PROGRESS REPORT 2011
North Central Region
Sustainable Agriculture Research and Education (SARE) Program

Project Title: Demonstrating Higher Yields and Market Opportunities of Mixed Annual & Perennial Intensive Planting in Appalachian Ohio

Project Number: FNC09-774

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I'd like to start with an overview of The Polyculture Demonstration Project, which I've dubbed Deep Garden Design, and what prompted the idea, now brought to life by the NCR-SARE grant.

The aim of this project is to make the case for moving from annual to poly-culture farming and gardening design by testing and demonstrating intensive planting methods of perennials and annuals. We designed the site with plants that offer high-nutrition food, attract pollinators, and/or have a place in the market–all to demonstrate how property owners can use their lawns, small plots, and larger acreages to build polyculture farms that impact their home and farm economy, soil, and water quality.

This project combines what I've gleaned from two approaches to polyculture gardening. First, were the permaculture readings I'd done that described edible forest designs emphasizing mimicry of forest succession in the design, particularly in the work of Dave Jacke, author of Edible Forest Gardens (see slide illustration from Jacke's Succession Workshop at PASA in 2012), and second, intensive planting methods, as demonstrated by Joe Kovach, etymologist from OSU, Wooster, where I attended field days to learn about how he designed with a focus reducing insect damage and increasing yields and Small Plot Intensive gardening which focuses on high return crops that yield throughout the season.

from Dave Jacke's Succession Workshop, PASA, 2012

Where Kovach's approach emphasizes yield and pest control with a design that is laid out on a grid on one acre, testing different combinations of annuals and perennials, Jacke's design book emphasizes a planning process that includes mapping contours, soil, and plants on site and building a design that includes directing water to the beds along the contours. In this approach, one chooses some plants for their market productivity, others for their ability to either pull minerals and nutrients from the soil or fix nitrogen; create biomass habitat for insect and bird pollinators, with minimal soil disturbance and an increase in topsoil and minimal use of fossil fuel.

These two systems show promise for demonstrating how this approach can offer low cost start-up methods to create local market and household food security while building soil and pollinator habitat, both of which contribute positively to yields. Other impacts include reversing the decline of farmland to development, soil erosion, and chemical runoff in streams and rivers.

By 2010, I had watched the impact of the recent economic recessions and rising fuel prices here in Appalachia, where the poverty rate was long ranked among the nation's highest dating back more than 100 years when resource extraction in the region created a boom and bust cycle. As more and more people felt forced to divide their farmland, I began to imagine how smaller plots can be productive. If successful, I hope this project will evolve into the development of a larger field site to demonstrate how larger grain and meat farmers can establish silvo-pastoral fields, in which larger swaths are left open

grazing between large nut trees, paw-paws, and other tree crops, and alley cropping, where for grains, beans, oil seed can be grown between berries, hazelnuts, and other perennials of smaller stature.

My full time work on regional food systems for staple bean and grain crops like spelt, corn, dry beans and oil seed focuses high nutrition crop varieties, and processing infrastructure these crops require at a regional scale. Together, these approaches build local alternatives to the two largest sectors of corporate agriculture–grains, beans, and oil seed, and fruits and nuts.

To put the potential for this market in perspective, I took a look at the 2007 agricultural census, which revealed that, at $38 billion in annual revenue, fruit and nuts claims the second largest revenue share in US agriculture (number one is grains, beans, and oil seed at $80 billion). Vegetable farming represent just under $10 billion. Increasing the local market share of these three sectors through polyculture food farming makes economic sense, promising positive ecological impacts on soil and water, food security by providing optimal nutrition not present in the large and distant food system, and create land based income in a region that has long lived in poverty.

As we head into the new farm bill, the mandate to purchase more local food can both generate income to landowners in the region and impact the food security and health of the children in our schools, up to 85% of whom are eligible for free and reduced school breakfasts and lunches. This demonstration site is also a learning lab for lab for adults and K-12 students to learn about new foods and learn methods we use in their own plots. I am confident that the growing market interested in local food and the increased understanding about how local purchasing is better for our health, environment and local economy, makes it feasible that sales through the region's farmers markets, CSA's and buying clubs can reach the growing market for locally raised crops.

