University of Minnesota, professor and researcher. Soils, Organic production and hoop house/season extension production.
11. Carl Rosen, University of Minnesota, Extension. Soils and soil fertility.
12. Terry Nennich. University of Minnesota, Extension. Hoop house and season extension production.
13. Cindy Tong. University of Minnesota, Extension. Post harvest physiology and handling.
14. Michelle Grabowski. University of Minnesota, researcher. Plant pests, insects and diseases.
15. Kevin Cavanaugh. University of Minnesota, Extension. Integrated Pest Management.
16. Michele Schermann. University of Minnesota, Extension. Food safety.
17. Jim Riddle. University of Minnesota Extension. Organic production and certification.
18. Amy Bacigalupo and Karen Stettler. Land Stewardship Project. Farm goal setting and business planning.
19. Big River Farms participants that also help as trainers:
 - o Rodrigo Cala – hoop houses, general farm management, irrigation, costs of production, tomatoes, wholesale marketing and distribution
 - o Moses Momanyi – ethnic produce marketing, direct marketing
 - o May Lee and Mhonpaj Lee – organic production, farmers markets, greenhouse production, starting CSAs

IV. GOALS AND OUTCOMES ACHIEVED

The specific objectives with measureable outcomes for this project for the Specialty Crop Block Grant Program through the MN Dept of Agriculture include:

- 1) **Provide technical assistance by training for USDA Organic Certification** to 10 socially disadvantaged farms; increasing their knowledge and skills of crop rotation, soil nutrition management for pest management and marketing opportunities.

Result: All 9 farms in the Big River Farms Program 2010 were certified organic by MCIAC again in 2010, some for the first time and others for their 2nd or 3rd consecutive year. BRF was certified organic and all the individual farms in the program each received their own individual certification as well. Each farm had its own daily/weekly field log and the Farm Manager and Training Coordinator held weekly field walks with each farm to review and confirm this. All the farmers maintain they practice organic methods and obtain organic certification for 2 main reasons: They believe that organic farming is the best method for the land, their health and the public health based on their values and principles; and that it makes them a better farmer and they wear this practice and certification like a badge of honor. All farms in the program used sustainable growing practices evidenced by the use of organic compost and their support for crop rotation and cover cropping for soil fertility.

2) **Provide technical assistance by training for USDA Good Agricultural Practices (GAP) Certification** to 10 socially disadvantaged farms; increasing their knowledge and skills in harvest, post-harvest, food safety and packing and distribution.

Result: MFA did not apply for GAP certification in 2010 because we did not sell to Chipotle which was the only market that required the GAP certification. Instead, we handed over this lucrative market to one of our graduate farms (Cala Farms) to help them build up their markets. They completed their Gap certification on their own farm in 2010. We consider this a huge success all around. All farms in the training program understand food safety issues and practices and follow these practices. We conducted 2 food safety training sessions and a post-harvest handling session as well. Big River Farms maintained all the GAP practices and monitored this on a regular basis throughout the season.

3) **Provide farm business management training** to 10 socially disadvantaged farms including records management, risk management, marketing management and financial management through one to one meetings.

Result: Not all farms in the training program actually completed their own business plan, but all the farms began the process. They all kept greatly improved records including their daily/weekly field log books, expenses, soil inputs, revenues from markets, invoice booklets and all the necessary paperwork for organic certification. MFA will focus more intently on this aspect of having each farm develop an operational draft of a business plan in 2011. It is both a cultural aspect and time aspect to get the farmers to develop a plan. But we see that as the farms' operations become more complicated and involved, they are coming to their own realization to the value of having a plan, especially when planning for the coming season.

4) **Provide technical assistance towards accessing non-traditional markets** to 10 socially disadvantaged farms.

Result: Each 2nd-year and 3rd-year farm had 2 or more regular market channels and many of the 1st-year farms had 2 markets as well. Three farms ran their own CSA in addition to supplying the BRF CSA. One farm sold to the Chisago school district for the first year. Three farms sold at regular farmers markets. MFA help one farm get established at the new Mahtomedi Farmers Market. 6 of the farms contributed to the BRF wholesale markets and learn about grading and packing. These markets included River Market Coop, Whole Foods, Emergency Food shelf Network, Savories Restaurant, and numerous other smaller markets and some one-time sales (like The Dave Matthews Band when they were in town in Sept.). All the farms produced at least \$1,000 worth of produce and all the farms but one sold more than \$1,000 even from a ¼ acre. We estimate that the farmers were yielding between \$4,000 – \$12,000 per acre in gross sales based on our records and comparing their records and field yield estimates.

Specific Action by Farmer	Evaluation and Verification	# Producers Reached
Practice organic methods 100%, completes forms and records	Organic certification	9 Farms (total of 25 farmers)
Improve soil, weeds and pest management	Adding compost, rotating crops, add measures to control erosion, improved irrigation techniques	9 Farms (total of 25 farmers)
Diversified markets to 2 or more	Selling at 2 or more markets,	8 Farms (total of 20 farmers)

channels	increased farm revenues	
Improved Farm Enterprise management	Farm has a business plan	2 Farms (total of 6 farmers)
Improved Food Safety	Farm follows GAP/GHP methods	9 Farms (total of 25 farmers)
Provides inputs to MFA program	Participates in <i>Farmers Forums</i> . Meeting notes.	6 Farms (total of 18 farmers)

Training Sessions and Farmers Forums for October 2009 – October 2010

When	Topic	Facilitator	Comments
October 25	Farmers Forum, End-of-Year All Farmers Meeting	MFA – all staff	20 farmers attended
November 7 and 8	Hoop house Construction Workshop	MFA – all staff, volunteers and farmers	BRF fields
November 12, 2009	Buyer/Grower Workshop, with LSP and River Market	MFA, LSP, River Market, and others	3 farmers
Nov 2009	Cabbage crop pest control	Wisconsin Farm	3 farmers
Jan 10, 2010	BRF Orientation and introduction	MFA staff	25 farmers
Jan 14, 2010	Organic Farming and intro to certification	MFA staff	10 farmers
Jan 24, 2010	CSA operations and marketing	MFA staff	10 farmers
Jan 31, 2010	Farm Business planning	MFA staff	9 farmers
Feb 7, 2010	Wholesale marketing	MFA staff	18 farmers
Feb 14, 2010	Seed starting at Home	MFA staff	14 farmers
Feb 18, 2010	Crop planning and plot mapping	MFA Staff	13 farmers
Feb 19 – 20, 2010	Immigrant Farming Conference in St Paul – numerous topics in 12 workshops	MFA staff, Planning Committee, many presenters	166 farmers; total 242 participants
Feb 25 – 27, 2010	MOSES National Organic Farming Conference, LaCrosse, WI	Many presenters	5 MFA staff and 8 farmers
March 14, 2010	Marketing at Farmers Markets	MFA staff	12 farmers
March 21, 2010	Farm Business Planning II	LSP staff and MFA staff	19 farmers
March 28, 2010	Record Keeping	Rodrigo Cala (BRF graduate) and MCIA, FSA, and MFA staff	18 farmers
April 25, 2010	Orientation to Big River Farms and food safety practices on the farm	MFA staff	13 farmers
May 2, 2010	Irrigation systems	MFA Staff	12 farmers
May 16, 2010	Soil Fertility and maintenance	Bud Markhart, Organic Horticulture Professor	13 farmers
May 23, 2010	Weeding techniques and management	MFA staff	14 farmers
June 13, 2010	Post-harvest Handling and Food Safety	Cindy Tong, UMN	13 farmers

		Extension; and Michele Schermann, UMN Agriculture Safety Program	
July 11, 2010	Plant diseases and organic approaches	Michelle Grabowski and Kevin Cavanaugh	14 farmers
July 18, 2010	Tractor Basics for Small Farms	MFA Staff	14 farmers
Aug 22, 2010	Cover cropping and putting fields to rest	MFA staff	12 farmers
Sept 19, 2010	Seed Saving Basics	Kathleen Plunkett-Black	15 farmers
Sept 26, 2010	Season Extension and Hoop house growing	MFA Staff; Bud Markhart, UMN	12 farmers
Sept 27-28	Cooperators Conference USDA Office of Outreach and Advocacy in St Louis, MO	MFA Exec Dir.; Training Coor; and one farmer	3 people
Oct 25, 2010	End of the Year All Farmers Meeting	MFA staff and Farmers in Training	20 people

MFA staff continue to work with all the farmers on an individual basis in developing their business plans, marketing strategies and direct markets. The majority of the Training Coordinator's time is spent in working with farmers, specifically on items as organic certification applications, GAP certification applications, applications to USDA SARE Farmer grants, pest intervention and control, quality control and produce grading, packaging, and so on. While the number of farmers is relatively small, the relationship is close, intensive and supportive.

Five MFA Staff and 8 farmers in the BRF program participated in the MOSES National Organic Conference in La Crosse, WI from Feb 25 – 27, 2010. For all the farmers this was their first time to this conference and for most of them, this was their first-ever farmer conference. It was a huge success. MFA sponsored their travel and expenses to the conference.

MFA continued to operate a Food Farmers Program in partnership with the SE Asia Adult Program of Wilder Foundation and Wingspan Life Resources Hmong Elder Program. About 50 Hmong elders produce magnificent vegetables on individual or family plots covering a total of about 4.2 acres. All the gardeners come from Ramsey County and primarily, St. Paul. About 66% are women. This program emphasizes the cultural traditions of Hmong farmers and carrying on these agricultural traditions, together with promoting the mental and physical health of elders and the production of local food. Everyone enthusiastically attests to the great benefit of this program. They also produce enough food for 160 – 200 families for 16 weeks, plus an additional amount for storage and canning throughout the year. They held 2 farmer markets at the Wilder Office in 2010.

Farmers Forums

MFA conducted 2 farmers' forums in 2010 which are simply listening sessions for the MFA staff to meet with the farmers in the program. This is especially beneficial for the Executive Director and management staff to hear the ideas and issues of the farmers and to share the overall program and organizational

issues of MFA with the farmers. MFA also conducted its annual End-of-the-Season All Farmers Meeting in October 2010 where we ate and conducted a participatory evaluation.

Annual Immigrant and Minority Farming Conference

MFA, USDA FSA, and the Association of Hmong Women in MN (together with a significant group of volunteers) conducted the 5th Annual Immigrant Farming Conference was held from Feb 19-20, 2010 in St Paul at the Wilder Foundation Auditorium with 166 farmer participants and about 60 organization and agency representatives attending. This is the largest gathering of immigrant farmers in the Midwest and one of the largest in the nation currently. Report is attached. This included 10 breakout workshops over 2 days. The conference remains free to farmer participants. Each year the conference becomes more relevant and practical for the immigrant farmers as all the workshops must be presented by farmers and/or practitioners and all workshops have simultaneous interpretation. Sessions cover topics as organic certification, farmers markets, restaurant markets, pest and disease control, irrigation, and more. The 6th Annual Immigrant Farming Conference will be held from Feb 4 - 5, 2010 in St Paul and MDA is contributing to this conference through MFA's Specialty Crop Block Grant for 2011.

Public Awareness and Education

MFA conducts a variety of activities to engage the community and raise public awareness. MFA conducted two major farm public events each year – the Spring Open House in May and the Fall Harvest Party in October. These events include farm tours, program and issue discussions, and visits with farmers in the program and sharing information and fresh local food. MFA hosted 3 school children groups and 2 youth groups to the farm in 2010. MFA hosted a group of about 12 Somali youth from Barron, WI, for a day on the farm and training in post-harvest handling. MFA partnered with the Pohlad Family Foundation to be a worksite for four North Minneapolis youth to work on the farm for one day per week for 5 weeks in July – August. MFA also held monthly Community Work Days from April through October that were open to the public where people can come to the farm and ‘work’ for a day, or half day, and learn about organic farming. This has been hugely popular for families who want to expose their children to a first-hand experience on an organic farm. MFA partnered with Slow Foods MN and hosted a Slow Food Dinner in Oct 2010 with four exceptional regional chefs preparing local food for about 80 people. This was a fundraiser. MFA also conducted four “Thank you Tours” of the farm for a select group of 12 -15 individual donors from June – October. MFA also hosted a visiting group from the ELCA Food and Ethnic Conference, the International Fellows Group from the Humphrey Institute, the Washington County Master Gardeners, the MN Department of Agriculture Organic Advisors Committee meeting, the Buy Fresh Buy Local St Croix Valley Planning Committee, and the National Immigrant Farming Initiative Annual Board Meeting. (We seem to do a lot of hosting). MFA staff makes regular presentations about food and farming to church and community groups as well. The Executive Director spoke to two Rotary Clubs, one church, one school class and one business in 2010. MFA and MFA farmers have also been featured on local radio station shows and local cable TV shows. MFA was featured on national public television in the *America's Heartland* show (<http://www.youtube.com/watch?v=xrI5ZbA0gxc>). MFA also made its own Big River Farms Program video (<http://www.youtube.com/user/mnfoodassociation>)

V. BENEFICIARIES

Target groups: The program primarily serves communities of immigrants, particularly Latino, Hmong, Laotian, Cambodian, Burmese, Karen, Kenyan, and Bhutanese and African-American farmers and others from East Africa and Southeast Asia. All the farmers in our program are considered “low income” by IRS standards and are “socially disadvantaged” by USDA standards. The farmers all come from the 7 county Twin Cities Metro Area and the St Croix River Valley of MN and Wisconsin. Primarily, they live in Ramsey and Hennepin Counties. In 2010, MFA is working directly with 9 “farms”, representing about 30 farmers. All these farmers but one have primary full time jobs as teachers, translators, factory workers, nurses, and other jobs, but are all low wage jobs. MFA also works with an additional 50 “food farmers” in the program who are primarily Hmong elders who produce mostly for themselves and community. We reached an additional 20 – 40 farmers through our classroom and field training classes that are open to the public and have between 2 – 10 farmers from outside the program at each session. We reach another 160 – 200 immigrant farmers through the Annual Minority and Immigrant Farmers Conference held in Feb or March each year (the 6th conference will be February 4-5, 2011). Overall, MFA reaches about 300 immigrant farmers annually with training, technical support and outreach. Other groups that benefit from this project include the 160 families in the BRF CSA, the 90 or so more families reached by the farmers’ own direct CSA operations, the hundreds of families that purchase food from the farmers at the farmers markets, the hundreds of families that receive food at various food shelves donated by MFA through Emergency Food Shelf Network, and the other countless families that receive food from MFA through the other wholesale and retail distributors like River Market Coop, Whole Foods, etc. The wholesale and retail vendors benefit by receiving quality local organic food for their businesses that help to increase the quality of their service and their reputations for supporting local farmers and providing quality food.

Impact and Project Benefits:

MFA has always practiced organic methods, and in 2008, became *organic certified*. All the farmers participating in the Big River Farms program and farming at Big River Farms must practice organic growing methods and maintain the organic certification of the land. This is the first structured training process with immigrant farmers in MN transitioning to organic certification. Organic certification is fully integrated into our training program. This integrated program has proven to provide significant boost to the farms’ enterprise development and stabilizing the farm operations. In only 2 years, 100% of the farms in our training program have expanded their production and sales and diversified their knowledge, while 40% of recent alumni farms have been able to obtain their own land. 33% have started their own CSA and others are exploring the possibility. 33% have used the contacts built by MFA to develop their own direct intermediate markets and others have been able to find their own direct markets with training from MFA. All of the farmers that have entered our program for even one year since 2007 are still farming in some capacity today. Big River Farms is one of two farms in MN that supply green peppers to Chipotle Restaurants for the past 3 years. For the 2010 season, MFA developed this \$13,000+ market and trained the Cala Farms, a BRF alumni, to carry forward directly. Chipotle and MFA consider this a great success story.

Another significant impact of the program is that as we are building relationships and **breaking down stereotypes between buyers / wholesalers and immigrant farmers.** We work with wholesale buyers to show that limited resource, minority and immigrant

farms are actually using sustainable, healthy growing practices and producing significant quantity and quality produce.

Highlights

- MFA is the only organization in Minnesota that focuses on training immigrants to be farmers, and is one of only about 20 or so in the nation.
- Training in Good Agriculture Practices/Good Handling Practices and food safety – possibly the only training for immigrant producers in Minnesota. MFA did do GAP certification in 2010.
- Training in organic practices and organic certification – the first and only USDA Certified Organic immigrant farmers in Minnesota.
- Immigrant farmers are gaining knowledge and earning income within the training program. In 2010, 9 immigrant farms (about 30 farmer participants) in production training earned between \$1,000 - \$30,000 in gross revenues, with yields at about \$4,000 - \$12,000/acre.
- New immigrant farmers have connections and recognition with 5 or more major wholesale markets through the farmer's name on each box of their wholesale produce. Farmers have begun to develop their own marketing and branding approaches. MFA connected 3 farms with new farmers markets and another farm with the Chisago school district. Three farms have set up their own small CSAs, based on MFA's model, and continue to further establish their farming businesses. MFA also connected 3 farms to their own direct retail markets in 2009 (local stores) and will continue to work as a market relationship mentor and connector.
- MFA, Cala Farms and Chipotle worked together in transferring the full Chipotle green pepper account to Cala Farms for 2010. Cala Farms conducted their own GAP and Organic Certification and worked directly with Chipotle and their distributor in the Twin Cities. Cala Farms produced about 5% of the green peppers used in the Chipotle restaurants in MN, and are looking at onions and jalapenos for the 2011 season.
- Supporting farmers to get on their own land. Two Latino brothers bought their own farm and established "Cala Farms". Another farm graduated in 2008 and started their own "Freedom Farm". Mhonpaj's garden continues in our training program but has leased an additional 5 acres on another site and expanded their operations. And Encore Farm, specializing in heirloom dry beans, has now entered into a long-term lease and expanded their operations at another site nearby in Stillwater. All the farms continue to be certified organic.
- Connecting farmers to USDA and other farmer-support programs. Two farmers are currently applying for their own USDA SARE grants for 2011, with MFA's mentoring, to develop new production and marketing approaches.
- MFA has contracted with the USDA NRCS to implement a 'conservation plan' from 2011 – 2014 involving soil conservation and pollinator habitat. MFA is now working with NRCS to connect our farmers to their new Season Extension/Hoophouse cost share program for the 2011 season.
- Support for immigrant farmers in new partnerships and civic engagement for knowledge, network resources and to have their voices heard; linking with relevant government agencies and programs, businesses, and nonprofits.
- Assisting other socially-disadvantaged groups through partnerships. MFA's gardening program, with Wilder Foundation and Wingspan Life Resources, significantly improves the mental, spiritual and physical health of about 50 Hmong elders in the program.
- Assisting low income communities obtain fresh produce. MFA provided about 5,000 pounds of fresh produce to local food shelves through Emergency Food Shelf Network and directly to other food shelves.

- Building healthy communities. Improved status and perception of immigrants, and their professional and productive role as citizens in society.
- More immigrant communities (Karen, Burmese, Bhutanese, East African), and Caucasian women and African-American communities, are entering MFA's training program.
- MFA continues to lead the co-hosting and organizing of the only minority and immigrant farming conference in MN on an annual basis which continues to draw increasing numbers of immigrant farmers each year.
- Identifying and developing sustainable ways to link low income, urban communities with local food. In partnership with AfroEco, The Minnesota Project, Community Design Center of MN and MFA, we conducted a one-year community-based study on food security issues in two neighborhoods in St Paul. The report was completed in November 2010 and plans will be made from there. The Report is available on request.

VI. LESSONS LEARNED

Our future plans and the outcome of our strategic planning process help to highlight our lessons learned and directions we want to take. As MFA grows the training program and the access to various markets, we need a Strategic Plan to address some specific program and institutional issues and to find clear direction for the future. The staff and board identified this need in 2006, and staff has begun to address this in 2007 and 2008 through numerous long meetings and a one-day workshop. As the board changed and grew, these issues became increasingly evident at the governance level as well. The Board held two specific strategic planning discussions in Sept-Oct 2008. This consolidated our thinking. The Board established a Strategic Planning Task Force in March 2009. In September 2009, we engaged Gordon Goodwin to guide us through the "Real-Time Strategy Planning Process" based on David La Piana's book, *The Nonprofit Strategy Revolution: Real-Time Strategic Planning in a Rapid-Response World*. The La Piana process leads nonprofit board and staff members in developing and testing a dynamic strategic decision-making framework. We held two board and staff retreats and two board only retreats, and then followed up with 5 more board sessions of 1 ½ hours attached to board meetings and have developed our Strategic Road Map. This Road Map outlines our big goal to develop a network of 15 or more immigrant farms that can produce and distribute over 1.5 million dollars (approximately 1.5 million pounds) of fresh produce into our local food supply and economy by 2015. We have framed the "big questions" – the major opportunities and challenges that we currently and will face - and then determine our best actions to implement our activities. In addition, we expect that we will be able to continue to use this approach as the future unfolds. MFA staff are currently developing an Action Plan with monitoring and evaluation components to move the Plan forward in the coming year. We envision a network of immigrant producers, with strong farm production and business skills, with a portfolio of markets and opportunities, who will be working together to produce and distribute a very large amount of fresh produce into the food supply chain of the Twin Cities Metro Area and St Croix River Valley.

The brokering of markets and relationships to markets is highly valued by our farmers. In 2011, MFA will continue to broker produce for the farmers to a variety of wholesale and intermediary vendors, but MFA will work with the farmers and buyers to establish their own direct relationships and act more as a 'market relationship broker'. This will allow them to develop their own long-term relationships and build direct markets for the new farmers.

MFA needs to both increase the number of farmers we reach and at the same time maintain the quality and integrity of the main training program which by its nature cannot handle significant increases in the

number of participant 'farms'. In 2011, MFA will be working directly with 10 "farms", representing about 30 – 35 farmers, in our comprehensive training program. They are from Kenya, Hmong, Cambodia and Karen and possibly Oromo and Bhutanese. We will also continue with the food farmer program with about 50 Hmong elders. We will also reach an additional 20 – 40 farmers through our general training program because we have now opened up all the individual training sessions to the general public and have between 2 – 10 farmers from outside the program at each session. We will also reach another 160 – 200 immigrant farmers through the annual immigrant farming conference in February 2011.

Many farmers are interested in other complimentary aspects of running a farm. One aspect is whole farm management. MFA has recently developed a Conservation Plan for the EQIP Program of the NRCS that will run from 2011 – 2013. We will work with the farmers in the program in both understanding the value of this program and the implementation and the value it has to the overall farm. We also hope to use this mechanism to connect more farmers with more farmer programs out there. We hope to be able to connect more farmers with NRCS in 2011, especially if NRCS continues with the cost-sharing program for hoop houses and season extension. We are also going to work with farmers in hoop house development and management and in greenhouse production.

The only one outcome not achieved was the actual GAP certification as explained in Goal #2. We conducted food safety training and worked with our farmers on food safety throughout the season. But because we were not selling to Chipotle who required it, and because of the amount of work and money it takes for an organization with limited funds and limited staff capacity, and because it is a distraction away from our main focus of training and working with farmers, we decided to forego the actual certification audit this season. We will likely be going back to GAP certification in the 2012 season.

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Project B - Women's Environmental Institute – Community Food Project

MN Department of Agriculture Food Specialty Crop Grant Progress Report

December 2011

**Submitted by Women's Environmental Institute and Environmental Justice Advocates of
MN**

Agreement Number 12-25-B-0931

Project Title: *Community Food Project to Increase Production and Consumption of Culturally-based, Healthful Specialty Food Crops in the Northside Neighborhoods and the Phillips Neighborhood in Southside Minneapolis.*

PROJECT SUMMARY

The purpose of the Community Food Project was to provide opportunities and resources for cross-cultural, cross-neighborhood research, development, and implementation of economic initiatives to increase and sustain the competitiveness of certain culturally-based traditional specialty foods. The project was an extensive collaboration of two community-based environmental justice organizations – Women’s Environmental Institute (WEI), based in South Minneapolis, and Environmental Justice Advocates of Minnesota (EJAM), based in North Minneapolis. The focus communities were the predominantly African American neighborhoods of North Minneapolis (North side) and the mostly Native American and Latino neighborhoods of the Phillips Community in South Minneapolis (Phillips). While both communities have diverse stories, cultures, and traditions, they share similar socio-economic and political challenges to living more sustainably. The communities of North Side and Phillips have some of the highest rates of obesity, diabetes, heart disease, cancer, and high blood pressure in the Midwest. This critical health disparity issue has been directly linked to poverty and the lack of access to healthy food choices. There is limited opportunity for economic development and wealth creation within these communities. According to a 2005 study by the Brookings Institute, the Twin Cities metro area had the second highest disparity between urban and suburban poverty. African Americans in North Side, for instance, have one of the lowest rates of home ownership for any population in the U.S.

Many of the foods, spices, and medicinal herbs that make up the traditional food systems of African American, Native American, and Latino peoples living in North side and Phillips are known to contain a rich diversity of macro- and micro-nutrients as well as protective factors that can guard against diseases such as cancer. As such, they offer tremendous potential to improve health and economic opportunity in the North side and Phillips while increasing competitiveness of Minnesota specialty foods in the regional and national markets. These two urban neighborhoods lacked the training and resources needed to reclaim vital, long-standing organic food production and consumption traditions that once supported their cultural communities’ nutritional health, well-being, and agricultural-based economies -- economies which were also environmentally conservative and restorative of the soil.

The project had a strong operational link with rural and regional partnership resources committed to supporting and enhancing the cross-cultural, cross community organic farming skills and training necessary to sustain production, distribution and competitive marketing of these culturally-based traditional specialty food and herb crops. It should also be noted that intergenerational transfer of cultural food knowledge and production skills between elders and youth that happen as part of knowledge sharing activities (i.e., organic agricultural skills training and traditional food sharing/harvest gatherings) was a purposeful strategy for ensuring the sustainability of these specialty crops and herbs in today’s agricultural marketplace.

The **major motivation** for this project grew out of the heightened awareness and research about how racial health disparities are related to food injustice and “food deserts” in our inner city urban communities, plus the excitement over urban farming opportunities that have blossomed in these same communities. Our Twin Cities local and state government initiatives (like this one from MDA) have helped to create hope that public support can provide the opportunities and resources needed by cultural communities to approach and develop sustainable food justice

responses for themselves -- including the opportunity to create specialty crops based on traditional cultural values and skills.

PROJECT APPROACH

Activities performed during the grant period. Whenever possible, describe the work accomplished in both quantitative and qualitative terms. Include the significant results, accomplishments, conclusions and recommendations. Include favorable or unusual developments

Summary of activities and tasks performed during the grant period:

Assembled the Food Justice Council to guide the initiative. We were able to recruit five organizations interested in food justice and growing food specialty crops who are affiliated with North side Minneapolis and five affiliated with Phillips Community Neighborhoods in South Minneapolis. In each case, they became the basis for the Community Food Justice Council (CFJC) participants. Included were three African American, one Hmong and one Native American community organization affiliated with EJAM on the North side. Those participating from the South side included two Native American, one Hmong, and two Latino organizations affiliated with WEI. The Council began meeting monthly for about 7 months. Training with Growing Power, Inc. and the business plan training with Latino Economic Development Center (LEDC) replaced the on-going meetings for two different months and then resumed. Monthly Council meetings were temporarily suspended during the flurry of soil preparation and spring planting by the individual grower collectives and begin again as a Council in July.

Recruited growers in North side and Phillips Neighborhoods. We successfully recruited growers' collectives from each of the ten (10) organizations. In four cases the growers represented families who joined individuals who lead the growers collective. In another case the growers came together out of a culturally specific housing community for Native American families. In two others cases growers were coming together based on a church affiliation. Three others joined together to form a growers group based on cultural identity—Hmong, Indigenous Native American and Indigenous Latino. In total there were ten participating grower groups.

Conducted a two day Organic Agricultural Production Training for growers. WEI sponsored a two days hands-on skills training with Will Allen, Founder and CEO of Growing Power, Inc., at WEI's Amador Hill farm campus. Each of the growers was invited to participate and received scholarships to do so. The day before, a special on-site training with Will Allen was dedicated to the Community Food Justice Council participants and held at Little Earth of United Tribes Community (one of the farm collective growing sites). It was focused on composting to build soil that was both free of toxic contaminants and high in nutritive value. Both adults and youth apprentices attended the training at both venues. Additionally, EJAM recruited University of MN Agriculture researchers to take soil samples to analyze and to teach that sampling process to the Food Justice Council members for their own land.

Assisted collective and individual growers in developing business plans for specialty crops. What began as a three day training had to be expanded to be a five day training in visioning, understanding basic food/farm justice concepts, exploring cultural inter-connections related to food and agricultural business and marketing issues. It culminated in hands-on help with business planning formats. The need to provide interpreters and translators for Hmong and Spanish-speaking participants slowed the process but greatly enriched it also.

Assisted growers in accessing seed, land and other resources needed to start crop production. Identifying available land with permission to grow food for market production was a huge challenge throughout the process for all but four of the growers. This has been one of the major reasons for extending the original timeline of the project. The city of Minneapolis has imposed restrictions on selling produce grown on city- owned land. Accessing seed and growing seedlings had not been difficult; however ensuring access to adequate water resources continued to be a challenge that is still under development for several of the project's farmers.

Established linkages to local and regional markets for distribution and sale of specialty crops. The business training provided an early how-to discussion for this activity. As noted, it was especially challenging given the need for additional time to provide for interpreting and translation the training into several languages plus the unfamiliarity with entrepreneurial marketing experience for most of our farmers. Four grower groups were successful in making progress toward developing their business plans, but only two fully completed their plan. So this activity will continue to be explored after the grant and developed as the project goes forward. The co-op model of distribution, sales and marketing has been a topic of discussion and initial training among these growers, but has been slow to be considered by most of the growers who seem to prefer individual entrepreneurship opportunities at this time.

Developed informal monitoring and evaluation of specialty crop production and distribution systems. Plans to do formal pre and post monitoring and evaluating testing were suspended because of both the need to extend the time devoted to business training and the demands of a later than expected harvest plus the challenge of limited production help for most of the farmers. Instead each grower reported their challenges, their successes, failures and questions to the Community Food Justice Council at the monthly meetings. Mutual problem solving happened there, either on the spot or as a plan to find expert resources to assist and provide advice at various growers' sites. Evaluation became part of a conscious interactive process between the growers at those meetings and was facilitated and recorded by the coordinators. Strong group rapport led to intercultural sharing of information and traditional skills --- an early identified objective that brought these growers together.

Postponed the Traditional Foods Conference. Because of the delays in the project, participants recommended that the envisioned Traditional Foods Conference be postponed until a later time and be funded by other sources. Instead we held a series of smaller gatherings for three groupings in the project: A gathering at the Little Earth of United Tribes farm site was attended by 30 participants and featured Will Allen of Growing Power as a facilitator and advisor. Discussion about composting challenges was the main issue and led to the group's decision to focus some efforts to change city and state policies regarding composting restrictions. Two gatherings were held at the Hawthorne farm site – one at the beginning of the farm season and one at the end. A third gathering occurred at the Elks Lodge, on Plymouth Ave at a farm plot jointly managed by a Hmong grower group and an African American group.

Significant contributions and role of project partners:

Both WEI and EJAM have each built on their years of extensive and trusted relationship-building in the grassroots communities they serve in order to recruit the Community Food Justice Council participants and growers. Over the last two years WEI helped establish the Little Earth of United Tribes urban farm which has become a model for many other culturally-based efforts in Minneapolis. WEI's work mapping toxic exposure sites and their relationship to health disparities in Phillips Neighborhood helped to provide a practical environmental justice framework for the South siders. WEI's appointment as the MN Regional Outreach Training Center for Will Allen's Growing Power Inc. also was a very useful resource shared with this project. EJAM's long standing ties with North siders through several schools and various community organizations in doing effective environmental justice education and organizing work on energy and toxic contamination was key to launching the urban farm and justice work with this project. Both organizations provided their executive director's time and EJAM hired their coordinator several months into the project. WEI also hired their project coordinator. Both organizations brought their considerable time, energy and deep commitment to food justice and urban farming to the table. It's notable that they jointly asked to present this project at several urban food conferences in the 2011 and became part of the Minneapolis Home Grown initiative.

GOALS AND OUTCOMES ACHIEVED

Measureable outcomes and accomplishments related to goals:

The overall purpose of the proposed project was to provide opportunities and resources for cross-cultural, cross-neighborhood research, development, and implementation of economic initiatives to increase and sustain the competitiveness of certain culturally-based traditional specialty foods. The goals and final measurable outcomes of the proposed project are detailed below:

Goal 1: To revitalize and perpetuate knowledge of traditional foods among African American, Native American and Latino families

We anticipated that approximately thirty (30) individual urban growers would be impacted and that ninety percent (90%) of these participants would increase their knowledge about the health benefits and the organic production methods of traditional specialty foods. Twenty-three (23) growers participated in structured knowledge sharing activities as part of the Community Food Justice Council meetings and the Business Plan Training sessions. This provided for a rich sharing of valuable information about traditional foods and their health related benefits. Planning of four small Community Food Gatherings and three gatherings were conducted. Outreach to more than 60 grower and community members at these gatherings resulted in a total of 240 contacts. Oral evaluations of knowledge sharing activities demonstrated that all participants increased their understanding of traditional foods, herbs, and medicines. Traditional knowledge related to more than forty (40) plants was exchanged among participants.

GOAL 2: To increase grower knowledge of organic specialty food production methods

We anticipated that the growers who participated in organic agricultural skill training would incorporate two or more organic strategies (e.g., composting, intercropping, and integration of endemic plants) into their specialty food production system. According to post event evaluations at the regular Community Food Justice Council meetings as well as the three small community gatherings that convened we determined that eighty-percent (80%) of participating growers incorporated two or more organic strategies into their specialty food production system. Specifically: A total of twenty-four (24) growers in North Minneapolis and approximately sixteen (16) in South Minneapolis organized in 7 grower groups engaged in specialty crop production. 100% of the growers implemented two or more organic strategies including vermiculture, composting, mulching, and poly cropping. In addition, 80% of growers tested their soil and utilized compost and raised beds to mitigate farming in contaminated urban soil. One hundred percent (100%) of growers grew their produce with no pesticides whatsoever. A total of 16 growers participated in knowledge sharing activities as part of organic farm training and/or soil quality monitoring training. Pre-planning and post evaluation reporting was conducted as part of the farm training. One hundred percent (100%) of participants stated that they increased their knowledge of organic farming. Oral questioning and participant demonstration of soil sampling protocols indicated that all participants increased their knowledge of urban soil contaminants and sampling methods.

GOAL 3: Generate economic opportunities for African American, Native American and Latino urban growers in the production, marketing, and sale of traditional specialty foods

We expected the ten grower groups to each produce a traditional cultural food product—mostly fresh produce for sale, but also processed food in at least two instances. Marketing and sales opportunities were explored as part of the business planning and training. Because we did not do formal pre and post evaluation testing, our organizers conducted one-to-one sessions to determine the kinds and number of specialty crops originally proposed, then produced and, in some instances, marketed. We found that six (6) traditional specialty crops were produced for sale. Two (2) grower groups produced specialty crops in the first growing season. Six (6) out of 7 grower groups presently in production produced one or more specialty crops that may either be marketed or exchanged through traditional barter system within their communities. Initially the plan was for ten (10) growers to generate revenue totaling a net of \$900 or more per year from production and sale of specialty groups. Five growers from two grower groups earned a net of at least \$900 from their production and sale of specialty crops during the first growing season. Three other grower groups produced at least \$900 worth of crops but distributed it to their community members through a combination of donation, sales, or barter. The on-going business plan training has enabled our farmers to

document inputs and out-puts and the Community Food Justice Council provided the support, encouragement and technical assistance to develop these skills and commitments, though more careful recording keeping resulting in a work in progress. Eighteen (18) individual growers participated in a 5-session Business Plan Training. Business plans for 4 grower groups were nearly completed as this final report. We had originally anticipated that a minimum of 6 or 7 grower groups would finalize business plans and that three (3) grower groups would sell specialty crops through direct sales or sales to corner stores. Alternatively, at least 2 groups desired to barter their specialty crops through cultural and social networks in their communities. Two (2) grower groups produced value-added products from their specialty crops – salsa and natural, chemical free lip balm and soap. Specialty crops produced included sweet potatoes, okra, and greens, “callalou” (a variety of amaranth) including Asian pumpkin, Hmong cucumber, Asian herbs for meat and poultry dishes; lavender and lemon grass for natural cosmetics; heirloom tomatoes, tomatillos, onions and basil, plus various peppers for salsa production; both Indigenous and Latino squash, corn, beans, sage, parsley, and various medicinal herbs.

The major long-term outcome was the cross-cultural sharing of traditional agricultural knowledge, skills and values. We found that the early enthusiasm shared between the various growers continued to inspire them so that they have shared some seeds and seedlings, made plans to go to each other’s farm sites to volunteer work time, shared ideas and information about what they were learning and eagerly shared samples of specialty produce growing at each other’s farms.

In summary, we sought to engage 10 growers/collectives in traditional and cross cultural urban organic farming production and have successfully launched that goal. One production site is tribal with conditions that relate closely to urban farming and has specifically impacted urban Native American relatives who maintain strong connections with the Tribe (Red Lake). Word has spread about this project throughout the larger urban farming community and we anticipate further interest in the next growing season.

BENEFICIARIES

Impact to Beneficiaries

The project benefited urban growers of specialty food crops as well as residents from the communities of North and South Minneapolis and our Tribal partner at Red Lake. The project impacted at least 10 urban growers (working as farm collectives, as families, or as individuals and described above) and approximately 600 consumers from the communities of North and South Minneapolis and the Red Lake Tribal Community. The project benefitted urban growers by providing training in organic production, conservation and some marketing or traditional bartering of high nutrition specialty food and herb crops that are culturally important to African American, Native American, and Latino people. These culturally-based, traditional specialty crops included, but were not limited to: varieties of legumes, greens, grains and root crops; endemic fruit trees and shrubs; herbs and spices; horticultural crops, and medicinal plants. Working in partnership with the five local grassroots organizations in North side and Phillips, WEI and EJAM recruited several existing and new African American, Native American and Latino growers who committed to develop specialty food crop economic initiatives in their communities. They organized and are operating as collective groups, as families, and as individuals (see above). A minimum of 10 traditional cultural grower collectives received assistance in developing their business plan and creating linkages to distribution chains and markets, locally, and regionally. The specialty food crop industry and organizations serving the industry have further benefited from the innovation in urban organic specialty crop production and from the —lessons-learned through this unique collaborative effort.

In addition to increasing production and some revenue from traditional specialty food crops for growers, we found that the project did broaden community awareness and consumption of nutritious food in North side and South side neighborhoods as well as Red Lake. These communities have a combined approximate population of over 150,000 people and we suspect that the long-term improvement in the diets of children and adults in these communities as families revitalize cultural knowledge of traditional healthy foods and herbs and has increased access to those foods.

Intergenerational bonds and sense of belonging in participating communities were strengthened. The organic agricultural training, small gatherings and the recommendation to hold a larger Traditional Food Conference, for instance, already encouraged intergenerational transfer of knowledge -- from elder to farmer to youth -- thereby ensuring perpetuation of production and distribution of high quality cultural-based traditional foods. We also witnessed the cross-neighborhood and cross-cultural coalition building which has been launched will help in the long-run to leverage additional resources and policy change needed to promote expansion and to further more community-led innovation in the production and marketing of traditional specialty foods and crops.

Improvements in environmental quality and the natural resource base in these communities is continuing to be addressed through cultural-based training in building soil nutrients, organic production methods, and beginning exploration of integration of endemic species of native prairie plants, fruit trees, shrubs and other woodland plants as well as testing for toxic contaminants expected to be in the urban soil in Minneapolis. Training in hands-on organic farm production was conducted in connection with WEI's rural farm campus at Amador Hill in nearby Chisago County throughout the season and in particular at a two day training event in October, 2010. One hundred (100) participants were present each of the two days shared information and many expressed interest in the Community Food Justice Council which was still in early visioning stages but had already shared their unique cross-cultural farming methods applied to several heritage crops (Hmong cucumber and okra for example). We began a partnership with the University of Minnesota's Soil Water and Climate Department to provide testing of lead, arsenic, and cadmium known to be toxic contaminants in South Minneapolis soils. The strategy of always building raised planting beds with wood chips and composted soil has become the standard practice, in this project. It contributed to ongoing learning about the building of healthful soil nutrients as well as helping to create safe physical environments for children, youth, pregnant women and vulnerable elders to participate in hands-on learning and information sharing about cultural heritage farming on urban farm plots in these communities.

Traditionally African, Native American and Latino agricultural systems offer holistic (e.g., earth, seed, soil, water and labor-respecting) strategies to food production-- integrating multi-purpose trees and plants, animals, plus soil and water conservation into these systems. Modern conventional farming methods have eroded some traditional practices in these cultural communities, yet the traditional knowledge remains strong with elders and with some upcoming youth who are becoming interested in organic farming as well as some of the traditional ways. The organic agricultural production training we did in this project consciously builds upon those traditional cultural strategies -- thereby enhancing biodiversity, regenerating soil organic matter, and reducing runoff into our streams and rivers. This initiative emphasized conservation and marketing of rare and heirloom varieties of traditional food and medicinal crops, thus it helped to preserve genetic biodiversity and sparking renewed interest in culturally traditional specialty crops.

LESSONS LEARNED

1. Access to land that is suitable for urban farming cannot be taken for granted and securing it must be calculated into the time-frame.
2. It is safe to assume that urban land is contaminated with environmental toxins and not automatically fit to grow healthy food. Not everyone interested in urban farming understands the contamination issues and the necessity for soil testing and soil building. One challenge for the future will be to find affordable soil testing resources. We utilized Will Allen and Growing Power's strategy for building new soil through composting and learned that adequate training in proper composting can take more time and commitment than was initially expected by some of the participants. It was also a great opportunity for youth to become involved and learn good soil science.
3. Providing language interpreting for cross-cultural training automatically extended the time required in training workshops and needs to be factored into the timeline for both the trainers and the trainees.

4. Childcare expenses are significant for aspiring young urban farm families and transportation can be a time and money barrier for all ages in our low-income communities. We found consistent participation required detailed planning and attention to both of these issues.

5. We were delighted to observe the ease with which cross-cultural sharing of information and even land resources became a part of this project. We think that the time we spent clarifying the vision and shared values of the Community Food Justice Council participants created a strong and generous camaraderie that will continue into the future. Likewise, cross-neighborhood sharing was very positive and we learned again that many low-income cultural community residents move within inner cities and tribal communities as a matter of course, probably partly due to housing costs.

Unexpected outcomes related to this project.

1. We unexpectedly discovered that state and local laws may require an individual or collective farming operation to receive official permits for composting and even for being able to sell their products if the land being farmed is publicly owned. Our farmers continue to be interested in helping to change certain public policies that make basic entrepreneurial activity more complicated than may be necessary. All the participants were very interested in adhering to environmental regulations that made sense and protected the public health, however. Costs of permits may be an ongoing barrier that must be addressed and budgeted for in the future.

2. All of our farmers wanted to employ organic growing methods and are willing to go through the necessary requirements for that certification. They do see it as a market advantage as well as an important route to address the health disparities and environmental justice issues in their communities.

3. As described above, access to urban land suitable for farming created some limitations, including time delay that led to an extension of our grant period. Long term solutions will need to be considered and we suggest it be one of the public policy issues that the MN Department of Agriculture considers in the future.

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Project C

PROJECT TITLE: Making the Connections for Minnesota-Grown Fresh Fruits and Vegetables

FINAL PERFORMANCE REPORT

PROJECT SUMMARY:

Making the Connections for Minnesota-Grown Fresh Fruits and Vegetables was an innovative project that worked to enhance the competitiveness of specialty crops by increasing consumption of Minnesota grown fresh fruits and vegetables through school-based activities, thereby positively impacting the health of children and their families and expanding markets for Minnesota grown specialty crops. **The USDA Fresh Fruit and Vegetable Program (FFVP) and University of Minnesota Extension SNAP-Ed nutrition education formed the foundation of this Specialty Crop Block Grant project.**

The Fresh Fruit and Vegetable Program (FFVP) is administered by the Food and Nutrition Service of the U.S. Department of Agriculture to introduce children to a wide variety of fresh produce. *Making the Connections for Minnesota-Grown Fresh Fruits and Vegetables* was an innovative project that connected specialty crop producers to an emerging market of schools that receive funding through the FFVP. The purpose of the project was to:

- Increase the use of Minnesota grown fruits and vegetables in school and at home, and
- Help students and their families appreciate the taste and healthful benefits of Minnesota grown fruits and vegetables.

This project increased children's access to healthy, local produce and addressed an emerging market for locally grown specialty crops. Increased consumption of fresh fruits and vegetables by children will support a decrease in childhood obesity, improved nutritional health and, less chronic disease. All of these health related issues are known to impact our economy through lost productivity and increased medical costs.

The FFVP funding is available to Minnesota elementary schools that have more than 50% of students receiving free/reduced price meals. *Making the Connections for Minnesota-Grown Fresh Fruits and Vegetables* built on the synergy created at the federal level. The Healthy, Hunger-Free Kids Act signed into law by President Obama on December 13, 2010 included new proposed guidelines for school meals that put an emphasis on serving a variety of fruits and vegetables. In addition, the new law provides funds to USDA to expand Farm to School. Furthermore, Agriculture Secretary Tom Vilsack announced March 23, 2011 that federal funding for the FFVP would be expanded in the 2011-12 school year. These changes in policy and funding at the federal level have presented us with a window of opportunity for MN specialty crop growers to enhance their competitiveness and market share.

