



Iowa Department of Agriculture and Land Stewardship

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Specialty Crop Block Grant Program – Farm Bill 12-25-B-1670

Final Performance Report December 9, 2016

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FINAL REPORT

PROJECT REPORT(S)

PROJECT TITLE

Optimizing the Cropping Potential and Profitability of Organic and Sustainable Apple Orchards Through the Use of Dwarfing Rootstocks.

PROJECT SUMMARY

The recently developed tall spindle training system (Robinson, et al 2011) that calls for tree spacing in the rows of 3 to 4 feet, and minimal pruning can bring trees into production as early as the second growing season. The system relies on dwarfing rootstocks and vertical tree support. Trees are maintained at the height of 10 feet with a narrow canopy that ultimately reduces harvest labor. At planting, pruning is confined to shoots low to the ground and shoots with narrow crotch angles. Shoots over one foot in length are tied down below horizontal during the first and second growing season. The second and third shoots developing below the new leader are removed during the first and second growing season when they are 2 to 3 inches in length. Shoots developing on the top quarter of the primary leader are pinched back during the second and third growing season when they are 4 to 6 inches in length. In later years, dormant pruning is confined to shoots longer than two feet and branches that become two-thirds the diameter of the primary leader at their base. This training system has been practiced in well managed orchards that rely on the use of herbicides to maintain weed-free strips under the trees. Little is known on how the system will perform in an organic or sustainable orchard where ground cover is allowed to grow under the trees.

Apple scab (*Venturia inaequalis*) is the most common disease of apples in the Midwest, and can require from 10 to 15 sprays per year to obtain control. Since 1945, apple breeding programs in North America and Europe have been working to develop scab-resistant cultivars (Crosby, et al 2002). Over 30 cultivars have been developed with significant improvements in fruit quality and consumer acceptance in the more recent introductions. 'Modi' (CIVG198) is a recently patented high quality scab-resistant apple that was developed in Italy from a 'Liberty' x 'Gala' cross (USPP#18730). With excellent resistance to apple scab and good resistance to fire blight and other common apple diseases, growers can now produce high quality fruit with fewer fungicide sprays thereby reducing production costs

and impact on the environment. With the availability of organically approved insecticides and alternative control strategies, it is much more feasible to grow these disease-resistant apples organically.

Growing scab-resistant apple cultivars that require few if any fungicide applications has the potential to shorten production time. If orchards can shorten production time by producing these apple cultivars on fire blight resistant size-controlling rootstocks they have the potential to reduce labor needs, ultimately leading to an increase in orchard profitability. Information gained from this study on rootstock usage will directly apply to conventional growers on erodible soils where herbicide strip culture is not feasible.

PROJECT APPROACH

In 2013, a final site at Will's Family Orchard was selected and partners agreed. Soil samples were collected and analyzed for optimal orchard structure and chemistry. Tree rows were marked and row centers were sub-soiled to a depth of eight inches with a single shank sub-soiler.

A harsh winter followed by poor drought conditions during the 2013 growing season resulted in plants that were deemed too small for establishment by the nurseries. Plants were cut back to a single bud at the nursery to be grown out as feathered whips a second time during the 2014 growing season per the decision of the NC-140 rootstock scientists. In November 2014, at the NC-140 Annual Business Meeting it was confirmed that the trees will be ready for spring 2015 planting. With a delay in planting we established a summer cover crop but pushed back most of our scheduled 2014 tasks.

In April 2015, we received the organic rootstocks and prepared the plot for planting. In addition, we purchased trellis materials and irrigation supplies. A wet spring delayed planting and the installation of the irrigation system. Plants went into the ground on May 2nd and a drip irrigation system was installed in July. We began collecting data in the summer with tree diameter and branch count which will help us achieve our expected measurable outcomes of identifying optimal rootstocks for organic apple management systems. Despite setbacks, we hosted a field day on July 13th with 35 in attendance.

In the spring of 2016 we presented an update at the Iowa Fruit and Vegetable Growers Association annual meeting held in Ankeny, Iowa. Project leaders continue to support this project beyond the life of the grant. In the spring we installed a weather station to help predict apple scab infection and for the overall monitoring of the impact climate has on organic apple production. In addition, we continue to collect data in accordance with the NC-140 rootstock project.

GOALS AND OUTCOMES ACHIEVED

An organic high-density rootstock planting was established at Wills Family Orchard. This has provided a site where Iowa apple producers can see first-hand orchard technologies that promote early and sustainable production practices. We continue to monitor tree growth, survivability, and productivity to identify rootstocks best suited for growing scab-resistant apple trees. However, through field days, annual reports and presentations we have reached more than 100 growers. This is a long term project that will continue to be assessed.

BENEFICIARIES

Iowa specialty crop producers have benefited from this project. Even with the delay in planting, we have shared the success and pitfalls with this project at field days, conferences, and in newsletters. One of the main advantages of this project is the establishment of a high density planting at a commercial Iowa orchard. This system shortens the initial production time from 4 to 5 years to production in year 2 or 3 without risk. While this system has been in practice for many years in other regions of the United States, Iowa producers are reluctant to adopt this system due to high initial cost and the risk associated with transitioning to a new production system. By having a local site that is accessible through field days, growers have seen the advantages of this production system. The 2015 field day held at Wills Family Orchard had 35 growers in attendance, and at the 2016 Iowa Fruit and Vegetable Conference held in Ankeny, IA, 23 growers attended the session on NC-140 rootstock trials, and close to 100 growers (total) were presented with information on high-density apple production at the 2016 annual Fruit and Vegetable Field day held at the Horticulture Research Farm.

LESSONS LEARNED

A harsh winter followed by poor drought conditions during the 2013 growing season resulted in plants that were deemed too small for establishment by the nurseries. Thus plants were cut back to a single bud to be grown out as feathered whips a second time during the 2014 growing season per the decision of the NC-140 rootstock scientists. This setback our planting date by one year which ultimately effected our achievable outcomes. Our goal to evaluate the performance of scab-resistant apple cultivars on size-controlling rootstocks that are resistant to fire blight under an organic/sustainable management systems was achieved. However, the delay in planting by one year resulted in a delay in data collection by one year. Thus 2015 expected results were not achieved until after the grant had expired.

This project was a great reminder of the issues our growers are faced with on a yearly basis. Weather delays are inevitable in our industry and this project was no exception to this issue. While it was unfortunate that our planting date was delayed and we were not able to report as many results, the grant did help us achieve the goal to plant a commercial organic size-controlling rootstock plot that will continue to be evaluated through 2025.

CONTACT PERSON

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ADDITIONAL INFORMATION

NC-140 Regional Rootstock Research Project – *Improving economic and environmental sustainability in tree fruit production through changes in rootstock use.*

<http://www.nc140.org/>

Final Report for
Iowa Department of Agriculture & Land Stewardship Specialty Crop Grant
State Point of Contact: Stephanie Groom
USDA AMS Agreement Number: 12-25-B-1670
Submitted: December 18th, 2015

Project Title
**Growing Iowa Valley Food Co-op Members into
Wholesale Marketers**

Prepared by Jason Grimm



Project of:



Project Summary

The Growing Iowa Valley Food Co-op Members into Wholesale Marketers Project goal was to provide tools and training experience to Iowa Valley Food Co-op producer members and other local growers to improve their skills to optimize production and sell on a larger scale to more complicated markets. Support provided to Iowa Valley Food Co-op members was meant to improve the effectiveness, product quality and regularity of the Co-op's producer membership. At the end of the project it was the goal of the project for Iowa Valley Food Co-op members to sell to new wholesale buyer accounts. The trainings were meant to strengthen the marketing of local food and ensure access to healthy seasonal and affordable food for institutions and wholesale markets in East Central Iowa.

The project was very timely for the Co-op's membership because for the Co-op to be successful it needs to help ensure that its vendor's are successful and have the appropriate knowledge. The Iowa Valley Food Co-op understands that its' members sell to other customers than themselves but the Co-op believes it has the responsibility to train its members so that they improve and grow their business. As the Co-op grows its customers it is important that vendors continue grow their production strategically and grow with the product demand of the Co-op's customers. A desired outcome of the project was for it to enhance the production, business and marketing skills of 10 specialty crop producers to increase their sales to one additional outlet other than IVFC by the 2015 growing season.

The project was built on a previously funded SCBGP project called, *Iowa Valley Food Cooperative for EastCentral Iowa*, in 2011. The IVFC had exceeded expectations for growth since it first opened in August of 2011. During one of the IVFC's annual producer member meeting producers expressed a need for and interest in IVFC offering technical support.

Project Approach

Growing Iowa Valley Food Co-op Members into Wholesale Marketers focused on providing technical assistance training on product quality and packaging, business sales, cost benefit business expansion planning, farm record keeping, and crop planning. As part of curriculum development the best practice tools and publications were created on Best Salesman Practices for Wholesale Produce Farmers and Excel Based Crop Planning Tools for Iowa Farmers.



To improve the relationships between specialty crop producers and regional wholesale buyers a couple template production agreements for grocers, school districts and other buyers were shared. These templates were meant to help producers negotiate and create written agreements with their buyers. Attached to this report are two examples of simple agreements that would be applicable to a school district and grocer/retailer.

A third component of the project was meant to individually assist producer members was assistance to create enterprise budgets on their farms for crops such as tomatoes – (cherry and slicing), onions, zucchini, green beans, summer and winter squash and potatoes. These enterprise budgets were meant to help each farm gather data about their business to use when making business decisions. Attached is a form that growers were provided to collect enterprise budget data during the growing season.

Goals and Outcomes Achieved

Proposed Impacts and Measurable Outcomes	Impact and Accomplishments
During the project 10 Co-op member growers will participate in wholesale readiness and business planning training	The following Co-op members participated in training in 2014 & 2015. TD n Guy Produce, Buffalo Ridge Orchard, Earth Biscuit Farm, Beals’ Produce, Prairie Rose Farm, Northern Ridge Berry Farm, Grimm Family Farm, Old School Produce, Bloomin Wooley Acres, Matus Produce, Bluebird Farm, Wild Woods Farm, Abbe Hills Farm, Red Earth Gardens, Morning Glory Farm, and Organic Greens. This goal was achieved with high success. 16 member farms participated in training and many more none members attended the trainings.
Iowa Valley Food Co-op will offer wholesale readiness and business planning training to its members on the topics of Food Safety, Grading and Packaging, Becoming the Best Professional Salesman, Planning Your Business Expansion for Wholesale Marketing, Developing a Record Keeping System on Your Farm and Planning Your Production to Meet Your Customers Demand	During the project Iowa Valley RC&D hosted 10 workshops for members of the Iowa Valley Food Co-op and other specialty crop producers in Iowa. Below are a list of the workshops and their corresponding dates. Example flyers are attached. Dec. 4 th 2013 – Crop Planning for Produce Farms Feb. 4 th 2014 – Capturing and Organizing Data for Organic Certification, GAPs Compliance and other Endeavors March 6 th 2015 – Market Ready Training March 22 nd 2014 – Food Safety and Post-Harvest Handling on the Farm Jan. 26 th 2015 – East Central Iowa Crop Planning and Variety Selection Jan. 31 st 2015 – Market Ready Training Feb. 20 th 2015 – Cost, Pricing, and Talking Wholesale Accounts March 30 th 2015 – Post Harvest Handling and Food Safety in Theory and Practice



Nov. 30th 2015 – Run Your Team: Tools for Managing and Motivating Employees on the Farm
 Dec. 4th and 5th 2015 – Equipment 101 Workshop: Bringing Hands On Learning to Beginning Farmers

Develop crop and business planning tools and wholesale best practice templates for Co-op Members

During the project Iowa Valley RC&D staff Jason Grimm and Dora Bopp created three tools that were shared with producers at trainings. Staff created an excel based crop planning tool that producers can enter information into when planning produce crops each season. The tool calculates row feet to plant or transplants needed. The other tools were guides for producers on marketing strategies selling to institutions and tips for selling to wholesale markets.

During the project staff also coordinated bulk orders of the Fearless Finances Book Published by the Midwest Organic and Sustainable Education Service and Wholesale Success published by FamilyFarmed.org. Farmers were able to get both of these books at either 50% or 25% off when staff did a bulk purchase vs purchasing them on their own.

Develop new example enterprise budgets for a series of vegetable crops in cooperative with Healthy Harvest of North Iowa and Iowa Valley Food Co-op farmer members.

In participation with Jan Libby from Healthy Harvest of North IA and Chris Blanchard from Purple Pitchfork an excel based enterprise budget template was created and shared with Co-op members. The enterprise budget template tool is attached to the report. TD n Guy was the only member farm that submitted information during the project. Farmers struggled to complete this task on their own.

Increase the readiness and success of Iowa Valley Food Co-op producers in the wholesale specialty crop industry

11 Co-op member farms self-reported that in 2014 and 2015 they begin selling to new wholesale customers. TD n Guy and Buffalo Ridge Orchard began selling to the Central City School District, Northern Ridge Berry Farm began selling to Clear Creek Amana School District, and Earth Biscuit Farm has signed a production agreement with the Tipton School District for 2015. In addition to these farms expanding their sales the Iowa Valley Food Co-op built a partnership with HyVee in Cedar Rapids. Over 2014 and 2015 10 Co-op member farms marketed more than \$88,000 of produce to 7 stores in Cedar Rapids and Marion.



The project impacted only specialty crop producers as it was focused on fruit and vegetable producer members of the Iowa Valley Food Co-op.

Project workshop instructor Chris Blanchard of Purple Pitchfork was a great partner as he helped develop new training materials for workshops and assisted Iowa Valley RC&D and Health Harvest of North Iowa develop the enterprise budget form.

Beneficiaries

Iowa Valley Food Co-op producer members were the primary beneficiaries of the project as well as other Iowa specialty crop producers.

Iowa Valley Food Co-op members have benefitted from regular training opportunities during the project and while sharing knowledge with other producers other at these meetings. As members of the Co-op they have received the new wholesale marketing guides, crop planning tools, and participated in the bulk book orders.

Producer members of the Co-op who participated in the project were very diverse. Bluebird Farm and Td N Guy were both in their first three of years of business while Morgan Creek Farm has been in business for more than 15 years. Buffalo Ridge Orchard is a family of four operation with more than 10 acres in an apple orchard and another in 8 acres in produce. Prior and still today farms who participated; their farms primarily market through either their CSA or at farmers markets.

The project assisted member farms by diversifying their market outlets for their crops. Iowa Valley Food Co-op was able to measure the economic impact of the project through the \$88,000 in wholesale sales during the project. Member farms also created new additional sales to wholesale customers such as school districts, Mercy Hospital in Cedar Rapids, Lucky's Grocery in Iowa City, Cornell College in Mt Vernon and more.

Lessons Learned

Project leaders learned a lot about the power of a Cooperative organization. As a result of the project's training workshops cooperative purchases happened between Co-op members. Co-op members cooperatively purchased over 3 tons of seed potatoes, wax produce boxes, Tsunami Produce Sanitizer and produce twist ties.

Project partners found that members of the Iowa Valley Food Co-op struggled at analyzing the profit and losses of their enterprises. Most members did not follow through and collect enterprise budget data to measure the profits of their crops. Producers who attended the training Cost, Pricing, and Talking Wholesale Accounts workshop said the workshop taught them a lot about how enterprise data is useful to help determine your profit and loss and help set your prices.

Future training for Co-op member farms will be focused on group efforts. Project leaders would like to host future training on enterprise budgets so that member farms can analyze their enterprises as a group of producers. In January 2015 Co-op members participated in crop planning and seed selection workshop. It was observed that when Co-op members solved problems together on their farms they were more engaged in the workshop.

Additional Information

The Iowa Valley RC&D during the project recognized the need for additional training on food safety as the Food Safety Modernization Act comes into law. The Iowa Valley RC&D is currently preparing staff and raising funds to begin offering training and one-on-one assistance with farms to ensure they come into compliance properly.

Report attachments

Tips for Selling to Wholesale Markets - pages 7 & 8
Example purchase agreement for grocer/retailer – pages 9
Example purchase agreement for school district – page 10
Sample workshop flyers – page 11 -14

Additional File Attachments

Enterprise Budget Template – Excel
Farm Production Tools_Final - Excel

Tips for Selling to Wholesale Markets

Wholesale markets consisting of grocers, restaurants and institutions like schools and hospitals, are increasingly interested in sourcing food locally. Local produce farmers and ranchers willing to develop a face to face relationship with wholesale buyers to negotiate fair prices, and deliver quality products consistently have a great opportunity to develop profitable wholesale market niches.

Considerations

- Liability insurance that covers claims of up to at least \$1 million is often recommended and possibly required.
- Packing and post-harvest practices - product should be in appropriate condition (clean, cold...).
- Good communication is key to developing a trusting relationship where fair pricing, quality, quantity, delivery schedule and expectations can be established.
- Explore demand for specialty crops (high-value) or value-added (processed) products that may offer higher profit margins.
- Time of delivery to time of payment can sometimes be longer than usual.

Institutional	Grocery	Restaurants	
●	●		Large Volume
●	●		Lower Prices/Unit
		●	Frequent Deliveries
●			Liability Insurance
●	●		Food Safety Plans
	●	●	Top Quality Produce
		●	Small Order Sizes
●			Long Payment Cycles
		●	Short Payment Cycles
●			Light Processing Required
●	●		Competitive Bid Process
		●	Higher Prices/Unit]
	●		Packaging (UPC or PLU)
	●		Possibility of Wide Range of Products

** Sample only; descriptors may not apply as indicated*

Key Questions to Ask Yourself

- Do buyers require liability insurance, a food safety plan or Good Agricultural Practices (GAPS) plan?
- How do buyers want produce packed and delivered?
- What production, handling, storage and delivery methods will I use to ensure the freshest and highest quality products? What are expected by buyer?
- What quantities and how often do buyers need my product?
- What does the buyer wants in terms of grading/sizing, shape, color, length?
- What's the best way to communicate with buyers about your produce availability and pricing – email, phone, web, or text message?
- Is there a competitive bidding process for schools and other institutions? What do I need to be considered?
- Does the buyer require any special packaging – PLU or UPC code, etc.?

