


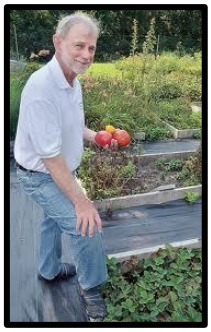


Central Minnesota Food Hub

Feasibility Study



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Happy Dancing Turtle, September 2012

In partnership with AURI (Agricultural Utilization Research Institute), Central Lakes College Small Business Development Center, the Farm on St Mathias, the Initiative Foundation, JBJ World LLC, Region Five Development Commission, University of Minnesota Central Regional Sustainable Development Partnership, and University of Minnesota CURA program (Center for Urban and Regional Affairs).

Cover Photos from left to right, beginning in upper left: Arlene Jones (The Farm on St Mathias) aggregating hydroponically-grown romaine; fields in spring; Farmers' Market at Lakewood Health Systems hospital parking lot, Staples; Dave Massey (Northwoods Organic Produce) showing off some heirloom tomatoes; starts in a Great River Gardens high tunnel; sunflower oil is produced in Central Minnesota at Smude's; inside the store at The Farm on St Mathias for tomato harvest; outside the store; Joe Riehle (Great River Gardens); locally grown produce served at restaurant partner Prairie Bay; Arlene Jones delivering produce to a local school.

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Abstract

Local food is not only in demand at farmers' markets and natural food retailers; it is also in demand in schools, hospitals, restaurants, and even conventional supermarkets. In order to meet these demands, local and regional food supply systems require the development of organizational and production capacity across the local food, community-based supply system. Regionally, the current food supply chain lacks mid-scale, regional aggregation and distribution systems that move local food to mainstream markets in an effective and cost efficient manner.

Small- and mid-size farmers have been increasingly squeezed out of the marketplace as production efficiencies have focused on larger operations. However, an innovative technique which facilitates small and mid-sized farms' wholesale marketplace competition is emerging across the country: grower-friendly aggregation and distribution systems, known as food hubs. Food hubs are sprouting up nationwide, in both rural and urban regions. Among other things, food hubs offer fair prices to growers, create jobs, keep dollars recirculating locally, associate producers with food, and improve access to fresh, local foods.

Grassroots development of a Central Minnesota aggregation and distribution system over the past 3 years has grown to involve a dozen local growers, 15 schools, and 5 restaurants, suggesting that the region could support the formal establishment of a food hub, including a processing facility. To determine the long-term viability of a regional food hub, a literature review was performed, regional data was gathered, surveys of growers and buyers were conducted, and various economic scenarios were explored based on this collected information.

Overall, the results of the feasibility study provide strong evidence supporting the development of a food hub in Central Minnesota. A food hub would offer an array of economic, social, and environmental benefits for the area, addressing a gap in the current food supply chain. It would enable growers to further expand and diversify their crop base, meet some of the high demand for locally grown produce, and provide farming opportunities with more stability, jobs, and economic growth. These results suggest that the development of a business plan is merited, including legal entity establishment recommendations, capital funding procurement proposal, and suggested timeline for phasing in expansion.

Introduction

"A much higher proportion of people eat locally grown than organic foods. When they think local, they think fresh and want to support local growers/packers."

(National Grocers Association, 2011)

The Problem

The face of agriculture has shifted dramatically in the United States over the past twenty years. Even while the number of very small, "Noncommercial" farms (less than $9,999 in annual sales) has increased, the number of "Small Commercial" farms ($10,000 - $249,999 in annual sales) has drastically fallen (see *Figure 1*). While the majority of farms in the U.S. are very small, noncommercial operations, most of our food comes from very large farms (USDA Economic Research Service, 2010). One of the reasons for rampant disappearance of midsized farmers and ranchers is the shrinking market opportunities at a scale and price which enables producers to remain viable. Farmers' markets, community supported agriculture, and other direct-to-consumer channels are not sufficient to support mid-sized farms. These farms cannot achieve sufficient economies of scale to profitably compete in undifferentiated commodity markets (Lerman, 2012).

Figure 1: Number of farms, by constant-dollar sales class,[1] 1982 and 2007

Sales class[1] (2007 constant dollars)	1982		2007		Change, 1982-2007
	Farms	Distribution	Farms	Distribution	
	Number	*Percent*	*Number*	*Percent*	
Total farms	2,240,976	100.0	2,204,793	100.0	-1.6
Noncommercial	954,349	42.6	1,319,161	59.8	38.2
Point farms[2]	254,097	11.3	688,834	31.2	171.1
$1,000-$9,999	700,252	31.2	630,327	28.6	-10.0
Small commercial	1,137,892	50.8	675,973	30.7	-40.6
$10,000-$49,999	601,840	26.9	403,017	18.3	-33.0
$50,000-$99,999	253,243	11.3	125,456	5.7	-50.5
$100,000-$249,999	282,809	12.6	147,500	6.7	-47.8
Large	132,544	5.9	154,150	7.0	41.0
$250,000-$499,999	97,894	4.4	93,373	4.2	-4.6
$500,000-$999,999	34,650	1.5	60,777	2.8	75.4
Very large:					
$1,000,000 or more	16,191	0.7	55,509	2.5	242.8

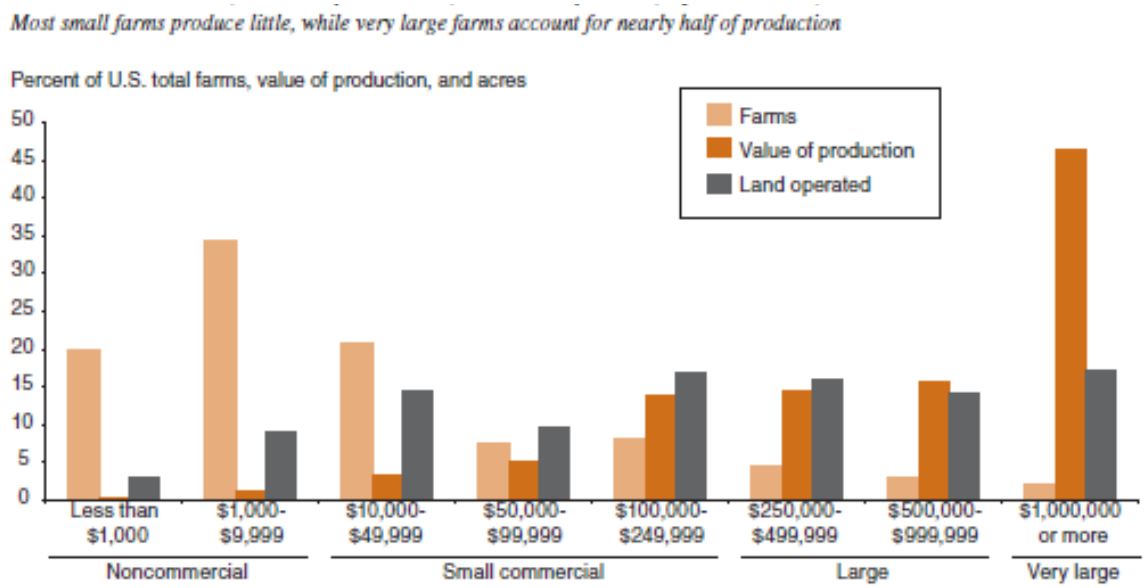
Notes: Sales classes are defined in 2007 dollars, using the Producer Price Index for Farm Products (PPIFP) to adjust for price changes. Point farms are identified using current dollars—with no adjustment for price changes—because the minimal level of sales in the farm definition is not adjusted for price changes.

[1]Sales class is based on the market value of agricultural products sold.

[2]Point farms have sales of less than $1,000 (current dollars) but are still considered farms because they would be expected to normally sell at least $1,000 of agricultural products.

Source: Economic Research Service calculations based on U.S. Census Bureau, 1982 Census of Agriculture and USDA, National Agricultural Statistics Service, 2007 Census of Agriculture.

Figure 2: Distribution of farms, value of production, and land operated, by GCFI class, 2007



GCFI=Gross cash farm income.
Source: ERS calculations based on USDA's 2007 Agricultural Resource Management Survey, Phase III, conducted by the National Agricultural Statistics Service and the Economic Research Service.

Small Commercial operations have seen their value of production drop, with most of that value transferring to Large and Very Large operations (see *Figure 2*). Many smaller farmers and ranchers are challenged by the lack of distribution and processing infrastructure of appropriate scale that would provide them with access to retail, institutional and commercial food service markets (Barham, April 2012). Meanwhile, logistic and economic barriers prevent many distributors from aggregating commodities from multiple suppliers in order to satisfy demand; profit targets are more easily met through minimizing the number of supplier interactions. Yet, consumer demand has been increasing the availability of local specialty crops, driving a growing local foods movement: the establishment of local foods aggregation and distribution systems known as *food hubs* (Ibid.).

Consumers around the country, from individuals to institutions, are turning to their local farmers to help provide nutritious, fresh, healthy, local food, and this movement is growing, as evidenced by the increase in the number of food hubs. While several years ago, it was possible to count the number of food hubs using one's digits, as of April 16, 2012 that number blossomed to over 179 food hubs in the U.S. (USDA, April 2012) In short, one solution for preserving smaller farms and ranches is a wholesale marketing channel that preserves the identity of the people who raised or grew the product being sold. In order for local, small- and mid-size producers to compete in the marketplace, an aggregator is needed which can compile sufficient quantities of commodities for distribution, while creating equitable relationships between growers and buyers.

Opportunities in Central Minnesota for boosting production and consumption of local foods are ripe. Currently, the majority of fruits and vegetables consumed are grown in California, Florida, Mexico, and beyond. This means that billions of dollars are leaving the state as they go to players across the supply

chain. Building the infrastructure needed to support a regional food system would not only help successfully meet this rapidly growing demand for local food, but would also bring about many economic, health and environmental benefits to the state.

As anticipated, regional food hubs are having a positive impact on their communities. Not only are regional food hubs increasing market access for local producers, they are also adding value to the current distribution system by providing source-identified products, positively impacting communities economically, socially, and environmentally, and doing all of this work framed through a social entrepreneurial spirit, with a triple bottom line (economic, ecological, and social (Wikipedia, 2012)) impact as the measure for success.

This report marks the growth over the past 3 years of a grassroots, citizen-driven effort to build the local Central Minnesota food system. Through connecting with area restaurants, and interested in expanding the market for her own farm, Arlene Jones helped lead community engagement sessions on Farm to Cafeteria ideas. These meetings helped develop relationships necessary to begin a Farm to School program in the region, and thus a grassroots aggregation and distribution system for locally grown foods began in 2010. A modest delivery of 1,000 pounds of produce from a single farm to the local school district during the 2010-'11 school year got the project off the ground. Four area farmers aggregated their produce during the 2011-'12 school year, with a 500% increase in produce delivered. By mid-September of this school year, pounds delivered to the school have already tripled over last year to 15,000 pounds, and other engaged buyers include restaurants, grocery stores, and a hospital. The conversation has now shifted locally to how community members and organizations can help this local, healthy food sourcing system grow.

Much of the community response backing this effort has been to gather resources, support feasibility and business planning, and develop the food hub concept. This report marks the culmination of a nine month research project aimed at describing methods for strategically growing the local food system. This effort has been broad in scope, involving many interested parties in the Central Minnesota region, including nonprofits, government entities, the state's land grant university, businesses, and individuals.

Herein is an analysis of the potential for establishing a food hub in the region, examining both economic and social factors. The intention of this report is to serve as a basis for a more specific business plan that would detail some of the many options presented here.

The Potential

Locally grown food is an increasingly important market. Local food sales through all marketing channels in the U.S. were estimated to be nearly $5 billion in 2009 and were projected to reach $7 billion in 2011 (Low, 2011). Consumers increasingly value and seek out local foods for a variety of reasons, with upwards of 85% of consumers citing the presence of local food as an important factor in their purchasing decision (National Grocers Association, 2011).