PROJECT APPROACH

This project focused on the following means to increase purchases of Minnesota grown fruits and vegetables: 1) Expansion of the USDA Fresh Fruit and Vegetable Program (FFVP) among Minnesota schools and 2) SNAP-Ed nutrition education to enhance students' and parents' appreciation of the taste and healthful benefits of Minnesota grown fruits and vegetables, which encourages families to increase their consumption of specialty crops. *Making the Connections for Minnesota-Grown Fresh Fruits and Vegetables* achieved our primary and secondary objectives by connecting specialty crop producers to an emerging market of schools that receive funding through the FFVP and by promoting the benefits of Minnesota grown fruits and vegetables to students and their parents through SNAP-Ed programming

PRIMARY OBJECTIVE: Increase, by a minimum of six servings per school year, the consumption of Minnesota grown fresh fruit and vegetable specialty crops purchased by 3 school districts using federal nutrition funding to serve in elementary schools in which over 50% of students receive free or reduced price meals.

The Minnesota Department of Education awarded \$1,931,222.25 to Minnesota schools in the 2010-11 school year for the USDA Fresh Fruit and Vegetable Program (FFVP). In 2011-2012 the FFVP funding in Minnesota increased to \$2.89 million. With an average of \$0.40 allotted for each snack the FFVP provides the purchasing power for schools to pay local farmers fairly for their product and allows schools to build labor into their budgets to prepare the fresh fruits and vegetables.

The purpose of the FFVP is to introduce fresh fruits and vegetables as a healthy snack to elementary school children during the school day. **With the support of MDA Specialty Crop Block Grant, three Minnesota school districts (seven schools) served six or more servings of Minnesota grown fresh fruits and vegetables in their Fresh Fruit and Vegetable and school nutrition programs.** Local purchases for the FFVP in this project were 13% above original estimates. These schools served more than 20 unique varieties of local fresh fruits and vegetables to students:



Apples
Beans (green, purple & yellow)
Bean sprouts
Carrots
Celery
Cheddar cauliflower
Cucumbers
Kale
Kohlrabi
Peppers
Potatoes (Yukon gold & purple)
Raspberries
Romanesco
Spinach
Squash (acorn & buttercup)
Sweet Potatoes
Tomatoes
Watermelon (crimson & orchid)

SECONDARY OBJECTIVE: Increase knowledge of children and adults about the nutrition and availability of Minnesota specialty fresh fruits and vegetables by creating and distributing to schools and producers materials about specific Minnesota grown specialty fresh fruits and vegetables through collaboration with the SNAP-Ed Project.

The FFVP and University of Minnesota Extension SNAP-Ed nutrition education formed the foundation for this project. Community Nutrition Educators (CNEs) teach students and families the information and skills to maintain healthy diets. In this project, CNEs worked with targeted grade levels at each of the schools to lead between four and six taste testings in the classroom and/or cafeteria. Nutrition education was federally funded through ongoing programming that is part of USDA's Supplemental Nutrition Assistant Program Education (SNAP-Ed) and Expanded Federal Nutrition Education Program (EFNEP).

Tasting lessons offered students the opportunity to try a new fruit or vegetable using all their senses. Each tasting lesson increased student exposure to locally grown fruits and vegetables and promoted the consumption of fruits and vegetables at school and at home. Research tells us that repeated opportunities to taste and eat new and familiar foods are required to increase acceptance and intake. CNEs state that taste testings create positive peer pressure as they encourage students to eat local, nutritious foods in a supportive environment.

Our findings demonstrated a small improvement in student knowledge pre/post and positive changes in behavior. Students reported changes in eating more fruits and vegetables and also reported increasing the variety of fruits and vegetables consumed.



Community Nutrition Educator, Karen Barrett-Beaulieu of Red Lake Nation leads a taste testing of orchid watermelon to 4th grade students at Red Lake Elementary.

Communication Plan for Best Practices

One of the key components of this project's communication plan was to assure the project offered sustainability and transferability so that information gained during the project would be accessible, understandable and relevant to specialty crop farmers and schools who want to increase consumption of Minnesota grown fruits and vegetables by students. One way to achieve this was to make sure the process, lessons learned, and opportunities were shared with all Minnesota stakeholders. The tools and resources created for and by Minnesota schools and farmers as a result of this project are available at the **NEW [Fresh Fruit & Vegetable Program](#)** page on the University of Minnesota Extension's [Farm to School website](#). The Minnesota schools and produce suppliers involved in this project have shared their best practices in three sections of this new webpage: 1) fact sheets, 2) videos and 3) education & outreach.

Four [fact sheets](#) were developed by the University of Minnesota Extension and Institute for Agriculture and Trade Policy. The first provides an introduction of the USDA Fresh Fruit and Vegetable Program for Minnesota schools and farmers. It includes an overview of the program and its purpose, eligibility, funding and benefits to schools and farmers. The second fact sheet is a guide for Minnesota farmers. In addition to highlighting the benefits of the FFVP and Farm to School, the second fact provides resources to help farmers in working with schools. The final two fact sheets highlight themes that emerged from interviews with school foodservice directors and produce suppliers that participated in this pilot project. These final two fact sheets highlight both the accomplishments and lessons learned from this project.

Nine short [videos](#) feature seven pilot project participants as they provide additional information and tips for Minnesota schools and farmers. Three foodservice directors, two farmers, and two

food distributors share their first hand experiences to assist others in building their Farm to School efforts.

Seven topics form the [education & outreach](#) section. The topics within this section provide resources for students, their families, teachers, CNEs and others. 1) The fruit and vegetable *Snack bites* are designed to be read by teachers or students during snack time when a local fruit or vegetable is offered. The *Snack bites* include information about how and where the fruit or vegetable was grown and fun facts to engage students. These short messages can also be read by the principal or students at the start of the day during morning announcements or can be used on the school menu or included in school newsletters. 2) A sample *tasting outline* is available for CNEs, teachers and others interested in leading a taste test. 3) An introductory *teacher letter* describes a teacher's role in offering fruit and vegetable snacks and offers suggestions for incorporating the fruit/vegetable snacks into their daily curriculum. The intention of the teacher letter is to engage school staff and encourage them to be good role models for eating fruits and vegetables, especially Minnesota grown fruits and vegetables. 4) Teachers and educators will appreciate the *classroom activities* that provide a list of worksheets and short lessons that connect food, agriculture and health for their elementary classrooms. 5) *Family newsletters* help reinforce student experiences in the classroom. The *Family newsletters* provide helpful tips for eating more fruits and vegetables, take home challenges and an assortment of tasty, simple recipes. 6) *Tools for families* contains activities and handouts for the whole family. While the short activities help families get their hands dirty in the soil or kitchen, the handouts provide tips to make healthy choices, easy choices. 7) A locally produced *poster and video* feature Minnesota Olympian and Minnesota Grown spokesperson, Carrie Tollefson as she promotes fresh fruits and vegetables to Minnesota students and their families.

Roles of Project Partners

- *Minnesota Fruit and Vegetable Growers Association and Minnesota Institute for Sustainable Agriculture* assisted project staff in identifying local growers for the steering committee.
- *The Minnesota Institute for Sustainable Agriculture*
 - Updated the Farm to School toolkit with additional farmers who are interested in selling their products to schools.
 - Supported and assisted transferring the Farm to School toolkit to the University of Minnesota Extension's server. UM Extension is now responsible for the content of the website.
- *The Institute for Agriculture and Trade Policy:*
 - Identified two distributors to participate in the steering committee.
 - Conducted one-on-one interviews with eight broadline and produce distributors that serve K-12 school districts in Minnesota, documented their local food offerings, compiled company materials, summarized results, and posted on U of M Farm to School toolkit.

- Produced six Farm to School case studies highlighting Farm to School activities and strategies in Orono, Little Falls, Wayzata, St. Paul, Willmar and Winona. Linked to U of M Farm to School Toolkit.
- Conducted electronic survey of Minnesota School Nutrition Association membership to document Farm to School activities, procurement practices, satisfaction levels, support needs, etc. Shared with UM Extension to inform development of the Specialty Crop project. Disseminated widely across the state through the Sustag list-serve and various speaking engagements (SFA, MFVGA, etc).
- Produced Best Practice materials in partnership with the University of Minnesota Extension.
- *Minnesota Grown*
 - Developed a Farm to School poster and video to promote fresh fruits and vegetables with students and their families.
 - Minnesota Olympian and Minnesota Grown spokesperson, Carrie Tollefson visited Wadena Deer Creek elementary students on September 22, 2010. A taped video address from Carrie was provided to Red Lake and St. Cloud.

GOALS AND OUTCOMES ACHIEVED

The purpose of *Making the Connections for Minnesota-Grown Fresh Fruits and Vegetables* was to increase the use of Minnesota grown fruits and vegetables in school and at home, and help students and their families appreciate the taste and healthful benefits of Minnesota grown fruits and vegetables.

Goals and Outcomes Achieved– Primary Objective

With the support of this MDA Specialty Crop Block Grant we successfully accomplished our primary objective of increasing consumption of Minnesota grown fresh fruits and vegetables. Three Minnesota school districts, with 50% or more of students receiving free or reduced price meals (seven elementary schools), served six or more servings of Minnesota grown fresh fruits and vegetables in their Fresh Fruit and Vegetable and school nutrition programs. Local purchases for the FFVP in this project were 13% above original estimates. In total, the three districts spent \$5831 (Wadena-Deer Creek: \$1269; Red Lake: \$2230; St. Cloud: \$2332). Of special note, the Red Lake Schools in their first year (2009-10) of the FFVP spent \$0.00 on Minnesota specialty crops. After working with this pilot project, they increased purchases of locally grown produce with FFVP funding to \$2,230 and equally importantly spent \$1,170 from non-FFVP funds for Minnesota specialty crops for their school meals and afterschool snack.

Goals and Outcomes Achieved– Secondary Objective

To evaluate changes in knowledge, CNEs surveyed the students (Student survey available in Appendix A). A total of 422 participants completed at least one of the surveys while 97% (n=409) completed the post-test and 46% (n=198) completed the pre-test. There were 185 (44%) matched pairs- participants who completed both the pre- and post-tests.

Knowledge Questions

The first of five questions asked students to choose three fruits and vegetables that are grown in Minnesota from a list of nine choices. For students who completed both the pre- and post-tests, the response percentages that each fruit or vegetable was chosen are shown in Figure 1. Apples, carrots and tomatoes were the most popular choices in both the pre- and post-tests. There was a slight decrease from pre- to post-test in the incorrect answers of bananas and oranges, but not for pineapple.

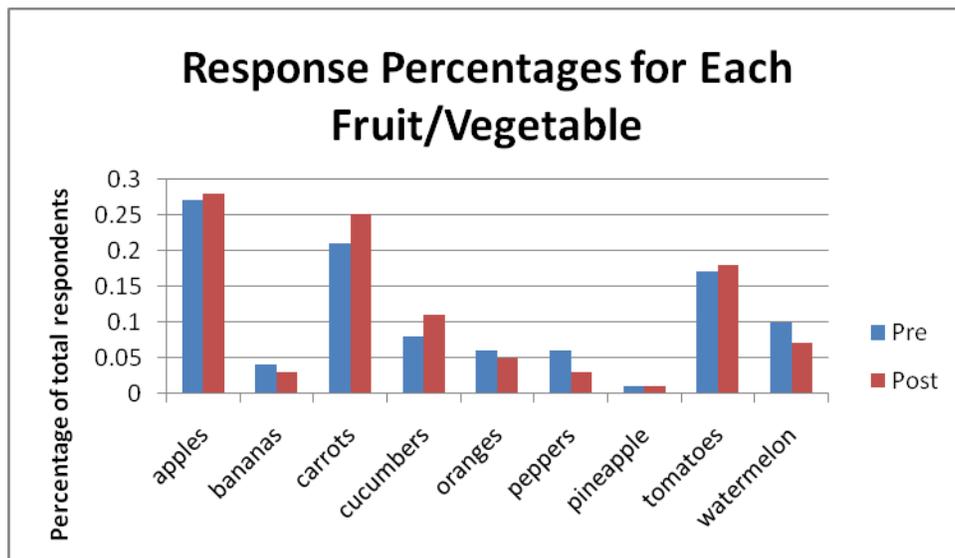


Figure 1

The knowledge questions showed a slight increase in knowledge, however the changes were not significant from pre- to post-test. For all of the questions, a high percentage of students answered correctly in the pre-test, which makes it difficult to show improvement in the post-test. This does not mean that students did not learn from the sessions, but rather that the survey asked questions that either students already knew, or were able to guess correctly.

To get a better assessment of student's overall change in knowledge, the first four questions were combined and given a score based on the total number correct, with a maximum possible score of six. The mean score in the pre-test was 4.796, and the mean score in the post-test was

4.949. The improvement in the post-test was not significant ($p=.103$) but is approaching significance.

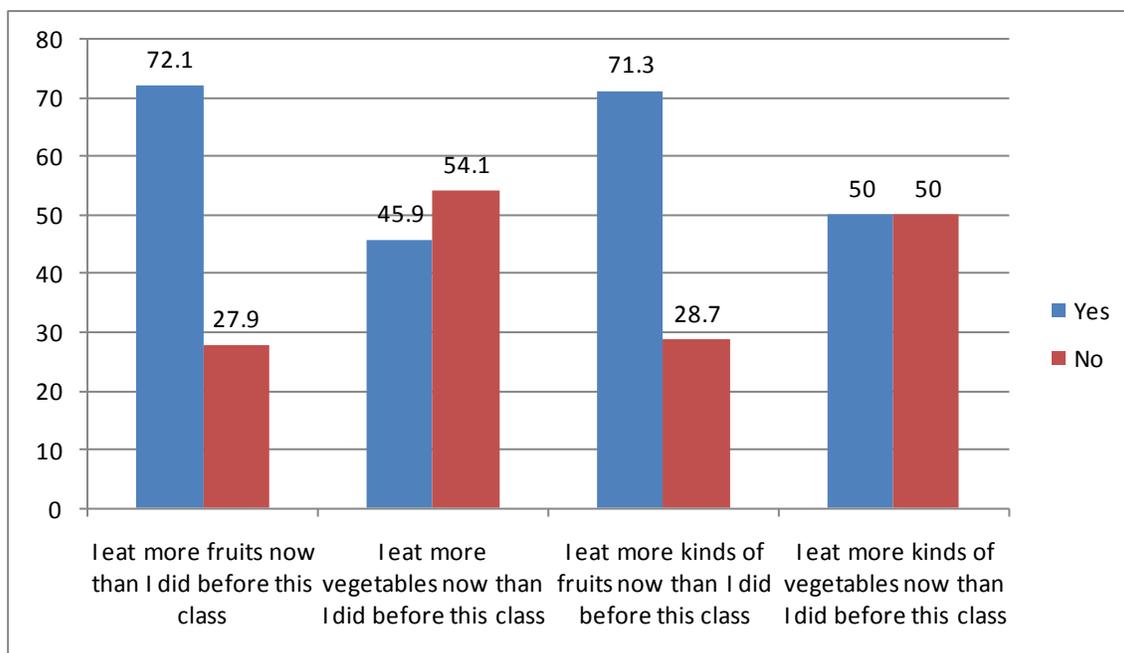
The question that showed the biggest change was the fifth question that asked students where they can buy locally grown fruits and vegetables. To analyze these short answer responses, each response was categorized as more desirable (farm, farmers market, garden, etc) and less desirable (store, Walmart, etc) or no response, and it was determined if each student's response changed categories from pre- to post-test. Ninety-seven of 159 students (61%) gave a more desirable answer in the post-test. Examples of student's answers to the question, "Where can you and your family buy *locally grown* fruits and vegetables?" are included in the table below.

Response in Pre-Test	Response in Post-Test
Coburn's, Walmart	Farmers Market
I do not know!!	Farmers Market
Cub Foods, Cashwise, Coburns	Farmers Market
At the Store	At my dad's garden
Cash Wise, Walmart	The ground

Behavior Change Questions

Questions related to behavior change were only asked at one site, where the CNE conducted a total of six sessions. A total of 143 students answered the behavior change questions.

Overall, students reported positive changes in behavior. More students reported changes in eating more fruit (72.1%) and types of fruit (71.3%) than eating more vegetables (45.9%) and types of vegetables (50%). This is a common pattern whenever we ask these questions, especially with kids.



Feedback from the nutrition education provided was positive as illustrated in the quotes below:

“I would do it again in a heartbeat. All of the positive feedback came from the students. They were interested in everything from “how can I grow this at home” to “what has more nutrition a sweet potato or a cucumber”. I called them adventurous eaters; they were so interested and willing to try the foods. I saw very little waste, and often they asked for seconds. We had GREAT discussions about the foods, how they are grown, harvested, various ways to eat the foods, where they could buy the foods and the nutritional information in each food. “

-- **Community Nutrition Educator, St. Cloud**

“In my class, we looked up the fresh fruit or vegetable. We learned when fruits and vegetables were in season, where they came from and how they were grown. It exposed them to so many new and exciting foods. My class loved them. Thank you for providing this experience for them.”

-- **Red Lake Elementary Teacher**

“The last class some students expressed disappointment that I would not be coming back to talk about the foods. Some teachers expressed how it helped to taste things that most students had never tried before as a group at the same time and rate their tastes.”

-- **Community Nutrition Educator, St. Cloud**

“Kids tried foods they would or could not try before. Teachers remarked how because of the FFV snacks kids are at least TRYING foods.”

-- **Community Nutrition Educator, Wadena-Deer Creek**

WORKPLAN

ACTIVITY	RESPONSIBILITY	ACCOMPLISHMENTS
Convene Steering Committee	UMExt	<ul style="list-style-type: none"> Meetings held Mar 8, June 7, Aug 24, & Mar 1 2011 Both March meetings were in-person One meeting was cancelled as there were no pressing issues for discussion
Develop materials on selected MN grown specialty crops to integrate into existing curricula	UMExt	<ul style="list-style-type: none"> Education & outreach plan for students and families developed and adapted for all MN Schools in Spring 2011
Work with distributors to simplify school purchase process of MN grown specialty crops	IATP	<ul style="list-style-type: none"> Conducted one-on-one interviews with eight broadline and produce distributors; documented their local food offerings, compiled company materials, summarized results, and posted on U of M Farm to School toolkit.
Develop materials for schools on available MN grown specialty crops	UM Ext (formerly IATP)	<ul style="list-style-type: none"> Adapted Minnesota Grown's seasonal guide to include 31 fruits and vegetables
Develop evaluation and reporting tools	UM Ext	<ul style="list-style-type: none"> Completed. Tools available in Annual report in Appendix B – pages 55-59.
Provide technical support to schools and distributors on using MN grown foods in school meal/snack programs	UMExt & IATP	<ul style="list-style-type: none"> Formed local workgroups in each region to source local produce. Also linked schools with tools and resources on Extension's Farm to School website. Local purchases for the FFVP in this project were 13% above original estimates.
Provide training to school personnel and Extension Nutrition Education Assistants on using curricula and resources	UMExt	<ul style="list-style-type: none"> Project staff (Heim) formed local workgroups in each district and trained individuals during July and Aug 2010. At the Simply Good Eating annual conference (Sept 2011), Heim presented the new tools developed in this pilot project to Community Nutrition Educators (formerly Nutrition Education Assistants) within UM Extension
Offer nutrition education activities in schools	UMExt & partner schools	<ul style="list-style-type: none"> Community Nutrition Educators partnered with each school district to offer taste testing lessons in selected grades.
Collect evaluation results	UMExt	<ul style="list-style-type: none"> Community Nutrition Educators surveyed students at the start and end of their taste testing series. Program staff (Heim) conducted one-on-one interviews with school food service and Community

		Nutrition Educators to capture lessons learned and success stories.
Prepare and disseminate evaluation report	UMExt	<ul style="list-style-type: none"> Completed and available on pages 5-8.
Review of Farm to School program evaluations	UMExt	<ul style="list-style-type: none"> Utilized "Bearing Fruit: Farm to School Program Evaluation Resources and Recommendations" (A. Joshi and A.M. Azuma) Completed July 2010
Identify and catalog best practices for incorporating MN grown specialty crops in school meal/snack programs	IATP & UMExt	<ul style="list-style-type: none"> Completed December 2010 with the revision of the Farm to School website and completion of four fact sheets and videos.
Prepare best practices for using MN specialty crops in schools report and training for dissemination	IATP & UMExt	<ul style="list-style-type: none"> Four best practice fact sheets were developed.
Enhance Farm-to-School website with producer and foodservice categories that include materials developed	UMExt	<ul style="list-style-type: none"> Completed and available at new Fresh Fruit and Vegetable Program page
Develop and provide training for MSNA and MFVGA	IATP & UMExt	<ul style="list-style-type: none"> IATP & UMExt presented at the Sustainable Farming Associations annual meeting February 20, 2010 IATP and UMExt presented individual workshops at the Minnesota School Nutrition Association's annual meetings in 2010 and 2011. Terry Nennich (steering committee) and Susan Ninham (member of Red Lake local workgroup) presented to the Minnesota USDA Tribe and Outreach Conference August 10, 2010
Develop and post webinar from MSNA and MFVGA members on project and lessons learned	UMExt (Formerly UMExt & IATP)	<ul style="list-style-type: none"> Fact sheets highlighted in a Ag News Wire article during Minnesota's Farm to School month (September). Best practices and lessons learned available for all Minnesota schools and farmers at new website.
Complete quarterly reports and final report	UMExt	<ul style="list-style-type: none"> Complete

BENEFICIARIES

The primary beneficiaries of this pilot project were the farmers, schools, students and their families. Seven schools, partnered with at least five produce suppliers (farmers and

distributors) to serve six or more servings of Minnesota grown specialty crops to 3,213 students. Minnesota fruit and vegetable growers gained a new market for their products both in the Fresh Fruit and Vegetable Program and school meal programs as noted above. Local food purchases were 13% above our original estimates and 20 unique fruits and vegetables were served. Schools received technical assistance in procuring local foods and built stronger Farm to School initiatives as they formed or strengthened local workgroups. Students received hands-on education through taste testing lessons. For those students that participated in greater than 2.5 hours of nutrition education, results show there were positive changes in healthy behavior. Students reported eating more fruits and vegetables and they expanded the variety of fruits and vegetables consumed. Parents received newsletters informing them of where to find local food in their own communities as well quick tips for role modeling healthy behaviors.

LESSONS LEARNED

Note: Lessons learned from schools and produce suppliers are highlighted in the [fact sheets](#) and [videos](#) available at the new [Fresh Fruit and Vegetable Program](#) website on the University of Minnesota Extension's [Farm to School website](#).

- The steering committee was able to work on universal Farm to School barriers (e.g. food safety) that many schools and farmers experience as detailed in the annual report. The steering committee was not however able to address issues that arose within each of the school districts. As a result, I assisted each school district in forming local workgroups. Building local teams is important in sustaining Farm to School efforts and this project assisted the three school districts in building or strengthening their teams.
- Although the steering committee could only do so much together, the formation of this committee along with many other synergistic projects in Minnesota has led to the formation of a statewide Farm to School leadership team. The University of Minnesota Extension and Minnesota Department of Health co-convened this leadership team and many of the participants on our steering committee for this pilot project are now members of the statewide leadership team.
- Taste testings were a hit! The response from schools and the University of Minnesota Extension's Community Nutrition Educators (CNEs) was extremely positive. The taste testings have also led to increased opportunities for CNEs to partner with school foodservice. Traditionally, CNEs develop strong relationships with school teachers, not necessarily school foodservice staff. This pilot project provided an opportunity to expand nutrition education programming around Farm to School and *Go Wild with Fruits & Veggies!* *Go Wild with Fruits & Veggies!* is a comprehensive program that encourages students in grades 3-5 to eat more fruits and vegetables and become more physically active. The program's unique animal characters, the Go Wild Bunch, and interactive activities make learning fun. Special activities and resources get parents, classroom teachers, and school food service staff involved with the program in addition to the students. Go Wild builds in discussion and activities on local foods, so that local food and farm to school efforts can be easily incorporated into the classroom. The

educator manual provides specific ways to incorporate Farm to School into their teaching. In addition, many of the seven lessons incorporate local foods.

- Both schools and produce suppliers stated that with greater time for planning buying/selling local produce would have been easier. Our timeline was condensed as the school districts in this pilot project agreed to participate in March 2010 even though they did not receive confirmation from the Minnesota Department of Education that their district would receive FFVP funding for the 2010-11 school year until July 2010. This made it difficult to surge ahead in planning the purchase of local produce and educational activities for students and their families. If schools received award notices before the end of the previous school year, I would have been able to meet with their local work groups earlier to begin planning and would have been able to provide greater technical assistance to the school districts.
- Our evaluation found a slight improvement in student knowledge pre/post. There are several potential reasons for this as noted above (pages 6-7). One likely reason is the questions themselves. In the future, program staff will collaborate with the evaluation team to develop questions that can best capture change in knowledge. In one school (Wadena-Deer Creek), the Community Nutrition Educator led six taste testing lessons and was able to use four questions from the SNAP-Ed evaluation to evaluate behavior change. As noted earlier, students reported positive changes in behavior. Students reported changes in eating more fruits and vegetables and also reported increasing the variety of fruits and vegetables consumed.
- Although the project proposal did not provide specifics of the best practice materials, my intention was to create materials that would be user-friendly for all Minnesota schools and farmers. While the [fact sheets](#) provide detailed information about the FFVP, the [videos](#) were developed to provide practical information for any Minnesota school or farmer interested in Farm to School.
- Finally, a positive and unexpected outcome was to learn that one of our three districts (Red Lake) purchased local produce for their school lunch and afterschool programs as well as the Fresh Fruit and Vegetable Program. The buy-in from the school district for purchasing local produce was tremendous.

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ADDITIONAL INFORMATION The NEW [Fresh Fruit & Vegetable Program](#) page on the University of Minnesota Extension's Farm to School website provides critical information for this final performance report as stated above.

<http://www.extension.umn.edu/farm-to-school/fresh-fruit-and-vegetable-program/>

Final Report

Specialty Crop Block Grant

The Minnesota Project/Heartland Food Network

1. Project Summary

An outline of the issue, problem, interest, or need for each project

As demand rises for locally grown specialty crops in Minnesota, more consumers are seeking these products in restaurants, college campuses, and other dining establishments across the state. However, these markets are often in their infancy, and chefs, restaurateurs, and college dining facility managers are uncertain how to successfully locate, purchase, and use these products. These buyers have specifically indicated that they would be willing to purchase locally grown specialty crops, but need assistance locating farmers, information on pertinent regulations, and tips to successfully navigate direct-from-farm purchases.

The Minnesota Project's Heartland Food Network (HFN) staff indentified distinct challenges that food service buyers and chefs face when purchasing local specialty crops. For example, buyers report that they cannot find local specialty crop suppliers who can meet their specific quantity needs. Others may have questions about how to set up accounts with farmers, arranging product drop-offs, or about state regulations impact their interactions with farmers. Buyers indicate that difficulties preclude them in many instances from purchasing locally grown specialty crops in favor of nationally or internationally sourced products. Local specialty crops are thus at a disadvantage in the wholesale marketplace due to these additional perceived and realized challenges. The purchase of foods produced outside Minnesota represents millions of dollars in potential lost revenue for Minnesota specialty crop producers.

2. Project Approach

How the issue or problem was approached via the project

The purpose of the project was to build markets for locally grown specialty crops by providing technical support and training to food service buyers so they could increase their purchases of local specialty crops. By improving the capacity of chefs and other food service professionals to

use these foods, we can increase their purchases in the long term and create stable, profitable markets for these farmers. Through interviews and discussions, this project documented the expressed needs of chefs and others, and then designed a series of workshops and publications to provide relevant information and training for food service professionals at restaurants and colleges in Minnesota. Information and skills was transferred to participants through training events led by knowledgeable chefs, a published *Guide to Buying Local Food for Food Service*, and through personal communications with chefs about specialty crop farmers that are able to provide products desired by the buyers.

Note: HFN and The Minnesota Project secured dedicated funds from the Minnesota Department of Agriculture that were used to conduct aspects of the project that fell beyond the limits of “specialty crops” as they are defined by the USDA. Specialty Crops were emphasized to chefs and food service professionals, but as interest in local meats or other ineligible items was raised, separate funds were used to conduct this work.

3. Activities that were undertaken to meet project goals:

Chef-to-Chef Panel at the Craftsman Restaurant

Starting in November of 2009, HFN reached out to an array of chefs with experience finding and using local specialty crops to determine how best to reach new chefs looking to learn how to use local specialty crops. After many phone calls and in-person meetings, it was determined that HFN would host an event at the Craftsman restaurant with a local food lunch and a panel of speakers. An advisory board was developed, and one meeting was held prior to the event to develop the goals, agenda, and content of the panel presentation. A list of knowledgeable chefs that could share information and best practices was developed, and HFN reached out to these individuals. The final panel members were chosen because they each were able to offer specific guidance and tips to the audience members. The final panel consisted of the following:

- Marshall Paulsen, Birchwood Café
- Tracy Singleton, Birchwood Café
- Peter Abrahamson, Bon Appetit Management Company
- Lori Zuidema, Co-Op Partners
- Scott Pampuch, Corner Table
- Mike Phillips, The Craftsman
- Lisa Klein, Hidden Stream Farm
- Lori Valenziano, Lucia’s Restaurant
- Greg Reynolds, Riverbend Farms
- Joe Hatch-Surisook, Sen-Yai Sen-Lek Thai

The event attracted 45 chefs, schools, and other attendees. The majority were chefs from independent restaurants. The panelists spoke about how to use local specialty crops, finding farmers, planning menus and promoting the food to the customers. Each was given a specific topic to cover. Q and A followed the 10 presentations (each presentation was roughly 10 minutes). Networking time followed the formal presentation. Chefs commented that they connected to other chefs that used local specialty crops at the event, giving them a resource for the future.

HFN prepared written documents and put them in guests' packets with information on where to find local growers, MDA fact sheets on rules and regulations about buying local product, and templates for keeping track of multiple local accounts. HFN gathered the names of farmers to give to restaurants by calling many farmers to determine their current interest in selling to restaurants. This list was given out at the event. Please see the attached PDFs.

Local newspapers, TV, blogs, online sites, and radio were contacted to develop interest and buzz leading up the event. The following ran articles or mentions of the event:

- The Heavy Table
- Simple Good and Tasty
- FoodService News
- KFAI Radio (Localicious Broadcast)

In addition, Food Alliance Midwest/MN Cooks, Edible Twin Cities, and The Perennial Plate were present and spoke to the gathered audience.

Chef-to-Chef Event at the Mill City Farmers Market: The next series of events were held at Farmers Markets, because feedback at the first events indicated that there were not enough farmers present, and chefs wanted a venue to meet farmers. Therefore the subsequent events were held at the Midtown and Mill City Farmers Market.

On Saturday, June 12th the first farmer's market Chef-to-Chef event was held at the Mill City Farmers Market. Jenny Breen, local food advocate, chef, and owner of GoodLife Catering, was asked to speak and give guidance to the chefs present on how to use local specialty crops. In attendance were 4 chefs, Jenny, Carol Banks from Edible Twin Cities, and Jill Grunewald from Food Alliance Midwest gathered in the courtyard at the market for an hour long discussion about using local specialty crops. All the participants said that they were looking for any source of local vegetables and more, but did not know where to find farmers. The small number of participants made it possible for Jenny Breen to answer specific questions about finding products which were asked.

After the discussion, the chefs were brought on a tour of the market and introduced to farmers. One match was immediately made, as the Bulldog Northeast connected with Loon Organics, and began buying lettuces and more from them that day. Laura and Adam from Loon Organics dropped their items off after the farmers market, offering them a way to ensure all their product was sold, and continued making these drop offs through the summer. Other chefs connected with farmers and made periodic purchases throughout the summer.

Chef-to Chef Event at the Midtown Farmers Market: This next event was held July 29th at the Gandhi Mahal restaurant and the Midtown Farmers market. Guests gathered at the Gandhi Mahal restaurant for buffet lunch featuring local foods and held a guided conversation led by HFN staff and Chef Ruhel Islam from Gandhi Mahal about how to buy and use local food and specialty crops. Participants ranged from those that were familiar with buying local specialty crops to those that were new, but all were interested in using more. There were 12 chef participants at this event. Many good ideas were mentioned about tips for storing vegetables, preserving, the money-saving potential of making stock and demi-glace from scraps, and promoting these local items via websites and social media.

After lunch, participants gathered at the Midtown Farmers market (one block from the market) and met with farmers. The week before the event, HFN staff and Hli Xyooj from the Farmers Legal Action Group (a partner organization that has many connections to Hmong farmers in Minnesota) had spoken with all the farmers at the market to determine their interest in selling to restaurants or schools. They documented their names, emails, location of farm, and phone numbers. This information was then passed out to the chefs at the event as they gathered with the farmers. The majority of the farmers there were Hmong, and many of them indicated a great interest in selling to these new markets and an interest in the event.

As the farmers and chefs gathered together at the market, the farmers went around and stated what they grew, where they were located, and their interest in selling. The chefs then went around and said what they were looking for and where their restaurant was. Conversations then emerged from these introductions and connections were made. A few chefs purchased items that day at the market, and a few more made connections that they pursued later.

Provide Trainings for Colleges on How to Use Local specialty crops:

In early 2010, HFN staff spoke with over 12 private and public colleges in Minnesota to gauge their current use of local specialty crops, their interest in using more, and how HFN could help

them. 75% said they were interested in using local specialty crops, but most said that a large meeting or symposium would not be useful to them, as their food procurement was directed by their campus management company, and even if they learned how to buy directly from farmers, their procurement options were set by contracts and they had little say in who they purchased from. Many of the management companies use wholesale distributors such as Bix or Sysco, so working with those companies to get more local purveyors into their system would be more useful than approaching the chefs individually.

So in lieu of large gathering where colleges would share information with each other, HFN helped colleges on an individual level find and use local specialty crops.

In February 2010, HFN staff spoke at Colin Peterson's Homegrown Economy Conference about how to source local at colleges. HFN worked one-on-one with Minnesota State Fergus Falls campus to help them start using local specialty crops based on this connection.

HFN also worked with Macalester to help them design the session on using local specialty crops at their Real Food Challenge Midwest symposium on March 14. HFN met twice with Augsburg College to help them become familiar with using local specialty crops, and helped them design signage to promote their local purchases on the line.

The Minnesota Project's HFN staff teamed up with The University of Minnesota Regional Sustainable Development Partnerships and other non-profits across MN as they organized a series of Farm to Cafeteria workshops across the state. HFN conducted outreach specifically to colleges and other institutions to encourage them to attend this event. HFN staff spoke directly with over 30 colleges and universities to invite them to the series of events, which occurred at the end of April.

Create a Guide to Buying Local Specialty Crops Guide

Starting in March 2010, HFN staff began gathering information that would be pertinent to give to chefs via a written guide. The final draft layout was passed to 12 chefs, non-profits, Minnesota Department of Agriculture, and other industry professionals and partners for their feedback. Printed copies of the guide will be mailed to all participants in the events and partner organizations, and will be available at conferences, expos and meetings. The guide will be available for free download on the Minnesota Project Website. Please see attached PDF.

3.) Evaluation of outcomes to reach overall project goal:

- a. Outcome 1.) 80% of session participants will report an increase in *knowledge and skills* after attending training sessions**

Actual outcome: Through 45 written surveys gathered at the culmination of the events, on average over 90% of participants reported an increase in the skills and knowledge about finding and using local specialty crops after attending the sessions. Evaluations from the event quantify the impact on chefs who attended:

- 95 % of participants reported that after attending the workshop they “strongly agree” that they would be more likely to purchase local specialty crops
- 100% agreed they would attend another Chef-to-Chef workshop
- 90% agreed that they more clearly understood how and where to find local specialty crops.
- 80% indicated that they would be contacting more specialty crop growers during 2010 and 2011 to purchase products
- 75% said that the best thing about the event was the information on where to find farmers

b. Outcome 2.) 50 restaurants and college campuses will report a 5% increase in their total purchases of specialty crops within the grant period.

Actual outcome: 60% reported buying “from at least one additional farmer”

Pre-test: According to 45 written surveys delivered at the training events, participants in attendance at the 3 events currently purchase 25% of their total food purchases from local growers, including specialty crop farmers, during the growing season, with answers ranging from 2-100%. Attendees said that they would like to increase to 50% in-season on average.

Post-test: In follow up conversations 4-6 months later with 40 attendees, it was determined that 60% reported buying “from at least one additional farmer” after attending an event. The other 40% percent said that their purchases have stayed the same. Most attendees were not able to easily or accurately quantify the increase *as a percent of their total purchases*, therefore it is not clear if they have seen a 5% increase in their total specialty crop purchases. But the fact that 60% said that they had connected with at least one more farmer indicates that there is potential to have great economic impact and support the financial viability of local specialty crop farmers.

4. Beneficiaries

Provide a description and quantitative data for the number of people or operations that have benefited from the project’s accomplishments, and/or the potential economic impact of each project.

Through the training events, HFN was able to provide **61** chefs and other food service professionals with information, resources, and best practices on how to find and use local specialty crops. As stated previously, 60% of attendees reported that they began buying from at least one more farmer as a result of the events. Chefs could not estimate the percent of their total

food dollars that were spent on local specialty crops, but if each chef spent \$1000 with the farmer this year or next, \$61,000 dollars could flow directly to local specialty crop farmers.

Over the course of the grant period, HFN was also able to provide an additional **12** chefs who contacted HFN information on finding farmers, regulations about using local specialty crops, and other specific questions that pertained to using local specialty crops in their restaurant.

HFN staff also gave resources to over **25** specialty crop farmers seeking information on selling to chefs and foodservice markets.

HFN frequently served as a resource – responding to phone or email questions from the general public or media about the increased interest in local food, where to find farmers or farmers markets, what the benefits of local food are, and how chefs can find out more about using local food.

HFN staff was present and spoke at:

- FRESH The Movie Local Food Panel- June 2010, sponsored by Simple, Good and Tasty
- Twin Cities Ascertainment Group, KSTP TV. Invited to speak on sustainable agriculture and local food.
- American Chef Federation, Minneapolis Chapter- May, 2010. “How Chefs Can Find Local Food”
- Homegrown Economy Conference - February 2010. Panelist and speaker, local food in colleges
- Real Food Challenge Midwest Conference - March 2010: Session leader, local food in colleges
- Sustainable Farming Association Annual Conference- February 2010 participant
- Minnesota State Fair – August 2010 Leader, Local Foods Day in EcoExperience Building and participant, Farm to School day

Lessons Learned

Lessons learned, results, conclusions, for each project. If goals or outcome measures were not achieved, identify and share the lessons learned to help others expedite problem-solving.

One lesson learned is that working with colleges, large food service establishments or “business and industry” accounts is very different than working with independent restaurants. These chefs need large amounts of product, and often do not make decisions about food procurement, and are much more price-sensitive, as they cannot pass on the premiums paid for higher-cost items to their customers as readily. Working with their food service distributors and management companies would be useful in the future, as this greatly impacts a college’s purchasing behavior. Additionally, it may be useful in the future to work directly with college students to help them

implement local buying at their schools, and then have them share this information with other colleges. Another market that is becoming very important is K-12 schools, and future projects should address the particular challenges and opportunities in K-12 school settings.

Another lesson learned is that often chefs, the public, and others have become familiar with the basics of buying local food and specialty crops. High-profile leaders like Michael Pollan and Michelle Obama have brought fresh and healthy foods to the mainstream, and the interest is very high. Thus chefs do not need to be told necessarily *why* or even *how* to use local specialty crops, but really just need help connecting with farmers. And beyond the delivery of one list, they need customized, hands-on assistance connecting to these farmers in a meaningful way. There was not time, for example, to meet with many chefs individually and provide a customized list of farmers that would work for them, facilitate meetings with the farmers, and build the relationships. That direct assistance is needed however, and future projects could provide this assistance.

Another practical lesson learned was that there were too many chefs on the panel of speakers at the first event in March at the Craftsman. It would have been better to have fewer speakers and more time for Q and A.

Also, the proposed timeline to have the draft Guide to Buying Local available at the trainings was not feasible. We gathered information at the trainings, and published it in the Fall of 2010.

5. Contact Person

Contact person for each project with telephone number and email address.

David Glenn, Interim Executive Director

Annalisa Hultberg

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6. Additional Information

Additional information available (e.g. publications, web sites, photographs).

Please see attached PDFs:

- *Buying Local Food for Food Serving in Minnesota* manual written by HFN staff
- List of farmers from the Midtown Farmers Market event July 29th
- Heavy Table article and photos from the first Chef-to-Chef March 22, 2010
- Summary of information given at the March 22 Chef-to-Chef event
- List of attendees and speakers at March 22 Chef to Chef event
- Agenda March 22 Chef to Chef event

Please check the following posts:

1. Blog post about Mill City event can be found here:
<http://minnesotaproject.wordpress.com/2010/06/15/connections-and-a-good-time-at-chef-to-chef-event-at-mill-city-market/>

2. Blog post about the Midtown event can be found here:
<http://minnesotaproject.wordpress.com/2010/06/30/great-connections-discussion-and-fresh-local-food-at-midtown-chef-to-chef-event/>
3. HFN was interviewed for the Summer 2010 issue of Minnesota Restaurateur Magazine's "Serving up Minnesota's Locally Grown Bounty" issue. See article here:
<http://ezmag.documation.com/MRAMagazineSummer2010/>
4. Hear the podcast by Localicious Radio on Heartland Food Network:
<http://localicious.tumblr.com/post/493764656/localicious-episode-3>

Project E - U of MN - Designing Scale-Appropriate Supply Chains for Specialty Crops Producers

In Central Minnesota

Project Summary

Over the past few years, citizens throughout rural Minnesota that are involved in local foods production, distribution, sales and consumption have convened to identify critical barriers and potential solutions for scaling up the supply and demand for locally produced foods, including significant amounts of specialty crops. A recurring issue has been the lack of a viable distribution system scaled to fit local production, that allows growers to set prices, and that increases efficiency and availability of product for buyers. Specialty crop producers express an interest in local markets and indicate that infrastructure issues inhibit them from maximizing profit, minimizing costs associated with distribution, and maintaining a balance between availability and demand.

This project was designed address this need: to develop and implement a small scale local foods supply chain for specialty crops. A 2009 survey of local specialty crop producers identified a significant in increasing sales in the region and improving distribution systems. Similarly, several area chefs were interviewed regarding their interest in using more locally grown foods. All expressed interested but indicated product availability and ease of obtaining product were of concern. This project then, was designed to address both these interests and challenges, focusing on several resorts with multiple dining locations plus one resort area restaurant and 8-12 specialty crop growers located within the Brainerd Lakes area of Central Minnesota. Resorts were the target of the study because peak growing season and the peak tourism season coincided. The project was initiated in the winter months, with implementation during the peak summer months.

Project Approach

Between November 2009 and June 2010 monthly meetings were held with area producers and chefs. Between 15 and 35 people attended each meeting. In the early months of the project, the agendas and discussions centered more on the distribution side and how that would work. During these meetings work focused on formulating the best and most highly sought products and hoped that this would assist the growers in putting in the items that would sell the most to area resorts. Interesting, both in the fall and early winter of 2009 and fall 2010 there was discussion with the resort chefs about making

commitments to purchase a given amount of a specific local crop. In both years, the chefs were (and are) reluctant to make even handshake commitments with the growers because of product availability and quality issues. On one hand, chefs did not want growers producing a crop solely for their operation because of the uncertainty of their product needs, and on the other hand, when they did need product, producers might not have adequate supply to meet chef needs. Furthermore, chefs were uncertain about product quality, specifically if ordering from new growers with whom they had not worked. The meetings, then, were designed to connect the chefs and growers to begin to establish relationships and to look at products that would be most available and would be most in demand by chefs.

After several months of discussion, the focus began to change in February 2010, when the “ordering” aspect of product supply and distribution came to the forefront. One chef noted that what would be most helpful to his operation was a more efficient way of product ordering, like, he said, a “cyber-market.” Growers also expressed comfort delivering product themselves. Many growers already did their own product delivery or were participating in farmers’ markets in the area so product delivery would be convenient to them. And chefs indicated they did not have a preference regarding specifying delivery times of day, as long as the product was available when needed. This proved to be an interesting and significant point in the project evolution. Rather than organizing a physical supply distribution system, it became apparent that identifying an ordering mechanism that would show all the growers products and allow resort chefs to order online was a first and most important step in increasing efficiency and convenience for chefs and growers. One of the producers involved with the project was using LocalDirt for his farm and thought this might be a suitable mechanism for use in this project. He then arranged for the staff of LocalDirt to attend our March 2010 meeting.

LocalDirt.com is based out of Madison, Wisconsin and is a technological outgrowth of the issues that Whole Foods Markets faced in securing local foods. A former Whole Foods produce manager recognized the limitations to securing local foods from many different farmers and created LocalDirt.com as an online product list and ordering mechanism. LocalDirt.com has received substantial funding from the National Science Foundation as a tool for decreasing post-harvest loss of crops due to the potential for immediate product information and on-line purchasing power.

The staff of LocalDirt, Kassie Rizzo and Heather Hilleran, became part of our project team and provided the on-line tool to our pilot group for free. In April and May onsite training was conducted for the chefs and producers on using LocalDirt. Kassie Rizzo set up each of the producer with their own LocalDirt accounts, entered product pictures, and prices. LocalDirt has an inventory function that helps manage available products. There was a lot of excitement early on and it appeared that all parties were committed to the use of the site and the project goals. However, some early season weather problems with wind, cold and hail set the growers back and that delayed the availability of produce by at least two weeks.

In addition to LocalDirt, other partners and their role in the project included:

Tom Kavanaugh, area chef and owner of Kavanaugh's Resort worked with all the chefs in the project and helped facilitate and lead the project meetings. Tom's local success and presence in the project was an asset in engaging this set of purchasers in the project.

Pine and Lakes Country Foods Group provided support to the project and had representatives at every meeting. They connected growers to the project and contributed their knowledge of the various aspects of the local foods scene to the meetings and on-line conversations.

U of M Regional Sustainable Development Partnerships staffed the project (Kathy Draeger and Linda Ulland) and connected with Tom Kavanaugh (who led the chefs), Pine and Lake Local Foods group, and consulted with other faculty involved in applied economics and supply chain research.

Chefs from the five resorts and restaurants participated in every meeting and engaged very positively with the producers. Relationships were built among the chefs and producers.