Tips

- Start small, and test your ability to grow and market new products before you scale up.
- Research and be familiar with potential and existing buyers and their institution.
- Sell before you sow - introduce yourself and your products, tell your story - bring a price list; visuals of your farm, staff and/or products; and provide product samples if available.
- Plan well ahead of the next growing season –determine what buyers needs are to best plan your production schedule.
- Provide a weekly availability/price list sent by email to buyers.
- Be open and honest in communication and a good listener



- to develop a trusting relationship.
- Build a relationship with everyone who handles your product.
- Be professional, reliable, and on time when communicating and delivering products.
- Be consistent in quality and delivery of product – establish a reputation for excellence.
- Deliver exceptional customer service.
- Know the market and use buyer as best source of market information – they may know what next best thing is before you do.
- Know how buyer is using your product and be prepared to talk about other ways to use it.
- Plan your plantings/production for continuous harvest and adequate volume to supply expected demand.
- Introduce new products by dropping off samples with your regular deliveries – and possibly with recipes.
- Ask about and follow the buyers’ expectations for pack, size, grade, or post-harvest practices.
- Find out if the buyer is interested in purchasing imperfect, blemished or seconds for a lower price.
- Don’t put all your eggs in one basket – diversify your product offerings and markets. Weather, pests, or a collapsed market may wipe out one or more of your offerings. Increasing variety may provide a good way to increase overall volume a buyer will purchase from you.
- Offer to provide farm tours and pictures of your farm for display.
- Attractive packaging helps market your products. It may pay to invest in creating a farm logo or appealing label to brand your products.
- Take time to relax and have fun – you will work more effectively and profitably by reducing stress.

Resources

- Tips to Successful Farm Produce Marketing by Duncan M. Chembezi, Ph.D., Alabama A&M University. Excerpts from “Sell What You Sow! The Grower’s Guide to Successful Product Marketing” by Eric Gibson. Online resource <http://www2.aamu.edu/saes/sfrc/FactSheets/Mkt-TipsToSuccessfulFarmProduceMarketing.pdf>.
- National Center for Appropriate Technology *Marketing Tip Sheet Series*
 - Tips for Selling to Institutional Markets <http://hfhpcollection.org/wp-content/uploads/2013/05/institutionalmkttipsheet.pdf>
 - Tips for Selling to Grocery Stores <http://www.carolinafarmstewards.org/wp-content/uploads/2012/12/6-ATTRA-Tips-for-Selling-to-Grocery-Stores.pdf>
 - Tips for Selling to Restaurants <http://www.carolinafarmstewards.org/wp-content/uploads/2012/12/5-ATTRA-Tips-for-Selling-to-Restaurants.pdf>

SAMPLE Intent to Purchase Agreement

The purpose of this agreement is to provide a formalized agreement between _____ and _____ purchaser of fresh fruits and/or fresh vegetables for the growing season of _____.

This agreement is made with the tacit understanding that _____ need to plan ahead and make allocations of land, fertilizer, seeds and other production supplies for the purpose of growing products for sale to _____.

It is also understood that the nature of fresh fruit and vegetable production is subject to weather conditions, acts of God and other unforeseen situations that may impact the quality and quantities of the products produced. Therefore, neither party; grower or buyer; is strictly bound by the agreement that refer to specific quantities, delivery dates and quality of products in the agreement. The _____ harvest season prices have been agreed upon between _____ and _____. The prices are subject to change based on local climatic and economic forces and are intended to be the best projections based on current conditions at the time of agreement.

The attached vendor information sheet, and _____ Product and price list, shall be considered as part of this agreement and deemed as components of the "agreement".

_____ desires to contract with _____ for purchase of fresh fruits and vegetables. It is _____ intent to purchase the total available amounts of each type of fruits and vegetables that can be produced by _____ during the _____ growing season

Farm _____ Date _____

Buyer _____ Date _____

SAMPLE Farm to School Purchase Agreement

With _____ (grower) and _____ (school)

Purchase Agreement:

The grower will deliver the specified items and quantities of produce to _____ (school) during the time period indicated.

Both parties acknowledge that if problems arise due to drought, hail, pestilence, flood, or other acts of nature and this agreement cannot be fulfilled, the above parties will be notified and changes to the purchase agreement can be made with the consent of both parties.

The grower recognizes that this agreement is not exclusive and _____ (school) may procure similar products from other vendors during the time of the contract agreement.

Quality:

Produce that does not meet the standards of _____ (school) food service staff may be rejected. Repeated deliveries of unacceptable product may nullify this agreement.

All produce must be accurately weighed or counted and cleaned before delivery. All packaging must be clean and adequately protect produce. All cartons must be labeled with the name of the grower, product and quantity. No cartons should exceed 50lbs.

Pricing and Quantity:

Pricing and quantity of individual products must be agreed upon at the time of signing the purchase agreement. Any changes in quantity must be communicated to the _____ (school) Food Service Authority.

Delivery and Payment Schedule:

Grower will deliver product on the day(s) indicated below beginning _____ until _____. Grower will make delivery at a mutually agreed upon time to the _____ (school) Food Service Warehouse.

	Monday	Tuesday	Wednesday	Thursday	Friday
Product					
Delivery					

All deliveries must be accompanied by a completed invoice. Payment is contingent on _____ (school) School Board approval and will be remitted within 30 days of invoice receipt.

Marketing:

_____ (School) agree to positively promote the grower’s product and business with cafeteria signage and media releases whenever possible.

Product: _____ Quantity: _____ lbs/wk Price: _____
 Product: _____ Quantity: _____ lbs/wk Price: _____
 Product: _____ Quantity: _____ lbs/wk Price: _____

 School Food Authority Date

 Grower Date

**CAPTURING AND ORGANIZING DATA
For Organic Certification,
GAPs Compliance
& other Endeavors**

**Feb. 4th from 12–3 p.m.
CSPS – 1103 Third St SE
Cedar Rapids**

Paperwork can be the bane of the certified-organic, GAPs-audited, and financially-aware farmer. Learn how to capture information, get on top of your paperwork, and wow your inspector, auditor, and banker. Rock Spring Farm's Chris Blanchard will provide an overview of the basic techniques he and his crew use to gather information and keep it organized for easy access with a minimum of effort.

**\$10 per person
FREE to IVFC Members**



**MARKET READY TRAINING
FOR PRODUCE
FARMERS & RANCHERS**

**Feb. 20th & March 6th – all day
Linn County Extension
383 Collins Rd NE, Suite 201
Cedar Rapids**

The *MarketReady* Program, developed by specialists at the University of Kentucky, addresses the market development risks and relationships farmers and ranchers must manage as they scale up to market their product to restaurants, grocery stores, food service buyers and schools. The topics to be covered include: communications, and relationship building, packaging, labels, supply/delivery, post-harvest handling for produce, grading, insurance, marketing, and regulatory.

**\$55 per person or \$90 for couple
FREE to IVFC Members**



**FOOD SAFETY AND POST
HARVEST HANDLING ON
THE FARM**

**March 22nd – all day
Hardin County Extension
524 Lawler Street, Iowa Falls
(transportation provided from Cedar Rapids)**

Learn about a farm's food safety practices and how to combat challenges that small-mid scale farms may face while implementing good practices. Food safety practices also help improve the quality of your produce to increase market appeal. Rock Spring Farm's Chris Blanchard will present concepts to improve productivity and systematize operation. Also learn about food safety regulations from a representative from Inspections and Appeals and a local chef about his perspective on food safety and product quality.

\$25 per person



LOCAL FOOD PRODUCER TRAINING IN 2015



EAST CENTRAL IOWA CROP PLANNING AND VARIETY SELECTION MEETING

January 26th from 5:30–8 PM
Iowa Valley Food Co-op
201 3rd Ave SW
Cedar Rapids

Come and socialize with your fellow produce farmers as we order seeds and plan our crops. The Iowa Valley Food Co-op and Iowa Valley RC&D is hosting a gathering of farmers. Come and hear Randy Cummings from Johnny's Seeds talk about new seed varieties and trends in the seed industry. Participate in a discussion about crop planning, seed selection and planting techniques led by Laura Krouse from Abbe Hills Farm.

Light Meal from 4:30–5:30 pm

FREE but please RSVP



MARKET READY TRAINING FOR PRODUCE FARMERS & RANCHERS

January 31st from 8 AM–5:30 PM
HyVee Club Room
1720 Waterfront Drive
Iowa City

The *MarketReady* Program, developed by specialists at the University of Kentucky, addresses the market development risks and relationships farmers and ranchers must manage as they scale up to market their product to restaurants, grocery stores, food service buyers and schools. The topics to be covered include: communications, relationship building, packaging, labels, supply/delivery, post-harvest handling for produce, grading, insurance, marketing, and regulatory.

\$55 per person or \$90 for couple
FREE to IVFC Members
Includes Lunch



COSTS, PRICING, AND WHOLESALE MARKETING

February 20th from Noon–3 PM
Mercy Hospital Hallegron Center
701 10th Street Southeast
Cedar Rapids

Being a sustainable farmer is more than the farming methods you use, it also means ensuring you can stay in business regardless of your marketing outlet. Veteran farmer and consultant Chris Blanchard will help you navigate pricing strategies to meet your customer needs and your farm's bottom line, and discuss strategies and techniques for reaching out to - and retaining - buyers from stores, restaurants, and wholesale distributors.

\$15 per person
FREE to IVFC Members



POST-HARVEST HANDLING AND FOOD SAFETY IN THEORY AND PRACTICE

March 23rd from 10 AM– 3 PM
Central City Civic Center
137 4th St North
Central City

As the demand for local produce has exploded in the last five years, so has the expectation on the part of consumers and institutional buyers for high quality fruits and vegetables with an extended shelf life. Join veteran farmer and consultant Chris Blanchard for a look at the theory and practice of keeping your produce in top condition while minimizing the risk of microbial contamination. This workshop includes a classroom component and on-site demonstrations of post-harvest handling techniques at Buffalo Ridge Orchard and vegetable farm.

\$25 per person
FREE to IVFC Members
Includes Lunch



Registration required, space is limited.

Register/RSVP online at www.ivrcd.org
contact jason@ivrcd.org or dora@ivrcd.org at 319.622.3264



This project was funded in whole or in part by the Iowa Department of Agriculture

Equipment 101 Workshop

Bringing Hands On Learning to Iowa's Beginning Farmers

Iowa County Fairgrounds & Amana Farms
800 E Marion St, Marengo & 1300 200th Trail High Amana

Dec 4-5th, 2015 12 PM - 6:30 PM & 9 AM - 4:00 PM

Limit to 30 attendees

Is your knowledge and comfort owning and operating farm equipment holding you back? Join others as they gain new skills and knowledge about equipment. First **learn about how to safely operate and maintain equipment**. Learn about **PTOs, 3 point implements, fluids, oils, hydraulics, batteries, jacks and more**. Amana Farm's shop staff will teach and demo the basics of welding and more.

Want some advice about outfitting your expanding farm business. Come and listen to, **small and mid-size vegetable equipment expert Martin Diffley**, discuss and describe a scenario of equipping a 10 acre or more vegetable operation with the proper size and type of tractors and implements.

Engineer and farmer Jacob Bolson will discuss and describe a similar scenario of a 200 acre or more small grain and row crop farm. Jacob will discuss equipment of a organic and sustainable agriculture operation. He will discuss tractor horse power for different field tasks, cultivation equipment and harvesting equipment. He will describe the difference between different models of equipment.

Workshop presentations will be both classroom and hands on style. Participants should expect to get dirty and practice operating implements and tools. Sample equipment will be on site for the workshop.

Plan on joining other beginning farmers Friday evening for a social time after workshop activities end for the day. Hotels are available in Marengo, Amana, and at the I-80 Williamsburg exit.

This workshop was supported by funds from the IA Department of Agriculture and Land Stewardship and Farm Credit Services of America



Register by sending the form below with check/cash or visit www.ivrcd.org. Last minute walk-ins possible as space allows.

QUESTIONS CONTACT
Jason Grimm
jason@ivrcd.org or 319.622.3264

Run Your Team: Tools for Managing & Motivating Employees on the Farm

Linn County ISU Extension
383 Collins Rd NE, Suite 201 Cedar Rapids, IA 52402

November 30th, 2015 10:00 AM - 2:30 PM

Limit to 25 attendees

Join us as we discuss managing employees on your farm. Employees make it possible to get more done, but managing workers and their work takes dedicated time, energy and processes. Whether you manage one seasonal worker or a large year-round crew, good management can make the difference between making headway on your farm's work or just creating headaches. Join veteran farmer and educator Chris Blanchard to learn how to create a productive, positive work environment by communicating clear expectations and implementing systems for efficiency and accountability. Learn how to create a productive, positive work environment by communicating clear expectations and implementing systems for efficiency and accountability. In this workshop, you'll learn how to:

- Utilize practical tools to increase employee satisfaction and productivity;
- Remove emotion from management decisions and actions;
- Build a team culture; and
- Collect and use labor information to make operational and investment decisions.

Chris Blanchard provides consulting and education for farming, food, and business through Flying Rutabaga Works. His workshops, writing, and consulting throughout the country about farm business concepts, food safety, organic vegetable production, and scaling-up have gained a reputation for fresh approaches, down-to-earth information, and honesty.



Register by sending the form below with check/cash or visit www.ivrcd.org. Last minute walk-ins possible as space allows.

QUESTIONS CONTACT
Jason Grimm
jason@ivrcd.org or 319.622.3264

PROJECT TITLE:

Improving Organic Apple Production as a Specialty Crop in Iowa

Project Organization

Iowa State University

Project PI: Kathleen Delate, Depts. of Agronomy & Horticulture

Date: December 10, 2015

Final Report

Project Summary

Currently, the bulk of organic apples consumed in Iowa are produced and transported across the U.S. from Washington and California and overseas from New Zealand. The long-term sustainability of this practice has been questioned in light of rising fuel costs and dependence on non-renewable fossil fuels. Also, local food sales have risen throughout the country as consumers place higher value on food produced with a lower carbon footprint, free of pesticide residues and generating ecosystem services such as clean water and air. The question this grant began to address was: Can Iowa's organic apple growers produce fruit that is commercially acceptable for the marketplace, while enhancing orchard ecosystems services, including increased pollination, lower fertilizer and pesticide residues, and improved soil quality? Across the U.S., there are 81,537 acres of organic fruit and berries, with \$621 million in sales. Iowa can participate in this growing market if ecological pest management and soil fertility practices are developed and promulgated to organic and transitioning producers. Low-input techniques for codling moth, plum curculio and fruit disease management were investigated at an on-farm sites, and economic comparisons are underway to determine which practice support highest returns. Surveys determined barriers to organic fruit tree adoption and methods to increase specialty crop production in Iowa.

While the current organic fruit industry in Iowa is relatively small (13 acres), many growers are interested in transitioning to organic production, or using organic treatments for their pest management and/or soil fertility improvements. The long-term usage of toxic pesticides for insect and disease management has been questioned in light of recent consumer awareness of these issues. Finding ecological approaches to apple pest and fertility management that are site-specific and affordable, and can improve organic apple production and sales, was the goal of this project. The objectives of this project were:

1. Survey Iowa fruit growers for their knowledge and interest in organic apple/organic fruit production
2. Hold workshops and Field Days to demonstrate best ecological management practices for organic apple production
3. Establish on-farm research and demonstration site where ecological methods for insect, disease and weed management will be compared to current organic practices

4. Determine costs of production and returns for the two systems
 5. Develop fact sheets and publications on lessons learned from on-farm trials and Best Management Practices for organic apple production in Iowa
- Activities and results are described in the following paragraphs.

Project Approach

The on-farm site in 2015 was the Wills Family Farm in Adel, Iowa. Forty 3-year-old 'WineCrisp' and 41 three-year-old 'CrimsonCrisp' apple trees were designated for the experiment. These are relatively new scab-resistant cultivars that have not been critically evaluated in Iowa. Trees were treated with organic-compliant sprays to manage cedar apple rust (CAR) and other diseases, in addition to insect pest management sprays (see attached log of spray treatments). The main treatments in this experiment were the following: 1.) Ca + SeaShield®; 2.) Sulfur and copper (S + Cu); 3.) Potassium bicarbonate (KHCO₃); and a control (no CAR sprays). Rates and product names were BioLink® Calcium (Westbridge Ag Products, Vista, Ca) at 2 qt/100 gal H₂O/acre; SeaShield® (Advancing Eco-Agriculture, LLC, Middlefield, OH) at 2 gal/100 gal H₂O/acre; Kumulus® sulfur (BASF, Germany) at 5 lb/100 gal H₂O/acre; Cueva® copper (Certis, LLC, Columbia, MO) at 1 gal/100 gal H₂O/acre; and potassium bicarbonate (MilStop®, BioWorks, Victor, NY) at 3 lb/100 gal H₂O/acre.

Treatments were applied to 10 WineCrisp trees for each of the treatments, while the CrimsonCrisp block had the following treatments: 13 trees in the KHCO₃ treatment; 11 in the Ca + SeaShield; 10 in the S/Cu treatment; and 7 in the control. Data on fruit size, disease rating, and insect damage were collected approximately every other week from all trees in each treatment, on May 27, June 17, July 1, July 15, August 7 and August 28, 2015 in the WineCrisp trial, while in the CrimsonCrisp block, data were collected on June 4, June 24, July 15, July 31, August 13, and August 27. Three apples/leaves were evaluated from each tree in the study at every sampling date.

Goals and Outcomes Achieved

WineCrisp Apple Production

The 2015 season was a very challenging season for apple production, with extremely high rainfall and high winds on June 24. On May 27, all WineCrisp fruits were the same size among treatments, averaging 0.75 inches, with similar disease ratings (average: 2.03, with 0=no disease) and 3 fruits/ft² (Tables 1-2). Some CAR galls were already present at this time, as an indication of a wet season. Fruit numbers averaged 3 fruits/ft². On June 17, fruit size was greater in control trees, averaging 1.40 inches, compared to 1.29 inches as the overall average, although the Ca + SeaShield treatment apples were similar to the control at 1.3 inches (Tables 3-4). Disease increased to an average rating of 3.0, with no difference between treatments. Insect damage was also similar at 0.33 (0=no damage). Fruit numbers remained stable at 3 fruits/ft². On July 1, fruit size increased to 1.6 inches, with no differences among treatments (Tables 5-6). Disease remained at a similar rating to the previous sampling date, at 3.0. Insect damage was similar among treatments, averaging a score of 1.2. Fruit numbers remained stable at 3 fruits/ft². On July 15,

fruit size increased to 1.9 inches, with no differences among treatments (Tables 7-8). Disease remained at a similar rating of 2.1 with no differences among treatments. Insect damage increased slightly, averaging 1.5 among all treatments. Fruit numbers remained stable at 3 fruits/ft². On August 7, fruit size increased to 2.02 inches, with no differences among treatments (Tables 9-10). Disease pressure, averaging 2.8 across all treatments, was lower in the KHCO₃ treatment, which averaged 2.23. Insect damage was similar among treatments, averaging a score of 1.8. Fruit numbers remained stable at 3 fruits/ft². On the last sampling date, fruit size increased to 2.4 inches, with no differences among treatments (Table 11). Disease increased to 3.1. Although there was a numerically greater amount of disease in the control trees (averaging 3.4), there were no statistical differences among treatments. Insect damage increased slightly, averaging 1.9 among all treatments. Again, apples in the control trees had numerically greater insect damage (averaging 2.5), but differences were not statistically significant.

