

Whole Farm Plan

I. Whole Farm Goals

Our goal is begin a market garden farm business in order to live a culturally fulfilling rural lifestyle in an environmentally responsible way. It is our intention to generate productive land while enhancing biological diversity and ecosystem function at the same time. The farm will be managed with few or no synthetic inputs. Researchers and students alike will be welcome to investigate scientific principles on our farm. We would like the farm to provide 100% of our family's produce needs, and eventually make \$15,000 a year.

II. Evaluation of Current Resources

Human Resources (Personal Farm Interests & Skills):

I will be the primary manager of the farm, and will be raising children at the same time. I have general gardening skills but have never gardened at a large scale. However, I continue to obtain new knowledge about large scale gardening as a member of the University of Idaho's Soil Stewards. My skills as a conservation biologist, teacher, and entomologist will hopefully enable me to think critically and make intelligent decisions regarding farm production and land management.

Though my husband, Nate, will have a full time job and will not be able to regularly work on the farm, we understand that he will be needed at times as an extra hand, an advisor, and a business partner. Nate has skills and knowledge in carpentry, farm machinery, farm business, and writing, especially for grants that will undoubtedly be extremely helpful in the farming business.

Other Management and Labor Resources:

My mother has offered to help periodically with the farm.

Natural Resources (Land, Soil, Water, Other):

Our goal is to have a minimum of 5 tillable acres with additional acreage in timber and pasture/prairie. The Midwest Driftless Area has characteristically rolling hills and bluffs, covered in oak/hickory or maple/basswood hardwood forests and adjacent prairie grasslands. The soil in this area is typically well developed as silt-loam and limestone as the bedrock. Annual rainfall is 32 in/yr, which normally falls in spring and summer. Freshwater springs are common, but there is no guarantee of sufficient groundwater on any given land.

Natural resources abound in the Driftless area, complete with charismatic megafauna including white-tailed deer, trout, and the occasional cougar or black bear. The unique and isolated habitat in the Driftless area has fostered rare and endangered organisms such as the Iowa Pleistocene snail and Northern monkshood flower.

Physical Resources (Buildings, Equipment, Other):

We hope any farm we purchase will have at least one outbuilding that is connected to electricity and a water source in order to create a cleaning/packing area and cold storage.

Market Resources:

Iowa, Minnesota, and Wisconsin are leaders in organic farming. Wisconsin is #1 in organic dairy farms, organic livestock, and layer hens, and #2 in total certified organic operations in the nation. Minnesota is #1 in organic corn and soybeans, and Iowa is #3 in organic corn and #2 in organic soybeans. In their recent Winter 2006 newsletter, the Midwest Organic and Sustainable Education Service (MOSES) called for more organic producers in the Midwest as a result of the aforementioned numbers. More specifically, there are major centers of marketing resources in the Driftless region. For example, three cities are populated with 50,000 people or more and host up to four farmers markets every week. Also, the Twin Cities, Madison, Milwaukee, and Chicago all lie within four hours most areas in the Driftless region. Many other small communities (one town has a population of only 4500) host weekly farmers markets as well. Most of these communities also have natural food markets and food co-ops that sell local produce. There are also a

number of businesses/organizations in this area that serve as distributors for organic farmers to connect the farmer with supermarkets, restaurants, and schools.

Financial Resources:

We currently have a sum of money in savings that will be used for a down payment for a farm, and hopefully we will be able to seek out and utilize grants for sustainable agriculture and incentives for new sustainable farmers from governmental agencies. There is likelihood that after the sale of a family ranch, we will receive an additional sum of money. Our parents are also willing to help monetarily if needed.

Community Resources:

I anticipate the using the Midwest Organic and Sustainable Education Service (MOSES) and regularly attending the Upper Midwest Organic Farming Conference. Also, the Twin Cities, Madison, and Milwaukee have CSA farming guilds, which is a resource for CSA farms to obtain additional marketing services especially on the internet. All states involved have very active extension services that focus on organic farming, which will likely prove to be an important resource. Because of the number of organic farms, natural food stores, and farmers markets, there is much evidence that the Driftless area has a plethora of resources for organic farmers.

