

**EXPANDING FOOD BANK IMPACT:
Healthy Food Access and Sustainable Farm Production**

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ABSTRACT

The Greater Lansing Food Bank (GLFB) is a food bank in mid-Michigan that is rethinking its mission and service to the community. Rather than simply supply as much food as possible, it is instituting programs that help its clients to help themselves by alleviating poverty. GLFB has a 30-year-old community garden program that provides support to about 100 community gardens and 450 low-income home gardens, ultimately helping around 7,000 individuals access food through gardening each year. In Fall 2012, the GLFB launched Lansing Roots, a farm business development opportunity that minimizes the barriers to starting a farm business. This program provides its participants with access to fresh foods, a supplemental source of income, and critical community building opportunities. Many refugee communities with farming backgrounds reside in the Lansing area, and benefit from the incubator farm program's resources, including tools, technical training, affordable land, and cooperative marketing opportunities.

The purpose of this master's research project is to evaluate the effectiveness and feasibility of this incubator-food bank relationship. Other food banks in the Feeding America network have reached out to GLFB for advice on implementing similar programs. However, this is a unique pairing of entities with little precedence in the literature; typically farm incubators are independent organizations and rarely, if ever, are food banks in the role of organizer. This project therefore includes: 1) benchmarking of best practices for food banks using a literature review and survey; 2) benchmarking of best practices for farm incubators through a literature review, survey, interviews, and GIS; 3) the creation of best practices for integrated food bank-incubator relationships; and 4) a glossy toolkit that GLFB can share with other Feeding America member food banks to guide implementation of similar programs. In short, this research helps to determine how incubators can be successful, as well as whether food banks are adequately positioned to be stewards of such farm-based programs. Identifying a method for food banks to help their clients feed themselves would have profound impacts on communities that are food insecure.

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TABLE OF CONTENTS

Abstract.....	3
Acknowledgements.....	4
Table of Contents.....	5
Executive Summary.....	6
Introduction	8
Methods.....	10
Literature Review.....	14
Results.....	24
Food Bank + Incubator Analysis.....	40
Conclusions & Future Implications	42
Figures.....	43
References	45
Appendix A: Literature Review Key Terms	50
Appendix B: Interview Guide	51
Appendix C: Best Practice Rubrics	57
Appendix D: Glossy Toolkit	76

EXECUTIVE SUMMARY

The Problem

The purpose of this master's level research project is to evaluate the effectiveness and feasibility of offering incubator farms through food banks. This is a unique pairing of organizations that typically address different stages in the food system, and there is little precedence in the literature. Farm incubators are usually independent operations focused on early-stage cultivation while food banks are focused on end-stage redistribution or waste management. Rarely do food banks operate their own incubator. However, some food banks are beginning to question the sustainability of the classic food-in, food-out model, and are pursuing poverty alleviation in conjunction with food assistance. These efforts are meant to help food bank clients to help themselves, and minimize their long-term reliance on food banks. It is unclear if incubator farms are an appropriate avenue to pursue that goal, which is investigated in the pages that follow. This research helps to determine how incubators can be successful, as well as whether food banks are adequately positioned to be stewards of such farm-based programs. Identifying a method for food banks to help their clients feed themselves would have profound impacts on communities that are food insecure.

Background

The Greater Lansing Food Bank (GLFB) is a food bank in mid-Michigan that is rethinking its mission and service to the community. Rather than simply supply as much food as possible, it offers programming to help alleviate poverty in its clients. With this goal in mind, the GLFB launched Lansing Roots in the fall of 2012. Lansing Roots is an incubator farm, which minimizes the barriers to starting a farm business by providing technical training, access to tools and land, and cooperative marketing opportunities. In doing so, incubator farmers have access to fresh food, a supplemental source of income, and critical community building opportunities. Many refugee communities with farming backgrounds reside in the Lansing area and benefit from the incubator farm's resources. However, the food-in, food-out model is still the dominant structure for food bank distribution streams. Therefore, there is limited research on the efficacy of food bank programming targeted at poverty alleviation. Similarly, incubator farm programs are newer enterprises with just 127 registered programs in the country, a majority of which are less than five years old. Research on incubator farm best practices is, therefore, also limited. Furthermore, only three Feeding America food banks were identified as operating incubator-like programs, including the Greater Lansing Food Bank of Lansing, MI; the Mid-Ohio Food Bank of Grove City, OH; and Community Food Bank of Southern Arizona in Tucson, AZ. In order to aid GLFB in its pursuit of poverty alleviation, this master's level research project evaluates the potential of incubator-food bank relationships. This work includes 1) benchmarking of best practices for food banks using a literature review and survey; 2) benchmarking of best practices for farm incubators through a literature review, survey, interviews, and GIS; 3) the creation of best practices

for integrated food bank-incubator relationships; and 4) a glossy toolkit that GLFB can share with other Feeding America food banks to guide similar programming.

Analysis and Main Conclusions

Information was gleaned using a mixed-methods approach, including the use of a literature review, a survey of Feeding America member food banks, a survey of incubator farm managers, interviews with food bank and incubator farm managers, interviews with farmers, and some geographic information system (GIS) analysis.

Each stage of the research process contributed in some way to identifying best practices for food banks and incubator farms as separate ventures, resulting in best practice rubrics for each type of organization. In addition, the research revealed that incubator farms that serve primarily vulnerable populations (such as refugee or low-income communities) define and evaluate success differently than other incubator farms. Therefore, two separate incubator farm rubrics were generated that are tailored to the two incubator types. These three best practice rubrics (food banks, incubator farms, and incubator farms for vulnerable populations) were then used to identify areas of overlap between food bank and incubator farm practices. Areas where their goals overlap include, for example, access to nutritious food for food insecure populations and cultivating client autonomy. The rubrics also revealed ways in which the two types of programs might be beneficial complements to one another by addressing gaps. For example, incubator farms are often fledging programs with very few solidified community partnerships, while food banks are very well-networked organizations that can provide community contacts to incubator farms. Similarly, food banks rely heavily on corporate donations and struggle to maintain stable streams of healthy food, which incubator farms could supplement by growing produce desired by the food bank.

Once these opportunities for joint benefit were identified, a final best practices rubric was designed for instances when food banks and incubator farms collaborate. This rubric identifies a number of key characteristics that should be in place to make this kind of collaboration beneficial and successful. Some of these characteristics are intuitive, such as a farming supportive climate and access to markets that support local growers. It was also found that food banks with garden programs are in a better position to offer incubator programming, because they already have the resources and experience that it takes to run a land-based program. One characteristic that is key to long-term success is less intuitive, referred to as a “structure for success.” This is about organization-wide buy-in for the partnership. If the food bank’s administration is not supportive of the incubator program, or vice versa, the two programs may be managed independently and fail to take advantage of collaboration opportunities. When a food bank has the basic key characteristics in place, such as a growing climate and a garden program, it is well-positioned to manage and benefit from an incubator farm.

INTRODUCTION

The Food Bank Model and Greater Lansing Food Bank

The shortcomings of the United States food system are widespread. Food security, overproduction and food waste, diet-related disease, and environmental degradation are some of the issues in need of management and reform. Many of these shortcomings have been thoroughly discussed and evaluated in academic publications. There is also a wealth of information evaluating the effectiveness of the various responses to these issues, such as food banks, community or urban gardening, government-assisted nutritional assistance, nutrition education, and professional development. This research investigates the potential for food banks in particular to address a wider range of food system issues than they currently address. The client for this research project is the Greater Lansing Food Bank, which approached the School of Natural Resources and Environment at the University of Michigan to recruit graduate researchers who could evaluate its programming.

Most often operated as non-profit entities, food banks are charitable organizations that minimize hunger by distributing food to people with limited access or income. The traditional food bank system in the United States faces a number of challenges, ranging from overabundance of unhealthy industrial foods to long-term client reliance on food bank services. The products procured by food banks are either donated by community members or gleaned from retailers and wholesalers. Most food banks measure their success, in fact, by the pounds or tons of food distributed, because weight is a quantitative, feasible metric to use. It is less common for a food bank to explicitly pursue poverty alleviation. However, some food banks are in search of these more proactive solutions to their community's needs. They are attempting to do more than just feed their clients; they are endeavoring to find ways to address the source of hunger so reliance on food banks is no longer necessary. Greater Lansing Food Bank, Mid-Ohio Food Bank, and Community Food Bank of Southern Arizona are all experimenting in this space, even rewriting their mission statements to prioritize poverty alleviation. One of their primary goals, therefore, is to make food banks less and less necessary over time through strategies such as economic development.

The Greater Lansing Food Bank (GLFB) of mid-Michigan is the case study for this research, and has enacted unique programming to serve its community. It serves families in seven mid-Michigan counties: Ingham, Eaton, Clinton, Shiawassee, Clare, Isabella and Gratiot (Greater Lansing Food Bank, 2013). In Michigan, 16.3% of the population lives below the poverty line, as compared to 14.9% of the population nationally. In fact, over 20% of residents live below the poverty line in two of the counties serviced by GLFB, and Isabella County has a poverty rate of 32.1% (US Census Bureau, 2010). This translates to a large demand for food assistance in the area. The GLFB serves tens of thousands of people yearly, a population that includes significant

numbers of children and senior citizens who are at a particular risk for being food insecure (Greater Lansing Food Bank, 2013). Food bank users can be grouped into two broad categories: those who have been recently unemployed (within the last two years, typically) and are seeking temporary food aid, and those who are long-term food bank users. People in this second group often are employed, but do not make enough to provide adequate amounts of food for themselves or their families (Kicinski, 2012). Understanding these differences in the food bank's user groups has helped inform the types of support that would be most effective for improved food bank services.

In the summer of 2013, the GLFB launched Lansing Roots, an incubator farm program seeking to "help people grow food as a source of income as well as nourishment" (Greater Lansing Food Bank, 2013). By providing low-income families with an economic livelihood, the GLFB can better serve populations who would otherwise rely long-term on the GLFB for food assistance. Historically, small business incubators have effectively benefited individual entrepreneurs through the sharing of tools, training, and resources (Rushing & Woods, 1997). Such services reduce the start-up barriers typical of new business ventures and support long-term success. The formal definition of a farm incubator is "a land-based, multi-grower project that provides training and technical assistance to aspiring and beginning farmers" (NIFTI, 2015). Incubator farm programs typically provide training, access to land, and shared farming equipment (Boekelheide, 2012). These programs help alleviate poverty by expanding food access in their given area and providing participants with a supplemental source of income. Like other farm incubators, Lansing Roots helps to develop farming skill sets that foster self-employment, stronger income streams, and nutritional stability. It is meant to better address the Lansing community's needs and serve as a model to other food banks across the country. Lansing Roots comes to the table with unique stakeholder connections that have been built by GLFB over the past 30 years, giving it an infrastructural head start that many independent incubator farms do not have. Several non-profit and government-sponsored incubator projects intentionally support the interests of vulnerable populations in particular, such as underserved minority or refugee populations (Boekelheide, 2012). Refugee populations have been a particular interest for incubator farms because many of these individuals were farmers in their home country. Lansing has a large refugee population, and many of them were indeed farmers in their home country (Greater Lansing Food Bank, 2013). From California to Vermont, farm incubators like Lansing Roots are providing hope and opportunity via a stable income (Brown, 2011).

The United States Department of Agriculture's (USDA) Beginning Farmer and Rancher Development Program (BFRDP), established in 2008, was the initial source of grant funding for Lansing Roots. The BFRDP supports the development of farm businesses by providing funding to novice farmers. The purpose of this USDA program is to increase the number of American farmers, which currently make up less than two percent of the United States population and are projected to decrease an additional eight percent by 2018 (Lacey & Wright, 2009). By encouraging younger generations to return to the

fields, the USDA hopes to stabilize the agricultural workforce (USDA Economic Research Service, 2013). The benefit of farm incubators, therefore, goes beyond added income and sustenance for the farmer. They are important to national agricultural stability and food security.

The Research Question

The nature of the relationship between food banks and farm incubators typically includes produce exchange, wherein food banks acquire fresh produce from area farms (including incubator farms) as part of a strategy to obtain healthier items. There has rarely been a more involved partnership, although many food banks are beginning to operate their own community-supported garden projects. Therefore, the combination of these two types of enterprises is very new and not vetted. They are typically focused on separate stages in the food system cycle: one on early-stage cultivation and the other on end-stage distribution. The lack of data-driven best practices around the organization and success of this relationship are of primary interest. **The objective of this research is, therefore, to determine the best practices for incubator farm operations, and whether those practices are beneficial to and within the capacity of food banks.** This will mean identifying if there is evidence for collaborative benefit from integrating incubators and food banks, distinct from situations in which the two entities engage in a mere partnership. This requires identifying best practices for food banks (which are already addressed in published literature), benchmarking best practices for farm incubators, and the creation of best practices for joint incubator-food bank relationships. Those integrated best practices can then be used to evaluate Lansing Roots' and GLFB's performance, and recommend areas for improvement.

The potential impact of this research is in generating an alternative food bank strategy focused on more complete client assistance. Given food banks' extensive community connections and their mission to supply food, they appear poised to provide a valuable service to incubators. Further, if food banks want to embolden their customers to no longer need food assistance, then incubators can provide a service to food banks too. This appears to be a logical connection. It is not entirely clear, however, what that relationship has or should look like.

METHODS

Literature Review

To approach answering the research question and generate a guide to incubator-food bank relationships, a literature review is needed in this niche of food system research. The purpose of the literature review is to inform and direct the subsequent methodologies of the research process, which include surveys, interviews, and geographic imaging system (GIS) analysis. A significant portion of the literature review is therefore dedicated to mapping the current landscape of the food system as it relates to food banks. Since "food system" can encompass so many different topics to many different audiences, we endeavored to first identify the current state of areas pertaining

to our particular research question. This includes searches on topics such as food availability, the nutrition of food bank products, populations most experiencing hunger, census data on farming livelihoods and farmer development, and other important trends impacting the approach to food banks and incubators.

In undergoing this initial search, there was not substantial information on food bank and incubator partnerships. Since this is the core research question, integrated best practices would need to be developed by the research team based on the project's separate findings about food banks and incubators. Therefore, the literature review was split into separate, independent reviews of the two themes: food banks and farm incubators. The purpose of this split is to identify what these two fields have already accomplished independently, their respective best practices, and where they see a need for future research. Only then is it possible to identify crossover between food banks and incubators, and identify common themes and best practices.

Secondary themes that are reviewed in conjunction with food bank and food incubator research include food justice and food policy. Food banks and food incubators both aim to be vehicles of change for justice and policy, so the literature on these two subject areas is applicable. Both entities also work intimately with the vulnerable populations discussed in justice and policy literature, such as minority or low-income populations, women, and refugees. Plus, literature on food policy and food justice can provide insight on assisting these particular populations.

In order to identify literature on food banks, farm incubators, food justice, and food policy, the research team compiled a list of key terms to search relevant databases (See Appendix A). Articles were first skimmed for overall applicability to our particular research question (does the article speak to one of the major themes or, even better, speak to multiple themes?), and then filed according to thematic area. Those articles with the strongest evidence and relevance were utilized to paint the landscape around our research question. Therefore, literature utilized in this process does not address everything related to nutrition, food banks, supplemental nutrition assistance, food inequalities, etc. Rather, the most recent literature or the literature that best represents a thematic area is utilized.

Coincidentally, it did not become necessary to filter research in the incubator theme, because the field is still so new. The number of publications addressing best practices alone is extraordinarily thin. As a result, this work utilizes a number of case studies and thesis dissertations in order to include the latest quandaries in incubator farming.

While reviewing an article's content, they were also skimmed for important stakeholder contacts. The mixed-methods research approach of the project would later include surveys and interviews, and the literature on these themes provides reputable contacts for those methodologies. For the farm incubator theme in particular, there are only a select group of farm incubator programs in existence in the country (approximately 127

total), and substantially fewer that have been operating longer than five years. Those long-standing incubators are examples of the types of stakeholders that were mentioned in the literature and added to a list of potential interview subjects.

Interviews

By the conclusion of the literature review, the research team generated a list of 50 potential stakeholder interviewees from farm incubators and food banks. Less than a handful of these individuals represent incubator-food bank programs similar to GLFB. The interviewees were chosen if mentioned in the literature, or through snowball sampling with key informants. Out of the list of 50 potential interviewees, 13 were successfully interviewed. This response rate was limited by the season in which they were conducted; the summer months are the busiest for many farm incubator programs due to the growing season. However, those interviewees who agreed to participate represent the most well-known and commonly referenced incubators in the country, and covered diverse geographic and socioeconomic regions. The 13 interviewees are from a cross-section of leading incubators, incubators working with low-income or refugee communities, food banks, and food banks who have started incubators.

