THE COMMUNITY FARM

Analysis of Farm Models Throughout the Nation

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TABLE OF CONTENTS

Community farms offer a powerful means of uniting people from a diversity of backgrounds. These farms benefit from social, physical and cultural differences; each individual offers unique skills and knowledges. This relationship is mutual. Just as the farm benefits from its community members, the community benefits from the farm. In addition to producing food, these farms present opportunities for education, neighborhood improvement, job skills, employment and overall self-sufficiency. Through these opportunities, farms actively encourage relationships with land and food. Furthermore, community farms are powerful tools to address food insecurity.

Food insecurity cannot be completely solved through one specific method, yet community farms are a step towards food stability. Contributing to the effectiveness of community farms in the fight against food insecurity is the momentum that exists around local food. There exists a well-established movement of non-profits, charities, and individuals working in communities to foster involvement and food security. In addition to providing fresh produce, these farms offer programs and resources to help community members become secure.

We conducted research of and interviews with community farms across the nation in order to answer the question "What makes an effective community farm?" Our hope is that this project will help establish a community farm in Lewiston-Auburn, Maine. This paper argues that there are three necessary components that result in an effective community farm: community involvement, financial stability and productive farming methods. We conclude with recommendations on how to successfully approach these three fundamental components.

Community farms are a viable means of addressing food insecurity. Each community farm has a unique variety of approaches in confronting issues of food insecurity. For example, Denver Urban Gardens has ninety-six farms throughout the metropolitan Denver area in order to provide access to as many community members as possible. Earthworks Urban Farm in Detroit was founded by a soup kitchen because they were concerned that community members were becoming too dependent on their food supply, and they wanted to provide people with the opportunity to grow their own food. Rippling Waters Organic Farm in southern Maine partners with Saco Valley Food Connection with the goal of providing 20,000 pounds of fresh produce to local Emergency Food Providers (EFPs). Just outside of Washington D.C., Red Wiggler Community Farm provides meaningful work experiences for individuals who have developmental disabilities who experience food insecurity. Lastly, Growing Power Inc in Milwaukee uses highly advanced farming methods in order to increase their productivity so they can provide food for as many community members as possible. Community farms have significant potential to address food insecurity, a growing problem in the United States.

INTRODUCTION

Food insecurity is a growing problem in the United States, and community farms have emerged as one viable method of addressing the issue. These farms offer community spaces where people can learn, grow, eat, and became self-sufficient while building important social networks and community cohesion. While these farms share common goals, they all approach food insecurity in different ways.

While people facing food insecurity are not necessarily hungry on a daily basis, they live with the burden of not knowing how or when they will get their next meal (Chilton and Booth, 2009). Food insecurity is a ubiquitous problem that can even affect people in privileged positions given unfortunate circumstances such as a divorce or the loss of a job. Food insecurity also has different implications based on one's social situation. Many individuals are afraid of the stigma of poverty, thus they avoid participating in hunger relief programs. Some people in such a position have reported that they feel a loss of dignity when they find themselves in a state of hunger (Schwartz-Nobel, 2002; Berg, 2008). Being hungry does not only affect one's physical health, but also has a strong effect on one's emotional and psychological wellbeing (Chilton and Booth, 2007).

A significant population of Lewiston-Auburn in Androscoggin County, Maine deals with food insecurity on a daily basis. Lewiston-Auburn is a community facing a significant loss of industry since the middle of the 20th century. The mills—once industrial power centers of the Northeast—have closed, thus limiting job opportunities in the cities. With this loss of industry, the community has experienced an increase in poverty. In Lewiston and Auburn, 15.5% and 12% of the population, respectively, are below the poverty line (US Census Bureau, 2000).

Further, Lewiston-Auburn has a large immigrant population consisting primarily of Somali refugees. They often lack the work opportunities by which to be economically secure. The first large influx of Somali immigrants occurred in the winter of 2001 and it is now estimated that there are more than 3,000 Somali residents in the Lewiston-Auburn area. Somali immigrants face a variety of cultural and positional factors such as language and financial barriers, which challenge their ability to access nutritious foods (Dharold, 2008). While food insecurity is not exclusively caused by poverty, the two conditions are often correlated.

Although there may be many EFPs in an area, due to various economic and logistical constraints, they often cannot always meet the demands of every person facing food insecurity (Berg, 2008). In an effort to combat food insecurity, community stakeholders around the country are establishing agricultural programs within the confines of their communities. Lewiston-Auburn is one such community. The ultimate goal of the project in Lewiston-Auburn is to launch an urban farm that can provide various opportunities to city residents, including access to fresh produce, educational programs, and potential job opportunities. Although the farm alone will not put an end to food insecurity in Lewiston-Auburn, it will provide additional food options. While food insecurity and hunger are large issues that cannot be solved by one community or urban farm, a farm will hopefully act as a step forward in the fight to end food insecurity in Lewiston-Auburn.

Community farms differ in numerous ways, but the majority of the farms we studied share similar goals. Many farms strive to provide education to the local area or to provide local nutritious produce. Additionally, community farms often work towards building relationships within the community as well as fostering relationships with food. It is the goal of many such

farms to acknowledge cultural, social, and physical aspects of their surroundings in order to benefit as many members of the community as possible.

In neighborhoods facing financial hardship and food insecurity, building a sense of community is an invaluable goal as it promotes unity and helps to solve common problems (Glover et al., 2005; Lyman, 2008). By addressing food insecurity through community farms, individuals are empowered to become active in local affairs. Therefore, not only do community farms alleviate hunger, but they also foster local involvement, promote neighborhood pride, and build strong localized communities.

As part of an environmental studies seminar at Bates College in Lewiston, Maine, we assessed community farm models throughout the United States. We placed an emphasis on farms that are located in cities and communities that share similar demographics and climate to Lewiston-Auburn. Through web-based research, we analyzed numerous characteristics of over 150 farms. In order supplement our web-based research, we conducted case studies on five farms to gain more nuanced perspectives on the successes, failures, and overall picture of a community farm. It is our hope that this report acts as a catalyst for the creation of an urban farm in Lewiston-Auburn.

FOOD INSECURITY, FARMS, AND THE COMMUNITY

This study of community farms is grounded in discourse regarding issues of food security and "buy local" campaigns. Our project addresses the question "What makes an effective community farm?" with the hope of implementing such a farm in Lewiston-Auburn. In order to understand the context of our study, it is necessary to first examine existing literature.

Food insecurity and poor nutrition are not new problems facing the United States, but they are pressing ones. In 2007, 11.1 percent of households were food insecure at least some time during that year. Therefore, 35.2 million Americans lived in food-insecure households, including 12.4 million children (Nord et al., 2008). This is a modest estimate, as these statistics only include households and do not include those individuals who are homeless, in temporary housing, or are illegal tenants. Millions are suffering from insufficient daily caloric intakes, while there are many more in the United States that do have access to enough food, but can do so only by consuming nutritionally-poor foods. Although food insecurity can affect people of all socioeconomic levels, it disproportionately occurs in low-income households. In the United States, cheaper foods tend to lack necessary nutrients and often much of their caloric content is derived from corn, such as corn syrup or cornstarch. Thus, both obesity and malnutrition plague low-income communities (Ogden et al., 2007).

Over the past few years there has been a significant increase in momentum behind the local food movement to help rectify these problems. There is a widespread movement of non-profits, charities, and individuals seeking out empty lots and converting them into vibrant spaces of sustenance and community. For example, Philadelphia, which has over 40,000 vacant and abandoned properties, has already transformed 7,000 of them into green spaces and farm plots.

One previously overrun lot has been converted to the New Kensington Garden Center. It now attracts hundreds from the local area to buy plants and participate in gardening workshops (Lyman, 2008). Similar trends can be tracked across the country. The member-owned Intervale Community Farm in Burlington, Vermont was started in 1990 as a small community supported agriculture program. It now has almost 500 members and covers over 20 acres with vegetables and uses another few acres for dairy (Stone, 2009).

Through close interactions with community stakeholders around food, community farms can foster social growth. There is an ever-increasing body of literature about the benefits of community farms in marginalized communities. Laura Lawson details the complex history of these gardens in her book "City Bountiful: A Century of Community Gardening in America" (2005). The first community garden movement occurred between 1890 and ended during World War I. Some years later, Eleanor Roosevelt inspired the victory garden movement of World War II. The 1970s saw the next significant surge in community gardening, which has continued with fluctuating enthusiasm until today, when local community gardens are once again thought to be a viable alternative food system (Lawson 2005).

The American Community Gardening Association defines a community garden as "any piece of land gardened by a group of people in urban, suburban, or rural settings" (ACGA). As of 1996, there were an estimated one million households participating in some form of community farming and gardening in the United States (Hynes, 1996). In a survey conducted by ACGA, in 1996 there were 6,020 gardens in 38 major American cities alone (Lawson, 241). While there are many large and visible farm projects, such as Intervale Community Farm in Burlington, Vermont and Denver Urban Gardens (DUG) in Denver, Colorado, there are countless small farms around the country that remain under the radar. In the Bronx of New

York, for example, there are 147 community gardens spread around various lots and yards (Voicu and Been, 2008).

Community farms address much more than just food production. Depending on the time period, location, and community, any particular garden project emphasizes particular needs and solutions. However, there are many common objectives that embody a community farm. Community farming is widely regarded as having the potential to promote recreation, health, and transcend social boundaries such as age, gender, and race (Teig et al., 2009).

Urban landscapes have been greatly influenced by the creation of these gardens. Urban environments that have experienced drastic loss of industry are plagued by the prevalence of empty buildings and open lots. Open lots have been attributed to generating crime, drug dealing, prostitution, and other illegal practices (Lyman, 2008). Converting these spaces to gardens decreases crime while providing a useful space for the community. These gardens also increase safety outside the immediate confines of the converted lot: "gardens serve as a neighborhood place to resolve conflicts, organize community members, and increase community capacity to address local tensions and concerns" (Teig et al, 2009).

In addition to simply addressing crime, the creation of urban gardens has many additional social benefits. These new community spaces can be used for relationship building, conflict mediation, and a space for common problems in the community to be solved (Glover et al., 2005). Mutual reciprocity in the garden introduces mutual reciprocity outside the garden. Tranel and Handlin (2006) point out that "Community development…is not a 'trickle down' strategy in expensive 'bricks and mortar' projects but a direct investment in neighborhoods, and the investment is as much in the development of the residents as it is in the physical improvements" (164-165). Community food growing initiatives invite reclusive community members to join

community efforts and work towards mutual goals (Myers, 1998). Cities have even created a new form of community pride around urban agriculture (Rishbeth, 2004). In Los Angeles, household ownership rates around gardens increased as residents enjoyed the increased sense of community (Irazabal and Punja, 2009). Urban farmers and gardeners gain a sense of accomplishment in growing their own food (Jamison, 1985). These are all significant, immeasurable qualities that gardens introduce into communities.