Demand for local food is strong and increasing – among end consumers as well as wholesale buyers. According to Mintel, a market research firm that studies consumer trends, "Local procurement is a fast-

growing category with tremendous promise, and marketers that are aware of the many dynamics at play can generate significant revenues" (Haack, 2009). Mintel found that one out of six Americans will go out of their way to buy local products. Locally sourced fruits and vegetables was the product category with greatest consumer interest, with 31% purchasing this product category from local sources at least once per week. (Dane County Planning and Development Department, 2011)

These trends are mirrored in the foodservice industry. Chefs surveyed by the National Restaurant Association ranked locally grown produce as the #1 menu trend of 2010. According to National Restaurant Association research, "89 percent of fine-dining operators serve locally source items, and nine in 10 believe demand for locally sourced items will grow in their segment in the future. Close to 3 in 10 quick-service operators serve locally sourced items now and nearly half believe these items will grow more popular in their segment in the future. Seventy percent of adults say they are more likely to visit a restaurant that offers locally produced food items." (Ibid.)

Wholesale buyers and distributors have a similarly growing interest in local produce to satisfy the needs of their customers. Further, the increased cost of shipping produce from California and beyond has made local and regional procurement a more cost-efficient option. A survey of just 14 potential buyers in Illinois – including a mixture of institutional buyers, grocery stores, and wholesale sellers – revealed that they would be interested in spending more than $23 million on locally grown food if the supply were available. (Illinois Dept of Commerce and Economic Opportunity, 2012) A recent buyer survey in southern Wisconsin identified $22 million in demand for local produce if it were available. (Dane County Planning and Development Department, 2011)

Consumers seek out local food because they prefer freshness and taste, above affordable price (Gunden, 2012). Some consumers *do* seek out local food because they believe buying locally and in season will save money, whereas others' motivations include the perception that local food is personally beneficial because it is fresher, better tasting, and healthier. Others believe that buying local food is preferable because it supports local producers, the local economy, and is less harmful for the environment. Consumers also frequently cite the value of direct or indirect interaction with producers, and increased social connectivity through farmers' markets, buying clubs, and other channels (Economic Research Service, June 2010).

Economic

Food hubs can contribute to regional economies through direct job creation, indirect job creation, increased grower revenue, and injection and recirculation of money in the local economy. According to the USDA's Regional Food Hub Resource Guide, "*Food hubs provide opportunities for more local food procurement at a larger scale, which can create jobs, generate business taxes, and increase earnings throughout the region as production increases locally. A study conducted in Northeast Ohio found that if the 16-county Northeast Ohio Region were to meet 25 percent of its need for food with local production, it would result in 27,664 new jobs, providing jobs for 1 in 8 unemployed residents, as well as increase annual regional output by $4.2 billion and increase State and local tax collections by $126 million. … A food hub feasibility study recently conducted in southern Wisconsin estimates that a food hub operation running at full capacity could create 400 jobs and inject an additional $60 million into the local economy.*

Furthermore, it would be able to serve as many as 50 family farm businesses in the southern Wisconsin region with the potential to increase their overall farm revenue by $900,000 to $1.8 million." (Barham, April 2012)

Job Creation

Food hubs create an average of seven full-time jobs and five part-time jobs within the hub itself, according to the 2011 National Food Hub Collaboration survey. Outside of the organization, food hubs can help retain local agricultural jobs through making farming more profitable. Some food hubs have even helped farmers establish their businesses, thus actively creating job opportunities. (Ibid.)

Food hubs create jobs from seasonal production to management. Additionally, as food hubs encourage growers to convert acres from commodity to specialty crops, additional farm labor will be needed for manual harvesting. According to a recent University of WI-Madison study, 2.2 jobs are created for every $100,000 in local food sales. (Dane County Dept of Planning and Development, 2010)

Increased Farmer Income

Many recently established food hubs are experiencing significant and rapid growth, doubling sales each year, and increasing grower income as well. "*Intervale Food Hub producers reported average gross sales of $85,085 in 2007 prior to selling to the food hub. After producers began using Intervale Food Hub, their average gross sales increased to $132,237 by the end of 2009.*" (Barham, April 2012)

Food hubs offer producers a fairer price for their goods. A recent USDA Economic Research Service study of five local food supply chains showed that producers in the local supply chain received net revenue per unit roughly more than seven times the price received in mainstream chains. "*By offering producers larger sales volumes, more stable sources of income, and higher returns, food hubs provide opportunities for producers to expand and diversify production, which often translates into increased profitability and the longer term viability of farm operations*." (Ibid.)

Current commodity crop growers could benefit from the significantly higher market value of fresh market crops by converting some acreage from commodity crops. Sales per acre for fresh market vegetables range from $5,000-$10,000 in Minnesota (Nordquist, 2012) versus $200 - $1,100 for commodity crops (Johnson, 2012). Additionally, by participating in value-added production, growers and producers can add a high-margin revenue stream to their farm businesses. According to one experienced food hub operator, working with commodity producers was less problematic than working with some growers who had established direct markets and were accustomed to receiving farmers market pricing, as opposed to wholesale (Cooperative Development Services, August 2007).

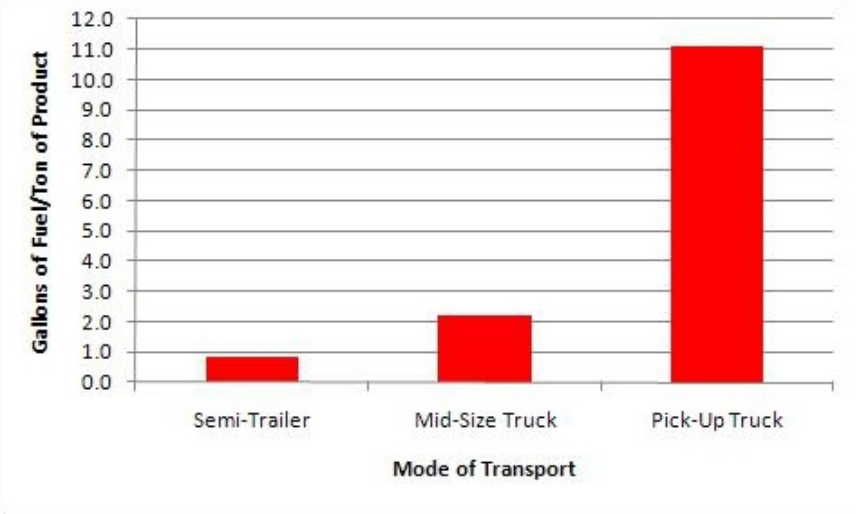
Triple Bottom Line

Food hubs also typically provide services and activities that drive social and environmental improvements within their local communities. These improvements include training and professional development, increasing the availability of fresh healthy food sold in retail and institutional markets, and promoting the adoption or use of sustainable or environmentally sound agricultural production practices. Forty-seven percent of food hub managers responding in 2011 indicated that they were

actively distributing products to nearby food deserts, thereby increasing access to fresh locally grown foods in areas that have been lacking access to fresh food (Barham, April 2012).

On average, each fruit or vegetable purchased in the Midwest travels 1,500 miles from farm to plate (Pirog, 2001). Central Minnesota has the capacity to replace a large percentage of out-of-state produce with locally grown fruits and vegetables, particularly in peak months. If done efficiently, this could eliminate thousands of tractor-trailer miles from the distribution chain, resulting in reduced carbon monoxide emissions.

Figure 3: Transportation Fuel Use per Ton of Product



Food must be delivered efficiently in order for the potential savings in emissions to be realized, however, as *Figure 3*: Transportation Fuel Use per Ton of Product illustrates (King, 2010). Although local food does not have as much distance associated with it, more fuel can actually be burned in its less efficient collection and delivery.

Improved Health Outcomes and Food Access

Fresh produce can help address the pervasive and growing concerns of obesity, hypertension and many other diet-related health issues and diseases that are diminishing personal health and increasing health care costs (Minnesota Department of Health, 2008). By increasing the availability of locally produced fresh commodities in the region, it is possible to improve health outcomes.

Central Minnesota Background

The driver behind this work has been **Arlene Jones**, owner of The Farm on St Mathias, an 80-acre farm located five miles south of Brainerd. Arlene has been a champion of local foods efforts, working to supply regional restaurants with local food through aggregating produce, including items grown on her own farm; serving as Chair of the Central Sustainable Farming Association Chapter; conducting Farm to Cafeteria workshops in partnership with the University of Minnesota Extension office; and tirelessly working to build bridges between producers and buyers. Partners currently include over 11 local growers and over 6 institutional buyers, including Collette Pohlkamp, foodservice Director at Brainerd ISD181.

Her efforts have been supported by an array of community organizations, including Happy Dancing Turtle (business incubation & fundraising support); the Initiative Foundation (financial assistance); Region Five Development Commission (technical and financial assistance); Agricultural Utilization

Research Institute (technical and financial assistance); and the University of Minnesota Central Region Partnership (technical and financial assistance).

Work on this project began in earnest in 2009. An abbreviated **Project History** follows**:**

- **Regionally in 2009** the group focused on growers:
  - **150 growers** interested in producing local foods for schools, hospitals, and restaurants.
  - **Forums** taught 22 growers requirements to sell, how to access value-added Ag funding.
  - **Interviewed 22 chefs** to gauge interest in sourcing more locally grown foods, with high level of interest and commitment.
- **In 2010** the group focused on consumers:
  - Met with representatives of **3 hospitals**, one which committed to sourcing up to 15% if distribution issues can be resolved.
  - **Chefs began to meet regularly** to exchange buying Best Management Practices and to understand the fair market rate of locally grown commodities.
  - **Growers gave school cafeteria presentations,** providing unique educational opportunities for students.
  - **Met with superintendents and food service directors** of 4 local school districts. Food service staff toured The Farm on St Mathias, resulting in ISD 181 committing to sourcing locally grown foods.
  - **Secured three additional growers** to fill orders for Farm to School.
  - **Collaborated with food service director ISD 181** to build school year 2011-2012 local foods menus for September and October.
- **In 2011** plan in place and implementation support was sought:
  - Project partner **School District 181** offered to **lease warehouse space from the District**.
  - Brainerd **School District increased the level of farm-to-school endeavor**, quintupling the level from 2010.
  - **12 weeks of Farm to School** successfully executed for the 2011-2012 school year, with over 5,500 pounds of food distributed between 7 schools including a total of 9 kitchens.
- **In 2012** further implementation support sought and targeted business planning:
  - **Intern furthers local food hub research**, focusing on the feasibility of a food processing facility, supported by Region Five Development Commission, the Initiative Foundation, and the University of Minnesota Center for Urban and Regional Affairs (CURA) Community Assistantship Program (CAP).
  - **Funding procured for formalization of Food Hub and food processing feasibility**, through Happy Dancing Turtle, Agricultural Utilization Research Institute, the Initiative Foundation, and University of Minnesota Central Region Partnership.
  - Brainerd **School District increased the level of farm-to-school endeavor**, adding an additional delivery day, more district schools, and helped expand the effort to **Pierz School District**.

Feasibility Study Funding

In 2012, Happy Dancing Turtle secured funding in support of the formal establishment of a food hub serving growers in the region and regional buyers. As funding partners, AURI (Agricultural Utilization

Research Institute), the Initiative Foundation, and the University of Minnesota Central Regional Sustainable Partnership provided $24,990, $5,000, and $2,000 respectively toward formal establishment of the food hub and further investigation into the feasibility of launching a regional food processing facility as part of the food hub.