Subjects represent the following organizations:

- Agriculture and Land-Based Training Association (ALBA), Salinas, California (incubator serving vulnerable populations)
- New Entry's National Incubator Farm Training Initiative (NIFTI), Lowell, Massachusetts (incubator)
- Food Gatherers, Washtenaw County, MI (food bank)
- Intervale Center Farms Program, Burlington, Vermont (incubator)
- South Side Community Land Trust (SCLT) Urban Edge Farm, Providence, Rhode Island (land bank and incubator serving vulnerable populations)
- Tilian Farm Development Center, Ann Arbor, Michigan (incubator)
- New Entry Sustainable Farming Project, Lowell, Massachusetts (incubator)
- Transplanting Traditions, Orange County, North Carolina (incubator serving vulnerable populations)
- Tillian Farm Development Center, Ann Arbor, Michigan (incubator)
- Northeast Beginning Farmer Project, Ithaca, New York (incubator)
- Headwaters Farm Incubator, Multnomah County, Oregon (incubator)
- Las Milpitas Community Food Bank, Southern, Arizona (food bank and incubator)
- Mid-Ohio Food Bank and Urban Farms of Central Ohio, Grove City, Ohio (food bank and incubator)

The interviews were conducted using a semi-structured interview process with pre-selected interview questions, which guided the conversation and ensured consistency. The final interview guide questions (See Appendix B) are based on the content of the literature review, and designed with the goal of obtaining specific information from respondents. All interviews were recorded and then transcribed for the coding process.

The interview transcripts were first separated into stakeholder groups: food bank, incubator, incubator serving vulnerable populations, and combined food bank-incubator. Next, each transcript was read for responses to the specific questions in the interview guide to gain a holistic understanding of emerging themes, and to define the coding categories. Once those themes and categories were identified, the transcripts for each stakeholder group were read and coded. The coded interviews helped to determine best practices and barriers for incubator farms, as well as insights on making incubator-food bank relationships successful.

Surveys

The research team collected survey data from two separate stakeholder groups using the online data collection software *Qualtrics*. Stakeholders include food bank operators and incubator farm program managers. The questionnaires were distributed to (a) 211 food banks affiliated with Feeding America (a national non-profit network of food banks across the United States), and (b) 111 incubator farm programs from the National Incubator Farm Training Initiative's (NIFTI) national listserv. The food bank survey was sent to the program directors at each of the Feeding America member food banks. The farm incubator survey was sent to all the incubator farm program managers in the NIFTI network. A single response on either survey therefore represents one food bank or one farm incubator. The response rate for the survey that was distributed to Feeding America's network of roughly 200 food banks was 27 percent. The incubator farm program manager survey received a response rate of 30 percent because, of the 111 farm incubators contacted, 34 completed the survey.

Spatial Analysis

Using the literature review and interviews as background, a spatial analysis was performed in order to determine where, geographically, partnerships between food banks and farm incubator programs could have the greatest impact. Suitability for forming partnerships was determined using a multi-criteria evaluation framework. Determining the ideal locations for partnerships involves incorporating various factors (demographic, spatial, etc.) and identifying optimal locations; these are tasks for which multi-criteria analyses are particularly well-suited. Multi-criteria evaluation typically involves stakeholders and decision-maker input (Jankowski, 1995). The basic process involves identifying important factors that influence the decision being made, weighing the factors based on importance to the decision, and then combining the factors as a weighted linear combination to determine the most optimal areas. GIS analysis was performed using six initial factors that impact the potential success of an incubator-food bank relationship, including proximity of an area to existing food banks, proximity of an area to farm incubator programs, accessible land, market access, limited food access or food insecurity, and underserved populations.

LITERATURE REVIEW

Current Landscape: Food Access

The research team first sought to draw out characterizations of the food system in which food banks and incubator farms currently operate. This is to ensure that the work being proposed by food banks like GLFB is truly necessary, and addresses a well-documented gap or need. Therefore, the literature review first reviews the current landscape of the food system, defining current issues with access, food banks, and farms.

First, there is strong evidence that disparities in healthy food access in the United States are very prevalent. One study in particular performed its own literature review on “food deserts” (Walker, Keane, & Burke, 2010). This review identifies a number of common topics that are addressed in food desert literature, such as access to stores or supermarkets, the impacts of income and socioeconomic status on access, the impacts of race and ethnicity on access, food store density, cost of foodstuffs, location of food stores, types of stores, general availability, perceptions of one’s built environment, quality of available foods, and the impact and outcomes associated with food deserts (Walker, Keane, & Burke, 2010). This review of 31 different studies focuses on the role that one’s local food environment has on a person’s ability to buy healthy, affordable, and nutritious food. The study identifies four primary themes in food desert literature, including low access to supermarkets, racial/ethnic disparities, income/socioeconomic status, and presence of chain versus non-chain stores, all of which can be indicators that food insecurity exists (Walker, Keane, & Burke, 2010). The differential access to chain versus non-chain stores is also related to inequitable food costs, diet quality, and energy balance, because individuals who shop in cheap convenience stores have fewer healthy options (Carlson & Frazao, 2014; Cassady, Jetter, & Culp, 2007).

Other publications note that access can be just as much a product of mobility limitations as geographic location, such that those without access to a car are at a greater disadvantage than low-income residents with a car who live very far from a grocery store (Coveney & O’Dwyer, 2009). This finding is consistent with the GLFB and Lansing Roots context, since transportation has been identified by Lansing Roots leadership as a barrier to program participation. Some participants in the Lansing area do not have access to a car and struggle to get to the market and farm locations.

Food banks are widely seen in the literature as an emergency lifeboat amidst food insecurity. The prevalence of food banks in the country is quite visible due to both the Feeding America network and the role that local churches and community centers play as food pantries. Food banks, as opposed to food pantries, are now very large and sophisticated enterprises run as non-profit organizations (Cotugna & Beebe, 2002). Their mission to alleviate hunger works as a safety net in conjunction with federal food assistance programs. There are more than 250 food banks in the country feeding more

than 23 million people with nearly a billion pounds of food annually (Cotugna & Beebe, 2002). Food banks often rely heavily on volunteer hours to operate effectively, and are reliant on industry donations of unsellable products (Cotugna & Beebe, 2002; Tarasuk & Eakin, 2005). Most of the gleaned items from wholesalers and grocery chains are donated to food banks because they are no longer marketable to customers. This act is often interpreted as a commendable act and donation to the community, rather than an indicator of overproduction in the industrial food system (Stuart, 2009).

Literature on the efficacy of food bank operations is frequently discussed in public health literature, specifically about nutritional benefits of food bank products. These papers make the argument that food banks, although necessary for some families to obtain much-needed calories, are not ideal dispensers of nutrients. For example, a study performed by several nutritionists and public health professionals discusses whether food banks are another entity contributing to diet-related diseases, which they assessed by categorizing the products distributed by the Oregon Food Bank. This study finds that only two thirds (66%) of the 36.4 million pounds of food are one of the MyPyramid diet requirements, including grains, fruit, vegetables, meat/beans, and milk (Hoisington, Manore, & Raab, 2011). Of the MyPyramid recommendations that are accounted for, fewer servings of fruit and milk are available compared to vegetables, grains, and meat/beans, although this study does not distinguish between fresh and canned fruits or vegetables (Hoisington, Manore, & Raab, 2011). The authors of this study make the point that increasing their clients' servings of food does not address nutrition if the food items are unhealthy, and that an area of focus should be targeted increases in overall quality of foods provided (Hoisington, Manore, & Raab, 2011). A similar study identifies that vitamins A and C, calcium, fruit, and dairy products are generally limited in food pantries and should be procured since over 23 million Americans rely on pantry food (Akobundu, Cohen, Laus, Schulte, & Soussloff, 2004). The difficulties of stocking more recommended products include faster spoilage of fresh items, limited freezer or refrigerator space, and the acquisition process. Food banks often accept whatever foods are available to them, which are dictated by the wholesale and private donations of suppliers (Stuart, 2009). Some low-income individuals experiencing hunger also purposefully seek out high-calorie foods to make up for periods of hunger (Bruening et al., 2012; Dammann & Smith, 2010; Ma et al., 2003; Olson et al., 2007; Smith & Richards, 2008).

The current landscape of farming or ranching is also troublesome. These professions are now both highly specialized and centralized, causing fresh food to travel further than ever before. California supplies over 60 percent of the country's consumed fruit and nuts and 51 percent of its vegetables (United States Department of Agriculture, 2014). In addition, the occupation is dwindling overall. Less than two percent of the U.S. population is growing our food, down from 21 percent in the 1930s and 12 percent in the 1950s (American Farm Bureau Foundation, 2014; National Institute of Food and Agriculture, 2014). Beginning ranchers and farmers have been in decline for at least two decades and constitute only 22 percent of current farm operations (USDA Economic

Research Service, 2013). As a result, the average age of farm operators in 2012 was 58.3, and over 60 percent of farmers are 55 or older (USDA National Agricultural Statistics Service, 2014). This is the continuation of a 30-year steady increase in age, which has prompted targeted federal support for beginning farmers and ranchers through legislation and grant funding (USDA Economic Research Service, 2013). This aging farmer demographic primarily includes non-Hispanic white men with just 14 percent of farms operated by women and eight percent operated by a minority. There has been an increase since 2007, however, in Hispanic farm operators in particular, which is up 21 percent (USDA National Agricultural Statistics Service, 2014).

Across the board, beginning farmers struggle to get started because of high start-up costs and limited availability of land, and most farm households—beginning or established—earn a majority of their household income from off-farm sources (USDA Economic Research Service, 2013). The challenge of acquiring capital and land is linked to a gradual increase in farm real estate values, making farmable land increasingly more valuable as a sale to urban sprawl than for agricultural use. This is particularly true in the Northeast and the Corn Belt regions with average prices of \$5,560 per acre (USDA Economic Research Service, 2013). This loss of farmland to development also makes agricultural land more and more physically scarce over time. The ability to acquire land is also exacerbated by low financial returns in the start-up phase; farms must grow to a significant size before they see positive returns (USDA Economic Research Service, 2013). Beginning farmers are funding themselves primarily through loans, and borrowed over \$10 billion in 2011 alone. They are often not able to participate in federal direct-payment programs that are focused on cash grain production (USDA Economic Research Service, 2013).

The current landscape for food banks and farms, therefore, is troubling, and justifies the implementation of programs that bridge one or multiple issues to make the food system more effective, just, and healthy.

Food Banks

Our literature review then focused its lens on food banks more specifically to obtain a clearer understanding of their unmet needs and best practices. This is needed in order to determine if incubators can serve a beneficial purpose to food bank operations.

One primary shortcoming of food banks is the nutritional content of its foodstuffs. Many food banks recognize these nutritional deficiencies, and are incorporating strategies to move more fresh produce. For many sites, this is reflected through farm and garden partnerships and programs, strategic policies about acceptable donated items, and infrastructural investments in refrigeration. Fruits and vegetables make up one-fifth of the 96 billion pounds of food wasted each year in the United States, but are still not adequately captured by gleaners (Cotugna & Beebe, 2002; Martin, Wu, Wolff, Colantonio, & Grady, 2013). Some food banks are instead approaching the issue of nutrition by bringing nutritious snacks and educational initiatives to after-school

programs, retirement homes, and shelters (Cotugna & Beebe, 2002; Handforth, Hennink, & Schwartz, 2013; Butcher et al., 2014). More integrated farm-based programs would appear to be a natural solution to the healthy food shortage at food banks, since these programs would provide more sustained access to fruits and vegetables.

In identifying food bank best practices, very few peer-reviewed publications define the specific practices that make food banks successful across multiple benchmarks. Many individual food banks, however, have done this work for themselves and published their own scoring rubrics for best practices. In trying to identify the best practices in this field, the research team amassed rubrics from throughout the country, comparing them for similarities and differences. In so doing, nine primary practices were identified as being common across rubrics, with four minor practices that were not always reflected but which address important food system issues. The language used in this paper to define those practices is taken from rubrics produced by Foodshare, central Connecticut's regional food bank (Foodshare.org, 2008); the Food Research and Action Center, which created a best practices report following the study of 10 top food banks in North Carolina (Edwards, 2014); and the West Michigan Food Bank, a Feeding America member food bank serving 40 counties in West Michigan and the Upper Peninsula (Arnold, 2004).

The nine primary best practices for food banks include the following: 1) translation of funds into food, which refers to the percentage of a food bank's funds that are spent acquiring goods (Arnold, 2004; Foodshare.org, 2008; Edwards, 2014); 2) respectful and dignified client intake, or how much information is required before someone can become a customer (Arnold, 2004; Foodshare.org, 2008; Edwards, 2014); 3) client choice, or the extent to which clients can select the items they want from what is available (Arnold, 2004; Foodshare.org, 2008; Edwards, 2014); 4) quantity of food given, such that clients receive as much food as needed, as opposed to having a cap on the amount they can take (Arnold, 2004; Foodshare.org, 2008); 5) frequency of help provided, or allowing clients to visit as often as needed (Arnold, 2004; Foodshare.org, 2008); 6) providing additional information, services, or programs in conjunction with food assistance, which is meant to address their underlying challenges (Arnold, 2004; Foodshare.org, 2008); 7) coordination with other agencies, which also increases capacity to serve clients by connecting them with other service providers in the area (Arnold, 2004; Foodshare.org, 2008; Edwards, 2014); 8) healthy foods, so that clients have access to fresh fruits, vegetables, meat, and dairy products (Arnold, 2004; Edwards, 2014); and 9) capacity building through partnerships, which addresses the need for food banks to utilize all avenues possible to expand and address the needs of clients (Foodshare.org, 2008; Edwards, 2014). The four minor best practices for food banks include the following: 1) coordination of staging areas or service zones for efficiency, which minimizes transportation and increases distribution capabilities (Edwards, 2014); 2) tax savings for supporters, which incentivize cash donations over food donations (Arnold, 2004); 3) non-traditional hours, so clients working normal business hours are able to

visit the food bank (Foodshare.org, 2008); and 4) advocacy and public awareness efforts, so that important stakeholders are encouraged to pursue system-level changes (Foodshare.org, 2008).

These best practices already attend to aspects of poverty alleviation, which seems to encourage the idea of developing programs—like farm incubators—that address professional development. For example, one best practice calls for partnerships with service providers beyond food assistance, or personally providing such services. There is therefore evidence in the literature that food banks are already engaging clients in some capacity beyond food provisioning. For example, many food banks are implementing community kitchens and culinary training to help customers develop marketable skills (Cotugna & Beebe, 2002). Others are offering help with resume writing and interview preparation, or connecting clients with organizations that offer those services. There is not yet evidence, however, of using food bank gardens to cultivate agricultural careers, although incubator farms are one professional development strategy that food banks could use.

One caveat or weakness of supplemental programming—particularly skills training—that is discussed in the literature is the unintended creation of a negative discourse around those reliant on food support (Carson, 2014). These studies recommend having discussions about food insecurity, food justice, and resource availability in conjunction with skill development to avoid the unintended message that an individual's reliance on food banks is due to their lack of skills. It is therefore important to situate self-help and self-empowerment initiatives within that individual's larger contextual framework. This could mean openly discussing strategies to address personal barriers, or connecting customers with other resources available to at-risk populations.

Farm Incubators

Next, the research team wished to understand the current capacity of farm incubators, the types of characteristics that are consistently identified as important to success, and areas where incubators struggle and might benefit from food bank partnerships. The literature on this thematic area tries to benchmark best practices for farm incubators and identify gaps that food banks are well-situated to address.

As mentioned previously, the need for more farmers is salient. The current food system encourages heavy centralization, specialization, and transportation. Consumers are reacting to these aspects of their food system in many ways, including movements such as Slow Food, the locavore movement, the ecological movement, and the organic movement (Berman, 2011), all of which demand many more small-scale farmers in all parts of the country. Yet, we know that it is incredibly challenging for new farmers to start agricultural ventures given the high start-up costs, limited land access, and smaller relative profits for young, small ventures. One way of expediting the development of beginning farmers has been incubator farm programs, which temporarily remove barriers such as land, capital, market entry, and business planning. They are, in essence,

a trial run for new farmers. The success of these programs is based on several assumptions, as identified in a study that catalogues 61 incubator farms across the country: 1) that there are a large number of consumers willing to pay premium prices for local produce, which lower the pinch often felt by small-scale operations; 2) that towns and cities have market opportunities for small-scale growers; and 3) that incubator farms enable beginning farmers to hone skills and market connections prior to major investments in land and machinery (Lelekacs, O'Sullivan, Morris, & Creamer, 2014). This same study emphasizes that incubator farms are still relatively new and that program evaluation has been minimal to date, so there are very few "ideal" recommendations for best practices. There are, however, various commonalities across the successful, long-running incubator farms in the country, including the Agriculture and Land-Based Training Association (ALBA) in Salinas, CA, the Intervale Center in Burlington, VT, and the New Entry Sustainable Farming Project of Lowell, MA (Lelekacs, O'Sullivan, Morris, & Creamer, 2014; Winther & Overton, 2013; Ewert, 2012).