Community farms provide educational opportunities for children and adults alike. Mayer-Smith et al. (2007) point out that eating is an environmental act; thus, farming can provide a base for fostering environmental education. In their studies, children developed more ecocentric views after participating in a community garden. Lawson (2005) emphasizes "the tangible nature of gardening allows participants to see the rewards of one's labor, the benefits of teamwork, and the importance of commitment and practice" (8). In Northern California, schools have been integrating fresh farm produce, including some produce that the children help grow on school grounds. Not only do farm to school programs foster consumption of local healthy food, but they also support local farmers and producers. This has had many positive results, including increased cafeteria attendance, consumption of fruits and vegetables, and farmer income (Joshi and Beery, 2007).

These increases in education also have significant health benefits. Community agriculture increases awareness and disseminates principles of eating healthy, locally produced foods (Alaimo et al., 2008). Many community farms offer classes and workshops that emphasize the benefits of eating and preparing more nutritious food. In addition, Alaimo et al. found a direct increase in food and vegetable intake among the participants of community gardens in Michigan. Their study shows that marginalized communities are not always able to pay for

nutritious foods; therefore, community farms address this problem by increasing neighborhood access to nutritious food that individuals would otherwise not be able to afford. When farms sell their produce at market stands, government-sponsored food assistance programs also play a significant role to make this produce accessible for disadvantaged citizens (Macius, 2008).

Finally, urban and community gardens can have very tangible benefits that exist outside of food production. Gardens reintroduce nature into the city (Lawson, 2005). Converting an empty lot to a verdant green space increases the aesthetic appeal of an area (Francis, Cashdan, and Paxson, 1984; Hobden, Laughton, and Morgan, 2004). In their 2006 study, Tranel and Handlin saw that the length of home ownership increased in areas with community gardens, demonstrating that the garden acts as an incentive for people to stay in one place. There are also studies showing that the introduction of a community garden increases property values in an area (Bolitzer and Netusil, 2000; Crompton 2001; Espey and Owusu-Edusei, 2001). Voicu and Been (2008) state that due to heightened property values, the following rise in property taxes produces income that easily covers an initial garden investment. In their study of Bronx gardens, each garden generated about $512,000 in tax benefits over a 20-year period. While this does increase tax burdens for homeowners, the benefits from the farm far outweigh these additional costs.

While community gardens can result in many significant benefits to an area, both tangible and immeasurable, these gardens have limitations. Bellos and Hamm (2001) discuss the limitations of thinking about "local food;" in fact, they use the terms *more* local and *more* global because "local has no universal meaning or reference" (272). Growing food locally does not necessarily mean that it will reach the people that need it most. Lawson (2005) notes that community gardens are more likely to fail when the community is not involved in the creation process, since the community is ultimately responsible for sustaining the farm. Thus, as Macius

points out “garnering the support of those most negatively affected by inequality is essential to the vitality and durability of movements seeking progressive social change” (1,099).

The current demand for affordable, local produce is much higher than the availability of land and funding can support. Community farms are powerful tools that can be used to fight food insecurity but these gardens alone cannot solve hunger. With these limitations in mind, we are hoping to present evidence that a community farm does have the potential to help the community, particularly in terms of increasing food security. The creation of a community farm could work towards solving a trend of food insecurity in Lewiston-Auburn.

METHODS

To gain an understanding of community farm projects across the nation, we employed both quantitative and qualitative approaches with the goal of answering the question "what makes an effective community farm?" There were two main components involved in our research. First, we conducted an internet-based search designed to highlight trends of community farms across the nation. Farms were selected only if they demonstrated characteristics transferable and beneficial to the Lewiston-Auburn community. Second, we interviewed five farms from our broad internet search that demonstrated particularly strong community programs. We conducted these interviews with a founder or employee from each of the five farms in an effort to highlight notable aspects of community farms that could be implemented in Lewiston-Auburn.

Spreadsheet

To gain an understanding of community farm trends, we conducted web-based research of farms across the country. We selected spreadsheet column headings that displayed the demographic setting of the farm's community (e.g. city population density and city percent of population below the poverty line), and basic farm characteristics (e.g. farm acreage, cultivation strategy, and management structure), as well as characteristics particular to a community farm model (e.g. education and entrepreneurial programs). We made sure to document contact information for each farm so the spreadsheet can continue to be a valuable resource to community stakeholders working on developing a community farm in Lewiston-Auburn. For a full listing of column headings and their corresponding definitions refer to Appendix A.

In order to determine which farms would appear in our research, a keyword search was conducted using Google. We searched for farms by state, using the phrases "community farm," "urban farm," and "food insecurity" and examining the first 30 results. We then used a the nonprofit website, Local Harvest, to find additional community farms by state.

Each farm found through the aforementioned research method was run through a set of criteria, which were assigned predetermined point values. A farm received points for the following characteristics: being located in a city or town with demographics similar to that of the Lewiston-Auburn area, sharing a similar climate to that of Lewiston-Auburn, and displaying environmental sustainability efforts, educational components, or entrepreneurial aspects on their website. Point assignments were weighted based on their importance to our study. The demonstration of environmental efforts, educational programs, and entrepreneurial programs were weighted more than specific demographic information. The full web search and point assignment protocol is included in Appendix B.

In order to evaluate the climate of the surveyed farms in comparison to Lewiston Auburn, we used the USDA Hardiness Zone Map. The map "…divides North America into 11 separate zones; each zone is 10°F warmer (or colder) in an average winter than the adjacent zone." (USDA website). Higher zone values correspond with higher average temperatures. We included farms in zones 4-10.

To include only the most salient farms, the point-based system was essential; however, it is important to note that the figures and results are limited to this system. Therefore, many of the figures are not representative of all existing community farms; they are only representative of the community farms found in this study.

Interviews

Quantitative web based research was supplemented with in-depth qualitative research on five farms selected from the spreadsheet. The interview questions were written to address a range of important aspects about the individual farms and about the role of these farms within their community.

Before beginning the interviewing process, this project was approved by the Bates College Internal Review Board (IRB) and our questions were piloted in an interview with Rippling Waters Farm of Steep Falls, Maine. A copy of the IRB forms and the interview schedule is included in appendix C and D, respectively.

The interviews were semi-structured to accommodate both the questions that we felt were essential and also to allow the interviewee to address concepts and ideas that he or she felt were noteworthy. Our interview schedule included eighteen questions and a number of probing questions. If requested, interviewees received a copy of the questions before being interviewed. All of interviews were conducted over the phone in pairs. Each interview took on average an hour; however, depending on the duration of each response, some of the interviews were longer or shorter.

The consent form was read aloud at the beginning of each phone interview. Interviews were audio-recorded with consent. Interviews were recorded using ProTools in a sound booth in Pettigrew Hall on the Bates College campus. All interviews were recorded onto a CD and transcribed.

Coding the Interviews

All interviews were transcribed and color-coded based on common themes and patterns. The selected themes were mutually exclusive, diverse and exhaustive. Relevant interview passages were summarized for each farm based on the selected categories: motivations for starting the farm, farming methods, community participation, successfulness of the farm, financial aspects of the farm, how the farm addresses food insecurity and management and employment structure of the farm. Each of these categories included subcategories, which allowed us to touch upon the diverse aspects of each grouping.

RESULTS

Using the Internet search method described above, we compiled a list of over 150 farms and evaluated information on each farm's geographic location and climate, surrounding community demographics, date of foundation, cultivation practices, programs, and infrastructure.

Internet Search Trends

Of the 157 farms surveyed using our search method, the Northeast region of the United States (regions defined by The United States Census Bureau) emerged as having the highest density of community farms with 51 farms (Figure 1). There were 40 community farms in the South, 41 community farms in the West, and there were 17 farms in the Midwest region of the United States.

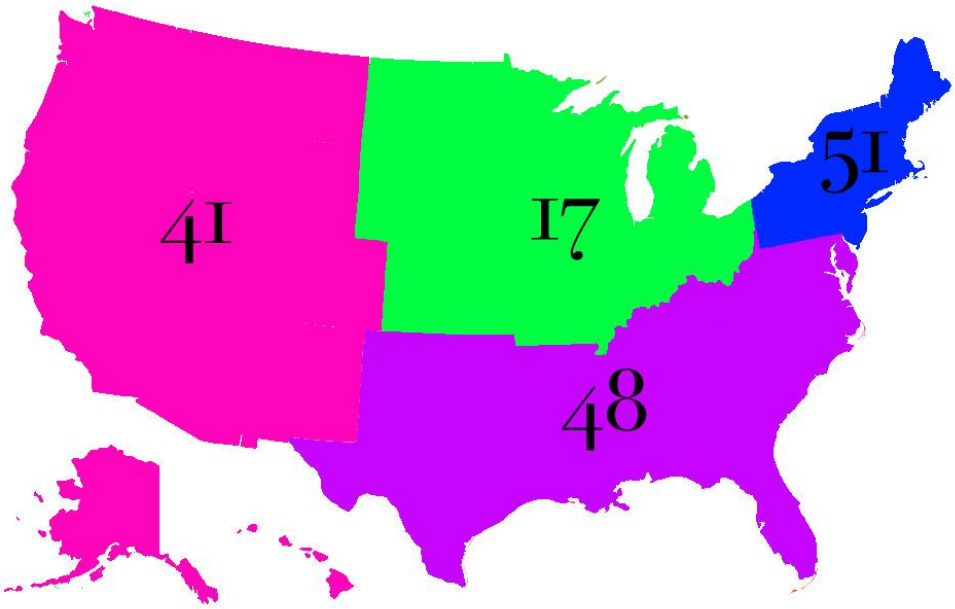

Figure 1. Number of community farms in U.S. regions as found using our Internet-search method

