PROGRESS REPORT 2009
North Central Region
Sustainable Agriculture Research and Education (SARE) Program

Project Title: Assessing the Sustainability of Growing Non-Traditional Fruit Tree Crops in Wisconsin: A Collaborative Agroforestry Approach

Project Number: FNC09-718

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1. **Describe in detail your work activities and how you used your grant funds this year. (Use another sheet if necessary.)** *Please refer to updated project budget for expense report and subsequent notes.*

Grant funds are being used to cover costs associated with evaluating such parameters as plant growth-response to soil mulch treatments; for 50% of plant-material, equipment and professional development costs; and for additional personnel and travel expenses. The bulk of our funds this past year have gone toward the purchase of plants and equipment and personnel costs associated with site preparation. We originally had lined up an in-kind donation of the 60 currant and 20 quince plant species needed, however, that commitment fell through due to the recession economy. We had a difficult time sourcing organic quince tree seedlings from a wholesale nursery and had to purchase through a local retailer. We also overlooked costs associated with installing our irrigation system. Our plans are to capture roof runoff from the barn, store in a 1,000 gallon cistern and divert the water through either a drip line or emitter system. We are in the process of sourcing a cistern which may be donated by a landowner in nearby Vernon County, WI, and use 'retired' fire hose from the local Department of Natural Resources. Rob and I spent a total of 124 labor hours, about a 60 percent of which was devoted to site preparation and outreach and 40 persent to researching plant sources. We received generous support from our project partners in technical support and time to assist with project planning and reviewing outreach materials.

We received $845 in additional funds from the Organic Crop Improvement Association Research and Education Micro-grant program to assist with the other 50% of professional development costs, and 50% printing and design costs associated with developing education resources and project signage. We also are receiving additional support from the Wildlife Habitat Incentives Program (NRCS WHIP) to install a 2.1 acre field border and windbreaks around the orchard perimeter. Details are reflected in our grant budget progress report.

Project Overview: In 2008 we began transitioning land to an organic mixed fruit orchard – designing for sustainability at all levels while seeking to increase the diversity of locally grown fruits. Working collaboratively with other farmers in Wisconsin, land managers and the University of Wisconsin – Madison Center for Integrated Agricultural Systems and Agriculture Innovation Center, our project's main objective is to assess the sustainability of growing non-traditional fruit trees crops using a combination of agriculture and forestry practices. Additionally, we are working to develop appropriate outreach materials, and provide educational opportunities for growers to collaborate regarding the production of eight fruits. These include: Aronia (*Aronia melanocarpa),* Russian Quince (*Cydonia oblonga)* European black currant (*Ribes uva-crispa, R. hirtellum),* White and Red Currant (*Ribes rubrum, R. petraeum)*, Saskatoon (*Amelanchier alnifolia),* Seaberry *(Hippophae rhamnoides)*, and American Elderberry *(Sambucus canadensis).* In addition to expanding unique varieties of Midwest – grown fruits, these species exhibit much potential for organic production, are high yielding, environmentally friendly, and are an exceptionally nutritional food source. Growing these fruits can lead to increased economic viability for small – mid-sized farms. Our main objectives include:

- Find fruits that are suitable for organic production in the Midwest that can be easily grown, and have minimal labor, establishment, and management costs. The fruits should also be nutrient rich, appealing, and accessible to consumers.
- Through our design, stimulate the use of sustainable agriculture methods that demonstrate ways to conserve moisture, build soil fertility, manage for wildlife, and reduce weed competition.
- Provide outreach opportunities and educational resources for growers about the value and potential profitability of growing these fruits.

Our project reflects the changes in consumer values and food choices from cheap, fast, and easy to the need and desire for healthy, sustainably grown, and accessible local food. Our on-farm research is part of a longer-term regional project that seeks to establish sustainable production practices, expand regional fruit grower networks, examine risk, and test consumer acceptance of these fruits. These outcomes can lead to local job creation and regional development opportunities in sustainable agriculture.