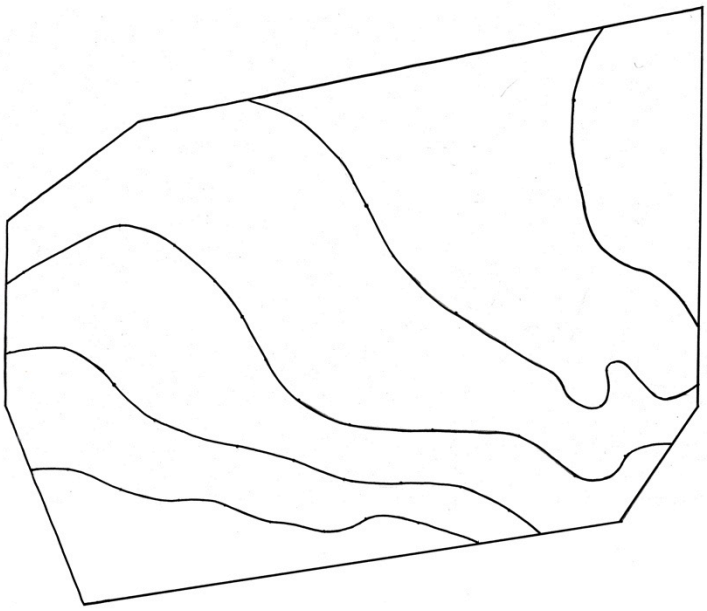
Site work, Field Days, and visits

Site work began in the spring of 2010 with planning sessions with Ross Martin, my primary partner on this project, and Kurt Belser. With the help of a few friends from the Permaculture Circle we are part of, we started base mapping in April and in May students from Hocking College started working with us on the site. Over the course of the project thus far, a total of 60 students from Hocking College's Eco Tourism and Sustainable Development programs and their instructors (Rebecca Wood and Steve Roley) have come to the site for six orientation sessions. The 2010 spring Ecotourism groups followed the orientation with work sessions twice weekly for four weeks. The 2010 fall orientation with Sustainable Development instructor Steve Roley and students included a one-hour work session followed by five-student volunteers who came weekly for two weeks. This was repeated in 2011. Led by myself and Ross Martin, the field site work progress included map layers and field work as follows-

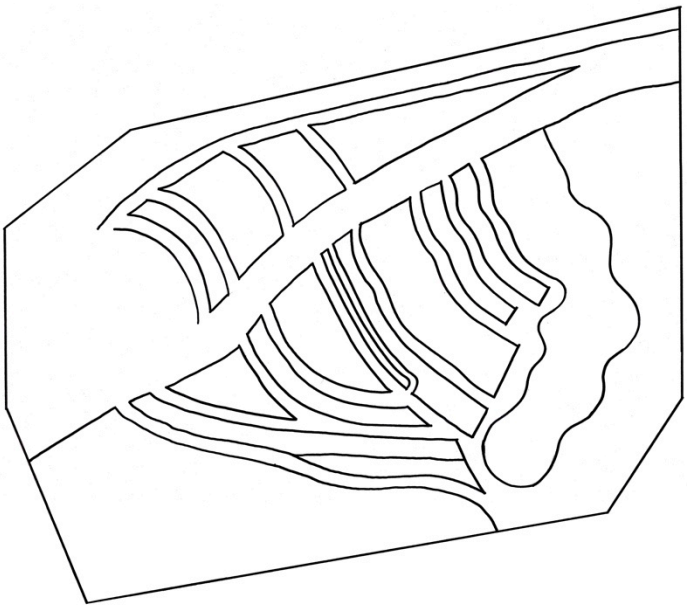
1. Base Map-The first layer of the map was the periphery of the site with trees and shrubs already on site mapped to scale.
2. Mapping site contours: -The second layer of the map–contours–was carried out with students in 2010, who learned how to use an A-frame and triangulate to map beds and plantings.
3. Building beds and paths: The third layer of the map shows the beds along contours from which five beds running east/west on the east side of the access road were built and mulched. An access road was built using a bobcat.
4. Plantings. The fourth layer of the site map is a view of the site as it matures, with all trees and shrubs suggested in place. Students helped plant planting a variety of raspberries, ground covers, fruit trees, and perennial vegetables, including asparagus. Drip tape was installed on asparagus and berries.

Drawings showing design process-

A. Contours-



B. Bed Layouts



C. Site Design

It should be noted that prior to the grant I had already planted two peach trees, two cherry, three gooseberry, one josta berry, two currant, thirteen blueberry, four hazel nut, two yellow senna, and many wild strawberries.