Producers (8-10) were engaged in the project. Two farms fell off during the growing season, one due to crop failure (weather related) and one secured a contract with another restaurant that took all of their produce.

Goals and Outcomes Achieved

1. Increase the regular purchasing of Minnesota-grown specialty crops by participating resort restaurants in the Brainerd Lakes area. The benchmarks and targets are from the current levels of near zero to 10 percent by the end of the 2010 harvest season (September).
 - The LocalDirt system was set up to record all transactions that occurred within and among the producers and chefs involved in this pilot project. That was the tracking mechanism for recording sales. However, even though all participating producers were set up on LocalDirt and listed their products, the chefs failed to use the LocalDirt.com ordering system. As a result, information on sales was hampered. A more detailed description of this setback can be found below.
2. Increase the income of specialty crops producers in central Minnesota that participate in a supply chain directed at resorts in the Brainerd Lakes area. This will be measured as total dollar sales to participating restaurants by 100 percent, doubling the total dollar sales to participating restaurants from the amount during the 2009 harvest season. This data was collected from all the Local Direct transactions, however it was insufficient to track sales and therefore project impact, despite our efforts to work with the chefs on a one to one basis. The project ended in November 2010 and therefore additional data is not being collected.
 - A follow-up survey completed by participating producers, demonstrated that all producers, but one, participating in the project reported higher sales in 2010. Some of those were mediated through this project and the face-to-face connection with the various chefs. So while there was less than anticipated participation in the formal means we established to connected producers

and chefs, namely Local Dirt, the face to face meetings that were held in the winter and early spring resulting in building the relationships that resulted in greater sales and purchase among the group.

- Most producers had positive comments about LocalDirt. One producer said I LOVE LocalDirt. It worked well for me, allowing me to upload, add real pictures that I took of my product, and to quickly edit/change when I needed to. I downloaded the pdf copy of the pricelist and was able to send it to other buyers and felt this was a great way to utilize the software.” Most producers said they would use or consider continued use of LocalDirt. Only one producer stopped using the tool because of technical/computer issues. From the chef perspective, LocalDirt offered the potential to increase efficiency in ordering and obtaining local foods during a busy time. On the other hand, there were instances in which product offerings were not kept up-to-date and so product ordered was not available. Another negative comment from a Chef's perspective was that by the time growers added product, the chef's were well into their season and it was an added "thing to do" to use LocalDirt. In both cases—producers and chefs—the use of LocalDirt required a change in habits, and that became an impediment.
- All growers, but one, indicated an increase in income and increased sales. They did not, however, share the total dollar amount of increase.

3. Generation of new knowledge regarding supply chains through the establishment of a model supply chain that is replicable in other Minnesota regions or with other products.

- Substantial information was gained on developing a supply chain and the limitations to accomplishing that in one growing season. At this point this is probably not a replicable model, although information and experience gained in this pilot offers opportunities for project adjustments that may create a more workable and replicable system. A project wrap-up meeting indicated enough interest that the project will be continued in 2011 growing season and the purchasing base will be expanded to other restaurants and institutions.
- The project was featured on Minnesota Public Radio, which reaches the entire state. The article “Chef, farmers in Brainerd meet online to buy local food” an audio clip can be found here: <http://minnesota.publicradio.org/display/web/2010/11/16/ground-level-local-food-brainerd-dirt/>.
- A full article with photos of the producers and chefs was run in the May/June 2011 issue of the Lakes Country Journal, a regional magazine. Upon conclusion of the project there hasn't been any presentation of the results at any specialty crop conferences.

4. Increase the number of resort restaurants buying Minnesota grown specialty crops by tracking which of the participating restaurants used local foods and identifying factors most closely associated with increased use of local specialty crops. This included price, availability and ease of securing product and motivation of the chef and staff.

- This was accomplished through the use of LocalDirt.
- At the beginning of the project only one of the chefs was purchasing local foods. At the end of the project every chef involved, a total of 5, had purchased local foods for their resort. These represent some of the largest resorts in Minnesota.

Beneficiaries

All project participants benefited to some degree in this project by building relationships between chefs and growers, and through the use of an on-line tool for listing and ordering products.

Specialty crop producers and restaurant chefs were able to directly connect during the many project planning meetings. During these meetings, growers identified those products most available, and chefs identified products that would be most useful to them. One chef was most interested in know when and what special crops (e.g., squash blossoms) might be available so that he could utilize those products.

The use of a new supply chain tool, LocalDirt.com was also a benefit, particularly to producers. One project goal was to generate new knowledge on building supply chains, and LocalDirt.com offered such a new tool and skill set for both producers and chefs. One chef said that this on-line tool offered efficiency to him in obtaining local foods from a variety of sources. A wrap-up survey completed by participating producers indicated general agreement in the value of this on-line tool. All but one producer indicated willingness to continue or consider continuing the use of LocalDirt.com. Only one producer had difficulty with the computer technology and discontinued participation in the project because of the technology.

LocalDirt staff Kassie Rizzo and Heather Hilleran became part of the project team once the pilot chef-grower group moved away from developing a model physical distribution system toward a focus expediting product ordering. LocalDirt was held training sessions for chefs and producers and worked with each producer to set up LocalDirt accounts, entered product pictures and prices. Consequently, participating producers learned a new skill set that has broader application in expanding their buyer base. LocalDirt was also a beneficiary; they gained experience working directly with growers and chefs and using their technology as part of a supply chain system. It has also offered additional opportunities for LocalDirt to support other, broader projects. As a result of this project, LocalDirt.com and Minnesota Grown (the Minnesota Dept. of Agriculture's local foods directory) are negotiating bringing the on-line purchasing functions of Local Dirt to all interested producers who are members of Minnesota Grown (over 1,000 in 2011). LocalDirt.com continues to work with partners in the Brainerd Lakes area of Minnesota. Producer Arlene Jones is developing a producer owned cooperative and has included LocalDirt.com as a project partner in a recent application to the USDA Rural Development. The 15 producers and chefs who were brought together for the first time in early 2010 all purchase/sold produce during the 2010 season. Since this was a one year project we did not collect data in 2011. The U of M Regional Partnership benefited from this project mostly though the finding that chefs do not have time to add an additional distribution system to their workload during the peak season and that they valued the direct connection made with producers when they do purchase local foods. As a result, the U of MN Regional Partnerships has investigated what existing distribution systems are available on which to build retail/producer distribution. This is leading to increased collaboration with regional distributor Mason Brothers, located near the Brainerd Lakes area.

All the producers, except one, participating in the project reported higher sales in 2010. However, specific transactions could not be tracked through LocalDirt because many of those transactions were not mediated through the on-line system. Some transactions were a result of the project, but most likely because of the face-to face connection made during meetings.

Potentially, the use of an on-line system such as LocalDirt could provide positive economic benefits for chefs and growers. For chefs, it offers efficiency in ordering and obtaining local foods. Instead of going to individual farmers' markets, chefs can see what products are available and order to their specific needs. Chefs can also identify best prices for products. For growers, there is the potential to increase product sales as more restaurants and institutions incorporate local foods into their menu offerings. Growers can identify and maintain an up to date inventory of product offerings, prices, availability, delivery, etc. on-line, thus saving time and potentially expanding their consumer base.

The project partners continued and expanding this work into 2011.

A February 2011 meeting is being planned to widen the group of institution for the specialty crop growers to work with.

Lessons Learned

The project initially focused on transportation, and issues related to the physical supply, demand, distribution of locally grown foods. However, during the discussions, both groups looked toward the most effective and efficient way to connect growers with chefs, and identified a need for an "on-line" tool as a first step in developing a supply chain. The meetings also offered some direct connections between chefs and growers that was of significant value.

However, both chefs and producers identified several issues that kept them from using the system to its potential. One chef had challenges with growers not following through—either not responding to the order, not having product available, and/or not keeping their product listing current. Other chefs, while interested, already had relationships with other growers and were overwhelmed by the busy season and simply did not take the time. For the producers, taking the time to update their product listing was difficult during the busiest time of year—when they are growing and picking product. However, one grower made the most of the on-line tool, using the site to maintain product listings, include photos of product, and downloaded price lists to use in their store and to send to other customers.

Both chefs and producers felt, in some ways, as though they were "afterthoughts." One producer felt that chefs were only ordering from him when their main vendor could not supply product. And chefs noted that for most producers, supplying to the restaurant was not growers' first priority; that is, they would sell to restaurants when they had extra product. These perceptions resulted in less use of the pilot system.

In summary, basic lessons learned were:

Relationships between growers and chefs is paramount. Chefs need assurances of product quality, availability, and dependability. Growers want assurance that product ordered will be purchased. This requires communications and developing relationships between the two. Project meetings made connections but did not establish the degree of relationships necessary. One chef noted that a follow-up phone call was necessary to ensure his order had been received and product was available. He indicated this was a way of maintaining the personal relationships.

Commitment to use the system. Chefs and producers were excited about the project and interested in the on-line tool; this was the agreement among the group. However, only one chef used the system, and only one producer actually used the tool to its best potential. Use of the on-line tool was a new way of doing business; it represented a change in habits. When the season is at its height, both producers and chefs are at their busiest and then it is more challenging to take extra time to change practices.

In the long term, the project has potential to provide an effective and efficient way for restaurants, schools, and other facilities to use local products. Using a straight-forward ordering format, with product listings and quantities available, and prices kept current, purchasers can order and set up delivery on specified items.

Contact Person

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Additional Information

The project was featured on Minnesota Public Radio (MPR) on The Central Region's Specialty Crop project was featured on MPR's local foods segment on November 16, 2010. In addition, she wrote a blog post about the project as well. The link to the article and the news clip can be found at <http://minnesota.publicradio.org/display/web/2010/11/16/ground-level-local-food-brainerd-dirt/>

PROJECT TITLE

Project F - Organic Tree Fruit Education and Research Collaborative

FINAL PERFORMANCE REPORT

PROJECT TITLE

Organic Tree Fruit Education and Research Collaborative

PROJECT SUMMARY

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

The purpose of the *Organic Tree Fruit Education and Research Collaborative* has been to make locally grown tree fruit crops more competitive in Minnesota and the region by helping growers take advantage of the increasing interest in local organic products. With support of the USDA Specialty Crop Block Grant through the Minnesota Department of Agriculture, the project built on the efforts of the Midwest Organic Tree Fruit Network by creating the Organic Tree Fruit Association (OTFA), a membership organization that serves the professional needs of its organic tree fruit grower members. As a professional association, OTFA provides growers across the region with educational opportunities, such as seminars, field days, fact sheets and its quarterly newsletter, *Just Picked*. We created an independent website, where growers will be able to browse current research, keep up with events, access educational materials and market their products directly to consumers. We piloted the Organic Tree Fruit Research Program aimed at addressing organic disease and pest management issues specific to the humid regions of the United States. The Research Program strives to facilitate organic tree fruit research appropriate to these regions by identifying and cataloguing research projects while facilitating connections between interested growers and researchers. Our efforts focused on 1.) On-farm tree fruit research sites, 2.) Tree fruit research programs, 3.) Scientists interested in organic research and 4.) Specific projects that would benefit from collaborative, multi-state testing.

Establish the motivation for this project by presenting the importance and timeliness of the project.

Improving organic practices as well as access to information on those practices will increase the number of growers utilizing organic management, the number of acres in organic production and the amount of organic tree fruit produced. The project is important because, despite increased consumer demand for food that is both “local” and “organic,” Midwest-grown organic tree fruits can be difficult to find, even during peak season. There are a few reasons why this is the case: 1.) The wet, temperate climate combined with a landscape speckled with woodlots and brush covered fencerows in Minnesota, and throughout the Upper Midwestern and Eastern regions, provides ideal conditions for orchard pests and disease and makes organic orchard management challenging. 2.) Much of the current research on organic practices comes out of warmer and/or

more arid regions and is not always relevant for growers in humid climates. 3.)Midwestern and Eastern growers are widely dispersed and need a formal organization capable of assessing production needs, coordinating existing research, facilitating new research and networking opportunities amongst growers and researchers, disseminating information and representing their interests in the larger community. This project responds to the needs of growers in this region and helps grow the organic tree fruit industry.

PROJECT APPROACH

Briefly summarize the activities performed and tasks performed during the grant period. Whenever possible, describe the work accomplished in both quantitative and qualitative terms. Include the significant results, accomplishments, conclusions and recommendations. Include favorable or unusual developments.

The Organic Tree Fruit Education and Research Collaborative took a comprehensive approach to responding to the educational needs of regional growers, providing diverse and accessible opportunities. We have been strategic in our partnerships and collaborations, which has allowed us to extend and expand those offerings beyond the original scope and timeline. Highlights of activities during this grant period include:

Incorporation of the Organic Tree Fruit Association –In December of 2009, OTFA was incorporated when the by-laws developed by the acting board of directors were approved. In February of 2010, a new board of directors was elected by the membership and three standing committees were created: The Executive Committee, The Education Committee and the Research Committee. The latter two committees have been instrumental in carrying out the work plan for the Organic Tree Fruit Research Collaborative. All board and committee members are growers themselves and are committed to improving the vitality and production capacity of the local tree fruit industry in the Midwest.

Membership Drive - An OTFA Membership Brochure (see attached) was created in 2009 and updated in 2012, sent to subscribers of the quarterly newsletter, made available on the website, and distributed during events. The brochure promotes local organic tree fruit, outlines OTFA's education and outreach opportunities and introduces the Research Program. We had originally estimated that OTFA would attract 30-40 paying members the first year. We exceeded our expectations and now have 46 members that represent 13 states (primarily in the Midwest, with a few members from Maine, New Hampshire, and Montana). Some growers are well established and certified organic, but most are small-scale beginning growers who are interested in organic orchard management.

Grower Survey – The initial 2010 Grower Survey was developed as an online document (sent out to the Organic Tree Fruit Network list serve and posted on the website). It requested information on orchard size, tree fruit grown, growing methods used, marketing strategies, interest level in organic management and certification, disease and pest problems barriers to production and marketing concerns. Respondents were also asked if they would be interested in participating in on-farm research. A total of 42 growers responded to the original survey. A

follow-up survey to the original respondents was sent in May 2012. A total of 11 responses were obtained. An additional 33 growers filled out the General Grower Survey distributed on-line in May 2012. The survey was distributed via our website, grower list serve as well as other grower networks in the Midwest. Despite the broader invitation, fewer growers responded to the survey in 2012. This could be due, in part, to the time of year, since the survey was conducted during the growing season.

Below is a summary and highlights from the surveys' findings and recommendations as a result. The full results of the initial survey were compiled and sent to the OTFA Research Committee in 2010.

Sample pool:

Growers represented 12 states, primarily in the Midwest, and are actively involved in production - (OTFA did screen results to make sure that 'hobbyists/gardeners' did not participate in the survey)

2010 Initial General Grower Survey – 42 respondents

Follow up Summary of Responses – 11 respondents from original sample pool

2012 – General Grower Survey – 33 respondents

Total survey respondents - 75

Grower Profile & Responses (*Highlights from 2010 & 2012 Survey Data*)

- ⤴ Farm sizes range from 'less than 1' to 41 – 100 bearing acres, though 72% of growers surveyed are 5 acres or less.
- ⤴ 53% of growers surveyed use organic management practices but are not certified organic; 29% are certified organic; 23% of growers were transitioning to organic production.
- ⤴ 94% of the growers surveyed are growing apples, 46% cherries with pears and plums at 43%, respectively. While apples represent the bulk of production on farms surveyed, many of the growers grow and sell a diversity of fruit crops.
- ⤴ In general, there is a desire amongst growers surveyed to expand their organic acreage with 70% in agreement – strong agreement.
- ⤴ Most growers (65%) sell direct to public from farm or at farmers markets with 22% of growers selling to wholesale markets.
- ⤴ Interest in organic management is very high: averaging 4.56 (on a scale of 1 to 5).
- ⤴ Interest in becoming certified is also high: 4 (on a scale of 1 – 5).
- ⤴ All of the growers were involved in value added production with sweet cider, preserves, and 'other products' representing the top 3 responses respectively.
- ⤴ In general, growers are seeking to improve production efficiency by increasing the volume of fruit produced per acre: 4.3 average response of strongly agree (on a scale of 1 to 5).
- ⤴ Growers agree that they are effectively using organic practices in their orchards.
- ⤴ 67.5% of growers surveyed expressed a strong interest in learning more about organic management practices. All growers rated their responses in the 3 – 5 (3 being agreed, 5 being strongly agree). This suggests that growers regardless of size or experience are

interested in continuous learning opportunities in organic management.

▲ A large majority of respondents are interested in participating in on-farm research - 36

Challenges and concerns with pests, diseases and marketing

(Listed in order of occurrence with the first listing being the most frequent concern listed among those surveyed):

1. **Pest Concerns** - Plum curculio, codling moth, deer, peach and plum borers, leaf rollers, Japanese beetles, rodents and birds, tent caterpillars, tree borer, round-headed apple borers, aphids, cherry fruit flies, are common pests.
2. **Disease Concerns** - Apple scab, fire blight, sooty blotch, cedar apple rust, fly speck, powdery mildew and brown rot are among disease problems in the orchards of those surveyed.
3. **Concerns and barriers (perceived?) to increasing production:** Lack of time, labor, money, disease and pest concerns, off farm work (related to lack of time), equipment (storage and production), knowledge, site limitations - capacity/size of land, inadequate water/irrigation, markets, fencing, weather, age, philosophy.
4. **Concerns and anticipated concerns about marketing include:** post-harvest handling, fruit storage, cost of a high density planting system, pricing, profitability especially for the risk – the need of a consistent supply of quality, lack of small-scale infrastructure and processing options, consumer education – i.e. Expectations and familiarity, perceptions of organic, local, certified organic, and holistic, amount of time spent at farmers markets, value-added product and test marketing development, lack of developed markets in NE MN.

Full survey results have been compiled and shared with the Research Committee and OTFA Board and results will be shared with the grower community in the winter 2012 issue of our newsletter, *Just Picked*. Results and conclusions from grower survey data is discussed further in the Goals, Outcomes, and Lessons Learned section of this grant report.

Field Days – OTFA sponsored two field days over the summer of 2010 and three in the summer of 2011. These were held in diverse geographic locations (MI, IA, WI, & MN) and drew established as well as beginning growers alongside positive evaluations. OTFA coordinated an additional field day in August, 2012 in Michigan.

a. A June 2010 field day was held at Earth First Farms, in Berrien Center, MI. It featured a farm tour by owner and OTFA board member Tom Rosenfeld, information on pest identification with Michigan State University researcher, Matthew Grieshop and a discussion of cider making with Robert Tritten. There were 44 participants with diverse levels of experience.

b. An August 2010 field day in Decorah, IA, was split between the Historic Orchard at Seed Savers Exchange (SSE) and a tour of Sliwa Meadow Farm. OTFA member David Sliwa explained his low-input organic approach to orchard management and Kathleen Delate of Iowa State University provided a research update. The event attracted 22 growers and 6 interns currently working on organic farms.

c. In June 2011, Rachel Henderson and Anton Ptak of Mary Dirty Face Farm hosted a field day outside Downsville, WI. The 24 participants had a chance to see the early stages of organic orchard management on a diversified farm.

d. A July 2011 field day on Integrated Pest Management for Organic Orchards was held at Hoch Orchards and Gardens in La Crescent, MN. The event was organized by OTFA, MOSES and CIAS (Center for Integrated Agricultural Systems-UW Madison), hosted by OTFA Board President Jackie Hoch and her husband, Harry Hoch and drew 55 growers and researchers from around the region. Tammy Hinman of ATTRA (Appropriate Technology Transfer for Rural Areas) and Matthew Greishop of MSU also presented.

e. In August of 2011, OTFA member Jim Koan of Al-Mar Orchard near Flushing MI and Matthew Greishop of Michigan State University, provided an in-depth full-day discussion of research taking place on site. This event was attended primarily by advanced growers (18) who are already OTFA members.

f. In August of 2012 OTFA members Gene and Kathy Garthe of Garthe Farms in Northport MI and Matthew Greishop, Mark Whalon, and Nikki Rothwell of Michigan State University, provided an in-depth full-day workshop of on farm research being conducted. This event was attended primarily by 34 participants from around the Midwest. Participants were primarily growers. In conjunction with the field day, a Cider Tasting and Tour of an Organic Hops Variety Trial were held the day before at Tandem Ciders, and the NW MI Horticultural Research Center respectively. Twelve growers participated in these events.

Results from our field day evaluations indicated a diversity of interests and experience levels which are discussed further in the outcomes and lessons learned section of this grant report. Overall, our field days reinforced the importance of providing opportunities for growers to learn from each other and structuring field days with split tracks that guide new growers through the basics and provide more in-depth information for experienced growers.

Fact Sheets – OTFA member, Harriet Behar, who is an organic certifier as well as an organic educator at the Midwest Organic and Sustainable Education Service (MOSES), developed a new fact sheet “Organic Tree Fruit Certification” that lays out the process for becoming USDA certified organic. A second fact sheet on “Organic Orchard Disease and Pest Management” was developed by Joe Pedretti of MOSES in collaboration with OTFA member, Harry Hoch. Both fact sheets were distributed at field days, via the OTFA list serve, and are available on our website: organictreefruit.org. It is also worth noting that these fact sheets are available/distributed during the annual Organic Farming Conference that MOSES hosts. This event attracts over 3,000 farmers from around the country and provides a great venue for sharing information and networking with other growers and professionals in the field.

Newsletter – Seven issues of the newsletter, *Just Picked*, were produced and distributed between 2010 – August of 2012. The publication highlights articles on management issues shared by our growers as well as researchers in the region, reports on emerging pests, updates on our grant-funded work, promotion for OTFA education opportunities and other events. Circulation of *Just*

Picked continues to grow with nearly 368 print subscribers and 494 people receiving the electronic version of our newsletter. The newsletter is also available as a free download on the website and is shared electronically with our grower list serve which reaches 318 people from around Midwest, U.S. and the world.

Website – OTFA (formerly the Midwest Organic Tree Fruit Network) now has an autonomous website: organictreefruit.org, maintained by OTFA staff. Our new website features educational resources produced by OTFA, links to current research and resources for organic growers, as well as current events and happenings. We will continue to engage and build our website content to help promote and market our member farms as well as enable more interaction and dialogue amongst growers. A summary of website use and user interaction is provided in the outcomes/lessons learned section of this grant.

Grower Seminars – OTFA coordinated three grower seminars on Organic Tree Fruit Certification and Holistic Orchard management in conjunction with major conferences in the Midwest in 2011 and 2012. Grower seminars provide an opportunity to delve more deeply into topics of interest to both beginning and experienced orchardists and learn from a panel of experts alongside peers.

The first seminar was held in December 2010 at the Great Lakes Fruit, Vegetable and Farm Market EXPO in Grand Rapids, MI and shared ways to navigate organic certification. Over 80 people attended these sessions.

The second seminar featured Organic Orchard Certification at the Organic University, just before the Organic Farming Conference in La Crosse, WI. A panel of instructors included OTFA grower members alongside Organic Specialists/Certifiers in the field. 58 people attended this session.

Most recently, in 2012, OTFA hosted Michael Phillips, author of *The Apple Grower and Holistic Orchard Management*, for an advanced grower seminar in La Crosse, WI before the Organic Farming Conference. 32 participants attended this seminar.

Research Catalogue – The initial stages of the Research Catalogue have been completed and consisted primarily of a list of growers interested in on-farm, participatory research with researchers. A full research catalogue that serves the function of identifying both growers and researchers presented a greater challenge which is discussed further in the lessons learned section of this grant report.

Additional Activities - OTFA plays an active role in sharing educational resources and information and was involved in several outreach activities and conference venues throughout the life cycle of the grant. OTFA responded on behalf of organic tree fruit growers in the region to a call for comments on the National Organic Standards Board sunset provision for approved materials of use in organic orchards: Elemental sulfur (3 uses); Lime sulfur; Copper hydroxide; Copper oxide; Copper oxychloride; Copper sulfate; hydrated lime; hydrogen peroxide; Streptomycin; Tetracycline calcium complex); Boron; Pheromones; Oils, horticultural-narrow range oils as dormant, suffocating, and summer oils (2 uses); soaps, insecticidal; sticky

traps/barriers; liquid fish products.

The statement provided background on these materials and explained why the tree fruit industry in the Midwest needs to continue to have these management tools approved by NOSB. OTFA President Jackie Hoch attended NOSB meetings in Madison, WI in October 2010, and Seattle in April 2011 to provide further comment and represent OTFA members.

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

OTFA does not have official project partners. However, we continue to cultivate existing relationships with several partner organizations and institutions. We also rely on the expertise of our growers to help us share information, collaborate on events and educational content, and facilitate connections between researchers and growers.

These relationships include:

The Midwest Organic and Sustainable Education Service (MOSES) – MOSES has been instrumental in the development of 2 new fact sheets, event publicity, collaboration with Organic University courses and seminars in conjunction with the annual Organic Farming Conference (which draws thousands of farmers), and initially hosted our website.

Great Lakes Fruit Vegetable and Farm Market Expo – GLEXPO organizers have worked with OTFA to include a two-part workshop series on organic production and certification, which allows outreach to much broader audience including conventional growers.

Indiana Certified Organics – Cissy Bowman, ICO Executive Director, offered her expertise in during the GLEXPO workshop on Organic Certification as well as helped develop course content for the Organic University seminars at the MOSES conference. Cissy continues to support OTFA with outreach and education and is a great link to growers in Indiana.

Michigan State University – Matthew Grieshop, Professor of Entomology, is an OTFA member and serves on the OTFA Education Committee. He presented, along with Diane Brown of MSU Extension, pest identification during field days along with MSU colleague Robert Tritten and Rob Serrine. Dr. Grieshop also plays an instrumental role in working with our grower members on on-farm research. He is generous with his time and expertise to our members as well as sharing findings of his research.

Iowa State University – Kathleen Delate, Professor of Horticulture, presented current ISU research and offered an update from the Organic Farming research Foundation. She also contributed educational resources for our field days.

Muskegon Conservation District – MCD donated a table display that OTFA used at the Michigan Food and Farming Association Conference and the two OTFA field days in 2010 and 2012. They too have been very supportive in collaborating on outreach and education for our events and seminars.

Appropriate Technology Transfer for Rural Areas (ATTRA) – ATTRA produced a new booklet on Organic Apple Production, which is distributed during OTFA field days. Tammy Hinman, a Sustainable Agriculture Specialist at ATTRA and co-author of the booklet, has also shared her expertise as a presenter during our field day OTFA members was involved with reviewing materials.

GOALS AND OUTCOMES ACHIEVED, LESSONS LEARNED

Supply the activities that were completed in order to achieve the performance goals and measurable outcomes for the project.

Completed activities (as of August 31, 2012):

- ▲ OTFA incorporation
- ▲ Membership drive
- ▲ Grower survey and follow up survey completed,
- ▲ 6 Field Days
- ▲ 7 issues *Just Picked* (available in print and on-line versions)
- ▲ 3 grower seminars
- ▲ 2 New Fact Sheets, and
- ▲ Made insightful and positive strides with the Research Catalogue.

Please see more detailed description of activities in the activities section.

Activities that have been adapted due to emerging needs, opportunities, and challenges revealed during the life cycle of the grant: 2 sections of Research Catalogue completed, though full Research Catalogue was not completed. The Research Catalogue project changed course due to emerging needs and challenges that surfaced during the grant project. Please see more detailed discussion for rationale, conclusions in the goal and outcome section.

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

Target 1: The primary target is to increase production of organic tree fruit by 10% each year of the funding period. The secondary target is to increase the number of growers utilizing organic management by 15% each year of the funding period.

Performance Measure: Grower Survey Results 2010 & 2012

Baseline: Survey results on number of orchards/acres that are USDA certified organic, in transition to organic certification, and use organic practices but are not certified.

Outcomes and Lessons Learned:

Grower profile results were consistent in 2010 and 2012 survey samples (both with follow-up survey and new grower survey results) in terms of acreage, markets, value added products, types of fruits being grown, general satisfaction with certifiers, and types of challenges and concerns with pests, diseases, and markets.

Interest in certification alongside costs to certify remains high, though not as strong in 2012 survey respondents as in 2010 respondents.

Of particular interest in the follow up survey was whether there were changes in organic acreage in production as well as changes in the number of certified organic orchards, transitioning farms, and farms utilizing organic practices. Based on the survey data, we were unable to accurately track the % increase in production of organic tree fruit each year. Despite repeated efforts by OTFA staff to follow up with growers originally surveyed, follow up response rate was low at 26%. What we can say is that most growers have 5 acres or less in organic tree fruit production, and that most growers are utilizing organic management practices and that this number was consistent over a 2 year period. Very few farms represented had 11 or more acres in production.

Farm Size	USDA Certified		In transition		Use Organic Practices	
	2010	2012	2010	2012	2010	2012
Less than 1 acre	2	2	2	0	6	2
'1-5	7	2	2	2	11	2
'6-10	0	1	2		1	0
'11-20	0	1	0	0	0	0
21-40	1	0	0	0	2	1
41 – 100	2	0	0	0	0	0
More than 100	0	0	0	0	0	0

The above table reflects survey findings and gaps. While the numbers are accurate results might be misleading (follow-up response rate low).

It is also difficult to ascertain from the follow-up survey whether changes in the number of certified organic farms, those in transition to certified organic, and those utilizing organic management increased over time and whether this was a result of the growers' participation in OTFA's education and research programs or more broadly whether they were due to market conditions, production challenges, climatic factors etc. From those that responded to the follow up survey, we can conclude that there was very little change in the number of acreage in organic production as well as changes in management practices.

Overall, of the 75 growers surveyed in 2010 & 2012, there were fewer growers transitioning to organic certification in 2012 than in 2010, though growers utilizing organic management or who were certified represented the majority of growing practices represented regardless of year. During the same time, the number of dual operation farms decreased, yet the number of low input conventional increased. Again it is difficult to draw from the sample pool what conditions

might exist that provide insight into these changes (however minor) in management practices and whether management practices correspond to changes in the market conditions and customer preferences or climatic factors such as emerging pest issues. It is worth following up in future years as to why growers may have changed practices and what went into this decision making process to help us set priorities for education and research, and assess market conditions.

There is a strong interest in improving production efficiency by increasing the volume of fruit produced per acre. There also exists a strong perception of organic management practices being used effectively. It would be worth pursuing the question in future years of what (if any) correlation exists between the use of organic management practices and production efficiency being based on volume of fruit. The results suggest that there are other factors that weigh in to production efficiency such as equipment, labor, time, and other ecosystem services in addition to volume of fruit.

In future grower surveys it would be interesting to build on these results and continue to learn what are the decision making factors/reasons for changes, in management practices.

Lessons Learned: The interest in organic production and certification among respondents is in line with OTFA's educational focus for the funding period and beyond the lifecycle of this grant. The challenge in dealing with diversity of pests and diseases cited by growers confirms our assessment of challenges facing organic tree fruit production in the Midwest.

If we want to continue to meet the growing demand for organic fruit in the Midwest, we need to better understand factors that limit production capacity and look for ways we can support growers in scaling up/optimizing their production systems. This will make organic tree fruit growers in the Midwestern and Eastern regions more competitive with their domestic counterparts in the Western regions as well as with foreign tree fruit producers. The diversity of pests and diseases cited by growers confirms our assessment of challenges facing organic tree fruit in the Midwest. OTFA will modify and release the grower survey annually, around the time of our annual meeting, in order to broaden and diversify input, track grower concerns/interests and develop programming in response to the challenges and concerns with organic management.

Target 2: *To increase the number of people reached through educational opportunities and improve the effectiveness of information provided.*

Performance measure: Grower participation in field days and seminars, and feedback from evaluations at these events.

Baseline: Prior to 2010, the Midwest Organic Tree Fruit Network (now OTFA) sponsored events have attracted an average of 23 participants. While an event evaluation baseline had not been previously established, OTFA built on the interest and need for grower to grower education expressed during these events; surveys and membership input and developed an event evaluation form.

Furthermore, to help us better assess and meet the needs of grower education, in 2012 growers

(both the 11 follow up survey respondents and the 33 new respondents) were also asked how useful OTFA sponsored educational opportunities have been. In both cases 100% of those surveyed have found educational events useful with 43% in agreement that these opportunities have been extremely useful.

Overall, the interest in organic production and organic certification among respondents is in line with OTFA's educational focus for the funding period.

A summary of evaluation results are as follows:

June 2010 Field Day, Berrien Center, MI = 44 participants

August, 2010, Decorah IA Field Day = 28 participants

June, 2011, Downsville, WI = 24 participants

July 2011, La Crescent, MN = 55 participants

August 2011, Flushing, MI = 18 participants

August 2012, Northport MI = 34

Statements rated: 1 (strongly disagree) to 5 (strongly agree)	June 2010 avg (12 responses)	Aug 2010 avg (18 responses)	June 2011 avg. (12 responses)	July 2011 avg (22 responses)	Aug 2012 avg. (7 responses)
I currently use organic management in my orchard	3.4	4.2	3.4	4.4	5
I find this information (from field day) on organic management valuable	4.1	3.9	4	4.2	4.4
I will likely change my practice b/c of this new information	3.3	3.5	3.4	4	4
I am seeking to increase/expand my production levels	3.4	3.6	3.8	3.5	4
I am interested in new marketing options	3.5	3.5	3.8	4	4.4
I am interested in becoming certified organic	4	3	4	3.5	3
I am interested in participating in on-farm organic management research	4.1	4.4	4	4.2	3.8

Evaluations also included opportunities for participants to comment and provide undirected feedback on event topics and speakers. Responses were largely positive. Suggestions for topics, speakers, and event sites were taken into consideration for planning future events. Responses indicate that tree fruit growers in the Midwest have diverse interests and needs, ranging from nutrient management to value-added processing to heritage scion preservation. Attendees at the

IPM field day at Hoch Orchards and Gardens in July 2011 overwhelmingly expressed an interest in a full day seminar on integrated pest management issues, which have spurred OTFA and researchers at MSU to organize events on this topic in 2012 – 2013. Evaluations were not distributed at the August 2011 field day at Al-Mar Orchard, which was not sufficiently promoted due to a tight timeline. The event drew mostly advanced growers who are already OTFA members.

Overall, attendance for field days has been within the range of expectations. Efforts to reach out to new growers were successful and several attendees became OTFA members as a result of their field day experiences. We will continue to work to meet the needs of established as well as beginning growers. Field Days like those in Minnesota and Michigan, with split tracts that guide new growers through the basics on organic orchard management topics and provide more in-depth information for experienced growers, have been well received.

Lessons Learned: OTFA will continue to seek grower input and feedback from members as well as other tree fruit growers in the Midwest with results to inform education and research needs. This will be done through evaluations following grower field days and events, an on-line grower survey distributed in winter (timed with our annual grower membership meeting), where growers may have fewer field demands and be more responsive; and more informally through our on-line list serve and member meetings.

Our list serve, website, and newsletter are useful tools in helping growers spread the word about events and self-organize around topics of interest to them. For example, as a result of this past winter's grower seminar on Holistic Orchard Management presented by Michael Phillips a small group of fruit growers in NE Iowa are getting together to discuss Phillips' holistic approach to growing fruit. From that initial luncheon, growers have continued to meet at different farms for discussion and tours. OTFA will continue to play a support and outreach role to our growers who host field days in collaboration with other organizations or through self-organized events based on grower interests.

Target 3: *Increase the number of people reached via Just Picked (print and electronic), fact sheets, list-serve, and website.*

Performance measure: Numbers reached through subscriptions, distribution at events and website hits are the primary indicators for newsletter and fact sheets. The number of participants and the level of activity on the list serve provide indication of its performance.

Educational Opportunity	June 2009	November 2010	September 2011	August 2012
<i>Just Picked</i> (print subscription)	345	362	390	368
<i>Just Picked</i> (electronic subscription)	122	134	152	494
Network List Serve	320	337	362	289

members				
Website Hits –	2008 – 2009 mosesorganic.org web host	Mosesorganic. org web host	Transition time – new website organictreefruit.org	*organictreefruit.org
Main page	5369	4552		1890
Events	3360	2480		NA
Research	Not yet created	Not yet created		NA
Newsletter	1650	1520		NA
Resources/Fact sheet	2686	3676		NA

There continues to be growth in the number of people reached through OTFA's educational opportunities. Additional copies of *Just Picked*, all six fact sheets, including the new Organic Tree Fruit Certification and the OTFA membership brochure are distributed during conferences, events, and seminars as well as available on-line. The Network List Serve, which provides growers with free access to discuss and share ideas and resources with hundreds of other growers, continues to increase in number and diversity of participants from around the region, nation, and world. The new website has an easily identifiable and searchable domain name, “organictreefruit.org” and OTFA staff is continually working on keeping content fresh and finding ways to promote our member farms as well as help consumers access organic fruit.

*With the transition to our new website, we have used Google Analytics (free service) to track website visits. Google Analytics summarizes web usage that differs from how mosesorganic.org tracks visits.

While we do not have specific site usage/page beyond the Main page, we can track how many new visitors have found our site, returning visitors, how many pages they visit and how much time they are spending visiting our website. When we launched our website in January, 2011 and through May 2012 we continued to see an increase in new visits (62%) and returning members (37%).

These results will help us assess and develop website tools and content that retains new site visitors and continues to attract new visitors. We will continue to develop our website so that it is an engaging and useful tool for growers in terms of research, education and marketing, and eaters interested finding organic orchards.

Growers continually express interest in learning more about what other growers are doing in their orchards. In response, OTFA staff continues to invite grower members from different regions to contribute to our newsletter, offering field notes and updates on their orchards.

Target 4 (adjusted): *Organic Tree Fruit Research Program: identify through Grower Survey interested research participants, compiling results and identify growers and researchers with full Research Catalogue online by the 2nd quarter of 2012.*

OTFA seeks to source project funding

Performance measure: By August 2012, the number of potential farm research sites, the number of relevant research projects as well as the number of research scientists interested in participating in multi-state research will be primary indicators of the program's success. In years to follow, the effectiveness of the Research Catalogue and the Research Program will be measured by the number, scope, and relevance of actual organic tree fruit research projects taking place in the region as well as the accessibility/applications of results to growers.

Five promising organic tree fruit research projects identified and pursued for funding.

Baseline: Currently, there is very little collaboration among researchers across different states, institutions, organizations and agencies who are working on organic tree fruit management research specific to a humid, temperate climate.

Outcomes & Lessons Learned: The research portion of the project has presented a greater challenge than anticipated. While we were able to identify organic oriented orchardists interested in participating in research projects, and were able to identify many researchers interested or involved in projects related to organic production, researchers were reluctant to commit to being listed in the catalog. In addition, another national project to connect researchers is currently underway through the Organic Farming Research Foundation.

As a result, a full Research Catalogue that serves the function of identifying both growers and researchers presented a greater challenge and was not completed within the life cycle of the grant. We hope to continue to be involved in the national project and expect that it will achieve a similar purpose, perhaps with greater results than we could have accomplished ourselves. Our efforts to identify and fund 5 research projects did not happen as we originally intended. We found that we were most successful in collaborating with other organizations pursuing research interest to our community. Projects, lead partners, and project status are listed below:

- ▲ Native Pollinator Habitat project – Xerces Society – in first year of research.
- ▲ Heritage variety suitability for northern climates and community education – University of MN Duluth – not funded

OTFA grower members are also actively involved in other on-farm research (supported by Ceres Trust)

These other projects include:

Michigan State University, “Integrating organic apple and pork production to benefit pest management and grower profitability.” Matthew J. Grieshop, Principal Investigator. Three years. \$177,446. Gene Member of Organic Tree Fruit Association and hosted a field day at his farm in August 2012 to share highlights and lessons learned from research.

Michigan State University, “Organic production of fruit crops under high tunnels.” John Biernbaum, Principal Investigator. Three years. \$171,473. Pie cherries, sweet cherries and apple tree nursery –OTFA members in Michigan were involved in this study and OTFA wrote a letter

of support.

Krista Buehrer, Michigan State University, \$9,789, “Potential of Organic Hogs as a Tool for Post-Harvest Orchard Floor Sanitation and Pest Management.” Prof. Matthew J. Grieshop, Faculty Adviser. Gene Garthe Farm. OTFA Field Day in August 2012 at Garthe Farms disseminated research findings to the group.

Challenges in meeting performance targets were due to a variety of factors including:

- ⤴ Proposals submitted that would have involved growers in research and education were not funded.
- ⤴ Researchers express interest in working with growers, however, needed time to further develop working relationships with colleagues before reaching out to growers.
- ⤴ OTFA lost its part-time coordinator in October 2011 and did not hire a replacement until mid-April 2012. This person's responsibilities include interfacing with researchers and helping facilitate connections and potential research projects that address the needs of Midwestern growers who could and should benefit from on-farm multi-state testing.

Despite the challenges of developing a research catalogue and securing partners and funding to pursue on-farm research, OTFA remains committed to supporting organic tree fruit research that considers the unique conditions the Midwest/humid regions of the U.S. Present. It is worth highlighting strides made over the past two years toward identifying research topics of interest to growers, as well as strides made in facilitating connections and relationships with researchers interested in working with growers. These include:

Results from the 2010 and 2012 Grower Survey helped to identify not only research topics of interest to growers but also specific growers who are willing to participate. A total of 46 growers are currently listed; 15 are certified organic, 12 are in transition to organic certification and 18 use organic practices but are not certified, and 1 utilizes low input conventional practices. Twelve states, a broad cross-section of the humid regions in the United States, are represented: Indiana, Illinois, Iowa, Maine, Maryland, Michigan, Minnesota, Missouri, Montana, New York, Ohio and Wisconsin. Furthermore, 25 researchers from land grant university programs and research stations in ten states who have promising project or programs in relevant areas (topics of interest to growers and with direct application), such as Integrated Pest Management, disease management strategies, cultivar development, heritage variety preservation, organic production systems, and pollinator habitat restoration were identified.

OTFA members participated in a Fire blight task force, providing input to the National Organic Standards Board. The working group included OTFA Board President, Jackie Hoch, David Granatstein, Washington State University, and Matt Grieshop, Michigan State University, with members from across the country, including small and large growers, university researchers, and consultants. Information on the work group and some of the documents it has produced can be found at <http://www.tfrec.wsu.edu/pages/organic/fireblight>.

OTFA had a presence at the International Organic Tree Fruit Research Symposium in June of 2012 and shared challenges and opportunities for working with organic growers in the Midwest. Researchers present expressed interested in issues, but needed more time to do more consolidation of ideas amongst their colleagues as well as source funding. OTFA member Jim Koan, presented his findings of on-farm production of nursery crops in high tunnels during the symposium.

A listing of research currently being conducted in the Midwest is posted on our website: organictreefruit.org. We plan to continue to highlight current research our grower members are involved with on our website as well as our newsletter.

We also will continue to connect with other researchers and at the very least, link to other organic tree fruit web databases such as the Washington State University Tree Fruit Research Center, the [Organic Farming Research Foundation](#), and the University of Vermont OrganicA - a resource for organic apple production <http://www.uvm.edu/~organica/>

OTFA wrote a letter of support for on-farm direct marketing research of lesser known organic fruit crops being conducted by three of its grower members' farms in Wisconsin. This project was funded through the NC SARE Farmer Rancher Grant program and began in 2012.

Lessons Learned: In all cases, current and completed on-farm research projects that were successful provided reasonable incentive and compensation to growers involved, growers were/are actively involved in providing feedback, not only with evaluating results, but also in the research design, and results of the research had direct application to growers and were shared through multiple venues (presentations, field days, newsletter articles, website etc.).

In particular, the Xerces pollinator research project is an example for what OTFA is striving for in helping further participatory research with growers and researchers. The research institution/organization (Xerces) extends an invitation to OTFA to partner, OTFA provides feedback to the research organization concerning research goals, methodology and ensure there is a direct application to growers involved, and the research model can be replicated/serve as a model for other farms, the research organization extends an invitation to OTFA grower members through OTFA. Results are shared with the broader OTFA/organic tree fruit community through our grower network, field day discussions, website, and newsletters.

SUSTAINABILITY BEYOND THE LIFE CYCLE OF THE GRANT

Support from this grant enabled us to incorporate as a professional grower association, launch new education and outreach initiatives, expand and leverage our impact and reach, connect with researchers and organizations involved with organic orchard research, and determine what's working and ways we might do more of it.

Where do we grow from here? A combination of completing project goals, lessons learned from

activities, and transitioning staff enabled the OTFA Board and its grower members to reflect on priorities, needs, and projects to continue beyond the life-cycle of this grant. OTFA Board President facilitated an on-line discussion with our membership to help guide the future direction of our organization. After great discussion and input from our members, our organization goals for 2012 and moving forward include:

- ▲ Offer member services that we can self-fund. For example, use member dues, workshop fees, and event sponsorship to continue publication of on-line newsletter, fact sheets, and membership materials, promote member farms through website listing, manage website and member list serve.
- ▲ Maintain and enhance website features to support marketing and promotion of member farms, as well as highlight current research and relevant information for organic orchardists in the Midwest.
- ▲ Use funds from member and workshop fees to coordinate a summer tour, winter meeting and events around the Midwest Organic Farming Conference—support outreach for grower members who host tours on their farms, self-organize gatherings around topics of interest to them/other growers in their regions, and continue to help facilitate networking opportunities with other organizations.
- ▲ Board and committee members will continue to advocate for organic tree fruit issues and research – this would occur on a volunteer basis and be based on availability.
- ▲ Explore expanding to other regions in future years.

OTFA will continue to have a strong role in facilitating grower to grower education and outreach through sponsorship of field days and the seminars in conjunction with the Organic Farming Conference in La Crosse, WI as well as Great Lakes Fruit and Vegetable Expo in Michigan. These events draw thousands of participants, primarily farmers each year. We will also continue to host learning environments for growers to share what's working in their orchards as well as challenges, alongside providing outreach support to growers who wish to 'self-organize' around topics of interest to them such as the NE Iowa growers who are meeting regularly to discuss holistic orchard management and tour each other's farms. Growers also continue to organize a Scion exchange in conjunction with our annual member meeting which further demonstrates the importance of grower to grower education and ways in which OTFA helps facilitate these opportunities. We are also committed to hosting seminars in conjunction with the annual Organic Farming Conference. These events are self-sustaining through a combination of membership and workshop fees.