At harvest on October 1, the average weight of WineCrisp apples in the experiment was 80.8 grams (Table 12). The apples in the KHCO₃ treatment were the heaviest, at 100.5 grams, although control apples were equivalent at 82.5 grams. Insect damage at harvest averaged a rating of 3.5, with no differences among treatments. Apples in the KHCO₃ treatment were actually rated higher in disease, averaging 3.9, compared to an average of 3.1 across all treatments, but biological differences were not observed in this season of such high CAR disease pressure.

CrimsonCrisp Apple Production

The CrimsonCrisp apples fared much worse than the WineCrisp apples in relation to disease development. On June 4, all CrimsonCrisp fruits were the same size among treatments, averaging 0.72 inches, with no differences among treatments (Tables 13-14). Disease ratings (average: 3.4, with 0=no disease) were already higher than that observed in the WineCrisp apples. Control apples had higher disease ratings (4.9) compared to the lower rating of 2.5 in the KHCO₃ treatment. Fruit load averaged 2 fruits/ft². On June 24, fruit size averaged 1.2 inches, with no differences among treatments (Tables 15-16). Disease remained at 3.2, with no difference between treatments, although the KHCO₃ treatment's disease rating was numerically lower at 2.9. Fruit numbers were lower (signifying dropped fruit) at 1.2 fruits/ft². On July 15, fruit size increased to 1.3 inches, with no differences among treatments (Tables 17-18). Disease increased slightly to 3.4. Fruit numbers dropped again to an average of 1 fruit/ft². On July 31, average fruit size dropped to 0.39 inches, with no differences among treatments (Table 19). Overall average disease ratings for July 31, August 13 (Table 20) and August 27 (Table 21) began to drop due to the lack of fruit to count.

At harvest on October 1, the average weight of CrimsonCrisp apples in the experiment was only 3 grams compared to 80.8 grams in the WineCrisp cultivar (Table 22). Insect damage at harvest averaged a rating of 3.3, with no differences among treatments. Apples in the KHCO₃ treatment were rated lower in disease, averaging 2.5, compared to a rating of 4.0 in the Ca + SeaShield treatment, but

statistical differences could not be determined because there were no apples left on trees in the control and S + Cu treatments.

A Field Day on *Organic Apple Production* was held on July 13, 2015, at the on-farm site for approximately 30 students, farmers and ag professionals. Information was presented by Maury Wills and ISU faculty on establishing and growing organic apples, nutrient and pest management. Details on harvesting, post-harvest storage and marketing were also presented.

Beneficiaries

Apple growers—both conventional and organic—benefited from the research conducted in this project, by learning the latest techniques (cultivars and treatments available for disease management). Other participants included ISU Extension & Outreach and IDALS.

Lessons Learned

The most important lesson learned from this project was that growers must consider cultivar selection and site selection for effective organic apple disease management. Scab-resistant cultivars are an imperative for organic growers who wish to limit applications of sprays. Low-lying sites are associated with increased humidity and flooding, which are ideal conditions for plant pathogens. WineCrisp trees fared better than CrimsonCrisp in relation to growth and CAR disease tolerance during extremely wet conditions in 2015, but neither cultivar performed as well as older scab-resistant cultivars on the farm. We are continuing to work with Mr. Wills on improving apple disease management in new cultivars in 2016, and analyzing production costs for Extension fact sheets.

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Wills Chart – Product Use and application Dates for Cedar Apple Rust Trial

Date	Bud Stage	Time Wet	Time Dry	Ave. Temp.	Rainfall Amount	Infection Odds	D Day Count	Spore Maturity	Trial 1 Potassium/Bicarb	Trial 2 Silica/Ca	Trial 3 Sulfur/Copper
4/1	Green Tip			H 83 L42							
4/2				61	¼"						
4/3				44	.09						
4/5	Zestar tight cluster; other varieties ½" green										
4/7	Tight Cluster			51	.05						
4/8	Tight Cluster			50	.04						
4/9	Tight Cluster			47	.1						
4/11	1 st Pink most varieties; looks great; loaded with fruit buds										
4/12	Pink			63	.29						
4/13	Pink			57	.05						
4/16	1 st Bloom Zestar; Planted 100 McCoun – B9										
4/18				68	.35						
4/19				57	.58						

4/20	Zestar & Liberty popped – full bloom.										
4/21	Zestar Full Bloom; others approx. 40%		L34!								
	Randy brought 32 hives										
4/22	Set up burn piles for tomorrow morning		L32								
4/23	Low of 33 at 3:30am and never got lower – yay! No fires set. Unexpected clouds rolled in mid am. Warmed to 60. Planted 18 cherry and 20 Snowsweet.										
4/24			54	.18							
4/25	Bloom		49	.43							
4/27	Bloom		L29! Avg 54					Boron, Ca, Dipel, Serenade, Neem	Boron, Ca, Dipel, Serenade, Neem	Boron, Ca, Dipel, Serenade, Neem	
4/30	Bloom; Petal Fall Starting										
5/4	Petal Fall		73	.08	No galls seen yet – odds low						
5/5	Petal Fall		71	.05	“ “						
5/9	Significant Petal Fall – fruit swell							Ca, Dipel, Micro-Pak, Sea-Stim Serenade, Neem (should not have sprayed Ca this day	Ca, Dipel, Micro-Pak, Sea-Stim Serenade, Neem	Ca, Dipel, Micro-Pak, Sea-Stim Serenade, Neem (should not have sprayed anything else on this day and 4/27 on this	

									and 4/27 on this Treatment – no more)		Treatment – no more)
5/10	Fruit swell			66	.4	Haven't scouted for galls again. May be present			Probably should have made 1st Tx		
5/12	Some apples pea size					Seeing some PC injury		Surround	Surround	Surround	
5/14	Fruit Growing			58	.6	Found Active Galls on Cedars			Potassium/BiCarb – in misty rain		Sulfur
5/16	Fruit Growing			72	.50 last night into today	Infection risk is high			Potassium/BiCarb		
5/19	Fruit Growing		49 (by end of day) cooler than that during wetness		.14 in am	Low to moderate risk of CAR infection – Not home to spray					
5/21	Fruit Growing									BioLink Ca, Sea Shield for Silica	Copper
5/22	Fruit Growing				.01 Rain	Low to moderate CAR. Little rain overnight - cool			Potassium/BiCarb 8 am.	Micro Pak, Sea Stim, Dipel, Serenade	
5/23	Fruit Growing								Micro Pak, Sea Stim, Dipel, Serenade		

5/24	Fruit Growing		Avg. temp 66	½" rain	Moderate Risk – previous active galls appear to be inactive – horns diminished		Potassium/BiCarb applied 4:30 pm		
5/26	Fruit Growing			1" rain	Rain event makes risk high if galls are still active		Potassium/BiCarb applied 6:30 pm		
5/27	Fruit Growing						Sprayed: Dipel, Entrust, Serenade & Surround		
5/28				.19" rain					
5/29				.02" rain					
6/2							Sprayed: CA, Sea Shield, Sea Stim, Micro Pak, Dipel, & Surround	Sprayed: CA, Sea Shield, Sea Stim, Micro Pak, Dipel, & Surround	
6/3				.02" rain					
6/7				.08" rain					
6/8							Sprayed: CA, Sea Shield, Sea Stim, Micro Pak, Dipel, & Surround, Entrust (9% Egg Hatch)	Sprayed: CA, Sea Shield, Sea Stim, Micro Pak, Dipel, & Surround, Entrust (9% Egg Hatch)	Sprayed: CA, Sea Shield, Sea Stim, Micro Pak, Dipel, & Surround, Entrust (9% Egg Hatch)

6/11				.09" rain					
6/15				1.03" rain					
6/17							Sprayed: CA, Sea Shield, Sea Stim, Micro Pak, Dipel, & Surround, CYD-X (62% Egg Hatch)	Sprayed: CA, Sea Shield, Sea Stim, Micro Pak, Dipel, & Surround, CYD - X (62% Egg Hatch)	Sprayed: CA, Sea Shield, Sea Stim, Micro Pak, Dipel, & Surround, CYD - X(62% Egg Hatch)
6/24 – 25th	Major storm on the 24 th pm. Tornadic conditions. 10 minutes marble size hail. Midnight another round of hail. 1 am another round of hail. More than 5 inches of rain.								
6/27							Sprayed: CA, Micro Pak, Dipel, & Surround, Entrust	Sprayed: CA, Micro Pak, Dipel, & Surround, Entrust	Sprayed: CA, Micro Pak, Dipel, & Surround, Entrust
							Sprayed: CA, Sea Shield, Sea Stim, Micro Pak, Dipel, & Surround	Sprayed: CA, Sea Shield, Sea Stim, Micro Pak, Dipel, & Surround	Sprayed: CA, Sea Shield, Sea Stim, Micro Pak, Dipel, & Surround

Table 1. Fruit size and disease rating for WineCrisp apples, Will's Family Orchard, 5/27/2015.

Treatment	Fruit size (inches)	Disease rating ^x
KHCO ₃	0.72	1.97
Ca +Sea Shield	0.75	1.86
S +Cu	0.75	1.93
Control	0.76	2.37
LSD _{0.05}	NS ^x	NS
p value	0.7363	0.0892

($\alpha = 0.05$)

^xDisease: 0=0% 1≤10%, 2≤25%, 3≤50%, 4≤75%, 5=All Diseased.

^yMeans followed by the same letter down the column are not significantly different at $P \leq 0.05$ or not significant (NS) (Fisher's Protected LSD Test).

Table 2. Average fruit number for WineCrisp apples, Will's Family Orchard, 5/27/2015.

Treatment	Fruits per sample area (1 ft ²)
KHCO ₃	3.00
Ca +Sea Shield	2.80
S +Cu	2.70
Control	3.00
LSD _{0.05}	NS
p value ^x	0.5627
($\alpha = 0.05$)	

^xMeans followed by the same letter down the column are not significantly different at $P \leq 0.05$ or not significant (NS) (Fisher's Protected LSD Test).

Table 3. Fruit size and disease and insect ratings for WineCrisp apples, Will's Family Orchard, 6/17/2015.

Treatment	Fruit size (inches)	Disease rating ^x	Insect rating ^y
KHCO ₃	1.24b ^z	2.97	0.47
Ca +Sea Shield	1.29ab	3.27	0.20
S +Cu	1.25b	2.77	0.23
Control	1.37a	3.03	0.43
LSD _{0.05}	0.02013	NS	NS
p value	0.0453	0.1227	0.3397

($\alpha = 0.05$)

^xDisease: 0=0% 1≤10%, 2≤25%,3≤50%,4≤75%,5=All Diseased.

^yInsect: 1 insect bite = 1, etc.

^zMeans followed by the same letter down the column are not significantly different at $P \leq 0.05$ or not significant (NS) (Fisher's Protected LSD Test).

Table 4. Average fruit number for WineCrisp apples, Will's Family Orchard, 6/17/2015.

Treatment	Fruits per sample area (1 ft ²)
KHCO ₃	3.00
Ca +Sea Shield	2.80
S +Cu	2.70
Control	3.00
p value ^x	0.5627
($\alpha = 0.05$)	NS ^x

^xMeans followed by the same letter down the column are not significantly different at $P \leq 0.05$ or not significant (NS) (Fisher's Protected LSD Test).

Table 5. Fruit size and disease rating for WineCrisp apples, Will's Family Orchard, 7/1/2015.

Treatment	Fruit size (inches)	Disease rating ^x	Insect rating ^y
KHCO ₃	1.61	2.73	1.23
Ca +Sea Shield	1.63	2.87	1.18
S +Cu	1.53	3.30	0.96
Control	1.63	3.07	1.37
LSD _{0.05}	NS ^z	NS	NS
p value	0.3127	0.0596	0.5003

($\alpha = 0.05$)

^xDisease: 0=0% 1≤10%, 2≤25%,3≤50%,4≤75%,5=All leaves diseased.

^yInsect: 1 insect bite = 1, etc.

^zMeans followed by the same letter down the column are not significantly different at $P \leq 0.05$ or not significant (NS) (Fisher's Protected LSD Test).

Table 6. Average fruit number for WineCrisp apples, Will's Family Orchard, 7/1/2015.

Treatment	Fruits per sample area (1 ft ²)
KHCO ₃	3.00
Ca +Sea Shield	2.80
S +Cu	2.70
Control	3.00
LSD _{0.05}	NS ^x
p value ($\alpha = 0.05$)	0.5627

^xMeans followed by the same letter down the column are not significantly different at $P \leq 0.05$ or not significant (NS) (Fisher's Protected LSD Test).

Table 7. Fruit size and disease and insect ratings for WineCrisp apples, Will's Family Orchard, 7/15/2015.

Treatment	Fruit size (inches)	Disease rating ^x	Insect rating ^y
KHCO ₃	1.83	2.17	1.43
Ca +Sea Shield	1.87	2.07	1.54
S +Cu	1.84	2.00	1.33
Control	1.89	2.00	1.83
LSD _{0.05}	NS ^z	NS	NS
p value	0.7697	0.9717	0.4771

($\alpha = 0.05$)

^xDisease: 0=0% 1≤10%, 2≤25%,3≤50%,4≤75%,5=All Diseased.

^yInsect: 1 insect bite = 1, etc.

^zMeans followed by the same letter down the column are not significantly different at $P \leq 0.05$ or not significant (NS) (Fisher's Protected LSD Test).

Table 8. Average fruit number for WineCrisp apples, Will's Family Orchard, 7/15/2015.

Treatment	Fruits per sample area (1 ft ²)
KHCO ₃	3.00
Ca +Sea Shield	2.80
S +Cu	2.70
Control	3.00
LSD _{0.05}	NS ^x
p value ($\alpha = 0.05$)	0.5627

^xMeans followed by the same letter down the column are not significantly different at $P \leq 0.05$ or not significant (NS) (Fisher's Protected LSD Test).

Table 9. Fruit size and disease and insect ratings for WineCrisp apples, Will's Family Orchard, 8/7/2015.

Treatment	Fruit size (inches)	Disease rating ^x	Insect rating ^y
KHCO ₃	2.03	2.23b	1.80
Ca +Sea Shield	2.10	3.17a	1.57
S +Cu	1.94	2.77a	2.07
Control	2.02	3.00a	1.83
LSD _{0.05}	NS ^z	0.46113	NS
p value	0.2022	0.0010	0.6475

($\alpha = 0.05$)

^xDisease: 0=0% 1≤10%, 2≤25%,3≤50%,4≤75%,5=All Diseased. 2 from old leaves, 1 from new leaves.

^yInsect: 1 insect bite = 1, etc.

^zMeans followed by the same letter down the column are not significantly different at $P \leq 0.05$ or not significant (NS) (Fisher's Protected LSD Test).

Table 10. Average fruit number for WineCrisp apples, Will's Family Orchard, 8/7/2015.

Treatment	Fruits per sample area (1 ft ²)
KHCO ₃	3.00
Ca +Sea Shield	2.80
S +Cu	2.70
Control	3.00
LSD _{0.05}	NS ^x
p value ($\alpha = 0.05$)	0.5627

^xMeans followed by the same letter down the column are not significantly different at $P \leq 0.05$ or not significant (NS) (Fisher's Protected LSD Test).

Table 11. Fruit size and disease and insect ratings for WineCrisp apples, Wills Family Orchard, 8/28/15.

Treatment	Fruit size (inches)	Disease rating ^x	Insect rating ^y
KHCO ₃	2.45	2.90	1.93
Ca + Sea Shield	2.83	3.13	1.57
S + Cu	2.00	2.87	1.70
Control	2.24	3.40	2.47
LSD _{0.05}	NS ^z	NS	NS
Ip value ($\alpha = 0.05$)	0.5012	0.0979	0.0878

^xDisease: 0=0% 1≤10%, 2≤25%,3≤50%,4≤75%,5=All Diseased.

^yInsect: 1 insect bite = 1, etc.

^zMeans followed by the same letter down the column are not significantly different at $P \leq 0.05$ or not significant (NS) (Fisher's Protected LSD Test).

Table 12. Harvest parameters for WineCrisp apples, Wills Family Orchard, 10/1/15.

Treatment	Fruit weight (g)	Insect damage	Disease rating ^x
KHCO ₃	100.50±4.96a ^y	3.33	3.93±0.32a
Ca + Sea Shield	72.63±4.96bc	3.53	2.47±0.32b
S + Cu	67.43±4.96c	3.50	2.90±0.32b
Control	82.50±4.96b	3.43	3.03±0.32b
LSD _{0.05}	4.096	NS	0.0079
p value	<.0001	0.9928	0.0131

($\alpha = 0.05$)

^xDisease: 0=0% 1≤10%, 2≤25%,3≤50%,45%,5=All Diseased.

^y Means followed by the same letter down the column are not significantly different at $P \leq 0.05$ (Fisher's Protected LSD Test).

Table 13. Fruit size and disease rating for CrimsonCrisp apples, Will's Family Orchard, 6/4/2015.

Treatment	Fruit size (inches)	Disease rating ^x
KHCO ₃	0.75	2.50c
Ca +Sea Shield	0.79	2.95b
S +Cu	0.66	3.33b
Control	0.68	4.89a
LSD _{0.05}	NS ^y	1.0340
p value	0.1585	<.0001 [*]

($\alpha = 0.05$)

^xDisease: 0=0% 1≤10%, 2≤25%, 3≤50%, 4≤75%, 5=All Diseased.

^yMeans followed by the same letter down the column are not significantly different at $P \leq 0.05$ or not significant (NS) (Fisher's Protected LSD Test).

Table 14. Average fruit number for CrimsonCrisp apples, Will's Family Orchard, 6/4/2015.

Treatment	Fruits per sample area (1 ft ²)
KHCO ₃	2.38
Ca +Sea Shield	2.38
S +Cu	1.60
Control	1.67
LSD _{0.05}	NS ^x
p value	0.2420

($\alpha = 0.05$)

^xMeans followed by the same letter down the column are not significantly different at $P \leq 0.05$ or not significant (NS) (Fisher's Protected LSD Test).

Table 15. Fruit size and disease rating for CrimsonCrisp apples, Will's Family Orchard, 6/24/2015.

Treatment	Fruit size (inches)	Disease rating ^x
KHCO ₃	1.26	2.95
Ca +Sea Shield	1.17	3.25
S +Cu	1.20	3.19
Control	1.11	3.24
LSD _{0.05}	NS ^y	NS
p value	0.5728	0.5835

($\alpha = 0.05$)

^xDisease: 0=0% 1≤10%, 2≤25%, 3≤50%, 4≤75%, 5=All Diseased.

^yMeans followed by the same letter down the column are not significantly different at $P \leq 0.05$ or not significant (NS) (Fisher's Protected LSD Test).