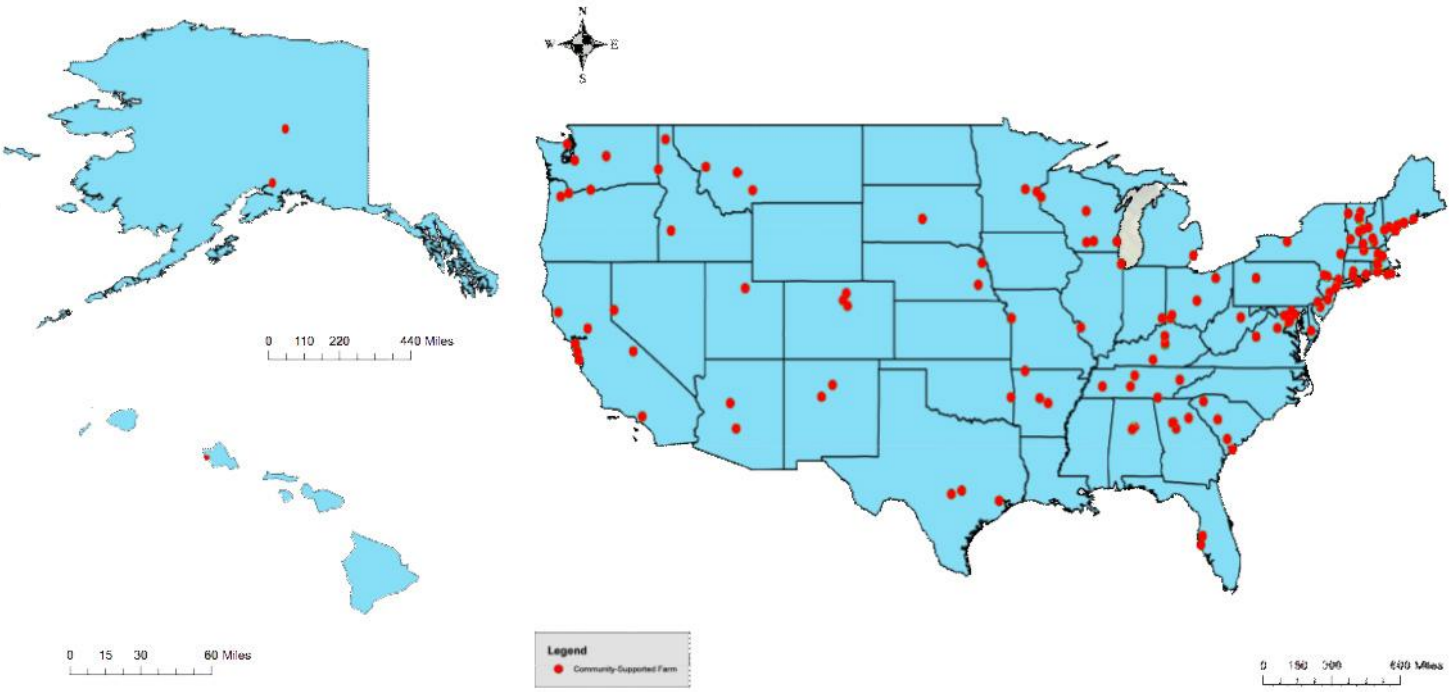

Figure 2. Distribution of community farms in the U.S. as found using the Internet search method

More specifically, community farms were found across the continental United States as well as in Hawaii and Alaska, but again a high distribution of farms were located in the Northeast. The Internet search method resulted in at least one farm in almost every state (Figure 2). There were, however, seven states from which our Internet search method did not locate any community farms. These states were Wyoming, North Dakota, Kansas, Louisiana, Mississippi, Iowa, and North Carolina. Considering the distribution of farms within different climates, we found that 54 of the farms were located in hardiness zone 6 (using hardiness zones as defined by the USDA), whereas there were few farms located in zones 9 and 10 (Figure 3).

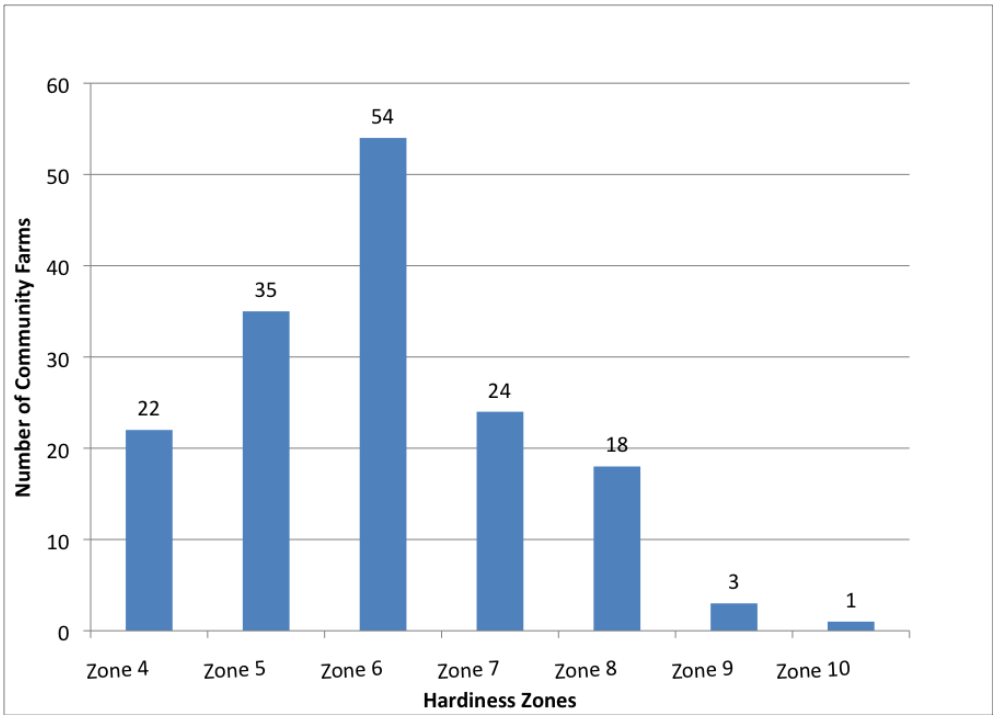

Figure 3. Distribution of U.S. community farms by hardiness zone

A large proportion of the farms surveyed were located in towns with 12% and 20% of the population below the national poverty line (Figure 4).

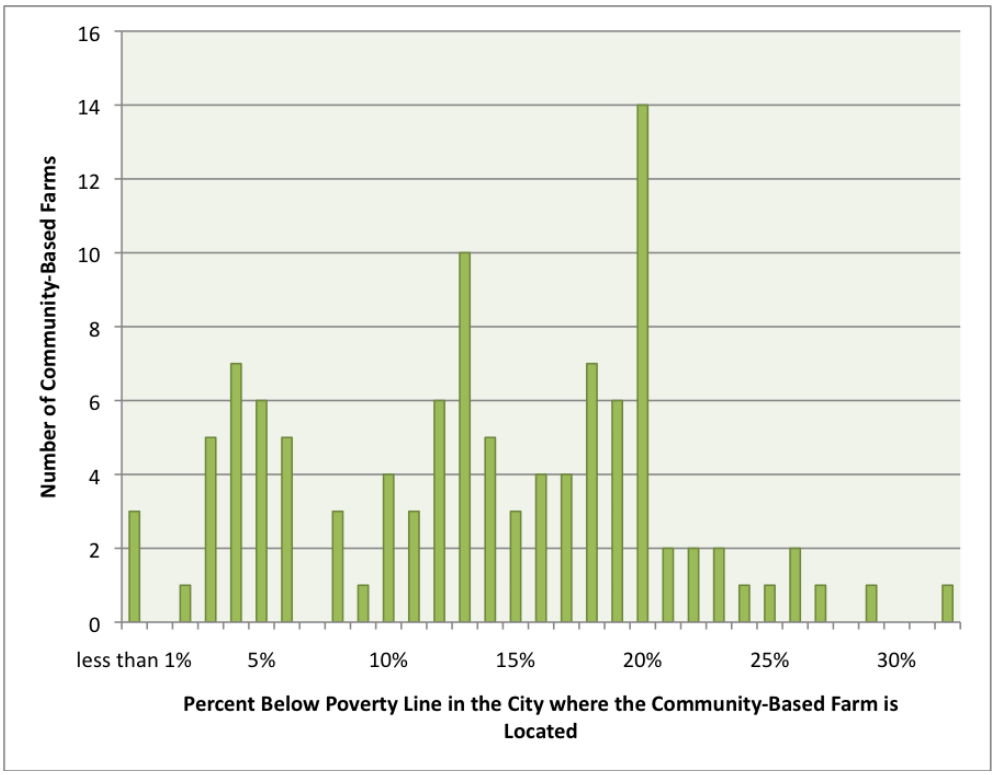

Figure 4: Community farms in the U.S. and the poverty levels of the surrounding community according to 2000 census.

Interview Themes

Interviews were conducted with five farms selected from the spreadsheet that demonstrated particularly strong community programs and educational components. The selected farms were Rippling Water Organic Farm located in Steep Falls, ME, Earthworks Urban Farm in Detroit, MI, Growing Power, Inc. based in Milwaukee, WI, Red Wiggler Community Farm in Clarksburg, MD, and Delaney Community Farm of Denver Urban Gardens in Denver, CO.

Certain overarching themes emerged from the interviews. All interviewees commented on the logistics of their farm including a discussion of funding (Table 1), management and employment structures (Table 2), and farming methods (Table 3). All of the interviewees also discussed broader issues including the how to define and achieve success (Table 4), the motivations for the farm (Table 5), and their farm's involvement in food insecurity issues (Table 6). Additionally, the topic of community participation was emphasized in many of our interview (Table 7). Within each of these general topics similarities and differences emerged across the five represented farms.