OTFA Board, committees and staff will continue to engage grower members in discussion/planning this fall and winter to determine what we are able to prioritize and can commit to doing in the areas research and education, outreach, and membership services.

We anticipate our membership to continue to grow in Minnesota and throughout the Midwest. As

a result of this project we are able to be the go-to organization for grower education around organic tree fruit management/orchard care and a key stakeholder in helping connect researchers with growers. Overall, support from this grant project has enabled us to pilot and launch new initiatives, develop as a professional organization, and determine which projects, such as our newsletter, field days and seminars, reflect trends and needs of organic fruit tree growers in the Midwest and can be sustained beyond the life cycle of this grant.

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ADDITIONAL INFORMATION

Provide additional information available (i.e. publications, websites, photographs) that is not applicable to any of the prior sections.

Please see attached Membership Brochure, sample of *Just Picked*; sample promotional field day post card, “Organic Certification” and “Organic Orchard Disease & Pest Management” Fact Sheets.

Please link to our website: <http://organictreefruit.org>

We also have a member’s only Google group as well as our general [Network List Serve](#).

Project G

Project Title

Bringing More Healthy Locally Grown Produce into Minnesota Health Care Institutions
Institute for Agricultural and Trade Policy

Project Summary

As places of healing, hospitals have a natural incentive to provide food that’s healthy for people and the environment in which we live. Over the last 5 years, hospitals in Minnesota and nationwide have become increasingly interested in the relationship between the food they serve and how its production, packaging and distribution can positively or negatively impact the health of their patients, staff and the broader community. The growing problem of obesity has also contributed to hospital interest in increasing patient, staff and visitor access to fresh, local and sustainably produced food.

Like many institutions, most hospital food purchases tend to come from locales around the globe and are unloaded from the back of a tractor trailer onto their loading dock. Their supplier and distributor relationships are largely determined by alliances with group purchasing organizations and food service contractors. Many purchase mostly pre-cut produce to avoid labor costs or deal with a lack of prep space. Despite these challenges, many opportunities still exist for Minnesota hospitals to bring fresh,

Minnesota-grown fruits, vegetables and other specialty crops through their doors and into their kitchens as well as employee kitchens.

Through the implementation of this project we sought to:

- Increase hospital purchase of Minnesota grown specialty crops via distributors and direct purchase.
- Increase sales of Minnesota farmers' CSA shares by working with health care institutions to serve as CSA drop sites, making the acquisition of healthy food grown on Minnesota farms more convenient for their staff.
- Build institutional markets for Minnesota farmers and assist beginning, socially disadvantaged and limited resource farmers in developing the tools and skills they need to access those markets.
- Raise awareness of the benefits of health care institutions purchasing from Minnesota farmers.
- Provide tools and models to continue to build on our successes.

Project Approach

On-line surveys; follow-up phone calls and in-person meetings with hospital purchasers; distributors; and other stakeholders were used to determine baseline values for hospital purchase of Minnesota specialty crops; identify barriers and issues; set goals for purchase of local, sustainably produced specialty crops during a set period of time (May 1 through October 31); assist with development and implementation of strategies for individual hospitals and farmer sales to hospitals; and track lessons learned. These methods were also used to determine the extent to which hospitals and other health institutions were already acting as drop sites for CSA shares as well as hospital and farmer interest in growing this model in 2010 and beyond.

Goals and Outcomes Achieved

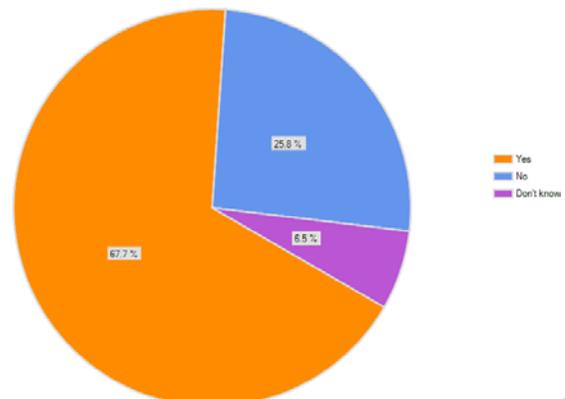
PROJECT GOAL: To improve the profitability of Minnesota Farms by expanding the purchase and consumption of local, sustainably produced specialty crops by Minnesota health care institution patients, employees and visitors.

Performance Measure: Number of Minnesota health care institutions in targeted regions that report purchasing local and sustainably produced fruits, vegetables and other edible specialty crops grown by Minnesota farmers

Benchmark: Develop baseline for targeted regions

Results: Approximately 68 percent (21 of 31) of the respondents to our survey reported that they had intentionally purchased and served Minnesota grown fruit, herbs, honey, maple syrup or vegetables in 2009. (Nationally, [52 percent of hospitals surveyed](#) reported purchasing local produce at least some of the time in 2009.) Seventy percent of respondents reported purchasing these products via their distributor(s), and 35 percent reported buying Minnesota specialty crops directly from a Minnesota farmer or farm cooperative. There is overlap

In 2009 did your facility intentionally purchase and serve any MINNESOTA grown fruit, herbs, honey, maple syrup or vegetables either direct from a farmer OR via a distributor?



between these percentages, because sometimes, the institution did both. Most commonly purchased crops were: apples, corn, tomatoes, cucumbers, bell peppers, potatoes, and winter squash.

Performance Measure: Health care institutions commit to tracking purchases, work toward increases and demonstrate a continued commitment beyond grant period via goal setting and plan development

Benchmark: Develop baseline for targeted regions

Target: Average of one per region where we are working

Results: Three hospitals committed to participation in this part of our project and followed through until the end: two hospitals in the Twin Cities metro and one hospital in western Minnesota. Through the survey we identified 21 respondents that were that were “somewhat” to “very” interested in working with us. Through a process of follow-up calls, emails and in-person meetings six hospitals/ health systems agreed to work with their regional contact at IATP, ISF or LSP to begin to determine their actual 2009 baseline for Minnesota grown specialty crop purchases and to track purchases and work to increase by 10 percent minimum their 2010 purchases. Three of these hospitals dropped out due to time constraints and, perhaps more importantly difficulty getting the information needed from the distributor used by all three.

Overall, how interested is your facility in working with us and receiving assistance in benchmarking and working to increase purchases in 2010 of MINNESOTA grown... (Please make a choice for each category listed.)

Answer Options	Very interested		Somewhat interested		Not at all interested		Response Count
...fruits, herbs, honey, maple syrup or vegetables?	9	3	9	4	4		29

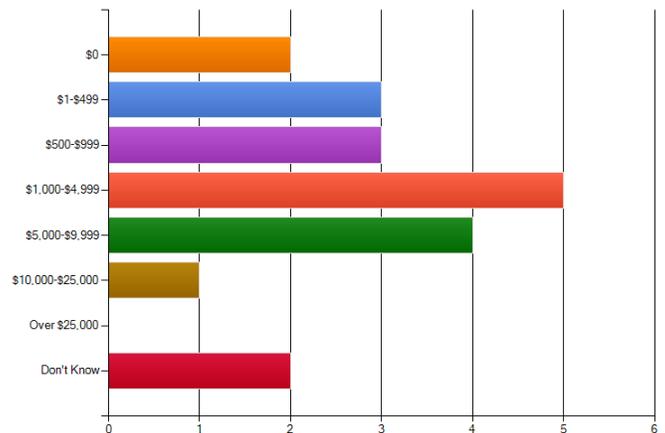
Performance Measure: Develop system for monitoring the amount of food purchased from Minnesota farms.

Benchmark: Develop baseline

Target: System developed and two hospitals committed to using it.

Results: Prior to this project, hospitals did not seem to be tracking this data in any formal way. Survey respondents were asked to indicate via a range how much they had spent in 2009 (see chart). They were also told they could estimate, since we were concerned that respondents would just skip it or not complete the survey if they felt they had to do research. Since we did not ask them to indicate whether their response was based on actual data

What is the combined dollar value of your facility's 2009 purchases of MINNESOTA grown fruits, herbs, honey, maple syrup and vegetables? (You may estimate for this question, but please do not over estimate.)



or an estimate, we have to assume that they were estimating.

At least two of the hospitals participating in the tracking portion of the project later confirmed that they had made educated guesses based on partial data from previous years. Thus, efforts were made to determine the actual 2009 baseline for these hospitals as part of the tracking project.

A set of Excel spreadsheets were developed to document each participating hospitals 2009 baseline and to track 2010 purchase of Minnesota grown specialty crops by product type, dollar value, volume and as a percentage of all specialty crops purchased during the same period.¹ When possible additional data was gathered to compare products purchased with products available. These spreadsheets were predominantly used by project partners to track data on behalf of the hospital--in part to assure the accuracy of the data given several complicating factors and until a simpler system could be devised. These forms were also used as the basis for creating a PDF version that one hospital preferred to print out and enter data by hand.

Performance Measure: Increase the amount of food purchased from Minnesota farms during the course of the project.

Benchmark: Develop baseline

Target: Minimum of 10 percent over baseline, goal of 25 percent over baseline

Results: Given the range of amounts used in the survey and difficulty getting information needed from distributors to establish actual purchases between 5/1-10/31/2009, the data gathered this year between 5/1-10/31 will have to serve as the baseline for future years. Also, for this reason we just asked hospital participants to “maximize” purchase of Minnesota grown specialty crops, by doing it this way we have likely set the bar higher for future years. (See chart on next page.)

Participant	MN Grown 2009 (est. from survey)	MN Grown 5/1-10/31/2010 (actual)	Total all specialty crop purchases 5/1-10/31/2010 (actual)	% MN Grown	Source of MN Grown Items
<i>Hospital A</i>	\$5,000-\$9,999	\$9,153 ²	\$124,142	7.37% ³	Bix Produce

¹ Since the project was scheduled to end before the end of 2010, hospital participants were not identified until March, and Minnesota’s growing season does not really get going until May or June, the baseline and tracking period was designated as May 1 to October 31st.

² Hospital A purchased a nominal amount of Minnesota grown produce via Sysco and considerably more produce than what is reflected here, but dollars values were excluded from the Sysco reports and cannot be listed.

³ If produce purchases from Sysco were factored in, this percentage would be lower though hard to say by how much.

Hospital B	\$1,000-\$4,999	\$1,677	\$13,290	12.62%	Sysco, Bix Produce
Hospital C	\$1-\$499	\$342	\$2,597	13.16%	Three farms

Performance Measure: Expand the number of CSA drop sites at hospitals in targeted regions

Benchmark: Develop baseline

Target: Increase by two hospitals

Results: Three hospitals reported that they had hosted a CSA drop site in 2009, two of which IATP assisted in starting. At least two of these hospitals were working with Wisconsin CSAs, since they had available shares at the time the hospitals were looking. In addition to these drop sites at least one other hospital, Regions Hospital in St. Paul hosted a CSA in 2009 as part of a Health Partners study. In 2010, LSP worked with one hospital in western Minnesota to pilot a CSA drop site with a beginning Minnesota-based CSA farmer. IATP provided assistance to a Twin Cities-based health system that piloted CSA drop sites at three separate locations—one hospital and two office locations. Shares were only made available to employees at two of the locations, but one office location opened the drop-site to non-employees. They partnered with two farms: one in Minnesota and one in Wisconsin. They plan to continue these drop sites and possibly expand to other sites in 2011. They did not have very good feedback on one of the farms they worked with and will use the list of CSA farms interested in adding Twin Cities’ area drop sites that we developed this year to look for a replacement. There were a few hospitals interested in adding CSA drop sites this year in the other regions where we worked, but they did not work out. (See Lessons Learned.) Staff at LSP and ISF continued to communicate with these facilities over the course of this year and plans are in the works for 2011. Also, one Duluth-area ended up hosting a weekly farmers’ market and one Minneapolis hospital setup a “mini’ farmers market in lieu of being a CSA drop site.

Performance Measure: Establish baseline of number of shares being sold

Benchmark: Develop baseline

Target: Complete baseline survey

Results: One of the two hospitals that IATP worked with in 2009 started small with 10 shares because availability was restricted and they did not want to work with multiple CSAs. Most shares were split between two employees. The other hospital that we worked with in 2009 started with 10 shares each from two different CSAs and had two drop locations. It is our understanding that these relationships continued this year, though a change in food service contractors made communication challenging. The CSA drop site that LSP helped to establish in western Minnesota started small with a four-share drop, two of which were purchased by the hospital to use in meal preparation. A total of 70 full and half shares were purchased from the two farms supporting the health system pilot (18 at office site A, 33 at the hospital site and 19 at office site B).

Beneficiaries

This project has had numerous beneficiaries. It has enabled IATP and its project partners, ISF and LSP, to both broaden and deepen its relationships with Minnesota hospitals so that we can accomplish even more. Hopefully, our hospital partners have learned what they need to know to continue to expand their purchases of Minnesota grown specialty crops whether they buy them through a distributor or direct from farms. As we share the data gathered and lessons learned from this project over the coming months, we anticipate that many more of Minnesota’s 151 hospitals will find ways to increase their

support of Minnesota farmers whether through purchasing them for use in their kitchens or making it easier for employees to purchase CSA shares and increase their consumption of fresh produce. Distributors such as Sysco and Bix Produce have likely learned more about what their health care customers need in order to maximize purchase of Minnesota specialty crops and track their purchases in reports.

While hospitals vary considerably in the number of meals served each day, Minnesota's larger hospitals serve between 500,000 and 1 million meals a year on average to patients, staff and visitors. They are open 365 days a year and have a consistent need for produce and other food items. Shifting even just a small percentage of their purchases by maximizing purchase of seasonally available produce could have tremendous benefits for Minnesota's farmers. Minnesota hospitals employ 108,000 people, an average of 715 staff per hospital. If each Minnesota hospital acted as a CSA drop site and just 20 new CSA shares were purchased and delivered to each location, annual Minnesota CSA farm revenue would increase by more than \$1.5 million dollars.

Lessons Learned

We learned quite a lot during this project that we will continue to share with Minnesota's hospitals and Minnesota's farmers in the coming months.

Purchasing and tracking purchase of Minnesota grown specialty crops:

- There doesn't seem to be much of a market for maple syrup in health care food service. One of the three hospitals we worked with on an individual basis purchases about \$800 worth of honey annually (not a lot for a hospital that serves more than one million meals each year). They were interested in getting small containers to put on tables in the cafeteria, but no Minnesota "grown" honey was available through their distributors and they cannot buy direct from farms. One distributor carried honey that is processed in Minnesota, but the processor buys honey from all over the world and blends it. Another hospital we worked with said they do not buy much honey or maple syrup. Other than that just a few survey respondents said that they buy Minnesota grown honey and maple syrup and only seem to do so infrequently.
- Hospital food service and procurement staff are very busy and can find it very challenging to do the extra work needed to change long engrained purchasing habits, to adapt menus to take advantage of seasonal items, to communicate preferences to distributors, to learn what to ask for in reports, analyze purchasing data and more. Of the three hospitals that participated in the tracking project, one had tried a few different times to get what they needed from their produce distributor, but was only successful when provided hands on assistance through this project; one was already inclined to buy more local produce, knew quite a bit about how to get it through their distributor and was only too happy to maximize purchases and share experiences; and one had already been buying on a limited basis from a local farm and was happy to work to do more.
- Based on our hospital survey, distributor survey and work with individual hospitals, we have concluded that there were only two distributors serving surveyed Minnesota hospitals (Bix Produce and Sysco) that really make an effort to buy from local growers, identify these products in ordering systems, market them to their customers and have systems in place to provide reports to their health care customers on what Minnesota grown items were purchased. Since two of the three hospitals we worked with on an individual basis used these distributors, they were in a much better position to succeed in the benchmarking part of our project.

Hospitals that relied predominantly on/contracted with one of the other major distributors made little headway. For instance, three Duluth-area hospitals/health systems committed initially to the tracking phase of our project, but in the end one unresponsive distributor (same one for all three) thwarted their success. For example, multiple requests for purchasing data from the distributor were not provided, even though the distributor was working under contract to the institution. Information on Minnesota grown foods provided by the distributor was not clear or potentially erroneous. This same distributor was unresponsive to numerous attempts to include them in the distributor survey conducted by IATP as part of this project. Hospitals using this particular distributor will likely need to renegotiate their contract to allow for more off contract purchases or change distributors to be successful in the future. Having hospitals go through the motions to try to get this data provides a valuable learning experience that can help lead to change in the long run either by having the distributor respond to demand or through contracting changes.

- Supplier/distributor loyalty can help or hinder a hospital's efforts to source Minnesota grown produce. If their preferred distributor already provides Minnesota grown produce hospitals are generally happy to try to buy more as long as prices are similar to non-local or can be accommodated and other conditions are met such as pre-processing, etc. On the other hand, longstanding relationships and sometimes friendships between the buyer and seller can influence a hospital's willingness or ability to hold the distributor accountable or buy from others. Change may only occur with turnover in staff, food service management or C-suite engagement and prioritization of local foods procurement.
- At least one of the hospital tracking partners found that in most instances the Minnesota produce was less expensive than non-local options. Exceptions to this included tomatoes and Honeycrisp apples.

Starting a hospital-based CSA drop site:

- There are almost as many models for setting up a hospital-based CSA drop site as there are variations between CSAs. Two have been established by the food service contractors at Minnesota hospitals and three were set up by hospital staff as part of an employee wellness program. At least one, stores the shares in a hospital cooler until they are picked up by staff. Most others drop them in a central, non refrigerated location and require staff to pick them up by a prescribed time. Some only want to deal with one farm, others are open to more. It helps to have at least one staff person involved who knows what a CSA share is, has purchased one in the past, and is excited about starting a drop-site, but it is not necessary. Most only want to allow employees to purchase shares, but at least one is open to non-employees.
- While hospital-based CSA drop sites have been known to get setup very quickly and with little red tape, this isn't always the case. Early in our project one hospital expressed interest in supporting a drop off site for a local CSA food box program. The nutrition service staff was highly supportive, had researched available CSA shares and had drafted a memo to staff. However, the initiative was quickly stopped by the marketing department because as Food and Nutrition staff reported, "they wanted to know what process we use to evaluate and choose the CSA". Staff further reported, "I believe it was a means to stop the program because they did not understand it". It became clear that more time was needed to do internal education and build support for the idea so the food box program was dropped for 2010, but planning began in mid-November for 2011.

- A number of CSA farms were interested in adding hospital-based drop sites, more than there was actually demand for this year, but that information has been shared with hospitals in the areas where they expressed interest and some are reaching out directly to hospitals on their own.
- While some CSA farms like to have several drop sites and avoid having all or most of their shares dropped in one place, at least one CSA farm has approached a hospital with an offer to essentially adopt his farm (100 shares). Those who purchase a share would essentially get to decide what they grow and possibly extra benefits.

Contact Person

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Additional Information

We commented on this project in our blog. Below is the link that includes our commentary related to this project and other follow-up materials for publication.

<http://iatp.typepad.com/thinkforward/2010/12/hospitals-support-minnesota-farmers-purchase-locally-grown-produce.html>

Project H

FINAL REPORT

USDA Specialty Crop Block Grant Program 2009 – Minnesota
Sub-project: Specialty Crop Enterprise Management 2010

PROJECT SUMMARY

The purpose of this project was to enhance the competitiveness of six target specialty crops: fresh market apples, berries, grapes, pumpkins, sweet corn and assorted/mixed vegetables and to increase the overall competitiveness of specialty crop production in the state.

This project built on an effort supported by the 2008 Specialty Crop Block Grant-FB Program by expanding the number of growers participating and focusing on specialty crops that our project partners identified as are particularly popular and promising.

PROJECT APPROACH

This award provided scholarships for 47 different specialty crop growers to work one-on-one with farm business management instructors. Participants learned to keep and use quality records in order to make sound business management decisions for their farming operations. They received year-end analyses useful for tax preparation, discussions with lenders and enterprise planning. In return, participants provided their data, stripped of all identifying characteristics, for inclusion in a public farm financial database. In addition, outreach and education efforts at meetings and conferences held by the Minnesota Fruit and Vegetable Growers Association, Minnesota Grape Growers Association, and Sustainable Farming Association of Minnesota sought to improve the financial management literacy of additional specialty crop growers in the state.

The Minnesota Department of Agriculture (MDA) administered the project and subcontracts, publicized the project through media placement of news stories (commercial media as well as grower organization newsletters) placed purchased advertising to attract participants, created a banner display and brochures about the project which were used at events such as the Minnesota Fruit and Vegetable Growers Association Annual Conference, Midwest Cold Climate (Grape) Conference, Minnesota Organic Conference, Minnesota Grown Conference, and Minnesota Agriculture Educators Conference.

The MDA also administered feedback surveys to FBM scholarship recipients in order to assess their satisfaction with the program and its impacts on their farming operations and collect suggestions for how to improve its usefulness to specialty crop growers. A total of 31 growers returned the survey for a response rate of 63%. Their responses are summarized in the *Goals and Outcomes Achieved* section and detailed in this report's appendix. In addition, we surveyed participating instructors in order to learn about their expectations, experiences and opinions, with a view toward improving the program and its ability to benefit as many growers as possible. Specifically, we wanted to know what financial management topics they consider most important for specialty crops growers and what resources or approaches would help FBM instructors be more effective in working with this population. The response rate was 72%. This data is also provided in the appendix.

In addition to work directly with growers of the targeted specialty crops, the project sponsored four educational sessions to enhance financial literacy of specialty crop growers:

A breakout session entitled: "Intro to Business and Financial Management for Specialty Crop Growers" was held at the Minnesota Fruit and Vegetable Growers Annual Conference on, January 21, 2010 as part of a business and marketing educational track. Two FBM instructors delivered the

session. The total number of breakout participants was not recorded. Participant feedback is reported in the *Goals and Outcomes Achieved* section below.

A seminar entitled “Establishing a Commercial Vineyard – Costs and Expected Income,” was held by the Minnesota Grape Growers Association on April 17, 2010. Iowa State University Extension Viticulture Specialist Mike White teach the seminar. A total of 57 people registered; 70 people attended. Participant feedback is reported in the *Goals and Outcomes Achieved* section below.

Two breakout sessions, “Keys to a Good Recordkeeping System” and “Assessing your True Cost of Production” breakout sessions were held at the Sustainable Farming Association of Minnesota’s annual conference on February 19, 2011. More than 75 participants attended these sessions. Participant feedback is reported in the *Goals and Outcomes Achieved* section below.

In order to increase the capacity of farm business management instructors to serve this clientele (many instructors have extensive experience with field crop and/or livestock production, but not with specialty crops), we conducted outreach to farm business management (FBM) instructors at three professional development workshops that emphasized financial considerations related to specialty crop production. These workshops were offered by MnSCU and partially funded by a State of Minnesota Department of Agriculture grant, not with SCBG dollars. At these events, instructor Thaddeus McCamant provided peer training about special considerations of these kinds of enterprises and project director Meg Moynihan provided an overview of the program and promoted the availability of assistance to specialty crop students. At one location, a participating specialty crop grower spoke to the instructors as well. The number of instructors who recruited one or more specialty crop students into the program subsequently jumped from six to 19.

An additional educational session was presented by specialty crop farmer/enrolled participant Laura Frerichs at the 2011 Minnesota Agriculture Technology Conference. This session was held on an effort to increase farm business management instructors’ knowledge about and comfort with specialty crop operations. This session was not evaluated.

Dr. McCamant also created and distributed a fact sheet about economic and financial considerations of specialty crop production. McCamant works for Minnesota State Colleges and Universities, one of the major project partners, at its Northland College campus. He has shared this fact sheet with other instructors and reports he has used it when speaking to grower groups in and outside of Minnesota.

The following partners played important roles in accomplishing the project's activities and objectives:

Minnesota State Colleges and Universities (MnSCU)– Dean Del Lecy and several FBM instructors participated on the project steering team. Dean Lecy also served as liaison between the project administrator/team and instructors enrolling and delivering education. Nineteen FBM instructors were directly involved in delivering FBM education to the 47 enrolled specialty crop growers

Center for Farm Financial Management (CFFM) – Assistant director Dale Nordquist participated on the project steering team. Through a subcontract arrangement, he and other CFFM staff revised analysis and reporting software to accommodate specialty crops, provided training and technical assistance to help instructors use the revised software, and oversaw review and publication of specialty crop farm and enterprise level data in the FINBIN database www.finbin.umn.edu. Dr. Nordquist also prepared data summaries and analyses.

Minnesota Fruit and Vegetable Growers Association (MFVGA) – Executive Director Marilyn Johnson participated on the project steering team. Through a subcontract and other arrangements, the association publicized the project through newsletter articles and paid advertising, held a financial management educational at its 2010 annual conference (see above), and provided a booth space in the trade show associated with the conference.

Minnesota Grape Growers Association (MGGA) – President Tom Martell contributed ideas to the project steering team and the association conducted outreach to its members through electronic communications and paid advertising in its newsletter. The MGGA also held a financial management education workshop in 2010 (see above).

GOALS AND OUTCOMES ACHIEVED

The following specific project goals were included in our project proposal.

Goal 1: Benchmarking information regarding the comparative performance of the target specialty crop enterprises is available to 4,000 growers of the target crops, as well as to others.

Target: Reportable data (minimum of 5 operations reporting) for at least three of the six target crops. This data is available to the public at www.finbin.umn.edu and in a summary report (see appendix).

Blueberries: <http://www.finbin.umn.edu/FinB.dll/generate?RecId=216234>

Grapes: <http://www.finbin.umn.edu/FinB.dll/generate?RecId=216235>

Pumpkins: <http://www.finbin.umn.edu/FinB.dll/generate?RecId=216236>

Strawberries: <http://www.finbin.umn.edu/output/215405.htm>

Sweet corn: <http://www.finbin.umn.edu/FinB.dll/generate?RecId=216238>

Vegetables (assorted): <http://www.finbin.umn.edu/FinB.dll/generate?RecId=216239>

Accomplishments and Outcomes: The project exceeded its target, generating reportable financial data for five of the target crops: pumpkins (11 farms), raspberries (10 farms), strawberries (10 farms), sweet corn (7 farms) and vegetables (5 farms). In addition, 2008-10 data is available for apples, blueberries, and grapes.

Goal 2: 35 growers of the target specialty crops improve their understanding of financial management production efficiencies as a result of working with FBM instructors and using farm financial management software tools called FINPACK and FINBIN.

Target: 75% or more participants who respond report that farm business management education has benefitted their farming

Accomplishments and Outcomes: The project exceeded its target, enrolling 47 different specialty crop farmers/farming operations, who improved their farm financial literacy as a result of this project through individual instruction by business management instructors. A smaller number (34) submitted reportable 2008-10 data (previously SCBG-funded work as well as the award on which we are reporting here). The disparity may be due, in part, to the fact that many of these farms

were new to recordkeeping and their records were not yet suitable for inclusion in the statewide database.

In the program evaluation survey we administered to growers, more than 75% of respondents said they used what they've learned in FBM to make pricing or marketing decisions and to assess their profitability. More than half reported using it to monitor cash flow and/or make planting decisions. More than a third used it at tax time. Nearly 90% rated the program "Extremely helpful" "very helpful" in terms of its impact on their farming operation to date.

Goal 3: *Educational sessions increase the financial literacy of specialty crop growers.*

Target: *75% of attendees say their understanding of financial concepts has improved.*

Accomplishments and Outcomes: Three formal grower educational sessions on various financial management topics were held, reaching at least 150 growers. Participants indicated they found the sessions helpful.

1) Minnesota Fruit and Vegetable Growers Conference Financial Management breakout

Unfortunately, the total number of attendees at this event was not recorded, but composite scores from session evaluations ranked information 4 out of 5 and usefulness of topic 4.1 out of 5 as well. The evaluations included comments such as:

"Very knowledgeable speakers – looking forward to having \$ on specialty crops (rather than cows-n-corn) in future years."

"I thought the financial session would be a disinteresting topic, but it was not. Valuable info."

2) Minnesota Grape Growers Association seminar

Evaluation forms submitted by 43 of the 70 attendees indicated 75% were "very satisfied" and 14% "satisfied" with the session. We think it is important to note that a solid majority (72%) said they

would adjust their business plan or marketing practice based on what they learned, indicating that the information presented was timely and immediately useful.

3) Sustainable Farming Association of Minnesota breakouts

More than 75 participants attended these sessions. Evaluations were conducted for both. All respondents (100%) rated the recordkeeping session as “good” or “excellent,” and 80% rated the cost of production session “good” or “excellent”

Specific data was not collected by the partnering organizations that coordinated the educational sessions; the closest we can get was reporting attendee ratings on usefulness and applicability of the information, and, in the case of the Grape Growers’ event, likelihood of changing their business management practices as a result of what they learned. As described in the Lessons Learned section of the report, *“Partner organizations and farm groups that coordinated and delivered the educational sessions all used different evaluation questions.”*

BENEFICIARIES

Project beneficiaries included:

47 growers of the targeted specialty crops who worked directly with FBM instructors to learn and apply farm financial management concepts in the context of their own farms.

19 instructors who delivered farm business management education to specialty crop producers, expanding their knowledge about this sector and their ability to serve these types of agricultural operations.

Approximately 150 growers who attended financial management education breakout sessions and seminars/workshops.

An undetermined number of existing and potential specialty crop growers who can now access summary data financial and production data for five of this SCBG project’s target crops (at www.finbin.umn.edu. (Also see appendix.)

Five collaborating organizations that received financial benefits (including salary support for project delivery, honoraria, funding for conferences, trade shows, advertising, and tuition) and non-financial benefits (including organizational visibility, new professional collaborative relationships, and assistance achieving statutory and/or organizational mandates to serving the needs of diverse groups of agricultural producers in Minnesota).

LESSONS LEARNED

We learned a number of important lessons during the implementation of this project:

1. The multiplicity of instructors and MnSCU campuses enrolled, as well as precautions put in place to protect participating growers' anonymity and the confidentiality of their farm data made it difficult to monitor the number of operations who did and did not submit data for publication. Midway through the project we recognized this problem and began to monitor enrollment and participation using a farm ID number so their data could be tracked and discussed by key project team members without compromising the growers' anonymity.
2. Partner organizations and farm groups that coordinated and delivered the educational sessions all used different evaluation questions. It might be advisable to define one or two standard and required evaluation questions when entering into sponsorship contracts for similar events in future.
3. Leadership changes at one of the partner organizations disrupted the continuity of the project, creating a few small administrative challenges. One solution might be to inform and engage the boards of directors when launching a partnership project such as this one – particularly for grower or other small organization partners.

We have already used many of these lessons in preparing a proposal seeking additional resources to expand and improve certain aspects of this project.

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ADDITIONAL INFORMATION

Additional information is contained in the following appendix. **Please note:** some of these materials were included with the 2010 annual report. We are including them again in the interest of providing a comprehensive account of project activities and approaches in this final project report.

Project I

Developing Native and Native-European Hybrid Hazelnut

Germplasm and Agronomics for Minnesota – University of Minnesota

Project Summary

The overall goal of this project is to develop a viable bush-type hazelnut industry in the Upper Midwest Region, based on either native *Corylus americana* or hybrids between *C. americana* and the European hazelnut, *C. avellana*. Hazel nuts are a healthy and tasty human food, as well as a source of oil for cooking and cosmetics, and potentially for biofuel. As perennials, hazelnut bushes provide the essential ecosystem services of cycling nutrients, conserving soil, building soil fertility, storing carbon, and protecting surface and groundwater quality more effectively than annual crops. This project addressed the following key bottlenecks hindering the development of a regional hazelnut industry: 1) lack of consistent high quality germplasm; 2) lack of low-cost commercially appropriate propagation techniques; 3) lack of recommendations on establishment and management methods; and 4) lack of grower knowledge of available management information. This state-level Specialty Crop grant enabled us to start these long-term tasks while we secured longer-term funding at the federal level.

Project Approach

Although hybrid hazelnuts have been subject to breeding efforts since the 1930s, most hybrid hazelnuts currently available are open-pollinated and seed-propagated, which means that the vast majority of hybrid hazelnuts in our region originate from seed collected from select female plants with unknown male parentage. This means that the superior genetics responsible for the outstanding yields of the mother

plant are not consistently passed on to their progeny. A few progeny may be like their parents or better; however, most will be inferior and they will all be different from each other. Although diversity is an asset from an ecological standpoint, it is exceedingly challenging to manage a commercial crop with plants that are of vastly different sizes, with different ripening dates and different nut characteristics. The lack of advanced varieties of regionally adapted and genetically predictable hazelnuts is thus the first bottleneck to the goal of developing a regional hazelnut industry. Addressing this is our **first objective**.

The second bottleneck is the lack of commercially viable methods of vegetative propagation. Breeding for predictable genetics in seeds, as found in agronomic crops such as corn and soybeans, is impossible for perennial horticultural crops such as hazelnuts because of long generation times and barriers to self-pollination. This is why the majority of commercial horticultural crops are propagated vegetatively, which results in clones with identical genetics to their parents. Vegetative methods include grafting for apples, stem cuttings for grapes, and layering for many ornamentals. Mound layering is the most reliable method with hybrid hazelnuts thus far, but it is capable of producing only a few new plants per year from each mother plant, and thus will not be able to supply growers with the large numbers of clonal material needed for a commercial crop. The development of more productive vegetative propagation methods for bush-type hazelnuts, such as stem cuttings and tissue culture, will thus be crucial to the development of a regional hazelnut industry, and is the **second objective** of our project

Vegetative propagation also enables us to properly evaluate reputedly outstanding individual plants. Currently, selections have been based on observations of single plants, which may be performing well because of outstanding genetics, or because they happen to be growing under exceptionally good conditions, or because of an interaction between these two. The truly outstanding plants are outstanding because of their genetics, not because of their environment. Vegetative propagation methods help us distinguish between the two. By cloning each candidate plant and placing it in triplicate in performance trials alongside other candidate plants, all managed uniformly, we can identify those plants that are best because of their genetics. With performance trials in different locations with different conditions we can verify that the genetics stand up to different environmental demands.

Conversely, in agronomic trials, to determine best management practices for growing hazelnuts, we want to be sure that the responses we observe to different agronomic treatments, such as variable rates of fertilizer, are due to those treatments, and not due to variable genetics. Thus the development of vegetative propagation techniques capable of producing large numbers of clones will help in our **third objective**, which is to conduct agronomic trials in order to develop management recommendations for hazelnut growers, about such things as transplanting, weed control and fertilization. Development of research based recommendations for hazelnuts in the Upper Midwest has, until now, been hampered by the lack of clonal material as well as the lack of resources for concerted research efforts.

Our **fourth objective** is to take the products of our other work (improved hazelnut varieties, and information on propagation and production) out to hazelnut growers and the public through outreach activities.

Goals and Outcomes Achieved

Objective 1: Germplasm Improvement

- a. **Hybrid Hazelnuts.** We well exceeded our goal to establish 60 genetic lines in triplicate at each of four performance trials: in 2011 we added a fifth germplasm performance trial, near Tomahawk, WI, and added 14 new genetic lines to the existing four trials, which are at St. Paul, Lambertson and Lake City, Minnesota, and at Bayfield, Wisconsin. Thus a total of 109 genetic lines of hybrid hazelnuts are now represented in the five trials. In 2011 we also expanded the genetic base of our material by including a few lines from sources other than Badgersett Research Farm, including material from Grimo Nut Nursery in Ontario and St. Lawrence Nursery in New York. In 2011 we also collected our first nut yield data from the oldest (layered in 2008) and most precocious plants in the trials.

We expect to collect data for at least three years, preferably five, before selecting the best, which will either be disseminated to growers and/or used as parent material for controlled crosses to develop even better material. To speed up the process, in fall 2012 we plan to plant out the nuts harvested from those sites which do not have other hazelnuts nearby (St. Paul and Lambertson) and which thus will have been pollinated only by plants that are potentially desirable. We will keep track of the female parentage of these seedlings, which will be four years old by the time we have five years of yield data from their mother plants. We will then cull progeny from undesirable mother plants and keep progeny from desirable plants for further evaluation. Although the male parent will be unknown, we will know that it was at least good enough to have been included in the germplasm performance trials. By doing this we will speed up our plant improvement program by four years.

Starting in 2009 we attempted to inoculate each of the performance trials with Eastern Filbert Blight (EFB), in order to screen for EFB resistance. The low-tech method we used is simply to tie segments of stems from infected plants to healthy plants. However, it was difficult to get enough infected material to cover all of our plantings with this method. (We don't find many infected plants, which suggests that the material we are working with already has a high level of resistance, which is a good thing.) Moreover, this method is only effective if the weather is rainy during the infective period in late April, which it has not been in recent years. So in 2011 we switched to a method involving inoculating potted plants in humidity tents in the greenhouse, then transplanting these plants to the field. Because EFB has a two year life cycle, will take several years before we know whether this worked.

Lois Braun coordinated the performance trials, with help from student workers, experiment station personnel, and from Norm Erickson, who hosts one of the trials on his farm. The Bayfield Wisconsin trial is coordinated by Jason Fischbach, the agriculture extension agent there. The Tomahawk WI trial is coordinated by Mike Demchik a professor at U.W. Steven's Point, and Kevin Burns, research coordinator at Treehaven, which is U.W.'s natural resource field school. Hazelnut growers have

been instrumental in helping to identify what plants to include in the trials, and have sometimes helped with setting up and harvesting the mound layers.

- b. ***Corylus americana***. In July and August 2011 we identified 11 new stands of wild *C. americana*, and returned to the best 9 of the stands we identified in 2010. At each site, plants with the best combination of nut load and nut quality were tagged and their locations noted with GPS coordinates. Visual assessments of yield were the initial “draw” to a plant, after which a few nuts were cracked to be sure they were filled out. If they were blank, had defects or other undesirable qualities, such as exceptionally thick shells, they were rejected. If the nuts proved to be of acceptable quality on cracking out, the bush was tagged for evaluation again next year. If the nuts were mature, a few were collected for numeric nut quality evaluations in the lab, though timing visits to coincide with the narrow window of time after nuts mature but before they are predated by wildlife prevented us from harvesting every bush, which is complicated by variable maturation dates. We visited some of the sites a second time to harvest late-maturing nuts. In order to sample as many bushes as possible within this small time frame, we decided not to collect yield data, relying instead on subjective assessments of yield. We will scout these 20 sites again in 2012, and make selections from them to add to the germplasm performance trials, along with approximately 20 *C. americana* identified by our colleagues in Wisconsin, for a total of approximately 40 new *C. americana* genotypes.

In Minnesota, initial scouting, to identify sites with significant hazelnut populations, was done by Lois Braun, after consulting with DNR personnel and others about what locations would be productive. Follow-up scouting, to identify the best plants within each site, and to harvest nuts, was done with the help of two undergraduates. Jason Fischbach and Mike Demchik coordinated the scouting for C. americana in Wisconsin.

Objective 2: Propagation Trials

- a. **Hardwood cutting trials.** We have made progress in developing the hardwood stem cutting method, but work is still needed. In 2010 we found that although only 24% of stem segments rooted, for every 100 stems collected we obtained 87 rooted cuttings. This is because each two- to four-foot long stem collected can be cut into multiple six- to eight-inch long segments. This ratio of 87 new plants for each 100 stems collected is more productive than the 56% rooting success we have found for mound layering. However survival during the transition from the high humidity rooting chambers to the greenhouse was only 66%. Survival after transplanting to the field was better, at 89%. Combining the two survival rates, overall survival was 59%, which is very low compared with survival for mound layers which is typically better than 95%. Thus mound layering is still a slightly more productive propagation method of the two, with 53 viable plants for every 100 stems, as compared with 51 for stem cuttings. There is room for improvement with the stem cuttings, especially during the hardening-off phase, which future research will need to address.

In 2011 we repeated the 2010 stem cutting trial with different variables. Although results have not yet been statistically analyzed, our subjective impressions are as follows: 1) Starting the cuttings in early February rather than in March improves survival during hardening off, probably because earlier cuttings are hardened off in May, when conditions in the greenhouse outside of the humidity chambers are not as extreme as they are later in the summer. In 2011 we will try starting them in

January. 2) Larger stem segments are more likely to survive after rooting than smaller segments, and thus it is not productive to divide stems into a large number of small segments. Determining the ideal segment size will help us maximize the method's productivity. We can also report that the method works with wild-collected *C. americana* stems, and that stems cut off the tops of rooted layers can also be made to root, as a way of getting two new plants for one.

We also attempted to replicate the method in an on-farm greenhouse and on the sun porch of a cooperating grower. Neither attempt was successful, we suspect because of lack of supplemental light at these locations. We plan to test that in 2012.

Lois Braun performed these trials in 2010. In 2011 she was assisted by Meagan O'Brien, with funding from the Undergraduate Research Opportunities Program.

- b. **Stock Plant Beds.** By the end of 2010, approximately 600 plants, representing approximately 40 genetic lines, had been planted into stock plant beds. These were plants which were generated by propagation experiments or were extras from the performance trials. They will be used to provide material for future propagation experiments and agronomic trials. Plans to start mound layering experiments with them in 2011 were postponed a year on the advice of researchers from Oregon who said that mound layering is most likely to be successful with more mature plants. The plants generated from these trials in 2012 will be used for some of the agronomic trials described below. No new plants were added to the stock plant beds in 2011 because we decided that 600 were enough. Instead, in 2011 the 266 surplus plants were planted ahead of schedule at sites for future agronomic trials.

Lois Braun coordinated the planting of the stock plant beds, assisted by student workers, experiment station personnel, and on-farm hosts.

- c. **Micropropagation.** Although our proposal did not include research into micropropagation, we would like to report that our colleague, Brent McCown, at the University of Wisconsin, Madison, has made good progress developing micropropagation techniques for bush type hazelnuts. We are hopeful that this will be the method that will enable us to scale up rapidly once we develop advanced selections.

Objective 3: Agronomic Trials

- a) **Transplant Timing and Type.** At the time we wrote our proposal in 2009, it appeared that low survival of hazelnut transplants was a major challenge. A survey of hazelnut growers found that survival of the 4-month old 6-inch tube-grown seedlings most commonly available at that time averaged only 28%. So one of our objectives was to figure out how improve survival. However, between writing our proposal and starting our project we determined that either field-grown seedlings, or vegetatively propagated plants, not "tubelings" would probably be method of

propagation of the future, and thus there was no justification in testing the tubelings. Instead, we turned the proposed trial into a comparison between fall and spring transplanting of mound layers, and between mound layers transplanted immediately after digging, layers grown out for an additional year in a nursery, and two-year old field-grown bare-root dormant seedlings.

We found no significant difference between rooted mound layers transplanted in November 2009 and April 2010: survival, as of fall 2010, was 91% and 89% for fall- and spring-transplanted respectively, a difference that is statistically insignificant. This is good news because it gives us flexibility in transplanting time, enabling us to better work around unpredictable weather. Although this survival rate was short of our target of 98% survival, we are satisfied with these results because the plants used for these trials were the weakest mound layers harvested that year (because they were left over after the best had been used for the performance trials and the stock plant beds). Because survival strongly correlated with quality of transplant, we are confident that if the best transplants had been used survival would have met our 98% target.

These trials also found no difference in survival between high quality 2nd year layers (layers that had been grown out in a nursery for a year before transplanting to their final locations) and high quality two-year old bare-root dormant seedlings, both of which had 100% survival. This excellent survival was probably because, with an extra year of growth, these plants were much more robust at transplanting time than the younger plants had been. Moreover, any weak plants would not have survived that extra year and thus would have been culled before inclusion in the trial. Based on these results, we recommend that planting stock be grown out in a nursery for a year before it is transplanted to the field, even though this would increase production costs.

We did not repeat this trial in 2010 going into 2011 because we had more important uses for our limited planting stock and because we were satisfied with our results. However, another year of observation of the 2009 transplants showed that although weak transplants may have survived, their growth continued to be stunted through the second year, relative to more vigorous transplants. This further supports our assertion that transplant quality is of utmost importance, and that money spent to purchase quality transplants is well spent.

These trials were conducted on the farms of five cooperating growers (Don Price, Roy and Teresa Cerling, John and Terry Cuddy, John Munter, and Bruce West), as well as at UMORE Park (Rosemount).

Other Agronomic Trials. In our proposal for this grant, we described three additional agronomic trails which we planned to do, but only after sufficient clonal plant material could be produced from the stock plant beds mentioned in 2b above. Using clonal material for these trials will be important to eliminate the genetic diversity that would otherwise confound results. Thus the site preparation and weed control trial is on hold until sufficient plant material can be produced, whereas the cover crop trial may be delayed indefinitely, because we now realize that existing information about cover crops in other woody crops is probably transferable to hazelnuts. Although hazelnut-specific recommendations on cover crops would

be nice to have eventually, they are not priority at this time. We did, however, find ways to forge ahead on the nitrogen fertilization trials described in the proposal, as described below. Moreover, we decided to initiate several other trials not described in the proposal, because of observed need and new opportunities. I include descriptions of them here to demonstrate how we are “stretching the goals.”

- b) **N Fertilization:** Although the dissertation research on the N requirements of hybrid hazelnuts by Braun (2011a and b) determined that hybrid hazelnuts have very low N requirements during their establishment and early nut bearing years, the N requirements for sustained nut production have still to be determined.

Staples. In 2010 we initiated an N fertilization trial on the ten year-old seed-propagated planting at Staples. Although genetic diversity is a factor there, we felt that the six years of yield data we already have on it could be considered as a covariate in the data analysis, effectively eliminating this concern. This site was chosen because it was the only site at which a definitive growth response to N fertilization was observed in earlier research (Braun, 2011b), and because yields have been declining there in recent years, likely due to N deficiency.