Table 16. Average fruit number for CrimsonCrisp apples, Will's Family Orchard, 6/24/2015.

Treatment	Fruits per sample area (1 ft ²)
KHCO ₃	1.38
Ca +Sea Shield	1.33
S +Cu	1.00
Control	1.00
LSD _{0.05}	NS ^x
p value	0.8280

($\alpha = 0.05$)

^xMeans followed by the same letter down the column are not significantly different at $P \leq 0.05$ or not significant (NS) (Fisher's Protected LSD Test).

Table 17. Fruit size and disease rating for CrimsonCrisp apples, Will's Family Orchard, 7/15/2015.

Treatment	Fruit size (inches)	Disease rating ^x
KHCO ₃	1.39	2.61c
Ca +Sea Shield	1.10	3.30b
S +Cu	1.42	3.57ab
Control	1.11	3.90a
LSD _{0.05}	NS ^y	0.05200
p value	0.2265	<.0001

($\alpha = 0.05$)

^xDisease: 0=0% 1≤10%, 2≤25%,3≤50%,4≤75%,5=All Diseased.

^yMeans followed by the same letter down the column are not significantly different at $P \leq 0.05$ or not significant (NS) (Fisher's Protected LSD Test).

Table 18. Average fruit number for CrimsonCrisp apples, Will's Family Orchard, 7/15/2015.

Treatment	Fruits per sample area (1 ft ²)
KHCO ₃	1.23
Ca +Sea Shield	1.08
S +Cu	0.27
Control	1.29
LSD _{0.05}	NS ^x
p value ($\alpha = 0.05$)	0.1485

^xMeans followed by the same letter down the column are not significantly different at $P \leq 0.05$ or not significant (NS) (Fisher's Protected LSD Test).

Table 19. Fruit size and disease rating for CrimsonCrisp apples, Wills Family Orchard, 7/31/15.

Treatment	Fruit size (inches)	Disease rating ^y
KHCO ₃	0.65±0.10a ^x	1.67±0.16b
Ca + Sea Shield	0.38±0.11ab	2.50±0.18a
S + Cu	0.09±0.11b	2.53±0.18a
Control	0.44±0.13a	2.86±0.21a
LSD _{0.05}	0.27032	0.66323
p value	0.0027	<.0001
(α = 0.05)		

^x Means followed by the same letter down the column are not significantly different at $P \leq 0.05$ or not significant (NS) (Fisher's Protected LSD Test).

^y0 = 0%, 1 = <10%, 2 = ≤25%, 3 = ≤50%, 4 = ≤75%, 5 = All diseased

Table 20. Fruit size and disease rating for CrimsonCrisp apples, Will's Family Orchard, 8/13/15.

Treatment	Fruit size (inches)	Disease rating ^x
KHCO ₃	0.58±0.09a ^y	0.26
Ca + Sea Shield	0.27±0.09b	0.29
S + Cu	0.17±0.10b	0.30
Control	0.19±0.12b	0.36
LSD _{0.05}	0.05489	NS
p value	0.0061	0.2505

^xDisease: 0=0% 1≤10%, 2≤25%, 3≤50%, 4≤75%, 5=All Diseased.

^yMeans followed by the same letter down the column are not significantly different at $P \leq 0.05$ or not significant (NS) (Fisher's Protected LSD Test).

Table 21. Fruit size and disease and insect ratings for CrimsonCrisp apples, Wills Family Orchard, 8/27/15.

Treatment	Fruit size (inches)	Disease rating ^x	Insect rating ^y
KHCO ₃	0.43±0.07a ^z	0.85	0.15±0.04
Ca + Sea Shield	0.17±0.08b	1.15	0.00±0.05
S + Cu	0.08±0.08b	1.20	0.00±0.05
Control	0.31±0.10ab	0.71	0.00±0.06
LSD _{0.05}	0.03818	NS	0.02104
p value	0.0124	0.0969	0.0455

($\alpha = 0.05$)

^xDisease: 0=0% 1≤10%, 2≤25%, 3≤50%, 4≤75%, 5=All Diseased.

^yInsect: 1 insect bite = 1, etc.

^zMeans followed by the same letter down the column are not significantly different at $P \leq 0.05$ or not significant (NS) (Fisher's Protected LSD Test).

Table 22. Harvest parameters for CrimsonCrisp apples, Wills Family Orchard, 10/1/15.

Treatment	Weight (g)	Insect damage	Disease rating ^x
KHCO ₃	6.15	2.75	2.50
Ca + Sea Shield	7.20	4.00	4.00
S + Cu	0.00	--	--
Control	0.00	--	--
LSD _{0.05}	NS ^y	NS	NS
p value	0.5665	0.4582	0.0522

($\alpha = 0.05$)

^xDisease: 0=0% 1≤10%, 2≤25%, 3≤50%, 4≤75%, 5=All Diseased.

^y Means followed by the same letter down the column are not significantly different at $P \leq 0.05$ (Fisher's Protected LSD Test).

FINAL REPORT CHECKLIST

PROJECT REPORT(S)

PROJECT TITLE

Agroforestry Templates for Perennial Specialty Crops

PROJECT SUMMARY

Iowa City Parks and Recreation will partner with with specialty crop growers, Backyard Abundance, the University of Iowa, Iowa State Extension, and other nonprofit organizations to:

- Develop an online publication of scalable agroforestry planting templates composed of interplanted fruits, berries, nuts, perennial vegetables and herbs in configurations that lower maintenance, increase yields, control pests, capture rainwater, build soil, create habitat, sequester atmospheric carbon, and thrive under climate change stresses;
- Implement a permanent public demonstration site of these templates in a popular urban park in a low-income neighborhood where growers and residents can readily observe and learn about specialty crops on large and small scales;
- Conduct hands-on classes to assist specialty crop growers with the design, implementation, and maintenance of their agroforestry plots.

Problem #1: Awareness. Most growers are unaware that specialty crops interplanted using agroforestry techniques can increase their profits by increasing and diversifying yields, lowering field maintenance, increasing soil health, and decreasing environmental stresses caused by drought and pest outbreaks. We are surrounded by conventional row crop agriculture, but lack public demonstration sites of environmentally-beneficial, sustainable specialty crop implementations where growers and consumers can visit, study, and learn about the wide diversity of perennial vegetables, herbs, fruits, flowers, and nuts that could be introduced to local markets. Many of these products would find a vigorous local demand if consumers were aware of their tastes, benefits and uses.

Problem #2: Getting Started. Current guidelines for specialty crop implementations typically only focus on one species or provide rough guidelines for agroforestry interplantings. Without researched best-practices and public demonstration sites, growers are confronted with a huge barrier of time, money, and risk associated with researching planting configurations, estimating implementation costs and payback, and experimenting with planting techniques.

Problem #3: Hands-On Knowledge. The lack of practical, experiential knowledge about designing and implementing specialty crops using agroforestry techniques increases grower's time and risk.

Importance and Timeliness: The growing awareness of environmental degradation caused by industrialized agriculture has caused growers and consumers to search for environmentally-

beneficial, sustainable solutions to growing food. In addition, most growers struggle to enter into and sustain themselves following current agricultural practices. To greatly increase the growth of specialty crops and consumer demand, the project will demonstrate that growing plants using agroforestry techniques can be a solution to economic and environmental resiliency.

PROJECT APPROACH

Researched agroforestry planting templates: A free online publication was developed containing temperate climate agroforestry specialty crop planting templates with establishment and maintenance guidelines so growers could replicate designs. Plant species and their configuration were thoroughly researched and peer reviewed by experienced agroforestry growers to ensure designs maximize yields and lower maintenance.

[View the Edible Agroforestry Design Templates document \(pdf\)](#)

Agroforestry demonstration site: A 1/3 acre permanent, demonstration site was established around an existing community garden at a popular urban park in a low-income neighborhood. A separately established “Edible Forest Maze” in the park was designed and planted by Backyard Abundance in 2011 and served as an excellent small-scale agroforestry example. Large scale plantings were implemented around the community garden expanding it from 4,000 square feet. Permanent signs throughout the site provide growers and consumers with an understanding of specialty crops and their benefits. A corresponding website of plant information provides year-round learning opportunities even for people who cannot visit the site.

[Learn more about the Wetherby Park Edible Forest](#)

[View the educational plant information website](#)

Agroforestry classes: A series of hands-on classes were conducted so growers understood the design techniques behind the templates, could create customized designs based upon their specific landscape and needs, and could implement and maintain plantings using best-practice planting and water management techniques.

GOALS AND OUTCOMES ACHIEVED

Goal #1	Templates: Compile into a publication 6 researched, implementable agroforestry templates for temperate climate specialty crops.
Measure	Downloads of online publication. Printed publications provided during classes.
Benchmark	No agroforestry templates currently exist.
Target	Provide the template publication to 65 growers at classes, 650 growers at a conference, and thousands of growers visiting agroforestry websites.
Progress	<ul style="list-style-type: none"> • Preliminary template designs were shared with 70 growers during the <i>Orchard Crop Design</i> class on 3/8/2014. • The designs and content were peer-reviewed by 7 experts. • The final <i>Edible Agroforestry Design Templates</i> electronic PDF was... <ul style="list-style-type: none"> ○ Provided to 9 relevant organizations for posting on their website. ○ Posted on social media (Facebook and Twitter) with 31,392 views, 468 shares, and 511 confirmed downloads. • The templates were presented to 110 participants at the <i>Food Chain Summit</i> event in Dubuque, IA on 2/14/2015.

Goal #2	Demonstration Site: Establish a fully implemented, permanent agroforestry demonstration site based upon the templates.
Measure	Implemented site in a popular park in a low-income neighborhood.
Benchmark	No public agroforestry sites of specialty crops exist.
Target	1/3 of an acre of implemented agroforestry landscape with permanent, educational signs.
Progress	<ul style="list-style-type: none"> • The Wetherby Park Edible forest was expanded from 4,000 square feet to 18,177 square feet in 2014 and 2015. • Number of plants planted by volunteers: 3,200. • Educational signs: 30 of 50 plant signs were installed in spring 2015, but many were vandalized by local children. Events are planned for 2016 to involve children in the establishment of the remaining signs to decrease chances for vandalism. Funding for larger, more durable signs is in progress. • Online educational website documenting all plants is completed.

Goal #3	Classes: Conduct 5 classes and 2 tours with at least 65 growers per class.
Measure	Class registration records, attendance records, implemented demonstration site.
Benchmark	Class evaluations.
Target	5 classes and 2 tours with at least 65 growers per class.
Progress	<p>The educational and outreach goals were greatly exceeded. Thousands of growers and consumers were introduced to specialty crops and the demonstration site through classes, tours, TV programs and other media.</p> <ul style="list-style-type: none"> • Estimated total participants: 410 • Estimated total participant hours: 640 • Demonstration site events and classes: <ul style="list-style-type: none"> ○ 3/8/2014: The Orchard Crops: Design and Plant Selection class. ○ 4/12/2014: Orchard Crops: Site Preparation and Water Management class. ○ 5/29/2014: Tours of the demonstration site were held during the park's Safe Summer Kick-Off Carnival event. ○ 6/28/2014: Wetherby Edible Forest site preparation event. ○ 7/14/2014: Comfrey in the Garden class. ○ 8/7/2014: Summer Berry Harvest event. ○ 8/9/2014: Tour of Red Fern Farm. ○ 8/30/2014: Public Food Forest presentation at the North American Permaculture Convergence. ○ 9/13/2014: Edible Forest Walkabout event. ○ 10/2014: The local Iowa City cable TV Channel 4 program recorded a 26-minute tour. The program replayed many times through 2015 reaching thousands of viewers. View the program. ○ 4/11/2015: Orchard Crops Establishment class. ○ 4/26/2015: Shrub planting party. ○ 5/23/2015: Herb Planting Party. ○ 6/7/2015: Selecting Ground Covers class. ○ 6/25/2015: Pizza and Planting Party. ○ 6/27/2015: Comfrey in the Garden class. ○ 8/1/2015: Smoothie and Harvest Party. ○ 9/11/2015: 9/11 Day of Service weeding party. ○ 10/23/2015: Playscape and pathway establishment. <p>View all media outreach (listed on the right side of the web page).</p>

BENEFICIARIES

Beneficiaries #1: Growers. The freely downloadable templates benefitted thousands of specialty crops growers and will continue benefiting others for decades. Approximately 100 unique growers benefitted directly from classes. Information was disseminated through the hand-on classes, the online template publication, and a conference listed above.

Beneficiaries #2: Consumers. The demonstration site provides tactile awareness of specialty crops to the annual 10,000 park visitors and 110 community gardeners. Understanding how specialty crops grow, appear, taste, benefit health, and benefit the environment greatly increases consumer demand.

LESSONS LEARNED

The only unanticipated challenge was finding time to address inquiries about the demonstration site. Local and regional residents and the media were very interested in the site. Email correspondence, phone discussions, and interviews took a substantial amount of time. Residents want to implement similar edible landscapes at parks in their neighborhoods. This welcome challenge was minor and did not impeded project completion.

Many plant signs were vandalized by local children. Events are planned for 2016 to involve children in the establishment of the remaining signs to decrease chances for vandalism. Funding for larger, more durable signs is in progress.

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ADDITIONAL INFORMATION

Orchard Crops Design Class



Demonstration Site Community Visioning



Demonstration Site Preparation Party



Red Fern Farm Tour



Students traveled from Minnesota to learn about the demonstration site and help with its establishment.



Children enjoyed foraging for food at almost all events.



Snacks were provided by local grocery stores to increase outreach.



Journalists from local TV stations and newspapers covered almost all events.



Each event gave families the opportunity to learn how to establish orchard crops.



Classes gave participants the opportunity to learn hands-on fruit tree pruning techniques.



FINAL REPORT

PROJECT REPORT

PROJECT TITLE

Demystifying Iowa's High Value Native Fruits: Growing, Harvesting, Processing, and Marketing of Persimmons, Pawpaw, and Aronia

PROJECT SUMMARY

The ultimate purpose of this project is to expand the diversity of unique high quality specialty crop fruit grown and consumed in Iowa and the upper Midwest.

There are currently over two hundred small growers of persimmon, pawpaw, and aronia in Iowa. Many grow two or all three of these fruits. There seems to be a certain synergy between these three fruit. Being able to grow these fruits and to market them in a profitable manner are all integrally connected, especially at a time when local foods are being embraced in Iowa and across the country.

The objective of this project is to document the successful cultural practices of innovative growers that have these fruit already bearing, and to use this fruit to determine best practices for harvesting, processing, storage, and marketing. Thus this project has four main goals. The first is to provide cultural information on how to grow these fruit in Iowa soil and climatic conditions. The second is to determine the most economical and quality preserving way in which to harvest these fruit. The third is how to store and process the fruit. The final goal is to introduce these fruits to the general public and to restaurant chefs. In summary this project has the potential to make growing persimmon,

pawpaw, and aronia a profitable venture for commercial Iowa specialty crop growers, while at the same time educating consumers and home growers of these unique fruits.

PROJECT APPROACH

For this grant in late 2013 and in 2014 and 2015 Tom Wahl and Patrick O'Malley grew, harvested, and delivered over 200 pounds of pawpaw, aronia, and persimmon and gave the fruit to Levi Lyle to process and market. Lyle worked on the processing and storage of pawpaw, aronia, and persimmon. Tom Wahl also processed some of the pawpaw. Lyle, Wahl, and O'Malley distributed the both processed and whole fruits to the general public and to restaurant chefs.

Levi Lyle purchased a Robot Coupe (not from grant funds) for the purpose of carrying out the processing of pawpaw, aronia, and persimmon for the Specialty Crop Block Grant (purchased from non-grant funds). He made progress in establishing procedures for adding value to these fruits by using the Robot Coupe to make these fruits into pulp. One such discovery is that multiple screen sizes are used to meet the needs of differential fruit characteristics. Also, freezing the pawpaw pulp as soon as possible has resulted in benefits by reducing oxidation.

In late fall 2013, the first of the pawpaw, aronia, and persimmon for this project was provided to businesses. Samples were provided when requested for all three fruits. During 2014, 7 restaurants, 2 food manufacturers, and 10 wineries have been approached about incorporating aronia, pawpaw, or persimmon into products.

The three fruit were introduced to the public in many different ways.

On September 21, 2014, pawpaw, aronia, and persimmon smoothies were the feature of the 7th Annual Iowa City Culinary Bicycle Ride. Levi Lyle provided the fruit for the event while serving more than 300 bicycle riders along the route. This event was well promoted by local sponsors which included several restaurants that have since showed interest in incorporating the fruits into their menus.

In 2014 Tom Wahl promoted the growing and marking of pawpaw, American persimmon and Aronia Berry at a variety of speaking engagements, conferences and field days. On 5 separate mini field days, April – September, he led a tour of his farm demonstrating how to landscape with native fruit trees and grow them in a commercial orchard for a total of 41 people. Samples of Aronia berry muffins, Aronia berry-black walnut bread, Aronia berry wine and pawpaw ice cream were offered at each field day. He and his wife, Kathy Dice, staffed a display promoting native fruits and nuts at the Practical Farmers of Iowa (PFI) winter conference in Ames, Iowa, January 24 – 25. At the conference they handed out samples of sweet and dry Aronia berry wine along with answering questions about

growing and marketing pawpaw, persimmon and Aronia berry to a crowd of over 820 farmers and “foodies”. At the Southern Iowa Grazing Conference in Bloomfield, Iowa on March 6, Wahl and Dice also offered wine samples to a mostly Amish crowd while answering questions about commercial use of native fruits. Wahl also promoted the growing of native fruit to landowners interested in agroforestry for the Jackson County Conservation Board near Maquoketa, Iowa and at the Indian Hills College on the Centerville Campus. Kathy Dice developed recipes for no-bake pawpaw cheese cake, pawpaw mouse, persimmon chiffon pie and Aronia berry smoothies.

Patrick O’Malley’s education of these fruit to the public included: Oct. 12, 2013 Iowa Nut Growers Association Meeting in Monmouth, IL. (25 participants); Jan. 31, 2014 Urban Orchard Meeting, Cedar Rapids (20 participants); Feb. 20, 2014 Fruit & Vegetable Grower Regional Meeting, Elizabeth, IL (45 participants); Mar. 1, 2014 Spring Garden Show, Mt. Pleasant (35 participants); Mar. 25, 2014 Growing Fruit in Iowa, Oskaloosa (30 participants); Sep. 20, 2014 Forest Crops Field Day Oxford (110 participants).