Table 1. Funding

	Rippling Water Organic Farm	**Earthworks Urban Farm**	**Growing Power, Inc**	**Red Wiggler Community Farm**	**Denver Urban Gardens**
Original funding	- USDA 3 year grant	- Funding secured from pre-existing soup kitchen	- Self-generated as small, private farm	- 50% from donation - 50% self-generated	-Scientific Cultural Facilities District (SCFD), CSA memberships, and more

Current Funding	- Grants - Fundraising - Donations - Employed supported by Americore	- Largely from soup kitchen, but working to become more self-sufficient -$25,000 self-generated from sales of produce (hope to double this) - Researching possible grants	-50% self-generated - 50% grants and donations	-17% generated through CSA program, farmers market, whole-sale - 83% fundraised	- CSA membership - City and corporate grants - Donations - Colorado Health Foundation - Livewell - and more

Table 2. Management and Employment Structures

	Rippling Water Organic Farm	**Earthworks Urban Farm**	**Growing Power, Inc**	**Red Wiggler Community Farm**	**Denver Urban Gardens**
Manage-ment Structure	- Executive director - Farm manager	- Program director - Numerous volunteers - Community partners	- Founder - CEO - Board of Directors - Paid staff - Volunteers	- Volunteer Board of Directors - Executive - Director - Farm - Manager - Volunteer Coordinator - Operation Manager	- Operations coordinator - 3 farm interns - one program and outreach intern - CSA community members
Decision-making process	-Executive director, farm manager and farm staff	-program director/farm manager makes most of the decisions; however, there is a consensus amongst staff a community members	Meetings open to the community (all staff members attend)	-Staff work closely with "growers" and executive manager makes decisions based on observation	
Seasonal jobs	-Most jobs seasonal (difficult because requires so much training and retraining)	- year-around and seasonal positions	- Takes pride in offering year-around employment	- year around and seasonal positions	- Internships are seasonal - High positions are year-around

Table 3. Farming Methods

	Rippling Water Organic Farm	**Earthworks Urban Farm**	**Growing Power, Inc**	**Red Wiggler Community Farm**	**Denver Urban Gardens**
Climate and Physical limitations/ adaptations	- Use of greenhouses and hoop houses - Crop selection is chosen based on community demands and profitability	- Emphasis on soil restructuring and composting (poor city soil quality) - Row-covers - Greenhouses	- Vertical systems to maximize productivity on smaller areas - Hoop houses and greenhouses heated by chicken body heat	- Grows plants that can adapt to difficult soils - Root cellar - Fabric coverings - Extended season on south-facing slopes - Greenhouse being built	- Don't grow in the off-season: no available water or electricity - Do have a greenhouse
Other (eg hydroponic, organic)	Organic methods	Sustainable agricultural practices, passive solar houses	Vertical systems, aquaponics, nutrient cycling, rainwater collection, anaerobic digester	Organic methods	Organic methods

Table 5. Motivations for the Farm

	Rippling Water Organic Farm	Earthworks Urban Farm	Growing Power, Inc	Red Wiggler Community Farm	Denver Urban Gardens
Overall Purpose	- Developing a sustainable and locally supported agricultural system	- Has a focus on health and food justice - Aim of closing nutrient loops, maintaining community connections, and breaking dependency on soup kitchens	- Education with a youth focus - Meeting community food demands in the most efficient way possible	- Employing disabled people - service learning education - improved food distribution	- Providing access to healthy, organic, high-quality foods to people of all socio-economic backgrounds
Change of purpose over time	- Became a non-profit to better meet goals	- Ownership shifted from the soup kitchen to the community	- Became a non-profit	- Became a non-profit	- More emphasis on outreach to in-need individuals

Table 6. Involvement with Issues of Food Insecurity

	Rippling Water Organic Farm	Earthworks Urban Farm	Growing Power, Inc	Red Wiggler Community Farm	Denver Urban Gardens
Approaches to addressing food insecurity	- Saco Valley Food Connection (educational and working experience program for schools) - Donate food to eight local food pantries - Volunteer at food pantries	- Affiliated with soup kitchen (partnership) - Works with low income communities to provide healthy produce	- Retail Stores - Partnered with organization to make affordable produce - Eat Smart Program	- Provides a limited number of job opportunities to a very vulnerable population - Distributes food to 150 low-income disabled people	- Has program with Federal funded program for women, infants, and children (WIC) - Community share and money goes to many different organizations such as the cholera-aids project.

Table 7. Community Participation

	Rippling Water Organic Farm	Earthworks Urban Farm	Growing Power, Inc	Red Wiggler Community Farm	Denver Urban Gardens
Educational components	- Working to create a garden with "parent and teacher and community support" - Teaches students at the elementary, middle, and high school level. - Hosts a high school internship program - Willing to educate any community member	- Holds various workshops on nutrition, gardening practices, soil preparation, etc. - Modifies programs depending on age - Emphasis on young adult and adult workshops teach marketing, budgeting, and entrepreneurship skills	- Hosts paid internships - Educational tours of the farm (farm practices a number of alternative techniques) - Information provided along with produce for their farm-to-school and market basket program.	- Hosts service-learning internships, which engages students on how Red Wiggler is part of the community - Collaborates with schools and non-profits in the community	- Hosts trainings on various agricultural techniques including composting, honey harvesting, tea-making, etc. - All trainings are open to the public (there is a suggested donation) and are led by experts from the community
Meeting Community Demands	- Producing crops to meet community requests - Searching for meaningful niche in community	- Distances itself from "if you build it they will come" philosophy as it wants full community participation. - Established a small market as well as a mobile food mart to sell food throughout the Detroit community - Tries to produce food often requested by African American communities	- Provides technical assistance to community members with interest in growing their own food. - Sometimes sells requested produce at market even if it's not grown locally and needs to be shipped in	- Sells produce at group homes (for the mentally disabled or senior homes) - Grows crops depending on shifting community needs - Selects crops that 'growers' will have to ability to handle	- There is a significant Somali population in Denver – DUG works with them to reintegrate farming practices into their lifestyle -CSAs keep residents actively engaged in the farm, where they learn the realities and limitations of local gardening.
Advertising strategies	- Struggles with publicity – not many community members attend workshop - Relies on newspaper articles, website, word of mouth, press releases, and fundraisers.	- Works to cultivate personal relationships with community members through door-to-door campaigns, flyers, and hosting BBQs. - Marketing through pronounced logo and color scheme on all products. - Press releases	- Word-of-mouth - Press releases - Online networking - Hosts community events for MLK day, Earth week, and Obama day of service.	- Relies mostly on word of mouth - Articles in local paper - Uses blog and facebook - Newsletter - Farm tours	- Relies mostly on word of mouth - Quarterly newsletter which goes out to over 6,000 people. - Does not pay much attention to advertising but there's a waiting list for the CSA.

DISCUSSION

Over the course of this study, it became apparent that there is strong ideological support for the shift to more localized food systems such as community farms. As Patrick Crouch, the program manager of Earthworks Urban Farm in Detroit, MI stated:

> I think that part of it is that we as a culture, as a people, we are so integrally connected to the land, and you can only push us so hard. You can only placate us with so many iPhones and Nintendo Wiis before we feel as though we've been pushed so hard that we feel the need to have the pendulum swing back.

This support for local and community food has gained momentum due to a variety of factors. For example, influential writers like Michael Pollan and Rachel Carson have put forth very persuasive critiques of industrialized agriculture systems. The current health care crisis has also increased discussions about the health repercussions of the processed foods we are eating and their ties to problems such as obesity and diabetes; Woody Woodruff, the founder and executive director of Red Wiggler Community Farm in Clarksburg, MD, stated, "people realize that eating well is a form of healthcare…it is preventative maintenance." These are a few of the factors that have led to this shift away from industrialized food towards a renewed interest in local eating. As Woodruff remarks, "It's no longer just hippies and intellectuals…you can buy organic stuff at Wal-Mart."

Woodruff recommended measuring success and effectiveness using a triple-bottom-line approach.

> Our triple-bottom-line is social, economic and environmental. If you are doing just social services and you're not thinking about the economy and the environment then I don't believe that that's a viable sustainable

> undertaking…I think out future in this country really is about making sure that we serve those three things.

The triple-bottom-line provides a framework in which we can answer the question "What makes an effective community farm?" Thus we divided our discussion into three broad categories: (1) Community Involvement, (2) Budget and Management, and (3) Production and the Environment. We concluded each section with summarized recommendations.

Community Involvement

While community farms grow food for their constituents, they also cultivate bonds: people-to-land, people-to-food, farmer-to-consumer, and neighbor-to-neighbor. Crouch describes a typical neighborhood: "you start talking to kids on the same street and none of them go to the same school, and none of them go to the same church…there's no community spaces, essentially." These farms help establish new community spaces where individuals can work together towards a productive goal. Sarah Christman, the Milwaukee Operations Manager for Growing Power, Inc. in Milwaukee, WI, describes "…this farm provides an opportunity to network and build social relationships. Through their mutual connections to the land, people connect to each other."

These farms have arisen out of increased community needs and demands for local and healthy foods. While multiple farmers pointed out that governmental policy changes are necessary to completely restructure our current food system, many small but significant changes can occur on a grassroots level. As Laura J. Lawson states in her book, *City Bountiful: A Century of Community Gardening in America:* "garden programs serve to further a vision of what *should be* in times when society is unclear about where the future is headed" (289). In order for these farms to meet community needs, members must be very supportive of the farm.

In fact, all of our interviewees responded that high levels of community participation and enthusiasm were some of the most important indicators of success on a community farm.

While these farms provide for their communities, they inversely require community support in order to thrive. Heather DeLong—the Farm Program and Outreach Coordinator for Delaney Farm, organized by Denver Urban Gardens (DUG)—found that community relations grow as the farm becomes more established: "Over time, you find people that are willing to do whatever it takes to make sure that their farm is doing well and has what it needs, and you have a group of people that really, really care about their farm and their farmers." She noted that one of the hardest parts of creating a community farm is establishing these relationships.

The initial creation of a farm seems to be one of the biggest challenges. In general, newer farms have more trouble with publicity, finances, and support than older, more established farms. Through our research, it also became very apparent that community members must be included in the development process. Farms that began with centralized development that "handed over" responsibilities and management to the community at a later time had more trouble encouraging participation than farms that involved community members from the creation. Involving local participants in the creation of the farm gives these people a better understanding of the farm's operations, builds a shared sense of responsibility, and provides an opportunity to teach and unite people around a common cause. As Crouch pointed out, the phrase 'If you build it, they will come' is a terrible principle for community engagement because you cannot engage the community in a project without including them from the beginning.

Community farms are unique in that they are designed to support a variety of individuals. However, our survey also included a few farms that chose to emphasize certain themes or people: immigrants, youth, women, people with disabilities, obesity, and the homeless were just

a few. Many farms were associated with other organizations; for example, six of the farms surveyed were either owned by or in partnerships with higher-learning institutions, and many more worked with k-12 schools.

Citizen engagement is supported and encouraged in a variety of ways, as discussed below in the *Programs* and *Publicity* sections. Each farm has a unique set of reasons for supporting the community: Earthworks Farm, for example, was created by the Capuchin Soup Kitchen in Detroit because there were concerns that people were becoming too dependent on their resources. Further, all of these farms must consider whom they want to include on the farm. Community Supported Agriculture (CSA) programs are very popular. People purchase shares in the farm and the season's harvest is split among all the shareholders. However, CSA memberships can be expensive, and most of the farms we examined also tried to cater to food insecure populations. Phil Jellen, the Community Gardens and Volunteer Coordinator for Rippling Waters Farm in Steep Falls, Maine, discussed how many people believe that local and organic foods are elitist and overpriced. He answered that one of the primary objectives of Rippling Waters Farm is "to change that around…nutritious, healthy organic fresh food should be available to everyone, regardless of income." In this sense, farms not only provide more food, they can also provide healthier food.