This study was partially built upon Region Five Development Commission's (R5DC) efforts to establish linkages, conduct studies, and administer other planning activities. In 2009, R5DC was awarded a grant from HUD to establish a Sustainable Communities Regional Planning Consortium. Over 600 resident individuals have been involved in these community sessions, creating a shared regional sustainable vision, defining local key issues, and establishing steps towards ameliorating those issues. Through these efforts, the formalization of a local foods distribution initiative has been identified as a key goal.

The project champion has been Arlene Jones, owner of the Farm on St Mathias, an 80-acre farm located five miles south of Brainerd, Crow Wing County. Arlene's farm and staff have been serving as the de facto volunteer managers, marketers, and deliverers of the distribution initiative to-date.

Project Team

The **Project Team** was composed of two groups: a Core Team which participated in all aspects of the project, and a team of Technical Advisors who provided valuable input for facets of the project relevant to their expertise.

The **Core Team** leading the project included the following individuals:

Name	Title	Role/Expertise
Arlene Jones	Founder and President, The Farm on St Mathias	Grower outreach strategy and implementation; Buyer outreach and overall project design and strategy
BJ Allen	President, JBJ World LLC	Research design, project design and strategy, outreach model development, final report
Robert McLean	Board Treasurer, Happy Dancing Turtle	Business modeling, project oversight
Julie Anderholm	Business Development Specialist, Small Business Development Center	Financial projections, fund development, business planning and strategy assistance

Technical Advisors provided expertise for survey design, fund development, opportunities for farmers, economic analysis, and more.

Name	Title/Organization	Expertise
Cheryal Hills	Executive Director, Region Five Development Commission	Grower networks; survey design and implementation
Don Hickman	Vice President for Community & Economic Development, Initiative Foundation	Food hub development; public/private partnerships
Kathryn Draeger	Statewide Director, University of Minnesota Regional Sustainable Development Partnerships	Public/private partnerships
Colin Cureton	Research Assistant, University of Minnesota CURA	Survey design and implementation

Methodology

While the Central Minnesota food distribution effort has been expanding its grassroots efforts each year since 2010, before a significant capital investment is made, the business viability needs to be examined in detail. This will include a financial model that analyzes the potential for the business to earn a satisfactory profit for owners and investors based on a set of reasonable assumptions. These assumptions are derived from primary and secondary research conducted, often borrowing from analogous operations.

In order to obtain needed information on which findings could be based, in 2012 a literature review was performed, regional data was gathered, surveys of growers and buyers were conducted, and various economic scenarios were explored based on this collected information. A supply side economic feasibility study initiated as part of this project was incorporated into this feasibility study. Entitled *Toward a Food Hub in North-Central Minnesota: Reframing the Conversation, Examining a Hub's Regional Economic Effects*, the study was conducted by Colin Cureton, University of Minnesota CURA Research Assistant.

Work Plan

Based on the opportunities identified, this study will address the following questions/areas:

1. Generic regional demographics and food consumption;
2. Types of produce buyers demand, in what quantities, at what time of year, and their other requirements;
3. Number and characteristics of fruit and vegetable farmers interested in selling to the food hub: quantity and type of produce;
4. Number of acres of fruit or vegetable production growers could supply/add by 2013;
5. Grower interest in a cooperative business structure vs. other models;
6. Operating model: aggregation, basic packing services, value-added services, private labeling, shipping, etc.;
7. Optimal scale in terms of facility size and throughput;

8. Potential size of the market and size of the business;
9. Economics of the operation at breakeven;
10. Buyer requirements: liability, GAP training, HACCP, and other certifications;
11. Location: evaluation potential sites in Crow Wing County and surrounding counties;
12. Nature of current and potential competition and sustainable competitive advantages;
13. Chief business risks and mitigation strategies;
14. Composition of management team, skill set required;
15. List of financing options – state, local, federal, private.

To answer these questions, the Project Team developed a work plan that encompassed stakeholder engagement, primary and secondary research, finalizing recommendations and developing this report.

STAKEHOLDER ENGAGEMENT	Invited growers, regional engaged non-profits, University Extension educators, and other stakeholders to participate on Advisory Board Conducted extensive grower outreach and met one-on-one basis
PRIMARY RESEARCH	Developed and implemented one survey among growers, and analyzed data collected from similar 2008 survey Held one-on-one discussions with key buyers, growers, and investors Established relationship with Brainerd School District for lease space at their warehouse in Baxter and Central Lakes College for lease space at their facility in Staples, drafted lease agreement
SECONDARY RESEARCH	Obtained market and trends data from USDA and other credible sources Analyzed operating data from published case histories Synthesized all findings Created financial model and conducted sensitivity analysis
REPORT FINALIZATION	Reviewed findings with Advisory Board Wrote study and reviewed with Project Team Created and disseminated final report
BUSINESS PLAN PREP	Wrote business plan Conducted financial cases

Results

Regional Demographics and Other Relevant Data

The Region

Central Minnesota is where three distinct biomes intersect, with the plains and prairies in the western areas meeting the coniferous forest to the north, and hardwood forest to the east. The Central Minnesota region is the heart of "The Land of 10,000 Lakes" for which Minnesota is known, with over 11 watersheds within its territory. The region includes Aitkin, Cass, Crow Wing, Mille Lacs, Morrison, Todd, Otter Tail, and Wadena Counties, and encompasses the Headwaters of the Mississippi.

The issues and opportunities faced by local businesses, governments and citizens are commonly shared throughout the region. These include: 1) both population in-growth and out-migration; 2) family farms disappearing; 3) pressure on natural resources; and 4) being an economically distressed area.

Population in Poverty

The area is rural, and poverty levels are higher than the State as a whole. The region also has a higher percentage of seniors and lower median incomes compared to the state as a whole. In sum, the average resident is likely to be older and lower income than the average Minnesotan.

Table 1: Regional Demographics and Poverty

Location	Population[a]	Poverty (%)[b]	Child Poverty (%)[c]	Seniors +65 (%)[b]	Median Household Income[b]
Aitkin	16,220	13.5%	22.8%	27.2%	$40,226
Cass	28,390	13.1%	17.9%	21.1%	$42,445
Crow Wing	62,763	11.5%	18.4%	18.5%	$44,659
Mille Lacs	25,979	12.4%	14.9%	16.1%	$45,273
Morrison	33,229	13.1%	15.9%	16.0%	$47,085
Otter Tail	57,252	12.9%	17.7%	21.0%	$43,478
Todd	24,836	14.9%	21.0%	17.4%	$42,927
Wadena	13,749	16.8%	23.2%	21.1%	$34,686
Minnesota	**5,344,861**	**10.6%**	**13.5%**	**12.9%**	**$57,243**

[a] US Census Bureau, State & County QuickFacts, 2011 population estimate http://quickfacts.census.gov/qfd/states/27000.html
[b] US Census Bureau, American Fact Finder, 2010 Census http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_10_5YR_DP03&prodType=table
[c] Includes all children in household under 18 years, US Census Bureau Fact Finder

Food Consumption and Expenditures

Although the region is rural and somewhat sparsely populated, total resident food expenditures add up to almost $1 billion (*Table 2)*. Fresh fruit and vegetable expenditures are a fairly small fraction of total food expenditures, amounting to roughly $37.1 million. A food hub in Central Minnesota would not be limited to offering fruits and vegetables, but could additionally offer a myriad of local products, such as dairy, meats, and other staple items (wild rice, maple syrup, whole grains, etc.). However, examining the consumption patterns of fruits and vegetables, and particularly fresh fruits and vegetables provides a conservative starting point for analyzing the potential for a regional food hub, especially since this will be the focus during the initial years as the operation grows.

Table 2: Regional Food Expenditures

Region	House-holds[1]	Median Household Income[1]	Per capita Income[1]	Total Food Expenditures[2]	At home food expenditures[2]	Away from home food expenditures[2]	Annual Household Expenditures Fresh Fruit & Veg[3]
Minnesota	**2.1 m**	**$57,243**	**$29,582**	**$21.3 b**	**$11.1 b**	**$10.2 b**	**$730.8 m**
Central MN	**106,550**	**$43,728**	**$23,287**	**$999 m**	**$520.7 m**	**$478.4 m**	**$37.1 m**
Aitkin County	7,903	$40,226	$22,966	$65.1 m	$33.9 m	$31.2 m	$2.8 m
Cass County	12,944	$42,445	$24,348	$114.7 m	$59.8 m	$54.9 m	$4.5 m
Crow Wing County	26,913	$44,659	$24,282	$251.0 m	$130.8 m	$120.2 m	$9.4 m
Mille Lacs County	10,538	$45,273	$21,744	$104.8 m	$75.8 m	$50.2 m	$3.7 m
Morrison County	13,496	$47,085	$22,934	$133.3 m	$69.5 m	$63.8 m	$4.7 m
Otter Tail County	24,691	$43,478	$23,445	$230.1 m	$119.9 m	$110.2 m	$8.6 m
Todd County	10,065	$42,927	$21,014	$100.0 m	$72.3 m	$47.9 m	$3.5 m
Wadena County	5,959	$34,686	$19,344	$55.2 m	$28.8 m	$26.4 m	$2.1 m

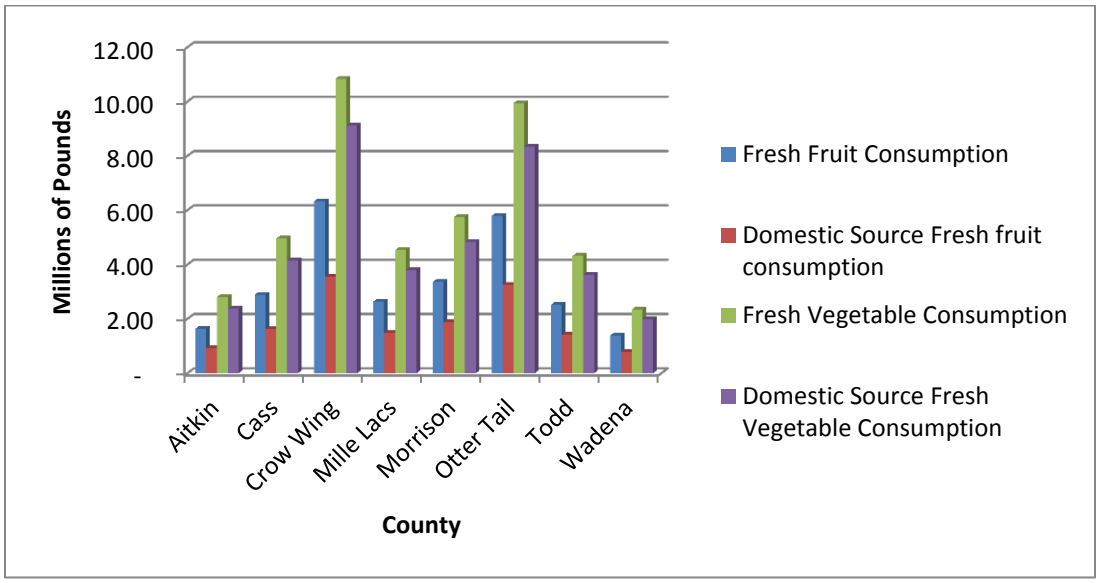
[1] From U.S. Census Bureau, State & County Quick Facts, 2011 estimate http://quickfacts.census.gov/qfd/states/27000.html

[2] From USDA Economic Research Service, Per Capita Food expenditures 2010 http://www.ers.usda.gov/data-products/food-expenditures.aspx#26636

[3] Based on average fresh produce expenditures for the $30,000 - $49,999 household income group, of $348, from U.C. Davis, Tracking Demographics and U.S. Fruit and Vegetable Consumption Patterns, October 2011 http://agecon.ucdavis.edu/people/faculty/roberta-cook/docs/Articles/BlueprintsEoEConsumptionCookFinalJan2012Figures.pdf

To cross-reference the figures above, data was extracted using SimplyMap at the James J. Hill Business Reference Library in St. Paul, MN. According to these regional statistics compiled from a variety of governmental sources, total food expenditures were about 28% less ($275 million difference). However, fresh fruit and vegetable expenditures were 28% higher ($10.3 million difference). Since the figures utilized for most of the subsequent market analysis are derived from Fresh Fruit & Vegetable expenditures data, the more conservative numbers provided in *Table 2* will be used. Cross-referenced data obtained from SimplyMap is available in *Appendix B: Fruit & Vegetable Consumption*. Because approximately 44% of fresh fruit and about 16% of fresh vegetables are sourced internationally (Huang, 2007), the amount of domestically sourced fresh fruits and vegetables are identified as an unmet demand which could be satisfied locally, based on season length.