In 2015 Levi Lyle continued to use the Robot Coupe for the purpose of carrying out the processing of pawpaw, aronia, and persimmon for the Specialty Crop Block Grant (purchased from non-grant funds). During 2015, pawpaw, persimmon, and aronia berries were processed and distributed to project restaurants. Juice prepared from aronia berries was processed into jelly and wine and then distributed. Educational materials were prepared for consumers to inform the public about pawpaw, persimmon, and aronia berries. This media material was distributed to restaurants along with the delivery of fruits. Levi Lyle worked closely with an ice cream shop in Washington, Iowa to develop an Aronia Frozen Yogurt. Tom Wahl worked closely with another ice cream shop in Iowa City to develop a Pawpaw Ice-cream product. A restaurant in Washington, Iowa was the site of the Native Fruit Festival, held September 20th. Levi Lyle, Kath Dice, Tom Wahl, and Patrick O’Malley all participated and answered many questions on the featured fruits. There were fifty-nine attendees at the event. The Festival featured dishes prepared with the three fruits from the project. Attendees of the Festival filled out a survey about the dishes and provided feedback on what they liked and disliked. The festival was advertised on local radio and through ads placed in regional newspapers. Invitations for the Festival were sent out to 40 central and eastern Iowa restaurants.

Other activities in 2015 were Tom Wahl and Kathy Dice who hosted 4 field days at their farm (Red Fern Farm) promoting native fruits including aronia berry, American persimmon and pawpaw. Tom Wahl also participated at the Aronia Field Day at Eldridge, Iowa to support the fruit. Kathy Dice and Tom Wahl displayed fruits, answered questions and made suggestions of more ways to enjoy pawpaws, persimmons and Aronias. During the fall Kathy Dice also experimented with cookie recipes utilizing persimmon pulp as a substitute for fat and sugars in the recipes. Patrick O’Malley spoke

at three different ISU Extension programs on the fruits. He also introduced the fruit into the Chinese community in Iowa City area.

GOALS AND OUTCOMES ACHIEVED

The objective of this project was to document the successful cultural practices of innovative growers that have these fruit already bearing, and to use this fruit to determine best practices for harvesting, processing, storage, and marketing. During the two year period of this project, the short term objectives were achieved. Some of goals were long term and will require more time before the outcomes can be realized. The following breakdown of goals describes the progress that was made toward achievement and comparison of actual accomplishments with the goals for the reporting period.

Thus this project had four main goals. The first was to provide cultural information on how to grow these fruit in Iowa soil and climatic conditions. This goal was achieved through events administered by Tom Wahl in the form of field days and Master Gardener workshops. The Conclusion Festival held at Dodici restaurant in Washington, Iowa was the site of the Native Fruit Festival, held September 20th. There were sixty attendees at the event. The Festival featured dishes prepared with the three fruits from the project. Attendees of the Festival filled out a survey about the dishes and provided feedback on what they liked and disliked. The festival was advertised on local radio and through ads placed in regional newspapers. Invitations for the Festival were sent out to 40 central and eastern Iowa restaurants.

The second goal was to determine the most economical and quality preserving way in which to harvest these fruits. For this project, fruits were processed within a couple days of being harvested. During that time they were kept in a walk-in cooler held at 35 degrees Fahrenheit.

The third was to assess how to best process and store these three fruits. To process the fruits, Levi's Indigenous Fruit Enterprises purchased a Robot Coupe for the purpose of carrying out the processing of pawpaw, aronia, and persimmon for the Specialty Crop Block Grant. Much progress was made in establishing procedures for adding value to

these fruits by using the Robot Coupe to make these fruits into pulp. Multiple screen sizes are used to meet the needs of differential fruit characteristics. For example, to process the aronia berries the smallest (juicing) screen was used to produce a very high quality juice. For Pawpaw and persimmon the largest screen provided adequate medium to separate the seeds from the pulp. The Robot Coupe did an excellent job separating the flesh of these two fruits.

In regard to storing the processed products, all three fruits were stored in a deep freeze chest. Aronia juice was placed in sealed plastic bottles and easily remained in good condition for a period of more than a year in freezer storage. The same was true for persimmon and pawpaw which were stored in freezer zip lock backs. Among these three fruits, pawpaw was known to have the greatest obstacle in storage as the fruit sometimes changes flavor through oxidization during storage if not kept sealed. For this project, freezing the pawpaw pulp as soon as possible has indicated benefits by reducing oxidation. Pawpaw was easily stored for a duration greater than one year without a change in flavor.

The final goal was to introduce these fruits to the general public and to restaurant chefs. In 2013, the first of the pawpaw, aronia, and persimmon was provided to businesses. During 2014, 7 restaurants, 2 food manufacturers, and 10 wineries were approached about incorporating aronia, pawpaw, or persimmon into products.

On September 21, 2014, pawpaw, aronia, and persimmon smoothies were the feature of the 7th Annual Iowa City Culinary Bicycle Ride. Levi's Indigenous Fruit Enterprises provided the fruit for the event while serving more than 300 bicycle riders along the route. This event was well promoted by local sponsors which included several restaurants that have since showed interest in incorporating the fruits into their menus.

Then in 2015 and 2016, processed pawpaw, persimmon, and aronia berry juice was distributed to restaurants in eastern Iowa. These included The Blue Bird Diner, Devotay, Dodici, Motley Cow, Vesta, Atlas World Grill, One Twenty Six, Hearth, Moonrakers,

and Tuscan Moon. Also, The Local Burrito and Kalona Brewery were provided samples to a lesser degree.

Juice prepared from aronia berries was also prepared into jelly and wine and then distributed. Also, Levi Lyle worked closely with an ice cream shop in Washington, Iowa to develop an Aronia Frozen Yogurt while Tom Wahl worked closely with another ice cream shop in Iowa City to develop a Pawpaw Ice-cream product. Educational materials were prepared for consumers and distributed at the Festival to inform the public about pawpaw, persimmon, and aronia berries. More specific materials were prepared and distributed to restaurants to assist in learning how to incorporate these fruits into recipes.

At the conclusion of this project, eight out of ten restaurants said they would continue to use these products in their establishments. Restaurants indicated that they felt ten dollars per pound was a fair price for the pawpaw and persimmon pulps and they said that they would pay greater than four dollars for a 16 oz. bottle of aronia juice.

The first three goals were measured by the number of participants present at a presentation given at the Iowa Fruit and Vegetable Growers Association. 100 people were in attendance. The presentation was conducted by Patrick O'Malley. Levi Lyle shared the project with attendees at the Midwest Aronia Association Conference. The number of growers, acres, and quantity of marketable produce of these specialty crops will be established by the results of the Iowa Horticulture Survey conducted in 2016. Results from this survey have not been published as of yet but should be made available later this year. The final goal was measured by two indicators. 1. The number of chefs that will continue to use the fruits at the conclusion of this project. Eight restaurants plan to continue use. 2. The number of participants at the consumer festival that showcased the project. There were sixty in attendance.

BENEFICIARIES

Grower groups that saw benefit to this project include the Iowa Fruit & Vegetable Growers Association, Midwest Aronia Association, Iowa Nut Growers Association, Practical Farmers of Iowa, Northern Nut Growers, and the Native Fruit Association. All of these groups have interest in at least one if not all of pawpaw, aronia, and

persimmon. Some of the benefits provided these groups were education on growing, harvesting, preserving, and marketing the fruit. Restaurant chefs learned of new fruit to incorporate into their menu. This seemed especially appealing to high end restaurants that wanted a locally sourced unique menu items. The general public learned about these fruit and how to use them in their diet.

In total over 300 people in the grower groups learned about these fruit. Nineteen food establishments/wineries had the opportunity to incorporate the fruits into their products, and over 800 others in the general public learned about the utilization of these fruits. At least a dozen of these have taken the next step and have become growers of these fruit.

LESSONS LEARNED

A lesson learned in the course of the grant is that there is interest by restaurant chefs and the general public in utilizing these ‘exotic’ fruits. Although a challenge has been to get restaurants to think creatively about how to implement aronia berries into dishes. Due to the sweet flavor of Pawpaw and persimmon, they have been less of an issue to incorporate into menus.

Unexpected outcomes are in the potential marketability of the byproducts of these fruits. For example, the dried pulp of the aronia berry was unused in this project but some growers have found that consumers like to use the dry pulp as a powder because it’s the most nutritional aspect of the fruit and the source of high antioxidants. For persimmon and pawpaw, the seeds can be kept to be sold to a nursery that wants to germinate them. Because the fruits are processed fresh, the seeds remained in good quality. Specifically for pawpaw, there is a possibility in developing a medicine from the seeds as research indicated that they contain powerful compounds that can fight cancer. Development of these avenues could further increase the profitability of these crops.

Demand for more information and access to these fruits has been created. This has led to the formation of a pawpaw festival to be held in conjunction with the Iowa City Farmers’ Market on September 24, 2016 which is after the conclusion of this grant.

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ADDITIONAL INFORMATION



**Final Report to Iowa Department of Agriculture and Land Stewardship from Practical Farmers of Iowa
December 18, 2014 – Updated April 14, 2015**

Project Title

Identifying Prevalence, Prevention and Response for Pesticide Drift Occurrences in Iowa's Specialty Crops

Project Summary

Practical Farmers' fruit and vegetable growers identified pesticide drift as the top issue they needed help with in 2013. Drift impacts the quality, food safety, marketing and organic certification eligibility of specialty crops, as well as the health of farm workers.

The purpose of this project was to educate fruit and vegetable growers and beyond about pesticide drift occurrences, prevention and response protocol in Iowa. With this project, Practical Farmers:

- 1) Helped 15 Iowa fruit and vegetable farms use drift monitoring instruments to measure pesticide drift on their farms;
- 2) Educated fruit and vegetable producers, row crop producers and the general public about the occurrence and impact of pesticide drift on specialty crops in Iowa;
- 3) Worked with fruit and vegetable producers to minimize drift; and
- 4) Worked with IDALS to assist fruit and vegetable producers about how to respond if affected by drift.

These learning outcomes were achieved through:

- Pesticide drift data training for 16 farms and sample collection from three farms;
- Workshop, webinar and field day on drift;
- Report that compiles details from Iowa Department of Agriculture pesticide drift reports for the past three years;
- Two case studies on recent drift occasions on fruit and vegetable farms;
- Creation and distribution of drift response checklist; and
- Extensive statewide media outreach.

The project included follow-up assessments that evaluated the efficacy of this project.

Project approach

Outcome 1: Help 15 Iowa fruit and vegetable farms use drift monitoring instruments to measure pesticide drift on their farms

Practical Farmers achieved this outcome by partnering with Pesticide Action Network (PAN) to train 16 Practical Farmers members (in addition to other non-member farmers and rural residents) to use the Drift Catcher, a citizen-science tool developed by PAN. These 16 farmers were educated how to use the Drift Catcher to collect air samples

on their farms across the state. More farmers were interested in participating but participants were limited due to the number of Drift Catchers available.

Of the farms who had Drift Catchers, three sent samples to PAN for testing. Of the samples sent in, one farm tested positive for chlorpyrifos (Lorsban) on two occasions, at levels near or exceeding the reference exposure level for a one year-old child. Samples from the other two farms did not contain identifiable pesticide residues.

Thirteen farms did not send in samples: three forgot or were too busy, and ten did not suspect potential drift.

For even those who did not submit samples, the Drift Catcher was a powerful tool. One farmer, Jan, invited her neighbor over to see the Drift Catcher and learn what it was for. This invitation and the discussion that followed led to improved understanding and openness about what chemicals were being sprayed and when. Jan did not have any issues with drift this summer. Another farmer, Susan, talked with her neighbors before setting up the Drift Catcher. Her farming neighbors, whom she has known for years, were interested to see the results, hoping pesticide applications to their farms were being done responsibly. No pesticide residues were found in Susan's samples. Alice had a productive discussion with her farmer-neighbor about pesticides when the neighbor's children took interest in the Drift Catcher. Alice's samples, also, did not detect any pesticide residue. The Drift Catcher report will be compiled by February 2015 and shared with IDALS.

Outcome 2: *Educate fruit and vegetable producers, row crop producers and the general public about the occurrence and impact of pesticide drift on specialty crops in Iowa*

Practical Farmers achieved this outcome through a variety of media and in-person events:

2014 Cooperators Meeting, Drift Session: This session, attended by 29 focused on farmer experience using the Drift Catcher and the role of Drift Catcher data in public policy work.

Panel Discussion on "Over the Fence: Discussing Spray Drift": This panel featured a horticulture farmer who had been hit with spray drift, a conventional farmer, and the President of the Iowa Agricultural Aviators Association, who is a pilot who applies pesticides. The panel civilly answered questions from each other and the audience, discussing concerns from all sides, fears, perceptions, and the potential for better working relationships. Thirty-eight people attended this panel discussion.

Thirty-five people attended this conference session, led by Linda Wells from Pesticide Action Network, that was an open forum for people to discuss policy recommendations and ideas for pesticide rules or enforcement improvements. The discussion also served as a venue for people to share their experiences.

IDALS Pesticide Bureau Case File Summary Publication: This document summarized and made widely available the public record of pesticide misuse complaints from 2008–2012 that impacted organic growers and horticulture growers. The document is available on the Practical Farmers website. Our website was visited over 200,000 times during the grant period.

Five blog posts on pesticide drift issues, including three that highlighted member accounts of pesticide drift. There were 52,288 visits to our blog during the grant period.

Two Practical Farmer newsletter stories featured member accounts of pesticide drift events. This publication goes out to 2,500 in printed format, and is also on our website.

A farminar (farmer-led webinar) walked through the events and steps taken by two farmers from the time of their drift event to the present day; they are currently pursuing litigation for damages. 199 people had viewed the farminar.

A news segment featuring farmer Greg King, whose tomato crop was hit with pesticide drift in 2013, was picked up by 27 news outlets and reached an audience of over 18,000 people.

Chef and long-time PFI member Donna Prizgintas was also featured in a radio news segment about the plight of the vegetable farmers in the face of pesticide drift that reached an audience of 150,967.

Forty-five people attended a field day to discuss pesticide drift and the Drift Catcher. In addition to farming, the farmer host is a retired litigator who has worked on pesticide misuse issues.

PFI staff visited with insurance providers, lawyers, and legal scholars about the risk of pesticide drift to fruit and vegetable growers and organic certification. Kolbe also gathered personal stories from fruit and vegetable farmers, field crop farmers, and livestock producers about their experience and perspectives on pesticide drift, some of which are shared on the Practical Farmers' blog and in the newsletter, *The Practical Farmer*. Many farmers chose to remain anonymous or did not want their stories widely shared. Others are waiting for insurance claims or legislation to move forward before speaking publicly. PFI staff led and facilitated discussions with Iowa Farmers Union (IFU), Pesticide Action Network (PANNA), and the IDALS Pesticide Bureau. Board members and staff from IFU and PANNA first met in January 2014 to discuss issues and priorities, followed by a February conference call. On March 7, 2014, PFI led a meeting with IFU board members and staff, PANNA staff, and the IDALS Pesticide Bureau Chief and staff members at the Wallace Building in Des Moines to discuss farmer and rural resident concerns and questions about the role of the Pesticide Bureau, clarity of the pesticide misuse complaint process, and desired improvements to the Pesticide Bureau website and Iowa Administrative Code. Though no changes to the website have yet been made, the Pesticide Bureau created a brochure explaining the role and procedure of the Bureau in investigating pesticide misuse complaints, which should soon be available online.

Following the March meeting, IFU and PANNA drafted a petition for rule-making and preliminary legislative priorities for the 2015 session. Practical Farmers participated in meetings during June and August to provide information on the Iowa Code and farmer experience. IFU, PANNA, and the Center for Energy and Environmental Education at UNI have formally submitted a petition for rule-making and are working with legislators to introduce Iowa Code changes to both chambers.

Outcome 3: *Work with fruit and vegetable producers to minimize drift.*

During this project we published "Protect Your Right to Farm: Drift Preparation and Response" brochure in partnership with Pesticide Action Network. The brochure uses advice from experienced farmers, community organizers, and the Pesticide Bureau to help farmers be proactive about making themselves visible to applicators and prepared to respond if spray drift would occur. Brochures were distributed at the Iowa State Fair, RAGBRAI, Blank Park Zoo's Pollinator Day, the Iowa Organic Conference, Iowa Farmers Union Convention, and at all Practical Farmers' field days and events. Five hundred copies were mailed to PANNA for distribution, and mailed to other organizations and individuals by request. The brochure is also available on Practical Farmers' website.

PFI staff engaged in conversations and relationship development with the Iowa Agricultural Aviators Association (IAAA), including the panel discussion at the 2014 Annual Conference. This included speaking with two pilots, including the President of the Association. Though formal collaboration with PFI was not adopted by the IAAA at their annual meeting, good communication and trust has been established and is being further developed with aviators through PFI's cover crop work. Letter-writing encouragement and drafting assistance: to farmer neighbors and surrounding coops alerting them to the presence of specialty crops and/or bees. PFI staff collected sample letters from three farms, and several others shared tips for letter writing on the email discussion list (and in the "Protect Your Right to Farm Brochure" and on the farminar).

PFI staff and several fruit and vegetable farmers also spent several hours in a small group discussion with representatives from Dow, IDALS, and Iowa State Extension during a July field day hosted by Dow to introduce Enlist Duo, the new formulation of 2,4-D with glyphosate. This provided a more nuanced and informed dialogue between the groups.

Outcome 4: *Work with IDALS to assist fruit and vegetable producers about how to respond if affected by drift.*

Farminar (also in Outcome 2) provided a detailed, first-hand experience of responding to drift, including what should have been done better.

Practical Farmer Newsletter articles (Outcome 2) provided information on how to report misuse to the Pesticide Bureau and the first-hand experience of farmers.

“Protect Your Right to Farm: Drift Preparation and Response” brochure (Outcome 3)

We assembled and published on the Practical Farmers website a list of private testing labs farmers can use to obtain pesticide residue analysis within 2 weeks.

Strengthened the resolve among the PFI membership with regard to drift response, applicator liability, and farmer rights: Working with farmers over the last year, PFI staff has noticed a shift in the conversation among fruit and vegetable farmers about pesticide drift. Though it is still a frightening issue, they seem more willing and able to offer each other support, more willing to seek advice, and more confident in their rights to earn a living on their land. For example, a farmer who posted to the PFI email discussion list seeking advice after a pesticide drift event said, “Thank you to everyone for your thoughtful responses. It makes me grateful for the PFI community! The informational brochure from PFI is excellent - it's proven to be a great resource too... This is very scary and upsetting to me and I just wish there was more I could have done - I've been sprayed on before, more than once, and it's not a position I ever wanted to be responsible for putting someone in. The applicator drove right by people in the field to get to the fields he was spraying. It just makes me want to be even more proactive, as possible, in preventing these things. We'll see what comes of the investigation and thanks again for all the great advice.”