Research is being conducted on one acre of transitioning organic land at Hilltop Community Farm, LLC, a small organic Community Supported Agriculture (CSA) and market garden located on the eastern edge of Wisconsin's Driftless Region.

2. **List the results of your project and what you have learned so far.**

PROGRESS, HIGHLIGHTS, AND LESSONS WE ARE LEARNING FROM THE FIELD

The first year of our project focused on site preparation, orchard design, plant cultivar research, and outreach. Land management activities included: burning the one acre test plot, planting a cover crop of oats and buckwheat, manual removal of invasive species such as multi-flora rose and autumn olive from the periphery of the orchard, fall cover crop planting of winter rye, designing a windbreak and field border, and photopoint monitoring.

Photos from left to right: *Conducting prescribed burn. (Photo by Alana Koshollak, Aldo Leopold Foundation) Removal of multi-flora rose around orchard perimeter, Photopoint of orchard on 7 – 15 – 09 with oats, same photopoint on 9 – 24 – 09 following discing and seeding of winter rye cover crop. (Photos by Erin Schneider)*

Managing for cool season perennial grasses and learning equipment needs have been the biggest challenges with site preparation. Initially our intent was to use no-till methods, and we decided to conduct a prescribed burn and direct seed. Burning does work, immediately followed by seeding. However, burning also stimulates growth of all plants present in the seed bank.

We would not recommend planting buckwheat as a cover crop – it does poorly in competing with perennial grasses, although oats proved a 60% success rate. We borrowed a seed drill from the Juneau County Land Conservation District to seed the cover crop. Because one of our design goals is to establish four planting strips with a twelve foot grass alleyway in between, we employed a neighbor to till the orchard area. This was followed by direct seeding with a winter rye cover crop in late September. We did not anticipate rental costs needed for equipment and highly recommend to growers to consider this if they do not already have equipment. Going into 2010 we were able to enter a cooperative agreement enabling us to borrow a tractor and tiller with nearby landowners, Dave and Diane Mikonowicz.

We initially set out to form a product development team to assess and determine value-added products such as aronia berry yogurt, sea buckthorn chips, and saskatoon wine. We realized that we do not yet have the capacity to support these efforts until more fruit becomes available and have shifted our focus to sustainable production needs, design, and budget planning. However, we are slowly making connections with local food processors such as Quince and Apple and Tera's Whey – an organic whey protein facility that also processes specialty fruit drinks and is building a new processing facility in nearby Reedsburg, WI. Additionally we are finding professional development opportunities related to product development on the fruits we are growing, specifically aronia berry. We attended an aronia berry field day hosted by Dale and Cindy Secher of Carandale Farms in Oregon, WI, and will be co-hosting another Aronia Berry field day in late August of 2010. Over 45 people attended the 2009 Aronia Field day including representative growers from Nebraska, Iowa, and Minnesota. The event was successful in making connections with growers and nursery suppliers. We will continue to engage and invite other organic growers to participate in our project, helping expand the organic grower network and provide educational opportunities for peer – to – peer learning and sharing.

3. **Describe your work plan for next year** *(Please see attached timeline overview and detailed monthly project timeline for 2010).*

2010 Project Overview

January through December 2010 will involve the bulk of our project efforts. We will be installing our research plots and begin monitoring results. Detailed growth measurements will be taken every three months. We will also be documenting plant survival, treating disease, weeding, pruning, and mulching. We are in the process of hiring a graduate student intern from UW Madison – Plant Pathology and Horticulture department to assist with monitoring and maintenance.

We are coordinating two volunteer work parties with the goal of having ten – fifteen volunteers (primarily our friends and CSA members, and students through UW Madison) to assist with planting on May 2 & 8. We initially set out to work with the Reedsburg Area High School Biology students to coincide planting with Earth Day in April. However, our plants will not yet have arrived and coordinating travel logistics with the school district has proved to be a challenge. In retrospect we should have lined up planting a year in advance in order to engage high school students.