Figure 4: Domestically Sourced versus Total Fresh Fruit and Vegetable Consumption



Food Deserts

A relatively new term defined as low-income areas with low access to fresh produce, food deserts are frequently accompanied with a high percentage of poor health outcomes, including diabetes, obesity and other issues. Food deserts are quite prevalent throughout rural America, although they are frequently thought of as an urban problem. The Central Minnesota region contains 24 food deserts. For a map of regional food deserts, please refer to *Appendix I: Regional Food Deserts*. As *Table 3* below illustrates, almost 82,000 regional people are living in a food desert, roughly 1/3 of the total population. The region is in need of solutions that will simultaneously increase the accessibility of fresh, local foods, while improving regional economic indicators. Zero food deserts are reported for Mille Lacs County.

Table 3: Regional Population and Food Deserts

County	County Population[1]	Number of Food Deserts[2]	Total Population Living in a Food Desert	Population Living in a Food Desert
Aitkin	16,220	4	12,258	76%
Cass	28,390	1	3,862	14%
Crow Wing	62,763	5	17,433	28%
Mille Lacs	25,979	0	0	0
Morrison	33,229	3	10,048	30%
Otter Tail	57,252	4	14,474	25%
Todd	24,836	5	15,505	62%
Wadena	13,749	2	8,334	61%
Total	262,418	24	81,914	31%

[1] U.S. Census Bureau, State & County Quick Facts, 2011 estimated population, sourced at: http://quickfacts.census.gov/qfd/states/27/27159.html

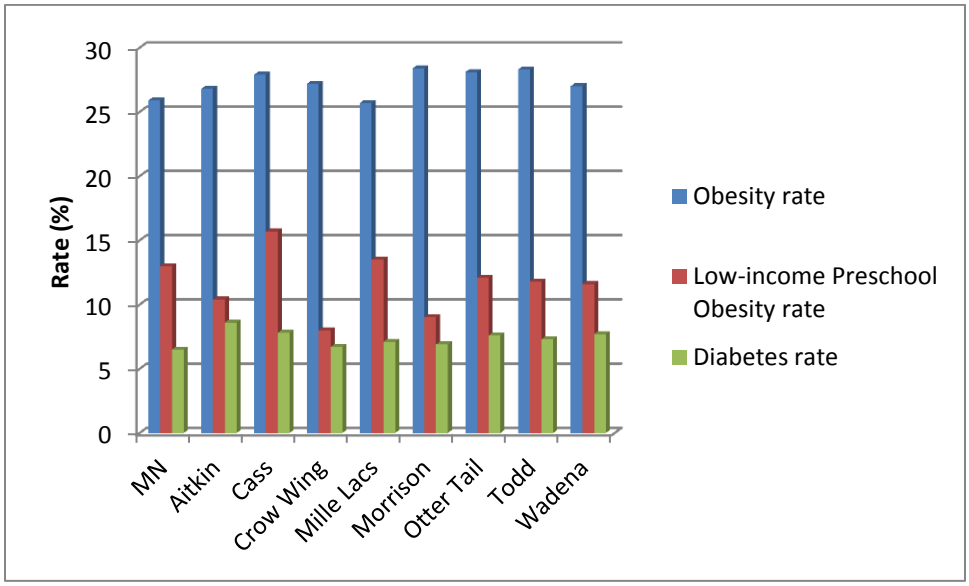
[2] USDA Economic Research Service, Food Desert Data, sourced at: http://www.ers.usda.gov/data-products/food-desert-locator/download-the-data.aspx

Health Outcomes

While this report will deal with regional health outcomes cursorily, it is anticipated that the establishment of a regional food hub could help reduce the number of food deserts, and help improve the health of local residents by increasing access to fresh produce. Poor diets can result from insufficient access to high-quality produce, often contributing to childhood obesity, diabetes, and other nutrition-related disease. Strategies to increase access to fresh food combined with nutritional education can help to overcome these problems (Minnesota Department of Health, 2008).

Food security includes both quantity *and* quality of food consumed. Nearly 63% of the people in Minnesota are overweight or obese (Minnesota Department of Health, December 2009). *Figure 5*: Regional Obesity and Diabetes Rates below shows a few key regional health indicators. Adult obesity is higher than the State average in every county except Mille Lacs, while low-income preschool obesity is generally regionally lower than the State average except for Cass and Mille Lacs Counties. Regional diabetes rates are higher in every single county than the State average.

Figure 5: Regional Obesity and Diabetes Rates



Source: City Data website, http://www.city-data.com/county/*XX*_County-MN.html

"Local" Definition

There is some confusion over the term "local," and the implication of the meaning is important to consider as it relates to competition and marketing strategies. A definition inclusive of the production system along with some environmental and social benefits is likely what the general public has in mind when they think "local." As food policy strategist Maggi Adamek, summed up: "*Food from here for here produced in a way that builds local economies and promotes environmental sustainability*" (Walljasper, 2012).

The U.S. Congress did specifically adopt a definition of a "locally or regionally produced agricultural product" in terms of distance between production and consumption in the Farm, Nutrition, and Bioenergy Act of 2007. According to the Act, it refers to an agricultural product:

(i) which is produced and distributed in the locality or region where the finished product is marketed;
(ii) which has been shipped a total distance of 400 or fewer miles, as determined by the Secretary; and
(iii) about which the distributor has conveyed to the end-use consumers information regarding the origin of the product or production practices, or other valuable information. (U.S. Congress, 2007)

This definition may be slowly catching on, as it was noted in a study conducted by the Economic Research Service of the USDA, *Local Food Systems: Concepts, Impacts, and Issues*, published in 2010 (Martinez, May 2010). At the same time, however, it is quite possible for retailers to advertise products as originating "locally" without the term meeting the definition proposed by Congress. A standard, recognized definition of the term "local" could benefit a food hub through limiting competition of specific products. However, since no such standard exists, large distributors could steadily use it and dilute it with a broader interpretation, further contributing to public confusion and making it more difficult for a food hub to distinguish its products.

To confuse matters further from a technical definition standpoint, the Food Safety Modernization Act of 2011 skirts the definition of "local" without actually using the word. In discussions regarding exemptions from the law, a "Qualified End-User" with respect to food is defined as:
(i) the consumer of the food; or
(ii) a restaurant or retail food establishment (as those terms are defined by the Secretary for purposes of section 415) that is located –
    (I) in the same State as the farm that produced the food; or
    (II) not more than 275 miles from such farm (U.S. Congress, 2011).

Consumer education, creative marketing materials, and product distinction will be critical to preserve a place in the market for the food hub's products.

Supply

State Support for Agriculture

Minnesota has a long history of supporting the increase of its specialty crop production and distributing produce locally. The *Minnesota Grown* promotion Program was created over 20 years ago as a means of distinguishing local produce through a statewide partnership between the Minnesota Department of Agriculture and Minnesota producers of specialty crops and livestock. The State's land grant university, the University of Minnesota and U of MN Extension tirelessly support agriculture through program delivery, research, and other avenues. The University of Minnesota has leading agronomists who have been conducting research on season extension for over a decade, as well as working for over a century on developing unique, cold hardy varieties of specialty crops, including Honeycrisp apples and Frontenac gris grapes.

Regional Agricultural Industry

There is considerable agricultural activity occurring in the region, and portions of the area have been well known for their commodities for some time. The Brainerd Lakes area has an $830 million agricultural industry, supporting between 10,800 and 15,800 jobs regionally (Bauman, 2010). This industry represents a major strength and opportunity for the economy.

Central Minnesota contains a greater number of farms with smaller average farm size as compared to the State as a whole. A smaller portion of the total land area in Central MN is in farmland than the State as a whole, and the U.S. as a whole: 38% of the total land area in Central Minnesota is dedicated to farmland, while farmland accounts for 53% of the total land area in the State, and around 51% of total land base in the U.S. (USDA Economic Research Service, 2012) Four of the eight counties have average farm sales over $50,000. Whereas statewide, crop sales slightly outpace livestock sales, in Central Minnesota, the reverse is sharply noted, with livestock sales accounting for 70% of the total market value of agricultural products. Only a small portion of Minnesota's farm revenue, 3.5% (American Farmland Trust, 2002), is actually devoted to the production of fruit and vegetable crops, also called specialty crops. See *Table 4* for more details regarding general agricultural activity occurring in Central Minnesota counties.

Table 4: Regional Agricultural Data

Area	Land in farms (acres)[a]	Land area (acres)[b]	# of farms[a]	Ave Farm Size (acres)[a]	Total Market value of agricultural products[a]	Average Sales per farm[a]	Market Value - Crop Sales[c]	Market Value - Livestock Sales[c]
Minnesota[d]	**26,900,000**	**50,961,280**	**81,000**	**332**	**$13,180,466,000**	**$48,498[e]**	**53.5%**	**46.5%**
Central MN	**2,408,499**	**6,395,520**	**10,202**	**236[f]**	**$ 829,566,000**	**$82,621[g]**	**27%[h]**	**73%[h]**
Aitkin County	132,672	1,166,080	538	247	$ 13,534,000	$25,157	53%	47%
Cass County	169,160	1,294,080	563	300	$ 25,631,000	$45,525	14%	86%
Crow Wing County	121,716	639,360	609	200	$ 13,466,000	$22,112	39%	61%
Mille Lacs County	124,956	366,080	762	164	$ 27,285,000	$35,807	31%	69%
Morrison County	431,346	720,000	1,867	231	$ 261,026,000	$139,810	11%	89%
Otter Tail County	898,703	1,262,080	3,296	273	$ 300,071,000	$91,041	44%	56%
Todd County	378,734	604,800	1,910	198	$ 148,608,000	$77,805	21%	79%
Wadena County	151,212	343,040	657	230	$ 39,945,000	$60,798	36%	64%

[a] USDA National Agricultural Statistics Service 2007 Census of Agriculture, County Profiles, except Minnesota
[b] US Census Bureau State & County QuickFacts, http://quickfacts.census.gov/qfd/states/27000.html
[c] Includes nursery and greenhouse sales, USDA NASS 2007 Census of Agriculture, County Profiles, except Minnesota
[d] USDA, Minnesota Agricultural Statistics Service, 2010 State Agriculture Overview, and 2007 Census of Agriculture State Profile
[e] Average net cash farm income, USDA NASS 2007 Census of Agriculture, County Profiles, except Minnesota
[f] Weighted average by number of farms
[g] Weighted average by number of farms and average farm size
[h] Weighted average by sales per farm

Local Producers

At the local level, there are three possible sources of supply for the food hub:

1) Existing specialty crop producers;
2) Commodity growers who would consider adding specialty crops; and/or
3) Growers who are beginning producers.

According to a 2007 study, the experience of a food hub in Southeastern Minnesota led the organization's director to seek out commodity growers who were willing to add specialty crops. This type of grower is generally happy to receive greater income for a specialty crop than commodity crops; they are willing to cooperate with an organization working to sell their products; and they are accustomed to meeting grading standards. In comparison, this study found that existing specialty crop producers often already had direct outlets for their products; they frequently did not want to accept less compensation for their product than direct market prices; and they were unfamiliar with grading standards (Cooperative Development Services, August 2007).