This experiment was designed to test the concept of basing application rates on sufficiency levels of leaf N, as defined either by recommendations from Oregon or from Braun’s earlier research. Thus we needed a planting in which plant to plant leaf N levels were variable to start with. To set this up, we applied variable rates of N in May 2010, basing our rates on average bush size, which is standard practice for woody crops, though it needs to be calibrated for bush-type hazelnuts. The range of rates we chose (0, 10, 20, and 40 g N m⁻³ of plant canopy volume, which equals 0, 40, 80, and 160 g N^{-plant}) turned out to be too high: all but the control resulted in leaf N, measured in August, that was well above the sufficiency threshold of 2.1%, with a flat response above the 10 m⁻³ rate. (There was no growth or yield response in that first year, as expected due to a lag effect that is typical for woody plants.)

Our over-application of N was very helpful in teaching us to better calibrate the two new N trials we started in 2011 (described below) but it seemed initially to have ruined the Staples trial itself, until we realized that it afforded us an opportunity to test how well hazelnuts hold on to the N that they have taken up. Theoretically, woody plants are very efficient at recycling previously assimilated N. If these theories are correct, there should be growth and yield responses to N applied in 2010 for several years into the future. Our current plan is to monitor this, and to resume our original plan to apply variable rates of N after we start observing leaf N levels near the sufficiency threshold. (2011 growth and yield data has not yet been analyzed.)

Clonal Plantings. Two hazelnut growers in the region already have plantings of mature clonal plants, which they kindly let us use for the N fertilization trial described in the proposal, so we would not have to wait the years needed for clonal material from our stock plant beds to come to maturity. We collected baseline data on leaf N, bush size, and nut yield from these two plantings in 2010, and made the first N applications in May 2011,

assigning treatments within blocks based on initial leaf N and plant size. After our mistake at Staples, we chose a lower range of N rates to test: 0, 2.5, 5, 10, and 15 g N m⁻³. We collected the first response data in fall 2011. This data has not yet been analyzed, but even if it had, we would not expect to see a response until the second year (with the exception of leaf N levels) because there is typically a lag in growth and yield response to fertilization in woody perennials. These trials will continue for at least five years. As mentioned in section 2b above, in fall 2011 we found that we had enough clonal planting material to start two additional plantings which will eventually be available for additional N fertilization trials, though we will have to wait for several years before they come into nut bearing.

The N fertilization trials are a collaborative effort between the staff at Staples Ag Center, growers Tom Stecklein, Roy and Teresa Cerling, and Lois Braun.

- c) **K Fertilization.** Yields of the planting at Rosemount, for which we have data dating back to 2005, have been declining in recent years. We suspect yields may be limited in part by K deficiency because that site has low soil K and because in previous research we found that K was limiting growth there (Braun, 2011b). Potassium deficiency can be challenging to correct in woody crops because K is not mobile in the soil. This is why we suspect that there is still a K deficiency at Rosemount even though we already tried to correct it. Since several of our growers are also challenged with low K we feel it important to address. Thus we initiated a K rate trial at Rosemount in spring 2011, with rates of 0, 80, 160, and 320 g K-plant, ground-applied as potassium sulfate. Responses measured include leaf K, plant size and yield. Only the baseline data has thus far been analyzed.

Lois Braun is coordinating this trial, with help from the staff at Rosemount and student workers.

- d) **Plant Spacing/Thinning.** In 2010 we also initiated a plant spacing/thinning trial on the Gibson farm near Montevideo. This planting, for which we have six years of yield data, has consistently produced the highest yields of any we have observed, but was becoming so crowded it was difficult to work in it. An analysis of 2009 yield data showed that the highest yielding plants were those that had gaps on one or both sides of them. So in April 2010 we removed all plants for which we did not have data, creating a patchwork of plants that had been released from competition on both sides, one side, or no side. If the yield increases from double-side release exceed yield presumed lost from the removed plant, we will recommend wider spacing on future plantings. Yields in 2010 were down, probably because of alternate bearing, but were up again in 2011. The 2011 data has not yet been analyzed. After yields have stabilized from the thinning experiment, we plan to add coppicing and pruning treatments to this planting, as described below.

This trial was the idea of hazelnut grower Dennis Gibson. Lois Braun helped him figure out the experimental design and has been coordinating the data collection.

- e) **Coppicing and Pruning.** At some of the older hazelnut plantings we work with, the plants are getting to be so large that they are difficult to pick, both by hand and by machine. Badgersett Research Farm recommends coppicing the plants to the ground when this becomes a problem, but doing so eliminates two years of harvest. We have recently begun to consider pruning hazelnuts instead, which reputedly also reduces their alternate bearing habit. However, we do not know how hazelnuts will respond to pruning, nor what approach to use in pruning them. Therefore, in 2012 we will be initiating trials to compare various pruning approaches with coppicing. In 2011 we collected baseline yield data for these trials from three experiment station plantings and one on-farm planting.

This trial will be coordinated with Lois Braun, with help from hazelnut grower Don Price, and student workers.

Objective 4: Increase Grower Knowledge

The first and second annual Midwest Hazelnut Conferences were held during the project period of this grant. The first was in LaCrosse, WI, March 12 and 13, 2010, organized by Jason Fischbach of University of Wisconsin Extension, and the second in South St. Paul, MN, March 4 and 5, 2011, organized by Jeff Jensen of Rural Advantage. Attendance at these conferences was 90 and 48 respectively. Attendees were a mix of current and prospective growers, and a few who were merely curious. Research findings from this project were reported at both.

In addition, Rural Advantage hosts annual field days, called “Walk-n-Talks”. Five Walk-n-Talks within the grant period focused on hazelnuts:

- June 2010 – Hazel Acres, Fenton IA – 12 attendees
- June 2010 – Dennis Gibson Planting, Montevideo MN – 15 attendees
- October 2010 - Hazelnut Valley Farm, Lake City MN – 35 attendees
- July 2011 – Hazel Acres, Fenton IA – 22 attendees
- October 2011 - Hazelnut Valley Farm, Lake City MN – 41 attendees

Norm Erickson’s field day is an annual event comprised of seminars in the morning and outdoor sessions in the afternoon.

In addition, hazelnut research at three U of M Experiment Stations was showcased as part of larger field days. These were:

- The Organic Field Day at SWROC, Lamberton, in July, 2010, attended by approximately 100 people.
- The Agronomy Centennial Celebration in St. Paul in August, 2010, attended by approximately 80 people.

- The Rosemount Research and Outreach Center's annual open house in August, 2010, attended by approximately 2,200 people. An estimated 100 people visited the hazelnut booth staffed by hazelnut grower Norm Erickson and Lois Braun.

Finally, the Upper Midwest Hazelnut Website (www.midwesthazelnuts.org) *has proven to be an extremely useful channel to get research results out to growers just as soon as it is developed. The site typically has about 200 visitors per week.*

Beneficiaries

A 2010 survey of hazelnut growers conducted by U W Extension identified 32 growers in Minnesota and a total of 127 in the region. This is likely an underestimate. (These numbers are lower than previously reported because some growers on our previous list could not be verified.) An estimated 500 people, including both growers and the general public, have been reached by our outreach events in the two years of the project, as outlined above. Independent outreach by members of the Minnesota Hazelnut Foundation has reached another 600 to 800 people.

Current and future growers are the proximal beneficiaries of this project, though the distal beneficiaries—consumers, the environment, and the state economy, in other words, the public at large—are no less important. The estimated value of the Oregon hazelnut market was estimated at \$75 million in 2007. We do not know if a Minnesota hazelnut industry can come close to that, but we do anticipate that the economic contribution of hazelnuts will be significant because of their low production costs, and because they can be grown without taking land out of production of other crops. Moreover, they will also reduce the need for taxpayer spending on mitigation of the environmental problems caused by annual crops planted on unsuitable land, such as flooding and water contamination. But none of these benefits—improved farm income, tasty and nutritious local food, a more sustainable agricultural system-- will be realized until there are more hazelnuts in the marketplace and on the landscape, and that is up to growers. That is why we are focused first on providing growers with the information and germplasm they need to grow hazelnuts more successfully and, we hope, to realize a return on their investments more quickly.

Preliminary results from the agronomic trials should start to come in just a few years, with the exception of the transplant timing and type trial, which is already complete and has already been presented to growers at the 2011 Midwest Hazelnut Conference, which was attended by 48 people. We hope that prospective growers who had been discouraged from growing hazelnuts by reports of low survival of tubelings have been encouraged that high survival is possible with better planting stock. Although we are not yet able to present definitive recommendations on such things as fertilization or weed control at our outreach events, we are confident that the information we do present—and the sharing that occurs between experienced and new and prospective growers at these events—is helping new generations of

growers avoid the mistakes of the pioneering generation. We need to attract new growers if we are to grow this industry, though we try to make it clear to potential new growers that because this industry is in its infancy they should not expect quick returns. Rather, they should consider growing hazelnuts to be a long-term investment, which may benefit future generations more than their own.

Likewise, the germplasm improvement and propagation work that were a major part of this grant are long-term projects, for which we do not expect to see the benefits for another decade or longer. A journey of a thousand miles begins with a single step. Because of this grant, we were able to demonstrate our ability to start a long-term hazelnut improvement program at the University of Minnesota, which was instrumental in securing enough funding to keep this program going for another five years through a SARE grant and a Federal Specialty Crop Research Initiative Grant. We might thus say that the biggest beneficiary of this grant was our vision for a bio-economy in which perennial native crops such as hazelnuts make a significant contribution towards human nutrition and energy supply while nurturing the land that sustains us.

Lessons Learned:

Germplasm Improvement. Our approach to finding exceptional *C. americana* in the wild calls for a rapid screening one year, followed by a return to the same plants the following year to see if they perform consistently well over multiple years. This requires marking them so we can find them again. We have been using a combination of plant tags and GPS coordinates. But we learned that this is easier said than done. We belatedly realized that the resolution of our GPS units was not fine enough to distinguish between bushes within 10 feet of each other. Since many hazelnuts grow in thickets, in which it is difficult to distinguish individual plants from each other, a ten-foot resolution was clearly not good enough. Plant tags help, but fade, break off, and become obscured by new plant growth. Large, durable and brightly colored tags are needed. It helps to sketch maps of our sites, with landmarks and verbal descriptions, but even so, finding our way back to the same plants next year will not be easy.

Propagation. The productivity of mound layering declines with successive years of layering the same plant. This is probably because girdling all the crown suckers slowly starves the mother plant's root system by depriving it of photosynthates. The way to avoid this is to leave an uncoppiced and ungirdled "nurse" stem to supply nourishment to the root system. But there is a trade-off: we found that plants without a nurse stem generally produce more abundant and more vigorous new shoots in the first year after coppicing than those with one, which results in more new plants that first year.

Some genotypes do not root as well as others, for unknown but probably genetic reasons. For those that failed to produce the fifteen rooted layers we needed to plant five sites in triplicate, we attempted to fill the gaps in subsequent years by layering the same plants again. Although this worked for some plants, it

did not for others, and for most plants a third year of layering was a completely wasted effort. In some cases a contributing factor appears to have been that coppicing put a plant at a relative disadvantage to its neighbors in the row, which were then able to shade it out. We have thus concluded that to maintain mound layering “stool beds” over many years will require either widely spaced plants or that adjacent plants in a row be coppiced together.

One of the objectives of the mound layering trials we plan for the stock plant beds, to start in 2012, will be to figure out how to balance high production and sustained production. Fertilization and irrigation might help. It may also be more productive, once the stem cutting method is better developed, to use the stock plant beds for production of hardwood stems instead of layering. Because hardwood stems are the same kind of stem that is used in layering that have just been allowed to grow through the whole season without girdling, this may be a better way to maintain the health of the stock beds’ root systems.

N Fertilization: The method we used to estimate what N fertilization rates to include in our trial at Staples greatly overestimated N requirements. This was based on the assumption that N requirement increases in proportion with bush size, which can be approximated by calculating bush above-ground volume from measurements of height and spread. By combining the N rate at which N response leveled off, with size of plants, described as height times canopy area (“canopy volume”), Braun (2011b) estimated that the optimal rate should be about 20 g N m^{-3} of plant canopy volume. The range of rates used at Staples (0, 10, 20, and 40 g N m^{-3} , which, for these plants which now average 4 m^3 , equals 0, 40, 80, and $160 \text{ g N}^{-\text{plant}}$) spans this, but proved to be way too high. We conclude that plant canopy volume is not a good way of approximating plant size. It was useful to learn this at Staples before starting the trials with the two clonal plantings, where we chose a lower range of rates to test (0, 2.5, 5, 10 and 15 g N m^{-3}).

Contact Person

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References

Braun, L.C., J.H. Gillman, E.E. Hoover, and M.P. Russelle. 2011a. Nitrogen fertilization for new plantings of hybrid hazelnuts in the Upper Midwest of the USA. *Can. J. Plant Sci.* 2011. 91:773-782

Braun, L.C., J.H. Gillman, E.E. Hoover, and M.P. Russelle. 2011b. Nitrogen fertilization for young established hybrid hazelnuts in the Upper Midwest of the USA. *Can. J. Plant Sci.* 2011. 91:907-918.

Upper Midwest Hazelnut Development Initiative website: www.midwesthazelnuts.org

Project J

**Northarvest Bean Growers Association
Final Report**

Project title: Strengthening Value-Added Programs for Dry Edible Beans

Specialty Crop Grant Final Report

**Project B26845
Northarvest Bean Growers Association**

Outline of the Issue/Need for Projects

To enable the Northarvest Bean Growers Association (NBGA) to develop a scalable, sustainable, and measurably effective program of electronic-based health communication targeting dietary professionals in their roles as “health influentials.” The goal of this program, broadly stated, is to increase awareness of the health benefits of dry beans among select groups of dietary professionals resulting in an increase in recommended levels of use of beans in healthy diets among consumers they reach.

Projects to be undertaken to address the Issue

Project 1: Development and launch of a new health related website for dry beans

Project 2: Establish editorial newsletter board

Project 3: Electronic newsletter to dietitians

Project 1: Development and launch of a new health related website for dry beans

Project Summary

The Northharvest Bean Growers Association has, over the preceding decade, advanced a number of initiatives to increase awareness of the dietary benefits of dry bean use. The level of investment and expertise required to sustain mass-market programs has proven problematic, and has contributed to a more focused and cost-effective strategy described here.

Project Approach

Northharvest had ongoing discussions with Dr. Bill Lesch, chairman of UND Marketing Department regarding the model, process, outcomes, and cost associated with web development, assembling and distribution of electronic newsletter. It must be noted from the outset that it takes a team of talented individuals to plan and implement a project with so many “legs,” since the talents and materials required are not within the span of control of any single individual.

Project Goals Achieved

Competitor website review and analysis was undertaken and concluded by;

RESEARCH AND PRODUCTION-UND

Dr. Mary Askim-Lovseth, Survey Research and Production

Ms. Rachel Lundbohm, Production Manager and Contractor Liaison

Ms. Corrine Iverson, Production and Traffic Coordinator

Mr. David Konerza, Research Design and Editorial Review

Mr. Kevin Williams, Research

Beneficiaries

To increase awareness of the health benefits of dry beans among select groups of dietary professionals resulting in an increase in recommended levels of use of beans in healthy diets among consumers.

Results, Conclusions and Lessons Learned

February 2010 UND launched the fully operational and trade marked Bean Institute web site.

The web address for The Bean Institute is www.beaninstitute.com. Working with a team of professionals under the supervision of the UND Marketing Department chair instilled confidence in our approach to developing the health web site. UND also aided the trade marking of the name; Bean Institute. Following launch Northharvest needed to enhance and promote the site.

Communiqué Inc of Jefferson City Missouri added a search function, overhauled and worked on

technical issues with Farm to Fork, added registered dietician educational power point presentation titled Beans 101, added new section called “Latest Research” and promoted the site by email to some 36,000 registered dietitians. Monitoring the web activity showed we were beginning to get some traction by June and hits on the website have come from nearly a dozen countries around the world.

Project 2: Establish editorial newsletter board

Project Summary

UND to assemble editorial newsletter board for Northharvest to support development of an electronic newsletter to dietitians touting health benefits

Project Approach

Earlier Northharvest produced a comprehensive beans and health literature review and hosted a gathering of some 30 scientist to further tout health benefits and beans. This became our pool of candidates.

Project Goals Achieved

UND was able to pool, screen and obtain the services of four individuals to produced copy and design layout for a Dry Bean Health Newsletter

EDITORIAL BOARD

Ms. Amy Myrdal-Miller, Culinary Institute of America

Dr. Julianne Curran, Product Innovation Manger, Pulse Canada

Dr. Cliff Hall, Associate Professor, North Dakota State University

Dr. Andrea Hutchins, Associate Professor, Colorado State University

Beneficiaries

Credible message, target audience and ultimately the consumer.

Results, Conclusions, and Lessons Learned

With the final selection of the two practicing researchers and two practicing dietitians that demonstrate the ability to write, be published and demonstrate a strong willingness to participate to further tout the health benefits of beans is achieved with the above mentioned individuals. Some candidate showed an interest but these individuals demonstrated a commitment.

Project 3: Electronic newsletter to dietitians

Project Summary

The development and launch of an electronic newsletter to dietitians touting the health benefits of dry bean

Project Approach

Northarvest had knowledge of another commodity that successfully developed and distributed an electronic newsletter to the dietetic community. We followed their blue print minimizing any delays and cost over run.

Project Goals Achieved

Northarvest contracted with **Steve Veile, COMMUNIQUÉ, Inc., Jefferson City, MO** to begin work with our established editorial board to develop and launch an electronic newsletter to dietitians touting the health benefits of dry bean use. June 11 the first issue of Dry Bean Quarterly (DBQ) was distributed electronically and reviewed by 6,425 registered dietitians. DBQ is posted on www.beaninstitute.com.

Beneficiaries

Dietitians are delivered scientific evidence touting the health benefits of beans and in the position to educate the consumer. The consumer is in the position to make smart choices and increase demand for dry bean.

Results, Conclusions, and Lessons Learned

Communiqué consulted with editorial board about content, selected newsletter themes, contacted potential authors for articles, designed masthead, edited articles as they were submitted by authors, created email version of newsletter, created layout for print newsletter, received approval from editorial board to send email version. Communiqué publishes another health research newsletter (Soylink) and manages the soy web site. The experienced management of Communiqué helped Northarvest target the correct set of dietitians within the very diverse group of dietitians belonging to the American Dietetic Association.

Long-Term Outcome Measures

Northarvest will track (through its consultant Communiqué) the influence the health newsletter has on the dietetic community, track the number of dietitians that find the information useful and track the number of visitors to the Bean Institute web site.

Northarvest extends its deepest appreciation to the Commissioners and staff of the North Dakota and Minnesota Departments of Agriculture, and the United States Department of Agriculture for their efforts to advance this and related programs.

**Specialty Crop Grant Project B26845
July 12 2010**

Income Received

Minnesota Department of Agriculture.....	\$ 20,000
North Dakota Department of Agriculture.....	\$ 20,000
Northharvest Bean Growers Association.....	\$ 25,000

Budget Expenditures

Commitments through June 30th were distributed as follows:

UND consulting, trade marking, and professional web services	\$35,953
Communiqué web and electronic news letter development.....	\$29,047

Contact

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Project K
 FINAL PERFORMANCE REPORT

PROJECT TITLE

Expanding the Potential of Native Turfgrass Seed Production

PROJECT SUMMARY AND MOTIVATION

Currently, there are over 40,000 acres of grass seed production in northern Minnesota; this acreage includes native and non-native species with a majority of the acres dedicated to perennial ryegrass and Kentucky bluegrass—both species that require significant inputs of fertilizer and pesticides in order to perform well in both turf and seed production environments. The addition of new, more sustainable turfgrass species to the seed production economy of northern Minnesota could result in significant additional economic return to farmers and the rural communities in which they live. This research project was initiated to favorably position turf seed production research in Minnesota for future public and private investment. The objectives of the proposed research were to determine the seed

production potential of the native grass prairie junegrass (*Koeleria macrantha*) in Minnesota and evaluate the species for use as a low-input, sustainable turfgrass.

PROJECT APPROACH

Objective 1: Seed production trials

Replicated seed production management trials were planted in summer 2010 at the University of Minnesota Research Farm in Roseau, MN and the Sand Plain Research Farm in Becker, MN using advanced breeding populations of prairie junegrass from the University of Minnesota turfgrass breeding program. The first trial was planted as a randomized complete block design consisting of four replications with a split-split plot restriction on randomization. Planting date (3 dates) was the main plot, planting density (3 densities) was the sub-plot and breeding population (3 breeding populations—MN, ND, and CO) was the sub-sub plot. The second trial was designed in a similar fashion with the same breeding populations as the main plot, nitrogen rate as the sub-plot, and plant growth regulator (3 rates) as the sub-sub plot. Because the stands were not yet to a point of sufficient reproduction, the treatments in the second trial were not initiated as planned; instead, they will be initiated in spring 2012 with data analysis to follow. We were only able to analyze data on whole plots for the second trial. In trial 1 at Roseau, we found that the June and July seeding dates resulted in significantly superior stand ratings the following year compared to the September seeding date (Table 1). Interestingly, at Becker, we found the opposite result; the September seeding date resulted in the best stand rating both in the late fall of the year of seeding and the following spring. These divergent results would indicate the importance of management recommendations based on location within the state. One explanation for these results may be the cooler, wetter weather that is common in Roseau compared to Becker; it is likely that the young stands of prairie junegrass experienced severe summer stress at Becker, thereby preventing significantly stand development. At Roseau, these young plants were able to thrive absent of severe summer stress.

Another interesting result in the first trial was that at Roseau, populations developed with germplasm originating from North Dakota and Colorado out-performed the population from southeastern Minnesota for percent stand ratings in both May 2011 and August 2011 (Table 2). At Becker, there were no differences in population performance, and by the end of the 2011 growing season, we observed

much less leaf rust disease in the plots seeded with material from Minnesota while those populations from North Dakota and Colorado suffered intense rust disease pressure.

Objective 2: Low-input Turf Evaluation

Advanced breeding lines and selections of prairie junegrass were used to establish turfgrass evaluation plots in fall 2010. Plots were 1.4 m² and the trial was planted as a randomized complete block design with 3 replications (advanced selections with inadequate seed yields were included in either 1 or 2 replications). The plots were maintained under low-input conditions (no pesticides, fertilizer, or supplemental irrigation after establishment, mowing height of 7.5 cm). In October, 2010, data was collected on turfgrass establishment. In 2011, data has been collected on overall turfgrass quality and leaf rust disease incidence. A number of native lines showed reduced levels of leaf rust and acceptable turfgrass quality under low-input conditions. These lines will be advanced in the germplasm improvement program.

ROLES OF PROJECT PARTNERS

University of Minnesota researchers established and conducted research trials on both seed production and low-input turf performance. Seed production trials were initiated in Roseau and Becker, MN and the turf evaluation was done in St. Paul, MN. These partners will continue this research beyond the funding period due to the potential importance of this species in seed production systems in the future. The Minnesota Turf Seed Council was instrumental in coordination of funding and working with seed producers for identifying research space and determining the best methods for information delivery. We will continue to collect data and present at professional meetings such as the Grass Seed Institute held each February in Roseau, MN.

GOALS AND OUTCOMES ACHIEVED

Outcome 1: Seed Production

Because the development of harvestable stands took longer than anticipated, short-term goals were not met; however, long-term goals can still be reached once we are able to deliver research results to stakeholders. Our initial goals started with 100 acres of new seed production for this species in 2011, followed by 500 and 1000 acres in successive years. This goal was overly ambitious and we could now expect that timeline delayed by 3-4 years. This research project has been important in that it has demonstrated some of the challenges in producing seed in this native, low-input species. Baseline data has not been collected officially; however, because of our close relationship with the seed producers of northern Minnesota, we know that new acreage has not yet been planted.

Outcome 2: Use as Turf in Sustainable Landscapes

Turf data also demonstrated that our short term goal of a cultivar release in 2012 was overly optimistic. We have been working on this aspect of the proposal and will continue this work in the future; in fact, we have already begun preparing to make important crosses between populations of germplasm that we successfully evaluated for low-input turfgrass characteristics as part of this project. The first cultivar release of this species will not happen for at least 3 years.

Extension and Information Delivery

Research updates were given at the Grass Seed Institute in both 2010 (100 attendees) and 2011 (50 attendees). Further updates will be given in February 2012. Research updates were also given at the Grass Seed Research Tour in 2010 (approx. 100 attendees) and 2011 (approx. 100 attendees). Because this work is ongoing, we will also show growers the plots and discuss progress at the 2012 tour.

Once we are able to get seed production on these plots (we are continuing the work beyond the grant period—seed will be harvested in summer 2012), we will post results on the Minnesota Turf Seed Council website: http://www.mnturfseed.org/html/progress_reports.html (this is a better location for this information than the forages website listed in the proposal). These progress reports are also

distributed in hard copy form to seed producers each year at the Grass Seed Institute held in Roseau, MN (approx. 100 attendees). When the turf trials have run their complete course, and data is analyzed, results will be posted at www.turf.umn.edu.

Additionally, Dr. Watkins has presented these research results to a wider regional and national audience, including an online seminar for the United States Golf Association (held on September 14, 2011); the Northern Green Expo in Minneapolis (January 4, 2012); and the Idaho Horticulture Expo (January 20, 2012). Audience members included those interested in all aspects of this species from turf use to seed sales to seed production. This research will continue to be presented to state, regional, and national venues for a numbers of years.

Why were goals not achieved?

The only barrier to full completion was the slow growth rate of the junegrass when planted in a seed production system. Our initial estimates on the time needed for growth of the plants to a point where they could produce seed were incorrect; however, we now have new knowledge about time needed for maturity to seed production (see 'lessons learned' below).

BENEFICIARIES

Grass seed producers benefited because new information about seeding dates and germplasm populations was found (see Tables 1 and 2; and 'Project Approach' above). This information will form the basis for management recommendations as we move forward with our research efforts in this area. The turfgrass breeding program at the University of Minnesota benefited by obtaining important germplasm data that can be utilized in the overall prairie junegrass germplasm program; this program is unique nationally and should have a major impact on both seed production and turf management in Minnesota in the coming years due to this work.

Because this research is something that will impact growers in future years, the exact number of growers that benefit is unknown. There are currently some growers of this species (3-5 growers), and

our information will benefit them in that it will provide them with some ideas about when to seed the species when growing for seed in northern Minnesota. In the long-term, as we continue to improve this species, we would expect the number of growers to increase substantially.

LESSONS LEARNED

When we have grown this in breeding nurseries, getting seed production in the time period of the grant is not a problem; however, in a seed production system, this appears to be an issue. We learned that the slow growth of this species will be a great challenge in seed production systems. However, this research has given us important insight into appropriate seeding dates. Although we found no significant effect on stand quality for seeding rate, seed production data in 2012 and beyond may give us valuable information as well. In the future, researchers (or farmers) should expect a longer establishment period (likely more than 1.5 years). One way that a farmer could deal with this is by seeding the prairie junegrass into an existing crop such as wheat (currently practiced with perennial ryegrass in northern Minnesota).

Even though we have not yet completed all proposed activities due to unforeseen circumstances, we will continue this project as laid out in our proposal. We will communicate the results of our work to this point, and in future years, through seminars at professional seed producer meetings and field days. We will also report all scientifically relevant information in appropriate peer-reviewed journals.

CONTACT PERSON

Marvin Zutz, Minnesota Turf Seed Council, Red Lake Fall, MN.

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ADDITIONAL INFORMATION

Table 1. Effect of seeding date on percent stand rating (100% = full stand) in May and August 2011 at Roseau, MN.

Seeding Date	Stand (%)	Stand (%)
	May 2011	August 2011
June 8, 2010	72.1 a [†]	75.8 a
July 20, 2010	70.8 a	76.2 a
Sept 28, 2010	50.0 b	63.8 b

[†]Means followed by the same letter within columns are statistically different ($p \leq 0.05$).

Table 2. Evaluation of three populations for percent stand rating (100% = full stand) in May and August 2011 at Roseau, MN.

Population	Stand (%)	Stand (%)
	May 2011	August 2011
North Dakota	58.3 a [†]	75.8 a
Colorado	66.7 a	77.1 a
Minnesota	39.2 b	50.8 b

[†]Means followed by the same letter within columns are statistically different ($p \leq 0.05$).

Minnesota Grown Promotion Group, Inc.

REVISED - January 23, 2012

Project Title: Strengthening Market Opportunities for Minnesota Specialty Crop Producers

Award Amount: \$75,000.00

Term: November 10, 2009 to April 30, 2011

PROJECT SUMMARY

The purpose of this project was to address four general issues related to the MDA's promotion and market development work for Minnesota specialty crop farmers.

- 1) Wholesale markets such as grocery stores, restaurants, and school food service programs have expressed interest in sourcing more locally grown fruits and vegetables but prior to this project there was no statewide database of growers who sell to them. The Minnesota "regular" Grown Directory is a comprehensive statewide database for *direct marketers* and it includes many growers who only market directly to the consumer. Wholesale buyers don't have time to sort through listings of farmers that don't have the ability to wholesale their products and needed something that would facilitate their purchase of locally grown produce. This project funded the initial development and launch of a new database of growers who market to wholesale accounts.
- 2) Previous Specialty Crop Block Grant funded initiatives allowed us to make major improvements to the Minnesota Grown website. In order to minimize costs, there were several features that couldn't be implemented in the original redesign and that have been added during this project.
- 3) Previous Specialty Crop Block Grant funded initiatives allowed us to create a pay-per-click (PPC) campaign to increase consumer purchases of fruits and vegetables by driving traffic to the Minnesota Grown website. PPC advertising on Google and Yahoo has been an extremely cost effective use of advertising dollars. It is targeted to specific specialty crops, is measurable, and has proven itself to be very

effective at delivering qualified customers to the Minnesota Grown website in order to find a farm near them. This expenditure is a natural complement to the continued improvement to the online Directory.

- 4) The Minnesota Grown Program provides specialty crop growers and their retailers with approximately 1.2 million stickers, price cards and other individual promotional items each year. This project allowed us to develop and print new point-of-sale materials to identify and promote Minnesota Grown fruits and vegetables in grocery stores. These included twist ties with the Minnesota Grown logo that can be used to close bags of produce, stickers that include the Minnesota Grown logo and also have room to write the product price. These are commonly used to label individual produce items such as pumpkins, squash or bags of apples. The new items were suggested by member farmers and retailers.

PROJECT APPROACH

Activity #1: Develop a new database of fruit and vegetable growers who market to wholesale markets such as grocery stores and restaurants.

- *The database was launched in late March 2011. We have more than 60 farms in the database and expect the number of participating farms to continue to grow.*
- *Participation in the database is free to any farmer member of the MDA's Minnesota Grown Program.*
- *Any wholesale buyer may access the database free of charge.*
- *Matching funds were provided by the Minnesota Department of Health (through its Great Trays Partnership that is working on Farm to School issues) and Hennepin County (as part of its Healthy Eating Minnesota project funded by Blue Cross Blue Shield).*
- *Key attributes of the database include:*
 - *Buyers can search for produce from farms that are GAP (Good Agricultural Practices) certified.*
 - *Buyers can search for certified organic produce*
 - *Buyers can search for farms with a specific amount of liability insurance*
- *A prominent link to the database is featured on the main page of www.minnesotagrown.com as well as on the "retailers" page of the website.*
- *Total expenditures of \$17,625 (\$13,218.75 Specialty Crop Block Grant funds and \$4,406.25 matching funds)*
- *Early feedback indicates that this database has the key components needed by buyers in order to source more locally grown produce.*
- *Our next priority is to add more growers to the database.*

Activity #2: Continuation of previous SCBG funded initiatives to improve functionality of the Minnesota Grown website.

- *The home page of www.minnesotagrown.com has been improved to make it much easier for consumers to locate fresh, locally grown products in the online Directory.*
- *Modifications performed to date include:*
 - *The main search box is much larger and easier to navigate.*
 - *Images on the detailed listing pages for farms have been improved.*
 - *Several enhancements have been made in our ability to measure consumer traffic, including the transition to Google Analytics.*
 - *Several modifications to the search page making it easier for consumers to view, sort and search the data.*
- *Total expenditures of \$6,625 (\$4,968.75 federal funds and \$1,656.25 matching funds)*

Activity #3: Continuation of previous SCBG funded initiatives to increase consumer purchases of fruits and vegetables by driving traffic to the Minnesota Grown website

- *The pay-per-click campaign includes Google Adwords and Yahoo. Yahoo Search Marketing is now officially a part of the Microsoft AdCenter so our Yahoo PPC campaign has been transitioned to Microsoft AdCenter. The new Microsoft AdCenter is delivering more results than Yahoo did but Google is still by far the more widely used search engine. One challenge is that Microsoft AdCenter includes Yahoo and Bing so we have seen increased strain on our pay-per-click budget. Additionally, Microsoft AdCenter tends to have a higher “cost per click” than Google Adwords. Total expenditure on PPC ads is \$51,910.41.*
- *SCBG funds are only used for keywords related to specialty crops. Livestock/Meat related keywords are paid for directly by the Minnesota Grown Promotion Group. The only ad campaign that isn't for the sole benefit of specialty crop producers is the ad campaign for farmers markets. In this case, the Minnesota Grown Promotion Group pays 20% of the cost of this campaign with non-SCBG funds to account for the small proportion of vendors selling meat. Here are the most popular groups of keywords paid for with SCBG funds:*
 - *Apples {35,546 clicks per year}*
 - *Most popular keywords:*
 - *Apple orchards in Minnesota*
 - *Minnesota apple orchards*
 - *Apple orchards*
 - *Apple orchard*
 - *Mn apple orchards*
 - *Farmers Markets {22,536 clicks per year}*
 - *Most popular keywords*
 - *Farmers market*
 - *Farmers markets*

- Minnesota farmers markets
 - Minnesota farmers market
- Pumpkins {17,800 clicks per year}
 - Most popular keywords
 - Pumpkin patch
 - Pumpkins minnesota
 - Pumpkin patches
 - Pumpkin patches in minnesota
- Christmas Trees {13,508 clicks per year}
 - Most popular keywords
 - Christmas tree farm Minnesota
 - MN Christmas trees
 - Christmas trees
 - MN Christmas tree
- Berries {13,091 clicks per year}
 - Most popular keywords
 - Minnesota strawberries
 - Strawberries
 - Strawberry picking
- CSA Farms {12,817 clicks per year}
 - Most popular keywords
 - Community supported agriculture
 - Community supported agriculture mn
 - Community supported agriculture Minnesota
 - Organic farms

Wineries {12,388 clicks per year}

- Most popular keywords
 - Minnesota wineries
 - Minnesota winery
 - vineyards
- *The Minnesota Grown Promotion Group (MGPG) also conducts pay-per-click advertising for various products such as meat and livestock that are not specialty crops. These expenses are paid directly by the MGPG to Google and Adwords and are not treated as matching funds for the purposes of this grant.*

Activity #4: Production of point-of-sale materials to identify and promote Minnesota Grown fruits and vegetables in grocery stores.

- *We printed new pricing stickers (stickers of the Minnesota Grown logo that include blank space to allow farmers to write the price on the sticker). A version of the pricing sticker for certified organic produce was also created. We produced 6" twist ties with the Minnesota Grown logo. The ties are used to close bags of produce. We also paid for custom photography of our spokesperson Carrie Tollefson and produced*

laminated price cards. The total cost of the point-of-sale materials developed is \$4,902.09.

- The laminated price cards were 7"x11" apple price cards. The size was different that we thought but the end result was the same and clearly these price cards are only used to market apples which are an eligible specialty crop*
- The twist ties are used to close bags of produce. Members order promotional materials on an order form that requires their Minnesota Grown license number and farm name. This lets us verify what products they produce and whether or not they are using them for specialty crops.*
- Pricing stickers. One variety of pricing sticker is for certified organic products. Very few producers are eligible for this logo so we printed a relatively small quantity (55,000). With such a small number of eligible producers it is easy to verify the crops/products on which they are using the logo. The other pricing sticker is available to the entire Minnesota Grown membership. The Minnesota Department of Agriculture (MDA) orders additional quantities of these stickers to account for the potential that some commodities sold may not be eligible under the SCBG. Approximately 25% of our members have products that are not eligible specialty crops. To compensate for this, more than 35% of the total number of pricing stickers ordered were purchased by the MDA to supplement what was purchased with SCBG funds by the Minnesota Grown Promotion Group.*

GOALS AND OUTCOMES ACHIEVED

Measureable Outcome # 1: Wholesale Database

Because this database did not exist when this project began, the baseline for participating growers is zero. At the end of this project, we had more than 60 farmers listed in the database. Our stated target was 50. Our other performance measure was a unique visitor count. Likewise the baseline was zero. At the end of the reporting period we had yet to install Google Analytics on this page so we are unable to verify the actual number of unique visitors. However, based on feedback from partners and potential buyers who visited the site we are confident that this goal was also met. We will be adding Google Analytics to this site as we move forward. This is very much a long term project that will continue to expand and improve as more farmers become aware of the opportunity to participate and as we receive feedback from buyers who are using the site.

Measurable Outcome # 2: Unique Visitors to MinnesotaGrown.com website

The benchmark for this outcome was 150,932 unique visitors during calendar year 2009. In calendar year 2010 we increased to 223,353 unique visitors – a much greater increase than our goal of 10%. This increase was accomplished as a result of pay-per-click (PPC) campaigns on the most commonly used internet search engines: Google, Yahoo, and now Bing (the new name for what used to be known as MSN). The PPC campaigns continue to be a very cost-effective way to bring qualified consumers to the website. And unlike typical advertising campaigns, PPC allows the advertiser to target customers based on location (we target the entire state of Minnesota plus bordering counties in Wisconsin, Iowa, North Dakota and South Dakota). It also allows us to target customers based on products. For example we have separate ads for apples, berries, pumpkins, Christmas trees and more.

Measurable Outcome #3: New Point of Sale Materials

Since these were new items, the benchmarks for the number of stores and the number of items ordered is zero. During calendar year 2010, we shipped orders to 354 stores, significantly higher than our goal of 100 stores. These stores requested more than 8,600 items (an average of 24 items per store), also much higher than our goal of 10 items per store.

BENEFICIARIES

The direct beneficiaries of this project are the growers who are listed in the Minnesota Grown Directory and Minnesota Grown Program members who have access to the free point-of-sale materials. In calendar year 2010, there were 840 farms listed in the printed Minnesota Grown Directory. All of them benefited from the increase in customer traffic via the www.minnesotagrown.com website. A total of 1,111 farms were licensed to use the Minnesota Grown logo during calendar year 2010 and have access to the free point-of-sale materials. During calendar year 2010, approximately 1.2 million individual items with the Minnesota Grown logo were distributed to members.

LESSONS LEARNED

The majority of project funds were spent on pay-per-click (PPC) advertising. We have found this to be a very effective, measurable way to drive traffic to our website. Our experience indicates that Google is by far the most popular and efficient of the search engines. The new Microsoft Adcenter which includes Bing and Yahoo brings in a smaller number of visitors and has a higher average cost per click than Google Adwords. More details about our PPC campaigns including details about the most popular ad campaigns and keywords can be found under Activity 3 on page 3 of this report.

One challenge that we are facing is that we are bringing in a very high percentage of our visitors via PPC instead of through non-paid (organic) search results or through direct traffic. Going forward, our challenge will be to maintain our unique visitor count without needing to spend so much on PPC. This could be done by encouraging visitors to bookmark the page, “like” our Facebook page, or through search engine optimization (SEO). A successful SEO project would improve our non-paid position in search results and therefore convert at least a portion of our recurring PPC cost to a one time investment in search engine optimization.

We are pleased that we were able to meet or surpass each of the measurable outcomes included in our application. Specialty Crop Block Grant Funds have enabled us to make great strides in improving the competitiveness of Minnesota specialty crop producers. The funds have allowed us to do a better job of linking consumers with farmers, linking wholesale buyers with farmers, serving more consumers and providing more and better point-of-sale materials to our member farmers.

CONTACT PERSON

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Appendix

PROJECT C

TITLE: Making the Connections for Minnesota-Grown Fresh Fruits and Vegetables

APPENDIX A

Student Evaluation

First and last name: _____ Date: _____

Apples	Cucumbers	Pineapple
Bananas	Oranges	Tomatoes
Carrots	Peppers	Watermelon

1. Pick three (3) fruits or vegetables from the list above that are grown in Minnesota.
 - a).
 - b).
 - c).
2. Which fruit or vegetable is in season in Minnesota during the Fall?
 - a. Asparagus
 - b. Blueberries
 - c. Carrots
 - d. Strawberries
3. Eating lots of colors of fruits and vegetables is best?
Yes ___
No ___
4. Locally grown fruits and vegetables have more nutrients than fruits and vegetables that have travelled long distances.
Yes ___
No ___

5. Where can you and your family buy **locally grown** fruits and vegetables?

Post test (Optional – If NEAs are present in classrooms for >2.5 hrs to evaluate behavior change)

Choose “Yes” or “No” as your answer.	Yes	No
I eat more fruit now than I did before this class.		
I eat more vegetables now than I did before this class.		
I eat more kinds of fruits now than I did before this class.		
I eat more kinds of vegetables now than I did before this class.		

Project F

Organic Tree Fruit Education and Research Collaborative

See attached Membership Brochure, sample *Just Picked*, sample promotional post card, “Organic Orchard Certification” and “Organic Orchard Disease & Pest Management” Fact Sheets.

EDUCATION

As an OTFA member, you will have the opportunity to learn from experienced tree fruit growers and agricultural professionals, access current research, find resources and network with other growers.

SEMINARS Intensive full-day courses provide in-depth information on wide range of production and management issues

FIELD DAYS See for yourself how successful orchards throughout region utilize organic management

"JUST PICKED" This quarterly newsletter features grower profiles, event listings, latest research and production-oriented information

OTFA WEBSITE Stay connected, participate in "the grower hour," research specific production problems and find resources

FACT SHEETS Comprehensive, concise information on organic production, management and certification issues

RESEARCH

OTFA has initiated the **ORGANIC TREE FRUIT RESEARCH PROGRAM** to address challenges of managing orchard diseases and pests organically in humid regions of the U.S. The program will facilitate research appropriate to these regions by identifying and cataloging potential:

- on-farm tree fruit research sites
- tree fruit research programs
- scientists interested in organic research
- specific projects that would benefit from collaborative, multi-state testing

Become an OTFA member and be at the cutting edge of solving disease and pest management problems in organic tree fruit production.

ADVOCACY

OTFA members have a professional organization capable of representing their interests in political discussions about the policies and programs that affect small growers most, such as:

National Organic Program (NOP)

Conservation Stewardship Program (CSP)

Good Agricultural Practices (GAP)

Have a voice through OTFA!



Organic tree fruit growers produce high quality, nutritious food and contribute to local economies. They also conserve natural resources, reduce the use of fossil fuels and harmful chemicals, sequester carbon, protect biodiversity and create habitat for wildlife and native pollinators.

Organic Tree Fruit Association is online at www.mosesorganic.org/treefruit/intro.htm

Email: OTFAinfo@gmail.com

OTFA MEMBERSHIP FORM

BECOME AN OTFA MEMBER TODAY!

You don't need to be a grower to join. If you want to learn more about organic tree fruit issues or would simply like to support organic tree fruit growers, please join OTFA as an Active Non-Grower Member or as an Associate Member.

Please note: Active Grower and Active Non-Grower Memberships include full voting rights within the organization. Associate Membership does not include voting rights.

All Membership levels receive a \$10.00 discount at OTFA events.

- ACTIVE GROWER MEMBER = \$50.00 ANNUAL FEE, PLUS \$1.00 PER BEARING ACRE (AS INDICATED IN GROWER INFO ON BACK OF THIS FORM)
- ACTIVE NON-GROWER MEMBER = \$50.00 ANNUAL FEE
- ASSOCIATE MEMBER = \$25.00 ANNUAL FEE

NAME _____

FARM NAME _____

STREET ADDRESS _____

CITY/TOWN _____

STATE _____, ZIP _____

PHONE _____

EMAIL _____

BE SURE TO FILL OUT **GROWER INFORMATION** ON THE BACK OF THIS FORM, CUT ALONG DOTTED LINE & SEND WITH CHECK TO:

OTFA
c/o Bridget O'Meara
1223 St. Croix St.
Hudson, WI 54016



ORGANIC
TREE
FRUIT
ASSOCIATION

JUST PICKED

VOLUME 7, ISSUE 1

SPRING 2011

CODLING MOTH CONTROL AT HOCH ORCHARD

By Harry Hoch

CM control on Hoch Orchard takes a truly integrated approach. There is no single silver bullet that can take care of the problem. We use a combination of chemical, biological, and environmental techniques to enhance the pest/predator balance on the farm. Our goal is to allow natural CM predators to keep CM

populations at low natural levels. These levels drop and spike naturally but the spikes will not be as high as they would be in an intensive pesticide program. A sound understanding of basic entomology and CM phenology is also an important tool. We try to keep a balanced low pest level and then use soft targeted controls to nudge down the natural population spikes that are caused by weather and breeding cycles.

Environmental

Enhancing the environment is the most important part of the integrated approach to CM control. Beneficial insects that feed on, compete with, or parasitize all phases of the CM life cycle are crucial to the success of this system. Birds, bats, toads, and frogs all feed on the adult CM. This same group of vertebrate predators will also feed on the larval stage. Invertebrate predators will feed on the egg stage. Bacterial, fungal, and viral pathogens can attack CM in all developmental stages. A strong biologically active soil will host many natural CM pathogens and an array of

insects that will feed on the stationary pupae or larvae in diapause. Soil that has been degraded by herbicides, insecticides, and synthetic fertilizers will host far fewer beneficial organisms. A diversity of plants on the orchard floor creates an exponentially greater diversity of soil organisms that have symbiotic relationships with specific groups of plants.

At Hoch Orchard we use a system of timed alternate row mowing. Regular country club style mowing makes an environment that enhances grasses and makes a diversity of broadleaf plants less competitive. We mow every other row in the orchard. Then we wait until the mowed row starts to show some flowers in the ground cover.