III. Capsule Definition

A sustainable family farm that will grow and eventually sell a variety of high quality, local, pesticide-free vegetable produce during the months of June to October, with a goal of producing salad greens all year long. Depending on the location of the farm, there will be an “on your honor” farm stand either on the farm or along a nearby major highway. Eventually, we plan to support a CSA program, sell produce to a cooperative distributor, and perhaps manage a potential strawberry, raspberry, and/or blueberry U-pick operation. In addition to producing food, I am interested performing experiments on my farm, therefore I would like my farm to be utilized by researchers, students, and teachers alike. Specifically, I would like to investigate how biological diversity and ecological functioning could be enhanced by the presence of a small, sustainable farm.

IV. Marketing Assessment & Plan

Marketing Options:

On-site farm stand, roadside farm stand, CSA’s (potentially home delivery), farmers’ markets, potential U-pick, restaurants and/or food distributors such as Organic Valley.

Location(s):

Ideally, we would marketing our food to the local community via farm stands, CSAs, and/or farmers’ markets. However, there may be a necessity to sell to a regional distributor, travel to farmers’ markets or travel to deliver CSA’s if the local market is too saturated.

Target Market Description:

Our target market will likely be married couples with families that ideally live and/or work within 30 miles of the farm. These buyers are looking for healthy, local, yet convenient food, and have a tradition of supporting local family farms. Other patrons may include city people who are buying produce from a mega-supermarket (who purchased their produce from a distributor that buys their food from small farms such as my own). We would encourage community members and visitors to tour our farm, so other customers may include weekend visits tourists.

Competition:

Due to the Driftless area and the surrounding regions being a hub of organic production, there will clearly be competition. However, I learned from an employee of MOSES that the market in the Driftless region is not saturated and there are many avenues to sell organic vegetables including selling food to local food coops, supermarkets, restaurants, farmers’ markets, and cooperative distributors like Organic Valley. There are numerous cooperative distributors that buy produce and then sell it to grocers, restaurants, and schools in some cases.

Demand for Product/Service:

As mentioned before, MOSES' recent publication called for an increase in organic producers in the Midwest and across the country due to the continued increase in the organic market (20% per year since 1990). With four major cities within four hours from most everywhere in the Driftless region, there is potential to take advantage of the booming markets in these cities.

Unique Product/Service Attributes (features to highlight):

I want my farm to be a community resource, where local researchers frequent the farm to perform studies. I also want to encourage teachers to bring their students from preschool to college aged to see how their food is produced, but to also perform their own experiments, or collect data for experiments already in place by myself or other researchers.

Promotional Materials & Advertising Ideas:

My husband's brother is a successful graphic designer, and we would hire him out to create our image. Promotional strategies include fliers around town, magnet signs that can be placed on our cars, ads in local newspapers including co-op or health care center newsletters. We will utilize the Internet for advertising on a variety of farm-related websites and for our own website. Because I am interested in having scientists and students use my farm, I will see to it that my farm gets the appropriate press coverage for such activities. Lastly, we plan to have a beautiful sign at the entrance of our farm.

V. Enterprise Requirements (include challenges & possible solutions)

Climate:

The median growing season lasts 160 days, where April 30 is the median last frost date and October 7 is the median first frost date. The average high is 85 degrees in July, and the average high is 24 degrees in January. Average rainfall is 32 inches, where most of the precipitation fall in spring and summer, and the region gets an average of 10 inches of snow a year in January. The cold in the winter will require some adaptations if we are to be successful growing salad greens through winter.

Soils:

The region generally has silt loams with some stony, rock land, and alluvial sands mixed in.

Water:

My water needs are relatively low if I utilize a drip irrigation system, which I plan to do. Specifically, I need a minimum of 3 gal/min output from a well. I would like to set up a rainwater catchment system to limit water use from surface water or a well.

Buildings & Fencing:

Ideally, we would have an outbuilding that was connected to electricity and water so that it could be used as a packaging/cleaning area and a cold storage. I plan to can and freeze a lot of my produce, therefore I will need a cellar and a large freezer. A hoop house would also enable me to extend my growing season, and perhaps produce greens all winter long.

Machinery:

Though, I do not think that machinery is needed in the beginning, because I should be able to borrow or rent machinery like a tiller and spreader. However, if my operation becomes profitable, then money will be set aside to pay for things like a lawn tractor that could pull a tiller, spreader, and wagon. Regardless of how I get the machinery, I will need a tiller in the spring and a spreader to spread compost and cover crop seeds.