We have also spent the year refining our project design and getting feedback from other growers and agroforestry practitioners in the area primarily through on-line discussion and a list serve with members of the Midwest Organic Fruit Tree Growers Network. We highly recommend this list serve to other growers, having received excellent and timely information on topics ranging from cultivar selection to troubleshooting irrigation and orchard grass seed mixes. The biggest challenge we have encountered is that very little knowledge and research exists on the best way to design and grow the fruits in combination with each other. The following is an update on our design layout, which we also plan to share in our brochure and during our 2010 field days.

Stacking Functions – Guilds as our Design Tool. A guild is a group of organisms placed in relationships that benefit a central component (and you). For example, by planting one comfrey plant every square meter around a crop plant we won't have to bring in any amendments save nitrogen. But if we add a nitrogen fixing plant such as sea berry, purple prairie clover, or blue false indigo to the guild, there is no need to bring in nitrogen. By planting field borders and windbreaks that include such species as bergamont, bluestem, hazelnut and white spruce at the edge of our orchards we create habitat that attracts beneficial insects and pollinators while helping regulate air flow, buffering temperature extremes and providing shelter from wind, sun, and snow. Installing a raptor perch or placing a pile of stones nearby in a swale provides great habitat for birds of prey and snakes that will keep our rodent population down. The following planting sequence represents our guild pattern used in our test plots:

- Fruit trees, shrubs - 5 Saskatoon, 5 Quince, 15 Aronia, 5 of each – Red, White, Black Currant, & Gooseberry (note: nut trees will serve the same function as fruit trees for your guild).
- One nitrogen fixing shrub – Sea berry + purple prairie clover, blue false indigo.
- One comfrey plant or lovage (dynamic accumulators, lovage also good in soups).
- Enough seeds for around the young plant(s). Any or all of:
  - white clover (nitrogen fixer, bee forage, edible)
  - fennel and or dill (culinary, insectory)
  - borage (insectory, edible flowers, medicinal) or alliums (chives or garlic)
- Enough low growing grass seed (to reduce need for mowing as well as reduce damage from mice & rabbit browse) between guilds to handle high traffic. Our organic seed mix includes:
  - 10% white clover, 30% red fescue (can substitute meadow fescue), 30% chewings fescue, 30% perennial rye mix. Application rate - 30 lbs/acre.

While we are foregoing mechanical harvesting, the ecological benefits gained and the economic costs saved from eliminating off-farm inputs and fossil fuel energy goes a long way in using the guild pattern as our orchard design strategy.

Overall, managing the diversity of species represented in our project has been a welcome challenge. Our one acre test plot involves more than 200 plants. Additionally, over 90 species of native plants – direct seeded or planted alongside the fruit crops as part of the research plot, or in adjacent field borders and windbreaks – will create habitat for beneficial species and pollinators, reduce erosion, and build soil fertility. We will have a spreadsheet that lists the subsequent species planted as part of this project together with a snapshot of their ecological needs which we will share during our grower field days and future workshops. More detailed ecological, social, and economic information regarding the eight fruit species we are assessing will be highlighted in our project brochure.

How did you share information from your project with others? (Include the number of people who attended field days or demonstrations.) What plans do you have for sharing information next year?

Photo: Rob and I welcoming participants during a project farm tour with grower members of Family Farm Defenders, including representatives from Uganda & Kenya. (Photo by John Peck, Director, Family Farm Defenders)

Our outreach and education efforts so far have focused on helping other growers and land managers understand how to transition to organic production of these fruits – sharing experiences from our own transitioning activities and providing information on what the costs are. We havedone this through a combination of: presenting to approximately twenty - five people at the National Small Farmer Forum in Columbia Missouri in November; writing an article for the Midwest Aronia Berry Network (a list serve hosted by UW Madison – Center for Integrated Agricultural Systems); writing an article on our project for *Renewing America's Food Traditions – Place Based Foods at Risk in the Great Lakes* publication; and hosting a field day on our farm in October as part of a Family Farm Defenders Tour. The field day included eight growers from around the world including one each from Uganda and Kenya. We also continue to update our annotated bibliography of recommended resources for the production and marketing of the fruits we are growing. We also shared our research with fifteen growers and interested land managers, facilitating a round table discussion at the WI Local Food Summit & Midwest Value Added Agriculture Conference in January 2010.