One similarity across the top incubators is their management structure. Most successful groups are either operated as a non-profit 501c3 organization, or a combination of non-profit, government, and university representation (Lelekacs, O'Sullivan, Morris, & Creamer, 2014). In addition, the most successful and praised programs, including ALBA and Intervale, have either full or partial ownership of their land. Other successful incubators have a secure leasing relationship or formal partnerships with university extension properties (Lelekacs, O'Sullivan, Morris, & Creamer, 2014). The details of an incubator's land tenure are therefore a critical piece to viability and sustainability. Similarly, long-term financing is critical and more challenging for newer incubators to navigate. Nearly all incubators rely heavily on grant funding, especially in the early years, followed by participant fees and local government budget allocations (Lelekacs, O'Sullivan, Morris, & Creamer, 2014). The determinant of success across these various indicators is financial security and autonomy.

There is considerable variety in program fee schedules, education/training, facilities, and capital resources. In fact, it is generally believed that incubator farm programs exhibit wide variation due, in part, to the wide variation of farm contexts, such as geography, climate, land access, target audience, and budget limitations, to name a few (Winther & Overton, 2013; Niewolny & Lillard, 2010). However, there appears to be a consistent effort on the part of incubators to offer everything that can feasibly be offered to promote farmer success. Very few evaluation metrics have been used to identify which resources and offerings have the strongest impact (Ewert, 2012). There is anecdotal evidence, however, that those incubators with relatively higher participant fees or land rental fees tend to produce more successful post-incubator farmers. This could be explained by higher cost of entry, which may predict a farmer's preparedness for full-scale business ventures. For example, a farmer with the ability to pay higher fee schedules would also be in a better financial position to purchase land and equipment following completion of the program than a farmer with less funding and resources.

It is generally assumed that program offerings should include farm business planning, financial planning, affordable access to land and equipment, market access and capital development, and production practices (Lelekacs, O'Sullivan, Morris, & Creamer, 2014; Winther & Overton, 2013; Niewolny & Lillard, 2010). Some additional approaches, albeit less common, exhibited by highly successful incubators include marketing, longer access to land, and supply chain education (Lelekacs, O'Sullivan, Morris, & Creamer, 2014; Winther & Overton, 2013). Groups that are more successful also have more stringent application requirements, which ensure that incubator farm participants have the technical skills and prior farm experience to build viable farm businesses. Incubators that must take time to teach entry-level agricultural techniques find that their participants struggle, and would likely benefit from a precursor program that teaches these techniques (Lelekacs, O'Sullivan, Morris, & Creamer, 2014; Winther & Overton, 2013).

Two primary benchmark organizations identified in the literature and anecdotally are the Intervale Center and the New Entry Sustainable Farming Project (NESFP), which houses the National Incubator Farm Training Initiative (NIFTI). In fact, NIFTI produces a toolkit for incubator farms as they plan and implement their own incubators. Intervale and NESFP both call for the following characteristics (Winther & Overton, 2014): 1) leasing land to farmers at reduced rates, including water, greenhouse space, and farming equipment; 2) workshops on business planning, crop production, sustainable practices, and land and capital procurement; 3) helping farmers to market their goods; 4) discussing broader food system issues and the farmer's role; 5) access to affordable food, since farm produce is often more valuable when sold rather than kept for personal use; and 6) facilitating the farmer's transition post-incubator by helping them access land and infrastructure. Food banks appear well positioned to provide food access to incubator farmers, ensuring that personal consumption does not detract from sales, as well as market opportunities.

Since incubator farms are so new, the methods used to evaluate success vary widely. In fact, defining what success means varies widely depending on the primary target audience of the incubator, such that incubators catering to vulnerable populations would define the benefits differently. However, common indicators used to measure success include farmer income, number of program participants, number of program graduates, number of farmers who are successful post-incubator, produce profits, household income for farmers, and improved literacy and credit for farmers (Winther & Overton, 2014; Ewert, 2012).

It has also been noted that many incubator projects are geared primarily toward refugee and immigrant communities (53.8%), as well as other socially disadvantaged and resource limited Americans (Winther & Overton, 2014). These populations of new farmers often do not have access to the necessary information or technical assistance required to operate successful organic farms, a market sector experiencing growth rates between 16 to 21 percent since 1997 (Melone, 2006). Incubator farms therefore serve a

tangible need in continuing education for immigrant or ethnic minority farmers. This means there is a convergence of three growing or highly-valued groups: organic farmers, new/beginning farmers, and immigrant/refugee/minority farmers (Melone, 2006). Helping minority farmers to fill this niche will increase their likelihood of success and help meet demand for beginning organic farmers. The ability of incubator farms to be successful—particularly the newer programs—is often dependent on meaningful community partnerships, which can take time to develop. Those incubators are tasked with providing a range of services that may be better met, at least initially, by a partner. Several of those services are also of interest to food banks, which are already intricately involved in the wider food system and tend to have many community connections. Based on that, food banks could be a beneficial parent organization for new incubators.

Food Justice

As mentioned previously, food justice is an area that is of significant interest to both food banks and farm incubators. Research in this thematic area offers insights on supporting the needs of those populations most often served by food banks and incubator farms. Food justice is defined as “communities exercising their right to grow, sell, and eat fresh, nutritious, affordable, culturally appropriate food, and grown locally with care for the well-being of the land, workers, and animals” (Alkon & Agyeman, 2011, p. 5). It impacts low-income communities and communities of color that are often disproportionately harmed by the current state of the food system, either as farm laborers without equitable treatment or due to limited food access and environmental degradation. Therefore, those communities with the strongest movements for food justice are those who are often considered to be socioeconomically deprived or poor, including West Oakland, CA; the South Bronx, NY; Detroit, MI; Milwaukee, WI; and Cleveland, OH (Alkon & Agyeman, 2011). The food justice movement itself is considered to be a progressive food movement, compared to the more radical food sovereignty movement, the reformist food security movement, and the neoliberal food enterprise movement (Holt-Gimenez, 2010). Its orientation is one of empowerment, and it prioritizes consumer rights to food, better safety nets, sustainably-produced and locally-sourced food, and just agricultural development (Holt-Gimenez, 2010).

Incubator farms have been one explicit pursuit of food justice, since incubator farms disproportionately serve minority participants. The NESFP began as a training program to help those refugees and immigrants with farming backgrounds to continue farming successfully in Massachusetts. The program has broadened since then to train any beginning farmer, but refugees and immigrants are still served by NESFP. The 2014 NIFTI Field School conference attended to refugee and immigrant populations in particular with dedicated presentations on assisting these populations.

Rapid immigration in recent years has also led to large Latino populations in rural towns like Denison, Iowa. Many of these immigrants have agricultural backgrounds in their home countries and found employment at the local meatpacking facility. However, programs through the Iowa State University extension service and the Leopold Center

for Sustainable Agriculture provide agricultural and business training in order to train new farmers. Studies of these programs reveal positive outcomes for the new farmers and the community (Thompson, 2011; Flora, Emery, Thompson, Prado-Meza, & Flora, 2012). Through the training programs, Latino/a farmers are able to reconstruct their cultural backgrounds as well as share their farming knowledge with others. Perhaps more importantly, however, the programs facilitate connections between farmers, creating a strong network and support system among recent immigrants (Thompson, 2011). It is found that human, cultural, and social capital provide the greatest benefit to program participants, above capital benefits (Thompson, 2011). This is consistent with the fact that incubators measure program success with different key performance indicators (KPIs) if they cater specifically to vulnerable populations.

Similarly, the Small Star Small Farmer's Program, located near Boise, Idaho, is a farm incubator program that helps to resettle immigrants to the United States through farming. In the specific case of the Somali Bantu immigrants who are served by the program, the development of strong production practices and business knowledge provides positive impacts beyond the economic benefits of many resettlement programs (Smith, 2011). In Boise, the farm incubator creates community support networks among the Somali Bantu immigrants, as well as allowing them an avenue to be visible participants in wider community activities. The program farmers typically do not see economic success as the driving goal, but instead empowerment and participation within their new community (Smith, 2011).

Other studies into successful farming ventures of displaced Mexican farmers in Iowa attempt to identify the pathways and contexts associated with success. Most of these farmers, which are not incubator graduates, succeed in spite of not having connections to extension, farm service agencies, or other agricultural organizations (Lewis, 2009). This study of Iowa immigrant farmers highlights farming as a personally meaningful and financially feasible alternative livelihood. The study identifies positive impacts on community well-being within Hispanic populations, as well as cultural, natural, and human capital (Lewis, 2009). These findings are particularly relevant to regions in the Midwest where Latino immigrants and other refugee populations have taken root, including Lansing, MI.

Food justice is not the movement prioritized by most food banks, however, which tend to fit better into the food security movement (Holt-Gimenez, 2010). The food security movement differs from food justice because its orientation is one of development and efficiencies as opposed to empowerment. Food banks are reformist in many ways by working toward sustainability and advocacy, but their capacity often limits their ability to challenge status quo, neoliberal practices (Holt-Gimenez, 2010). Rather, food banks often serve as repositories for overproduction of industrial agriculture, which does nothing to discourage overproduction when retailers view donations as marketing opportunities (Winne, 2008; Stuart, 2009). However, those food banks wishing to challenge the status quo and better serve their clients would be unique envoys between

food security and food justice, particularly if they are able to implement programs aimed specifically at elements of justice, such as incubator farms.

Food Policy

Most policies implemented to alleviate hunger or reduce poverty affect day-to-day food bank operations. Food assistance initiatives such as the Supplemental Nutrition Assistance Program (SNAP) and The Emergency Food Assistance Program (TEFAP) supplement food provisions offered by food banks. The impact of these programs is critical and immediate. In fact, many food banks would be unable to meet the needs of their community without the added support of SNAP, TEFAP, and similar programs (Stabenow, 2012). Assistance from these two initiatives is complementary because they alleviate the demand placed on food banks, which increases the capacity of distribution agencies to address hunger in clients without SNAP. TEFAP provides food to emergency food relief agencies (i.e. food banks, soup kitchens, etc.) free of charge, whereas SNAP benefits are allocated directly to citizens in need. Both SNAP and TEFAP are appropriated under Title IV of the 2014 Farm Bill (Hesterman, 2011). Title IV represents 80 percent of all the money spent under the Farm Bill and is granted to various nutrition-related programs (USDA Economic Research Service, 2014).

Several federal and state policy initiatives impact the operation of Michigan food banks. A few organizations that leverage political support for such initiatives include Feeding America, the Michigan Food Policy Council, and the Food Bank Council of Michigan. These organizations are personally invested in addressing agricultural, economic, nutritional, and social deficits that exist in the food system.

Several policies also affect the stability and feasibility of incubator farm operations. Currently funded under Title VII of the 2014 Farm Bill, the Beginning Farmer and Rancher Development Program (BFRDP) exerts major political and financial influence over beginning farmer projects. As part of its mission, BFRDP intends to “offer education, training, outreach and mentoring programs to enhance the sustainability of the next generation of farmers” (USDA NIFA, 2014). Initiatives sponsored by BFRDP are diverse. They include farmer training and incubation projects that assist a variety of populations, including existing farmers diversifying current crops, young farmers, farmers with no experience, and immigrant and refugee farmers (Niewolny & Lillard, 2010). Funding for this program first began as part of the 2009 Farm Bill, but appropriations to eligible agencies—distributed by the USDA’s National Institute for Food and Agriculture (USDA NIFA)—continued under the 2014 Farm Bill. Funding for BFRDP actually increased to \$100 million from \$75 million between the two Bills (USDA, 2014). It is important to note that these figures represent less than one percent of the Farm Bill’s total budget. BFRDP only accounts for a small share of fiscal spending under the Farm Bill, but investment in these projects is rapidly growing. There is a large opportunity to expand upon them given the increasing desire for sustainable agriculture in the United States (Niewolny & Lillard, 2010).

Collaborative efforts between nonprofits and other entities have blossomed as part of the BFRDP policy effort. Beginning Farmers, the National Farm Transition Network, and Michigan State University's Organic Farmer Training Program are also successful initiatives taking place in the state of Michigan. National initiatives such as Education for American Agriculture and the Young Farmers and Ranchers Program are also evidence of a continuing trend to garnish beginning farmer support.

There are many organizations, political or not, with a vested interest in food banks, incubator farms, and community gardens. This list continues to grow in response to food access issues, weaknesses in the food bank model, and depletion of the farmer workforce. The agencies whose current mission involves an intersection of at least two of these realms are an interesting focal point for new ideas about hunger relief, including Feeding America, the Michigan Good Food Charter, the Michigan Land Use Institute, the Michigan Food Policy Council, the Food Bank Council of Michigan, the Michigan Department of Agriculture and Rural Development, the USDA's People's Garden Initiative, and the Office of Refugee Resettlement.

RESULTS

Interviews: Incubator Farms

The coded interviews consistently identify 11 key factors or categories as critical to program success. These include the following: 1) high barriers to entry for participants, 2) a complete curriculum, 3) mixed demographics, 4) the use of a stair-stepping approach, 5) mentorship and demonstration farms, 6) creative funding methods, 7) community development, 8) evaluation, 9) marketing assistance, 10) partnerships in the community, and 11) sustainable farming practices.

High barriers to entry. Many of the incubators cite the importance of incorporating barriers to entry into the incubator program. This can help the farmer to generate a sense of ownership and investment in their own success, and helps the incubator farm ensure that participants are prepared to try their own independent farm business venture. Examples of ways that incubators are incorporating this include having an application process, requiring references, and requiring classes and farm experience before entry. An example of this comes from an incubator on the West Coast that requires farmers "to complete the Explore Farming Class as a prerequisite for the Business Planning Class, and the business training class is a prerequisite for farming on the incubator."

Participation fees are another way that incubators ensure their participants are fully vested before being admitted. For example, one program manager said, "no one gets to take the class for free because it's important that people have skin in the game during the whole process here." Similarly, another manager said, "I usually tell people that they need to have at least a couple thousand dollars saved up. So we're not working with

people that don't have any resources. We're working with people that have enough resources to launch a business."

Complete curriculum. Nearly all of the incubator farms cite the importance of a complete curriculum package, providing farmers with hands-on agricultural training as well as the skills to run a business. Curriculum content should address all aspects of the growing process and equipment use, as well as experience in crop planning and land management. Several incubator managers also mention the importance of field-based learning, so that the agricultural concepts are acquired through hands-on learning. For example, one manager said, "Adding the farming component was a pretty big deal in my opinion because really farming this acre together as a class is absolutely the best preparation for someone to become a farmer here. They get a chance to grow all the crops, they learn how to pack them, they learn how to do lots of things that are just basic and fundamental to farming here." In order to prepare farmers to run a farm business, the incubator might offer instruction or guidance on marketing, business planning, and how to go about acquiring land. On this point, a farm incubator manager said, "Most things we do are very hands on, so, for example, at our farmer's market we have a volunteer and then a staff [member] check in [with the farmer], so there's constantly a volunteer there who's helping our farmers to improve their customer interaction, their marketing skills, setting up their tables, what are ways to make things more competitive in their display, things like that." Another manager said, "Our curriculum includes the farm business planning piece so that it is not weighted in the profit/loss side of things but actually, 'what are some of the details of production expenses and production skills that need to be understood in order to put together a good farm business plan?'"

Mixed demographics. Long-standing incubators believe that recruiting a diverse mix of demographics and skill levels for the incubator program helps to foster success. Some incubators mention that their farmers come from a diverse range of professional backgrounds, some already farm workers and others making career changes. Similarly, incubators strive to have diversity in age, skill level, and ethnicities to foster peer-to-peer learning, which they identify as an important benefit of diverse cohorts. One incubator manager said, for example, that "having all those different skills in the class is super helpful because if you look at the range of skills you need to have to become a farmer (from business, marketing, production) it's a whole lot of information to try to give to somebody in a short amount of time. The fact that students can learn from each other is really helpful."

Stair-stepping approach. Interviewees commonly refer to the benefits of a stair-stepping approach, which is a way to foster progress over time by tailoring the program to farmer experience and skill level. There are two types of stair-stepping approaches identified by interviewees. The first type of stair-stepping is tailored to the progress of an individual in the program, such that farmers move into more graduated responsibility each year they participate. For example, a West Coast incubator manager said, "In the

first year, someone pays 40% of the commercial land rate, and then by their last year in the incubator they're paying 90%. So all along we're trying to prepare people for farming out there outside of [the incubator program]. In addition to that we have all kinds of goals for them to meet along the way in terms of getting their own licenses, certificates, permits."

The second stair-stepping approach focuses on the role of the incubator in a larger network of training programs. In this way, the incubator program is not treated as a one-stop program to train farmers, but as one step among many that farmers may take to become farmers. These incubators may enroll participants who have completed other more basic training programs. In many ways, this factor is related to the idea of "high barriers to entry" because only those with a solid foundation and skill set would be considered eligible to enroll. One incubator said, for example, "I think our role—and it's a developing role, because we're such a young program—is to provide the last step in what we're terming the 'farmer development network' here in our region. And I think that people down at the lower rungs need more hand-holding, need more support and access to resources whereas people more toward the top are more independent, know what they're doing and just need a little bit of a boost, whether it's affordable land or access to certain equipment. So we're kind of that last step. We take people who have been through other programs or academic institutions, or who grew up on farms, or apprenticed somewhere and are really ready to put their business together. And we try to provide the final pieces so that when they're done with our program in four years we can assist them in getting land, and they can continue to build their business independently."