Beginning producers or commodity growers not already growing product are also likely to be flexible in terms of variety and quantity grown. Rather than be faced with the challenge of marketing a product there may not be a demand for, they will be growing products customers request, providing an almost guaranteed market for products. Currently active participants in the Central Minnesota grassroots food hub are specialty crop growers. However, based on the experience of the Southeastern Minnesota food hub mentioned above, **reaching out to commodity growers** could be a worthwhile option to explore (Ibid.).

Producer Surveys

Grower specific data on the region's local food system was collected in 2 separate surveys. In the fall of 2008, Region Five Development Commission implemented a survey that was also available online exclusively, and received a high response rate (n=142). The second survey was conducted in May 2012, developed specifically for this research by University of Minnesota CURA Research Assistant Colin Cureton, and was modeled off a feasibility study conducted to assess the viability of a local food hub in Dane County, Wisconsin. This survey was also available online exclusively, and was publicized through a Region Five Development Commission local food producer list that was built to get out the 2008 local foods survey. The survey was also publicized through the U of MN Central Regional Sustainable Development Partnerships lists and Board contacts.

While this survey was more acutely designed to assist in quantifying the economic effects of a local food hub in the region, farmer interest in participating in the hub, etc., its weakness is that it received a smaller response rate (n=31). While the extrapolation of the more recent survey's results onto the other is a methodologically careful endeavor, it also allows us to make reasonable inferences about the region's local food system on a larger scale (Cureton, 2012).

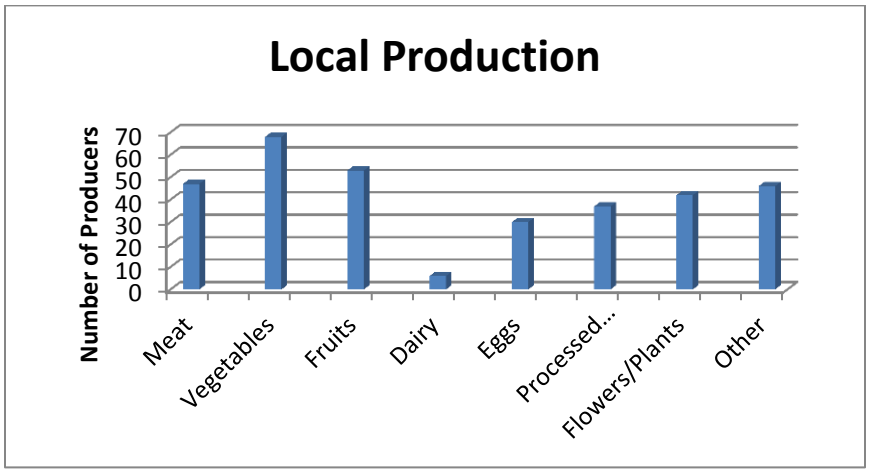
2008 Survey

124 of the 142 growers participating in the 2008 survey (87.9%) indicated that they produced/grew/raised products for local sales. To ensure the survey captured responses from a base

ready to do business with a food hub, growers who did not currently grow fresh market vegetables were removed from the sample, totaling 18 responses removed from the 2008 survey. Of the growers who do not currently grow fresh market vegetables, a full 81% of the 2008 respondents expressed an interest in diversifying their farm, indicating the pool of ready growers may increase in the future (Ibid.).

The 18 respondents in the 2008 survey who did not sell food locally all reported the desire to expand to local markets. The largest category of respondents was vegetable growers (49%), followed by fruit growers (37%), as well as meat producers (34%). There were also roughly a quarter of respondents who produce eggs, flowers/plants, and processed items. Few dairy producers are represented in the survey (only 4%) (Ibid.).

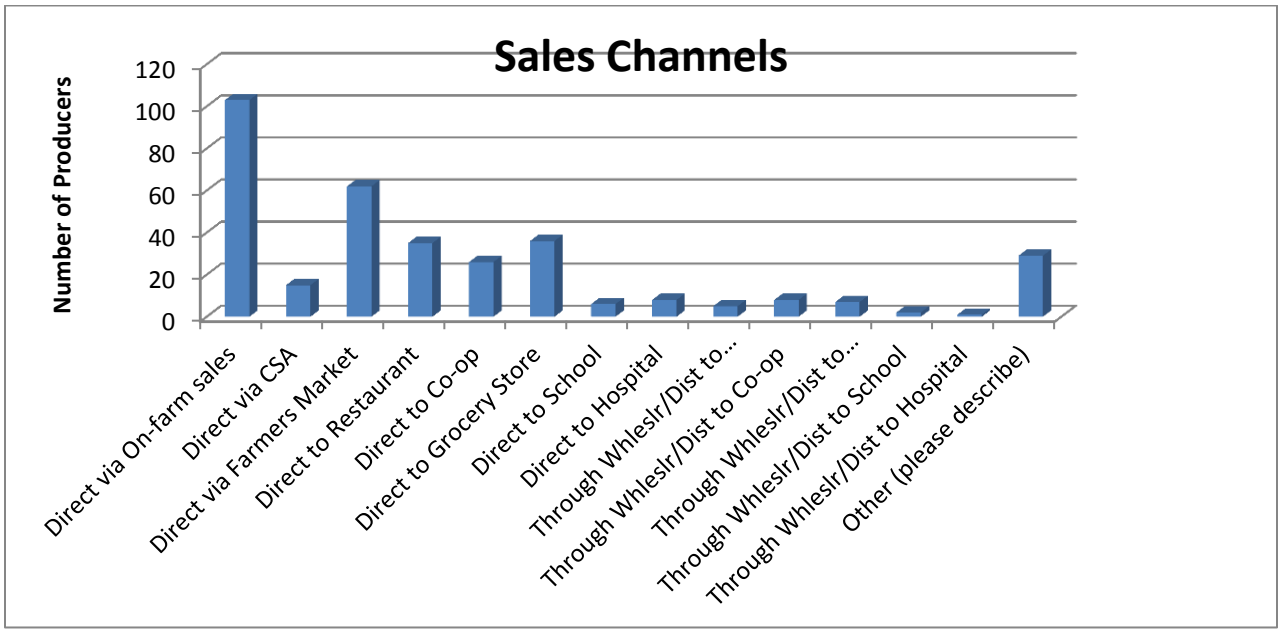
Figure 6: 2008 Grower Survey Local Production



The survey results are in line with the USDA's research on direct marketing channels in that a high percentage of respondents report less than $5,000 in local food sales per year and, accordingly, the most utilized distribution channels were direct-to-consumer (i.e. on farm sales, CSA, and farmers markets). The next most common channels were direct marketing to restaurants, grocery stores, and co-ops. Farmers utilizing intermediated channels (such as selling to wholesale to distributors) were much less common (Ibid.).

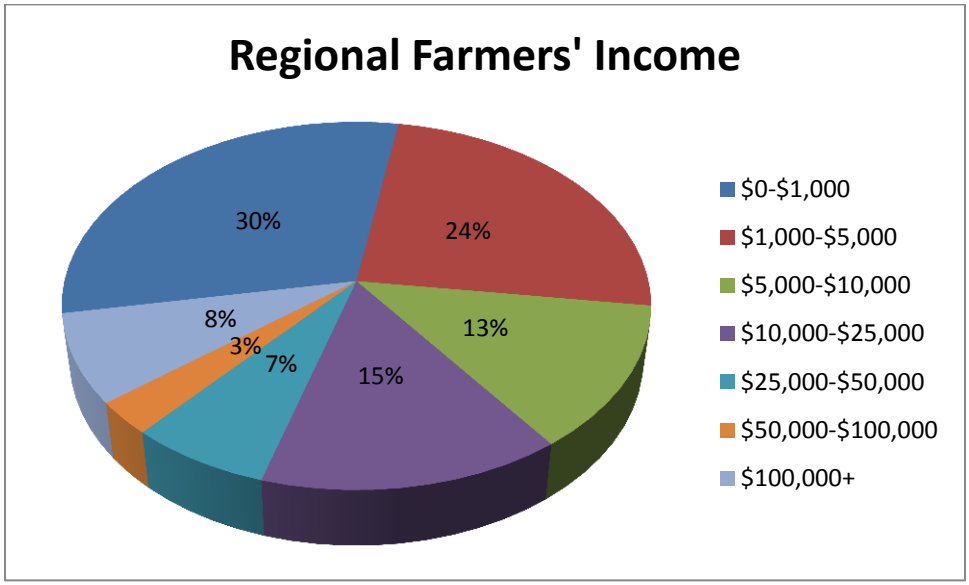
When farmers were asked how they distribute their products to local buyers, they responded overwhelmingly that they did it directly to consumers, versus through a wholesaler or distributor. Even when detailed in the "Other" category, most sales were still directly to the consumer.

Figure 7: 2008 Grower Survey Sales Outlets



The majority of respondents showed annual farm income of less than $5,000, with 55% of respondents indicating a very low income generated from farming. This could be indicative of a low ability to abandon paying jobs off the farm and thus an inability to dedicate a significant amount of time to farm work; a small amount of product grown; lack of marketing strategy; or a number of other things. Therefore, a modest **increase in annual revenue of around $5,000 would be relatively significant** for most producers participating in the survey. As is the case in the U.S. as a whole (see *Figure 2*), the total amount of local food sales is mostly attributed to the large and medium sized farms.

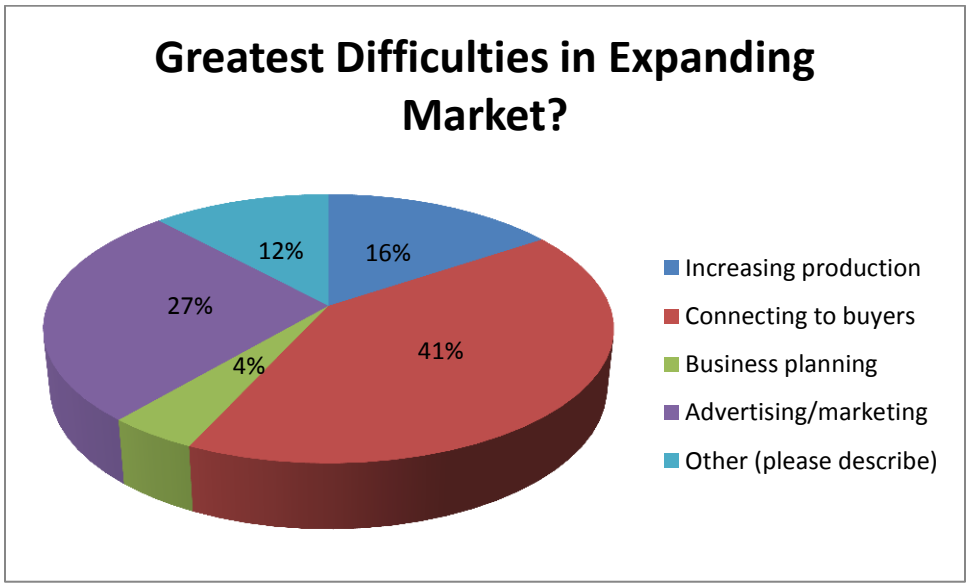
Figure 8: 2008 Grower Survey Regional Farmers' Income



An estimate of the total sales of the respondents in the 2008 survey was made by taking the mid-point of each local food sales bracket and aggregating the number of producers in each bracket. For example, if there were 6 respondents in the $25-$50,000 range, it was assumed that each of the respondents experienced sales of $37,500. Thus, the estimated total local food sales attained by these respondents was calculated to be $2.15 million. Excluding the large producers who report over $100,000 in local sales annually, local food sales are just under $1 million. Considering that the USDA projected a 40% increase in local sales between 2007 and 2011, it is reasonable to assume there has been some degree of growth locally since the survey was conducted. At that rate of growth, the region's local food sales may be currently upward of $3 million, with small and medium size farms representing well over two-thirds of the total (Cureton, 2012).