Many of the participants at these farms are people who live below the poverty line and are not able to pay basic expenses or CSA fees to support the farm. They face other large obstacles to participation such as time and transportation constraints. Families that are struggling to make ends meet often work long hours and do not have the time to commit to gardening. Preparing meals with fresh produce generally requires more time than meals using processed foods, and time is very limited for many of these families. Women are particularly affected

when local foods are introduced into the kitchen, since they are traditionally the ones that do the majority of household cooking (Allen & Hinrichs 2007).

Community farms must also address access limitations. Commuting to farms can be time-consuming and expensive. Some farms offer reimbursement for travel costs by issuing gas cards and bus passes. Others use a different approach: decentralized farming, where many plots are spread out throughout a community. Denver Urban Gardens, for example, has over 90 gardens spread throughout the metropolitan Denver area, and the Community Gardens Project has over 150 gardens in Atlanta. By having many gardens spread over the community, more people are able to access the farm.

It is important to recognize that certain groups are marginalized in terms of food access. Community farms try to create healthier communities, but as Crouch declared, "you cannot have a food system that is just without a world that is just." If farms hope to include poorer members, they often must take extra steps to help these people overcome challenges to their participation. DeLong encourages having a community outreach coordinator that can help address many of these needs.

At Delaney Community Farm, having an outreach coordinator helped the farm respond to changing community needs. Denver has a growing Somali immigrant population, which is particularly relevant to this study because Lewiston-Auburn has a large Somali population, too. Ideally these farms will be able to accommodate the unique opportunities and challenges of having a diverse community. A few Somali residents approached Delaney Farm about working with them, and Delaney Farm responded by developing a refugee farming program to help these immigrants. The farm offered additional trainings, ranging from farming methods to ESL classes. These refugees worked with farms, markets, and restaurants and conducted transactions

in order to practice their language abilities and marketing skills. They also were allowed to help out on the farm in exchange for vegetables to take home.

Programs like this one are only possible with strong staff members: many of these farms have been effective thanks in part to their leadership. The value of employee enthusiasm cannot be overstated. Christman highlighted the excitement at Growing Power, Inc.:

> Most people here are deeply passionate about food, whether eating, cooking, growing, or composting. It is a real common bond between staff, volunteers, interns, workshop participants, and tour groups. Most people are coming here for some love of food or food production.

This passion is important because working on a community farm is no easy task. Many problems require creative solutions: for example, in New York, community gardeners reduced theft and vandalism by reaching out to offenders and offering them positions and opportunities on the farm (Lawson, 2005). Adapting to dynamic community needs is also important. Delaney Farm responded to an influx of Somali immigrants by creating a very successful refugee farming program.

Including community input into decision-making processes also helps the farm effectively meet people's needs. When asked how to create a community farm, Crouch responded, "All I have to do to learn how to garden is to start doing it and I have twelve people come up and tell me how I'm doing it wrong, you know? So there's plenty of folks that have knowledge that want to share it." Individuals bring unique knowledge and skills to the farm, and these resources should not be underestimated. Most of the farms in this study were centrally managed, and decisions were ultimately made from administration, with varying levels of community input. These farms usually had meetings that were open to community participation and often sought out community opinions before making decisions. Decentralized farms and community-owned farms were often even more democratic, with shared ownership and

responsibilities. For larger operations, however, some sort of centralized structure appears to be necessary to oversee various matters such as budget and outreach. However, management structures do not imply that all the power lies within these individuals. Woodruff pointed out that at Red Wiggler, "There's no hierarchy on the farm: one thing cannot happen without the other," recognizing the interdependence of relations and people on the farm.

Recommendations:

- **Involve community members in the creation of the farm**
- **Help individuals overcome time and transportation constraints, particularly in marginalized communities**
- **Be prepared to adapt to dynamic community needs**
- **Incorporate diverse community input**
- **Create centralized management structures to address budget and outreach**

Programs

One of the most important ways that community farms serve people is through programming. The farms we interviewed all had a large number of programs that pertained to a variety of individuals. Educational programs were among the most common forms of community outreach.

Farm-to-school initiatives were very popular among the farms in this study. At Rippling Waters Organic Farm, growers and children interact in many different ways. This farm has helped introduce gardens and greenhouses to local elementary and middle schools. Schoolchildren help raise the produce while learning about environmental stewardship and nutrition. Teachers at these participating schools are trained so they can introduce the project into other subjects, such as science and history. The food goes to the classrooms, the cafeteria, and to other school venues: one plot was used as a "pizza garden," where children grew toppings

for a pizza party at the end of the season. In addition to providing much-needed produce in local schools, these farms help students develop gardening skills and social skills.

There are many other opportunities for youth-learning at the farm site itself. Growing Power, Inc. uses advanced farming technologies that they construct with help from young adults. This hones math and science skills. Most of the farms support field trips from schools, and at least six of the farms from our web-based research operated a summer camp. In addition, almost all of the farms encouraged participation of all ages in their farming and harvesting activities.

There are also a number of programs for teenagers on these farms. Many of them offer internships that help high school students learn farming principles along with valuable marketing skills. Others have farm stands that are run by young adults who then share in the profits, which gives them an opportunity to improve communication and job skills while earning wages to take home. Teenagers are also encouraged to volunteer on the farm.

While almost all of the farms had some sort of youth educational programs, adult programs were also very common among the community farms in this study. There are many different opportunities to get involved, but workshops seemed to be by far the most popular. The range of topics covered in these workshops varied greatly and pertain to a wide range of individuals.

Some of the workshops focused on nutrition and the necessity of healthy eating. Others focused on how to prepare meals using fresh produce or how to can and preserve fruits and vegetables. Many were related to farming itself, and they often encouraged participants to create gardens at home by offering workshops focused on composting, water-harvesting, soil preparation, transplanting, and other farming practices. There were also many creative and original classes, such as “luscious lavender,” sun teas, traditional herbal medicine, bee-keeping

and honey-harvesting (Delaney Farm), paper-making, crop budgeting, and seed extension (Earthworks), "Growing Your Community Food System 'From the Ground Up'" (Growing Power, Inc.), how to brew your own beer, how to make ginger ale, garlic planting, and square foot gardening (Rippling Waters Organic Farm). Most of these workshops were taught by community experts and were open to people of all ages and backgrounds: DeLong noted that Delaney Farm has had 4 year-old participants and 70 year-old participants. The size of these workshops ranged from less than 10 to almost 50 people in particularly popular programs.

These workshops often provide people with skills they need not only to participate in farming, but also to actually start their own gardens. This corresponds with a growing "victory garden" movement, where people are encouraged to plant their own food, thus becoming more food secure, self-reliant, and energy efficient. In addition to offering workshops, community farms often offer support for these personal gardens by providing compost, seed transplants, and other necessities for starting a garden. City Slicker Farms in West Oakland, CA., has a particularly successful "Backyard Garden" program. This initiative offers technical assistance and start-up resources to community members that are interested in starting a garden, putting particular emphasis on meeting the needs of low-income minorities. These individuals are taught how to sustain their garden with the expectation that they will then share the knowledge and any extra produce with neighbors. In 2008 alone, City Slicker Farms built 31 new gardens, and Backyard Gardens grew an estimated 15,608 pounds of produce (City Slicker Farms annual report, 2008).

"Plant a Row for the Hungry" is another initiative that started in Atlanta and has since developed into a national movement. This program encourages home gardeners to donate a portion of their extra produce to EFPs. These programs are very important but harder to evaluate

because while a community farm can help people start these gardens, their successes and impacts cannot be measured on the farm itself.

There are a variety of other ways that farms can encourage and include community members. The Homeless Garden Project in Santa Cruz, CA works with a local food bank and has a full kitchen on site where they offer meals for volunteers. In fact, many of the farms have potlucks and large banquets after volunteer days and workshops. Earthworks Urban Farm hosts monthly potlucks where people cook together and have meaningful interactions. However, while food insecurity is a very serious issue, farming does not have to be all about business and work. Gardening can be recreational and fun, and farms often encourage community involvement by hosting entertaining events such as concerts, speakers, and panel discussions.

These levels of enthusiasm are necessary because farms require very large time and energy inputs. The central management staff at these farms is rarely capable of sustaining the farm and its needs without community help. Volunteers play a very important part in this process.

Volunteering at a farm has a service-learning component. Woodruff stated, "it is hard to talk about working on a farm without talking about education." Some farms offer paid positions that serve as transitional employment and emphasize job training for poorer community members, young adults, and other populations that are more likely to have trouble entering the job market. While some farms hire these growers and harvesters, many others reciprocate work with produce and meals. Sometimes CSA members are also required to contribute: shareholders at Delaney Community Farm are expected to fulfill monthly volunteer hours in addition to the cost of their share. According to DeLong, this is a great way to encourage interactions on the

land where their food comes from. This human-food-land connection differentiates community farms from most agriculture systems that exist today.

Recommendations:

- **Strong school programs should be integrated into the curriculum**
- **Youth programs should be interactive**
- **Offer a variety of workshops that pertain to diverse needs**
- **Offer food-based social gatherings after volunteer days and workshops**
- **Offer other recreational events**

Publicity

This report repeatedly emphasizes the importance of community on a community farm. However, there has to be some mechanism to bring people to the farm. This is where publicity becomes important. Some farms struggle with the issue of marketing more than others, but definite trends emerged as to how to successfully gather support and attention from the community. Problems with community awareness emerged as one of the largest impediments to participation.

One of the most essential forms of spreading awareness was also one of the most basic: through word of mouth. In these cases, information is disseminated person to person through social networks. Farms that were established for longer periods of time spent less time focusing on publicity measures because their social networks were so strong that information spread independently. This is one of the reasons why creating lasting relations with community members is so important, especially early in the creation of the farm.

Another important form of publicity is a website. This was particularly important for this research project, since we did our initial farm analysis using Internet resources and websites. Websites are accessible to anyone with a computer and they reach an audience outside the

community. In many ways, having a website is just as necessary as being in the phone book in order to be recognized as legitimate. There are also a variety of local databases of community farms and CSAs, (www.localharvest.org is a particularly good one) and whenever possible, these are important to join as they connect potential supporters and shareholders. Websites can be used to advertise upcoming events, educate and inform members, and spread general useful information. Other internet sources are also gaining popularity and momentum: Red Wiggler Community Farm has accounts on both Facebook and Twitter to reach a broader and younger audience.