Mentorship and demonstration farms. Mentors and demonstration farms are also commonly mentioned as critical components of incubator programs. They provide inspiration and valuable learning opportunities in ways that the core curriculum might often fall short. These types of opportunities allow farmers to experience the unpredictability of farming and troubleshoot solutions. One incubator farm manages this by allowing some program graduates to stay on incubator-owned land indefinitely, so graduates are a resource to current incubator participants.

Creative funding methods. Many incubator farms mention goals for financial stability, and the strategies they employ to work toward that stability. Pursuing creative, diverse funding sources is a common strategy for incubators that are more financially stable. However, multiple creative funding methods are identified by interviewees, including the rental of barns for weddings and events, and revenue from sales to wholesalers and grocers. For example, one program manager said, "We do have some enterprises within the incubator, so in addition to farm incubation, which is actually one of our smaller programs in terms of our budget, we also have a food hub, which sells memberships to food direct-to-consumer and then delivers them to workplaces and community drop-off spaces. They're considered an enterprise of the unit, so they sell products and generate revenue that way."

Community development. An important factor of incubator success is also community development and family engagement. Farming is discussed as a very family- and culturally-driven enterprise, wherein the people choosing to be farmers tend to come from: 1) multi-generational farming families, or 2) a social environment that places high community capital on agriculture. Therefore, engaging with existing farmers or laborers and maintaining the presence of these community groups is a way to cultivate future farmers and build interest.

Evaluation. Continuous tracking and evaluation is identified as a crucial to success for the incubator as well as the incubator farmer. This tracking helps to secure grants, loans, and land for the incubator and the farmer.

Marketing assistance. Marketing assistance varies widely across incubators, from no assistance at all to complete management by the program staff. However, nearly all program managers mention offering some form of assistance. Incubator programs may offer to do the marketing for their farmers by arranging sales to wholesalers or Community Supported Agriculture (CSA) programs. Others will provide the market opportunity and leave the rest of the work to the farmer. There is no solid conclusion on a best practice for marketing.

Partnerships in community. Partnerships in the community are identified as very important to incubator success. Interviewees cite a number of examples of beneficial partnerships, including local politicians, land banks, and universities. One incubator manager said, “Having the city in our corner really helps because they are helping us to find land, they are helping us to make it happen. And you know there’s a lot of land that isn’t being used... and you know part of it is just taking these spaces that aren’t being used for anything, and seeing the potential in them and developing them.”

Teaching sustainable farming. Since many of the incubators programs operate on small farms, a key characteristic of successful incubators is attention to sustainable farming practices. Teaching those skills to participants is important not only to maintaining the health of the incubator program’s land, but also in maintaining the marketability and sustainability of its farmers. These practices include crop rotation, soil testing, and others. One manager said that, “as the grower comes into the incubator farm site, they bear the responsibility of the farm site, not just from year to year but for the tenure of their time, and that way they can experience the consequences of how they manage those plots... that there is a soil testing protocol, [and] nutrient management that complements their management of those plots.”

Interviews: Incubators Working with Vulnerable Populations

The six most highlighted barriers for vulnerable populations of farmers, such as refugee or low-income communities, include the following: 1) market access, 2) access to quality

land, 3) access to financing, 4) inexperience with farming, 5) transportation, and 6) time, since many farmers have full-time jobs.

Five key factors surfaced as being critical to the success of incubators serving vulnerable populations. These include the factors described for typical incubator farms, but also some specific considerations for working with these particular populations. Those specific factors include the following: 1) low barriers to entry, 2) community development and stair-stepping approaches, 3) tailored and specialized education, 4) partnerships with community development organizations, and 5) key performance indicators (KPIs) focused on community development.

Low barriers to entry. Refugee and low-income communities tend to have more barriers to becoming a successful farmer. The barriers to entry need to be reduced for vulnerable populations to allow for success. For example, one program manager said, “We subsidize costs for farmers. Especially in the beginning that subsidization kind of decreases as they get into marketing and become more successful. But it’s one of our goals to find funding so that there’s not barriers, you know, economic barriers for participation.” Other program managers note that nearly all of their vulnerable farmers have full- or part-time jobs outside the incubator.

Community development and stair-stepping. Community development takes time, so stair-stepping is very important. Many refugees and low-income farmers start in trusted community gardens, move to incubation with support, and then move into a location with lower support but still leased by the incubator organization. The process of stair-stepping allows farmers to acclimate to the process of growing food in that specific context through less intensive programs first, such as community gardens. They later enroll in more advanced programming. Furthermore, many vulnerable farmers are using agriculture to supplement their dietary needs, particularly for culturally-relevant foods. Growing foods that are indigenous to their homes and cultures help to build community, and are often initiated first at the community garden level.

Tailored and specialized education. Education for refugee and lower-income communities should be tailored with accessible language, and more diagrams and photos. It also should focus more on the physical processes of growing in that climate, as well as business planning. For example, one farm manager said, “We have curriculum that’s really specific, at least on the agricultural education front, specifically geared to ESL learners.” Another manager said it was valuable for them to use PowerPoint with images and videos to communicate more detail-oriented growing practices. These efforts to foster inclusivity also impact how staff members are trained. One manager said, “Cultural competency a really critical part of our annual meeting, and providing training to organizations in how to make sure their work is inclusive, even if immigrants and refugees aren’t a designated target audience for them. “

Partnerships with development and refugee organizations. Due to increased barriers and needs, partnerships with community development organizations and refugee-focused organizations are important. One incubator manager said of working with refugee populations, “We have collaborations and partnerships with a multitude of community organizations and international institutes... which work with refugees coming into Rhode island, and we’ve brought in interpreters or translators from some of our community partners because they have the resources to be able to assist with things like that.” Another manager said, “we work with some social workers, ESL teachers who are really close allies of our program. We work with a refugee social support non-profit. The Community Foundation is a really great partner for us in kind of connecting—they act as a hub, almost like a non-profit hub and they connect partners of partners”

KPIs focused on community development. Given the barriers and the unique financial and social situation facing vulnerable farmers, KPIs should measure performance beyond pounds grown or revenue earned. For example, one manager said, “But it also is beyond just supplemental income, and training, and helping farmers get connected to markets, and all of the very logistical aspects which are part of incubator farming. We have found that it is incredibly important for community development, creating community and even for mental health for this community, so it has a social impact that goes beyond the economical, logistical aspects of what an incubator farm does.”

Interviews: Joint Food Bank-Incubator Farm Programs

Five key factors surfaced that lead to successful implementation of a farm incubator by a food bank. The specific factors include the following: 1) food bank has a forward thinking mission, 2) community connections, 3) trusted garden program that precedes incubator participation, 4) anchor farm produces food for the food bank, and 5) a suitable ecosystem and growing season for farming.

Food bank has forward thinking mission. Food banks focused on increasing fresh, healthy food access and on economic development will be more apt to engage with an incubator. Many food banks mention active efforts to increase the amount of fresh food available on shelves, and that making those improvements possible is dependent on relationships with farm and garden programs. The types of food banks able to offer incubator-like programming cite the importance of being forward thinking and making considerations about poverty more generally. For example, one manager said, “We have expanded our strategic vision to include both feeding the line and ending the line of hungry people,” while another said, “we’re now looking to solve hunger instead of just provide meals.

Community connections, building, and support. When a food bank is actively engaged with the community, they are more apt to participate, support, and engage in the incubator program. Food banks that implement incubator or farm programs identify this type of programming as a way to establish connections that benefit their clients, as well

as build and maintain a sense of community in their area. In many instances, therefore, the implementation of farm or garden programs is a direct response to input from the community. For example, one manager said, “The process for when stuff began was not sort of the general practice of coming into the community and saying, ‘This is what we’re going to do for you.’ But actually having many series of community meetings and input sessions and idea sessions, and votes on exactly what it is that we could do in the community here.”

Trusted garden program. Food banks with a trusted garden program have experience managing land-based programs, and have amassed the minimum knowledge and resources needed to run an incubator. They also have community members and food bank clients already involved in gardening programs who may be interested in taking the next step towards more intensive farming. For example, one incubator manager said, “We’ve got a lot of great community gardens—I think the new number is like 250 plus now—and they continue to develop, and I think the folks that were having conversations wanted to see if there was something beyond community gardens that could effectively produce food for the community and do so in a way that was financially viable.”

Anchor farm produces food for the food bank. If the food bank has a larger anchor farm at its incubator site, it can be used as a learning or demonstration space for farmers. The produce grown on that site can then be directed back to the food bank to supplement its healthy food selection. One incubator manager said, “If the food bank can somehow close that loop and bring the produce back to the food bank somehow and then reimburse the farmers, then I think you’ve really created a symbiotic relationship and I think it’s going to flourish.” Another program manager said, “... we also have something called a residency farm... where there’s something on the ground year after year, the same crops; there’s consistency, and the food bank can come back and say, ‘Hey, let’s do that again.’ [Farmers] can be out there for two to three years and run it, then go off and do their own, and they get experience running an actual farm business that is diversified ...”

Suitable ecosystem and growing season. A food bank interested in incubator farms needs to be located in a climate conducive to farming, which includes a long enough growing season for the farmers to be successful. It is also helpful if a local food culture already exists, which is typically the market utilized by incubator farmers to sell their goods. One incubator manager located in an area where water is more scarce and expensive said, “one of the big differences between where you’re at and where we’re at is the capacity for food to grow. And so we have actually back-pedaled on the program a lot, because we have so many local farmers that are struggling, that it didn’t make sense to us to birth more people who were ready to farm.” Regarding the importance of a local food culture to an incubator farmer’s sales, one manager said, “The local food movement is catching on here, but it is still culturally seen as this thing that is accessible to generally middle and upper-middle class people of white descent. So a lot of the local

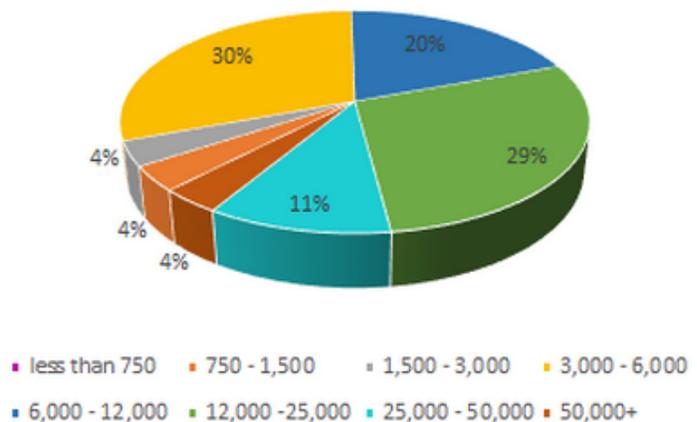
farmers are still struggling to reach into those markets and really try and change that culture.”

Overall, the interviews provide a useful cross-section of the professionals in the farm incubator field and, in combination with the literature review and survey results, help to inform or confirm best practices.

Surveys: Food Banks

Food banks were surveyed in early fall of 2014. Survey respondents represent a sample of 54 separate Feeding America food banks. Most of the food banks surveyed (53%) were founded between 1981 and 1990, the majority of which (84%) offer services in both rural and urban areas. However, 11 percent report their region of service as completely rural, and 4 percent serve only urban areas.

Figure 1: Food Bank Annual Distribution Totals (tons)



As demonstrated in Figure 1, tons of food distributed annually varied across food banks. Twenty-eight (50%) distribute between 3,000 and 12,000 tons per year. Another 24 (44%) distributed greater than 12,000 tons of food per year. Only 7 percent of participants indicate their annual food bank distributions are less than 3,000 tons per year.

Figure 2: Food Bank Annual Perishable Food Distribution (tons)

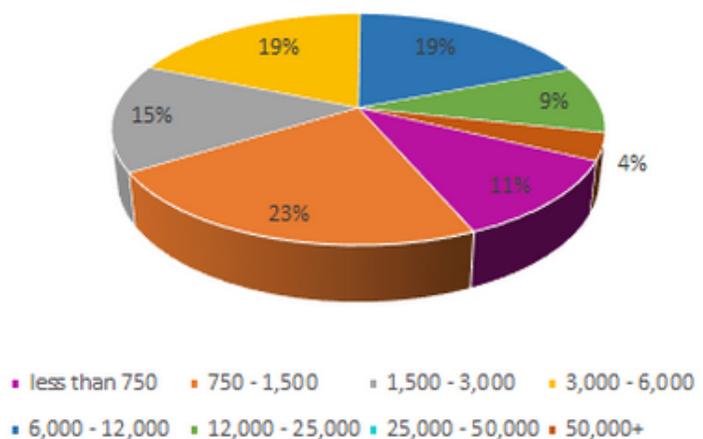


Figure 2 displays the tons of perishable food distributed annually. In sharp contrast to the distribution totals, almost half (49%) of food banks report distributing less than 3,000 tons of *perishable* food, or fresh produce, on an annual basis. Nearly 40 percent distribute between 3,000 and 12,000 tons of perishable food annually. The smallest percentage (13%) distributes greater than 12,000 tons of fresh food per year.

The average food bank receives about 44 percent of its funding from individual donations, with some receiving as little as 10 percent and others as much as 75 percent

from such revenue streams. “Other” funding sources account for an average of 28.17 percent of funding for the food banks surveyed. Additional funding sources from largest to smallest percentage include foundations, the federal government, state government, and city government.

When asked to rank the top priorities of their organization, nearly 81 percent of survey respondents indicate alleviating hunger is their number one priority. Seventy-one percent of food banks state that providing access to healthy and nutritious food is one of their top two priorities. A weak negative correlation exists between the goal of poverty alleviation and interest in learning about incubator farms, and interest in learning about potential partnerships between food banks and incubator farms. In addition, there is a moderately strong negative correlation between the goal of promoting nutrition and the goal of reducing food waste. Alleviating poverty is listed as the lowest priority (below reducing food waste and serving underrepresented populations) by 41.3 percent of food banks. This is consistent with the current food bank model, which is focused on a food in-food out process. It is also possible that these food banks see poverty alleviation as a Meta goal that can only be addressed when other priorities are satisfied. Respondents express that food banks experience some difficulty in meeting their prioritized goals. The biggest challenges food banks face include funding and government policies.

Although not a primary goal, many food banks do still offer supplementary programming. Examples of this include food assistance programs and partnerships with other organizations in their communities. The majority of food assistance programs are targeted at the elderly (85%) and children (89%). Another 38% offer some sort of garden or market garden project as part of their programming. Types of partners include non-land grant universities, land grant universities, immigration services, economic development organizations, and farms and farmers’ markets. There is a significant difference in the type of programming offered by food banks with diverse community partnerships. For instance, food banks with non land-grant university partnerships (38%) are significantly more likely to offer garden programs, job training services, and SNAP benefits than food banks without such partnerships. Interestingly, those partnered with non-land-grant universities are also significantly less likely to offer child food assistance programs but significantly more likely to offer elderly food assistance.

Of the food banks sampled, 45 percent report partnerships with a land-grant university in their community. Food banks with these relationships provide more job training and economic development services as part of their programming than food banks without land grant university partnerships. Job training, economic development services, SNAP, and garden projects are more likely to be offered by the 16 food banks (34%) who partner with immigration service organizations than those who do not. Food banks partnered with economic development organizations (36%) offer more gardens, including market gardens and incubator farms, as part of their programming. This seems to indicate that food banks are making conceptual connections between food

production and economic livelihoods. Additionally, economic development programming such as job training is *less* likely to be offered by food banks who are partnered with economic development organizations already offering these services. In contrast, no sound scientific inferences can be drawn about the differences between food banks with and without farm and farmers' market partnerships because so many food banks in the sample (87%) report established relationships.

In addition to their current partners, food banks desire collaborations with other outside organizations and agencies. In order of demand, survey respondents wish to partner with more health care agencies, including hospitals and clinics, as well as universities or other research institutions. Sixty-seven percent of the respondents have an interest in learning more about partnering with incubator farms, and another 60 percent wish to learn more about incubator farm projects in general. Excitingly, 15 percent are interested in adding an incubator farm.

When asked, "Do you think it would be feasible to expand your programming to include a farm incubator project? Why or why not?" Food banks (N = 39) mention a variety of factors that influence feasibility. The most prominent considerations include the following:

Time: A temporal factor and a resource. A significant number of respondents (N = 10, 25.6%) identify "time" as a significant factor influencing their willingness to incorporate an incubator farm. The concept of "time" includes two sub-categories because some participants say their organization lacks time in a resource sense; others simply state that program expansion is not feasible at the current moment in time. Responses like "[we] don't have time to allocate to [an incubator farm program]" are classified as referencing time as a resource. In contrast, statements which allude to a temporary inability to start a incubator farm such as "not at this time" or "not for about 3 – 5 years" are coded as alluding to time in a more temporally-dependent capacity.