This year we will coordinate two field events and anticipate having 40 - 50 participants at each. The first field day, set for May 8 will focus on site preparation and installation. The second will involve a site tour and grower-gathering that focuses on budgeting and planning for the organic orchard; this is planned for October 18, 2010. The format for our events will be a mix of round-table discussion, hands on activities, and a site tour. Participants will leave the day with plant lists, resources on growing these fruits, and a base map for scheming and dreaming up their own agroforestry systems. For the fall budget discussion field day, we will focus more on budget-planning and sharing financial results of our research. We will target members of the Midwest Organic Tree Fruit Growers Association, Midwest

Aronia Berry Network, Madison Area Community Supported Agriculture Coalition (MACSAC), Farmers Raising Ecologically Sustainable Healthy Food (FRESH), and Family Farm Defenders. While our audience focus is other farmers, we also recognize the importance of inviting and collaborating with others interested and involved with sustainable agriculture. Students from UW Madison, as well as land managers, government agencies, local food enthusiasts, and CSA members will also be invited to participate.

We are currently working with Julianne Hunter of Future Deco Designs, LLC to help design the brochure which is set for completion by March 31, 2010 to coincide with our field days. The UW Agriculture Innovation Center and Center for Integrated Agricultural Systems will help to develop a research-based, fully-reviewed fact sheet that focuses on budget planning and design of the orchard which we will feature during our October field day, in addition to reviewing the project brochure. Signage design and development at the test plot will not be complete until Spring of 2011. This is in part due to an emerging opportunity to partner with Indiana University's Herron School of Art and Design. We plan to work with Dr. Matt Groshek, Public Scholar and Transformational Designer, and students in his fall class in public exhibition planning and design, to assist with co-creating signage that explains the project and its contribution to sustainable agriculture; this would result in a more publicly accessible display for our project. Upon completion, the exhibit will be featured on our farm then travel to destinations within the Midwest, beginning at sites near Madison, and traveling north through central Wisconsin to Ashland. As planned, at each venue, participants will add content through photographs, stories and other artifacts. This co-designed process will result in a contemporary record of the natural and cultural history of growing local and sustainable food economies and cultures that are emerging in Wisconsin, and helpothers who see the exhibit understand the meaning and power of the emergent civic agricultures that are shaping our area.

Additionally we plan to present again at the National Small Farmer Forum in Columbia, MO in November 2010, as well as host a grower gathering with MACSAC farm members in winter of 2011. We will continue documenting our project and story, writing and distributing a press release to local media, posting updates on our website, hilltopcommunityfarm.org, and producing two articles for publication in such venues as *Journal for Agroforestry* and *Acres U.S.A.*

Growing connections: As fruit becomes available we are connecting with the following individuals and groups working to expand the networks and of knowledge of sustainable fruit production (not an exhaustive list):

- Dale and Cindy Secher of Carandale Farms, Oregon, WI – www.carandale.com
- Aronia Network List Serve – https://lists.wisc.edu/read/?forum=aronianetwork
- Midwest Aronia Association - www.midwestaronia.org/
- Midwest Organic Tree Fruit Growers Association –www.mosesorganic.org/treefruit/intro.htm
- Center for Integrated Agricultural Systems, UW Madison, WI – www.cias.wisc.edu/
- Midwest Organic and Sustainable Education Services – www.mosesorganic.org/
- Midwest Permaculture Network – www.midwestpermaculturening.com
- National Center for Agroforestry – www.centerforagroforestry.org

Overall, our project work in helping fuse agriculture and conservation practices has resulted in other emerging opportunities, including; working with the UW Madison Arboretum and Madison

Permaculture Network in the Spring and Fall of 2010 teaching a forest gardening/agroforestry workshop at our farm in the spring; and working with the Aldo Leopold Foundation's Woodland School program, teaching a class in the Spring of 2011 on organic fruit tree production and agroforestry.

Send completed report by mail or e-mail:

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