Labor:

Clearly the most labor will be needed in the spring, summer, and fall. I plan to spend an average of 20 hours a week throughout the entire year. During summer time, I will have extra help from my husband

who does not work in the summer. In winter I plan to work very little, but labor in the summer time will make up for the time spent not working in the wintertime. I will be raising children, which will take up a lot of my extra time.

Regulatory/Liability Factors:

Because I am interested in getting the public onto my farm to perform and collect data, I must obtain the most appropriate insurance for such activities. Additionally, if I pursue selling canned goods from my farm, I will need to be sure I am following the rules set forth by all the correct regulatory agencies.

VI. Crop Production Plan

Type of Enterprise/Crops:

General produce farm rotated on 5 acres with one-half acre in production at one time. As time progresses and the opportunity to expand becomes available, more land would be put into production if the soil was able to handle the extra production.

Crop		Acreage	% of Land		
salad greens	spinach	1 acre	1/5 th of tillable land.		
arugula	sweet peas				
green beans	onion				
green onions	cucumbers				
broccoli	chard				
tomatoes	peppers				
sweet corn	carrots,				
potatoes	sweet potatoes				
pumpkins	butternut squash				
delicata squash	acorn squash				
garlic	fresh cut flowers				
Potentially:					
strawberries					
blueberries					
raspberries					

Soil and Crop Fertility Management

General Soil Types and Location:

The region generally has silt loams with some stony, rock land and alluvial sands mixed in.

Major Components of Crop and Soil Fertility Management Program:

We plan to only keep 1 acre in production at a time. The other four acres will be kept fallow under a blanket of cover crop.

Methods for Monitoring Effectiveness of Program:

I plan to keep records on the following:

- Field Activity - planting dates, harvest dates, and harvest amounts.
- Crop Inputs – Sources and dates for soil amendments, seeds, compost, pest/disease controls.
- Conservation – soil tests, water quality tests.
- Equipment – cleaning activities, storage location.
- Sales –sales journal, invoices for CSA’s or distributors.
- Weeds – weekly record observations/counts, compare with crop yields.
- Insects – weekly collection of trapped insects and record findings, compare with crop yields.
- Pathogens – weekly record observations, compare with crop yields.
- General Productivity – weekly crop yield data (numbers and weight), weekly crop quality observations records.
- Soil Conservation – test nutrient and pH levels monthly.
- Water Quality – test water quality for nutrient and pH levels monthly if a body of water lies within a mile of farm site.

In general, I plan to have an extensive record keeping process, where record keeping is simply built into my weekly and monthly schedule.

Seeds and Seedlings Production

Sources, Suppliers, & Specifications:

I plan to purchase organic seeds from local suppliers if possible. For example, in the Pacific Northwest, Territorial Seed Company and Nichols Garden Nursery are seed suppliers that assist large scale produce farmers and who, according to their websites have ethics that are aligned with my own.

Seeds and Seedling Production; Transplanting, etc.

If I am able to harvest my own seeds for use the following years, I will do so. At this time, I expect to purchase seeds every year. I do however expect to begin my own seedlings in a hoophouse or eventually a greenhouse.

Greenhouse Specifications:

Eventually I would like to have a permanent greenhouse, where I could begin my seedling starts in the late winter/early spring.

Other Season Extension:

I would like to have at least one 20ft x100 ft hoophouse for extending my growing season for tomatoes and peppers, but also potentially growing salad greens through winter. I anticipate using row covers for season extension as well.

Materials Needed (Soil Mix, Fertilizers, and other Inputs:

The materials I need to input into my soil will depend on the quality of my soil. I anticipate using compost and perhaps composted manure if it is available locally.

Watering System:

Timed Drip irrigation that utilizes water from a rain catchment system.

Greenhouse crop/Seedling Insect & Disease Control:

Pest control methods will depend on the particular pests, but general pest control methods will include using row covers, encouragement of natural enemies via biodiversity especially if there is an opportunity to restore tall grass prairie species nearby the farm. A prairie remnant may also serve as a “trap” crop for some insects. If necessary, I will utilize biocontrol methods for not only weeds, but also for insects via the release of natural enemies. My hope is that through crop rotation and cover cropping soil quality will increase therefore decreasing plants susceptibility to insects and disease.