The media is also a great resource for connecting with the community. Press releases require small amounts of time and energy, are virtually free, and can reach many people. However, some farms found them to be less effective than other methods. Jellen of Rippling Waters noted that in addition to word of mouth, personal invitations were more effective than press releases. Unfortunately, Rippling Waters is still struggling with marketing in the surrounding area. In fact, Jellen stated "I think we have a large problem with publicity and marketing in the fact that we're largely anonymous in our community." This has resulted in small turnouts for many of the workshops and less participation than is desired. Having other programs and partnerships (e.g. with schools) helps to spread awareness, but currently the farm is still experimenting with ways to publicize.

Newsletters are another way to spread information and maintain strong social networks. Delaney Community Farm sends out over 6,000 quarterly newsletters. These are good opportunities to inform shareholders and community members about special events, volunteer opportunities, workshops, and even recipes.

Lastly, hosting entertainment events and activities are important to encourage community members to visit the farm. This includes concerts, performances, and speakers. Having potlucks and community cookouts are also wonderful means of bringing people to the farm, particularly when community members are food insecure. As Crouch stated, "It wafts pretty far, fortunately." Hosting fun events is a great incentive to bring people to the farm, where relations can form and information can be shared. Fund-raising events are similarly helpful; as Jellen pointed out, "fund-raising is as much about raising awareness as raising funds."

Lastly, Crouch recommended having a logo or some type of visual brand. This helps make the farm memorable and unique. If it is placed on other products (t-shirts, for example), it also continues circulating the name and idea of the farm.

Recommendations:

- **Establish strong community networks to disseminate information**
- **Use a wide variety of publicity methods such as**
    - **Website**
    - **Press Releases**
    - **Newsletters**
    - **Networking Sites (e.g. Facebook and Twitter)**
    - **Host events**
- **Create a farm logo**

Sources of Income

Although there are many overall trends, each farm has different methods of financially supporting themselves. One way is through grants. Rippling Waters Organic Farm started as a for profit farm, but decided to become a nonprofit. They did this with the support of the three-year U.S. Department of Agriculture's (USDA) Community Food Projects Competitive Grant. This grant has existed since 1996 and provides money for programs that are fighting food insecurity with community food projects. The grant is offered only once to a farm and can range

from $10,000 to $300,000. Phil Jellen of Rippling Waters Organic Farm explains that the USDA grant is an effective way to start a nonprofit farm, but the farm must establish a long-term financial plan to prepare for the years after the grant expires. Jellen states:

> I think one of the leading causes to turn nonprofit was this 3-year grant that they got from the USDA. That was a 3-year grant enabling them to hire Americorp people, to start community gardens, to create this food connection core program, so that was a huge thing. That was in 2006, so this was that last year for it….We are trying to scramble to figure out what we're doing next…

Additionally, the USDA offers many other grants for new farmers through their Beginning Farmers and Rancher Program. The grants generally last for three years and do not exceed $250,000. The goal is to help new farms build strong community relationships through local and fresh food.

Growing Power, Inc. takes advantage of many available grants such as the Ford Foundation grant, the Heifer International grant and the W.K. Kellogg grant. The Ford Foundation's goals are to reduce poverty and inequity, enhance democratic ideals, contribute to international partnerships and advance human success. These grants can range from $2,000 to as much as $3,000,000. Heifer International works with projects all over the world. Their overall goal in the United States is to work towards cultivating healthy farms, food and communities. In addition to providing grants, Heifer International offers hands-on training for new farmers. Coincidentally, Heifer International is currently working on a project called "New American Sustainable Agriculture Project," where they have partnered with recently resettled Somali Refugees and Latino migrant workers in Lewiston, Maine to plan and implement an educational immigrant farming project. Lastly, W.K. Kellogg distributes grants to organizations that improve conditions in communities for children and families.

According to Sarah Christman of Growing Power, Inc, about 50% of their income comes from grants and donations. The grants are an effective means of receiving money; however, Christman claims that grant writing can be time consuming and expensive. Delaney Urban Farm receives numerous grants from both public and private institutions including Adolph Coors Foundation and the Cedar Tree Foundation. The Adolph Coors Foundation was established in 1975 and works solely with organizations in Colorado. The foundation will only support nonprofit farms that promote self-sufficiency, leadership, and independence through community involvement. Cedar Tree Foundation is more specific to environmental and agricultural aspects. Some of the grants they offer are the Sustainable Agriculture Grant, the Environmental Health Grant and the Civic Engagement Grant. Most of the grants range from $75,000 to $100,000 for one to two years.

In addition to using grants, all of the farms we interviewed gain part of their income from selling their produce or through participating in the community supported agriculture program. Rippling Waters Organic Farm sells produce to supermarkets like Whole Foods and Hannefords, thus much of the produce they grow is dependent on the wants and needs of the supermarkets. They also sell produce in farmer's markets through their high school internship program, where students manage money and interact with costumers.

Half of Growing Power, Inc.'s budget comes from the farm's own revenue generating stream, which includes sales of their food, services and production. Earthworks Urban Farm sells their produce; however, they market their fruits and vegetables below cost to make them more affordable. They believe that by selling products that their community members can afford encourages more community involvement. Unfortunately, Earthworks Urban Farm has lost money through discounting their produce, so they are heavily dependent on donations.

Many farms start off as a CSA and have found it to be a very successful model. Red Wiggler Community Farm used to rely more heavily on farmer's markets and the CSA program, with 50% of the revenue coming from selling their produce; now only 17% of their revenue is gained through the CSA program. The CSA programs "…tend to be structured as small income-generating businesses within the organization" (Lawson, 273). According to Woody Woodruff of Red Wiggler Community Farm, the CSA program is an exceptional economic model; however he recommends that beginning farms should not depend heavily on the CSA program because it can be stressful to meet all of the demands of the program. Instead of beginning with a CSA program, he suggests that a new farm should start with a market stand, where there are no expectations and the farm can learn how much they are capable of producing in a given time. Additionally, starting with a market stand allows the farm to learn about their limitations and the cost of growing as well as providing the opportunity to form relationships with potential CSA clients. Woodruff argues that once the farm is familiar with production costs and yields, then it will be better able to start a CSA program.

Farms also depend on group and individual donations. There are many different ways of reaching out to potential donors. For example, Rippling Waters Organic Farm held a fundraiser that pertained their greenhouse.

> In the spring we had a fundraiser at Bonny Eagle Middle School to raise money for the greenhouse there and we raised about $10,000 at this dinner and silent auction…We made a little bit of money which put us in the positive for creating a greenhouse, but I think more importantly that huge push to raise money gained 3 times as much publicity for what we're doing at the schools and the greenhouse then we did raise money, and that is immeasurable.

In addition to raising money, fundraisers also strengthen the community partnerships and community involvement.

Recommendations:

- **Apply for a variety of grants**
- **Sales should be subsidized by the farm to make produce more affordable**
- **CSAs are economically viable models, but require understanding of production capacity prior to implementation**

Employment Structure

Another way of financially sustaining a farm is through implementing policies of paid labor. Each farm has relatively similar management structures, but different ways of incorporating the community's ideas. Rippling Waters Farm is primarily managed by the executive director, Richard Rudolph and the farm manager, Julie Osterwisch. They also partner with Maine Organic Farmers and Gardeners Association (MOFGA) and Americorps. MOFGA offers farm apprenticeship programs that provide training opportunities on local and organic farms. MOFGA apprentices typically exchange labor for room, board, and a stipend in addition to informal but intensive training from the farm. Americorps offers young adults the option to work with local and national nonprofit organizations with the overall goal of addressing critical community needs such as food insecurity and lack of sufficient education. Although Rudolph gives the farm its general direction, all members of the staff are in charge of making decisions. Each staff member works on different projects, so decision-making power is distributed amongst a variety of individuals.

Similarly, the executive director Woody Woodruff and the farm manager Adrienne Altstatt primarily manage Red Wiggler Community Farm with help of the Board of Directors, volunteer

coordinator and operation manager. Red Wiggler Community Farm has a unique decision-making process. Woodruff states,

> …because the growers have cognitive disabilities…we evaluate and that's our way of giving them the opportunity to offer input. We are always talking over lunch and anecdotally…the staff really becomes the consensus on decisions about the farming, but you have to trust that they are watching and observing and tracking…

Although Woodroff and Altstatt finalize the decisions, members of the community still have input in some way.

Earthworks Urban Farm is managed by the program director, Patrick Crouch with help from the community partners and numerous volunteers. Although Earthworks Urban Farm prides themselves in having many volunteers, "…there is a huge compromise between productivity and…volunteer involvement, space, and time constraints." Therefore, although Crouch deeply appreciates the time of the volunteers, he believes that having more volunteers can lower productivity. In addition, the decision making- process at Earthworks Urban Farm is beginning to change. Because Earthworks did not include the community in the founding of the farm, the staff manages the older urban gardens and the community partners manage the new gardens. This gives the community the opportunity to become more involved in the decision-making process.

In order to establish the management structure of the farm, one must consider the financial advantages and disadvantages of having seasonal jobs. Many farms pride themselves in having year round jobs because it gives employees the ability to build strong, long-lasting relationships with the community. For example, Rippling Waters Organic Farm has seasonal jobs, which require more frequent retraining and slow the progress of building relationships with the

community. Phil Jellen works at neighboring schools to get students, teachers, parents and cafeteria workers involved in managing a garden on school grounds.

> A large part of the job is to build these relationships with the teachers, with the students and with the cafeteria workers. You have to build up that trust and takes a long time to do…it is unfortunate that the farm is seasonal because what it wants to accomplish could be developed further if people stayed longer.

When employees have seasonal jobs they are often interrupted from their current projects and relationships, which then takes extra time to train and retrain new employees in the specific field**.**

Recommendations:

- **Utilize supplemental programs like the MOFGA apprenticeship program and Americorp**
- **Delegate responsibilities among staff members**
- **Involve community members in decision-making as often as possible**
- **Take into account**

PRODUCTION AND THE ENVIRONMENT

As we have discussed, community farms have goals that are far more dynamic than just growing food; however, as a farm, food production does provide the foundation. No two farms will have the same set of social and physical resources and challenges, as these factors are dependant on the location of the farm, the surrounding area's demographics, the relationship the farms holds with its community stakeholders, and the farming and business knowledge of the employees and volunteers. At times it can be a balancing act to meet the demands of the local participants while upholding environmental stewardship. Further, there are a number of physical limitations put upon every farm, which might include a limited growing space, poor soil quality, limited growing season, and nuances of manual labor.