Expected Measurable Outcomes

As described above, only three individuals turned samples in to Pesticide Action Network. However, all participants involved in the project reported better understanding of what to look for, times of the season when drift is more likely, and how to submit samples to Drift Catcher. One person who attended the trainings reported they forgot how to use the Drift Catching equipment after the trainings.

The average rating for the usefulness and effectiveness of information presented at the spray drift panel discussion was 3.83/5.

Participants' in the drift policy discussion average usefulness and effectiveness rating was 4.5/5.

Average farminar participant rating for effectiveness and usefulness was 4/5, and all reported increase in knowledge as a result of participating. One commercial applicator who attended replied: “As a commercial applicator, this helps me remain aware of sensitive areas in and around our application areas.”

Average field day attendee ranking for effectiveness of field day was 4.37/5, and average quality was rated 4.42/5. All participants reported an increase of knowledge as a result of attending.

In the Spring of 2015, Practical Farmers asked members to complete a short survey about pesticide drift programming. Within a week, 52 people responded to the survey – 47 were farmers (35 with fruits and vegetables, 19 with row crops, and 24 with livestock, 14 with bees) and five were non-farmers.

Eighty-one percent of respondents indicated a change in knowledge from Practical Farmers programming on pesticide drift. Of the remaining 19%, several commented that they had “already learned the hard way.” This provides a more conservative estimate of impact than individual event evaluations (July Frye Farm Field Day and February 25 farminar, e.g.) for which 100% of evaluations reported an increase in knowledge. Using pesticide drift programming event attendance (362) and these survey results, we estimate 300 people increased their knowledge

and awareness of pesticide drift issues in Iowa. This impact does not capture people reached through the PFI blog, radio stories, PFI Newsletter articles, listserv discussions, or popular press articles.

In April 2015, 705 unique farms and rural residents were listed on the IDALS Sensitive Crops directory. Of these 705, 162 are unique entries of fruit and vegetable farms, 34 are orchards and 70 are vineyards. The number of registrants from fruit and vegetable farms and organic row crops increased from April 2014. Unfortunately, PFI does not have data for this registry prior to April 2014.

From this survey, 83% of fruit and vegetable farmers reported they had communicated with their neighbors about their pesticide drift concerns. Based on event attendance and survey results, we estimate 300 fruit and vegetable farmers have talked to their neighbors or local agronomists about their pesticide drift concerns. A similar percentage of fruit and vegetable survey respondents said they felt "prepared" (46%) or "somewhat prepared" (37%) to respond to a pesticide drift event on their farm. One farmer said, "I'll never feel fully prepared." Others noted they knew which action steps to take, but were frustrated knowing how insignificant the penalties to applicators would be. In subsequent comments, survey respondents asked for more work on communication strategies with and education for applicators and regulatory agencies about the issues facing specialty crop and organic/non-GMO row crop farmers. They also asked for continued data collection on drift instances, awareness outreach, and geographic data on pesticide applications.

Beneficiaries:

This project targeted Iowa fruit and vegetable farmers, people considering adding fruit and vegetable production to an existing farm and those considering starting a fruit and vegetable farm.

The direct beneficiaries of this project were fruit and vegetable producers, both in Practical Farmers' membership as well as beyond: For example, 56% of attendees to the pesticide drift field day were not members of Practical Farmers of Iowa.

Lessons Learned:

We were aware that drift was a sensitive topic, but we were not aware the magnitude of sensitivity of the topic. Over the course of this project it was difficult to find fruit and vegetable producers willing to talk publicly about pesticide drift, at events and in the media. They were concerned about relationships with neighbors and in their community, legal ramifications of being vocal, as well as their personal safety. It was even more difficult to find applicators and conventional farmers willing to go on record about their actions to reduce drift. We did get enough people engaged to meet the grant deliverables, but it was more difficult than we realized.

However, over the year we performed this work, there was noticeably more open discussion among the membership and board of directors about drift events, farmer health, and the scope of the issue.

The number of participants who submitted samples through the Drift Catcher project was lower than we anticipated. The technology is flawed in that it doesn't test drift across time; it only takes a sample when the person managing the Drift Catcher collects one. While it is encouraging that many people did not feel the need to take a sample because they did not suspect drift, the three participants who were too busy or forgot reduced the quality of the results. We plan to coordinate Drift Catcher work again next year, and will stress the importance of follow through, especially since there are more people interested in participating than there are Drift Catchers available.

The fact that only three farms submitted samples, and only one farm tested positive for pesticide drift, does not mean that drift only occurred on one farm. This potentially paints a picture of less drift than is actually occurring, which does not help increase understanding of severity of the issue.

During this time period, we learned more about how much pesticide drift is negatively impacting farms' viability, human health, animal health, and about the inconsistent messages around drift response. For instance, one

pesticide representative mistakenly told the farmer who had chloransulam methyl drifted on their produce that the chemical was safe enough to drink, and it was safe for them to market it to their customers. The label states it has not been cleared for human consumption.

Program budget

Iowa Specialty Crop Block Grant Program November 1, 2013 - October 31, 2014

	Budget	Expended To Date
EXPENDITURES:		
1. Personnel	14,400.00	14,400.00
2. Fringe Benefits	1,860.00	1,860.00
3. Travel	615.00	615.00
4. Supplies	500.00	500.00
5. Contractual	3,000.00	3,000.00
6. Other		
Conferences/Meeting	1,750.00	1,750.00
Speaker/Trainer Fees	1,375.00	1,375.00
Publication Costs	500.00	500.00
TOTAL EXPENDITURES	24,000.00	24,000.00

Contact: Sally Worley, sally@practicalfarmers.org, 515-232-5661

Final Report - Lutheran Services in Iowa

Increasing Iowa Specialty Crop Production and Consumption through Empowerment of Refugee Producers



Project Summary:

Many of the most recent arriving refugee groups in Des Moines come from agricultural backgrounds. Farming, both for home consumption and for profit, has been for many, a way of life. Several refugee groups have expressed a deep desire to return to the land in order to provide food for themselves, maintain their culture, and create new forms of income, however, they are faced with an inability to access land and training resources due to the language and cultural barriers as well as a lack of resources. For the past several years LSI has been working with many of these farmers to access land and learn more about operating a specialty crop business. This project builds upon a previously funded project through the SCBGP.

The 2012 Iowa Specialty Crop Block Grant Program supported LSI's proposed project entitled, "Increasing Fruit and Vegetable Production by Refugee Groups through Land Access and Grower Education." The primary goals of this project were to bridge language barriers to reconnect 100 existing refugee gardeners to their small garden plots; assist another 60 families still on the waiting list in identifying small garden plots; translate the city's garden contract into Kirundi, Karen, Burmese, and Nepali; conduct a series of in-the-garden workshops that build upon classroom trainings done in 2012; and identify 20 larger (bigger than 10'x15') plots for gardeners who want to expand their production. LSI successfully translated the garden contracts into the four languages and connected a total of 130 families to garden plots. In total, LSI identified 44 plots that were larger than the small 10'x15' community garden plots. Twenty of the 44 plots were 20'x20' in size. The remaining 24 plots were 50'x50' in size and are located at Valley Church in West Des Moines. LSI established a partnership with Valley to utilize this site as a farmer training site where growers could expand their plot size and begin establishing small businesses with on-site technical support and training. The site was named the Global Greens Farm and was developed into a training site through additional resources leveraged through the previous proposal. The site includes water access, a supply of shared-use tools, a wash station and cooled storage areas for harvested produce.



The focus of the previous proposal was on basic production education and land access for smaller gardens as well as larger plots for those who wanted to expand their production and pursue markets. This year's proposal brought a sharper focus to providing intensive land-based training and technical assistance in all aspects of specialty crop production – from production to marketing - for 8 farmers who indicated that they want to grow fruits and vegetables for market. This training was conducted with farmers growing on the Global Greens Farm at Valley Church. Each had a quarter acre of land. The objective of the project was to implement a land-based training model that will assist and train these 8 growers in all aspects of specialty crop production and marketing and begin to help them in the establishment of a small-farm business. The incubation of the small farm businesses is a multi-year endeavor and this proposal supported the implementation of the first year of training.

Project Approach:

During the reporting period, LSI finalized its list of 8 growers in the Advanced Market Farmer (AMF) training (100'x100' plots) and 18 growers in the Beginning Market Farmer (BMF) training (50'x50' plots). AMF's will be incubating businesses over the next 3-5 years and will be required to participate in group and individual training sessions. BMF's are still exploring whether or not they want to develop their own business and can voluntarily participate in formal trainings that are offered. Participants were provided an orientation and entered into service agreements which outlined the responsibilities, services, and costs of the participant and LSI. During October 2013, the 18 Beginning Market Farmers from the 2013 growing season were surveyed to get feedback on trainings that were offered and provide input on trainings to be provided in the next year. From those results LSI developed its plan for the trainings to be offered for the 2014 growing season.

During the project year LSI provided training sessions on the following topics:

- Seeds Ordering
- Production Basics
- Record Keeping and Finances
- Seedlings and Crop Planning
- Soil Science and Fertility
- Market Training
- WIC and Senior Market voucher program participation training
- Record keeping
- Seed Saving Techniques



AMFs also participated in individual trainings throughout the growing season with staff on the farm in order to use items such as the tiller, mower and to obtain weed fabric and tomato trellising materials.

LSI staffed worked with growers to order seeds and start seedlings. Participants were able to start planting beginning April 9. Program participants also participated in the Practical Farmers of Iowa (PFI) Annual Conference in January where they networked with other Iowa farmers and attended workshops relevant to sustainable farming. Through additional grant dollars received for the program LSI was able to hire a full-

time Farm Marketing Specialist who worked with growers specifically on record keeping, business development, and marketing. Participants met with her on a monthly basis to review record keeping and business progress.

AMF and BMF participants were able to participate in the LSI Farmers Market which took place every Saturday at the LSI office from 10:30am – 2:00pm. Market began on June 7 and ended the first Saturday of October. Seven out of the eight AMF participants showed strong participation in the market while 1 AMF chose



to focus marketing directly to ethnic community members with great success. AMF income from the LSI market alone grossed a range from \$393.00 - \$2,262 for the season. BMFs were able to participate in the LSI market as well. 12 of the 18 BMFs participated in at least 1 market day throughout the season while many participated almost every weekend. WIC and Senior market vouchers, along with SNAP were accepted at the market. Each participating farmer went through the necessary training to accept WIC and Senior market vouchers individually while LSI managed the single SNAP machine for the market. A total of \$855 in SNAP

benefits were used by customers at the LSI market in 2014. LSI began gathering customer information at the LSI market in order to create a base for a Global Greens newsletter that will begin next year.

In addition to the LSI Farmers Market, 4 AMFs participated in a new market developed in partnership with Oakridge Neighborhood, a low-income housing neighborhood in Des Moines. This market was not as successful and ended earlier in the season than planned because of a low customer base. However, AMF and BMF participants were able to participate in a market once a month at Valley Church which owns the land where the Global Greens Farm is located. This market was set up for parishioners after Sunday morning services. Farmers reported this market as very successful however, the church would not like the market to be more than once a month so that farmers do not rely on a “sheltered market” and still pursue other mainstream market venues. Of the 6 AMFs who participated in the Valley Church market, revenue ranged from \$135 - \$580 over the course of the 3 markets (June – August).

AMF participants were also able to participate in the Iowa Food Coop (IFC), an on-line food coop where members and farmers can connect to buy and sell goods on a bi-weekly basis. All 8 AMFs participated in the IFC. Staff assisted growers in creating a bio page with background information on each farmer, their farm, what they grow and a description of their growing practices. This was also a very successful market for the farmers since IFC members are willing to pay a slightly



higher price point for produce which is Certified Naturally Grown. This experience was also a good teaching tool for farmers as it challenged the growers to think about what they will be harvesting 2 weeks in advance and remember not to harvest what they had promised to sell to coop customers. Farmers had to harvest, package and label their produce under a strict time deadline and drop off produce, on time, to a delivery site. All 8 farmers are interested in continuing with this market in the 2015 growing season. Revenue ranged from \$183 - \$779, June through September for the AMFs.

Global Greens Farm also received nine requests from various whole sale buyers such as small restaurants, coffee shops and individual buyers for events for a total of \$1,238.25 in revenue for farmers. Staff worked primarily with AMFs to fill orders received. LSI will continue to foster these relationships over the winter months to see if more consistent plans can be created to meet the demand. One whole sale market that began this season and is continuing to be developed is with the DM Golf and Country Club restaurant chef.

LSI staff was satisfied with the amount of marketing options presented to farmers at this stage. Farmers were able to find a good amount of options for selling food as well as keeping food for home consumption. LSI also partnered with the local Buy Fresh, Buy Local (BFBL) chapter with Drake University. BFBL has a program called “Plant a Mile” which provides a fund match to farmers who donate produce to local food banks. LSI is currently participating in this program and is able to access a match up to \$1000 for donated produce.

Through continued partnerships with local food groups and potential customer bases, a wide variety of market options have been presented to staff and evaluation of the season has already began. LSI will plan to meet with farmers to assess interest in which marketing avenues to direct the program.

During the reporting period LSI developed a Global Greens logo (below) and created marketing materials for the LSI market and for AMF participants which included bio cards, recipe cards and program information cards. The Global Greens portion of the LSI website was also enhanced to include specific grower information, recipes for lesser known produce than customers may encounter and links to market outlets where Global Greens farmers are participating. www.lsiowa.org/globalgreens.



Two AMFs completed their first year in the Practical Farmers of Iowa (PFI) Savings Incentive Program (SIP) during the reporting period. Participants met with their mentors both at the mentor’s farm and having the mentor visit their plot at Global Greens Farm. Both farmers continued to save each month in their PFI savings account and will continue in the program for one more year. LSI will assist the remaining 6 AMFs in applying for SIP in October when the application period opens.

End of season evaluations have also taken place with each of the farmers and all eight of the AMF’s plan to continue with the next year of training. Currently the farmers are working with staff in evaluating markets for next year and planning their plots accordingly.

Below is a list of quantitative results form the year as well as key project partners:

Lutheran Services in Iowa - Global Greens RAPP QUANTITATIVE OUTCOMES

Number of participants	33
Number of gardens/farm plots	29
Number of garden/farm sites	1
<i>with refugee growers only</i>	
Average plot garden/farm plot sizes	21-50'x50' plots
	8- 100'x 100' plots
Primary purpose of growing	
<i>home use only</i>	0
<i>some market sales</i>	26
<i>incubator farm</i>	8
<i>independent farmer</i>	0
Number of participants in classroom/field training classes	25
Training topics	
<i>Program orientation</i>	3 hours
<i>Seeds</i>	3 hours
<i>Production Basics</i>	3 hours
<i>Record Keeping</i>	3 hours
<i>Seedling</i>	3 hours
<i>Farmer's Markets and Branding</i>	3 hours
<i>Soil science and bugs</i>	3 hours
<i>Organic Pest/Disease Management</i>	3 hours
<i>In Field-Training- tomato trellising</i>	2 hours
<i>In-Field Training- Using Weed Fabric</i>	2 hours
Number of sales venues	
<i>farmers markets</i>	3
<i>farm stands</i>	2
<i>CSAs</i>	1
<i>grocery stores</i>	2 (online food cooperative)
<i>Restaurants</i>	3
<i>Institutions</i>	4
<i>Other</i>	2
Total dollar sales	\$29129.72
Total donated produce	\$2040 (1360 lbs @ \$1.5)
Total estimated home consumption (self reported by farmers)	\$12540
Number of volunteers	20
Total number of volunteer hours	286
Primary crops	
Tomatoes	
Lenga Lenga (Amaranth Greens)	
Beans	
Potatoes	
Onions	

Main ethnic groups

Burundi

Rwanda

Burma

Bhutan

Primary partner organizations

Valley Church – Provides incubator farm land and barn

Plymouth Church – Local church that has a farmer micro-loan program and after service farm-stand/market

Eat Greater Des Moines – They are the organizational hub for local food activities in Central Iowa. They offer promotion and resource support.

Practical Farmers of Iowa (PFI) – They are a farm-membership organization that provides networking, research, and support to sustainable farmers across Iowa. They also support beginning farmers through a matched savings and mentorship program called Savings Incentive Program (SIP) and offer field days throughout the season to share information amongst farmers. Growers in LSI's program attended their annual conference, will participate in field days, and will help host their own field day at Global Greens Farm. Two participants in LSI's program are also enrolled in PFI's Savings Incentive Program (SIP). LSI and PFI are working together with the hope that after farmers have incubated their business and graduate off of Global Greens Farm that they will have a PFI mentor and be able to independently operate their business and call upon the resources of PFI as they continue to grow and develop.

Wabi Sabi Farm – Local organic CSA farm that has assisted LSI with seed ordering and greenhouse space.

The Homestead – Local autism organization that operates a CSA and has allowed LSI use of green house space.

Goals and Outcomes Achieved:

LSI and the refugee farmers began tracking production yields, total sales and other distributions of specialty crops in order to establish a base-line for future seasons. Farmers were trained on the relevant record keeping tools, which served as the data sources, and they were reviewed and collected at each monthly meeting with the Farm Marketing Specialist.

The long-term goal of the project is to develop a multi-year incubator model for refugee famers that would help 8-12 individuals to establish their own independent specialty crop business. The target for this year of the project was for 80% of participants to begin operating their own businesses and begin tracking profitability through record keeping that would help inform future years of training and business development.

Eight AMF’s were selected to participate and 100% completed the season and tracked income and expenses throughout the season. As a result a baseline has been established for future years. Below is a cumulative summary of the income and expenses for the eight AMF’s. Each of the growers kept an individual ledger which was combined into the cumulative summary below.



With the addition of the BMF’s the total gross income was just over \$29,000 for the season. Amongst the AMF’s the average net income earned from the season was just under \$1,600. The top performing grower netted \$6,341 and the lowest net by a grower was around \$500. Each growers revenue and expenses are being evaluated to find improvement in earnings in subsequent years.