Crop Rotation Plan

Describe:

I would like to have five acres split into 5 one-acre beds, with cover crops used on the fallow beds. The 1-acre plots would be used every 4th year. If we decided to have chickens on the property, the chickens could be rotated in portable chicken coops on the fallow land.

Cover Crop/Green Manure Use

Describe:

A mixture of rye, vetch, and clover would be used as cover crops. Eventually I would like to explore ways to incorporate native vegetation as cover crops rather than the traditional cover crops.

Compost Use

On-farm Materials to be Composted

Any food or vegetation materials would be composted.

Method of Composting:

We would likely have a few large compost bins that would be at different stages of composting so that compost could be made available throughout the season rather than just at one time.

Uses for Compost:

Compost will be used as a fertilizer for greenhouse potting mix, crop plantings, holding in moisture, and reducing weeds. We would likely use some mulch for similar purposes.

Manure Use

At this point I do not plan to use manure, unless I own livestock. However, if there is a local producer of composted manure I may consider using it to augment my compost. Through my monthly water quality monitoring, I would be able to observe any negative consequences of using manure, especially if it was raw manure.

<p>Additional Soil Amendments to be used</p> <p><i>Describe:</i> Since I am unaware of the particulars of my potential soil quality, I can only guess what kind of other soil amendments I will use. Perhaps, I will use mulch, lime, or fish emulsifier.</p>	<p>Tilling, Preparation & Cultivation Practices</p> <p><i>List:</i> Every spring I will till under one-acre of cover crop, which will require multiple tillings as the cover crop will have been established for four years. I am concerned about especially rainy springs, where conditions for tilling under cover crops are poor.</p> <p><i>Machinery/Equipment Needed:</i> Eventually, I would like to own a lawn tractor that has a pull behind tiller, spreader, and wagon.</p>
<p>Water Use</p> <p><i>Describe Needs:</i> Our needs for water use include a timed water irrigation system with ability to water different plants on different schedules and water requirements. A minimum of 3 gallons per minutes is necessary for the planned vegetable production.</p> <p><i>Sources:</i> Sources may include a well from a spring or groundwater, surface water, or a rainwater catchment system such as a cistern.</p> <p><i>Water Quality Protection Practices:</i> I will not use synthetic herbicides or pesticides. So agricultural runoff will be minimized. If I end up using manure, I will need to carefully monitor the local water quality in case of increased runoff as a result of using manure. The water quality monitoring plan will help me identify how my practices may need to change as needed.</p>	<p>Natural Resources Management</p> <p><i>Soil Conservation Practices to be used:</i> We plan to utilize intense rotational practices where land will lay fallow for 4 years in between production. The cover crop will be tilled under prior to vegetable production, which should enhance soil organic matter.</p> <p><i>Practices to Minimize Soil Erosion:</i> Cover cropping will help keep soil from being washed away. In addition, when planning my garden plots, I will need to find plots that are as level as possible, and will terrace the landscape if necessary.</p> <p>Besides enhancing soil, I am interested in restoring a part of my land to native tall grass prairie, which will enhance water quality and wildlife utilization of the land. I believe farmland can be “native habitat” for flora and fauna.</p>
<p>Weed Management Plan Summary</p> <p><i>Monitoring & Identification of Weeds:</i> I plan to record observations/counts of weeds weekly. I will need to learn my weeds, which the local county extension should have publications that will assist me in this manner.</p> <p><i>Issues:</i> It may take me awhile to learn Midwest weeds, but since I work with plants it should not be a large issue.</p> <p><i>Strategies to be used:</i> Enhancing soil quality will be key to keeping weeds to a minimum, so that my crops will have a competitive edge. Also, crop rotation and cover crops should also keep weeds to minimum. However, if weeds become an issue, I will mechanically remove them, mulch the crops, and use biological control.</p>	<p>Insect & Pest Management Summary</p> <p><i>Anticipated/Expected Pests:</i></p> <ul style="list-style-type: none"> - Flea beetles on cruciferous plants. - Japanese beetles on all plants. <p><i>Monitoring & Identification of Pests:</i> As an entomologist, I will be interested to see what kind of insect communities are living on my farm. So I will likely have some pitfall traps out and will collect and record my findings weekly. I should not have a problem with identifying insects, but will look to the county extension for other pests that I am unable to identify.</p> <p><i>Strategies for Control:</i> As was the case with weed control strategies, crop rotation and cover crops should keep most pests to a minimum. Row covers may be needed to keep out some insects. I may also need to incorporate the use of trap crops/vegetation to repel insects from my crops.</p>

Disease Management Summary*Anticipated/Expected Problems:*

At this point, all I can do is expect to have problems with pathogens, but I am unable to say what those problems may be. Pathogens will likely be vectored by piercing-sucking insect pests, which may be minimized by crop rotation and/or cover crops.