In the first season, spring of 2010, students learned base mapping, which is a method for mapping the site with soil information, contours, air flow, and existing vegetation used in Permaculture Design worldwide. We identified plants on site that indicated soil health and gaps, conducted soil tests, mapped existing cultivars, and with the leadership of Ross Martin and his series of site drawings, we were able to show the students how their work contributed to the overall site plan when the material we were planting matures. Our data, the contours, soils test results, and other site investigations permitted us to design the site, including bed placement and initial plant choices.

Ross prepared several drawings that laid out the site plan with contours, and in the summer of 2010 Rusty Kisor was hired to put a dry weather road through the site with a ditch for the water line, the building of which yielded a large mound of topsoil for use on the beds we built that season. We seeded the road with a mix of white clover and short fescue. We have additional topsoil that will be used this and next season (see Next Steps below). I am attaching our maps, and a list of plant stock to this update.

An usually wet fall forced me to postpone fall planting plans until spring of 2011. Instead, students helped set up a nursery of our initial plant purchases, which included apricot, peach, nectarine trees, elderberry, aronia, raspberries, dwarf Siberian pea shrubs, ground covers including dwarf comfrey kiwi and blueberries, and spread mulch.

In the spring of 2011, bed preparation continued and we planted raspberries, aronia, elderberry, asparagus, apricot and peach trees, and dwarf Siberian pea shrub. Previous plantings of fruit trees, hazelnuts, perennial grasses, asparagus, wild strawberries, jostaberry, gooseberry and blueberries were mulched.

Additional Yields

Two outcomes are imminent. One is that Ross and I anticipate that as the site takes shape this year, in addition to showing students and community members how such a site progresses, our fall and spring field days will serve as a platform to market our design skills to other land and lawn owners to establish similar sites suitable to their property.

The addition of the hoop house grant is an opportunity to design the house for propagation of perennials that are on site, which will be offered for sale and as plant stock for site designs we are contracted to complete.

Outreach

The project's group FaceBook group page, *Deep Garden Design*, is the primary social marketing tool I use to organize student and community field days. Currently membership has reached 93, one of whom is an urban farmer in Cleveland. I use the platform to organize field days, and post photos, documents, and updates, as well as links to other sites of interest. I conducted additional outreach through organized email lists

populated by a wide cross section of community members, including a local permaculture list serve and through my email lists to community members. I also set up a page on LocalFoodSystems.org, which reaches Ohio State Extension and the OSU and OARDC network in Columbus and Wooster, where one of my supporters on the grant, Joe Kovach works.
Finally, when a representative from the Natural Resource Conservation Service toured the site in the fall of 2011, he invited me to apply for a high hoop house project for the site, which was just awarded in March and includes funds for drainage.

Next Steps
Plans for this spring, summer and fall include
I. Field days with Hocking Students May 1-21 to design and plant the pond area, build a swale, establish hazelnut and apricot beds, and plant aromatics on site.

In the next year, the site will continue to serve as an educational and outreach site for students and community members. My partnership with Hocking College Ecotourism and Sustainable Development program instructors helped bring four groups of 15-20 students to the site in the spring and fall terms of 2011. This week, 11 students have each chosen their project from the list below and will work 2-3 hours a week for four weeks on the site, helping us accomplish the goals outlined above.

A. Pond & Blueberries Group one

- Design, prep site, and plant around the small pond we installed last fall, which will include a swale into the blueberry patch, just south of the pond, on other side of several while pines, which ensure the acidity that blueberries thrive on. Students will bring a plant list next week and start sheet mulching the pond edge. Ross will lead them in contour mapping from the pond past the blueberries so any blueberries that are off the contour can be marked and moved in the fall, and the swale can connect to swales between the berries that will be built this month.

B. Intensive fruit and nut production-Group two

- The second group chose to develop the hazel and apricot beds, just north of the center of the site, after the asparagus. There is already senna and wild strawberries within the site for the hazelnut, along with a few out of place paths. The students will level the area, filling in pathways using sheet mulching then compost to bring the path level with the rest of the bed. Bits of pathway will just be sheet mulched with wood chips, to make a swale within the large bed. Sheet mulch the area within the bed outline.

C. Aromatics-Group three

- Design, prep, and plant a hedge that includes lavender, rosemary, basil, thyme, and other aromatics along the edge of the beds along the road. They will sheet mulch the edge next week, and the week after, then plant all the material in week four. Outreach to local schools, camps, FFA, and 4H, and a

local self-sufficiency non-profit to invite classes and community members to field days next fall and the following spring. Another option is to hand dig a swale between two beds.