Land: Suitability and access. Land is a major factor influencing participants' beliefs (N = 10, 25.6%) about feasibility. Two sub-categories exist within the category of land: suitability and access. Some food banks refer to the land in their service area, such as its suitability for farming and markets for farmers. For instance, one food bank said, "we are in a farm rich area and there are opportunities to consider alternatives to how we engage fresh food." The ability to access land for farming is another major factor because some food banks experience, "a lack of affordable, available land" in their service area.

Funding. Several respondents (N = 8, 20.5%) consider additional funding support as pivotal to their food bank's capacity to incorporate an incubator farm.

Scope: Beyond priorities and "core mission." Some food bank representatives (N = 10, 25.6%) feel that incubator farm projects do not fall within the scope of their

organization's (a) primary priorities, or (b) central mission. Overall, sixty percent of the responses that reference scope allude to some discrepancy between the mission of food banks and farm incubators. For instance, comments indicate that a farm incubator, "goes beyond the scope of our core competency," and "does not seem to be a good fit for food banks." Others recognize food banks "have other priorities." This is consistent with the priority rankings at the beginning of the survey.

Existence of other organizations. A few food banks (N = 6, 15.4%) think an incubator farm is unnecessary due to the existence of other incubator-type programs in their service area. In these responses, participants perceive very little need for farm incubators because "many qualified organization [are] already doing this in the communities we serve."

Incubator impact: Efficiency and "proven performance." A small number (N = 4, 10.3%) of survey respondents express hesitation around adding a farm incubator due to the unknown impact of such projects. As one respondent put it, "With so many opportunities to consider, the ROI for what has the greatest impact needs to be evaluated and considered." Thus, without "proven performance" some food banks are unwilling to include an incubator farm project as part of their programming.

Additionally, the survey asked respondents to explain which "innovative changes" they would make to their current programming if funding was unlimited. Responses (N = 30) vary but include several similarities. Consistent themes include increasing their organization's capacity to:

Focus on nutrition and health. Increasing focus on nutrition and health is the most common form of innovation food banks desire (N = 19, 63.3%). Pursuit of this goal is often proposed through nutrition education, healthy food, or greater connections with the healthcare sector. A consistent emphasis on creating a "positive impact on their [clients] long-term health" is observed across food banks. Though, the means for achieving this long-term impact vary considerably. For instance, some respondents state a desire to "achieve 100% healthy food" in their distribution chains, while other's goals include having a full-time "nutrition educator on staff."

Strengthen the system of food distribution. Transportation and distribution of food surfaced as a major barrier preventing innovation among food banks (N = 8, 26.7%). The 30 respondents express a need for trucks, drivers, and the capacity to handle more food. Strengthening the food distribution system could take place by hiring more drivers, buying additional refrigerated trucks, or expanding mobile pantry service areas. Quite simply, food banks want to "expand distribution" because "better transportation systems get food to people and people to food."

Provide job training and poverty alleviation strategies. Survey responses revealed some food bank representatives (N = 7, 23.3%) "believe in a comprehensive approach to

hunger and poverty” which requires “more than just food distribution; it requires programming and education.” Other food banks echoed the desire to “shorten the line of clients needing our [food bank] assistance.” Innovative ideas related to poverty alleviation included life skills and job training, financial security programming, as well as a full-scale “bridges out of poverty program.”

Partner with outside agencies. Our survey of food banks (N = 8, 26.7%) revealed a desire to “expand” existing partnerships or promote new relationships with outside agencies. Food banks stated a need to change existing programming by increasing collaboration with current distribution partners. Some respondents desired a complete “restructure” of their agency distribution network, while others simply wanted to provide training or nutritional resources to the agencies which distribute their food. Less common responses included a desire to expand work with “commercial growers” or their food bank to farm program.

Surveys: Incubator Farm Program Managers

The survey distributed through the NIFTI listserv received responses from 34 different incubator farm managers. Of these, 97 percent reported being either “somewhat” or “very” familiar with food bank organizations. More interestingly, almost half (45%) of the incubator farm managers indicate there is a definite opportunity to collaborate with food banks. Another 52 percent of incubator farm operators responded there might be some potential for collaboration among food banks and incubator farms. Only one respondent reported seeing no potential for the two organizations to work together.

Participants were asked to explain their response about the potential for collaboration between incubator farms and food banks. Of the 24 responses, the majority were positive (N = 16), although a few participants expressed a negative (N = 2) or uncertain (N = 6) emotional affect. Several topics were observed in the data and are explained by five primary themes: 1) market insight and opportunity, 2) local food production, 3) the nature of food dispersal to food banks (donations or sales), 4) collaboration and partnerships, and 5) partnership logistics.

Market insight and opportunity. Incubator farmers often struggle to establish markets. Incubator managers (N = 6, 25%) see food banks as a way to access and enter a more diverse pool of markets to sell their product. In particular, “If food banks had greater resources to procure locally grown food, it would provide a significant market opportunity to beginning farmers who often struggle to establish markets.” Incubator managers also express that food banks could be useful for selling late-stage produce that may not sell well at farmers’ markets, which would minimize lost revenue. This would amount to food banks or their in-between organizations being treated much like wholesalers. Incubators also see potential for recruiting new farmers and gardeners from those individuals served by food banks, to connect with and recruit those food insecure populations. Furthermore, the respondents explain that consumer preferences exhibited by food banks can help inform incubator farmers about which products sell

well in their communities. Specifically, “Food banks can teach new farmers what is most popular and, therefore, what to grow.”

Local food production. Incubator farm operators (N = 7, 29.2%) discuss the value of locally grown and distributed food. Importantly, several incubators acknowledge the capacity for farms to assist with pre-existing or developing food bank programs which seek to increase distribution of fresh produce. Some of the programs mentioned include Buy Fresh Buy Local and Farm to Food Bank. As one participant commented, the Farms to Food Banks program “allows Food Banks to pay local farmers decent (though not great) prices for locally grown produce.” Some farms who have already established relationships with local food banks are selling their produce at or slightly below market value, while others make donations. Regarding distribution, most incubator operators mention that a proportion of their production might be sold or donated to local food banks. Scale varies from small projects such as “grow a row” to larger operations where an entire plot of land is intended for donation.

Various conditions associated with food production, such as times of excess or surplus produce and transitions between growing seasons, presents additional possibilities for collaborating with food banks. For instance, “incubator growers leasing plots could coordinate with local gleaning programs to donate surplus produce on their plots to food banks, especially at the end of the season when fields are being prepped for the winter.” Discussion of local produce and collaborations with local food banks varies significantly in scope of timing and distribution. Potential partnerships with food banks are thought to be especially valuable for beginning farmers working to establish market opportunities. Some incubators find that working with food banks can be especially beneficial when there is a surplus of farmers’ produce. Other respondents envision or employ more permanent collaboration opportunities.

Nature of food dispersal to food banks: donations or sales. Many incubators (N = 9, 37.5%) see food donation as the means by which they would interact with a food bank, and some incubators grow food specifically for this purpose to give back to the wider community. Others use food banks to move unmarketable or excess products to reduce food waste, sometimes at a reduced market cost for small revenues. Despite the largely positive potential for incubators and food banks to collaborate, respondents are not without concern. Importantly, both of the responses which are classified as expressing a negative emotional affect referenced the nature of food dispersal as a primary concern. The most common worry expressed by incubator managers was whether farmers could earn sufficient income, especially if donations are made to food banks. Some respondents feel their farmers’ food products are too valuable to be donated because certain incubators have, “a livestock emphasis, so the end product is higher value and less likely to be donated.” Others worry about selling produce at discounted rates to food bank because, “farmers really need to make money [and] donations do not create income.”

Collaboration and partnerships. Generally, the types of partnerships with food banks proposed by incubator managers (N = 6, 25%) were for very formal exchanges of goods for shared value. Some incubator farmers discussed potential for collaboration beyond goods exchange, but this was less common. These incubators identified with their role in the wider community food system and the mission similarities between incubators and food banks. One respondent noted “our farm already donates some produce to our area food bank, as well as directly to some food pantry outlets. I do see the potential for expanding this collaboration and finding additional ways to do so that support the missions of both organizations.” It is unclear how those partnerships may manifest beyond produce dispersal, but possible opportunities include education, volunteering, and community building. Rehabilitation services are also mentioned as a possible opportunity for collaboration, “we think there are a lot of possibilities. Our participants, people who have been previously incarcerated, volunteer at the food bank and they tend to be open to creative partnerships.”

Partnership logistics and potential challenges. A few incubators (N = 4, 16.7%) express that logistical challenges interfere with farm and food bank collaboration. Logistical challenges include discrepancies between 1) the type of product produced at the farm and the type of product desired for donation, and 2) food bank and farm operation times. Some farm managers “have looked at partnering with food banks in the past. The challenge is always in the logistics: hours of operation and delivery schedules.” Those incubators producing livestock or produce of inconsistent qualities and quality seemed unsure about the potential partnership opportunities: “Our producers are primarily raising livestock. The higher value of their product and ability to freeze and market the product longer, make it unlikely that the producers would have excess product. In my opinion, it is the excess in veggie operations that make it a better fit with food banks.”

Spatial Analysis

For the purposes of a GIS analysis, six initial factors have been identified for their potential to impact the success of a food bank-incubator partnership. These factors are utilized in the first iteration of the analysis, the details of which are outlined below.

Proximity to existing food banks (1) and farm incubator projects (2). Partnerships only make sense in areas with already established food banks and incubator farms. This factor was considered using the addresses of Feeding America network food banks, as well as farm incubator addresses from NIFTI. The addresses were geocoded with 20-mile buffers around each point to both account for margin of error in geocoding, and provide a rough approximation of service area. Euclidian distances were calculated from each buffer, resulting in geographic displays of an area’s proximity to food banks and farm incubators.

Accessible land. Lack of access to affordable land is one of the most frequently cited barriers to beginning farmers. Therefore, to determine an area’s suitability for incubator farming, land banks are used as a proxy for available, affordable land. Locations of land

banks are sourced from the Center for Community Progress, and then overlaid on the food bank and farm incubator data. However, this is a poor proxy for available land because land banks are found primarily in the eastern half of the country. This creates some analysis bias in that region.

Market access. Farmers must be able to sell their produce to operate successful farm businesses. This analysis endeavored to locate areas with reasonable access to farmers' markets. The 2013 farmers' market density information was sourced from the USDA's Food Access Research Atlas. This dataset maps the number of farmers' markets on the census tract level. This proxy does not account for the instances in which incubator programs sell their farmers' products to wholesalers; however, farmers' markets are a good determinant of success for individual farmers upon completion of the program when they are no longer benefitting from collective incubator sales.

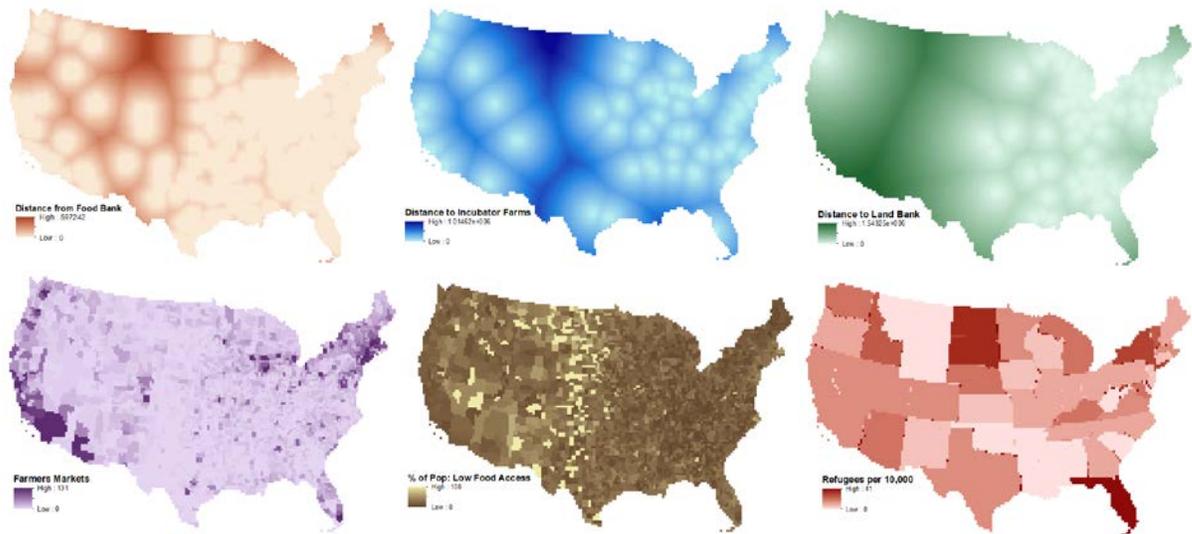
Increase food access and security. Incubator farms and food banks should increase food access in the area of the partnership by enhancing the capacity of residents to obtain food. This means that appropriate locations for this partnership are areas where there is low food access—areas that tend to be low income, as indicated in the literature review. Using the USDA's Food Access Research Atlas, the percent of the census tract that is classified as low-income and low-access was mapped.

Serve underserved populations. Food bank-incubator partnerships should serve populations who experience food insecurity, such as immigrants and refugees. The Office of Refugee Resettlement tracks the number of incoming refugees on the state scale. Using 2010 U.S. Census population counts, the number of refugees per ten thousand state residents was calculated.

Two other factors are influential in determining whether or not a partnership between a food bank and incubator farm is beneficial. However, these factors were not included in the first iteration of the analysis. They include a climate suitable for farming, and existing garden projects. Partnerships would be most effective in areas that have a climate conducive to farming, which could refer to temperature but could also refer to water access. This can partially be inferred by our knowledge of certain geographic areas, such that desert regions might pose certain challenges, and greenbelt climates are likely well suited. Regarding garden projects, food banks with pre-existing garden projects are especially suited to implement incubator farms, because they already have growing experience and resources. A map of these projects can be plotted as a check of the predictive capabilities of the model.

Once the six contributing factors were compiled and processed (proximity to existing food banks and farm incubator projects, accessible land, market access, increase food access and security, serve underserved populations, climate suitable for farming, and existing garden projects) each was scaled so that all six layers were on the same 0-100 scale. Figure 3 shows the six scaled layers included in the analysis.

Figure 3: Scaled Factor Layers



An analytic hierarchy process was used to come up with weighting schemes that are consistent, with all weights adding up to one. Three initial schemes were considered priorities in weighting: 1) Proximity to existing infrastructure, 2) barriers, and 3) serving underserved populations. Proximity to existing infrastructure refers to proximity to farm incubators and food banks. Barriers refer to factors that focus on lowering barriers for farming, such as access to land and access to markets. Serving underserved populations refers to increasing food access and engaging refugee populations. Figure 4 shows the suitability maps produced by each of these three weighting schemes. In each map, red indicates areas less suitable for food bank-incubator partnerships while green indicates areas more suited for partnerships.

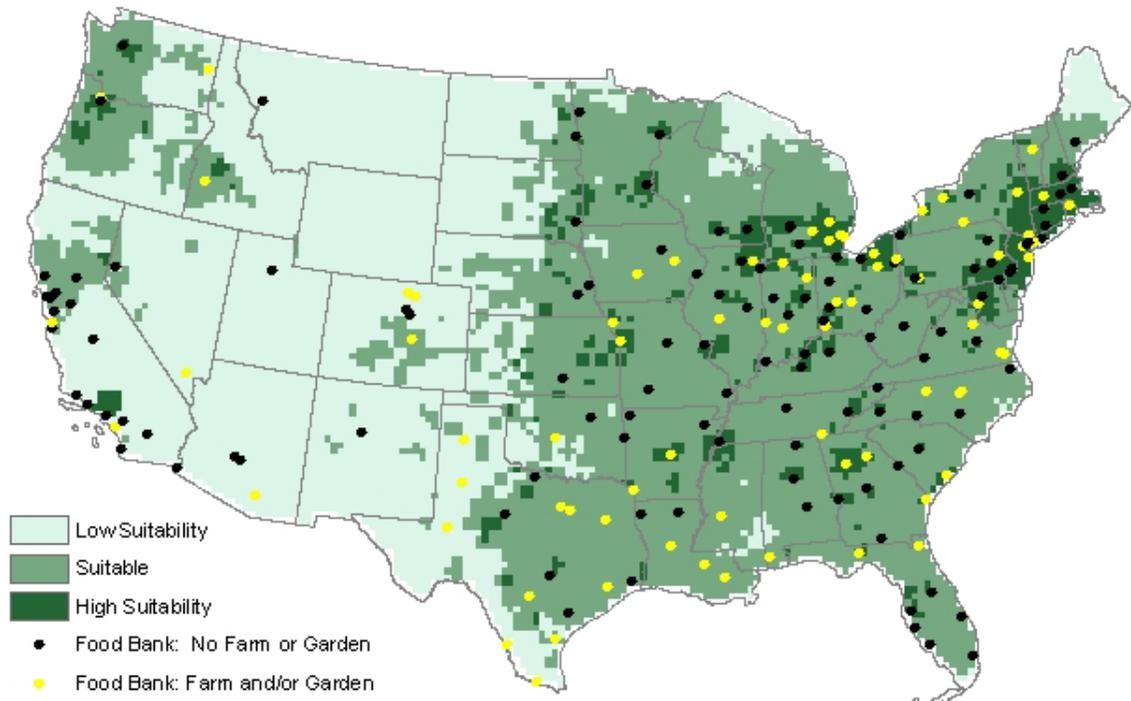
Figure 4: Weighting Schemes 1-3



Ultimately, a lack of literature regarding food bank and incubator farm partnerships means that there is no expert opinion on which factors should be prioritized in the weighting process. For this reason, the weighting scheme that was ultimately chosen was a combination of the initial three schemes. Schemes one, two, and three were combined equally to result in a final suitability map that weights each factor approximately equally. Figure 5 shows this final suitability map for food bank-incubator

partnerships reclassified into three levels of suitability, low (light green) to high (dark green).