These flowers provide a food source for many of the beneficial insects that will parasitize apple pests. Many of the beneficial insects require pollen or nectar for feed. If these beneficials do not have anything to eat they will not stick around to mate and parasitize the apple pests. Timed mowing keeps an array of continuously flowering plants on the orchard floor. Some apple growers use a minimal mowing system where they let orchard floor grow until harvest and then mow everything. This method does not keep the constant flowering that timed mowing does. In fact, the unmowed orchard floor often becomes dominated by vigorous growing spring flowering plants. This gives a flush of

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flowers early, then the seed production sets in by early summer, and by late summer the orchard floor is brown with drying wild grasses and grains. At our location, timed mowing enhances a diverse multistoried group of grasses and broadleaves. As I mentioned earlier, a diversity of plants enhances the soil biology. Many different species of bacteria, fungi, beneficial nematodes and bugs will all inhabit the soil and compete with (or feed on) the overwintering pupae or resting larvae of the CM.

Chemistry

We use both chemistry and biology when controlling CM. The most important chemistry that we depend on is synthetic pheromones. While these are not produced naturally they are considered an accepted synthetic under the national organic standards. We do not spray the synthetic pheromone, we use it to attract the male adult moths into traps with a tanglefoot board. This allows us to monitor the population levels and identify action thresholds.

Monitoring

We monitor CM population levels with Delta traps baited with a long life pheromone lure. We count and clean the traps once per week. We start monitoring CM levels shortly after bloom. We use an action threshold of seven moths caught in a one week period. We

use multiple zone monitoring in order to identify which blocks to treat when they go over threshold. Our blocks range from 1.5 to about 5 acres in size. The larger blocks or longer narrower blocks will have two pheromone traps. Each zone/block is monitored and treated independently. Monitoring starts after bloom and continues through August.

The pheromone traps catch male moths. Males and females emerge at the same time so this gives us a representation of the population level over a specific time period. We also use a weather data logger to record temperature twice per hour. CM is a cold blooded animal so its rate of development is dependent on the temperature in the orchard. The warmer it is the faster they develop. The traps tell us when the adult moths are flying and breeding. Knowing this date and the rate of development allows us to predict when the CM eggs will be laid and when they will hatch. We use Spectrum Technologies data loggers and computer model to predict the most efficient time to apply our CM controls.

Treatment

Biological

Our primary treatment for CM is the granulosis virus. CydX is the commercial formulation that we use. If the CM flight is short we use one application between 180 and 200 degree days (base 50) after the recorded action threshold was reached. If the flight is long (over

BLOCK	5-24	5-27	6-2	6-9	6-16	6-23	6-30	7-7	7-14	7-21	7-28	8-4	8-12	8-18	8-25	9-2
6		16	2	0	1	0	0	1	0	1	0	0	0	0	0	0
1	3	3	1	0	4	2	2	0	1	3	2	5	1	1	0	3
7	13	4	8	0	1	0	0	1	1	0	0	3	0	0	0	2
8	SET	4	9	0	4	0	1	0	1	2	0	0	0	0	0	0
18W	SET	0	1	3	0	0	0	0	0	2	0	1	4	0	1	0
18E	9	4	8	3	2	0	0	0	0	3	2	1	0	3	0	0
14	SET	2	2	3	0	0	0	0	0	0	1	0	2	0	0	0
9	17	12	14	1	4	3	0	0	0	0	3	1	2	0	0	0
11	8	2	6	0	0	0	1	0	0	0	1	2	1	0	1	0
4	5	4	7	0	1	1	2	2	0	0	3	1	2	1	0	0
5		0	1	0	1	0	0	0	0	0	/	1	0	1	0	0
F2W	10	6	14	3	4	17	3	3	1	3	3	2	1	3	2	2
F2E	SET	14	17	7	3	3	4	0	1	2	8	9	6	1	0	2

Block	5-30	6-4	6-10	6-17	6-29	7-1	7-8	7-15	7-22	7-29	8-5	8-13	8-20	8-27	9-2	9-9
1	2	1	0	5	4	2	2	0	0	1	1	6	5	2	0	1
7	3	5	1	4	6	2	2	1	0	0	4	8	3	6	0	0
8	1	4	2	1	2	0	1	2	0	0	3	6	2	0	1	0
18North	0	0	0	4	0	0	0	0	0	0	0	0	1	0	0	0
18West	3	3	1	4	2	0	1	0	0	4	23	16	7	4	2	0
14	1	0	0	1	0	0	1	1	0	0	2	0	1	0	0	0
9	New	1	0	4	4	0	1	0	0	0	2	1	2	0	0	0
11	4	4	0	1	3	4	5	0	0	0	5	1	7	0	0	0
4	4	3	0	3	3	1	1	2	1	1	10	6	6	0	0	0
F2W	1	1	0	3	2	1	1	4	0	1	4	2	14	4	1	1
F2E	0	4	2	1	2	2	2	2	3	1	4	4	5	0	0	1

threshold for two or more consecutive weeks) we will apply CydX two times. The second application is around seven days after the first.

Repellant

We usually apply Surround to repel Plum Curculio around the time first generation CM begins to fly. While the Surround is not applied specifically for the CM, it will have some effect on the adult moths. Surround is not a stand-alone control for CM, but it will irritate the moths. This may shorten their life by making them more agitated and forcing them to use more of their limited body fat before they lay all of their eggs or get a chance to breed. Surround will also repel some of the adult moths. It may also affect the larvae as they search for an apple to enter. The clay particles may make it harder for a larva to identify an apple, and it will most likely slow down the movement of this tiny newly hatched worm. The longer it searches for an apple the longer it is exposed to the elements, predators, and pathogens. We also apply Surround in the summer to repel Apple Maggot Flies. This application often overlaps second generation CM and helps reduce damage.

Chemical

In addition to CydX and Surround, we will add Entrust to the mix if the trap catch is very high. If we catch 7-13 moths per week we use only CydX. If we exceed 13 moths per week or have a sustained catch in double digits we add Entrust.

Level of Control

This approach to CM control is doing a good job on our orchard. While we can occasionally find infested apples in the field, the larvae are usually discolored and/or listless. Sub lethal infection of the virus will cause some damaged fruit. This fruit usually aborts prior to harvest. It is rare that we find CM damage in the packing house. We intend to increase our action threshold from 7 to 10 moths per week in 2011. Since we rarely find damage on harvested fruit, we can assume there is the ability to reduce our use of pesticides. If you look at the trap counts in 2010 there were several incidents with catches above six and below ten. With a slightly higher threshold, several sprays would have been saved.

I believe our approach is working very well on our farm, but I do not know if it will work on all farms in all locations. The multi faceted approach utilizing a balanced environment with high levels of beneficial insects and limited amount of chemicals may be what makes the whole system work. A cleanly mowed orchard, a history of heavy chemical use, or exceptionally high trap catches may cause this approach to fail. Multiple zone monitoring with targeted pesticide applications may allow beneficial insects to thrive in unsprayed blocks and recover quickly in sprayed blocks. Eliminating the multiple zone monitoring on a small or large orchard may be enough to cause this system to fail.

(Continued on page 4)

(Continued from page 3)

I encourage the reader to use the information I am sharing here, but cannot recommend this control strategy be implemented on all orchards. I suggest trying parts of my strategy, or better yet test the strategy on block or one section of your farm. See how it works, then adapt it to your situation.

Cost of Control

Organic pest control can be exceptionally expensive. The cost of the higher priced pesticides can be limited with high levels of pest monitoring. The current price from our local supplier for CydX is \$311.25 per quart, Entrust is \$530.00 per pound, and Surround is \$1.30 per pound. We apply these products using a 300 gallon airblast sprayer. We use 75 gallons of water per acre. This gives very good coverage with little loss to drift or drip. Thorough coverage is important when using biologicals and repellants. These products are not like the old conventional pesticides that will redistribute around the apples with light rain and dew. The organic products have to be carefully sprayed and coverage of all apple and leave tissue is necessary. These products will fail if incomplete coverage is caused by inconsistent volumes carelessly sprayed from a hand gun or sections of the tree missed because a backpack sprayer could not reach all parts of the tree.

Poorly pruned trees, or trees that are very large, will require the highest rates of organic products. Even then they may not give the same level of control that we are getting on our open pruned trees and dwarf orchards. Good quality equipment, well pruned trees,

and the labor needed for weekly monitoring are some of the costs associated with organic CM control that are significant but difficult to put an exact number on. We will have at least one scout on our farm average about one day of labor per week from mid May to the end of August. This includes maintaining and monitoring traps, and scouting for several pests on 30 acres of apples.

Total Surround used - 1650 lbs Cost \$2145
 Total CydX - 168 oz Cost \$1634
 Total Entrust- 32 oz Cost \$1060

Total cost to control CM Organically on 30 acres in 2010 was \$4839 or \$161.30 per acre. The actual cost for CM alone should be lower considering the Surround was sprayed as the primary control for Plum curculio in the early season and Apple maggot in the summer.

Multiple zone monitoring is a critical part of this IPM system. Without multiple traps and zones I would have either spent considerably more money or missed some areas of high pest pressure and had more damaged fruit. If I had treated all 30 acres instead of targeting the applications to the ones over threshold, the cost of controlling CM with this strategy would have been almost four times higher.

Full treatment scenario

The current price of CydX is \$311.25 per quart (\$9.73 per oz), Entrust is \$530.00 per pound (\$33.13 per oz), and Surround is \$1.30 per pound

- Surround 25lb per acre x \$1.30 = \$32.50 x 30 acres = \$975 per orchard application x six apps = \$5850
- Entrust 2oz per acre x \$33.13 = \$66.26 x 30 acres = \$1987 per orchard application x 4 apps = \$7951.20
- CydX 2.5 oz per acre x \$9.73 = \$24.32 x 30 acres = \$729.60 per orchard app x 7 apps = \$5107.2

I would have spent a total of \$18908.40 had I sprayed the entire orchard every time one block went over threshold.

Hoch Orchard Sprays by block

Date	Product	Rate per acre	Amount per tank	Total sprayed	Blocks Treated
5-24	Surround	25lbs	100lbs	400lbs	1,4,5,6,7,8,9,11,12,14
5-31	Cydx	3 oz	12 oz	36	4,5,6,7,8,9,11
	Surround	25lbs	100lbs	300	
5-31	Cydx	3 oz	12 oz	12	F2
	Entrust	2 oz	8 oz	8	
6-1	Cydx	3 oz	12 oz	12	1,4,18
	Surround	25lbs	100lbs	100	
6-7	Cydx	2 oz	8 oz	32	4,5,6,7,8,9,11,18
	Surround	25lbs	100lbs	400	
6-7	Cydx	2 oz	8 oz	8	F2
	Entrust	2 oz	8 oz	8	
6-14	Cydx	3 oz	12 oz	24	4,7,F2
6-15	Cydx	3 oz	12 oz	6	9
7-5	Cydx	2 oz	8 oz	8	5,F2
	Entrust	2 oz	8 oz	8	
7-12	Cydx	1.5 oz	6 oz	6	5,F2
	Entrust	2 oz	8 oz	8	
7-18	Surround	25lbs	100lbs	200	1,5,11 boarder,F2
	Surround	40lbs	150lbs	150	8
7-22	Surround	25lbs	100lbs	100	F2
8-9	Cydx	3 oz	12 oz	12	F2
8-23	Cydx	3 oz	12 oz	12	F2

OTFA 2011 SUMMER FIELD DAYS

OTFA is sponsoring three exciting field days that will cover a range of topics this summer. Join us for any or all of these great educational opportunities! Remember: OTFA members get a \$10 discount. If you are interested in hosting a 2012 OTFA field day, please contact us at OTFAinfo@gmail.com before the first of the year. The Board and Education Committee will begin the process of location/topic selection in February.

Sunday, June 26th - Mary Dirty Face Farm, Menomonie, WI

Anton Ptak and Rachel Henderson have been working on establishing a perennial crop farm since 2009, and have included many types of tree fruits into 3 of their 20 acres over the last few years. During the time it takes for the crops to reach bearing age, they've worked their day jobs and spent weekends on the farm, doing nearly all of the work by hand. The transition to the farm is getting closer, and this year will be the first year to market a small but much anticipated crop! There are many varieties of apples, pears, cherries, plums, and apricots. Also planted are a good number of currants and gooseberries, some of which may be approaching ripeness at the time of the field day. Come see the early stages of the transition from hayfield to orchard! Contact OTFAinfo@gmail.com for details and registration information.

Saturday, July 16th - Hoch Orchard and Gardens, La Crescent, MN

Summer Organic Apple IPM Field Day sponsored by MOSES, CIAS and OTFA will include full day discussion of organic IPM and pest related tours. Dr Matt Grieshop will present info on current pest issues and lead an orchard walk identifying pests and beneficial insects. Tammy Hinman, Agricultural Specialist with The Nation Center for Appropriate Technology will discuss the recent ATTRA publication of *Apples: Organic Production Guide*. Joe Pedretti of MOSES will give an overview of certifying your organic orchard. Harry Hoch will explain the IPM program used on Hoch Orchard and lead an orchard walk looking at insect monitoring and control using traps.

This IPM tour will focus on pest monitoring and control strategies. Organic growers interested in improving fruit quality and low-input conventional growers looking to take their IPM to the next level should attend this Field Day. Although the IPM practices will focus on the organic example, many of the techniques that will be discussed could be 'integrated' in a conventional orchard. Topics will include: enhancing the environment and promoting beneficial insects; multiple zone monitoring and apple maggot trap out; use of kaolin clay, liquid lime sulfur, micronized sulfur, neem, fish oils, and soft insecticides; post infection apple scab control.

For those individuals not interested in the in-depth discussion of bugs and diseases, we will offer concurrent walking tours of the farm. These will be informal walks through the areas of the farm not related



Home Acres Orchard in Stevensville MT manage their alleyways for beneficial insect habitat. Photo courtesy of: University of Montana Dining Services.

to pest control including: berry plantings, vineyard, plum orchard, apricot orchard, High tunnel #1 with strawberries and raspberries in production, High Tunnel #2 newly planted with sweet cherries, blackberries, and strawberries, fruit processing facility, Freedom Ranger chickens, Old Spot Orchard pigs, and more.

Young adults (of any age) interested in farming are welcome. Bringing children is discouraged. This is a professional seminar promoting advanced agricultural practices, not a family fun day on the farm. We will serve a local food lunch, most of it coming from our farm. Rustic camping spots available if you want to spend the night.

Time: 9am - 4pm

Cost: \$30 per farm, includes one lunch, one information packet, unlimited attendees

\$10 for each additional lunch

\$10 discount toward registration for OTFA members

\$15 late registration fee after July 5th.

For more information or to register, contact MOSES: 715-778-5775 or angie@mosesorganic.org

Saturday, August 5th - AiMar Orchard, Flushing, MI

Catch up with OTFA charter member Jim Koan and his son Jake Koan at the AiMar Orchard Field Day. Jim and Jake will be on hand to share their insights into the art of growing organic apples under always unpredictable Midwestern growing conditions. Organic researchers from MSU will also be present to share some of the ongoing projects happening at AiMar. Topics to be discussed will range from on-farm production of heritage and "organic friendly" apple tree varieties to novel approaches to organic pest and weed management. Be sure to reserve your spot today so you don't miss out on this fun and informative day! Contact OTFAinfo@gmail.com for details and registration information.

ORGANIC APPLE PRODUCTION—NOT FOR THE FAINT OF HEART!

Apples, or *Malus sp.*, are among the most difficult crops to grow organically. They are prone to attack by more pests than perhaps any other crop. National Center for Appropriate Technology agriculture specialists Guy Ames and Tammy Hinman recently completed a long-awaited update of the ATTRA publication *Apples: Organic Production*. As is mentioned in the publication, there is a clear difference in pest pressure between the Eastern and Western parts of the U.S., making it difficult for Eastern growers to compete in a national wholesale market. As is mentioned in the marketing section of the publication, however, there are many growers who have developed sizable direct and value-added marketing channels.

As Ames and Hinman mention in their publication, "Without effective management, the worst of these pests can be devastating—to the fruit, to the grower's spirit, and to the bottom line. To minimize or eliminate chemical inputs while keeping yields and profits sound, the grower must develop a detailed understanding of the orchard as a managed ecosystem. In this regard, there is no substitute for direct observation and experience, along with a willingness to experiment."

Apples: Organic Production covers most predominant apple diseases and insect pests, with particular focus on the pest complex of the Eastern U.S. There is a sizable amount of attention paid to the "bane of the organic orchard," the plum curculio. It provides sound organic management suggestions for these pests, including a full section on Surround WP, the new "almost silver bullet" of organic apple pest management. The authors acknowledge that there is nothing like tried-and-true experience to help teach the complexities of organic apple production. The publication features profiles of several farmers, including Harry and Jackie Hoch from Hoch Organic Orchards in Le Crescent, Minnesota. The Hochs have developed a state-of-the-art integrated pest management system in their eastern-Minnesota orchard, using sophisticated monitoring, pest management techniques, and beneficial encouragement. Taking a holistic approach that includes strong competition with beneficial insects and moth predators helps the pest insect populations stay pretty low. According to Harry, "We only treat (Codling Moth) a few times per season, and when we do treat, the codling moths don't go much above the threshold levels."

Equally important in organic apple management is orchard-floor management. This publication features new research from Michigan State University on grazing hogs as an orchard-pest and weed-management

tool. Another important aspect of orchard-floor management is keeping a variety of plants and flowers available for beneficials. Both the Hochs and Kurt and Pam Clevenger, from Home Acres Organic Orchard in Stevensville, Montana, deliberately delay mowing specific alleyways between their apples. This technique encourages beneficial insects for biological controls as well as pollinating insects.

The increased pest-management costs associated with an organic management system will require a careful analysis before making the transition to certified organic production. *Apples: Organic Production* also outlines different economic costs and returns based on three organic apple analyses from different regions of the U.S. Marketing is the key to getting the returns you need to make up for the higher production costs of organic orcharding. Merby and Lou Lego from Elderberry Pond Farm and Restaurant have several varieties of heirloom apples, which they market through farmers markets, their farm stand, and their restaurant. Many of the apple seconds are turned into a delicious cider that people travel miles to buy. Lou describes their marketing strategy, "The thing I think we have learned over the years is that diversification in both markets and crops is important to success. One or two crops or even one or two classes of crops can be risky. Some years our vine crops are a disaster, but the orchards are

spectacular. Other years the deer eat all the beans, but the tomatoes and potatoes are perfect. Diversification is a form of crop insurance as well as a natural scheme for crop pest and disease protection."

Whether an organic apple orchardist can build an economically and ecologically sustainable business depends on many factors, not the least of which is self-education. Because of the many potential pit-



Pristine. Photo Courtesy of Lou Lego, Elderberry Pond Farm and Restaurant

falls, it is highly recommended that the aspiring organic orchardist consult appropriate texts, journals, Cooperative Extension specialists, and—most important—other orchardists for additional information. This is why organizations such as the Organic Tree Fruit Association are critical to grower's success! If you would like more information on organic apple production, see the ATTRA webinar "Organic Apples: a Beginners Guide," at <http://www.attra.org/video/> or have a better look at *Apples: Organic Production* at <http://attra.ncat.org/attra-pub/PDF/apple.pdf>

STREPTOMYCIN AND OXYTETRACYCLINE FOR FIREBLIGHT CONTROL

Portions of this article originally appeared in the Organic Broadcaster, MOSES publication, April 2011
By Harriet Behar

The US Organic Foods Production Act has a very clear bias against synthetic substances in organic agricultural production and organic prepared foods. They are only to be allowed when they clearly meet the strict criteria for an exemption to this prohibition of synthetic chemicals. The criteria include review of the substance's possible potential detrimental chemical interaction with other materials used in organic farming. The material's toxicity and mode of action as well as its breakdown products that could contaminate, concentrate or persist in the environment is another criteria for review. The possibility of environmental contamination during the manufacture, use, misuse or disposal of the substance is a wide ranging consideration. The effect the substance would have on human health, on biological or chemical interactions in the environment, crops and livestock are also to be reviewed. And lastly, the synthetics can only be allowed if there are no natural materials or methods that could be used in a system that is compatible with organic agriculture.

There is nothing in the law or our regulation that says materials decision making should be made easy, nor that if it would make organic farming or food processing cheaper, it should be allowed. There are also an overwhelming percentage of organic consumers who would be outraged by the thought that synthetics should be allowed in organics to expedite profits or expand the number of products with the organic label, just for the sake of having more items with an organic premium in the marketplace. However, it is understood, that synthetics, when benign, should be allowed.

The National Organic Standards Board must review and vote on every substance that is petitioned for inclusion, or is currently on, the National List of approved synthetics and prohibited natural products. They have to review every substance for relisting every 5 years, or else the materials sunset, and are removed from the list.

In April 2011, the organic tree fruit community was faced with the imminent sunset of Streptomycin and Tetracycline from the National List. They are allowed to control fire blight only, which is a serious problem for apple and pear growers. These items are not approved in organic production in the European Union or Canada. So, let us go back to the criteria for the allowance of synthetics in agricultural production and how it could apply to these antibiotics. Is there a detrimental chemical interaction with other materials? Is there toxicity, environmental contamination and persistence in the environment? For these two

criteria, there has been a strong argument that there is no reason to disqualify these items from use. However, the additional criteria of detrimental effects on human health and biological processes in the environment as well as the compatibility with organic systems, put a large question mark next to the use of these materials. One more issue is the concern of whether there are natural materials or methods available to make these antibiotics unnecessary in an organic orchard system.

The NOSB voted April 29, on the sunset and expiration of both streptomycin and tetracycline (oxytetracycline) allowing the use for fire blight control in apples and pears until October 21, 2014. The Board expects members of the organic tree fruit growing community to collaborate and coordinate efforts to prepare for the eventual removal of this material from the National List. They are hoping research and the marketplace will specifically optimize the use of resistant rootstocks and cultivars. The use of alternate, allowed chemical controls, can also be part of a holistic approach. The NOSB crops committee has expressed that antibiotics should come off the list, but they understand that the apple and pear growing community still needs some time. They want to see research on cultural practices as well as alternative inputs.

In two other votes of interest to organic tree fruit growers, copper and pheromones were relisted for use in organic production for another five years with the same annotations as they currently have on the National List.

Read the formal
OTFA position on
Streptomycin use in Apple
Production on the website:
[http://
www.mosesorganic.org/
treefruit/intro.htm](http://www.mosesorganic.org/treefruit/intro.htm)

OTFA AT NOSB MEETING

Matt Greishop, Jackie Hoch and Jim Koan

The OTFA was well represented at the NOSB board meeting held on April 25-29 2012 in Seattle WA. The potential sun setting of Streptomycin and Oxytetracycline was one of the most hotly debated topics, second only to revised animal welfare standards for organic chicken and hog farms. Other items of debate included sun setting of: Sulfur dioxide "smoke bombs" for rodent control, sodium nitrate —aka Chilean nitrate— for nutrient management, and ethylene for use in fruit ripening.

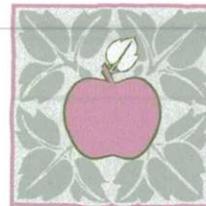
At the end of the meeting both streptomycin and oxytetracycline were recommended for a two-year extension (October 2014) on the condition that a task force would be formed to assess the potential of current fireblight alternatives and the development of new ones. Ethylene was recommended for five years more use but both sodium nitrate and sulfur dioxide were recommended for removal from the NOP list of approved inputs. Oxytetracycline was unanimously approved for relisting. Streptomycin was almost lost with a final vote of 10 for and 4 against its extension — the minimum vote to retain it was 10 votes.

This constitutes a major victory for US organic tree fruit producers and consumers because the removal of antibiotics —streptomycin in particular— without workable alternatives would have likely resulted in the loss of much of our organic acreage, especially in the Eastern US. As important as this victory is, an even more important development from this meeting will be the creation of a fire blight task force with membership from the grower, research, industry and consumer sectors, and representation for all major pomme fruit growing regions. The major purpose of this taskforce will be to serve as a common ground for the sharing of current regionally appropriate fire blight management strategies, to advocate for more research and extension of organically acceptable fireblight management tactics, and to develop a plan to reduce and eventually eliminate the use of antibiotics for fireblight management. Dr. Matt Grieshop (Michigan State University) and other members of the OTFA will

lead the initial development of this taskforce.

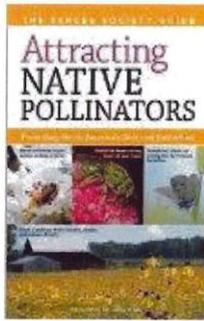
Another major outcome of this meeting is evidence that while seemingly convoluted and complicated, the NOSB process WORKS, but ONLY when growers, consumers, advocates, and academics attend the meetings to provide public comment. Early on in the meeting it was clear that at least half the board was set on the elimination of both of these —unfortunately necessary— synthetic products. To a very large extent this was because they were uninformed on the potential consequences of this action and the peculiarities and management complexities inherent to perennial tree fruit crops and their diseases. Changing the direction of the board was the result of a lot of hard work provided by members of the OTFA board, the National Organic Coalition, Harriet Behar from MOSES, and many organic certifiers and growers from all over the United States. This recent meeting should serve as a good reminder that structured, polite, and yes sometimes boring, debate is at the core of how democracy should function —something often forgotten in this age of high priced lawyers and lobbyists, no-bid contracts, and corporate personhood.

The authors would like to express their profound gratitude to the NOSB crops committee for maintaining an open mind and providing a forum for discussing the consequences of delisting these products. Decisions made by consensus are challenging to come by when such a diverse array of constituents is represented and even more so when the issue is one as complicated as tree fruit management. It is our genuine hope that in addition to the eventual sun setting of antibiotics, this particular decision will result in stronger relationships with organic tree fruit growers across the U.S. The OTFA should be proud of its role in this debate and stands to play a central role in building the relationships needed to increase the availability of regionally produced organic fruit.



ANNOUNCING THE RELEASE OF ATTRACTING NATIVE POLLINATORS

By Eric Mader, Assistant Pollinator Conservation Program Director
The Xerces Society for Invertebrate Conservation



"Attracting Native Pollinators belongs on the bookshelf of everyone who values the future of the natural world."

- Douglas W. Tallamy, author of *Bringing Nature Home*.

"Precise, elegant, and thoughtful, the recommendations offered by the Xerces Society will become essential to advancing a healthy and diverse food-production system."

- Gary Paul Nabhan, author of *The forgotten Pollinators and Renewing America's Food Tradition*.

The Xerces Society for Invertebrate Conservation is pleased to announce the release of our new book, *Attracting Native Pollinators: Protecting North America's Bees and Butterflies*.

Just Picked readers may recall the series of pollinator conservation articles contributed by me several years ago. Those early articles provided some of the first ever guidelines how to protect and enhance native bee populations in organic orchard settings, and they became especially timely with the sudden collapse of managed honey bee populations in 2006, due to the phenomenon called Colony Collapse Disorder.

Since those first articles were published, conservation practices have continued to evolve. New research and USDA incentive programs are now available to support tree fruit growers who want to create on-farm habitat for native pollinators and other beneficial insects. The Xerces Society has been at the forefront of these efforts and is actively collaborating with several OTFA members to manage their orchards for wild bees—especially through the integration of native wildflowers into farm systems, and reducing the need for both organic and

conventional insecticides. Working with partners like the USDA's Natural Resources Conservation Service, and the University of Wisconsin's Center for Integrated Agricultural Systems, we have conducted a number of full day pollinator conservation short courses and field days nationwide in recent years, and are now seeing the widespread adoption of pollinator conservation as a mainstream "best management practice" among organic tree fruit producers.

To make this information even more accessible, we spent nearly two years consolidating the latest pollinator conservation research findings and state-of-the-art expertise in restoration ecology into a single guide. At 380 pages, *Attracting Native Pollinators* provides dramatically expanded breadth and detail, reflecting everything currently known about creating and managing pollinator habitat. Illustrated with hundreds of color photographs and dozens of specially created illustrations, *Attracting Native Pollinators* is divided into four sections:

- **Pollinators and Pollination** explains the value of pollinators, and includes informative chapters on the natural history and habitat needs of bees, butterflies, flies, beetles, and wasps.

- **Taking Action** provides comprehensive information on ways to help pollinators and on creating nest sites and safe foraging areas. It includes guidance on conserving pollinators in all kinds of landscapes: farms, gardens, natural areas, urban areas, roadsides, utility rights-of-way, and more.

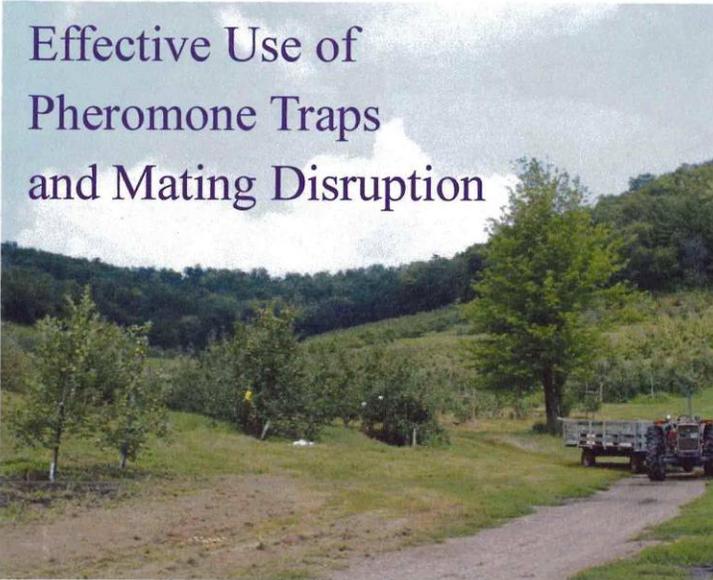
- **Bees of North America** provides the first available field guide to identifying the more abundant and important bee species, and supplies detailed profiles of more than thirty commonly encountered genera.

Creating a Pollinator-Friendly Landscape shows how various kinds of land can be enhanced to support diverse pollinator populations. Sample planting designs and fifty pages of illustrated plant lists facilitate selection of the best plants for any region.

Our hope is that *Attracting Native Pollinators* will offer both a window onto the fascinating lives of these insects and provide meaningful information about how you can help these vital animals work for you. The OTFA has consistently been among the most forward-thinking, innovative, and conservation-minded farmer organizations with whom I have worked. This book is hopefully a reflection of that spirit and a resource for all of you to continue doing great things. Cheers!

Attracting Native Pollinators is published by Storey Publishing, and is available through major book sellers, or at www.xerces.org.

A SHORT COURSE FOR IPM PRACTITIONERS



Effective Use of Pheromone Traps and Mating Disruption

*The Center for Integrated
Agricultural Systems is
holding a one-day, in-depth
course on the effective use of
Pheromone Traps and Mating
Disruption on
Wednesday, June 22, 2011 in
Galesville, Wisconsin*

9am—3pm

Speakers:

*Larry Gut, Michigan State
University and*

*Matt Stasiak, Peninsular Ag
Research Station
UW-Madison*

About the course

This new course about effective use of pheromone traps and mating disruption will:

- * increase your knowledge of various monitoring lures and trap designs
- * provide you with a foundation for effective use of pheromone-based controls for

lepidopteran fruit pests

- * show you how to optimize placement of pheromone traps



This unique, innovative program provides an intensive, one-day applied course including hands-on demonstrations in the field.

It also provides an opportunity for you to learn about the current research being conducted on codling moth in

Bayfield and Door Counties, Wisconsin and in Michigan.

Dr. Larry Gut is a tree fruit entomologist at Michigan State University with special research interests in mating disruption and other selective controls.

Matt Stasiak is a fruit researcher and Assistant Superintendent at the UW-Madison Peninsular Agricultural Research Station.

Course objectives

Pheromone-based mating disruption (MD) has become an important component of fruit IPM programs.

Excellent monitoring programs are required for successful implementation of IPM programs that rely on MD and other selective controls.

Course members will learn how to:

- * place pheromone traps within the tree canopy





- position pheromone traps within the orchard
- use various mating disruption technologies

Course size is limited to 40 participants, which will allow for active discussions and interaction.

The course is targeted to IPM practitioners, to enable them to maximize the effectiveness of their use of pheromone traps and mating disruption.

Meals and Lodging

Lunch will be provided.

Lodging arrangements must be made on your own.

For lodging options in Trempealeau, see www.trempealeau.net; for Onalaska see www.discoveronalaska.com; and for Winona, Minnesota, see www.visitwinona.com.

To learn more about the workshop, contact Regina Hirsch at the Center for Integrated Agricultural Systems, UW-Madison, 608-265-3637 or rmhirsch@wisc.edu.

Course Registration – limited to 40 participants

Name:

Farm/Business:

Address:

City:

State:

Zip:

Telephone:

Email:

Dietary preferences:

Vegetarian ___ Vegan ___ None ___ Other _____

Location: This workshop will be held at an orchard in the Galesville area. Directions will be sent to you after you enroll.

APPLICATION DEADLINE: June 1, 2011. Course is limited to 40 participants on a first come, first served basis. **No on-site registration permitted!**

___ **Workshop fee: \$25** (includes lunch)

Make checks payable to the University of Wisconsin

Sorry, we cannot take credit cards

Registration and payment must be received prior to the workshop.

Please send registration form and payment to:

Center for Integrated Agricultural Systems
Attn: Pheromone/Mating Disruption Workshop
Ag Bulletin Bldg
1535 Observatory Drive
Madison, WI 53706
Registration questions? Call 608-265-3637 or
608-262-5200

THE COMMUNITY ORCHARD MOVEMENT: BRINGING HEALTHY ORCHARDING TO A NEIGHBORHOOD NEAR YOU!

by Michael Phillips
www.GrowOrganicApples.com

Orchardists know several years of investment in branch training and soil building go into creating a strong tree that will bear fruit for many decades to come. What follows is a similar vision of what can be. The hopes and offerings being shared here make up a "grower tree" now coming into bearing in its own right. So without any further adieu, ladies and gentlemen, let me introduce to you, the one and only Sargent Pepper's Holistic Orchard Network. Hmmmm. . . that doesn't have quite the same ring to it, does it? Never mind. Me-thinks we're going to have some fun strutting our stuff and intriguing the inner druid in each of you.

The Berkshire Roundtable

Here in the Northeast, a couple dozen "alternative-minded" apple growers have been meeting every March for what will be 20 years running now. Which is a fairly phenomenal feat for those of you who know some of the mainstays in this circle like Alan Surprenant, Bill MacKentley, John Bemis, Hugh Williams, Brian Caldwell, Jim Gallo, Elizabeth Ryan, and myself. The lessons shared in this inquisitive circle have helped each participant become a better orchardist. This includes numerous up and coming young'uns who represent the rising tide of tree people inspired to grow good fruit.

This roundtable meeting got its start back in 1992 and 1993 when the NOFA chapters sponsored five farmer-to-farmer exchanges under the auspices of one of the very first SARE grants. Growers involved with sweet corn, bedding plants, livestock, strawberries—and the most tenacious of the bunch—apples were brought together for two days to explore the gamut of their respective passions. Margaret Christie facilitated the Apple Meeting, first held at the Rowe Conference Center in Massachusetts, the next year at the Rodale Research Farm in southeastern Pennsylvania, and mostly since then at the Stump Sprouts Cross-Country Ski Center high in the Berkshires. Reading back on earlier proceedings reminds me of what a long way we have come in organic orcharding since those heady days.

Apple growers kept their momentum going full steam ahead. Here's how our grower invitation flyer reads today:

No other get-together better explores the cutting edge issues facing community orchardists. Our unfettered talk ranges from how to best manage repellent strategies for curculio to the complex overlay of fruit moth woes. We'll discuss what global warming means for our beloved trees and how a beneficial microorganism complex furthers holistic disease control. Is organic thinning (beyond endless hand-work) becoming a real possibility? What are the latest discoveries regarding soil health and wood's edge ecology? And you bet we share our marketing success stories and frustrations. Local agriculture is

truly one of those earth-saving graces now needed more than ever.

GrowOrganicApples Website

The creation of a networking website naturally evolved from our Berkshire Meeting. All sorts of things emanate from this virtual orchard that growers have put out to the world! I'll share important bits with you here by way of snippets. Feel free to go directly to the source—as projects underway, an exciting biological curriculum, and marketing promotion shine that much brighter on the computer screen compared to newsprint.

We set the stage for both tree fruit growers and apple lovers alike on the opening page. This dual invitation is deliberately designed to make folks who want to support local agriculture an equally appreciated part of the team. These are the words that greet you when first checking out the site:

You have stumbled onto something good in your search for healthy apples! GrowOrganicApples.com is where holistic-minded orchardists come together to explore thoughtful ways to grow good fruit. Our orchards are interconnected webs of biodiversity, deep nutrition, heirloom varieties and exciting new cultivars. Connecting sensible growers with apple lovers broadens the marketing base vital to every local orcharding effort. Here we share with you what it takes to grow healthy fruit, and post listings of community orchards where such wholesome fruit can be found.

The Vision in a Nutshell

The Holistic Orchard Network is about bringing orchard health to the fore. Health is not necessarily a concept emphasized in the national organic certification standards. Nor does Health necessarily have value in research trials where a "natural spray" must match the results of the chemical it's being tested to replace, more often than not in a non-holistic setting. Reductionist agriculture will never be able to grasp the worth of woody compost, fungal allies, herbs, biodiversity, tree-ripened fruit (with flavor to boot!), and grassroots marketing. The Health contained in nutrient-dense fruit supports our Health. That is "the word" driving all we are going to achieve in community-based orchards as we learn how to grow wholesome fruit.

Community Orchards Defined

Fruit grown locally comes fresher and tastier. The choice of varieties can get to be astounding. Families who know their farmers share in a vital connection to the land. And that in turn means you are informed about decisions of how that fruit is grown.

We need to grow healthy food in the places where we live!

The venerable apple is absolutely what it should be when orchardists steward the growing of fruit with health-enhancing practices. Holistic Orchardng goes beyond certified organic, encompasses biodynamic

principles, and at the same time is accommodating enough to recognize that some growers—in some places—facing certain pressures—in some seasons—may indeed feel compelled to use limited allopathic measures (including mineral fungicides) to keep a small-scale orchard viable. Ignoring the ecological cost of transporting food from thousands of miles away is wrong. What's right is helping consumers understand the dynamics that go into *one good apple* and clearly pointing the way to where such fruit can be found.

Holistic Core Values

Our healthy orchard manifesto establishes the paradigm that growers are asked to take to heart. Holistic Core Values (please go to the site and check these out!) provide consideration for "apple diplomacy" as well. This is our way of *listening yet prodding* all fruit growers to do better. I will add only this: Our grower circle began by embracing all comers, many of whom do far less allopathic spraying today—if at all—then was common 20 years ago. Serious change takes time and always, absolutely always, begins with mutual respect amongst growers. . . .

Philosophical approval of one's farming practices is indeed a tough nut to crack! What follows is a work-in-progress: Holistic growers, let your thoughts be known! We have no intention of launching yet another certification process here. On the other hand, giving orchardists a nudge to embrace radiant system health that results in the growing of nutrient-dense fruit on the local level is an honorable achievement. Orchard challenges are many—the work overwhelming at times. What follows are positive guidelines to keep us on track in managing orchards based on minimal off-farm inputs, living soil practices, and integrated ecosystem health.

The term "organic" as now in the hands of the US Department of Agriculture has been convoluted. National certification standards for organic agriculture do indeed reflect good tenets but there are also dubious rules and outright hedging that miss the mark. One can meet the standards for organic fruit growing and yet be way out of touch with holistic understanding. The true goals of the grassroots organic movement have never changed: Healthy food from healthy soil; Local farms feeding local folks. Importing an "organic apple" from thousands of miles away is not environmental awareness in action—burning petroleum to get that piece of fruit to your door is as "earth allopathic" as organophosphate sprays are in the orchard ecosystem. Which isn't to say we don't make compromises in going about our daily lives.

This network uses the word "holistic" to describe health-building orchard practices that bring about wholesome fruit. We recognize that there are extremely well-intentioned growers who may not yet be in an economic position to forego a certain chemical application. These are growers who support the living soil, abate fungal problems with good sanitation practice, minimize the use of fungicides in favor of boosting tree immunity with deep nutrition, abet microorganism allies, and approach insect pest situations with life-cycle understanding and bold bio-

diversity. Very discerning chemical use may be a one-shot directed at overwhelming curculio pressure, or extended fruit rots due to high humidity in the Southeast, or organized borers lurking behind every tree trunk. And yet we need such folks to provide nutrient-dense food in the communities where we live. We encourage growers to trial holistic techniques that others have successfully employed. This is a nudging process. We're getting *here from there*, to paraphrase an old New England adage.



Cider is a great way to utilize seconds and add value.

Photo courtesy of: Tammy Hinman, National Center for Appropriate Technology

Golden Apple Pledge Drives

This vast undertaking requires fundraising to support the progress taking place. Creativity keeps this fun, as our Golden Apples saga of Hercules will reveal to those who check out those top menu bar buttons. Supporting memberships from growers and businesses are at the core of this effort. Those of you who listen to NPR will recognize a

(Continued on page 14)

(Continued from page 13)

familiar pitch here:

All of us are working hard to grow apples that impart health to our families and friends in the communities where we live. Having a grower's network where we can exchange ideas, propose solutions, and basically accelerate our mutual learning curve is a good way of tapping into holistic knowledge. Apple lovers—our dear customers—might consider financially supporting these efforts as well. Everyone benefits from making community orcharding a viable proposition.

You've been enjoying these web pages. Now it's time to consider lending your financial support to this mutual work. \$5, \$10, \$25, \$40. You decide a pledge amount that works for you. The time and direct costs that go into setting up each and every web page found here amounts to \$200 per page. Frankly, we need your help defraying these expenses if we are to keep putting this information up and making it freely accessible. If enough growers and apple lovers deem this work worth supporting, well then, ladies and gents, there's plenty more we can plan on doing. From a European research tour to enabling grants that make soil food web testing possible in coordinated orchard trials. Full-fledged membership in the Holistic Orchard Network unleashes all sorts of organic potential!

Our intentions are to keep all aspects of this site open to everyone. From the free newsletter to the discussion forum to perusing cutting edge articles to research participation. Slowly but surely we are gaining ground here, the biggest challenge of all.

Holistic Research

Growers get to hobnob with brilliant nuance on our research pages. Individual topics are handled in their own right, plus you will see additional intentions that await a financial shot in the arm. The biggest goal of all is establishing coordinated trials in healthy ecosystems on actual farms. . . which most university specialists just seem incapable of comprehending.

Useful research for holistic orchardists will always depend on the integration of several factors. Tree health counts, air drainage counts, birds count, microbes count, beneficial insects count, and when it comes to inputs, synergy counts. The organic context is best seen as a holistic integration of everything we do. Nor will an organic solution necessarily seem worthy if we insist on the same standards of "chemical perfection". The mythical 95% packout ties into a cheap food system that requires large-scale growers, mega-packing houses, and WalGreens super stores to set out the insipid results of the harvest. A sensible local economy that provides locally-grown food is one of the factors integral to the methods we seek to develop. We always need to think "integration" in our research approaches even though combined ramifications are much harder to discern.

Social Networking... sort of

Our discussion forum is set up to keep insightful conversations about fruit growing organized by topic. Here's where experienced orchardists ask questions and delve into the nuts and bolts of ecosystem dynamics. More than a few categories have been established for topic threads. The beauty here is that growers can completely review any orchard topic and add their own observations months later.

Signing up for the Community Orchardist newsletter gets you on our bona fide mailing list. We currently have close to 1500 folks from across North America interested, intrigued, and appreciative of what's being undertaken by the Holistic Orchard Network.

And yes, you betcha, we're on Facebook! One entices apple lovers wherever they can be found, or so the thinking goes. The Happenings page on the website is dedicated to restoring apple culture once again in this country.

Community Orchard Listings

Member growers get listed on our "community orchard search engine" based on accepting the core principles. This evolving listing by regions across this continent will someday reach hundredth monkey momentum—and then we all had better hold on to our hats!

Growers with a listing as a community orchard deal with specific orcharding challenges in numerous ways. First and foremost, we are people who emphasize HEALTH in our farming practices in order to bring our friends and neighbors healthy fruit. Please read our Holistic Core Values to fully understand the scope of what's involved in making wise orcharding decisions. And do feel free to ask each grower about his or her need to employ specific means.

The success of this network—through the grower-inspired research we're undertaking and everything else—will help us improve diversified farm systems and thus make the "natural apple" all the more attainable in every community. Farmers are among the local heroes who can help this messed-up material world get back on a sustainable track. Orchardists work hard at high cost subject to the vagaries of the weather. Accordingly, nutrient-dense fruit costs what it takes to grow it. Farmers should be paid fairly for investing in holistic practices that produce healthier food. Quite a few chemicals are applied for aesthetic purpose. "Fruit without flaw" is a misnomer when we begin to understand how nutritionally empty the products of industrial agriculture have become. Lighten up, folks. Trust your local farmer. A little fungal spotting on the occasional apple is not a worm.

Thank you for letting me introduce you to some of what it takes to grow healthy fruit. Go now and embrace your own community orchardist, whoever she or he may be. We are indeed making this world better, one tree at a time.

ATTRA LOSES FEDERAL FUNDING

ATTRA, or the Sustainable Agriculture Information Service, has served farmers since 1987. ATTRA is managed by the National Center for Appropriate Technology (NCAT) and was funded under a grant from the United States Department of Agriculture's Rural Business-Cooperative Service. It provides information and other technical assistance to farmers, ranchers, Extension agents, educators, and others involved in sustainable agriculture in the United States. Their services include a 1-800 information/ help line that is staffed by an agriculture specialist 12 hours per day; a web site that features an extensive topic of publications, webinars, and breaking news and information on sustainable agriculture topics. If one of the 390 plus publications does not answer the question, one of our agriculture specialists will do one on one technical research for farmers. Our agriculture specialists have access to a wide range of research materials and other resources that they use to compile summaries of sustainable agriculture techniques and technologies that farmers want to know about. Using these resources, our agricultural specialists can provide you with the most recent information regarding sustainable agriculture practices, as well as resource lists to help folks find equipment, materials, supplies, and other sources of assistance.