II. Other projects we hope to start or at least design this year-

A. Trellis-

- Designing, siting, planting and setting the primary poles for a kiwi trellis, with space within to sit and to plant shade loving vines.

B. Annuals-

- Design a fence line planting of annuals that are tall or climb. First flats will be planted with amaranth, quinoa, millet, barley, sunflower, & corn. Then the fence will be tightened and straightened. Then the vegetation beneath it will be cut back and sheet mulched. These crops will be planted in late May after the students have completed their projects.

C. Mixed Annual Plantings

- We have already planted onions and brassicas and parsnips in the perennial beds. This month, we will add tomatoes and basil into one asparagus bed as a companion experiment.

D. Site work

- A bobcat operator will enlarge the pond, move soil and mulch, site the high hoop house, and expand the site to the south, where contours will be mapped and swales and beds will be installed for a fall or spring planting of grape vine.

E. High Hoop House

- We will ask two other builders and farmers to think with us about how to design a hoop house on site and develop drawings and a description of the design and building process as part of our final report.
- Field days to participate in erecting the high hoop houses this fall.

F. K-12 Classes, Camp Groups, and Clubs

- Outreach to local schools, FFAs, Local Non profit members, nature programs and camps to achieve 2-3 tours and workshops to younger students for next fall and the following spring.

G. Web and News Releases

- Increase our web presence on FaceBook where I will set up a business page for Deep Garden Design, promote field days and class opportunities.
- Write news releases about tours and field days for local papers, the Sierra Club Newsletter, and Athens Soil and Water.
- Develop a pamphlet to market our design skills, which we will hand out to field day participants in the next year. The goal of marketing our design skills is two fold. One to be hired to do site design on other sites, and two to find landowners

who may be interested in being part of a group proposal that will expand the project.

Interim Budget Report

PERSONNEL COSTS	***Grant Funds Requested/Used***
Michelle Ajamian, 14100 Mill Creek Road, Millfield, OH 45761 740-590-1501; michelle.ajamian@gmail.com Farmer. Supervise and work with volunteers and hired help to lay out contours, beds, plant and maintain site; all outreach, news writing, and organizing of field days; document w photos and weekly journal. 124@20=2480/60 @ $20/hr. =$1200	$2475/$1200
Michelle Ajamian, 14100 Mill Creek Road, Millfield, OH 45761 740-590-1501; michelle.ajamian@gmail.com Farmer. Supervise and work with volunteers and hired help to lay out contours, beds, plant and maintain site; all outreach, news writing, and organizing of field days; document w photos and weekly journal. 150@$20=$3000/75 @ $20/hr. =$3000	$0/$1500
Weston Lombard, Kurt Belser, Ross Martin will work with volunteers and Ajamian to plant and maintain perennials and lay out site 190 @ $15/hr. =$2850.00/73.5 hr@15=$1102.50	$2850/1104
SUBTOTAL	$2304.00

OTHER COSTS		***Grant Funds Request/Spent***
Operating costs and Supplies		
ONE BROAD FORK	$180	$180/205.59
Mulch cloth (3 x 250 ft. for beds and 4 x 250 for paths) For weed suppression around perennial trees and shrubs	270.	$200/183.75
Drip irrigation (I am reassessing what is needed but will pay all but 100 dollars)		$100/0
Outreach		
Printing costs for Field day handouts and promotion materials	$65.	$20.87/0
SPIN Complete Farm Guides from SPIN Farming	$83.93	$83.93/83.93

Equipment, permanent fencing, perennial seeds & plants *(These items are subject to the 50% rule [see page v] – NCR-SARE only pays for 50% of the cost of these items.)*	***Total Cost of Item***	***Grant Funds Request*** *(Amounts must be 50% or less of the total cost of each item.)*
Perennial Fruit, nuts, and asparagus Purchased 50 asparagus crowns, one nectarine, two apricot, two elderberry, two aronia, ten lavender, four creeping thyme, four scented geranium, five holy basil, four dwarf comfrey, four Siberian pea shrubs	$950.	499.79
Other expenditures— Mowing, weed whipping, site bobcat work		$350
	SUBTOTAL (from above, excluding plant purchases, other expenditures, and Michelle Ajamian's time for supervision and outreach).	473.27
	SUBTOTAL (from Personnel Costs)	$2304
	TOTAL	$2777.27