Disease Monitoring & Identification:

My weekly monitoring system will record observations of pathogen problems. I will definitely need help from local authorities to identify pathogens, as I have no knowledge of them.

Strategies for Prevention/Treatment:

The best I can do without knowing much about problem pathogens, I can only prevent through enhancing soil quality, rotating crops, utilizing cover crops, and monitoring/recording pathogen problems. When I identify a pathogen I will need to immediately contact a profession for best treatment practices.

Harvest & Storage*Methods:*

Harvesting will be completed by hand with wheelbarrows, crates, and eventually maybe a lawn tractor and trailer.

Facilities:

Ideally, we will have a structure that can be used as a cleaning/packing house and cold storage. The cleaning/packing house would need a washtub with a counter for processing. Electricity in the cleaning/packing house would be necessary as well for light and heat in cold months. For our personal use and eventually as a possible value added enterprise, we will need a cellar in which to store canned goods and a large freezer to store frozen vegetables.

Processing or Transportation Concerns:

We will need upfront money to purchase cleaning and packing materials like boxes/crates. We have a truck and trailer that could be manipulated to use for transportation. We also need to think about how heat will affect produce at an un-personed farm stand.

VII. Livestock Production Plan - NA**VIII. Farm Conservation Plan:**

My farm conservation plan adheres to the philosophy that farms can and should be natural habitat. I do not believe that the only way to increase biological diversity is to “preserve” the land and take it out of agricultural production. Nor am I convinced that the only way to make food is to sacrifice the ecological integrity of the land to do so. I plan to manage my farm in a way that enhances biological diversity and ecosystem function, while making the land productive and economical. As mentioned previously, I intend to strictly monitor soil and water quality, but hopefully there will be little need to do so because of strategically planted native hedgerows, restored native prairie, and/or un-drained valuable wetlands. These conservation plans will enhance the farm’s productivity by encouraging native natural enemies to weeds, insect pests, and pathogens.

IX. Financial Plan Summary:*Financial goals (include short term and long term financial goals):*

Initially, I want to raise enough food so that my family does not need to purchase produce, a rough estimate of \$1000 saved per year. Once established, ideally my market garden would profit at least \$15,000.

Funding (Potential sources of capital and operating funds until business pays back):

We currently have a sum of money in savings that could be used as a down payment for a farm, and if any money remains we could use some of the savings for start-up capital needed for seeds, irrigation, and a hoophouse. Other sources of funding includes a bank loan, grant money, and/or family loans.

Enterprise Budget Summary:

Using only 1/8th acre carrots and 1/8th acre salad greens for estimates:

My operating costs for one year is \$18,000 (paying me \$15/hr for 20hrs/wk for 39 weeks – ¾ of the year).

Income for one year is \$19,000 (\$6000 in childcare for one child, and \$13,000 in carrots and salad greens). Salad greens bring in the most price/pound and carrots bring in an average price/pound compared to other vegetables. It is my estimate that increasing acreage from ¼ acre to 1 acre will substantially increase my profits, but will not substantially increase my operating costs.

Plans for Risk Management:

Generally speaking, I plan to begin small by simply making sure I am able to raise enough produce for my family prior to creating enough food for numerous families. It may be situation, where I have a large garden while also having a part-time job while our children are small. Once the children are in school or close to it, I may be more able to expand my garden into a moneymaking enterprise. Also, I would like to purchase a hoophouse early on so as to eliminate some weather and pest problems.

X. Next Steps to Business Success:

For the next two years I will be in graduate school, where I plan to be involved with the University of Idaho's organic farm. I hope that experience provides me with the knowledge to, at the very least, get started with my own large garden. I also hope to attend as many farm/professional workshops and conventions as I am able. I clearly have a passion for beginning my life on a farm. Therefore much of my spare time is and will be used for researching how to begin a small farm, particularly enhancing my business plan.