Advanced Market Grower-2014

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Cash Flow Actuals													
Income													
Valley Farm Stand	-	-	-	-	-	480.00	622.00	761.00	490.00	100.00	-	-	2,453.00
Home sales	-	-	-	-	100.00	320.00	200.00	580.00	389.50	-	-	-	1,589.50
Farmer Market	-	-	-	-	-	1,059.10	1,328.00	1,344.00	844.00	867.00	243.00	-	5,685.10
WholeSale	-	-	-	-	-	102.00	174.00	364.00	264.50	-	38.50	-	943.00
Iowa Food Coop	-	-	-	-	-	-	731.86	872.31	1,109.84	513.00	232.06	-	3,459.07
LSI market	-	-	-	-	-	1,384.00	2,021.00	3,214.00	1,632.16	130.00	-	-	8,381.16
Misc	-	-	-	-	-	-	-	10.00	1.70	33.00	-	-	44.70
	-	-	-	-	-	-	-	-	30.00	-	-	-	30.00
Total Cash Inflows	0	0	0	0	100	3345.1	5076.86	7145.31	4761.7	1642.995	513.56	0	22585.525
Operating Expenses and Cash outflows													
Program Fee	700.00	1,000.00	800.00	500.00	-	100.00	-	500.00	400.00	-	-	-	4,000.00
Market Fee/supplies	-	-	-	-	-	54.00	9.00	108.42	6.34	-	-	-	177.76
Seeds/Transplants	-	236.10	-	489.88	108.22	47.80	-	199.40	255.00	17.50	-	-	1,353.90
Soil Prep/Amendment	-	-	82.12	-	27.00	-	-	31.24	-	-	-	-	140.36
Production Supplies	-	-	-	-	287.72	579.38	12.38	-	-	-	-	-	879.48
Labor/Contractor	-	24.00	136.00	48.00	-	592.00	332.00	-	-	-	-	-	1,132.00
Equipment (Capital)	-	-	-	-	-	2.85	26.49	-	-	-	-	-	29.34
Marketing	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc	30.00	-	-	52.47	-	-	29.98	35.64	1,952.80	-	-	-	2,100.89
	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Cash Outflows	730.00	1,260.10	1,018.12	1,090.35	422.94	1,376.03	409.85	874.70	2,614.14	17.50	-	-	9,813.73
Cash Balance	(730.00)	(1,260.10)	(1,018.12)	(1,090.35)	(322.94)	1,969.07	4,667.01	6,270.61	2,147.56	1,625.50	513.56	-	12,771.80

Beneficiaries:

The specialty crop beneficiaries of the project were the 8 AMF's growers who participate in the intensive beginning farmer training to help them as they scale up their production and begin marketing their produce. The trainings and support will allow these 8 growers to be more competitive in growing and marketing specialty crops. The project also benefitted the 18 BMF's who participated in some of the trainings and made sales at markets. The economic impacts for these growers have already been quantified above.

Additional beneficiaries of the project will be the families of the growers who will benefit from the food that is produced for their family's consumption. An estimated \$12540 was taken home and consumed by the growers' families.

LSI also anticipates that another obvious group of people that will be specialty crop beneficiaries are the congregants of Valley Church. The church is going to have a market stand following weekend worship services which will likely increase the amount of Iowa specialty crops that are consumed by that group of people. A similar arrangement took place at Plymouth church who had a weekly after-service market for one of the growers. Through the course of the season close to \$6,000 in produce was sold to congregants at that market.

On an existing training farm previously visited by LSI staff, refugee farmers were netting between \$2,000-\$12,000 per quarter acre. LSI had estimated that its farmers would fall somewhere in this range. Some of the growers were slightly below this range which should be expected for the first year of production on this scale.

Lessons Learned:

Many lessons were learned from this first year of operating the incubator training:

- Staff and growers quickly realized that while the farmers are not lacking in energy, enthusiasm, and skill for farming and developing their businesses', they are lacking in the amount of time they have. This became evident in attempting to add a second farmer's market at Oakridge. For many of the farmers it became clear that one farmers' market per week was all at they had time for. Evaluating time commitments in market opportunities is something that growers and staff are now evaluation in planning for the next season.
- While there was some wholesale revenue this first year LSI desires to improve its training and establishment of these relationships in future years. Growing for wholesale markets requires the highest set of skills in terms of delivering a consistent, quality product to the buyer and LSI would like to ensure that the farmers gain these skills through future hands-on trainings.
- The record keeping tools proved to be effective for the growers and staff will continue to work with growers to develop and refine their business plans as they learn from each years results.
- It can also be challenging to work on a shared piece of land working across cultures and language groups. One of the effective ways that LSI has helped to overcome some of these barriers and create a stronger sense of community amongst the growers and between the growers and the staff is to frequently solicit feedback on the program and ask for input on plans for subsequent programming.
- Farmers will still be exposed to multiple marketing avenues in the next year as they decide what avenues are best for their business. In this first year it was apparent for some that farmers' markets fit well with their personality and style of marketing while for others it was clear it wasn't a preferable method. LSI will continue to cultivate marketing opportunities that expose growers to a variety of methods for selling their produce.

- One of the main things that differentiated our top earner this year was that she sold at a weekly after service market at Plymouth Church. This proved to be a good opportunity for her. She is also someone who did a very good job of making sure she had a colorful display and really enjoys talking with customers. For many of the other growers this market time did not work with their schedules. LSI will continue to offer this opportunity and may expand it if there is a desire from other farmers.

Contact Person:

- Name the Contact Person for the Project - Nicholas Wuertz, Director of Refugee Community Services
 - Telephone Number - 515.271.7443
 - Email Address – nicholas.wuertz@lsiowa.org

Additional Information:

Profiles of the eight AMF's can be found on the Global Greens portion of LSI's website: www.lsiowa.org/globalgreens

Several press releases were used throughout the growing season to attract attention to the market and other events related to the project.

Here is a press release related to the opening of the Global Greens Farmer's Market:

<http://lsiowa.org/index.php/2014/06/global-greens-farmers-market-now-open/>

Here are two links to press releases promoting the PFI field day: <http://lsiowa.org/index.php/2014/07/lsi-global-greens-to-host-field-day-potluck/>

<http://practicalfarmers.org/news-events/newsroom/news-release-archive/13714/>

The Global Greens program received press from the local Des Moines Register, NPR, and the Associated Press. LSI Global Greens Farmers Market received great press through the following articles in the Des Moines Register. <http://www.desmoinesregister.com/picture-gallery/money/agriculture/2014/08/27/11-photos-global-greens-farmers-market-in-des-moines/14678519/>

“Harvest of Change” – Des Moines Register:

<http://www.desmoinesregister.com/longform/money/agriculture/2014/09/04/harvest-of-change-virtual-farm-day-3/15110421/>

AP Story featuring Global Greens:

<http://bigstory.ap.org/article/dc77e20b44534de5b9b029f968cb21c4/refugees-settle-thanks-small-farm-plots>

dsm Magazine article on market: <http://www.dsmmagazine.com/2014/05/29/global-greens/>

The local Hunger in the Heartland group is also in the process of publishing a book highlighting various issues and initiatives surrounding hunger in which Global Greens farmers are interviewed and highlighted.

LSI provided many tours of the farm over the summer to local funders and their stakeholders. The program also had a visit from Norah Deluhery who is the USDA's Director of the Center for Faith-Based and Neighborhood Partnerships in late May.

Project Title: Iowa's Specialty Crops Taking Root through the Farm to School Program

Project Summary: Being a specialty crop producer in Iowa offers its share of challenges. The goal of this project was to increase demand in new markets. While many local producers sell their produce through CSAs and Farmers Markets, we want to help them diversify by creating new marketing opportunities while simultaneously increasing access and awareness of fruits and vegetables to our students through the Farm to School program.

Project Approach: To enhance the competitiveness of specialty crops in Iowa, we need to raise awareness of what specialty crops we grow and when they are harvested. Promotions are created that can easily be carried from the classroom to the home. Creating Iowa Planting and Harvest Calendars that showcase Iowa's specialty crops, planting and harvest calendars, correlating recipes featuring Iowans is a great way to help consumers shop and eat seasonally. Social media is also utilized through our Iowa Farm to School Facebook and Iowa Department of Agriculture and Land Stewardship's tweets.

The following opportunities were offered to increase awareness and consumption of specialty crops:

A is for Apple

Forty one classroom teachers were offered the chance to receive \$30-40 to spend on locally grown apples in conjunction with an apple lesson. Iowa has a new processing center that procures all Iowa products and quick freezes it the same day it is harvested. IDALS partnered with Iowa Choice Harvest to offer schools the chance to eat Iowa apples all year by trying this new product. Teachers sampling this new product were awarded an additional \$10 to procure them. One school was drawn from those classrooms that participated in the Midwest apple crunch and sampling the frozen apples to have a school wide apple tasting sponsored by Iowa Choice Harvest. Apple growers, representatives from the Iowa Department of Education, along with the Iowa Secretary of Agriculture and a host of reporters and media personnel were on hand for this event. (photos attached)

A Garden is the Way to Grow

Offering students the opportunity to help grow their food is empowering. Teaching them how to prepare the soil and the science behind gardening is an often overlooked aspect of Farm to School. The A Garden is the Way to Grow offered schools the opportunity to look at specialty crop waste in our school lunches as well as how to create a more productive garden by focusing on compost. The grant funds within this project offered educational books such as a Handful of Dirt and Gardening Lab for Kids or Composting – Nature's Recyclers, depending on the age of the student. While this is the first year of the project, the intention is to raise awareness to the waste and why or what can be done to alleviate it (new recipes, better promotion...) as well as measuring the productivity of a garden utilizing a healthier soil.

Iowa Planting and Harvest Calendars

This educational 12 month calendar provided suggested planting dates and harvest dates for Iowa for as many as 30 specialty crops. Each month offered a harvest bar showing which crops may be harvested that month. In addition, recipes and other helpful facts such as tips on picking or storage of specialty crops were included in this learning tool. Calendars were distributed to schools and public events such as the Iowa State Fair, Extension Offices, and through sister agencies such as Iowa Department of Public Health or other locations where community outreach could be most effective.

- 5,000 calendars printed in 2014 & 2015

Farm to School Chapters

The Farm to School Chapters create their own plan to increase knowledge and consumption of specialty crops has long term impacts. Approved chapters must have 7 members or more. Approved activities included establishing a school garden, and offering a mock farmers market at school in which students

- Create learning labs in school gardens (4 schools)
- Improve nutrition outcomes by educating students and parents about eating healthy, nutritious foods through displays and sampling both at school and during school events such as parent teacher conferences
- Initiate after school farming & garden clubs

Iowa Farm to School's Farmers Market Scavenger Hunt

One goal of Iowa's Farm to School Program is to increase awareness and access to fruits and vegetables to students within our schools. Iowa is among a leading state for the number of farmers markets per capita. Providing an initiative to promote specialty crops at farmers markets while giving students the opportunity to learn about fruits and vegetables is the perfect pairing. A scavenger Hunt was created for students K-8. As part of this initiative, students were to: seek out root crops, find the smallest fruit or vegetable, talk to a grower about their favorite thing to grow, as well as looking for 40 specialty crops at the market.

This opportunity was promoted to Farmers Markets and schools alike. The 71 participating markets received a promotional specialty crop scavenger hunt banner, were featured on our FaceBook and were part of a press release and media event to promote their market. The second year a book Market Farming Success: The Business of Growing and Selling Local Food Students completing the form were given a free piece of fruit or vegetable from the market and their names submitted to receive a cookbook or cooking utensils. Many markets also offered promotions around the Scavenger Hunt.

Some of the results of the first Farmers Market Scavenger Hunt were:

- For 15% of students completing FM scavenger hunt this was their 1st time EVER at a farmers market
- 31% of students completing scavenger hunt this was the 1st time of visiting that particular market
- 51% of students saw a fruit/vegetable or herb they had never seen before
- 29% of student participants tried a specialty crop (fruit/vegetable/honey) they had never tried before

Farm to School...to Market

To further promote specialty crops at the Farmers Markets, classroom teachers were awarded \$30 to procure specialty crops from a farmers market and incorporate them into a classroom lesson. Recipients also received classroom supplies such as a Farmers Market Math Bulletin Board Set (which allowed specialty crops to be incorporated into math lessons) or educational books. Some statistics that have been compiled so far include:

- As many as 80% of some classroom's students have never been to a farmers market
- Students did not "think" they would like the produce being offered and found they did like it
- Increased knowledge of how many fruits and vegetables are grown in Iowa and how many varieties there are
- How many parts of the plant can be eaten

Farm to School—Open Something Great

When growers are surveyed as to how we can help them in their efforts to get more local produce into schools, packaging continues to be a factor. In order to help growers with this additional expense, while at the same time addressing a large school concern—food safety—food grade boxes was the perfect answer. To qualify for the boxes, schools had to list their local produce purchases and commit to making additional purchases. In turn, they were provided 4 different sizes of food grade boxes to give to their local growers.

- 8 schools participated, identifying more than 20 local growers
- 90% of the schools intend to increase their local purchases with 10% remaining the same.
- Data obtained from applicants will be instrumental in increasing local specialty crops sales through things such as: listing produce purchases and future requests, use of geographic preference, refrigeration space and additional needs.

This opportunity was going to be offered a 2nd year. One issue relating to this is the expense of shipping these boxes and the storage until they are distributed. A request was sent to gauge the size of boxes desired and due to a lack of responses, the 2nd order was not placed.

Goals and Outcomes Achieved:

We exceeded the goal of adding 15 new producers in the directory by 9. Forty eight producers are listed in the Farm to School Directory. The demand for Farm to School continues to increase. Schools are reporting that without the opportunity we help provide, they would not be able to incorporate specialty crops into their classroom lessons. A Garden is the Way to Grow, increases student's willingness to try new fruits and vegetables and has greatly increased their awareness of specialty crops. In just one year's initiative 18% of the students tried a fruit or vegetable for the first time.

A timeline of Farm to School activities was posted on the website and sent out to Farm to School advocates to try to increase awareness and participation of events. As a result of this, the Department continues to receive emails asking to be put on our email list.

Beneficiaries:

Farm to School impact is felt statewide. Farm to School has a lasting impact. The fruit and vegetable samplings and garden initiatives expose student's to new specialty crops and the knowledge of how to grow them and the nutritional benefits of including them in their diets. Today's students are tomorrow's consumers and this increased awareness exceeds the school activity to which it is associated.

A sampling of direct beneficiaries for some of the Farm to School Initiatives is listed below:

Below are estimates of the impact of just a few Farm to School initiatives:

Initiative	Students impacted	Grower impact \$	Benefits
Farm to School Chapter	520	\$2,500	Sales/consumption/awareness
A is for Apple	1,900	\$1600*	Sales/consumption/awareness
A Garden is the way to Grow	6,119	Indirect	Awareness/consumption
Farm to School to Market	1,864	\$960*	Sales/awareness/consumption
Farmers Market Scavenger Hunt	200	Not measured**	Sales/awareness/consumption

*Many schools spent additional funds (up to 85% more) to implement the project school or to a larger scale

** Students participating in the scavenger hunt attended the markets with their parents, direct sales were not measured.

Lessons Learned:

Some of the planned activities occurred but through other funding sources. The Farm to School collaboration was replaced with a multi-state Farm to School collaboration. A lot of groundwork must be done before some projects can be implemented – such as the What Schools Want opportunity. Through a partnership with USDA AMS, we now have a new Farm to School Tool “Iowa Farm to School Local Purchase Report.” Taking advantage of all the opportunities that arise continues to strengthen the Farm to School Program, provide access to fruits and vegetables to students, and increase the awareness of specialty crops.

Contact:

Tammy Stotts,
Farm to School Coordinator
Iowa Department of Agriculture and Land Stewardship
502 E 9th Street
Des Moines, IA 50009

Tammy.stotts@iowaagriculture.gov

515-281-7657



USDA Final Performance Report

The final report is due within **60 days** of the end of the grant period. The report will be posted on the SCBGP-FB website and represents an important vehicle for sharing project findings with Federal and State agencies and the public. **Include these section headings and completely explain each bullet point in your final performance report.**

Project End: Feb. 28. 2016

PROJECT TITLE

Positioning North Iowa Specialty Crop Producers for Profit

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.*

Market opportunities are changing in North Central Iowa as institutions are beginning to seek local products. With new opportunity comes a timely window to introduce skills for critical analysis of profitable position.

Across North Iowa, direct to consumer sales through farmers market have been the predominant market for most local food producers. Healthy Harvest of North Iowa began a SARE Farmer/Rancher grant project on collaborative marketing of locally grown products very close to the same time this project began. The SARE project was focused on collaborating to serve a wholesale market with a very different pricing structure from farmers markets. Recognizing producers would be considering either adding some new market opportunity to their mix or substituting market opportunities, providing technical support around record keeping, pricing product, and a critical look at some key crop production practices, this series of workshop fit together to help producers be more critical in their analysis and planning.

PROJECT APPROACH

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

Two main threads run all the way through this project: producer workshops and an on-farm record keeping project. The goal was to leverage insights gained from production focused workshops into the on-farm record keeping piece of the project. The theory was that as best practices were shared through the workshops, workshop participants would overlap as some of the same producers involved with the on-farm research to develop an enterprise budget. Producers who repeated their enterprise budget documentation had the opportunity to incorporate lessons learned and demonstrate any impact on their enterprise budget results.

The **producer workshops** were to take place during the winter months of January through March. The first phase of the project was lining up the 2014 season of workshops and presenters. We planned 2-3 workshops per year and wanted to include both reputable

local producers, including Chris Blanchard as the lead consultant of the on-farm record keeping project, and some Extension staff as presenters. One of the scheduled workshops, to focus on record keeping, served as the kick off for the on-farm record keeping project.

We learned that our window of attention to workshops quickly winds down around early March.

Workshops were set up to be in person workshops to foster the networking and learning community among North Iowa producers. But when we ran into some weather interruptions in 2014, we began to explore use of webinar format. We were able to stretch our grant budget further than expected because of travel savings and actually hosted 9 workshops, exceeding our projected count of six. We included not just crop production topics, but other timely production topics such as food safety and marketing. For the Record Keeping workshop, we provided participants a copy of "Fearless Farm Finances" - extending the depth of resources that would have for future reference.

Workshop titles include:

2014 - Totally Tomatoes, Growing Great Greens, Record Keeping, Food Safety

2015 - Cucumber , Onion production (both webinars)

2016 - Marketing Principles and Strategies, Pricing Produce for Profit, (webinar) Taking Steps Toward Organic Production (webinar)

The **On-Farm Record Keeping Project** was modeled after Practical Farmers of Iowa's on-farm research practice . Producers who participated made a commitment to track data on a specific crop and then develop an enterprise budget. Chris Blanchard, who led the March 2014 Record Keeping Workshop, provided consultation support for this project, coaching producers through the data collection plans, number interpretation for final enterprise development, and critique of each farm's results during an end of year evaluation. We had six producers participate in this piece of the project. Each producer selected a crop specific to their farming goals and used the results to assist with production related decisions. For example, one producer wanted to assess the cost of production for spinach they were wholesaling, another producer wanted to develop good record keeping for a new 8 acre wholesale pumpkin enterprise they were beginning, and another producer was assessing the returns of their strawberry operation - the focus of their fruit based business. Each participating producer was provided a stipend for their work in data collecting, report development, and participation in each year's wrap up session.

We had included some collaboration between Healthy Harvest and the Iowa Valley RC&D in this project. We jointly hosted the Food Safety workshop and shared planning for the on-farm record keeping component. A Producer Guide to On-Farm Research and an enterprise budget template was used by both groups. Both of these resources, as well as an Enterprise Budget Tip sheet were produced as ongoing resources to support continued use of enterprise budget development and are discussed further in this report.