Funding was eliminated for the ATTRA project in the deficit reduction efforts for the congressional Fiscal Year 2011 budget. NCAT executive director, Kathy Hadley says, "We are committed to maintaining our sustainable agriculture services and are exploring other funding options for the project in the wake of these federal budget reductions." "Generating revenue to meet operating costs for the next six months while Congress debates the fiscal 2012 budget is the first priority," Hadley said. Some of the options include increasing private donations from corporations, foundations and individuals, and charging a minimal fee for access to technical publications. NCAT is a non-profit holding 501(c)3 status, and donations to the organization are tax deductible.

If you would like up to date information about this topic see the ATTRA Face Book page: <http://www.facebook.com/pages/ATTRA-Sustainable-Agriculture/134541719898890>

or the NCAT web site <http://www.ncat.org>.

For press on the funding cut, see High Country News Blog: <http://www.hcn.org/blogs/goat/sustainable-ag-education-loses-funding>

OTFA WELCOMES KEN MANDLEY TO THE BOARD OF DIRECTORS

Ken Mandley was elected to the Board of Directors in April of 2011 and will serve a one-year term. Ken is relatively new to orchards and to organic farming, having embarked on both journeys about five years ago. He is the operator of Deedon Lake Orchard, in NW Wisconsin, which was certified organic in 2010. He operates his ten acre orchard on a share crop basis with the present landowners. The orchard, which originally consisted of 1020 trees of twelve different varieties, all on standard rootstock, is about thirty years old, and was essentially abandoned a few years after planting. Today, approximately 500 of the original trees remain. Shortly after Ken began managing the orchard, he removed about an acre of unproductive trees, and is slowly converting that land to high-density plantings of highly desirable varieties, such as Honeycrisp, and disease resistant varieties, such as Liberty. Ken is interested in pursuing research opportunities, both in his orchard and through OTFA, that are applicable to smaller scale growers and in identifying heritage varieties that are suitable for organic operations. Ken recently was part of the panel presenting the MOSES sponsored Organic University "Transitioning to an Organic Orchard."

Ken will Chair the OTFA Research Committee and oversee the development of the Organic Research Catalog, a project funded by the Minnesota Department of Agriculture through USDA Specialty Crop Block Grant Program. The Catalog will be comprised of completed research topics, on-going research topics, and needed research topics. It will also include a listing of scientists who are actively engaged in research pertinent to organic tree fruit production as well as a listing of growers willing to participate in on-farm research. The desired outcome of the research catalog is three fold.

- A. Develop a data base of pertinent research that is easily accessible by growers interested in some topic. I think we envision this piece to be a keyword based search engine that links from our website (being developed right now)
- B. Identify priority research topics so that researchers will be able to develop proposals that can be supported by OTFA.
- C. Link researchers with other researchers and growers

If you are interest in serving on the Research Committee, contact Ken at kmandley@centurytel.net



MINNESOTA DEPARTMENT
OF AGRICULTURE

Funds to support this project received through the Minnesota Department of Agriculture through USDA Specialty Crop Block Grant funds.

ORGANIC TREE FRUIT
ASSOCIATION
OTFA c/o Bridget O'Meara
1223 St. Croix St.
Hudson, WI 54016
OTFAinfo@gmail.com

JOIN OTFA TODAY!
MEMBERSHIP FORM
BELOW.

OTFA MEMBERSHIP FORM

The Organic Tree Fruit Association (OTFA) is professional association dedicated to serving the interests of organic tree fruit growers and serving the organic tree fruit industry through education, research and advocacy. You don't need to be a grower to join. If you want to learn more about organic tree fruit issues or would simply like to support organic tree fruit growers, please join OTFA as an Active Non-Grower Member or as an Associate Member.

Please note: Active Grower and Active Non-Grower Memberships include full voting rights within the organization. Associate Membership does not include voting rights. All Membership levels receive a \$10.00 discount at OTFA events.

- ACTIVE GROWER MEMBER = \$50.00 ANNUAL FEE, PLUS \$1.00 PER BEARING ACRE (AS INDICATED BELOW)
- ACTIVE NON-GROWER MEMBER = \$50.00 ANNUAL FEE
- ASSOCIATE MEMBER = \$25.00 ANNUAL FEE

NAME _____

FARM NAME _____

ADDRESS _____

CITY/TOWN _____ STATE _____ ZIP _____

PHONE _____ EMAIL _____

TYPE(S) OF TREE FRUIT GROWN _____

OF BEARING ACRES _____ # OF NON-BEARING ACRES _____

SEND THIS FORM WITH YOUR CHECK TO:

OTFA C/O BRIDGET O'MEARA 1223 ST. CROIX STREET, HUDSON, WI 54016

**SUNDAY,
JUNE 26TH!**

**Join us for a Field Day at
Mary Dirty Face Farm!**



Starting An Orchard?

Learn more about...

- Smaller scale orchard establishment
- Diversification within an orchard
- Questions to ask before you begin
- Challenges in the early years

It starts with a dream!

See how Rachel Henderson and Anton Ptak turned a hayfield into an orchard.

**OTFA Field Day - June 26th, 9:00 a.m.
to Noon at Mary Dirty Face Farm,
Menomonie, WI.**

Since 2009, Anton and Rachel have been working to establish a perennial crop on 3 of their 20 acres. They have worked their day jobs, spending weekends on the farm and doing nearly all of the work by hand. This year will be the first year to market a small but much anticipated crop! There are many varieties of apples, pears, cherries, plums, and apricots as well as currants and gooseberries. *Come see this diversified orchard—and be inspired to pursue your dream!*

Everyone is welcome! Please register by June 20th. The cost is \$10 (OTFA members free) and includes beverages and pastries. To register and get directions, call or email us at [715-808-0060](tel:715-808-0060) or OTFAinfo@gmail.com

Organic Tree Fruit Association (OTFA) is a non-profit membership organization dedicated to serving the interests of organic tree fruit growers and advancing the organic tree fruit industry through education, research and advocacy.

OTFA is online at

www.mosesorganic.org/treefruit/intro.htm



Place
stamp here.

per year. If your sales are between \$15,000 and \$70,000 annually, the fees would approximate \$1,000 per year. The cost of organic certification can be reimbursed to you by your state department of agriculture, at the rate of \$750 or $\frac{3}{4}$ of the cost per year, whichever is less.

Documentation is an important aspect of organic farming. During the transition years a record keeping system should be developed to suit your operation. Small pocket calendars, spiral notebooks and computer systems can be used to note field activities, inputs, storage and sales information, which will be needed once the farm is certified for organic. These records are a valuable historical reference, detailing your farm's unique growing conditions, and will aid you in making yearly management decisions.

Planting Stock and Seeds

If planting a new orchard you are required to try to buy organic tree stock, rootstock, scion wood, and organic seeds for any planting of the understory.

If you plant organic nursery stock, and you get a crop within 12 months, you can sell that first fruit harvest as organic if your orchard floor has been free of prohibited products for 36 months prior to the harvest. Alternatively, you are allowed to buy nonorganic trees, rootstock or scion wood (which have not been treated with prohibited synthetic materials), and manage them for 12 months on organically managed land. You can sell a crop of organic fruit from this planting as long as the harvest is at least 36 months from the last application of a prohibited substance.²

You must document all materials applied to the land and trees for at least 36 months prior to the harvest of organic fruit. If you are transitioning an existing orchard, or planting a new orchard into a previously non-organic field, you must write the last date of prohibited substance application in your organic certification application. If you are renovating the understory with grasses or legumes these seeds cannot be treated with synthetic substances, nor be genetically modified (GMO)

². See the *MOSES fact sheet Planning the Organic Orchard to help you develop a good foundation for future organic fruit production.*



or have been inoculated with genetically modified bacteria. Once you are certified organic, you must plant organic seeds unless you can prove you cannot find them in the type, quantity or quality you seek. You are not mandated to plant organic seeds during your transition years, however, use of organic seeds is a good way to make sure the seeds are not GMO, nor treated with something prohibited. If you accidentally plant something not allowed you must start the organic transition again from the day of planting, and your first organic harvest will be delayed until 36 months after the prohibited product use.

If you wish to produce both organic and nonorganic fruit on the same farm this "parallel" production will require you to maintain strict separation of the crops, including dedicated equipment for each type of production as well as no comingling of the organic and nonorganic during production, harvest, storage or sales. Documentation must be maintained describing your protocols and activities to keep the organic from being contaminated by nonorganically approved inputs and equipment or nonorganic fruit.

Soil Fertility

Organic farming is a proactive management system based on ecologically sound practices in concert with the use of approved inputs. Soil fertility is approached not only to feed the current year's crop, but also to continuously build organic matter and improve soil tilth through the use of green manure plowdowns, animal manures, plant materials, mined minerals, and compost. The healthier the tree, the less attractive to pests and the more

resilient it is to survive pest or disease outbreaks. Organic management activities in an orchard typically offer numerous benefits. For example, a planting of clover fixes nitrogen, improving soil fertility, while also choking out unwanted weeds. Clover flowers also attract beneficial insects who work to keep problem insects at a tolerable level. Understory weed control may be accomplished by mulching or mowing instead of using synthetic herbicides. The mulch or decayed clippings offer the added benefit of contributing organic matter, improving the soil's water holding capacity.

Soil fertility, and ultimately tree health and fruit quality, will be improved through the use of manure. However, in organic systems manure must be managed very carefully. Manure may be turned into compost, which if prepared according to strict guidelines, is very versatile and highly beneficial. All animal waste-based inputs except vermicompost (worm castings) are considered raw manure unless they have clear documentation that they meet the compost regulation. Even manures that have sat in a pile for many years and do not have an odor must be handled as raw manure. Raw manure cannot be used on or in the soil any sooner than 120 days before harvest of the crop where soil particles may be in contact with the crop. If manure is applied less than 120 days before harvest, fruit that could have been splashed by irrigation or rain water from manure on the ground cannot be sold as organic. True NOP-compliant compost or processed manure can be applied to the crop up until the day of harvest.

Pest and Disease Management

The organic regulation mandates that a specific pest control hierarchy be used. To manage pests and diseases, you must start with cultural controls (i.e. planting resistant stock), mechanical controls (i.e. screening or netting) or biological controls (i.e. the use of beneficial insects and pheromone disruption). If these methods don't work, document the fact and then natural products can be used. If natural inputs are not effective, then approved synthetics can be used.

Organic tree fruit management is one of the most difficult types of organic farming, due to the many



Organic tree fruit management is one of the most difficult types of organic farming, due to the many devastating pests and diseases that are present.

devastating pests and diseases that are present, especially in the humid upper Midwest and Northeast U.S. Choosing disease resistant rootstock, planting trees in a pattern where good airflow can lessen fungal problems, and planting beneficial insect habitat are all examples of a systems-based approach mandated by the organic regulation. This challenges organic orchardists to continually improve their ecosystems. Monitoring throughout the season enables the orchardist to anticipate problems and be prepared to apply approved materials before problems become crises. Trees under stress are more susceptible to pest and insect damage. Providing an environment with a healthy ecosystem will help trees withstand challenging climatic conditions such as drought or excessive rain, and will lessen the need for inputs. Preventative practices such as removing apples from the base of the trees before winter, to prevent overwintering of pests, and keeping grass short to lessen rodent damage, are all part of organic orchard management.³

Production Inputs

Prohibited substances are all synthetic materials that have not specifically been reviewed and approved for use in organic production, as well as a few natural products that have been specifically not allowed. In other words, most synthetic mate-

³. An excellent publication listing the various pests and diseases and their organic management strategies was published by Cornell University Cooperative Extension, A Grower's Guide to Organic Apples, NYS IPM publication No. 223, http://www.nysipm.cornell.edu/organic_guide



MOSSES ORGANIC FACT SHEET

Managing Pests & Diseases in an Organic Apple Orchard



There are also many "minor" pests and diseases for apples that can, under the right conditions, cause economic damage.

Growing apples in the Midwest has always presented challenges. Apples are susceptible to many diseases and insect pests. Our humidity, rain and warmth can produce ideal conditions for fungi in particular, the single greatest threat to apple producers. Prior to the advent of Integrated Pest Management (IPM) techniques, apples were among the most heavily sprayed crops. Even after the widespread adoption of IPM, growers are challenged to produce blemish free apples without using chemical inputs. Conventionally produced apples are near the top of the Environmental Working Group's "Dirty Dozen" list of foods found with pesticide residues.

Integrated Pest Management (IPM) is the science of combining cultural, biological and chemical pest control methods to reduce the reliance upon chemical inputs. Scouting for the presence of pests, and monitoring the conditions that contribute to their growth, are central techniques to IPM, since the use of chemicals should only be done if there is the potential of actual economic damage to the crop. Timing is everything- a little too early or too late and the effort (and money) is wasted. Before IPM, products were sprayed on a schedule, with minimal attention paid to the actual need for these applications.

Organic agriculture is indebted to many of these IPM strategies. The emphasis in an Organic System Plan is more on the mechanical, cultural and biological pest control options, but if needed, natural pesticide and preventative inputs can be used to minimize economic loss. Organically approved pesticide inputs can be effective, but most are restricted use only, meaning

that per the National Organic Standards, they can only be used when other pest control strategies (resistant varieties, biological and cultural controls) are not enough. Inputs that contain copper are restricted use in order to prevent soil contamination. In short, it is not enough to simply substitute organically approved inputs for conventional inputs. An organic orchardist can learn to control pests using a variety of IPM techniques. By doing so, the organic orchardist can meet the requirement of the organic rule, reduce input costs and minimize economic losses.

Your choice of pest control strategies will depend upon your goal as an apple producer. You have to decide what quality of fruit is your goal. Blemish free, grocery store shelf quality fruit requires an understanding of the newest techniques. Fruit destined for your own table, or for processing (cider) does not need to be cosmetically perfect, so you may only need a minimalist approach. For grocery stores, farmers markets or roadside stands, however, you need #1 quality fruit grown using advanced monitoring and control programs.

Apple Scab

Apple scab is the number one pest of apples. It is caused by the fungus *Venturia inaequalis*. It causes more economic damage than any other pest. For that reason, it also requires the most monitoring and inputs. Susceptible varieties could require a rigorous spray schedule to produce grocery shelf quality fruit.

Disease Resistance

Disease control for organic apples begins with choosing disease resistant varieties. Both modern and antique apple varieties have varying degrees of resistance to apple scab and may require a fungicide program in an average year. Many books and most catalogs list disease resistant varieties. Beginners, and those

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who want to minimize inputs, should choose apple scab resistant varieties or better yet, choose varieties that were bred for field immunity to apple scab. The following scab immune varieties have proven to be hardy and productive for the upper Midwest: Early August Harvest- "Pristine", a yellow apple with good quality but poor shipping traits. Late August Harvest- "Red-Free". Early September Harvest- "Prima", a tart apple similar to "Haralson". Resistant to apple scab but susceptible to cedar apple rust. Late September- "Liberty".

These varieties are "Field Immune" to apple scab, meaning that in a typical year you will not get apple scab even if these trees are not sprayed. Given ideal conditions even the most resistant trees will get apple scab. The apple scab fungus is also evolving and orchardists are starting to see strains of scab that can infect even the varieties bred for field immunity. The increasingly popular "Honeycrisp" variety is only slightly resistant to apple scab and can be a tough tree to grow for beginners. If you choose this variety, plan on having to manage apple scab to guarantee a sellable fruit. Avoid "Jersey Mac," "McIntosh," "Cortland" and any apple with McIntosh genetics as they are very susceptible to apple scab and will need high levels of inputs to produce a sellable fresh fruit.

IMPORTANT NOTE: ALWAYS CONFIRM WITH YOUR CERTIFIER THAT ANY CROP INPUT IS ACCEPTABLE. MANY OF THE GENERIC AND BRANDED PRODUCTS LISTED IN THIS DOCUMENT ARE "RESTRICTED USE." YOUR CERTIFIER HAS THE FINAL SAY ON INPUT APPROVALS BASED ON THE NATIONAL ORGANIC STANDARDS AND YOUR ORGANIC SYSTEM PLAN.

Terminology

Some organic growers may not be familiar with terms commonly used in commercial fruit production. Apple scab is a fungal disease that overwinters on leaves that were infected the previous season. Spore cases develop in these decaying leaves and then expel spores for a limited period of time during the spring. Primary scab refers to the lesions created by spores that came from the overwintered leaves. Secondary scab refers to the lesions that spread from the primary scab actively growing on the leaves and apples. Scab spores require a film of water to start growing and penetrate the tissue. The wetting period refers to the number of hours the leaf surface remains wet. An infection period refers to the number of hours that is needed for a scab spore to grow and penetrate a leaf or apple skin. The infection period is shorter with warm weather. As little as nine hours of wetness can be enough to cause an infection in hot weather, while 36 hours or more may be needed in very cold weather.

The fungus can be controlled in one of two ways. A protectant fungicide coats the leaves and fruit and stops the spores from infecting the tissue. A post infection fungicide penetrates the fruit or leaf and kills the fungus initiating the infection.

Controlling Primary Apple Scab

If your intent is to produce sellable organic fresh fruit, start with these important cultural activities:

- Remove wild apple trees, wild crabapple trees and any unwanted susceptible varieties of apple tree to reduce the level of fungal spores in the immediate area. Remove any unwanted trees within two hundred yards or more if possible. Spores can travel up to a mile from their source.
- Rake up and remove all fallen leaves as soon as possible. Fallen leaves are a major source of fungal spores. The more leaves that are removed, the less inoculum in the immediate area.
- Pruning is important. An open structured tree with good airflow will have fewer problems with scab. A pruning course is recommended for beginners. When climatic conditions are optimal for apple scab, and cultural controls alone are not sufficient, you then might need to use organically approved materials:
- During a typical spring in the Midwest, it is recommended that a least a few sulfur sprays be applied as a protectant fungicide before every rainfall from bloom until mid-June. Use an NOP allowed micronized wettable powder sulfur. Check with your certifier in addition to the OMRI Materials List for allowable options. Sulfur prevents the fungal spores from penetrating the leaf during periods of high humidity and moisture on the leaf, which are necessary for infection.

Traditionally, orchardists have followed up with another spray of liquid lime sulfur as a post infection fungicide after each rain. Computer monitoring can determine which rains actually provided a long enough wetting period to allow infection. Only use the post infection lime sulfur spray if the computer model indicates a need. This will allow you to drastically reduce the number of lime sulfur sprays. For the orchardist who cannot afford such monitors, plan to apply micronized sulfur before each rain event, and follow with a lime sulfur post infection spray. Following this spray program from bloom to mid-June should keep primary scab under control. With good early season control, good sanitation practices and a little luck with the weather, you should be able to reduce or eliminate spraying for secondary apple scab. This does have risks and in a wet year you will have problems from secondary scab, including the possibility of crop failure. If you need to maximize the quality and quantity of sellable fresh fruit, you need to consider a more comprehensive secondary apple scab control program.

Controlling Secondary Apple Scab

If infections are controlled during the primary scab season, fungicides can be greatly reduced during the summer because the overwintered spore cases will have expelled all of their spores. If protectant and post infection sprays are successful in controlling primary scab, an orchardist can get by with five or six properly timed post-infection sprays per season.

This reduction in total sprays is accomplished by using a weather data logger to track the temperature and leaf wetness in the orchard. This is a small fist sized unit that is placed in the tree canopy. Some models have to be brought in and downloaded to the PC. There are more expensive models that will send the data directly to the computer. The data from the logger is then entered into a disease modeling program that takes the weather data and figures

out if the wetting period was long enough to cause an infection. If the modeling program indicates a need, plan to spray a protectant micronized sulfur in combination with a post infection lime sulfur product. Over time, monitoring equipment can help pay for itself by lessening your input costs and the labor needed to apply materials.

Tips for Managing Apple Scab (For #1 Quality Fruit)

Reduce the amount or eliminate the varieties that are highly susceptible to scab. Phase out Jersey Mac, Cortland, and McIntosh. These varieties require higher rates and more applications per season to produce fruit that will grade out lower than the other varieties in an average season.

Treat every infection period, even if it is a very light infection according to the computer disease modeling programs.

Spray the most scab susceptible varieties first, and then move to the more resistant ones.

Implement good horticultural practices. The post infection Lime Sulfur program will not control scab in high inoculum conditions. Remove blocks that are shaded or in a slow drying environment. Mow or remove leaf litter in the fall. Mow or flail again in the spring. Use a foliar spray of fish oil or neem oil to stimulate decay organisms and break down leaves. Keep the orchard well pruned.

Sooty Blotch and Fly Speck

Sooty blotch is caused by *Gloeodes pomigena* and fly speck by *Microthyriella rubi*. These are less damaging, but important fungal diseases of apples which are mainly a cosmetic issue and do not have a significant effect on production. Sooty blotch and fly speck are mid to late summer diseases, which are more of an issue in moderate temperature, humid conditions. Fog and heavy dew from cool night temperatures can be ideal conditions for infection. If you are producing cider apples and fruit for personal use, do not worry about control. Spraying is very difficult to time correctly.

Remove wild brambles around the orchard, as they are a secondary host for the diseases and are often a source of infection.

Air movement through the orchard and the trees is very important. Any management practice that increases the rate of drying will be helpful. Keep trees well pruned, the orchard mowed or grazed and remove any barriers to wind flow. Maintain good tree spacing. These cultural practices alone can greatly reduce the infection rates of these diseases.

Fireblight

Fireblight is a bacterial disease caused by the bacterium *Erwinia amylovora* that attacks a tree through wounds in its bark. Overly fertilized trees with vigorous growth and young trees are more susceptible. Start your prevention program by sourcing resistant apple tree varieties when possible.

Susceptible varieties on susceptible rootstocks are a disaster waiting to happen. Fireblight can be translocated to the rootstock, which will kill the tree if you have susceptible rootstock. If the rootstock is resistant, even a severe infection will not kill the tree. There are several



new rootstocks coming out of the Cornell University Geneva program. Cummins Nursery has made some of these rootstocks available for purchase. Dr. Cummins, who was an apple and root stock breeder at Cornell, owns the nursery. Contact Cummins Nursery for a list of stocks that would be good for organic production- <http://www.cumminsnursery.com/>

Cut out infected shoots- being careful to disinfect the pruners in between cuts with 70% alcohol or 10% bleach (alcohol requires a longer contact time to disinfect than bleach). It is best to prune on dry, sunny days. During dormant season pruning, look for lesions on infected branches and remove them. Carefully apply fertilizers to avoid overly-vigorous trees. Use composted manure for slow release nitrogen which also stimulates the soil biology.

If fireblight was a problem the year before, or if you are dealing with susceptible varieties, you should use a preventative copper spray between green tip and loose cluster growth stages. If you have an active fireblight infection, it is currently allowed to spray with either streptomycin or tetracycline antibiotics. Leaf wetness and temperature data loggers can help you determine if there is a need to spray with greater accuracy. Please note that both streptomycin and tetracycline are only approved for this specific use until October, 2012 unless they are renewed by the National Organic Standards Board. Check with your certifier if you have questions on whether a product is allowed or not. The apple industry is actively researching alternatives to these antibiotics, and new, less problematic materials may be available in the next few years.

Codling Moth

To control the codling moth (*Cydia pomonella*), you need to understand its mating behavior. The male is attracted to the female by the scent of pheromones. Once mated, the female lays eggs near the developing apple. The newly hatched larva crawls until it finds an apple, and once there, immediately eats its way inside. Your opportunity to control this pest only exists before or just after egg hatch and before the larva enters the apple. There is no way to prevent damage once the larva is inside the apple.

Pheromone traps are your first line of defense and your way of monitoring the need to spray. Pheromone traps, scented with the same pheromone as used by the female moth, "trick" the male into becoming stuck on a glue board. Seven male moths in one trap over the course of a week is the threshold for treatment.

Start trapping at petal fall and continue throughout the growing season. A "rough spraying plan" is to wait for two weeks (for the eggs to hatch) and then spray with *Bacillus thuringiensis* (Bt) or Pyganic™. The better way to time the spraying is by counting degree days. It takes 200 degree days to hatch out the eggs. The most effective treatment should therefore be applied 200 degree days between the threshold count and the application. Be aware that Pyganic™ is a broad spectrum organically approved pesticide. Application will kill beneficial insects as well as the codling moth, so use it sparingly.

Degree days are not difficult to calculate. Take the high and low temperatures for the day, add them together and divide by two then subtract 50. Codling moth eggs will not develop when the temperature is below 50. This is the number of degrees accumulated for that day. Track that until 200 is reached and spray for the best results. The MN Department of Agriculture has an excellent Apple IPM Manual that describes degree day calculations and IPM in general. It is available online: www.mda.state.mn.us/plants/pestmanagement/ipm/apple-manual.aspx

If codling moth and other insects such as plum curculio are common problems, you should also consider using a kaolin clay product known as Surround™. Made of refined kaolin clay, Surround can be applied by backpack or other sprayer directly to the tree. The clay literally clogs up the insects orifices, making for a very inhospitable environment. It will even kill very small, newly hatched larvae of the codling moth. The trick is to get enough of the clay on the tree, and with enough coverage and thickness to discourage and/or kill insects. Many growers have found this environmentally benign input to be a very important tool in their organic orchard.

Apply Surround around the time the first generation codling moth begins to fly. While the Surround is not applied specifically for the codling moth, it will have some effect on the adult moths. Surround is not a "stand alone" control for codling moth, but it will irritate the moths. This may shorten their life by making them more agitated and forcing them to use more of their limited body fat before they lay all of their eggs or get a chance to breed. Surround will also repel some of the adult moths. It may also affect the larvae as they search for an apple to enter. The clay particles may make it harder for a larva to identify an apple, and it will most likely slow down the movement of this tiny newly hatched worm. The longer it searches for an apple the longer it is exposed to the elements, predators, and pathogens. Surround can also be applied in the summer to repel Apple Maggot Flies. This application often overlaps second generation CM and helps reduce damage.

Some sources recommend three applications of clay before you reach effective coverage. Surround™ can even be mixed with Bt or Pyganic™ to reduce labor.

Make sure to pick up dropped fruit throughout the growing season. Apple trees will frequently drop infested fruit. If you allow the codling moth to develop and emerge to become an adult, you are only adding to the problem. Remove and destroy dropped fruit as soon as possible. Infested fruit should be chopped up and composted or

fed to livestock. Michigan State University has published interesting research on pest control in orchards using hogs, which rapidly and happily consume dropped apples. <http://www.michiganorganic.msu.edu/uploads/files/31/Koan%20Pig%20Research.pdf>

Plum Curculio

The plum curculio (*Conotrachelus nenuphar*) is a weevil (small beetle) that damages fruit in two ways. After mating, the female will look to lay eggs into a suitable developing fruit. She may make several attempts to do so and each spot will develop into a crescent shaped scar. Scarred fruit will not develop normally and will often have a warped appearance around each scar. When the female successfully deposits her egg, the larvae will also do internal damage, making the fruit unsellable.

Plum curculios overwinter in brush and woodlots near the apple trees. Keeping brush under control and the orchard clean will help. As with codling moth, apple trees often drop infested fruit. Prompt removal will kill many larvae before they can emerge as adults.

This is the toughest insect to control with organic methods. A combo of neem-derived products (Neemix and AzaDirect are two commercially available options) Surround™, and fish oil, sprayed from petal fall into early June will keep them under control. If you can live with a little damage here and there, Surround™ clay and cultural techniques such as cleaning up dropped fruit and removing overwintering habitat may be enough. If you want consistent #1 quality fruit, you will probably need to spray neem. Some orchardists will combine neem oil with fish emulsion or compost teas as a time and labor saver. Because neem is broad spectrum pesticide that will destroy beneficial organisms as well as the plum curculio, conscientious use is encouraged.

Apple Maggot

Apple maggot is a summer insect pest of apples. The apple maggot is the larval stage of an adult fly. Once mated, the female apple maggot fly will search for a developing fruit on which she will lay her eggs. She has a strong preference for large, red, strong smelling fruit, which can be used against her. You may have seen the red plastic spheres hanging in orchards. These are traps coated with Tanglefoot™ sticky glue and an apple essence for smell. The combination is very attractive to the female fly which will land to lay eggs, become stuck and die. The traps, Tanglefoot™ and apple essence are readily available online.

Good control can be achieved by placing red sticky spheres every 15 feet around the perimeter of the orchard. Put at least two spheres per large tree. At least once a week they should be checked and cleaned since dust, dirt, leaves and dead insects will cover it quickly. Spheres need to be placed by July 15th and remain in the orchard until August 15th. This will control the majority of the AM flight in an average year in the upper Midwest.

Surround™ will help repel the female fly. It is possible to spray for the fly, but without proper monitoring equipment it is difficult to time the applications.

AM can be monitored by placing baited spheres in the orchard. If you are not using the trap out system, place three or four baited spheres around the orchard. The action threshold for conventional orchards is an average of five flies per sphere. The organic grower has to develop a threshold appropriate for his needs. For clean apples use the five fly average or lower given the fact that organic sprays are not as persistent as conventional sprays. Check the traps twice per week and treat as needed.

For a combination of the trap out system and organic pesticides put out three spheres for monitoring in late June. Check the traps twice a week. June flight rarely damages the small green highly acidic apples, but in an early bloom year, or on summer apples some damage could occur. If you start to trap several flies a day put out your border traps ASAP. Be sure to have a couple traps in the center of the orchard. If the center traps continue to catch AM even with the border traps in place, then you need to apply Surround or an organic insecticide to produce grocery store quality apples.

Other Pests and Diseases

There are also many "minor" pests and diseases for apples that can, under the right conditions, cause economic damage. It is highly recommended that you read as many resources as possible to prepare yourself for the common challenges in your area. Don't forget that your county's Extension Office can identify pests and diseases for you if you are unsure of what problem you are dealing with. Contact MOSES or reference the resources in this article for developing your own organic integrated pest management plan. Finally, remember to always check with your certifier to get approval on changes to your Organic System Plan and to verify that inputs are approved for use before you use them for the first time.

Additional Online Organic Educational Materials

The Organic Tree Fruit Growers Network
<http://www.mosesorganic.org/treefruit/intro.htm>

A grower's guide to organic apples – Cornell University Cooperative Extension and IPM program
www.nysipm.cornell.edu/organic_guide/apples.pdf

Michigan State Horticulture- Organic Apple Spray Program
<http://www.canr.msu.edu/vanburen/organasp.htm>

Grow Organic Apples- Holistic Orchard Network
<http://www.groworganicapples.com/>

Organica- A Resource for Organic Apple Production
<http://www.uvm.edu/~organica/>

ATTRA- Apples: Organic Production Guide
<https://attra.ncat.org/attra-pub/PDF/apple.pdf>
 ATTRA- Insect IPM in Apples- Kaolin Clay
<http://www.attra.org/attra-pub/kaolin-clay-apples.html>

Sources for IPM Materials and Supplies

Planet Natural
 1-800-289-6656
<http://www.planetnatural.com/site/index.html>

Great Lakes IPM
 1-800-235-0285 <http://www.greatlakesipm.com/>

Arbico Organics
 1-800-827-2847 <http://www.arbico-organics.com/>

Useful Links

www.mosesorganic.org

Free resources including the Organic Resource Directory, Certification Guidebook, Organic Fact Sheets, details on upcoming events and trainings, plus subscribe to the free Organic Broadcaster. The MOSES website is your source for farmer oriented news.

www.localharvest.org

Find farmers' markets, family farms, and other sources of sustainably grown food in your area.

www.landstewardship.org

Food and Farm Connection section includes a Community Supported Agriculture (CSA) Directory, and recipes using local foods.

www.rodaleinstitute.org

Supports farmers and consumers with research and resources, including a resource directory and Farm Locator™.

www.organic-center.org

The latest news and research on why organic is better - with a consumer resource section.



The Midwest Organic and Sustainable Education Service (MOSES) provides a variety of resources for farmers interested in learning more about organic and sustainable farming. Visit: www.mosesorganic.org

07JP1131

Project H

Sub-project: Specialty Crop Enterprise Management 2010



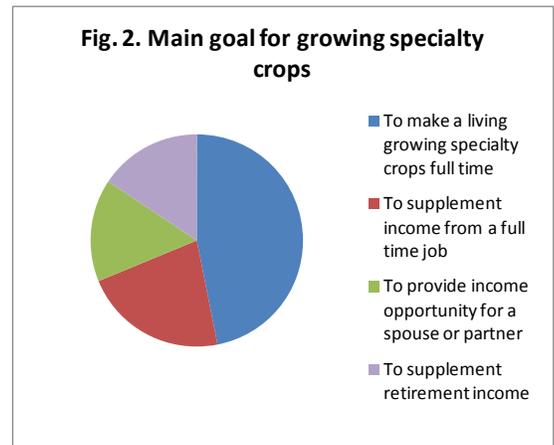
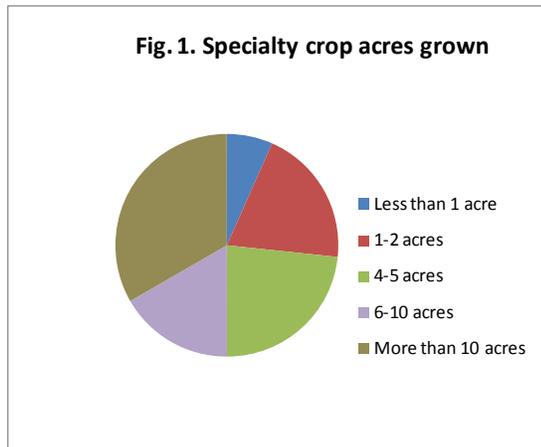
**MINNESOTA SPECIALTY CROP FARM BUSINESS
MANAGEMENT SCHOLARSHIP PROGRAM
~ GROWER PERSPECTIVES 2011 ~**

In late spring 2011, the Minnesota Department of Agriculture mailed a 10-question survey to 49 Minnesota fruit and vegetable growers receiving Specialty Crop Farm Business Management (FBM) scholarships. Business reply envelopes were provided; a total of 31 individuals returned the surveys for a response rate of 63%. One of the 31 submitted responses online at www.surveymonkey.com.

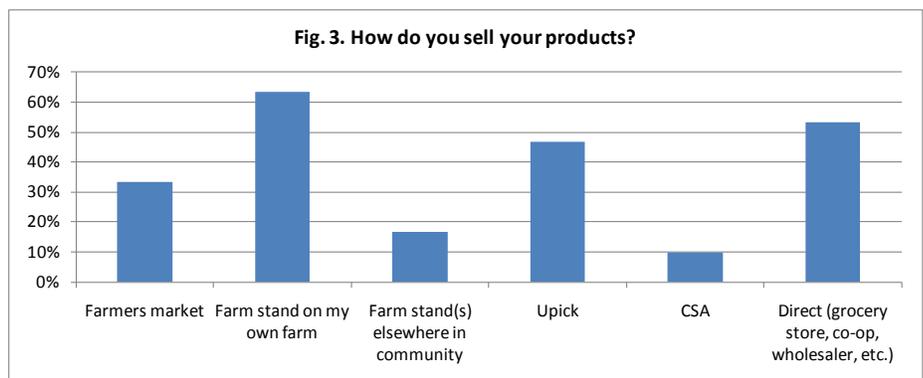
Scholarship funds for this program are provided by the USDA Specialty Crop Block Grant Program and the Minnesota Department of Agriculture. Scholarships start at 80% of tuition and decrease by 10% every two semesters. The program is delivered in a one-to-one setting by instructors affiliated with the Minnesota State Colleges and Universities system. Currently, only growers of fresh market apples, berries, grapes, pumpkins, sweet corn, and/or assorted vegetables (e.g., no canning crops) are eligible for the scholarships.

Half of survey respondents reported growing more than five acres of specialty crops, and half said they grow fewer than five (Fig. 1). While growers reported a variety of goals, 48% said they aim to make a full-time living growing specialty crops (Fig. 2). Nearly a quarter said they're seeking to supplement income from another job. Others want to supplement retirement income (16%) or provide opportunity for another person (16%).

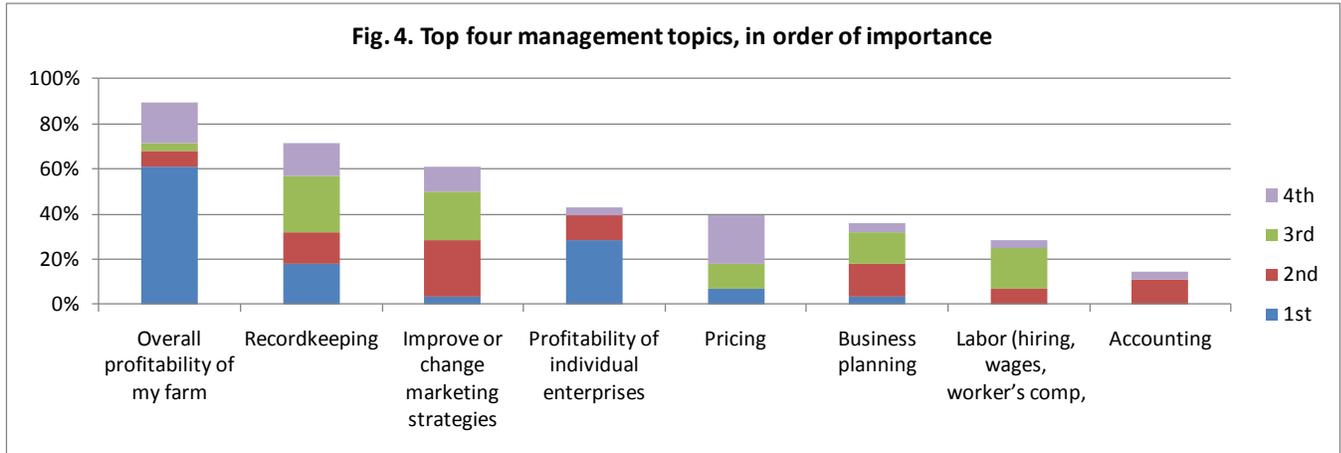
They sell their produce using a variety of outlets, and most use more than one sales venue (Fig. 3). More than half sell at a farm stand or elsewhere in the community. More than half also operate U-pick operations.



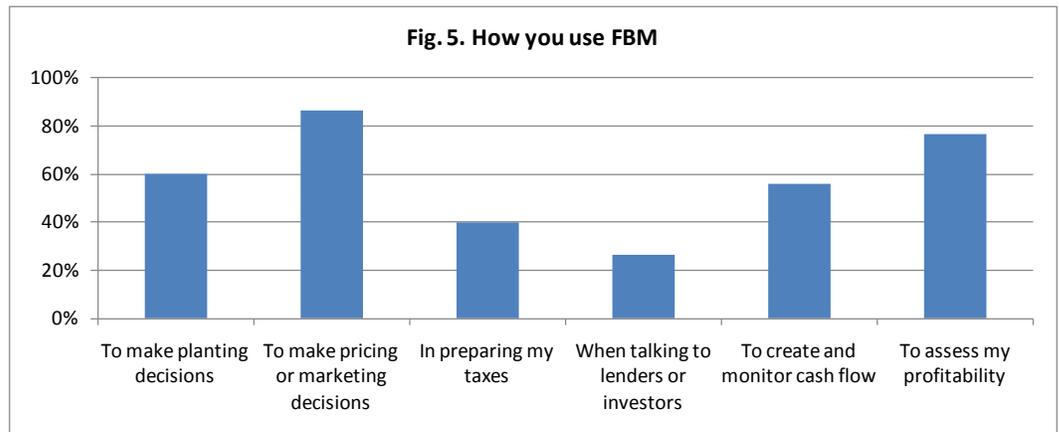
farm stand – either on their own farm in the community. Slightly more than



The survey asked respondents to identify and rank the four management topics most important to them out of eight choices (Fig. 4). Overall, *profitability of the farm*, followed by *recordkeeping*, *marketing*, and *profitability of individual enterprises* made it into most respondents' top four. When we look at what respondents identified as their #1, most important topic (dark blue bar), *overall profitability of the farm* again came out on top, followed by *profitability of individual enterprises*, and then *recordkeeping*.

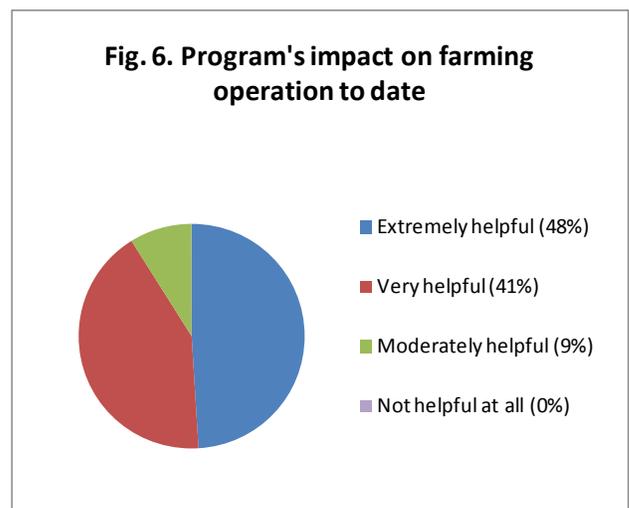


When asked how they have applied information they've learned through participating in FBM education, nearly every respondent offered multiple responses (Fig. 5). More than



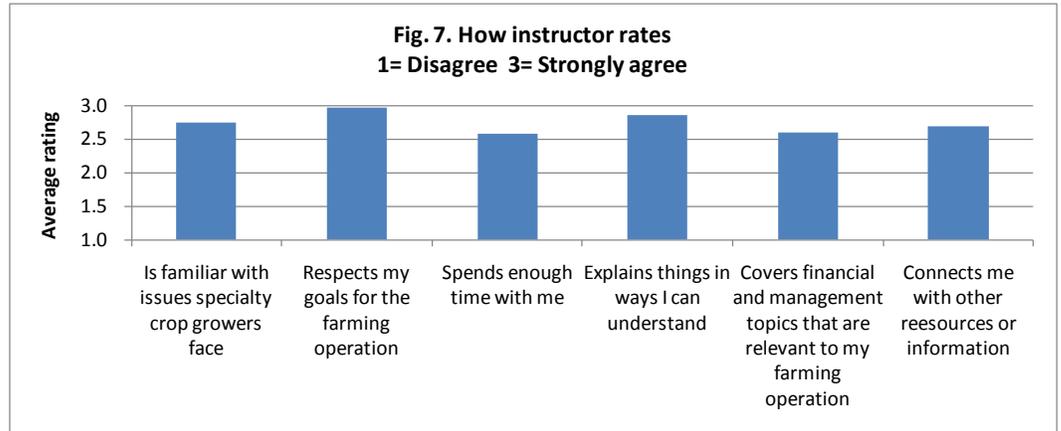
75% used what they've learned in FBM to make pricing or marketing decisions and to assess profitability. More than half used it to monitor cash flow and/or make planting decisions. More than a third used it at tax time.

All respondents said the program has helped their farming operation. They rated the program an average of 3.38 on a scale of 1 to 4, with 1 being "not helpful

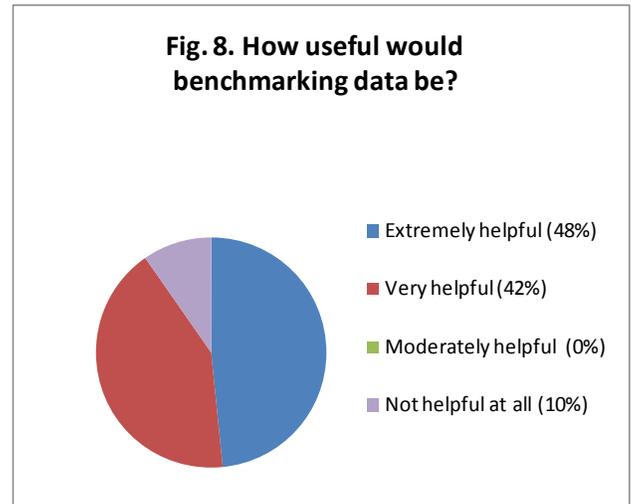


at all” and 4 being “extremely helpful.” Nearly 90% gave it a “top box” rating of 3 or 4.

In general, the survey respondents rated their instructors high in each of six areas related to program delivery (Fig. 7).



One of the goals of this scholarship program is to collect enough data so that individual farms can use it to benchmark with a peer group of growers. Respondents endorsed this effort, with 90% saying the ability to compare their farm’s economic performance against an average of similar operations in the state would be extremely helpful or very helpful to them (Fig. 8).



MnSCU FBM instructors and programs provide data about participating farms to the Center for Farm Financial Management at the University of Minnesota, which publishes much of the data online at www.cffm.umn.edu.

As with all MnSCU and CFFM programs, information about individual participants is kept confidential; only summary data are published for public use.

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In late spring 2011, the Minnesota Department of Agriculture surveyed Minnesota Farm Business Management (FBM) instructors who work with specialty crop growers. These instructors work with students who receive specialty crop FBM scholarships and grow fresh market apples, berries, grapes, pumpkins, sweet corn, and/or assorted vegetables (e.g., no canning crops). Scholarship funds are provided by the USDA Specialty Crop Block Grant Program and the Minnesota Department of Agriculture; they start at 80% of tuition and decrease by 10% every two semesters. A total of 13 out of 18 instructors responded to a 10-question online survey (www.surveymonkey.com), for a response rate of 72%.

Most instructors reported their students are highly motivated (Fig. 1). They said this is a fun and interesting population to work with for various reasons, including their interest, and enthusiasm, and eagerness to learn the subject matter, the fact that these students are a “clean slate” when it comes to this kind of instruction, and the fact that they come to farming and to FBM with a different, “outside the box” perspective. Instructors also cited some frustrations, including finding time to meet with growers who have off-farm jobs, lack of records and recordkeeping skills, challenges of affording the program, and the fact that some growers are not used to looking at their farming operation as a business.