Access to Land

Land is a clear necessity of all farms. The availability of space and the resources available on that space can pose challenges that must be overcome. Growing Power, Inc., in Milwaukee, is surrounded on all sides by an army base, a road, by housing, and by a creek, and must work within a limited footprint . To maximize the space available to them (only an acre and a half), they make use of vertical gardening systems. Vertical gardening is a technique of expanding growing space upwards rather than out. Most of Growing Power's planting is done in large pots or tray flats so that some of the plants can be moved outside for the summer and then in the colder seasons they are brought back in and can be hung up in the greenhouses on shelves and hooks. Growing Power is able to use 10 – 15 feet of growing space above the ground

throughout their greenhouses to take full advantage of the space available to them. Sarah Christman, the Milwaukee Operations Manager of Growing Power, Inc., explains that "traditional row-cropping is said to yield, on a good year, about $500 dollars an acre." However, using their vertical system, "in good succession of crops, Growing Power is growing at about $200,000 an acre."

To further enhance the limited space Growing Power, Inc. applies aquaponics. Aquaponics is a technique that uses nutrient cycling between plant and animal species. Typically, the nutrient rich wastewater from a fishery is used to fertilize plant crops. Growing Power, Inc. raises perch and tilapia in a 30,000 gallon tank. The tank is dug four-to-six feet below the ground in order to conserve space. Aquaponic methods, coupled with the vertical gardening system, have been highly successful for Growing Power; they have expanded what was a 55 gallon drum to the current 30,000 gallon fish system.

While Growing Power, Inc. found a means by which to cope with their limited footprint, farms may find that their limit to space manifests itself in other ways. Delaney Farm, operated by Denver Urban Gardens (DUG), has a vast amount of space available to them, but only on a limited time basis; their availability to land is limited temporally rather than spatially. For more than 11 years, Delaney Farm has upheld a memorandum of understanding with the Department of Parks, Recreation and Open Spaces. In most respects this is a great arrangement, as DUG is able to use the land free of charge, but it also means that they must comply with the schedule set by the Parks, Recreation, and Open Space committee. Water is shut down in mid-October and not turned on again until June, thereby limiting the farm's ability to grow. Thus, DUG has a set window of only five months with which to work, and therefore water availability is one of DUG's main limitations.

Even when a farm has access to land and the associated resources, zoning restrictions may pose an obstacle. Growing Power, Inc. regularly comes up for rezoning for their produce and livestock faculties as well as for the on-site wholesale store. Christman explained that it can sometimes be a time-consuming process to keep all the paperwork in order, but because they are located in an area that has traditionally been an agricultural site, the process is easier – they are "grandfathered in." Heather DeLong of Delaney Farm found that in their case, zoning regulations actually were of assistance. The city of Denver designates a certain percentage of its land to agricultural purposes and is looking to fulfill its annual quota.

Water is a resource that usually comes with land access. In the past, Growing Power, Inc. has used municipal city water, but in an effort to increase self-sufficiency, Growing Power, Inc. recently began a water run-off collection project. They partnered with metropolitan Milwaukee sewers to make four gutters to collect rainwater. The water collection will be used for crops, but it will also be linked underground to the aquaponics system. One farm in our research explains on their website that they use butterfly roofs. This is a design that collects rainwater from a building's roof and transports it to crops as an innate irrigation system.

Recommendations

- **Take care to select a plot of land that will be able to provide adequate space, or develop means of growing on limited space**
- **Assess the availability and accessibility of resources (e.g. water)**

Soil Health

To be successful, a farm's plot of land needs to be expansive enough to accommodate necessary growing space, but also must be fertile and healthy so that it can foster nutritious and uncontaminated produce. Because of the nature of community gardens, many make use of

vacant and abandoned lots. In the mid 1970s, there was a surge of concern regarding possible contamination of urban gardens' produce. People worried that the produce would be tainted by city pollution. In response, Boston Urban Gardeners and the Institute for Local Self-Reliance in Washington, D.C. tested soil and air pollution. They found that lead contamination from paint chips could potentially be a concern. This could be remedied by keeping the soils within the pH range of 6.5 and 7.0, by applying a fresh layer of organic matter to the ground soil's surface to dilute any effects, as well as encouraging customers to wash their produce before consumption (Lawson, 2005). Lead paint is no longer in use today, but modern urban gardens should take care to test their soils for other metal toxins and chemical pollutants.

Earthworks Urban Farm uses numerous vacant lots and has had to address poor soil quality issues from the demolition of previous buildings on their land. To remedy the low nutrient levels and compacted ground, they focus on soils restructuring and composting. Patrick Crouch of Earthworks Urban Farm explained in his interview that closing nutrient loops is an important process. They take "what's usually seen as waste and turn it into food." From our initial research we found a number of farms that stated that they collect compost from the local community. In this way, community members not only contribute this natural fertilizer; they also gain a sense of involvement in the process. They can feel that they are contributing to the produce they consume. Growing Power, Inc. uses traditional composting techniques, but they also have an anaerobic digester on site. An anaerobic digester uses microbes to break down biodegradable materials in the absence of oxygen. Currently they use the nutrient-rich digestate as a fertilizer, but are exploring the possibility of also utilizing the biogas byproduct as a source of fuel.

Red Wiggler Community Farm found a different way of addressing soil quality issues. Rather than devote time and effort on remediation of their soil, they selected crops that were better suited to the situation instead. For this reason, they grow a lot of garlic and tomatoes. Both crops are hardy and forgiving and thrive in the difficult soil conditions.

Recommendations

- **Test soil for pollutants, particularly in urban areas**
- **Start a community compost collection service**
- **Focus on soil health and nutrient cycles**
- **Consider soil limitations when selecting crops**

Working With Climate

Woody Woodruff, executive director of Red Wiggler Community Farm, emphasized that "The future of east coast small-scale farming—where the profit is to be made—is not in growing more tomatoes a week earlier or a week later, it's about growing vegetables year-round." The ability of the farm to accommodate climate fluctuations and regional weather patterns is a vital capacity for the success of any farm. All of the farmers that we interviewed stated that extending the growing season in some way is a important goal for the longevity of the farm. "Growing just a few months out of the year just isn't enough." said Woodruff. The extendibility of a farm is important, not just for the prolonged income to the farm, but also to provide consumers with a more consistent source of food.

With the leading goal of addressing food insecurity, Growing Power, Inc. has put an emphasis on extending their season so that they can provide food to those that need it most throughout the year. Through the extensive use of greenhouses, hoop houses, and solariums, they are able to produce food year-around. These three structures are key tools in extending the growing season. While they all work in a similar way, they are slightly different. A greenhouse

is a framed, usually permanent structure, walled with glass or plastics such as polyethylene. Sunlight enters, but cannot escape, which keeps the heat inside. Hoop houses are similar to greenhouses, but are less permanent. They are long half-cylindrical structures usually five-to-eight feet in height. They are constructed using metal or plastic half-circles covered with flexible plastic sheeting. Solariums are sun-facing rooms with many windows. They are usually built into the side of a more permanent building. Seed flats can be set up in the late winter to start the seedlings early in the season. Growing Power, Inc., for example, starts seeds in their solarium in February and then after they have germinated for three or four weeks, the seedlings are moved to the greenhouses.

All of the farms that we interviewed take advantage of insulating techniques, whether it is green houses, hoop houses, solariums, or row covers. Earthworks Urban Farm explained that rather than invest in greenhouses they use floating row covers to insulate their leafy vegetables from early frosts in addition to pest predation protection. Similarly, Red Wiggler Community Farm covers their crops in loose laying reemay fabric to deter pests in the warmer months, and to protect the crops from early frost and the winds during winter. Red Wiggler Farm also recently dug a southern facing slope to better take advantage of the sun's heat and energy.

All of these methods use solar radiance as a heat source, but heating can be supplemented by using electric or oil heating devises or other means. For example, Growing Power, Inc. moves their poultry into the greenhouses in the colder months. The chickens heat the greenhouses with their body heat. Christman explained in her interview that each chicken puts off five therms of heat. Growing Power, Inc. also stores some of their compost within the greenhouses, as the decomposition process releases heat.

Weather can be unpredictable. For example, DUG was faced with a hailstorm in August. That same season, the frost came early – the first week of October. These two events had detrimental effects on farm production. Fortunately, DUG takes extra measures to prepare for snow, ice, and frost. On the other hand, Growing Power, Inc. faced the opposite problem this fall. They moved their planters into the greenhouses in November, but even that late in the season the greenhouses were overheating. They had to devise a system to keep the greenhouses aerated before the cooler weather set in. Instead of a greenhouse, Red Wiggler Community Farm uses a root cellar to store some of their crops. They keep a stock of carrots and garlic in the cellar as well as most of the seeds they will need for the next season.

Recommendations

- **Be prepared for weather challenges and fluctuations**
- **Consider different options for season extension**
    - **Greenhouses**
    - **Hoop houses**
    - **Solariums**
    - **Root cellars**
    - **Row covers**

Environmental Stewardship

Most of these farms demonstrate environmental stewardship through their farming practices. Each farm that we looked at goes about this process in a different way. A number of the main approaches that came up were advocating environmental ideologies, providing educational programs to the surrounding community members, and choosing to incorporate organic and environmentally-thoughtful methods.

The different farms that we interviewed each targeted different communities in their environmental stewardship efforts. Red Wiggler Community Farm hires “growers”: individuals with developmental disabilities. Woodruff explains that farm work is a job that teaches

sustainability and fosters relations with the land. In addition, many of the growers take pleasure in their work. Woodruff described it as "very therapeutic" and maybe even "horticulture therapy."

Through our research we found other ways in which farms address environmental stewardship. Nine of the farms that we included in this study cite that they use biodynamic farming practices, while another seven farms explicitly state that they use crop rotation or intercropping. Crop rotation is the practice of growing dissimilar crops in the same plot of land from year to year. It helps to maintain the health of the soil structure and fertility as well as to keep pests under control. Similarly, intercropping is cultivating two or more crops in the same space at the same time. It can be used to take advantage of different crop characteristics. One farm converted their tractors so that they could be run on cooking oil. This farm collected oil from local restaurants.

Many farms in this study were certified organic. Even farms that were not certified practiced organic methods. Permaculture methods are another environmentally mindful farming practice. These methods approach farming by emphasizing positive, symbiotic relationships that naturally occur in ecology. For example, chickens feed on insects; thus, if allowed to browse amongst the crops, they can help to control pests. Similarly, a beehive can be kept at one corner of the farm. These bees thrive from the nectar from the produce while simultaneously pollinating crops.

Recommendations

- **Use environmentally conscious farming methods to preserve land quality**
- **Teach environmental stewardship by applying sustainable efforts and teaching the principles behind them**

Further Study

It is important for us to acknowledge limitations to our research particularly because community farms and food insecurity are extremely dense subjects.
These limitations should not discount our research, but rather they should be taken into consideration when viewing the results.