Figure 5: Partnership Suitability Map



Areas that are highly suitable for partnerships between food banks and incubator farms are concentrated primarily in the northeast and Great Lakes regions. This is unsurprising; the land banks layer that was used as a proxy for affordable land biases towards the eastern half of the country. Additionally, the majority of food banks and farm incubators are in these regions as well. Incorporating climate suitability and using a different proxy for available land should make the map even more effective at predicting where partnerships between food banks and farm incubators can have the biggest impact. The Feeding America food banks that already incorporate community gardens or farms into their programming are identified by yellow dots; the majority of these food banks coincide with areas that are suitable or highly suitable for partnerships. This reinforces the premise that food banks with existing garden projects are particularly well positioned to implement incubator farms.

FOOD BANK + INCUBATOR ANALYSIS

The information gleaned from the literature review, interviews, surveys, and GIS analysis helped generate a running list of frequently cited factors that are indicative of successful food banks and incubator farms. To design best practice rubrics for food banks and farm incubators, these factors were reviewed and clustered into more

comprehensive chunks, which were labeled key characteristics. This made the rubric more succinct. Each key characteristic encompasses sub-characteristics that speak to the factors mentioned in the research phase. A full version of the rubric is available in Appendix C, which defines the key characteristics, sub-characteristics, and things to look for when evaluating programs.

The final key characteristics for the food bank best practices rubric include the following: 1) food justice, which is the extent to which the food bank is proactive and considerate in its approach to hunger; 2) effective distribution, which speaks to infrastructural and partnership capacity; and 3) respectful client experience, which addresses whether the food bank creates a positive, flexible, and responsive environment for clients.

The final key characteristics for the incubator farm best practices rubric include the following: 1) supportive culture of excellence, which refers to the enabling of farmer progress through thoughtful infrastructure and recruitment; 2) comprehensive programming, which refers to the types of resources and instruction provided to farmers; 3) building self-sufficiency, which measures how well an incubator prepares its farmers for post-program success; and 4) internal capacity, or the incubator's ability to be a stable and financially viable program. The incubator farm key characteristics and sub-characteristics are identical for typical incubator farm programs and incubator farms serving vulnerable populations. However, application of the specific sub-characteristics is very different for incubators working with vulnerable populations because those organizations define success differently. Incubator farms that serve vulnerable populations utilize different KPIs and levels of resource support, for example. Therefore, two separate incubator farm best practice rubrics are available that cater to the needs of the two incubator types.

With the three rubrics in hand (food banks, farm incubators, and farm incubators for vulnerable populations), it is possible to compare them for potential programmatic overlap, the purpose of which is to design a combined best practices rubric. Looking for overlap helps determine whether it is possible for food banks and farm incubators to work together toward shared goals, and whether they have enough shared capacity to combine their efforts. This rubric also takes into account those areas where there might be gaps in one organization's capacity that can be filled by the strengths of the other organization. The final best practices rubric for combining food banks and incubator farms identifies those areas that need to be in place in order for this type of relationship to be feasible and successful. Those final key characteristics include the following: 1) suitable location; 2) forward thinking mission; 3) a garden program; 4) farm production for the food bank; 5) leveraged partnerships; and 6) structure for success.

Each of the best practice rubrics can be utilized by a food bank, farm incubator, or food bank-incubator partnership to assess their programs. They are meant to help

benchmark, qualitatively, the current state of these organizations and provide evidence-based suggestions of practices that lead to success.

CONCLUSIONS & FUTURE IMPLICATIONS

Given the commonalities and complements identified in the best practice rubrics, there appear to be a number of contexts in which food bank and incubator farm relationships can be beneficial. The desire of GLFB to provide healthier food and economic development may be beyond the purview of a food bank on its own. The capacity of incubators to provide fresh food and supplemental income is one way the two entities might complement one another. Additionally, incubator farms are more successful when they have strong community partnerships, which are often weak at these young organizations. They also are very reliant on grant funding, and would benefit from the more stable revenue streams that food banks could provide. Overall, the pairing of these two entities is an exciting prospect, and one that should be watched closely as GLFB and others pursue this inventive work.

However, it is also well documented that research on this partnership is extraordinarily new, and further research is needed to further refine the best practices proposed here. This research was not able to draw conclusions about which key characteristics should be weighted more heavily than others, beyond indicators such as climate and physical capacity. It would be interesting to learn whether some characteristics are more critical than others. Similar research is also needed about incubator farms as singular entities. Furthermore, it remains to be seen if such a pairing will cause larger systematic shifts in food bank culture, such that more and more food banks begin to reconsider their food-in, food-out model.

Finally, it is important to remember that food bank-incubator farm relationships are not the only method by which food banks can pursue poverty alleviation. There are alternative strategies that food banks can pursue to embolden their clients and minimize long-term reliance on food assistance. Some food banks in the Feeding America network, for example, are offering culinary training, or local economic development initiatives. Research in the future might evaluate the efficacy of incubator farms operated by food banks compared to other food bank poverty alleviation programs. The presence of alternatives is encouraging, and perhaps indicative of a larger food system movement to come.

FIGURES

Figure 1: Food Bank Annual Distribution Totals (tons)

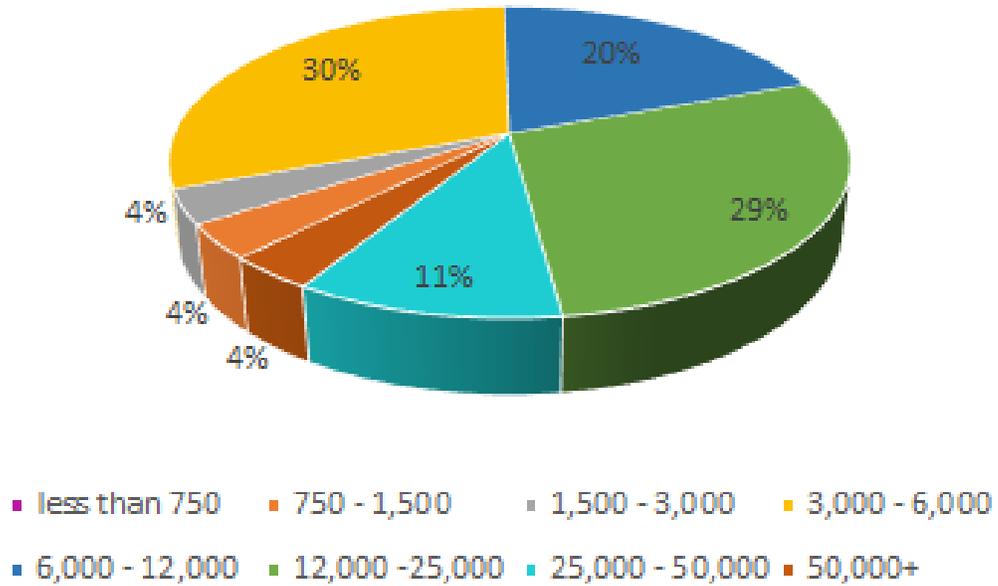


Figure 2: Food Bank Annual Perishable Food Distribution (tons)

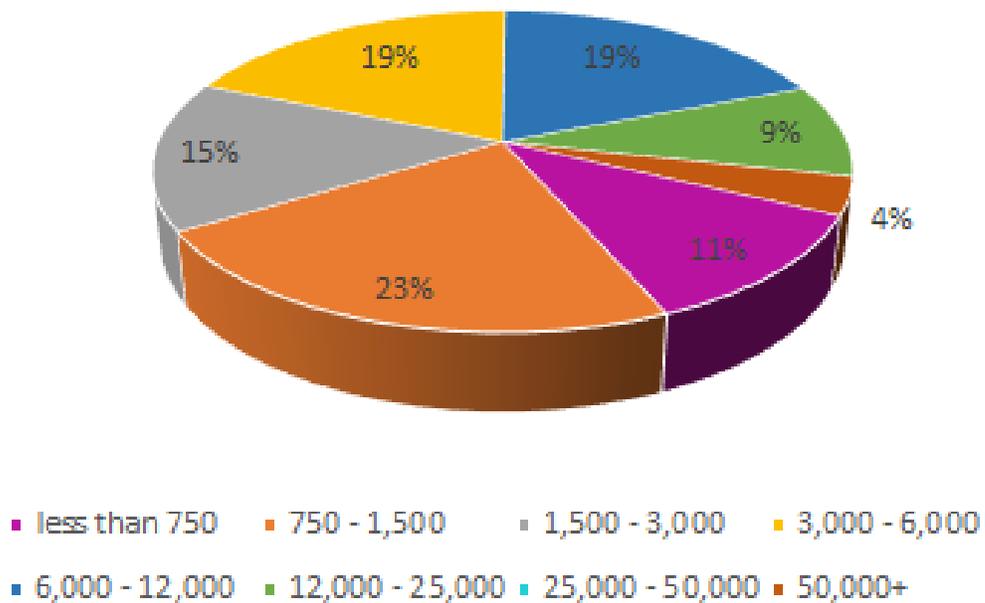


Figure 3: Scaled Factor Layers

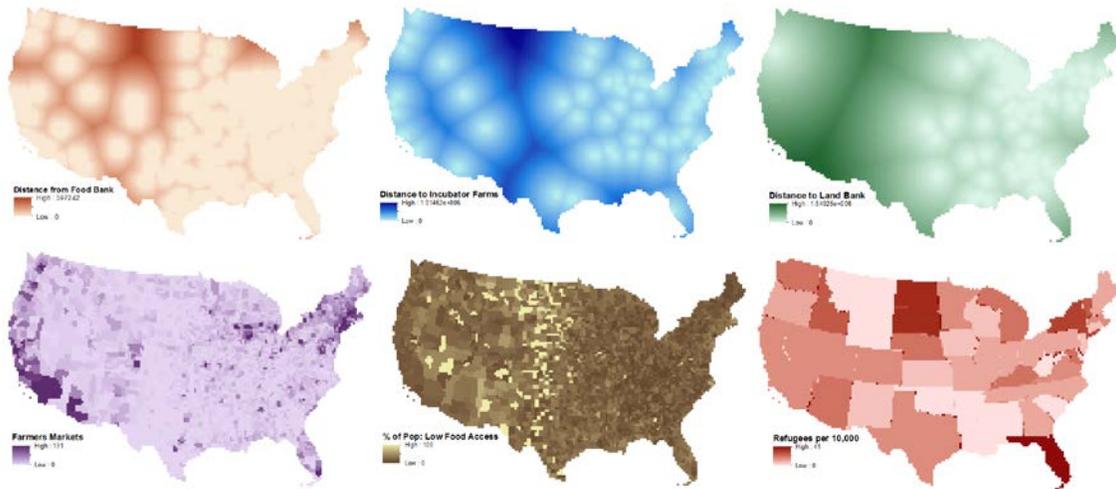


Figure 4: Weighting Schemes 1-3

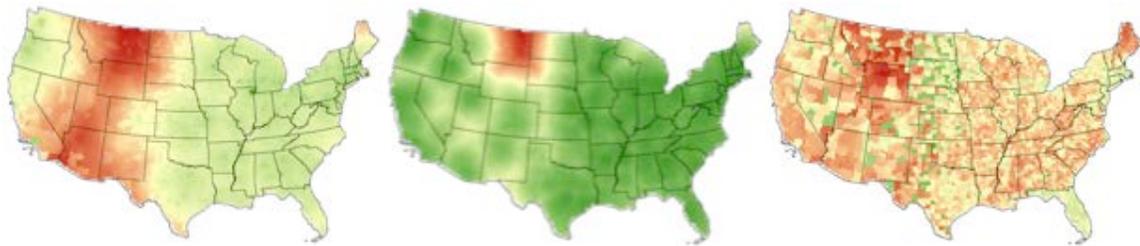
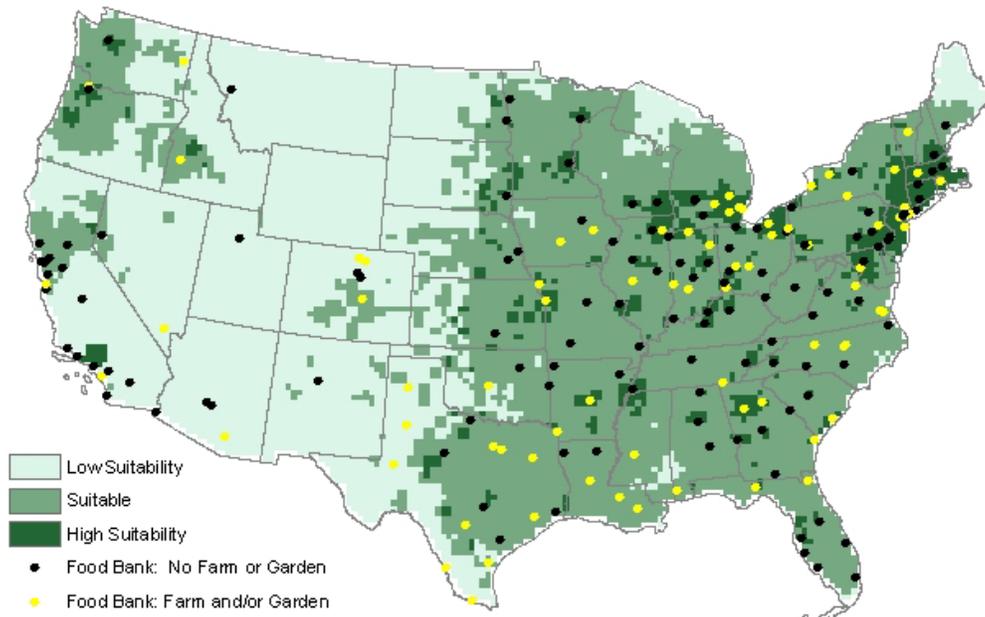


Figure 5: Partnership Suitability Map



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APPENDIX A

Literature Review Key Terms and Subjects

Subject	Key Terms
Food Bank	<ul style="list-style-type: none">• Needs• Purpose and mission• Michigan• Metrics• Program evaluation• “Best practices”• Hunger relief
Incubator Farms	<ul style="list-style-type: none">• “Best practices”• Land-based incubators• Human-powered agriculture• New entry farmers• Sustainable farming• Metrics• Program evaluation
Food Security	<ul style="list-style-type: none">• Food justice• Farmer training• Local food• Refugee farmers• Low-income farmers• Female farmers• Environmental implications
ROI	<ul style="list-style-type: none">• Post-program land acquisition• Land grants• Marketing support• Joint ownership• Business incubation• Income generation

APPENDIX B: Interview Guide

INFORMED CONSENT FORM FIRST: FOR EVERYONE

Thank you for agreeing to participate in this interview. I appreciate you taking the time to meet with me.

As you know, I am interviewing key stakeholders of incubator farms and beginning farmers in those programs to better understand how to support new farmers. The purpose of this study is to identify expansion opportunities and sustainable practices for incubator farms that are managed by food banks. The study is being conducted for the Lansing Roots farm incubator program by Masters students at University of Michigan's School of Natural Resources and Environment. Your responses will help inform my recommendations for Lansing Roots.

Before we get started, I wanted to be sure you know that your decision to participate in this interview is entirely voluntary and you are free to withdraw from the research at any time. Or if there are any questions you don't want to answer, just let me know.

Also, if you would prefer, I can strive to keep your identify in this study confidential. In other words, I will not use your name in any presentations of the research or written reports.

Is it ok for me to use your name?

And finally, if you are ok with it, I would like to tape record the interview. Taping ensures that

Your views are accurately recorded, and it allows me to focus on what you are saying. Is that ok with you?

Questions for Farm Incubator Operators/Managers:

BACKGROUND

What is your background with farm incubation programs? Professional story!

Prompt: Would you tell me about your role in the program?

Why is it important to generate new farmers?/Why do new farmers matter?

In your local context, what are the largest barriers to becoming a farmer?

PROGRAM OPERATION & BEST PRACTICES

Turning to the program itself, I thought we could start at the beginning and talk about how the incubator was created. Tell me the story about how this got started.

Prompt: When it was getting started, what were your main goals?

Prompt: What is your program's current mission?

Prompt: Who was involved? Did you look to any other incubators for ideas or guidance? Any partnerships?

I'd like to learn a little about the land itself. How did the program find its land?

Prompt: How much land does the program have? Is it owned or leased? From whom?

Prompt: What are the terms? Where is it located? What buildings were originally on the site?