Fig. 1. In general, how motivated are your specialty crop FBM students to work with and learn from you?

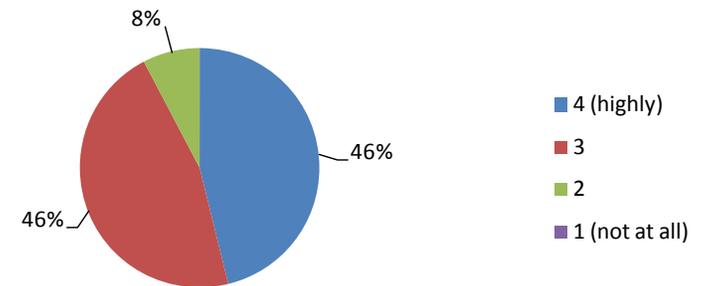
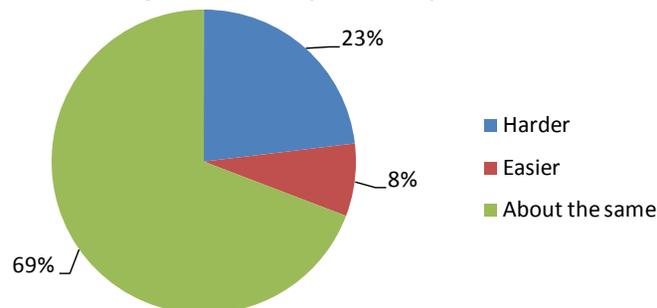


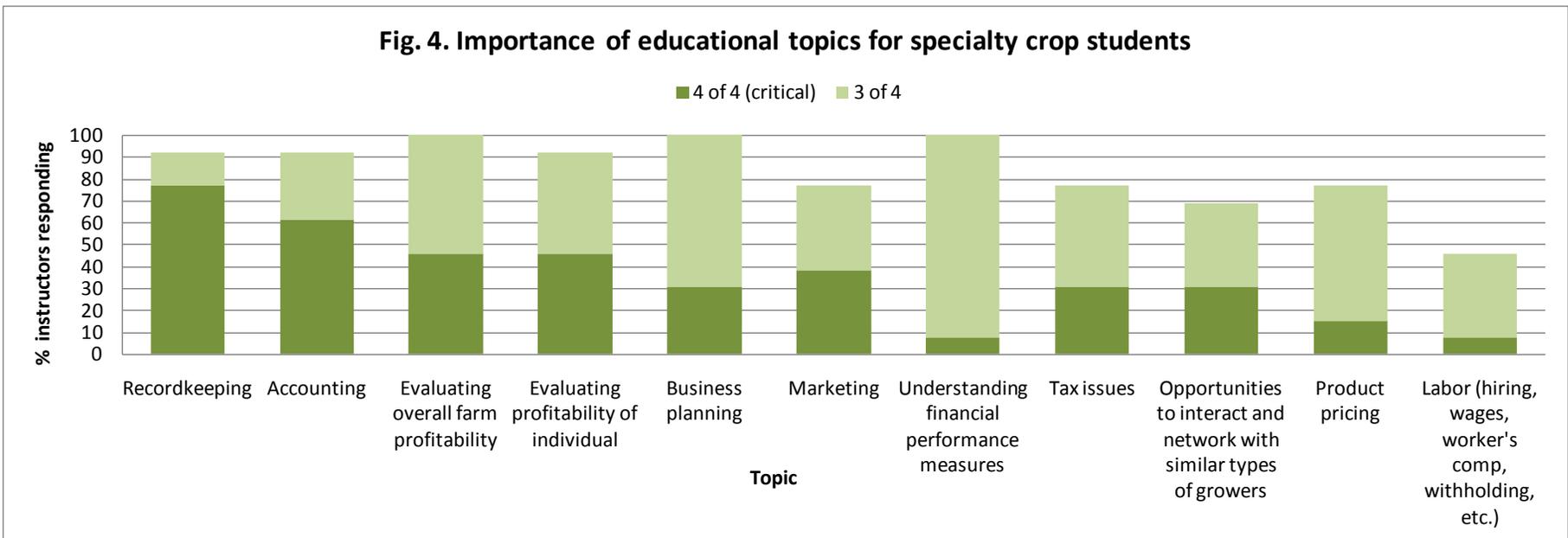
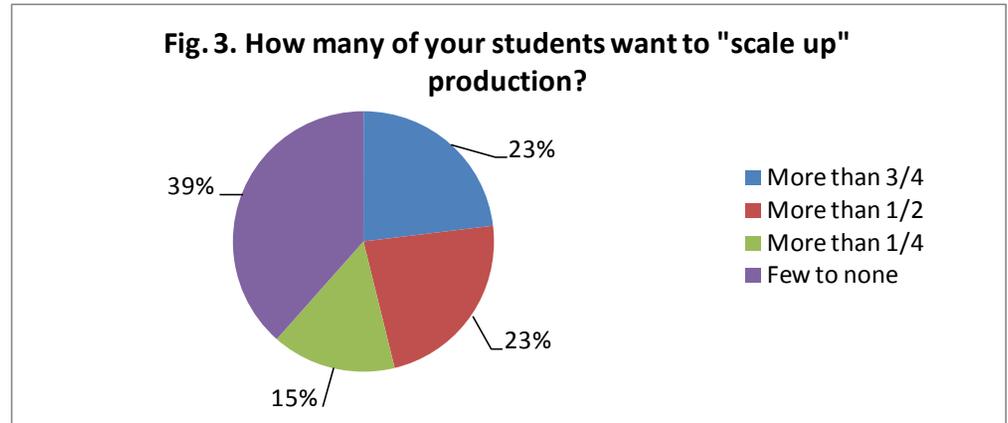
Fig. 2. How does working with specialty crop growers compare to working with fieldcrop and dairy farmers?



Almost a quarter of instructors reported that they find it harder to work with these students compared to their traditional crop and livestock students, while more than two thirds reported the level of difficulty is about the same. (And seven percent said it was easier!)(Fig. 2)

More than three out of four instructors said they think that, by and large, their peers recognize specialty crops as a valid farming enterprise. More than half of them reported they have at least some students who want to “scale up” their operations to increase production (Fig. 3).

We were interested in knowing which FBM topic instructors felt were most important to their specialty crop growers. The top answer was *Recordkeeping* (average score 3.69 out of 4), followed by *accounting* (3.54), *evaluating overall farm profitability* (3.46), and *evaluating the profitability of individual*

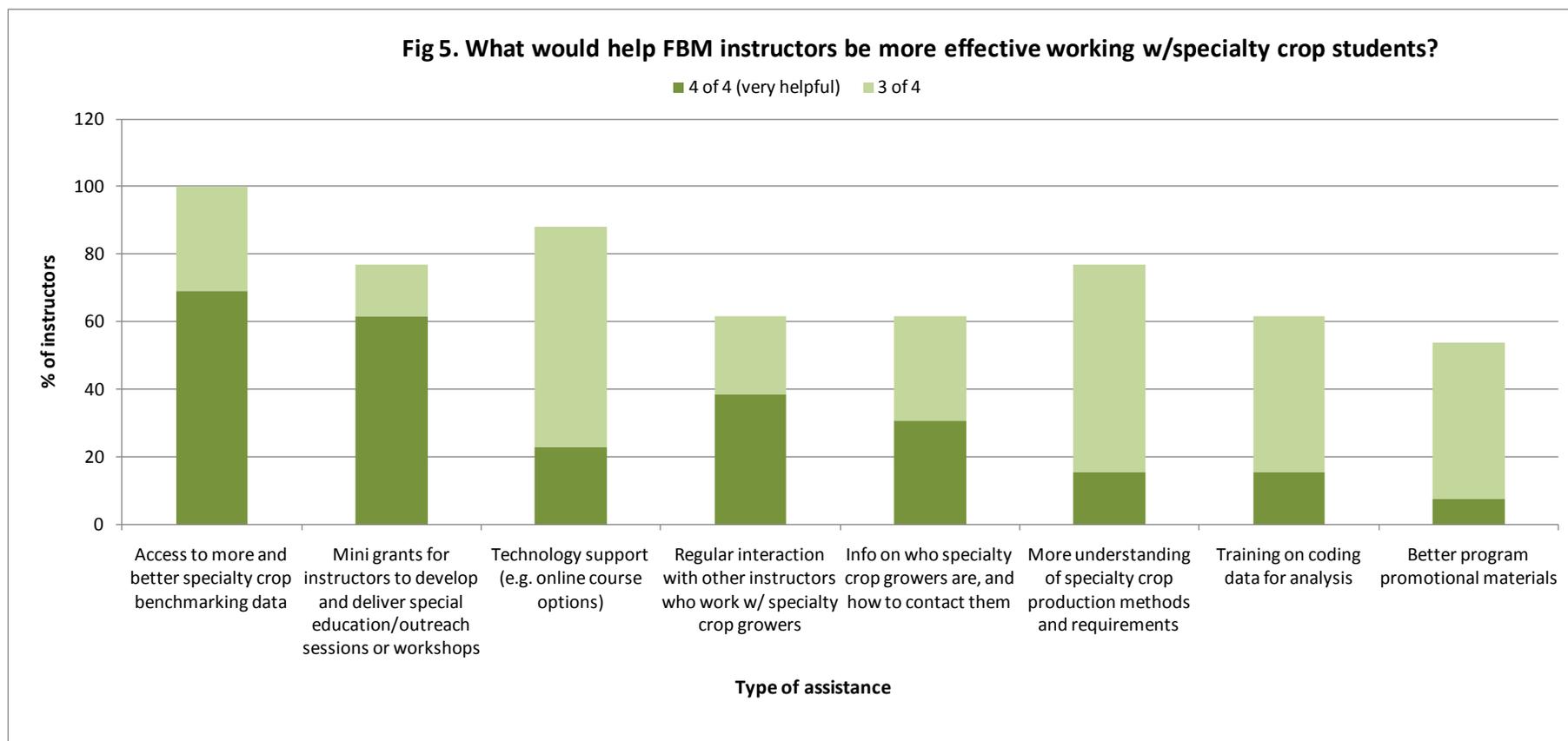


enterprises (3.38) (Fig. 4).

However, when a “top box” score was calculated (i.e., instructors rated importance “3” or “4” on a scale of 1-4), *business planning*, *understanding financial measures*, and *evaluating overall farm profitability* shared the top spot – 100% of instructors responding rated these topics a 3 or a 4.

When asked what would help them be more effective at delivering educational programs to specialty crop students, instructors identified *access to more and better benchmarking data* as most important (average 3.7 out of 4 points), followed by *mini grants for instructors to develop new programming* (3.3) and *professional resources* (technology support and *interaction with other specialty crop instructors* both came in at 3.0).

When it came to figuring out why students dropped out of the program, instructors reported an equal split among a variety of factors, including: student didn’t think he/she needed the information, instructor/student personality mismatch, cost, and time requirement. Cost scored no higher than any other factor (but it’s probably worth mentioning here that most students enrolled are still receiving scholarships of 70-80% per semester).



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2010 Results

Specialty Crop Farm Business Management Minnesota Farm Business Management Education



Prepared by Dale Nordquist

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University of Minnesota

This project was funded, in part, by a grant from

The USDA Specialty Crop Block Grant Program

Project Director: Meg Moynihan, Minnesota Department of Agriculture

Specialty Crop Farm Business Management

2010 Annual Report

This report includes financial summaries for 34 Minnesota farms that participated in the Specialty Crop Farm Business Management project from 2008 to 2010. This project, managed by the Minnesota Department of Agriculture and funded by the Risk Management Agency, USDA, provides partial tuition support for Minnesota farmers who grow specific specialty crops to enroll in MnSCU Farm Business Management Education Programs. Each participating farm completes an annual analysis of farm business and enterprise performance and agrees to share financial information via the FINBIN farm financial database supported by the Center for Farm Financial Management, University of Minnesota.

Reports on whole farm performance include:

- Financial Summary (farms sorted by years): Key financial indicators for these farms across the three years of this project completed to date.
- 2010 Financial Summary (farms sorted by Net Farm Income): Comparison of the financial position and performance of the high profit vs. the low profit farms in 2010.

These farms are very diverse, particularly in size. Many are part-time farms and do not rely on their farms for the major share of their living. They may have small specialty crop enterprises and have no other farm activities. Others are large full time farming operations which include conventional commodity production as well as specialty crops.

The average specialty crop farm earned \$58,012 in 2010. However, the median (or middle) farm earned only \$2,709. This shows how much diversity there was in profitability between these farms. A small number of very profitable farms increased or skewed the average of all farms. This is common for conventional farms as well, but seldom to this extent.

When the results for 2010 are sorted by net farm income, this diversity becomes even more clear. The “High 34%” group was very profitable while the lower return farms all reported negative returns on equity. However, these lower return farms also earned more non-farm income.

The most profitable farms were much larger in terms of total assets. Their repayment capacity was very strong, with a term debt coverage ratio of \$4.42 available to pay every dollar of scheduled debt payments.

One surprise and concern was that the less profitable farms, while smaller in terms of total assets, used relatively the same amount of debt capital per dollar of assets, but generated a lower profit margin. Small, specialty crop farms should expect—and generally need—higher operating margins than conventional farms to offset their lack of volume of sales. A combination of high debt and low margins can be particularly dangerous. While the debt level of these farms is not burdensome, this is something that these farms need to monitor. Of course, this highlights the paradox of trying to improve efficiency without incurring higher high capital expenditures and additional borrowing.

Liquidity is also a concern for the less profitable group. The low profit group ended the year with negative working capital while the higher profit farms were in relatively strong liquidity positions. With little inventory to cushion financial setbacks, these farms need to look at other strategies to offset short-term financial risks. These include maintaining off-farm income sources and careful monitoring of short term debt and other short term obligations, while trying to build cash reserves and other liquid assets.

Crop enterprise reports are included for:

- Apples
- Blueberries
- Grapes
- Pumpkins
- Raspberries
- Strawberries
- Sweet corn
- Assorted vegetables (multiple vegetables produced on the same plot or field).

Five farms must have grown the crop to be included. “Avg. Of All Farms” is the average over all three years of the project (2008 – 2010) to date. If only the average column is included, it is the average for that crop over all three years.

The enterprise reports also highlight the diversity of returns for these farms. Strawberries have been consistent profit-makers over the three years of this project. Raspberries and “assorted vegetables” have also been money-makers. Pumpkins were profitable in 2010 but have lost money per acre, on average, over the last three years. Apples, blueberries, grapes, and sweet corn have not been profitable, on average, for these farms over the 2008 – 2010 period. It should

be noted that these are results from a very limited number of farms and other farms in the state may have experienced different financial results. Increasing the number of specialty crop operations that contribute their financial information will increase the accuracy and reliability of this data.

Financial Summary
Specialty Crop Farm Business Management
(Farms Sorted By Years)

	Avg. Of All Farms	2010	2009	2008
Number of farms	83	34	28	21
Income Statement				
Gross cash farm income	420,933	208,014	541,857	604,428
Total cash farm expense	349,066	168,532	462,017	490,758
Net cash farm income	71,867	39,482	79,840	113,670
Inventory change	24,558	38,519	14,334	15,585
Depreciation	-33,526	-19,561	-33,659	-55,960
Net farm income from operations	62,899	58,441	60,515	73,295
Gain or loss on capital sales	468	-428	13	2,525
Average net farm income	63,367	58,012	60,528	75,820
Median net farm income	3,019	2,709	1,779	23,578
Profitability (cost)				
Rate of return on assets	5.0 %	7.6 %	4.4 %	3.3 %
Rate of return on equity	4.9 %	10.1 %	3.5 %	2.1 %
Operating profit margin	12.2 %	23.9 %	9.9 %	7.0 %
Asset turnover rate	41.3 %	31.9 %	44.3 %	46.9 %
Liquidity & Repayment (end of year)				
Current assets	284,250	157,221	349,734	402,605
Current liabilities	101,350	75,372	103,226	140,907
Current ratio	2.80	2.09	3.39	2.86
Working capital	182,900	81,849	246,508	261,697
Working capital to gross inc	40.2 %	33.9 %	42.1 %	41.8 %
Term debt coverage ratio	2.38	3.36	2.10	1.99
Replacement coverage ratio	1.66	2.11	1.49	1.49
Solvency (end of year at market)				
Number of farms	83	34	28	21
Total farm assets	1,335,472	1,073,759	1,520,956	1,511,886
Total farm liabilities	518,700	415,036	608,849	566,341
Total assets	1,533,618	1,280,503	1,699,527	1,722,210
Total liabilities	568,932	459,785	665,700	616,624
Net worth	964,685	820,718	1,033,827	1,105,586
Net worth change	43,279	56,110	32,140	37,357
Farm debt to asset ratio	39 %	39 %	40 %	37 %
Total debt to asset ratio	37 %	36 %	39 %	36 %
Nonfarm Information				
Net nonfarm income	28,094	29,049	31,271	22,312
Farms reporting living expenses	16	6	5	5
Total family living expense	57,798	58,423	53,423	61,424
Total living, invest, cap. purch	67,416	68,255	68,274	65,554
Crop Acres				
Total acres owned	197	109	254	264
Total crop acres	378	206	407	616
Total crop acres owned	150	76	193	214
Total crop acres cash rented	224	123	214	402
Total crop acres share rented	3	6	-	-

2010 Financial Summary
Specialty Crop Farm Business Management
(Farms Sorted By Net Farm Income)

	Avg. Of All Farms	Low 33%	33 - 66%	High 34%
Number of farms	34	11	11	12
Liquidity				
Current ratio	2.09	0.91	4.48	2.15
Working capital	81,849	-2,464	26,951	209,460
Working capital to gross inc	33.9 %	-5.9 %	47.4 %	35.3 %
Solvency (market)				
Farm debt to asset ratio	39 %	42 %	37 %	38 %
Farm equity to asset ratio	61 %	58 %	63 %	62 %
Farm debt to equity ratio	0.63	0.74	0.58	0.62
Profitability (cost)				
Rate of return on farm assets	7.6 %	-5.6 %	-1.0 %	12.6 %
Rate of return on farm equity	10.1 %	-14.1 %	-6.4 %	18.0 %
Operating profit margin	23.9 %	-51.0 %	-4.9 %	31.9 %
Net farm income	58,012	-13,793	652	176,414
EBIDTA	89,155	941	14,909	238,076
Repayment Capacity				
Capital debt repayment capacity	71,494	15,252	14,924	174,906
Capital debt repayment margin	50,208	4,666	2,923	135,300
Replacement margin	37,543	-1,557	-6,367	113,634
Term debt coverage ratio	3.36	1.44	1.24	4.42
Replacement coverage ratio	2.11	0.91	0.70	2.85
Efficiency				
Asset turnover rate (cost)	31.9 %	10.9 %	19.5 %	39.6 %
Operating expense ratio	63.1 %	97.7 %	73.8 %	59.9 %
Depreciation expense ratio	8.1 %	18.5 %	13.3 %	7.0 %
Interest expense ratio	4.5 %	12.7 %	12.3 %	3.3 %
Net farm income ratio	24.0 %	-33.0 %	1.1 %	29.7 %

**Crop Enterprise Analysis
Specialty Crop Farm Business Management
(Average, 2008-2010)
Apples on Owned Land**

	Avg. Of All Farms
Number of fields	11
Number of farms	8
Acres	7.09
Yield per acre (bu.)	217.85
Operators share of yield %	100.00
Value per bu.	25.12
Other product return per acre	114.38
Total product return per acre	5,587.04
Gross return per acre	5,587.04
Direct Expenses	
Seed	32.53
Fertilizer	201.99
Crop chemicals	235.13
Crop insurance	25.96
Irrigation energy	27.42
Fuel & oil	230.82
Repairs	362.28
Custom hire	53.58
Hired labor	895.62
Utilities	99.44
Hauling and trucking	104.95
Marketing	531.21
Operating interest	165.02
Miscellaneous	40.63
Total direct expenses per acre	3,006.56
Return over direct exp per acre	2,580.48
Overhead Expenses	
Hired labor	207.98
Machinery leases	0.61
Building leases	348.25
RE & pers. property taxes	120.24
Farm insurance	191.50
Utilities	62.65
Dues & professional fees	315.45
Interest	92.87
Mach & bldg depreciation	868.31
Miscellaneous	472.35
Total overhead expenses per acre	2,680.21
Total dir & ovhd expenses per acre	5,686.76
Net return per acre	-99.73
Government payments	-
Net return with govt pmts	-99.73
Labor & management charge	1,096.01
Net return over lbr & mgt	-1,195.74
Cost of Production	
Total direct expense per bu.	13.80

Total dir & ovhd exp per bu.	26.10
Less govt & other income	25.58
With labor & management	30.61
Net value per unit	25.12
Machinery cost per acre	1,215.09
Est. labor hours per acre	119.12

**Crop Enterprise Analysis
Specialty Crop Farm Business Management
(Average, 2008-2010)
Blueberries on Owned Land**

	Avg. Of All Farms
Number of fields	10
Number of farms	6
Acres	0.67
Yield per acre (lb.)	1,677.61
Operators share of yield %	100.00
Value per lb.	2.70
Total product return per acre	4,528.11
Gross return per acre	4,528.11
Direct Expenses	
Seed	53.28
Fertilizer	562.24
Crop chemicals	160.00
Irrigation energy	51.62
Fuel & oil	167.41
Repairs	287.50
Hired labor	1,717.16
Marketing	374.93
Operating interest	1.74
Miscellaneous	277.46
Total direct expenses per acre	3,653.35
Return over direct exp per acre	874.76
Overhead Expenses	
Hired labor	35.05
RE & pers. property taxes	81.19
Farm insurance	204.80
Utilities	24.32
Dues & professional fees	245.93
Interest	99.98
Mach & bldg depreciation	838.74
Miscellaneous	788.28
Total overhead expenses per acre	2,318.29
Total dir & ovhd expenses per acre	5,971.64
Net return per acre	-1,443.53
Government payments	-
Net return with govt pmts	-1,443.53
Labor & management charge	1,576.41
Net return over lbr & mgt	-3,019.94
Cost of Production	
Total direct expense per lb.	2.18
Total dir & ovhd exp per lb.	3.56
Less govt & other income	3.56
With labor & management	4.50
Net value per unit	2.70
Machinery cost per acre	1,195.88
Est. labor hours per acre	471.59

**Crop Enterprise Analysis
Specialty Crop Farm Business Management
(Average, 2008-2010)
Raspberries on Owned Land**

	Avg. Of All Farms
Number of fields	10
Number of farms	10
Acres	0.53
Yield per acre (lb.)	1,352.01
Operators share of yield %	100.00
Value per lb.	3.20
Total product return per acre	4,325.11
Gross return per acre	4,325.11
Direct Expenses	
Seed	124.95
Fertilizer	51.24
Crop chemicals	12.38
Irrigation energy	14.16
Fuel & oil	65.70
Repairs	58.61
Hired labor	369.71
Utilities	56.95
Hauling and trucking	57.14
Marketing	482.10
Operating interest	228.04
Miscellaneous	87.62
Total direct expenses per acre	1,608.61
Return over direct exp per acre	2,716.50
Overhead Expenses	
Hired labor	91.06
RE & pers. property taxes	55.63
Farm insurance	81.13
Utilities	33.48
Dues & professional fees	65.28
Interest	277.29
Mach & bldg depreciation	346.62
Miscellaneous	102.59
Total overhead expenses per acre	1,053.08
Total dir & ovhd expenses per acre	2,661.69
Net return per acre	1,663.42
Government payments	-
Net return with govt pmts	1,663.42
Labor & management charge	805.00
Net return over lbr & mgt	858.43
Cost of Production	
Total direct expense per lb.	1.19
Total dir & ovhd exp per lb.	1.97
Less govt & other income	1.97
With labor & management	2.56
Net value per unit	3.20

Machinery cost per acre	349.28
Est. labor hours per acre	123.08

**Crop Enterprise Analysis
Specialty Crop Farm Business Management
Strawberries on Owned Land**

	Avg. Of All Farms	2010	2009	2008
Number of fields	40	15	15	10
Number of farms	38	14	15	9
Acres	2.67	2.57	2.99	2.35
Yield per acre (lb.)	5,567.61	5,491.37	4,970.04	6,834.56
Operators share of yield %	100.00	100.00	100.00	100.00
Value per lb.	1.67	1.75	1.65	1.58
Other product return per acre	149.27	413.77	-	-
Total product return per acre	9,426.75	10,020.43	8,184.05	10,825.97
Gross return per acre	9,426.75	10,020.43	8,184.05	10,825.97
Direct Expenses				
Seed	35.55	52.02	25.52	27.66
Fertilizer	218.62	246.66	192.05	223.32
Crop chemicals	181.01	180.96	175.10	192.37
Crop insurance	42.65	56.53	35.66	33.21
Irrigation energy	75.69	47.30	99.23	77.34
Packaging and supplies	48.75	75.80	51.00	-
Fuel & oil	183.67	227.05	127.13	220.46
Repairs	258.66	287.68	235.59	255.06
Custom hire	25.23	12.95	49.00	-
Hired labor	912.44	772.46	819.89	1,319.19
Utilities	106.48	40.54	133.56	163.06
Hauling and trucking	37.85	104.92	-	-
Marketing	873.52	1,098.96	802.32	639.28
Operating interest	167.51	64.04	45.71	570.17
Miscellaneous	458.91	532.44	427.52	398.10
Total direct expenses per acre	3,626.54	3,800.31	3,219.27	4,119.24
Return over direct exp per acre	5,800.21	6,220.11	4,964.78	6,706.73
Overhead Expenses				
Hired labor	252.06	486.36	182.57	-
Machinery leases	2.09	2.70	0.46	4.22
Building leases	29.69	52.29	25.80	-
RE & pers. property taxes	130.67	97.09	178.84	93.80
Farm insurance	156.89	197.27	117.45	165.89
Utilities	76.31	166.52	35.79	5.56
Dues & professional fees	233.37	166.08	351.52	118.13
Interest	321.37	327.55	450.27	64.92
Mach & bldg depreciation	679.69	519.53	678.66	944.72
Miscellaneous	371.35	235.03	427.62	487.73
Total overhead expenses per acre	2,253.49	2,250.43	2,448.98	1,884.98
Total dir & ovhd expenses per acre	5,880.02	6,050.74	5,668.25	6,004.22
Net return per acre	3,546.73	3,969.68	2,515.79	4,821.75
Government payments	-	-	-	-
Net return with govt pmts	3,546.73	3,969.68	2,515.79	4,821.75
Labor & management charge	1,390.62	925.27	903.36	3,085.95
Net return over lbr & mgt	2,156.11	3,044.42	1,612.43	1,735.81

Cost of Production

Total direct expense per lb.	0.65	0.69	0.65	0.60
Total dir & ovhd exp per lb.	1.06	1.10	1.14	0.88
Less govt & other income	1.03	1.03	1.14	0.88
With labor & management	1.28	1.20	1.32	1.33
Net value per unit	1.67	1.75	1.65	1.58
Machinery cost per acre	961.11	904.50	919.80	1,133.00
Est. labor hours per acre	207.22	204.50	194.78	235.44

Crop Enterprise Analysis
Specialty Crop Farm Business Management
(Average, 2008-2010)
Grapes on Owned Land

	Avg. Of All Farms
Number of fields	5
Number of farms	5
Acres	3.05
Yield per acre (ton)	0.55
Operators share of yield %	100.00
Value per ton	1,308.93
Total product return per acre	718.41
Gross return per acre	718.41
Direct Expenses	
Fertilizer	72.79
Crop chemicals	258.62
Fuel & oil	26.88
Repairs	48.73
Custom hire	390.95
Operating interest	9.63
Total direct expenses per acre	807.61
Return over direct exp per acre	-89.20
Overhead Expenses	
Hired labor	122.95
RE & pers. property taxes	10.97
Farm insurance	4.55
Utilities	45.83
Interest	7.71
Mach & bldg depreciation	224.80
Miscellaneous	8.21
Total overhead expenses per acre	425.02
Total dir & ovhd expenses per acre	1,232.63
Net return per acre	-514.22
Government payments	-
Net return with govt pmts	-514.22
Labor & management charge	189.63
Net return over lbr & mgt	-703.85
Cost of Production	
Total direct expense per ton	1,471.45
Total dir & ovhd exp per ton	2,245.83
Less govt & other income	2,245.83
With labor & management	2,591.34
Net value per unit	1,308.93
Machinery cost per acre	665.06
Est. labor hours per acre	174.09

Crop Enterprise Analysis
Specialty Crop Farm Business Management
(2009, 2010, and Average, 2008-2010)
Pumpkins on Owned Land

	Avg. Of All Farms	2010	2009
Number of fields	25	10	11
Number of farms	25	10	11
Acres	2.74	3.26	2.51
Total product return per acre	1,442.33	1,537.57	1,241.52
Other crop income per acre	1.46	-	3.62
Gross return per acre	1,443.79	1,537.57	1,245.13
Direct Expenses			
Seed	131.21	124.72	126.62
Fertilizer	105.19	91.23	105.37
Crop chemicals	53.34	53.53	43.18
Crop insurance	4.24	5.83	-
Irrigation energy	39.27	17.57	66.08
Fuel & oil	58.96	62.90	49.79
Repairs	64.04	67.22	66.02
Custom hire	2.19	4.60	-
Hired labor	16.49	19.94	9.04
Machinery leases	3.39	3.74	3.98
Utilities	12.52	12.27	16.53
Hauling and trucking	14.61	30.67	-
Marketing	95.12	79.05	88.39
Operating interest	10.44	2.21	2.73
Miscellaneous	108.33	110.64	110.67
Total direct expenses per acre	719.34	686.11	688.39
Return over direct exp per acre	724.46	851.46	556.74
Overhead Expenses			
Hired labor	154.35	74.55	294.21
Machinery leases	0.44	0.32	0.17
Building leases	17.19	22.93	15.52
RE & pers. property taxes	80.66	54.58	85.80
Farm insurance	50.18	44.17	39.96
Utilities	14.03	22.45	7.96
Dues & professional fees	30.30	26.73	20.47
Interest	54.65	55.13	55.59
Mach & bldg depreciation	263.11	156.41	264.66
Miscellaneous	98.25	36.93	182.15
Total overhead expenses per acre	763.15	494.21	966.48
Total dir & ovhd expenses per acre	1,482.49	1,180.32	1,654.88
Net return per acre	-38.69	357.25	-409.74
Government payments	-	-	-
Net return with govt pmts	-38.69	357.25	-409.74
Labor & management charge	340.20	185.01	91.35
Net return over lbr & mgt	-378.90	172.24	-501.09
Machinery cost per acre	339.62	264.60	318.81
Est. labor hours per acre	71.46	42.65	70.51

Crop Enterprise Analysis
Specialty Crop Farm Business Management
(2010 and Average, 2008-2010)
Sweet Corn, Direct Market, on Owned Land

	Avg. Of All Farms	2010
Number of fields	12	7
Number of farms	12	7
Acres	3.75	4.64
Yield per acre (doz.)	391.04	417.17
Operators share of yield %	100.00	100.00
Value per doz.	3.40	3.56
Total product return per acre	1,329.93	1,483.57
Other crop income per acre	28.89	-
Gross return per acre	1,358.82	1,483.57
Direct Expenses		
Seed	154.78	148.93
Fertilizer	122.91	130.56
Crop chemicals	74.06	74.37
Crop insurance	2.22	3.08
Irrigation energy	19.19	25.87
Fuel & oil	55.85	70.85
Repairs	67.25	89.20
Custom hire	20.51	25.02
Hired labor	26.67	36.92
Machinery leases	1.07	1.48
Utilities	1.28	0.61
Hauling and trucking	11.11	15.38
Marketing	114.80	158.95
Operating interest	1.96	2.25
Miscellaneous	55.80	5.40
Total direct expenses per acre	729.46	788.86
Return over direct exp per acre	629.36	694.71
Overhead Expenses		
Hired labor	236.99	327.92
Machinery leases	1.18	1.63
RE & pers. property taxes	48.82	65.58
Farm insurance	52.98	72.68
Utilities	37.77	52.08
Dues & professional fees	35.56	48.60
Interest	90.58	106.13
Mach & bldg depreciation	117.96	158.95
Miscellaneous	69.57	94.25
Total overhead expenses per acre	691.42	927.81
Total dir & ovhd expenses per acre	1,420.88	1,716.66
Net return per acre	-62.06	-233.09
Government payments	1.30	1.64
Net return with govt pmts	-60.76	-231.45
Labor & management charge	361.22	482.05
Net return over lbr & mgt	-421.97	-713.50
Cost of Production		
Total direct expense per doz.	1.87	1.89

Total dir & ovhd exp per doz.	3.63	4.12
Less govt & other income	3.56	4.11
With labor & management	4.48	5.27
Net value per unit	3.40	3.56
Machinery cost per acre	250.40	329.21
Est. labor hours per acre	42.51	41.39

Crop Enterprise Analysis
Specialty Crop Farm Business Management
(2010 and Average, 2008-2010)
Vegetables, Assorted, on Owned Land

	Avg. Of All Farms	2010
Number of fields	7	5
Number of farms	7	5
Acres	4.71	4.55
Yield per acre (\$)	8,234.33	9,387.38
Operators share of yield %	100.00	100.00
Value per \$	1.04	1.05
Total product return per acre	8,600.27	9,903.60
Gross return per acre	8,600.27	9,903.60
Direct Expenses		
Seed	550.48	680.70
Fertilizer	235.64	317.19
Crop chemicals	61.21	88.79
Crop insurance	12.88	18.68
Irrigation energy	1.91	2.77
Packaging and supplies	52.36	75.96
Fuel & oil	302.24	348.03
Repairs	321.17	382.76
Custom hire	3.03	4.40
Hired labor	213.64	191.21
Utilities	35.85	40.92
Hauling and trucking	193.94	281.32
Marketing	158.61	228.53
Operating interest	2.94	3.44
Miscellaneous	106.64	47.78
Total direct expenses per acre	2,252.53	2,712.47
Return over direct exp per acre	6,347.74	7,191.13
Overhead Expenses		
Hired labor	380.11	551.36
Machinery leases	0.60	0.87
Building leases	52.42	42.64
RE & pers. property taxes	67.76	90.41
Farm insurance	151.98	186.50
Utilities	138.73	201.24
Dues & professional fees	155.65	193.62
Interest	1,120.60	1,166.09
Mach & bldg depreciation	538.73	667.76
Miscellaneous	352.84	497.78
Total overhead expenses per acre	2,959.42	3,598.26
Total dir & ovhd expenses per acre	5,211.95	6,310.74
Net return per acre	3,388.32	3,592.87
Government payments	-	-
Net return with govt pmts	3,388.32	3,592.87
Labor & management charge	1,131.96	1,288.09
Net return over lbr & mgt	2,256.36	2,304.78
Cost of Production		
Total direct expense per \$	0.27	0.29
Total dir & ovhd exp per \$	0.63	0.67
Less govt & other income	0.63	0.67
With labor & management	0.77	0.81

Net value per unit	1.04	1.05
Machinery cost per acre	1,123.56	1,363.56
Est. labor hours per acre	224.58	286.84

**Program
flyer/brochure**



Farm Business Management Scholarships for Specialty Crop Growers

Effective financial and business management are important keys to farm prosperity. Farm Business Management (FBM) education helps farm owners and operators learn new skills that will help them meet their own business and personal goals.

Growers in the program learn to maintain and, most importantly, **use** farm records to make sound business decisions.



In Minnesota, the FBM program is offered by the Minnesota State Colleges and Universities (MnSCU) system and the Southwest Farm Business Management Association. There are more than 70 instructors located throughout Minnesota.

The scholarship program offered by the Minnesota Department of Agriculture (MDA) pays a portion of the cost for specialty crop producers to enroll in FBM education.

Who is eligible to receive a scholarship?

Specialty crop growers (fresh market only - eligible crops in 2010 & 2011 are apples, berries, grapes, pumpkins, sweet corn, and vegetables.)

All recipients must be enrolled in a Minnesota FBM program. Only a limited number of scholarships are available.

If I am already an FBM student, am I still eligible?

Yes!

How does it work?

You will meet one-on-one with a farm business management instructor. Together, you will design a program that fits your needs, customized to **your** farming operation. At the end of the year, you will receive an analysis that details the financial performance of your farm, and your instructor will submit your data to be combined with information from other specialty crop growers. Strict privacy measures protect the confidentiality of your information.

How much are the scholarships? How much do I have to pay?

While funds are available, the scholarship will pay:

- 80% of your tuition for the first two semesters of enrollment,
- 70% for semesters 3 and 4,
- 60% for semesters 5 and 6, etc.

Tuition ranges from \$151 to \$160 per credit, depending on your location. A scholarship can reduce your out-of-pocket cost significantly.

More →

Is it worth the investment?

More than 3,000 other Minnesota farmers think so! They use the program to help them manage their records and get a clearer picture of what is really happening on their farms from year to year. Which enterprises are making money? Which enterprises are unprofitable? Where could I reduce costs? Enhance profits? You will receive an end of year financial and business analysis and can use an anonymous benchmarking database called FINBIN to compare your operation with others at www.finbin.umn.edu.

Participants report that being in the program also helps them quickly provide information their banker wants to see, complete farm program forms, and organize information at tax time.

When can I start?

You can start the program at any time.

How long will this scholarship last?

The Minnesota Department of Agriculture will offer these scholarships as long as funds are available.

How do I sign up?

Contact the farm business management program in your area (see map) and ask for an instructor. The instructor will do the rest.



1. Northwest Ron Dvergsten Northland Community and Technical College (218) 683-8747	4. Southwest Al Brudlie Minnesota West Community and Technical College (507) 847-7928 Jim Kurtz Southwest Farm Business Management Association (507) 372-3904
2. Northeast/East Central DelRay Lecy Central Lakes College (218) 894-5164	5. South Central Al Brudlie South Central College (507) 389-7264
3. West Central Jim Molenaar Ridgewater Community and Technical College (320) 222-5211	6. Southeast Eric Deters Riverland Community College (507) 259-6262

Where do the scholarship funds come from?

Funds come from MDA and the USDA Specialty Crop Block Grant Program.

What if I have questions this brochure does not answer?

Contact Meg Moynihan at the MDA (651) 201-6616 or meg.moynihan@state.mn.us



What participating farmers are saying:

It is a good tool to help in all management decisions made on the farm...
In a multi-enterprise operation, I have to know my costs of production in order to determine if I am marketing my products for a profit or loss. I highly recommend this program...
Our instructor prepares us very well to go to our lenders with our ideas and plans. It has given us courage to expand and improve our farm through (using) credit wisely...
My instructor is an awesome numbers guy. I am definitely a better manager because of this much needed program. My lender loves the information...



Project partners and supporters

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 Minnesota Fruit and Vegetable Growers Association · Minnesota Grape Growers Association*

*In accordance with the Americans with Disabilities Act, an alternative form of communication is available upon request. TDD: 1-800-627-3529
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REVISED 10/21/10
 File Name: FBMS version B 2010.indd

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MINNESOTA COLLEGE AND UNIVERSITY
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Fact Sheet for Farm Business Management Instructors Working with Direct Market Specialty Crop Producers

By Thaddeus McCamant, Northland College

Fruit and vegetable growers with small acreages represent one of the few categories of farmers who are increasing in number. The increasing number of farms is both a response to the rising demand for locally grown produce and small landowners hoping to make money off their land. This fact sheet is intended to help Farm Business Management Instructors who are interested in working with the growing number of Specialty Crop Producers.

People go into fruit and vegetable production for a variety of financial and personal reasons. Many fruit and vegetable producers want to make money off their small acreage and have neither the equipment nor the land required to profitably raise traditional row crops. Urban people who want to start farming are often attracted to fruits and vegetables due to the small land and equipment requirements. Of the roughly fifty farms enrolled in the Specialty Crops Management Program, about a third of the farms are beginning farmers. The remaining businesses include both lifelong fruit and vegetable growers and farmers who formerly raised dairy, beef or row crops.

Some beginning farmers and second career farmers do not worry about making money, but those people rarely enroll in Farm Business Management programs. Most have the goal of making enough money to quit their jobs one day, but 28% of the people enrolled in Specialty Crops still rely on their day job for the majority of their income (Table 1). Only 6% of the businesses enrolled in Specialty crops are farmers who supplement their farm income with fruits or vegetables. Many producers are retired and want to supplement their retirement by growing and selling fruit.

Table 1. Financial Goals for Students enrolled in Specialty Crops Management.

Primary family income 38%
Supplement income from full time job 28%
Supplement retirement income 28%
Business for spouse of farmer 6%

Although many crops
Minnesota, only a few

can be grown in
have been demonstrated

to be economically viable (Table 2). Production costs are typically high in Minnesota, so profitable crops have better quality than products sold in grocery stores or the crops thrive in Minnesota's unique climate. Crops such as pie cherries and Saskatoons might be profitable, but there is currently not enough data to devise a cash flow. Others, like currants and gooseberries grow exceptionally well in Minnesota's soils and climate, but are unprofitable due to low local demand. Hardy pears, meanwhile, suffer from low yields.

Table 2: Fruit and Vegetable crops for Minnesota. The information comes from both FinPack analyses and discussions with producers.

Crops proven to be profitable	Crops whose profitability has not been proven
Strawberries	Pie cherries
Red raspberries	Currants
Blueberries	Gooseberries
Apples (southern 1/3 of state)	Apples (northern half of state)
Mixed Vegetables	Hardy pears
Asparagus	Aronia berries
Tomatoes	Lingonberries
Pumpkins	Hazel nuts
Shitake mushrooms	Elderberries
Sweet corn	Chokecherries
Peas	Saskatoons/June berries
Hardy plums	

Direct Marketing

Prospective direct market farmers must investigate where and how they will market their products before they plant their crops. The most common outlets include farmer's markets, roadside stands,

Pick-Your-Own (PYO) patches, farm sales, restaurant sales and sales to grocery stores. At first glance, direct market farming looks like profitability is guaranteed, because the farmer can set their own price, but marketing costs can be very high, often representing 1/3 of final price of the product for producers selling at farmers markets. Prospective direct market farmers must also ask themselves if they like dealing with customers. Perhaps the biggest mistake direct market producers make is overestimating the demand for unique products.

Table 3. Advantages and disadvantages of direct marketing

Advantages	Disadvantages
Can set price	High marketing costs
Immune to commodity price fluctuations	Market is limited to nearby towns
Consistent demand from year to year	Sales can be hurt by adverse weather
	Extra management skills required

Producers who want to run PYO farms can and should calculate the potential market in their area. Although there are few guidelines for many crops, the market for some crops can be estimated:

Strawberries. 80% of the customers at a PYO strawberry farm come from a 25 mile radius. Rural customers pick more fruit than urban customers. In rural areas, 2500 people in a 25 mile radius can support one acre of PYO strawberries. In urban areas, 10,000 people in a 25 mile radius can support one acre of PYO strawberries. A prospective strawberry grower should calculate both the population within 25 miles of the farm *and* the number of producers within a 50 mile radius. If the population within a 25 mile radius is 11,000, the population can support 4 acres of PYO strawberries. But if there is a one acre farm 25 miles away, the farm can only support 3 acres.

Raspberries The demand for raspberries is roughly a fourth that of strawberries. The growth in raspberry demand has been matched with a growth in production, resulting in a saturated market in many parts of Minnesota.

Blueberries. The market for blueberries is not saturated in Minnesota

Pumpkins. Most years, Minnesota farmers grow far more pumpkins than they sell. Growers interested in pumpkins should either have a contract or invest in agritourism.

Apples. Most medium to large apple growers sell both direct and to grocery stores. There is concern that the wholesale outlets are being closed, which would cause overproduction at many farmers markets. Currently, only two cultivars of apple, Zestar and Honeycrisp, are consistently profitable.

Returns for Selected Crops

The following figures for strawberries and pumpkins are based on averages generated by FinPack. The figures for other crops are based on averages of profitable producers. Overhead costs vary tremendously from farm to farm, depending on whether or not a producer is buying land, or if the producer is trying to pay for a large acreage and house off a small acreage of specialty crops. For cash flows, the most reliable figures to use are returns after direct expenses.

Table 4: Per acre returns for several crops in Minnesota, 2009

Crop	Gross returns /A	Direct expense s/A	Returns after Direct Expenses	Overhead expenses	Net return.
Strawberries	\$9000	\$3700	\$5300	\$2300	\$3000
Pumpkins*	\$1804	\$1020	\$785	\$1635	-\$850
Apples	\$7627	\$4110	\$3509	\$2507	\$1001

*On-farm pumpkins sales were low in 2009 due to poor weather

Labor Requirements

The highest expense for direct market fruit and vegetable growers is labor. Even the largest growers spend a great deal of time working in the field. Growers should expect to spend 10 hours per week for

all months listed, but there are peak work times for each crop. During peak workloads, expect to use 20 man hours per acre.

Table 5. Labor requirements for selected fruit and vegetable crops.

Crop	Maximum farm size without hired help (2 people)	Months plants need work	Peak work months
Strawberries (establishment)	½ acre	April-November	May-July
Strawberries (picking)	1 acre**	April-November	June, July
Apples* (picking)	4 acres	March-November	March, June September
Raspberries	2 acres**	March-October	March, July
Pumpkins	20 acres	May-September	September
Blueberries	1 acre	March-November	April, July

*After planting, apples need little work for two years. The workload increases exponentially from year 2 to year 5.

** Assuming all PYO.

Establishment Costs

All perennial fruit and vegetable crops require a large investment in money and labor before any sales occur. In all crops, the key to profitability is to get maximum growth during year or two after planting. Producers who try to cut corners during the establishment year, either by cutting back on irrigation or soil preparation, nearly always regret their decision. With good site preparation, most crops will cash flow two or three years after planting, but will only pay off the initial investment after four to five years.

Crop	Years until production	Establishment Costs
Asparagus	3	
Strawberries	1	\$3,000
Apples	3	\$8,000
Raspberries	2	\$4,000
Blueberries	4	\$10,000