Regarding expanding local food sales, 58% of producers want to expand their sales to individual consumers, 39% want to expand their sales to businesses, and 25% to institutions. Reasonable explanations may be that the majority of farms already heavily rely on direct sales, and that direct sales to consumers require the least infrastructure, compliance, and retains the highest percentage of food sales relative to other markets. There was relatively low interest (15-30%) in most strategies given that might help increase local sales. By far the most common response (50%) was access to a list of businesses interested in buying local. The most common difficulty growers expressed in expanding their market was connecting to buyers, which bodes well for establishing a regional food hub, as that would be one of its key roles (Ibid.).

Figure 9: 2008 Grower Survey Difficulties in Expanding Market



2012 Survey

In 2012, 22 of the 31 respondents in the 2012 survey (71.0%) indicated that they currently grow and sell fresh produce. To ensure the survey captured responses from a base ready to do business with a food

hub, growers who did not currently grow fresh market vegetables were removed from the sample, totaling 9 responses removed from the 2012 survey. Of the growers who do not currently grow fresh market vegetables, 30% of the 2012 respondents expressed an interest in diversifying their farm, which is considerably down from the 2008 survey. Very few respondents were brand new farmers, with 50% concentrated between 6 and 20 years of experience (Ibid.).

Grower interest in selling to a food hub is strong. Fourteen growers (70%) were either "very interested" or "somewhat interested" in selling to a local food hub given a fair price and accessible location. Fourteen growers were also interested in utilizing any processing facilities that would be located at a local food hub to do value-added activities.

Two crucial questions to examining the potential immediate and long-term economic impacts of a local food hub were:

1. How much land farmers would be able to divert or put into production to grow for the hub; and
2. What amount of products farmers would be able to make available to sell through a local food hub beginning in 2013 (Ibid.).

Including all respondents, a total of between 286 and 854 acres could be devoted to the Hub, or between 11 and 37 acres per farmer. Excluding farmers who made a low-end or high-end estimate of over 50 acres, the total acreage that could be devoted to the Hub is between 86 and 258 acres. This works out to between 3.58 acres and 11.75 acres per grower. *Table 5: Total Acreage that could be devoted to a food hub* and *Table 6: Total Acreage that could be devoted to a food hub, excluding growers who estimated over 50 acres* below display these figures (Ibid.).

Table 5: Total Acreage that could be devoted to a food hub

Source: Cureton, *Toward a Food Hub in North-Central Minnesota*, 2012.

	Low-end estimate:	High-end estimate:
Total acres	286	854
Average acres per farmer	11	37

Table 6: Total Acreage that could be devoted to a food hub, excluding growers who estimated over 50 acres

Source: Cureton, *Toward a Food Hub in North-Central Minnesota*, 2012.

	Low-end estimate:	High-end estimate:
Total acres	86	258
Average Acres per farmer	3.58	11.75

Producers indicated that in 2013, they could make available for sale through the food hub 203,000 pounds of fruits, and 936,000 pounds of vegetables. Utilizing pricing averages over the season from the USDA Agricultural Marketing Service Chicago Terminal Market (USDA Agricultural Marketing Service, 2012), an average price per pound offered to growers specific to each crop was estimated. Then, based on the type and amount of produce that growers responding to the survey said they could offer, the **estimated total sale value** of this produce for

the food hub is **over $850,000**. While the slower development of food hub systems and procedures would necessitate more gradual growth than what growers indicate is possible, it is encouraging that this level of volume could be ready for sale in relatively short order. Notably, this total excludes additional products growers indicated they could sell through the food hub, including 50,000 pounds of decorative pumpkins, 27,000 pounds of beef, 10 hogs, 1700 chickens, 12,000 eggs, honey and maple syrup. See *Appendix F: Grower Supply in 2013 by Survey* for the spreadsheet details (Cureton, 2012).

A response consistent with the 2008 survey is that growers expressed the **most interest** (67%) **in connecting to new local buyers** out of all other additional services a local food hub could offer. The additional service with the next highest interest was processing and value-added activities (50%) followed by equal interest in business skill development and cooking, food, and nutrition (46%). The two most common responses to **what would make growers more likely to sell to a hub** were if a hub could **pick up produce from their farm (57%)** and if facilities were available for **processing and value-added** activities **(43%)**. A general theme that emerged from throughout the survey is strong grower interest in processing and value-added (Ibid.).

Finally, just under two-thirds (62%) of growers would be willing to participate in pre-season planning with the hub and 75% wish to be contacted about R5DC's efforts to strengthen the local food system.

Producers were asked what types of products they were selling, and the products were placed into general categories: Meat, Vegetables, Fruits, Dairy, Eggs, Processed Items, Flowers/Plants, and Other. 50% of respondents were growing some type of vegetable. The next most commonly produced items were Fruits, at 39%, Meat at 35%, Other, at 34%, Flowers/Plants at 31%, Processed Items at 27%, Eggs at 22%, and Dairy coming in at a mere 4% of respondents. The "Other" category included diverse items such as herbs, baked goods, honey, soap, maple syrup, manure, beeswax, pollination services, yarn, nursery stock, and more.

Revenue Extension

Looking exclusively at selling produce, the Central Minnesota growing season is relatively short. Therefore, methods to extend the number of months in which a food hub could capture revenue merit examination. These methods include:

1. Expansion to sales of animal and other products;
2. Season Extension;
3. Cold Storage;
4. Processing;
5. Potential expansion to sales of produce sourced non-locally in off-season.

Animal Products

Regarding sales of animal and other products, we have established that supply is available. In *Appendix B: Fruit & Vegetable Consumption*, we illustrated that regional production of animal products far

exceeds the State average. Additionally, through the grower surveys, respondents indicated that animal products would be available for sale in 2013 through the food hub.

Season Extension

Of the 22 respondents selling produce from the 2012 survey, 18 of them indicated they currently are using season extension structures. The controlled environment provided by season extension structures offers more stable growing conditions promoting greater plant and subsequent fruit development. These structures also extend the number of frost-free days by 30-50 days (Flynn, 2009). The use of season extension structures is increasing in the United States and currently amounts to about 40,000 acres of production (Lamont, 2009). Assuming the 18 respondents indicating the use of season extension structures have a standard size structure of 2500 ft^2, or 6/10 of an acre, the **total acreage currently in season extension production amounts to just over 1 acre**. Yields are greater than field grown commodities, according to the University of Minnesota in some cases over 7 times that of field grown (Wildung, 2004), so a low high tunnel acreage is more productive and not directly equivalent to outdoor acreage. While the quantity of produce currently available through the use of these structures will have a relatively small impact on the overall supply of the food hub, as these structures become more common, their impact on the ability of the local foods system to supply produce out of season will become more significant.

An additional season extension technique is growth of produce **hydroponically**, in a controlled environment using treated water as a growing medium rather than soil. Two year-round hydroponic growers have been added to the supply chain this year in Central Minnesota.

Cold Storage

Storage of root crops for sale during winter months can be accomplished with adequate capital investment or the ability to pay for currently under-utilized space. Growers responding to the 2012 survey indicated that they would have 66,000 pounds of squash, 60,000 pounds of potatoes, 30,000 pounds of onions, 12,000 pounds of beets, 5,300 pounds of carrots, and small amounts of rutabagas and garlic available for the food hub to sell in 2013.

Two separate, 40-ton capacity, temperature and humidity-controlled root storage bins are located at Central Lakes College (CLC) in Staples, Minnesota. Originally constructed around 1996 for the purposes of a carrot crop storage study, they are currently used for alternate storage purposes, and could be used for crop storage by the distribution initiative should the need arise. The bins would be available for in-kind rental to the food hub, according to CLC Ag Center Director Robert Schafer. The food hub would have to pay for related operational expenses, and with both bins running, those expenses were an average of $622 per month in 1996 (Krause, 1996). Assuming the food hub would sell product by the end of March the following year, cold storage expenses would be roughly $4,000.

Processing

"Several food hubs see processing as a potential way to use 'seconds,' reducing waste and increasing revenue for producers. They also see processing as a way to increase the number of shelf-stable products the hub distributes, which would enable them to offer a greater variety of off-season products

and keep buyers engaged on a year-round basis. A few of the food hubs interviewed intend to obtain processing equipment to develop value-added products; others said they are actively pursuing new business partnerships with existing processors to perform this function for them." (Barham, April 2012)

While the term "processing" is generally used to describe the preservation of food either by freezing, canning, dehydration, or other methods, it should be mentioned that there will be some less resource-intensive manner of processing required as the food hub grows. In fact, the Minnesota Department of Agriculture distinguishes between "processing" and "limited processing" as follows.

*"**Processing** includes slicing, heating, canning, freezing, drying, mixing, coating, bottling, enrichment, or similar actions. Any addition of off-farm ingredients (e.g., salt) prior to use or sale is also considered processing.*

***Limited processing** includes sorting or trimming (e.g., topping carrots or husking corn) as part of the harvesting process, or washing (e.g., to start the cooling process or to remove extraneous soil and debris)."* (MDA; MDH; UMN Extension, 2010)

Initially the food hub may serve simply as aggregator and distributor, but as resources become available, at some point the capacity to conduct "limited" processing while maintaining the status of fresh fruits and/or vegetables should be considered (e.g., washing lettuce for consumption). Infrastructure and training will be required in order for this increase in capacity to occur seamlessly.

Growers participating in the 2012 study overwhelmingly stated (83%) that they would be more likely to participate in the food hub if there were processing facilities available. Much of the products growers indicated would be available for sale at the food hub in 2013 could be processed and stored for sale at a later date, or value-added. The most common types of processing are canning and freezing for vegetables, and juicing and freezing for fruits (USDA Economic Research Service, 2010). The capacity to process fruits and vegetables could be very advantageous for a food hub, by extending the period in which local food is available, and utilizing otherwise un-saleable commodities.

Having a processing facility exclusively dedicated to regional farmers would likely be difficult to justify economically in the region, as its peak use would be during the summer months, and it may stand idle for the remaining 36 weeks of the year. It is for this reason that other models for organizing a self-sufficient processing facility have been successfully implemented, and these include:

1. Contract processing, where the facility maintains staff which produces food for clients under the clients' label;
2. Private labeling, where the facility usually maintains staff which produces food for clients, but under the facility's label;
3. Shared-use facility for growers, where the facility is a rent-by-the-hour or membership-based processing facility, which may also be combined with contract processing and private labeling;
4. Shared-use facility for community-at-large, where the facility is a rent-by-the-hour processing facility, which is available for public use and fully equipped for catering, pastries, and storage. This type of facility may also have event space for rent, and may also serve as a food business incubation center;

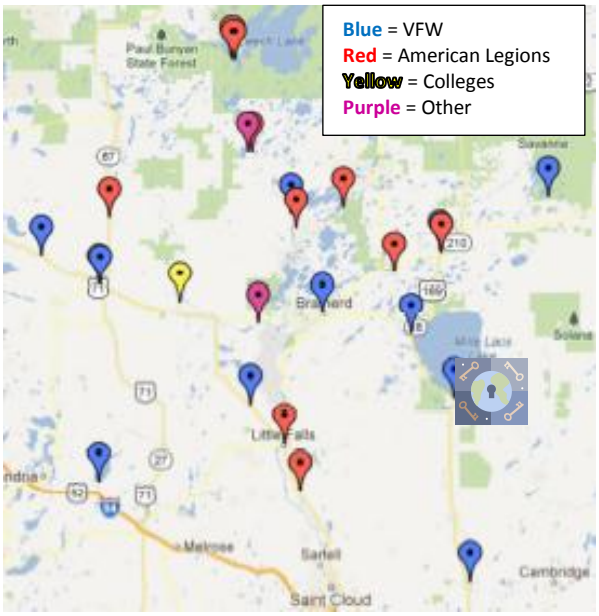
5. Food business incubator, where the focus is on business incubation and technical support services;
6. Workforce development, where the focus is on food business training and professional development, usually targeting a specific disadvantaged group; and
7. Other, where the scope is generally broader. This type of facility may encompass portions of the above models (Illinois Dept of Commerce and Economic Opportunity, 2012).