How did you get funding? AND Current funding status and long-term funding plans?

Who are new farmers in your program? What tends to be their story?

How are farmers selected to be participants in your program? What is the application like?

Prompt: Any program fees?

Prompt: How long are they in the program (if subject hasn't addressed this yet)

What is the structure of your incubator program?

How do you decide on program content?

What resources do you provide to farmers, from start to finish and beyond?

Prompts for program components: Skill building? Workshops? Mentorship or Networking? Marketing? Land acquisition? Equipment and tools? Access to buildings?

Prompt: Any addition fees for use of these resources?

What are some of your key successes? Failures?

Prompt: What resources made those successes possible? What created the failures or barriers to success?

What is your retention rate?

Who are your primary contacts?

What do you think defines a successful incubator farm?

Prompt: Based on that definition, have your program's participants been successful?

What do you think are the primary obstacles? What are the obstacles to further development?

How do you track the success of current and past incubator farmers? What are your methods of program evaluation?

FOOD BANK + FARM INCUBATORS

Thinking about farm incubators and food banks, what do you think might be the benefits or drawbacks of combining these two programs into one model?

SOCIAL JUSTICE

How does social/environmental justice play a role in your mission as an incubator farm?

FUTURE CONTACTS

Do you have any colleagues or contacts who you think would be interested in sharing their expertise and opinions?

Prompt: Are there any farmers who participated in your program that might be interested in talking with us?

Questions for Food Bank People:

What needs is your food bank trying to meet in the community that you serve?

What are the demographics of the population you serve?

What resources do you provide in your community?

Prompt: What food resources? (type of product distributed)

Prompt: Additional resources?

What are some of your key successes? Failures?

Prompt: What resources made those successes possible? What created the failures or barriers to success?

Have you implemented any programs which try to break the cycle of giving? What were/are some of these methods or approaches?

Do you have any gardening projects?

Do you provide any professional training opportunities/poverty alleviation opportunities?

Have you heard of farm incubators?

Describe Lansing Roots: Lansing Roots is designed to help limited resource and historically under-served individuals begin successful market gardening and farming enterprises through an incubator farm setting. Participants receive a small plot of land to start their own farmers and are also provided training workshops focused around practical skills in agriculture and business.

Prompt: Would your organization be interested in supporting a similar farm incubator project? Why or why not?

How does social justice play a role in your Mission as a food bank?

Farmers who “Graduated” a Farm Incubator (Not LANSING ROOTS):

Can I start by asking you a few demographic questions?

→ What is your age?

→ What is your race?

→ Were you born in the US?

→ Note: Gender

How did you hear about the incubator?

Did you have any farming experience before joining the farm incubator?

Do you currently operate a farm/agriculture business?

Can you describe your overall experience with ____’s farm incubator project? Was it positive or negative experience? Why?

What were the biggest challenges?

Prompts: another job? transportation? sharing resources? family responsibilities?

What resources were you provided that were helpful? What was most beneficial about participating in an incubator project?

What resources were not provided that you would have liked? What was least beneficial about participating?

Did your program provide help with: land acquisition, licensing, etc.?

What kind of funding was supplied as part of the program? What were the program fees like?

Did you have access to funding following the program?

Did your farm incubator project work with any nonprofit agencies or University extension programs? If so, how did they work together?

What were the group dynamics and support systems like?

What advice would you give to a new participant?

Any other thoughts you would like to share?

Interview Questions for Policy Actors:

What is your background with farm incubation programs? Professional story!

(Incubator Farms)

In your opinion, what role does policy play in the establishment or continuation of incubator farm projects?

Prompt: Who are the key players/stakeholders who might push for such policy?

Is it important to establish legislation which supports incubator farm projects?

Do you know of any policies that inhibit or support incubator farm projects?

Do you know of any zoning issues that inhibit or support incubator farm projects?

Can you describe the political landscape that incubator farm projects are situated in?

Where do you see the future of farm incubators or beginning farmer projects going?

Prompt: What policy needs to be strengthened or established to make this future a successful one?

How does social justice play a role in current policy surrounding incubator farms?

What role do you think incubator farms might serve for food banks? Or what role do you think food banks might serve for incubator farms?

(University Agricultural Extension Programs)

What role do you think incubator farms might serve for agricultural extension programs? Or what role do you think agricultural extension programs might serve for incubator farms?

Interview Questions for TUFTS:

History of the New Entry Sustainable Farming Project?

What were the motivations for starting the program?

Who are the key contacts in the community?

What are some of the biggest obstacles to incubator projects?

What role do you hope incubator projects will play in the future?

What role do you see higher education playing in the development of farm incubators?
What has your role been established?

What have been the most favorable outcomes?

How do you distinguish a successful farm incubator project? (Metrics?)

APPENDIX C: Best Practice Rubrics

Incubator and Food Bank Best Practices Rubrics

<u>Incubator Farm</u>	<u>Incubator for Vulnerable Populations</u>
<p>#1 Supportive culture of excellence: Incubator expects excellence from farmers, and in turn provides the environment to support successful completion of program.</p> <ul style="list-style-type: none">1.1 Skin in the game1.2 Stair-stepping1.3 Diverse Demographics <p>#2 Comprehensive programming: Incubator farm offers the training, education, and tools necessary to nurture successful farming techniques while completing the program.</p> <ul style="list-style-type: none">2.1 In-depth training program2.2 Connection with skilled and enthusiastic mentors2.3 Access to resources2.4 Evaluation techniques <p>#3 Building Self-Sufficiency: Incubator is intimately involved in preparing farmer for success after completion in the program.</p> <ul style="list-style-type: none">3.1 Access to land3.2 Comprehensive marketing3.3 Access to finance <p>#4 Internal capacity: Stable internal infrastructure is in place for long-term incubator success and sustainability.</p> <ul style="list-style-type: none">4.1 Inclusive recruitment4.2 Diverse funding sources4.3 University partnerships4.4 Evaluation	<p>#1 Supportive culture of excellence: Incubator expects excellence from farmers, and in turn provides the environment to support successful completion of program.</p> <ul style="list-style-type: none">1.1 Skin in the game1.2 Stair-stepping1.3 Diverse Demographics <p>#2 Comprehensive programming: Incubator farm offers the training, education, and tools necessary to nurture successful farming techniques while completing the program.</p> <ul style="list-style-type: none">2.1 In-depth training program2.2 Connection with skilled and enthusiastic mentors2.3 Access to resources2.4 Evaluation techniques <p>#3 Building Self-Sufficiency: Incubator is intimately involved in preparing farmer for success after completion in the program.</p> <ul style="list-style-type: none">3.1 Access to land3.2 Comprehensive marketing3.3 Access to finance <p>#4 Internal capacity: Stable internal infrastructure is in place for long-term incubator success and sustainability.</p> <ul style="list-style-type: none">4.1 Inclusive recruitment4.2 Diverse funding sources4.3 University partnerships4.4 Evaluation4.5 External partnerships

Food Banks

#1 Food justice: Food bank is proactive in its approach to hunger, and considerate of how inventory choices impact individuals experiencing hunger.

- 1.1 Connect hunger with poverty
- 1.2 Supplemental resources
- 1.3 Respectful client intake

2 Effective distribution: Food bank infrastructure and relationships enable efficient distribution of resources to clients.*

- 2.1 Coordination to meet need
- 2.2 Develop important partnerships

#3 Respectful client experience: Client experience at the food bank is positive, flexible, and provides food security.*

- 3.1 Client caloric needs met
- 3.2 Healthy food options
- 3.3 Client choice

**Note: If food bank does not distribute directly to clients, then evaluation of distribution agencies is needed to ensure client needs are met.*

Combining Food Bank & Incubator Farm

#1 Suitable Location: The food bank's location is amenable to farming practices, and the area population is suitable for incubator ventures.

- 1.1 Farming supportive climate
- 1.2 Food insecure populations
- 1.3 Local food culture

#2 Forward thinking mission: Food bank actively pursues upstream solutions to hunger.

- 2.1 Connect hunger with poverty
- 2.2 Health focus
- 2.3 Economic development

#3 Garden Program: Food bank has initiated a community-based gardening program.

#4 Farm production for food bank: Food bank has started or is starting to incorporate fresh produce, either from its own farm plot or through area farm partnerships.

#5 Leverage partnerships: Food bank is conscious of client needs, and can connect clients with alternative resources that are beyond the food bank's capacity.

- 5.1 Partnership with economic development organizations
- 5.2 Partnership with Universities
- 5.3 Partnership with health care agencies
- 5.4 Partnership with local government (land trust)

#6 Structure for Success: Food bank and Incubator work collaboratively, engaging in open communication and support.

- 6.1 Resource support for incubator
- 6.2 Cooperation among administrative leaders
- 6.3 Shared culture

Incubator Farm

Key Characteristic #1: Supportive Culture of Excellence

Incubator expects excellence from farmers, and in turn provides the environment to support successful completion of program.

1.1 Skin in the game: Create higher barriers to entry through experience, applications and cost.

What to look for:

- Farmers invest in the experience through participation fees, which are calculated on a sliding scale.
- Farmer already has formal education in farming techniques, and is an experienced gardener or farmer. The incubator is being used to experiment with the field as a business venture, as opposed to a hobby.
- Incubator requires farmer to submit a formal application summarizing their knowledge, experience, and other details that will help identify candidates who are serious about farming as a career.
- Program encourages farmer to take responsibility for their own experience, taking full advantage of resources available.

1.2 Stair-stepping: Provide clear timelines of program progress and graduation and offer entry at different levels for different participants.

What to look for:

- Incubator has separate programming, such as garden programs, for beginners and novices. Organization may require completing one to two years in beginner program prior to enrollment in incubator.
- Farmers will be organized into groups of similar skill level, and will move through the program as a cohort. Different cohorts will mentor and be mentored by other cohorts, and will gradually progress together to higher levels of instruction, coupled by diminishing levels of oversight.
- Organization may offer separate incubator programming for different levels of farming experience to better serve the varying needs and skill levels of participants. For example, programming for less experienced farmers would include more instruction and mentoring on a monitored site, whereas programming for experienced farmers would focus less on technique and have more autonomy.

1.3 Diverse Demographics: Create a cohort with a variety of racial, ethnic, skill-level and socioeconomic groups.

What to look for:

- Incubator attempts to balance a wide range of racial, ethnic, and socioeconomic groups, so farmers can teach one another from their experience, and learn farming techniques that may differ across cultures.

- Incubator finds opportunities to blend different skill levels so mentorship opportunities are plentiful.

Key Characteristic #2: Comprehensive Programming

Incubator farm offers the training, education, and tools necessary to nurture successful farming techniques while completing the program.

2.1 In-depth training program: Include hands-on learning that engages trainees and includes broad discussion of food system issues as well as detailed discussion of agroecology.

What to look for:

- Farmer is trained in a wide range of farming techniques, but also understands which techniques are most appropriate for a given context or geographic location.
- Farmer gains experience in crop rotation and soil health throughout their years in the incubator, so they can practice long-term planning and have the capacity to be farmland stewards.
- Incubator has a demonstration farm that is actively maintained by program participants, to ensure farmers and learning and practicing various skills. Early skill levels may be required to work these farms before being allotted their own acreage.

2.2 Connection with skilled and enthusiastic mentors: Link existing farmers in the community with incubator trainees or other mentors currently participating in the program.

What to look for:

- Incubators should cultivate relationships with the local farming community, and arrange opportunities for program participants to speak with and learn from farmers who already have their own farming operations.
- Incubator program should require participants in various cohorts and skill levels to finding “teaching moments” where they can teach or learn something new from a fellow participant. This can improve skill-building and strengthen the program’s sense of fellowship.

2.3 Access to resources: Provide tools, infrastructure, and qualified and capable leadership to allow for success while at the incubator.

What to look for:

- Incubator provides farmers with access to tools as necessary, ranging from hoes and rakes to running water and tractors. More advanced and experienced farmers in higher-level programming may be expected to furnish many of their own tools, whereas less experienced farmers may need more tool supplementation. The resources available should reflect the stair-stepping approach in Key Characteristic 1.2 and getting farmers to have Skin in the Game in Key Characteristic 1.1.

- Incubator is equipped with the basic essentials necessary to a real farm operation, so the experience is appropriate practice for farmers' independent ventures. This includes the availability of washing stations, storage, electricity, and running water.

2.4 Evaluation techniques: Develop curriculum and forms to guide farmers through successful data collection and evaluation (ie: number of pounds produced and sold, soil quality, accounting systems, etc.).

What to look for:

- Farmer is required to keep accurate records of their farm, such as pounds produced and sold; seeding, transplanting, and harvest dates; and various revenues, expenditures, and profits.
- Farmer learns to track the types of evaluation metrics that are preferred by funders and investors, which will enable better financial tracking (as referenced in Key Characteristic 3.3).

Key Characteristic #3: Building Self-Sufficiency

Incubator is intimately involved in preparing farmer for success after completion of the program.

3.1 Access to land: Access rates that are affordable and reduce the barrier of land acquisition; land leased at lower rates, land via land banks, or program-owned land.

What to look for:

- Incubator endeavors to connect farmers with land owners and realtors, to facilitate viable independent farm operations after farmers complete the program.
- Incubator assists farmer with the business-aspects of land acquisition, aiding in the search process, completion of applications, and identification of special opportunities or supplemental programs.
- Incubator offers acres of its own land to program alumni, who may continue to grow on site at lease levels higher than program participants. This may be ideal when unused land is in short supply in a given geographic area, or when the price per acre is particularly high. This practice is linked to Key Characteristic 4.2.

3.2 Comprehensive marketing: Aid in developing marketing plans, assessing markets, and determining what to grow.

What to look for:

- Farmer is familiar with all the types of markets to whom they may sell, and can make informed decisions about the ideal market for a given context. They can craft long-term plans to meet their needs.
- Farmer has high-level support from incubator in entering into new markets. They are trained to formulate new market relationships and can tailor their efforts to the needs of a given market population.

- Farmer has an understanding of the market value of various products, and understands their strengths and weaknesses as a grower.

3.3 Access to finance: Develop business techniques, data and plans to allow for access to finance at affordable rates.

What to look for:

- Incubator Farm develops relationships with local banks and funding institutions to create understanding and pipeline for their farmers.
- Incubator supports data collection and evaluation mentioned in Key Characteristic 2.4 that correlates with information required for securing funding from banks and other funding organizations to prove viability of farm enterprise.

Key Characteristics #4: Internal Capacity

Stable internal infrastructure is in place for long-term incubator success and sustainability.

4.1 Inclusive recruitment: Develop culturally competent and inclusive recruitment strategies for incubator staff and build incubator capacity to recruit diverse farmers.

- Incubator is able to actively recruit female farmers, as this is an underrepresented group in the field of farming and, along with Hispanic Americans, is one of the fastest-growing farmer groups.
- Incubator makes a concerted effort to provide staff with professional development, catered to all racial, ethnic, and socioeconomic groups.
- A diverse group of staff members are recruited to more effectively support the needs of farmers from a variety of backgrounds.

4.2 Diverse funding sources: Access funding from diverse sources (ie: charging for classes, wholesaling produce, owning land and leasing it back to farmers, etc.).

What to look for?

- Incubator does not rely on a single funding source for a majority of its budget. Incubator pursues creative strategies that make the program more financially stable, while not encroaching on programmatic mission and client experience.
- Incubator endeavors to acquire and own its incubator land, to the extent that is possible. If land cannot be acquired in this way, incubator pursues a rent-controlled relationship with current landowner. This allows for better long-term planning, organizational stability, and flexibility when setting participant fees.
- Incubator makes active use of the demonstration farm and excess acreage for revenue, such as leasing land to program alumni and selling produce from demonstration farm to wholesalers.

4.3 University partnerships: Develop partnerships with universities to provide access to agroecology experts, land, and potential incubator members or mentors.

What to look for?

- Incubator maintains relationships with academics interested in ecology, agroecology, food justice, environmental stewardship, etc., to stay current on farming best practices and the current state of the food system.
- Incubator pursues relationships with land-grant institutions that may be able to supplement farm acreage.
- Incubator utilizes partnerships to recruit experienced farming mentors or laborers.

4.4 Evaluation: For overall incubator define key performance indicators and track program elements (ie: returning farmers, pounds produced and sold, successful completion, etc.).

What to look for?

- Incubator keeps up-to-date records on all participants as they move through the program, to help detail the personal progression of each farmer.
- Incubator compares participant data over time to improve programming and better enable farmer success.
- Incubator tracks, to the extent possible, the post-incubator success of its alumni. Incubator follows up with past participants for feedback on what the farmer might have benefitted from that was lacking.

Incubator for Vulnerable Populations

Notes:

- Sub-characteristics in blue are different from the sub-characteristics in the “*Incubator Farm*” section
- *The characteristics with an asterix are the same as the “*Incubator Farm*” section

Key Characteristic #1: Supportive Culture of Excellence

Incubator expects excellence from farmers, and in turn provides the environment to support successful completion of program.

1.1 *Skin in the game*: Develop metrics and effective intake forms to determine commitment and possibility of success for the incoming farmer; balance between overcoming barriers and hand-holding.