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

Jan Libbey, Administrative Director for Healthy Harvest of North Iowa lead the project in conjunction with Andrea Evelsizer, Program Director for Healthy Harvest. Andrea took the

lead with coordinating workshops and Jan took the lead with the on-farm research component.

Chris Blanchard, of Purple Pitchfork, played a key role both as workshop presenter and consultant with the on-farm research project. Chris brings valuable experience and this extended opportunity to work with him allowed producers to get to know him . These connections provided us with a good foundation to build upon if future projects make it possible to bring Chris and his expertise back into our area.

We also worked with a number of producers we know through the Practical Farmers of Iowa member network , some of our North Iowa local producers, one ISU Extension horticulture specialist, and an area college professor. Healthy Harvest emphasizes building relationships and leverages local knowledge both through peer presenters and through the continued bringing producers together to learn and share during workshops.

Ag Ventures Alliance, was a funding partner for this project. They are committed to supporting value added agriculture and have been very supportive of local food development in North Iowa. They provided the match that supported, in part, the on-farm research stipends paid to participating producers.

Below is a summary of workshop and attendance numbers.

Beneficiaries	Grant goals Projected	2014 Actual	2015 Actual	2016 Actual	Total per grant project
# workshops	6	4	2	3	9
# wkshps as webinars		0	2	2	
On-Farm Record Keeping Wrap up meeting	2	n/a	1	1	2
Producer workshop attendance and benefit from this project	10 -15 per workshop	54	45 + some viewings of webinar recording	44	143 (avg. 12/workshop)
On-Farm Record keeping Producer participation and benefit from this project	10 each year	4	6	N/A	6 (4 repeated in 2015)
Producer leaders (includes workshop/webinar presenters, on-farm research)	Had not included this record	5	8	8	21

GOALS AND OUTCOMES ACHIEVED

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

The purpose of this project is to cultivate a fine-tuned set of skills and a collaborative learning environment so producers can analyze their costs of production and make informed decisions about pricing and market position.

Nine winter workshops were conducted during the 2014, 2015, and 2016 between January and March. A total of 143 producers participated in the workshops, with an average of 12 producers at each workshop. We hit our workshop attendance projections and exceeded the total number of workshops presented.

While there was a core of producers involved throughout the workshops, the topics attracted a variety of producers and we expanded our reach beyond our original projections. The series of workshops also continued to underscore the importance of continuing education as part of the local food system work in North Iowa and the value of networking and sharing knowledge and resources.

On-farm research to develop an enterprise budget involved producers from March 2014 through January 2016, covering two production seasons and two end of season wrap-up sessions to report findings and insights. Four producers participated in the 2014 production season, repeating again for the 2015 season. Two additional producers participated during the 2015 season only.

Goal 1 of the grant proposal was to educate producers on the use of enterprise budgeting through on-farm research participation. None had used this technique prior to this project and 79% reported increased confidence in use of enterprise budgets following the project. This result is right in line with our projections for 80% to report increase in knowledge.

Goal 2 called for increasing producer confidence in determining a price that assures them of a profit through the on-farm research participation. While the workshop and on-farm research efforts clearly outlined the theory of pricing product for profit, our survey results suggest it will take more time and practice to put this knowledge into use. Forty one percent reported improved record keeping system due to participating and 48% reported adopting 1-2 new practices due to participating in the project.

Goal 3 was to increase producer production efficiencies. For the general crop production workshops, 50% reported increased knowledge and adoption of 1-2 practices due to attending workshops. Forty percent reported adopting 1-2 new practices due to attending a workshop. Only 25% reported increased production efficiency due to workshop attendance. Responses were higher for the record keeping workshop - with 66% reporting increased knowledge as well as increased production efficiency and adoption of 1-2 new practices. Eighty percent of food safety workshop participants reported adopting 1-2 new practices. The marketing workshop resulted in 50% indicating an increase in knowledge as well as adoption of 1-2 new practices.

The crop production workshops were generally two hours long and the other topics including record keeping, food safety, and marketing were all 4 hour workshops. It appears the longer sessions may have provided time for more in-depth presentations, making a bigger impact on the learning and skill adoption. Looking at specific workshops, also suggest webinars may have lower impact than the in-person workshops. Increased knowledge of subject for Totally Tomatoes and Growing Great Greens (both in person presentations) both ranked at 50% whereas this same assessment for three webinars (cucumber, onion and organic production) ranked at 20%. Webinars are convenient, but lack the reinforcing discussion of participants that come with in-person presentations.

Likewise surveying revealed the highest levels of increased confidence through the on-farm research project, ranging from 50% to 100% between the specific on-farm research component to the end of year wrap up and reporting out session.

Healthy Harvest is actively building its local food system work and learning how existing work will flow into future projects. The need for this project was stimulated in conjunction with a collaborative marketing project that was stimulating new conversations with new food buyers. Encouraging producers to step into wholesale markets involves evaluating product pricing strategies. As mentioned, most of the participating producers sell through a direct to consumer market and need to weigh the cost benefit between the two different market strategies.

On the one hand, these findings are useful for future education and workshop design. This would enforce the value of cultivating the learning network and farmer to farmer sharing as is so well modeled by Practical Farmers of Iowa. Healthy Harvest really expanded its technical support to producers through the winter workshop platform as part of this grant and counts this as one of its anchor services to local producers. It's helpful to gain these insights as we anticipate future projects for producer education.

On the other hand, as this project was unfolding, the collaborative marketing project has evolved into a young food hub with a growing capacity for wholesale to local grocers and restaurants. It's clear from that group's work, that enterprise budget and product pricing practices are still evolving and lessons learned from this project may well percolate through member deliberations as they refine their pricing strategies in the coming years. A number of members of this collaborative marketing group were also producers involved with the workshops and on-farm research of this SCBG project.

BENEFICIARIES

- *Provide a description of the groups and other operations that benefited from the completion of this project's accomplishments.*
- *Clearly state the number of beneficiaries affected by the project's accomplishments and/or the potential economic impact of the project*

Participating specialty crop producers included a range of experience, farm size, and product mix, but primarily were made of producers with 2-20 years of experience farming on 1-5 acres.

These producers predominantly sell through farmers markets. A couple also use the Community Supported Agriculture (CSA) model. Several have joined the new food hub and

will be able to contribute skills learned through this project to the decision making of the food hub.

The workshops were attended by 143 producers. Those participants, in turn, will share insights gained with at least 1 other producer, doubling, by connection, the tangential impact of the workshops.

The on-farm research participants included six producers. The results of their data collection and enterprise budget assessments contributed to all of the following:

- baseline accounting for a new enterprise that will be added to each subsequent year helping to monitor the enterprise carefully
- improved record keeping that will shape the producer's overall business management
- critical decision information that led to the purchase of additional equipment to increase efficiency for an expanding crop enterprise.
- critical decision information that led to refocusing crop mix
- affirmation of prices being used in the market place
- demonstration of record keeping skills for the next generation of farm business managers in the family
- improved record keeping skills that will be used in future crop planning

LESSONS LEARNED

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

This project represents a well-integrated plan between classroom education and field practice. It also represents a project that is in tune with other, related local food system developments. The timing allowed involvement of producers who were also getting involved with the new food hub. All of these producers now are repositories of more intentional record keeping and price setting knowledge.

As noted, it appears the length of workshop time and delivery mode do affect the impact of the information. More time, more depth, and more integration of lessons learned into field practices may be important to consider in design of future producer education projects.

The number participating in the on-farm record keeping reflect the fact that it's hard to convince producers to make this time commitment. But those who decided to participate found establishing the necessary record keeping protocols was not burdensome and, in fact, engaged other members of the family to increase their ownership of the operation. The key is the personal connection to persuade producers to participate in the first place. I think having a well planned project with the extra supports such as "Fearless Farm Finances" book as a resource as well as the Producer Guide to On-Farm Research helped get participants off the hesitancy and commit to the project.

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

We didn't really expect to host nine workshops, but shifting to webinars saved some travel expense, sharing a workshop with Iowa Valley RC&D saved some workshop budget - both made funds available to cover additional presenter expenses.

Projects just take a lot of coordinating time. We underestimated the amount of hours required by staff to put all the pieces together of these workshops and would recommend others, designing similar projects, be sure to plan approximately 20 hours coordination time pre workshop (plan and promote - 10, workshop - 5, evaluation and records - 3-5).

Within the match funds from Ag Ventures, we earmarked some for education scholarship, helping to cover travel expenses for producers attending the workshops of this project, but also intended to encourage them to attend larger, workshops that would carry a higher registration, travel, and potentially overnight lodging expense. That scholarship program was offered in 2014 and again in 2015. It helped 13 producers attend additional workshops and continued to underscore Healthy Harvest's commitment to technical support for producers. Where our workshops served as general topic overviews with a network of North Iowa producers, some of the workshops producers requested support for included much more robust offerings such as The Organic Farming Conference held in La Crosse, Wisconsin or Practical Farmers of Iowa Annual Conference in Ames. At these workshops, North Iowa producers had a chance to get introduced to additional resources and networks.

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

As noted above, outcome measures were right on our projections for goal 1, related to educating producers in the use of enterprise budgets. The results regarding goal 2, demonstrating clear understanding of how to establish a price for profit, was not as clear, but may come into greater use over the next couple of years as producers pull upon their growing reservoir of knowledge. The third goal spoke to increasing producer crop production efficiencies. Again, it is felt the production workshops may have lacked in depth and opportunity to tease out applicable lessons shared.

Healthy Harvest has developed several resources specific to the enterprise budget work that will be posted on their website as residual resources from this project. Perhaps development of a more complete bibliography of resources and demonstration tips from each of the presenters may have been a more efficient way of extending the impact of lessons shared through each workshop presentation. We are also considering adding a one-on-one direct consulting strategy into our producer education approach. After several years of the winter workshop series where producers attend for 2-4 hours, and then return home to the continued demands of everyday life, these results suggest to us that we should expand our strategies. With the experience we've gained from our

workshop series, we now have an array of options to consider when determining format is most appropriate . We are considering different formats for different levels of impact - i.e. when we want to have a more general impact, we will use the webinar or shorter workshop. Where we want more depth of impact, we will plan longer and more intense education design.

- *Provide a total accounting of the gross income of the project. State the use or intended use of the project income.*

The total project income of \$1,734.25 was generated through workshop registration fees. These fees were used to cover the working lunches that were part of the workshops and contribute to the overrun of coordinator hours required for the management of this project.

CONTACT PERSON

- Jan Libbey, Administrator, Healthy Harvest of North Iowa
- 515/851-1690
- libbey.jan@gmail.com

ADDITIONAL INFORMATION

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

Several tools were developed as part of the on-farm record keeping project and provide the basis for several resource and tip sheets that Healthy Harvest will host on its webpage of producer resources. These include:

- A Producer Guide to On-Farm Research
- An Enterprise Budget spreadsheet template
- An Enterprise Budget How-to Tipsheet

We will also have a powerpoint presentation from both the 2014 and 2015 on-farm research project report and wrap up sessions available on our website.

Project Title: Iowa Grown Produce: Promotional Awareness Campaign

Project Summary: Iowa is known for its rich, abundant farmland. As Iowans, we cannot help but be aware of the corn/soybean production as fields line our highways. Not as prevalent; however, are the number of specialty crops grown here. While we can produce a variety of specialty crops, the harvest season and knowledge of these crops are limited. To increase the awareness of our specialty crops and when they are harvested, we launched a broad radio campaign.

Project Approach: A contract was awarded to Learfield Communications, Inc. to create 15 and 30 second customized ads for each crop/season with unique messaging. Six different messages were created featuring: strawberries, veggies, and apples. All messages featured a tag line by Iowa's Secretary of Agriculture Bill Northey stating "Iowa grown is Iowa good...for all of us."

These messages were aired on 65 Radio Iowa stations across the state over a six week period with a reach of 812,200 people. In addition, Learfield provided a bonus value of \$6,434.

Emails were sent to growers informing them of this campaign as well as the soundbites for the commercials.

Goals and Outcomes Achieved:

The goal was to increase the sales amounts of specialty crops in Iowa by 5%. Email surveys were sent to a sampling of producers that grow crops featured by the campaign. The questions asked if the producer heard the radio announcements, if their customers commented on the radio ads, if they saw an increase in sales by 5%, 10% or more and if they thought the campaign was beneficial and any suggestions for changes that could be made for future projects. While some growers saw a minimal increase, the majority of the respondents either did not see as much as a 5% increase, or they did not necessarily reflect a direct correlation to the ads. No other level was measured.

Producers responded to the question "Do you think the ads are an effective way to promote specialty crops?" with a resounding "yes." The feedback from specialty crop producers has been very positive with comments such as "please do more."

Lessons Learned

Attributing increased sales to a particular promotional campaign is a very hard thing to measure as there are so many things impacting the industry aside from marketing, primarily weather, and insect/disease issues. While the growing season started out on a very positive note, heavy mid to late summer rains created flooding concerns for many producers in the state. With the high moisture came an increase in powdery mildew, aphids, squash bugs and grass hoppers in the central and western parts of the state with spotted winged drosophila creating havoc in the eastern part of the state.

Radio campaigns are very effective in raising awareness of the harvest season of specialty crops; however a different measureable should be used.

Beneficiaries:

Producers benefit from consumers heightened knowledge of when crops are being harvested as the campaign aired during peak harvest seasons. Consumers benefit from knowing when to get the freshest, best-tasting produce. Increasing knowledge and awareness in a favorable growing year will create on-going benefits and the potential for increased sales for years to come.

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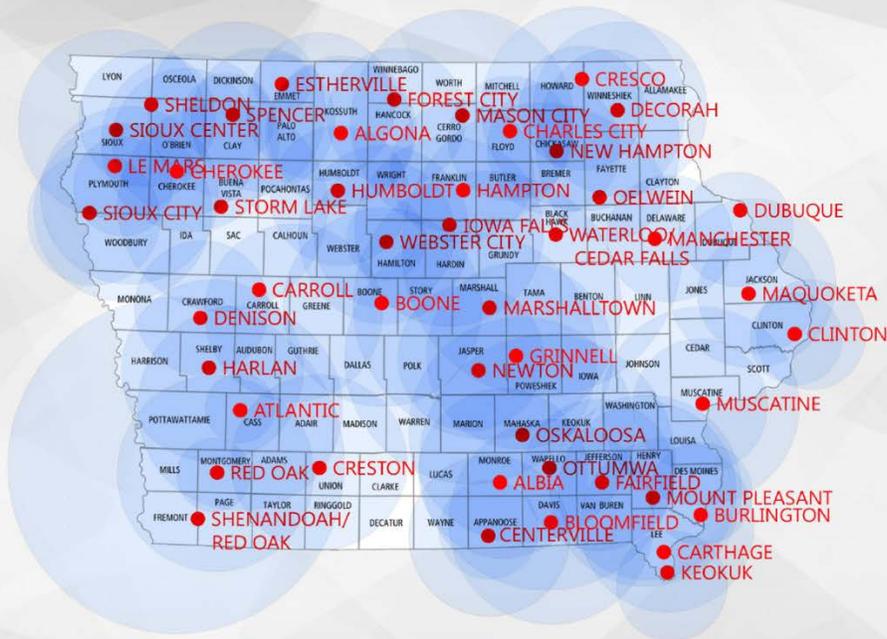
SCBG 2016 Recap

May 30 – October 9, 2016



Coverage – 69 markets	Audience Listenership	Schedule Including Bonus	Total Local Messages	Total Number of Weeks	Total Bonus Value	Investment \$20,250
Radio Iowa, 65 stations KHAK-FM Cedar Rapids KDRB-FM Des Moines KHKI-FM Des Moines KKHQ-FM Waterloo	Reach 812,200 Frequency 3.2 Gross Impressions 2,609,800	274 spots statewide	4,498 local messages	6 weeks	Bonus Value \$6,434	\$4.50 average cost per station
CAMPAIGN TOTAL LISTENERSHIP IMPACT: NIELSEN RESEARCH SP16 IOWANS 18+						
REACH		Number of unique people who hear your message during campaign				
FREQUENCY		Number of times each person hears your message on average				
GROSS IMPRESSIONS		Number of different times your message is heard during campaign				





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Radio Iowa

KIIC-FM Albia
 KLGX-FM Algona
 KLGZ-AM Algona
 KLGZ-F2 Algona
 KJAN-AM Atlantic
 KJAN-F2 Atlantic
 KOJY-FM Bloomfield
 KWBG-AM Boone
 KBUR-AM Burlington
 KCIM-AM Carroll
 WCAZ-AM Carthage
 KCOG-AM Centerville
 KCOG-F2 Centerville
 KCHA-AM Charles City
 KCHE-AM Cherokee
 KCHE-FM Cherokee
 KROS-AM Clinton
 KROS-F2 Clinton
 KCZQ-FM Cresco
 KSIB-FM Creston
 KDEC-AM Decora
 KDSN-AM Denison
 WDBQ-AM Dubuque
 KILR-AM Estherville
 KILR-F2 Estherville
 KMCD-AM Fairfield
 KIQW-FM Forest City
 KGRN-AM Grinnell
 KLMI-FM Hampton
 KNOD-FM Harlan
 KHBT-FM Humboldt
 KIFG-FM Iowa Falls
 KOKX-AM Keokuk

KLEM-AM

KLEM-AM Le Mars
 KLEM-F2 Le Mars
 KMCH-FM Manchester
 KMAQ-AM Maquoketa
 KMAQ-FM Maquoketa
 KFJB-AM Marshalltown
 KRIB-AM Mason City
 KIL-AM Mount Pleasant
 KIL-FM Mount Pleasant
 KWPC-AM Muscatine
 KWPC-F2 Muscatine
 KCZE-FM New Hampton
 KCOB-AM Newton
 KCOB-FM Newton
 KOEL-AM Oelwein
 KBOE-FM Oskaloosa
 KBIZ-AM Ottumwa
 KOAK-AM Red Oak
 KOAK-F2 Red Oak
 KIWA-AM Sheldon
 KCSI-FM Shenandoah/Red Oak
 KSOU-AM Sioux Center
 KSOU-FM Sioux Center
 KSCJ-AM Sioux City
 KSCJ-F2 Sioux City
 KICD-AM Spencer
 KICD-F2 Spencer
 KAYL-FM Storm Lake
 KCNZ-AM Waterloo/Cedar Falls
 KWVC-FM Webster City
 KZWC-AM Webster City
 KZWC-F2 Webster City

Metro Enhancement

KHAK-FM Cedar Rapids
 KDRB-FM Des Moines
 KHKI-FM Des Moines
 KKHQ-FM Waterloo

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