Because of the capital investment required, a new processing facility would not likely be built for a number of years. However, because so many of the growers participating in the 2012 survey indicated an interest in a processing facility, Central Minnesota Food Hub facilitators are currently identifying and surveying existing regional processing facilities. If a partnership with another entity is possible where peak use would not conflict, such as a school, this could prove highly advantageous for both parties. For example, Central Lakes College, Staples Campus, has a state-of-the-art, 22-burner facility that is currently under-utilized. Through establishing relationships with processing facilities' owners, it is possible that multiple facilities in various locations around the region could be utilized, based upon grower proximity and terms of agreement.

Processing Partnerships

Seeking external partnerships with facilities already in possession of a licensed commercial kitchen was pursued for several reasons. Since a processing facility would only be needed for a limited number of months each year, extensive capital would be required for infrastructure investments, and further capital would be required for operations, building the food hub's own facility is out of reach for now. Locating regional licensed kitchens was more of a challenge than originally thought, as the Minnesota Department of Health does not conduct statewide inspections of facilities and subsequently issue licenses. In fact, in some counties in Central Minnesota, inspections are conducted based on the city in which a facility is located, while other counties issue licenses at the county government level.

Figure 10: Central MN Licensed Commercial Kitchens – Potential Collaborators



Due to the complexity in which the licenses are issued, there appears to be no single source of information regarding licensed commercial kitchens. Each respective agency was individually contacted, and based on the suggestions of the Public Health officials, a further search was conducted for licensed kitchens. *Figure 10: Central MN Licensed Commercial Kitchens – Potential Collaborators* shows the location of potential collaborators in possession of commercial kitchens. Detailed contact information for public health officials, licensed kitchen operators, and other contacts can be found in *Appendix J*: *Processing Facility Information*.

Choosing several facilities located around the region in convenient locations for growers originally seemed like the best way to coordinate processing. Utilizing an existing facility has the added benefit of making the license process go more smoothly. However, since it was discovered that each location would have to be separately licensed through the MN Department of Agriculture as a Wholesale Food Processor/Manufacturer, this methodology was ultimately questioned (Posterick, 2012). License fees are based upon sales volume, but the minimum yearly fee of $169 covers annual sales of less than $125,000 (Minnesota Department of Agriculture, 2008). The best option initially may be to continue pursuing the logical arrangement with Central Lakes College in Staples, particularly in light of the potential for crop storage and aggregation at the campus.

In the case that the food hub undertook obtaining a Wholesale Food Processor license for one or more facilities, then a contract with each interested grower would be required prior to their use of the facility. The contract would cover basic topics such as requiring Food Manager Certification, cleanliness policies, evidence of established relationships with the local Food Inspector, and other items.

A volume processing breakeven analysis was conducted based upon utilization of the Staples location. The facility is roughly 3,350 square feet in size, including a walk-in cooler approximately 150 square feet, a walk-in freezer approximately 200 square feet, and a loading dock with a standard size door. Lease options were based on a standard lease through the College at $6.50 per square foot (Christiansen, 2012), with the assumption that the space *could* be leased for less than a full year. Additional assumptions were that processed food would be sold at a 25% wholesale margin, and that all revenues would result from sales of processed food. Expenses were limited to all leased space costs, along with associated license fees, staff time assumed at 5 hours per week and $14.40 per hour, and mileage from Brainerd twice per week.

Table 7: Processing Breakeven Analysis

Lease Type	Lease Cost	Processed Food Sold	Cost of Goods
3 months	$ 5,500	$ 30,229	$22,672
5 month	$ 9,100	$ 49,932	$37,449
Annual	$21,775	$118,914	$89,185

Table 7: Processing Breakeven Analysis clearly illustrates the high level of volume required in order to support the processing facility with the given assumptions. This analysis provides some insight into the level of processing that would be required in order to support basic operations with an existing facility. If the food hub achieves a level of grower interest in the future, outside investment dollars may be possible to procure for the construction of a mini-processing facility. Yet it is instructive that solely operating costs will require a great deal of processed food volume.

An alternative which could be worthwhile exploring would be leasing the facility for specific, distinct processing needs, rather than months at a time. These instances may be more justifiable from an economic standpoint, if the facility owner would be willing to accommodate. While the breakeven model assumes that all costs will be covered by processed food sales, realistically this risk should not be borne entirely by the food hub, but shared with the growers, so some fee would be assigned to the expense of using the facility, to be determined at a later date.

Non-Local Sales

The final method for extending the season during which produce could be sold would be to purchase commodities grown out of the region when not locally available. This would have the benefits of maintaining buyer interest and established routines in purchasing through the hub, as well as providing year-round revenue and jobs for the hub. It would face the marketing challenge of delineating local from non-local at various times of year with buyers.

Economic Impact

Estimating the economic impact through the amount of produce that growers indicated they could have available for sale through the hub in **2013, the food hub could generate $850,000 in sales**, assuming infrastructure was adequate and demand met supply (Cureton, 2012).

Estimating the economic impact through acreage growers indicated they could dedicate for the hub, and extrapolating the 2012 survey to the larger body of respondents in the 2008 survey, a comparison approximation of the total local food sales is generated. Using the USDA estimated value of specialty crops at $5,000 - $10,000 per acre (USDA National Agricultural Statistics Service, 2010), if **all the land that producers said they could make available to a hub were put into production, $7.2 - $21.5 million in local food sales could be generated**. Recall that these estimates are solely for produce growers, excluding animal and other products (Ibid.).

With respect to job growth, first assume that a hub in the region would directly employ the equivalent of an average food hub. According to the National Food Hub Coalition, the average food hub employs seven people full-time and five people part-time. Outside of this direct employment, according to a recent UW-Madison study, 2.2 jobs are created for every $100,000 in local food sales (Dane County Dept of Planning and Development, 2010). Using this figure, **at capacity the hub could create between an additional 45 and 145 jobs** in the regional economy (Cureton, 2012). This estimate is created using the lower acreage figure that excludes large farms. Regarding regional economic growth, using a 2.6 multiplier (which is commonly used for food dollars spent locally), local food sales through a hub could result in $5.7 to $16.9 million generated elsewhere in the local economy (Meter, 2008).

These figures, of course, assume that the full regional capacity expressed in the 2012 survey and extrapolated to the 2008 survey will be captured by a local food hub, which is likely not the case. However, many growers in the region assuredly did not respond to the survey, which suggests the regional supply of local foods is much greater. Thus, capturing 50% of the local food supply available for a hub may have similar effects. Even capturing 25% of the supply available, a hub could generate $1.1-$3.2 million in local food sales, create 20-70 jobs (in addition to the direct employment of the hub), and have a regional multiplier effect of another $2.86-$8.3 million.

Conducting crop planning with growers could be economically advantageous for both parties, depending on whether it satisfies the needs of the consumers. Through planning, high value crops could be targeted for greater sales volume than low value crops. A brief list of high value crops by California markets can be found in *Appendix K*. A more local report based on some

recent Minnesota-based specialty crop research is *Minnesota Specialty Crops: An Analysis of Profitability & Performance 2008-2011*. According to the author, strawberries, raspberries, and assorted vegetables were consistently profitable for growers. Pumpkins were profitable for 2 years during the study, while cantaloupe, grapes, and sweet corn covered or almost covered direct and overhead costs but did not cover labor and management costs. Apples and blueberries consistently had higher expenses than receipts (Nordquist, 2012).

Direct-to-consumer sales through a channel such as Community Supported Agriculture (CSA) subscriptions could further boost sales. According to a report published earlier this year, CSAs alone contribute $10.5 million to the state economy (Walljasper, 2012).

Demand

"The challenge cited most often by the interviewed food hub operators was the difficulty of balancing supply and demand. Most of these food hubs are finding that the demand for locally produced food is simply greater than their regions can supply, especially within certain product categories." (Barham, April 2012)

Industry Size, Growth Rate and Sales Projections

The U.S. Fruit and Vegetable Wholesale Market reached $78 billion in 2011, with an annual growth between 2007-2012 at 2.9% (IbisWorld, 2012). The 5-year growth projection is 8%, and is being fueled by health and wellness trends, greater awareness of sourcing and food safety, and growing cooking and eating trends inspired by food connoisseurs/gourmets and ethnic groups (Dane County Planning and Development Department, 2011).

Local Market Analysis

Consumers in Minnesota spent $21.3 billion on food in 2010. Approximately $730.8 million of this was spent on fruits and vegetables (USDA Economic Research Service, 2010).

Central Minnesota food expenditures totaled just under $1 billion in 2010, with fruit and vegetable expenditures totaled $37.1 million. While 44% of fresh fruit and 16% of fresh vegetables are consumed from imports, 29.6 million pounds of fresh fruits and vegetables grown domestically were consumed in Central Minnesota alone. Much of these fruits and vegetables could be grown in Central Minnesota.

With processed fruits and vegetables accounting for 54% of total sales ($20.0 million), fresh produce sales account for $17.1 million in Central Minnesota (Cook, 2011). According to market research firm Mintel, 90% of consumers would buy local produce if it were conveniently available (Dane County Planning and Development Department, 2011). This means that $15.4 million in revenue could have been reaped from locally grown fresh fruits and vegetables. Assuming that Central Minnesota can provide only 16 out of 52 weeks' worth of food based on a typical field growing season length (Minnesota Department of Natural Resources, 2012), at 30.8% of the total annual local fresh produce consumption of $15.4 million, the potential **unmet need for local produce would still be $4.7 million**. This conservative estimate does not account for season extension, storage, or processing potential.

Since the broader region was included in the food consumption estimates contained in the sections above, to be even more conservative in estimates regarding demand in the immediate region, a more detailed examination of the area immediately surrounding the presumed best location of the food hub is merited.

The twin cities of Brainerd and Baxter are at the center of a major tourist destination, with over 450 lakes within 25 miles of the cities. They also serve the broader district as the regional retail center (Wikipedia, 2012). The region has been defined as a Micropolitan Statistical Area by the US Census Bureau, which is based on urban clusters of at least 10,000 population but less than 50,000 (Office of Management and Budget, 2010). This area is called the "Brainerd Micropolitan Statistical Area," it includes Cass and Crow Wing Counties, and has a total population of 91,067 (U.S. Census Bureau, 2010).

With the high number of recreational opportunities that the Brainerd Micropolitan Area offers, summer seasonal population soars to 2-3 times the year-round population. From Memorial Day weekend to Labor Day weekend, total summer population estimates range from 250,000 to 300,000 people (Richardson, 2004). This seasonal influx of visitors at the peak of farm production lends itself well to the support of a regional food hub. While one would think that a conservative methodology would be to exclude 6 of the 8 counties from the evaluation of existing outlets to support a food hub in Central Minnesota, it turns out that high-end estimates of regional seasonal total population (300,000) eclipse the total 8-county population (approx. 250,000).

Examining regional possibilities based upon the Brainerd Micropolitan Area, regional demand for fresh fruit and vegetables would still be at minimum $14 million, and up to $22 million including seasonal summer residents. As mentioned earlier, market research firm Mintel holds that 90% of consumers would buy local produce if it were conveniently available (Dane County Planning and Development Department, 2011), so reducing the potential demand in the **Brainerd Micropolitan Area** by that factor brings the **unmet demand** range from $12.6 to $20.2 million. Further reducing the number as above by seasonality to 16 weeks of fresh produce, we still have the possibility of reaching from **$3.8 up to $11.6 million**.