What to look for?

- Farmer has past experience in agriculture, likely as a laborer or as a farmer in their home country. Farmer may not have formal education or training in agricultural practices.
- Farmer is personally invested in program completion to either 1) become a professional farmer, 2) supplement existing income, or 3) supplement family nutrition.
- Incubator requires farmer to pay small participation fee. Incubator carefully determines the amount to charge for participation after taking into account the farmer's financial capacity. A sliding scale may be used.
- Incubator learns as much as possible about farmer's needs and goals, which are gleaned from respectful conversations and, if possible, some intake forms. Incubator should gain a clear understanding of how much technical support and guidance will be necessary.

1.2 *Stair-stepping*: Create a system of advancement over time, such that farmers begin on smaller plots with greater oversight and graduate to larger, more independent plots.

What to look for?

- Farmer starts on small-scale acreage, and hones technical skills with the assistance of mentors and incubator staff. Once farmers have mastered the skills and tasks at this level, incubator will increase plot size and give the farmer more autonomy.
- Incubator is flexible about farmer's investment of time. Many farmers will have other full-time jobs, limits to transportation, or other contextual factors that will minimize time spent on their plot.
- Farmers have access to all necessary tools and resources throughout their participation in the program. Incubators do not expect farmers to fund their own equipment use on site.
- Incubator will offer continued land lease agreements to program graduates at reduced market rates. Farmer may have limited prospects in acquiring land, and may not be in the program to become a large-scale farmer.

1.3 Diverse Demographics*

Key Characteristic #2: Comprehensive programming

Incubator farm offers the training, education, and tools necessary to nurture successful farming techniques while completing the program.

2.1 In-depth training program: Create a hands-on learning program that engages trainees and is culturally relevant; training is simplified without losing content.

What to look for?

- Incubator provides instruction that is catered to the technical needs of the farmers, who will likely be bringing diverse cultural and technical perspectives to their plots. Incubator works toward an overall understanding of a variety of techniques and provides farmers an opportunity to experiment with new practices. This process should not be "dumbed down," but rather should be cognizant of cultural perspectives and language barriers. Farmer should take away an understanding of the food system's big picture, particularly for those who are not U.S. citizens and may be unfamiliar with local processes or markets.
- Incubator staff will be highly involved in a demonstrational capacity, and will encourage hands-on learning on demonstration farms.
- Incubator will make an effort to grow culturally relevant produce, and will be open to letting farmer have autonomy over the food they personally grow.

2.2 Connection with skilled and enthusiastic mentors: Link incubator trainees with existing farmers in the community or other mentors currently participating in the program. Mentors should have a cultural connection with farmers, or be passionate and experienced in working with vulnerable populations.

What to look for?

- Incubator establishes partnerships with outside organizations invested in the success of a new generation of farmers.
- Formal mentorship program is established, pairing first-time farmers or those without a strong farming background with those who are more experienced.
- Established events which encourage interactions between LR participants and farmers in the community.

2.3 Access to resources: Provide tools, infrastructure, and qualified and capable leadership to allow for success while at the incubator.

What to look for?

- Incubator provides farmers with access to tools as necessary, ranging from hoes and rakes to running water and tractors. More advanced and experienced farmers in higher-level programming may be expected to furnish many of their own tools, whereas less experienced farmers may need more tool supplementation. The resources available should reflect the stair-stepping

approach in Key Characteristic 1.2 and getting farmers to have Skin in the Game in Key Characteristic 1.1.

- Incubator is equipped with the basic essentials necessary to a real farm operation, so the experience is appropriate practice for farmers' independent ventures. This includes the availability of washing stations, storage, electricity, and running water.
- Access to resources is appropriate for all farmers, including those of lower socioeconomic status and various ethnic backgrounds who may need transportation or translation services.

*2.4 Evaluation techniques**

Key Characteristic #3: Building Self-Sufficiency

Incubator is intimately involved in preparing farmer for success after completion in the program.

*3.1 Access to land**

*3.2 Comprehensive marketing**

*3.3 Access to finance**

Key Characteristic #4: Internal capacity

Stable internal infrastructure is in place for long-term incubator success and sustainability.

*4.1 Inclusive recruitment**

*4.2 Diverse funding sources**

*4.3 University partnerships**

4.4 Evaluation: For overall incubator define key performance indicators and track program elements but focus more on Key Progress Indicators (KPIs) related to social capital and poverty alleviation.

What to look for?

- Incubator evaluation emphasizes farmer security above profits, such as increased family income and food security. Successful incubators for vulnerable populations will allow for produce grown to supplement the farmer's nutrition.
- Incubator farms work to cultivate social capital by connecting farmers with one another and encouraging community building. Farmers should have a strong sense of social support from their peers and the incubator.
- The level of social capital should help to support the mental health of the farmer via a sense of purpose and value.

- Incubator provides an environment of continuing education, such that farmers are also able to improve other skills, such as language. Refugee or immigrant farmers may also need the space to expand their cultural understanding and knowledge, which may differ from their country of origin.
- Incubator ensures that proper land stewardship is taking place on farmer plots. Farmer training will emphasize sustainable growing practices so that future farmers are land stewards.

4.5 External partnerships: Partner with economic development organizations and refugee organizations to minimize barriers to success and enhance overall experience of incubator participants

What to look for?

- Farmers from refugee populations may not have the language or writing skills to apply for a spot at the incubator, and those barriers may persist into the incubator program itself. Incubator should be working with refugee organizations that can help with translation services and language instruction. Incubator may also have relationships with ESL instructors.
- Incubator is able to connect refugees with Organizations trained to mentor this population through the transition to a new country. Immigrant transitions will often involve various logistical, mental, and financial challenges that the incubator is not equipped to handle but which are barriers to successful program completion.
- Incubator can direct farmers from vulnerable populations to community development organizations and social workers for assistance with, for example, housing, unemployment, financial, and mental health services.

Food Banks

Key Characteristic #1: Food justice

Food bank is proactive in its approach to hunger, and considerate of how inventory choices impact individuals experiencing hunger.

1.1 Connect hunger with poverty: An understanding of the importance of combating poverty to lead to the elimination of hunger.

What to look for?

- Food bank mission and values seek to address more than hunger in their communities. Food bank is forward-thinking, and makes connections to hunger's underlying causes.
- Food bank leadership is well-versed in socioeconomic disparities and the gaps in their service area, and is making efforts directly or indirectly to address those issues.
- Food bank evaluation measures outcomes beyond food distribution. Food bank may keep records on pounds of produce distributed, but should also be endeavoring to measure area trends in population poverty, average client income, and total clients served.

1.2 Supplemental resources: Provide additional information, services, or programs in conjunction with food distribution so clients are better able to address their underlying challenges.

What to look for?

- Food bank has supplementary programming or partnerships in place to meet client's non-food needs, such as job training or funding support.
- Food bank has staff on hand who are familiar with support programs not available directly through the food bank. These supplementary services may be offered by a range of organizations in the food bank's service area, such as housing assistance, career development agencies, temporary-staffing offices, health care clinics, and others.
- Food bank offers SNAP or WIC assistance and outreach for clients.

1.3 Respectful client intake: The food bank is cognizant of the emotional weight clients experience in needing nutritional support, and their interactions and service of new clients are respectful of this.

What to look for?

- Clients are greeted with kindness and respect, and staff are trained to engage with at-risk populations.
- New clients are asked to submit only essential client information; food bank does not make the application process unnecessarily burdensome, embarrassing, or restrictive.
- Food bank keeps all client records confidential.

Key Characteristic # 2: Effective distribution

Food bank infrastructure and relationships enable efficient distribution of products to clients.

2.1 Coordination to meet need: Food bank's geographic footprint is organized for distribution efficiency, particularly large food bank organizations with multiple sites and warehouses.

What to look for?

- Food bank is equipped with the facilities needed to properly handle and process incoming products, and product is transferred efficiently to the client.
- Food bank minimizes the amount of product that becomes food waste.
- Food bank communicates semi-regularly with suppliers about product needs to ensure sufficient inventory at all times.

2.2 Develop important partnerships: Food bank collaborates and communicates with other service providers in the area, and keeps local government informed about hunger in the service area.

What to look for?

- Food bank has partnerships or lines of communication with community and economic development organizations, so all parties understand up-to-date hunger needs and poverty in a service area.
- Food bank shares hunger data with local government officials so they know the current state of their constituency. Food bank can identify specific geographic spaces or populations in need of government support, and regularly report that information to local, state, or federal representatives.

Key Characteristic #3: Respectful client experience

Client experience at the food bank is positive, flexible, and provides food security.

3.1 Client caloric needs met: Clients are provided with adequate amount of food to meet nutritional needs.

What to look for?

- Food bank endeavors to offer a friendly and understanding distribution environment, such that clients feel comfortable asking for the amount of food they really need to sustain their families. Food bank rarely places a cap on the amount of food distributed to a particular client during any one exchange, nor on the amount of visits allowed during a specific time period. Food bank treats each client as an individual with unique needs.
- Food bank offers flexible, considerate hours of operation, so that clients have a realistic opportunity to visit the food bank for their family's nutritional needs. Food bank is ideally available to clients on weekends, and in the evenings on some weekdays.

3.2 Healthy food options: Clients have access to fresh fruits and vegetables as well as meat and dairy products.

What to look for?

- Food bank attempts to stock as much fresh food as possible, and monitors how inventory aligns with federally-recommended diets and nutrition. Food bank works to address gaps in nutritional categories by initiating food procurement strategies.
- Food bank markets its healthy products to at-risk populations who may have limited or insufficient access, such as small children, the elderly, or the homeless.
- Food bank offers, or has partners who offer, nutrition education and counseling.

3.3 Client choice: Clients can take the items that are best for their family's needs and tastes.

What to look for?

- Food bank has the quantity and variety in its inventory to match all client needs, ideally including a range of fresh, frozen, canned, and high-calorie items in all food groups. Client has autonomy over the products they take home.
- Food bank does not pressure its clients to choose certain products over others. Food bank may utilize strategies to highlight certain products, but is respectful of the needs and tastes of all clients.

Combining Food Bank & Incubator Farm

Key Characteristic #1 Suitable Location

The food bank's location and population is suitable to farming practices.

1.1 *Farming supportive climate*: Incubator and Food Bank are located in an area amenable to farming activities.

What to look for?

- Geographic location has a growing season of at least six months or more. This timing can be flexible if a food bank can install extended season facilities such as hoop houses.
- Basic resources, such as land and water, are available in adequate supply and at manageable prices.

1.2 *Food insecure populations*: Incubator and Food Bank are located in an area where there is a need for food distribution and poverty alleviation.

What to look for?

- Areas with lower socioeconomic status and more racial and ethnic diversity are more likely to have populations experiencing food insecurity. Different racial and ethnic groups may also have very limited access to culturally-appropriate foods.
- Areas with limited access to supermarkets or grocery stores have populations who struggled to obtain healthy food products, and have less autonomy over their food choices.

1.3 *Local food culture*: Incubator and Food Bank are located in an area with a local food culture.

What to look for?

- Culture of the service area is supportive of area growers, which is often present in areas with local food movements, slow food movements, and large immigrant communities.
- Service area has an infrastructure in place to provide market opportunities to new growers, such as farmer's markets, local grocers, local-friendly chain supermarkets, and citizens interested in community-supported agriculture.

Key Characteristic #2 Forward thinking mission

Food bank and Incubator actively pursues upstream solutions to hunger.

2.1 Connect hunger with poverty: Food bank understands the system view of poverty leading to hunger and the reinforcing feedback loop.

What to look for?

- Food bank/incubator mission and values seek to address more than hunger in their communities. Food bank is forward-thinking, and makes connections to hunger's underlying causes.

- Food bank/incubator leadership is well-versed in socioeconomic disparities and the gaps in their service area, and is making efforts directly or indirectly to address those issues.
- Food bank/incubator evaluation measures outcomes beyond food distribution. Food bank may keep records on pounds of produce distributed, but should also be endeavoring to measure area trends in population poverty, average client income, and total clients served.

2.2 Health focus: Food bank pursues initiatives focused on the health of their clients.

What to look for?

- Food bank attempts to stock as much fresh food as possible, and monitors how inventory aligns with federally-recommended diets and nutrition. Food bank works to address gaps in nutritional categories by initiating food procurement strategies, such as garden programs or on-site farm production, partnerships with area farms or farmer's markets, and healthy donations from area wholesalers.
- Food bank markets its healthy products to at-risk populations who may have limited or insufficient access, such as small children, the elderly, or the homeless.
- Food bank offers, or has partners who offer, nutrition education and counseling.

2.3 Economic development: Food Bank and Incubator pursues initiatives focused on the economic development of their clients.

What to look for?

- Food bank/incubator's mission statement or strategic priorities acknowledge the source of client hunger, and the ways in which client services should be supplemented beyond food distribution.
- Food bank/incubator has supplementary programming or partnerships to meet client's non-food needs, such as job training or funding support.

Key Characteristic #3 Garden Program

Food bank has initiated a community-based gardening program.

What to look for?

- Food bank has verified community support of garden- and farm-based programming, and has clients interested in gardening for recreation or nutritional supplementation.
- Food bank has the capacity to arrange for plot space, and can oversee plot assignments to gardeners. Location of garden program plots is ideally spread evenly throughout the service area, so gardeners are more likely to live close to where they garden.
- Food bank connects garden program efforts with job training efforts, and identifies clients who may be interested in more advanced professional farming development.

Key Characteristic #4: Farm production for food bank

Food bank has started or is starting to incorporate fresh produce, either from its own farm plot or through area farm partnerships.

What to look for?

- Food bank has the facilities to handle, store, and distribute fresh produce.
- Food bank has access to land, a garden program, a farmer's market, or farmer partners for fresh food procurement.

Key Characteristic #5: Leverage partnerships

Food bank and Incubator are conscious of client needs, and can connect clients with alternative resources that are beyond the organization's capacity.

5.1 Partnership with economic development organizations: Incubator and food bank foster relationships with key local and/or national economic development organizations.

What to look for?

- Food bank/incubator is connected in some capacity with community and economic development organizations, so all parties understand up-to-date hunger needs and poverty in a service area.
- Food bank/incubator staff are familiar with support programs not available directly through the organization. These supplementary services may be offered by a range of economic organizations in the service area, such as housing assistance, career development agencies, temporary-staffing offices, and others.

5.2 Partnership with Universities: Incubator and food bank foster relationships with universities in key development areas (ie: Land, research, resources, potential incubator participants).

What to look for?

- Food bank/incubator has connections with University researchers, and can utilize expert knowledge to evaluate and improve their physical infrastructure, services, and methodologies.
- Food bank/incubator endeavors to gain access to land owned and leased by University partners, who have stable ownership and land protection.

5.3 Partnership with health care agencies: Incubator and food bank foster relationships with health care agencies to develop programming and offer resources.

What to look for?

- Food bank/incubator is connected in some capacity with health organizations, so all parties understand local hunger and malnourishment needs.
- Food bank/incubator staff are familiar with local health clinics and can direct clients to needed services.
- Food bank/incubator connects clients with health educators in the community to address important topics such as nutrition, chemical exposure risks, and other applicable health risks. Food bank/incubator leadership works directly with county health department and wellness educators to ensure that food security is being addressed at a regional level.

5.4 Partnership with local government (land trust): Incubator and food bank foster relationships with local government for access to land and funding.

What to look for?

- Food bank/incubator develops relationships with local constituencies to utilize reserved land on easement and government-owned properties.
- Food bank/incubator partnerships with local government help to connect organization with constituency-supported programming, such as farmers' markets, downtown development events, and local food culture.
- Food bank/incubator has regular discussions and connections with local policy makers to improve ordinances and zoning bylaws for a more supportive local farming environment.

Key Characteristic #6: Structure for Success

Food bank and Incubator work collaboratively, engaging in open communication and support.

6.1 Resource support for incubator: Food bank takes responsibility for partially supporting the efforts of its incubator to encourage growth and excellence, particularly in the early years.

What to look for?

- Food bank allocates funding to help support incubator start-up operations and programming, either through budget allocation or staff support toward grant writing.
- Food bank and incubator staff are shared whenever possible if operations overlap, particularly in administrative tasks.
- Food bank and incubator endeavor to share facilities and supplies whenever possible to facilitate shared staffing arrangements and reduce overhead.

6.2 Cooperation among administrative leaders: Coordinators from both the food bank and incubator are engaged in open and constructive communication.

What to look for?

- The leadership of both programs should have regular conversations about program goals and needs, and work together constructively
- Food bank and incubator coordinators endeavor to identify joint programming opportunities to take full advantage of their unique relationship.

6.3 Shared culture: The leadership and employees of both organizations recognize the strengths and weaknesses of their conjoined programs, and are motivated to meet one another's gaps.

What to look for?

- All staff members in both organizations are familiarized with the mission, strengths, and weaknesses of both entities, and are encouraged to engage with one another.

- Program coordinators for both the food bank and incubator are encouraged to share metrics, strategies, and community contacts.