. Due to limited resources, much of our research relied on the Internet rather than in-person observation of farms. First of all, not all farms had reliable websites (if they even had a website at all). Many of the websites were outdated and contained only limited information to answer our specific research questions. Additionally, we assumed that all information on websites was true and we did not verify statements. While there might be small inconsistencies, this should not change the overarching conclusions of our study.

The scale of our research was another limitation that we encountered. Community farms and gardens are locally managed and many do not spread their message outside of their own community; therefore, our research focuses on farms that actively disseminated information to a larger audience. There are an endless number of thriving community farms and gardens in the United States that could have been included in our study, but due to various limitations, we were only able to pick and choose those that fit our stated criteria. Despite these limitations, we were still able to compile information on 157 farms supplemented with an in-depth analysis of five farms. Just as there are an endless number of farms, there is also an ever-increasing body of literature on the subject. A more thorough evaluation of sources could further enlighten our study (see suggested reading at the end of the bibliography).

There are many opportunities for further study. For example, conducting more interviews, visiting farms, and surveying more participants would increase insight and solidify

trends. Additionally, surveys and interviews with community members and farm partners would be necessary to thoroughly evaluate effectiveness and to measure community response. Despite its limitation, this study offers valuable insight and can provide a foundation for further research. It is our sincere hope that this report will help to achieve a sustainable and just food system in the communities of Lewiston-Auburn.

CONCLUSION

As evidenced in this study, community farms can be used to combat food insecurity and develop social structures. While each farms is unique in their approach in addressing food insecurity, they share characteristics that define them as community farms. By conducting in depth interviews with five farms, we were able to determine the characteristics that help make farms effectively address food insecurity. Most farms that in our study worked with individuals to foster community engagement, economic independence, and food security. By teaching specific skills, farms are able to challenge the tendency towards food insecurity in low-income communities.

This study could have been greatly improved with more time, with which we could have further explored interactions between communities and farms. Regardless of the limitations we faced, it remains our intention that this study be seen as the beginning of a long adventure. The success of a community farm relies on tactful resource mobilization and hard physical and mental labor, but they can deliver in ways unimaginable at their foundation. In this way, while community farm models vary throughout the United States, there are distinct features that are essential to the implementation of such a farm in Lewiston-Auburn.

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APPENDICES

Appendix A: Column headings and definitions
Appendix B: Web search and point assignment protocol
Appendix C: Informed Consent Form
Appendix D: Interview schedule

Appendix A:

Spreadsheet column headings and definitions (metadata file from spreadsheet)

Researchers: Charlotte Friedman, Rob Friedman, Molly Mylius, Hannah Roebuck
Context: Conducted as a part of Bates College ENVR 417: Environmental Studies Across the Disciplines
Search methods: Conducted as is outlined in 'Internet search method.doc'
Dates of research: October 15 – November 10, 2009

Clarifications:
y/n: indicates that the column is to be completed with a 'y' or 'n' indicated that yes, the criteria is met, or no, the cirteria is not met

Column heading definitions:

Point Value: Total points accumulated, using point system as described in form Internet search method protocol
Year of Foundation: the year the farm was developed as is reported on it website
Management Structure: Describing the infrastructure of the farm
Website: The farm's main website as well as supplementary websties (e.g. blogs, facebook page, etc.)
City: the town or city location of the farm
State: the state location of the farm
Contact Info: the most pertinent contact information provided by website sources (generally email, phone number, and mailing address)
Hardiness Zone: applies the USDA identified Growing Zones, which are based on average annual minimum temperature ranges
City population: population of the 'town/city' as started by the 2007 census (where ever possible) conducted by the US Census Bureau
City pop. Density: Population density of the 'town/city as found by the 2007 census (where ever possible) conducted by the US Census Bureau
City % below poverty: percent of the town/city that is living below the poverty threshold as defined by the U.S. Census Bureau (http://www.census.gov/hhes/www/poverty/threshld.html) using 2007 Census data
Medium household income: the town/city income value lying in between the upper and lower income values, as defined by the U.S Census Bureau 2007 census data
Farm acreage: total used agricultural land, this data is somewhat variable as some of the figures include only acreage used to grow produce, while others numbers encompass all lands the farm owns
 # Full time employees: number of individuals for whom work on the farm is their primary, year-round employment
Poly or monoculture: the farm grows a number of different crops in a given growing season in the same plot of land (poly) or the farm grown only one crop in a given growing season in the same plot of land (mono). While this is not the standard definition, we also described a farm as having polyculture if they practiced crop rotation.

Volunteers/interns: the farm uses the assistance of individuals that are not paid

The next set of column headings were answered with a 'y' for yes and a 'n' for no.

Paid staff: Does the farm have paid staff? (as opposed to work done by volunteers or food compensation for work done)
Work for food: Are work hours completed on farm can be reimbursed with food payments rather than monetary payments?
CSA: Does the farm us a community supported agriculture system as defined in the Natrional Agricultural Library by the USDA (http://www.nal.usda.gov/afsic/pubs/csa/csa.shtml)? This is an arrangement where community members invest in a farm as share-holders and risks and benefits are shared
Environmental Sust. Efforts: Does the farm conduct any efforts with the aim of environmental longevity?
Educ. Component: Does the farm hold programs or workshops to educate participants about agriculture, nutrition, health, personal development, or other similar topics?
Entrepreneurial Aspect: Does the farm hold programs to help participants develop enterprising, management, and business skills?
Works w/EFP: Does the farm collaborate with Emergency Food Providers?
Hand picked: Is the produce harvested by hand? this can include tools that are powered by hand (i.e. hoe, shovel, hand plow)
Organic: Is the farm either a) certified organic or b) practicing organic farming methods?
Greenhouse: Does the farm mention a greenhouse on their website, either textually or visually?
Composting: Does the farm explicitly state that it composts? This includes composting done exclusively for the farm or a community composting program.
Livestock: Does the farm have any animals raised for agricultural use or profit? Poultry is included in our definition of livestock.

This concludes the y/n section of the spreadsheet.

Comments: any comments on the education, sustainability, and entrepreneurial programs as well as other important observations
Citations: URL of any websites used to gather information

Appendix B:

Web search and point assignment protocol

1). Search using the following keywords on a Google search engine and look at the first 30 entries:
- "community farm" + state name
- "urban farm" + state name
- "food insecurity" + "farm" + state name

2). Search by state using the Local Harvest site http://www.localharvest.org/csa/.
3). All findings were scored points based off the follow system:
1 point if the farm was located in a town/city with a poverty line above 10%
2 points if the farm was located in a town/city with a medium household income of $25,000 - $50,000
2 points if the farm was located in a town/city has a population density of between 500 – 4000 people/mi^2
2 points if the farm itself is located in a USDA plant hardiness zone (http://www.usna.usda.gov/Hardzone/ushzmap.html) of between 4 – 6
3 points if farm has environmental sustainability efforts
3 points if farm an educational component
3 points if farm an entrepreneurial aspect

Farms with 9 points or higher were considered relevant enough to be included on the spreadsheet

Appendix C:

Informed Consent Form

The study will be analyzing various models of Urban Farms, considering their applicability to the Lewiston-Auburn community and seeking to understand both their successes and struggles. This report is being conducted as part of Bates College class ENVR 417: Environmental Studies Across Disciplines. There are three primary objectives. 1). To quantitatively relate each farm's location, infrastructure, support, and social aspect to that of L-A 2). to analyze a large population of farms, searching for overarching trends and 3). to study a few farm models in particular depth and with a qualitative approach. This will be compiled into a report for course credit and also for the Nutrition Center of Maine to inform future planning for a proposed community farm project.

The study will be conducted under the support and guidance of Bates College, Lewiston, Maine, Department of Environmental Studies, to be conducted by Charlotte Friedman, Rob Friedman, Molly Mylius and Hannah Roebuck.

By signing below I, hereby consent to the participation in this study. My name will be withheld and all identifiers will be stripped, unless specified otherwise below. Pseudonyms may be used in the place of my name. I understand that I am free to discontinue my participation at any time without suffering any disadvantage.

The interview will be audio-recorded and I understand that I can ask for comments to be made off the record, in which case the tape recorder will be stopped and no notes will be taken.

Printed name: _____

Signature: _____Date: _____

_____ Initialing here indicates that I consent to have my name and affiliation published in connection with this research project

If I have any questions or wish further information about the study, I know that I may call Molly Mylius at (207) 240-6329. I am also aware that if I have additional questions that may not be answered by the researcher, I may call her advisor Annie Doran at (508) 264- 2729 or the professors of Environmental Studies Across Disciplines, Sonja Pieck at (207) 786-8206 or Holly Ewing at (207) 786-8315.

Script for Debriefing Research Subjects

Thank you very much for participating in our study of community farming. We very much appreciate your input as for of this extensive study on what a community farm looks like and how one is developed. We will be sure to contact you with any further questions we have and if you would like we will provide you with our results.

Appendix D:

Interview Schedule

- What is the history of the farm?
    a. What inspired its creation?

- What are the primary purposes of the farm?
    a. Do you consider your farm to be community-based?)
    b. How do you define a community-based farm?
    c. Has the purpose of the farm changed over time?

- What are some of the principal activities that you engage in on the farm?

- Why did you become involved in the farm?

- What types of educational outreach programs does your farm run?

- Has the physical location of your farm affected how you farm?
    a. (Climate, land quality)
    b. Do you grow in the off-season?

- How has the surrounding community affected how you farm?
    a. (Demographics, population distribution)

- Do you publicize yourself within the community?
    a. How?
    b. Is public awareness important?
    c. Have you been successful?

- How do community members participate in the farm?
    a. How has the community responded to the farm?
    b. Were community members involved in the establishment of the farm?

- How is the farm managed?
    a. How are decisions made?
    b. Are community members involved in the decision making process?
    c. Are jobs seasonally based?

- What necessary skills and resources are required to start a community-based farm?

- Financially how does your farm sustain itself? (What is the long-term economic viability of your operation?)
    a. Do you know the rough proportions of profits coming from each of these sources?

- How was funding secured for starting the farm?

- How do you measure success on your farm?

- What challenges are associated with running a farm?
    a. Any there any challenges special to the needs/wants of the local community members?

- If you were to start a community farm project from scratch, who would be the three most important people/groups to bring to the table in developing it?

- Do you think your farm helps to address issues of food insecurity and hunger?
    a. How so?

- In the past few years there has been a lot of interest in community-based farming in the U.S. Why do you think this is?