Table 8: Brainerd Micropolitan Statistical Area Seasonal Visitor Influx Impact on Food Consumption

	Population	Fresh Fruit & Veg Expenditures
Brainerd Micropolitan Area	91,067[j]	$13,870,236[k]
Micropolitan Area + Low-end Seasonal	250,000[l]	$20,387,444[m]
Micropolitan Area + High-end Seasonal	300,000[l]	$22,437,745[m]

[j] U.S. Census Bureau

[k] Based on average fresh produce expenditures for the $30,000 - $49,999 household income group, of $348, from U.C. Davis, Tracking Demographics and U.S. Fruit and Vegetable Consumption Patterns, October 2011 http://agecon.ucdavis.edu/people/faculty/roberta-cook/docs/Articles/BlueprintsEoEConsumptionCookFinalJan2012Figures.pdf

[l] Brainerd Daily Dispatch, 2004

[m] Adjusted to include 14 weeks of seasonal visitors, Labor Day to Memorial Day, based on average fresh produce expenditures for the $30,000 - $49,999 household income group, of $348 (see k above)

Expansion into the nearest urban markets could be considered, should supply outstrip local demand. Refer to *Table 11: Distance from Brainerd Micropolitan to Nearest Urban Centers* for details on distance

to nearby urban centers. With the existence of trucks running daily to and from the Twin Cities from Brainerd, exploring cooperative strategies to reduce delivery cost could prove mutually beneficial. As the Metro area is a minimum of 130 miles each way, these strategies will be critical in order to continue to profit.

Market Expansion

Food hub operators participating in a 2011 National Food Hub Collaboration survey indicated that the top primary and secondary market outlets include restaurants (84%), grocery stores (69%), colleges and universities (62%), food cooperatives (53%), other distributors (53%), and school foodservice providers (53%) (Barham, April 2012).

In order to diversify revenue and capture a larger market, some food hubs sell wholesale as well as directly to consumers. Direct sales to consumers can take the form of Community Supported Agriculture, a retail store front, and other methods.

Competitive Landscape and Advantage

The list of food distributors serving Minnesota is extensive. *Table 9* below highlights most of these distributors who could be perceived as indirect competitors, including all sales areas which the food hub could ultimately grow into: meat, poultry, eggs, dairy, produce, and processed foods. National broad line distributors such as Sysco are potential competitors and many are currently building local food programs. While these distributors serve similar markets as the food hub would, i.e., restaurants, institutions, and grocery stores, they do not offer the same products, services and benefits as the Central Minnesota food hub would.

Specialty produce distributors who could be perceived as direct competitors to the Central Minnesota food hub now or in the future are listed in *Table 10* below. These distributors offer organic foods and other specialty products, but at this time none offer the same products, services and benefits as the Central Minnesota food hub would.

Table 9: Processed Goods, Meat & Poultry, and Produce Wholesalers Distributing in Minnesota

Company Name	City	Markets Served & Products	Some Local	Near Central MN	Target Market	Foodservice Accounts	Annual Sales	Number of employees
Appert's	St. Cloud	Grocery; Institutions; Restaurants; Canned Goods; Meat & Poultry; Produce; Specialty/Gourmet	X (very large like Gold 'n Plump)		IA, MN, ND, SD, WI	1,900	$81 m	250
Bellboy Corporation	St Louis Park	Grocery; Institutions; Restaurants; Canned Goods;			Nationwide	2,000	$13.5 m	50
Classic Provisions	Minneapolis	Grocery; Institutions; Restaurants; Canned Goods; Specialty/Gourmet			MN	50	$7 m	13
Coastal Seafoods	Minneapolis	Institutions; Restaurants; Organic Meat & Poultry			IA, MN, ND, SD, WI	150	$4 m	25
Core-Mark	Plymouth	ALL; Canned Goods; Meat & Poultry; Produce; Specialty/Gourmet			IA, IL, MI, MN, ND, NE, SD, WI	1,800 (regionally)		300
Crystal Farms Refrigerated Distribution Co.	Minnetonka	Grocery; Dairy	(dairy)		East of Rockies	10,000	$395 m	400
Fraboni Wholesale Distributors Inc.	Hibbing	Grocery; Institutions; Restaurants; Canned Goods; Meat & Poultry; Produce; Specialty/Gourmet			MN, WI	500	$9 m	30
Henry's Food Inc.	Alexandria	Grocery; Institutions; Restaurants; Meat & Poultry; Produce			MN, ND, SD	1,000	$68.4 m	150
J&B Group Inc.	Saint Michael	Grocery; Institutions; Meat & Poultry; Specialty/Gourmet			Nationwide	4,500	$575 m	630
Jerry's Produce Co.	St Paul	Institutions; Restaurants; Produce			MN, WI	300	$13.5 m	13
Mason Brothers Co.	Wadena	Grocery; Meat & Poultry; Specialty/Gourmet		X	MN, ND, WI	200	$88 m	220
New Ulm Wholesale	New Ulm	Institutions; Restaurants; Canned Goods; Meat & Poultry			MN	1,300	$3.7 m	16
R. Grand Distributing	Hopkins	Institutions; Restaurants; Dairy; Specialty/Gourmet			MN	100	$4 m	5
Reinhart FoodService	Marshall, Rogers	ALL; Canned Goods; Meat & Poultry; Produce			IA, MN, ND, NE, SD, WY	2,800 (regionally)		400
Roma of Minnesota	Rice	ALL; Produce		X	IA, MI, MN, ND, NE, SD, WI	2,200 (regionally)		245
Sampson Dairy Foods Inc.	Owatonna	Grocery; Institutions; Restaurants; Meat & Poultry; Produce			MN	5,000	$6.9 m	35
Sandstrom's	Grand Rapids	Grocery; Institutions; Restaurants; Produce		X	MN, WI	1,000	$45 m	70
Sullivan Candy &	Hibbing	Grocery; Institutions; Restaurants ; Produce;			MN	330	$5.5 m	19

Supply		Meat & Poultry						
Sysco	Nationwide	ALL			Nationwide		$39 b	46,000
The Martin-Brower Co.	Fridley	Produce			IA, MN, MT, ND, NE, SD, WI	400 (regionally)		150
The Watson Co. Inc.	Cambridge	Grocery; Institutions; Restaurants; Produce			MN, WI	300	$12.5 m	27
Upper Lakes Foods Inc.	Cloquet	Institutions; Restaurants; ALL			MI, MN, ND, WI	7,000	$166 m	400
Ziebell's Hiawatha Foods Inc.	Winona	Grocery; Institutions; Restaurants; Produce; Meat & Poultry			IA, MN, WI	1,000	$7 m	19
Zuccaro's Produce Co.	Minneapolis	Institutions; Restaurants; Produce; Canned Goods			MN	200	$8.5 m	25
Whole Farm Co-op	Long Prairie	Individuals; Produce; Meat & Poultry	X	X	Twin Cities		$250,000	3
Prairie Potato Company	Rice	Potatoes	XX	X	Unknown		$4.5 m	11
Wingard Farms	Elk River	Potatoes	XX	X	Unknown		$5.5 m	20-49
White Clover Farms	Paynesville	Wholesale Herbs & Produce	XX		Unknown		$1 - $2.5 m	13
Wholesale Produce Supply	Minneapolis	ALL; Produce			Upper Midwest & Canada		$25 - $75 m	100 – 250

Table 10: Specialty Produce Wholesalers in Central Minnesota

Company Name	City	Markets Served & Products	Some Local	Near Central MN	Target Market	Foodservice Accounts	Annual Sales	Number of employees
Albert's Organics	Mounds View	ALL; Canned Goods; Organics; Produce	X (organic)		Nationwide	175 (regionally)	Over $1 b	5 – 10,000
Bergin Fruit Co. Inc.	St Paul	Grocery; Institutions; Restaurants; Canned Goods; Organics; Produce; Specialty/Gourmet			IA, MI, MN, ND, SD, WI	1,000	$20 m	80
Bix Produce Co.	St Paul	Institutions; Restaurants; Canned Goods; Organics; Produce			MN, ND, WI	1,200	$59 m	220
Co-op Partners Warehouse	St. Paul	Grocery; Organics; Produce	XX (organic)		IA, MI, MN, ND, SD, WI	200	$12.5 m	10
J&J Distributing	St Paul		X		MN	Unknown	$20 to $50 m	140
McLane/ Minnesota	Northfield	ALL; Canned Goods; Meat & Poultry; Organics; Produce			IA, MI, MN, ND, NE, SD, WI	1,500 (regionally)		400
Nash-Finch Company	Minneapolis	ALL; Canned Goods; Meat & Poultry; Organics; Produce; Specialty/Gourmet			Nationwide		$4.8 b	6,342
Northwestern Fruit Co	St Paul	Restaurants			MN, WI		$20 to $50 m	26
Premier Food Products Inc	St Paul	Institutions; Restaurants; Meat & Poultry; Organics; Produce			IA, MN, ND, SD, WI	300	$1.2 m	8
Restaurant Depot	St Paul	Restaurants; Canned Goods; Organics; Meat & Poultry; Produce			MN	8,000 (regionally)		60
Ron Mar Foods Inc.	Minnetonka	Grocery; Institutions; Restaurants; Meat & Poultry; Organics			MN, ND, SD, WI	300	$3.5 m	20
Royal Foods	Hopkins	Grocery; Meat & Poultry; Organics			IA, MI, MN, ND, NE, SD, WI	300	$20 m	40
Saint's Commercial Food Service	Minneapolis	Institutions; Restaurants; Produce & Organics			MN	450	$1.7 m	12
SuperValu Inc.	Eden Prairie	Grocery; ALL			Nationwide	5,000	$36 b	135,000
Swanson Meats Inc.	Minneapolis	Institutions; Restaurants; Organics			MN, WI	350	$25 m	60
US Foods	Plymouth	ALL			IA, MN, ND, SD, WI	3,000		400

Industry information largely sourced from Chain Store Guide Online courtesy James J Hill Reference Library; also via Manta at www.manta.com; and Minnesota Grown Directory.

While the current competitive landscape specifically for locally produced foods does not appear to be aggressive, there are a large number of suppliers already in the marketplace. Therefore, it is important to understand the features that could provide competitive advantages for the food hub in the future.

- As the first entrant into the marketplace, the food hub would have the opportunity to engage and solidify relationships with a chosen group of growers. Given the constraints in supply, a large base of skillful and loyal growers is a key competitive advantage, and potentially more important than secure relationships with buyers.
- The food hub enjoys a high level of stakeholder engagement including key partners that can enable rapid scale-up: University of Minnesota Extension, Region Five Development Commission, the Sustainable Farming Association, and AURI (Agricultural Utilization and Research Institute) to name a few. The initiative was identified as a need in a 400-citizen participatory process in establishing a sustainable Central Minnesota.
- There is a wide network of distributors and market specialists (e.g., Minnesota Grown, Buy Fresh Buy Local, Whole Farm Co-op, SE Minnesota Food Network) within which to form marketing and distribution partnerships.
- There is also an extensive network of large-volume buyers identified through the collective work of the Project Team, interested, ready, and some already engaged in sourcing local produce.
- Two growers participating in the food hub plan to end their 150-member Community Supported Agriculture (CSA) programs in 2013, opening up a significant market opportunity for the food hub.
- Unique services will be available to help buyers capitalize on the local foods market, including seasonal menu planning and featured farmers.

Opportunities & Advantages

Additional market opportunities for local aggregation and distribution systems have opened up through USDA's updated dietary guidelines in 2010 (USDA Center for Nutrition Policy and Promotion, 2011). These new standards include a significant recommended increase in fruit and vegetable consumption, opening up market opportunities for a food hub through local schools and senior meals programs.

According to the USDA website, farm to school "*is generally understood to include efforts that connect schools with local or regional producers in order to serve local or regionally produced foods in school cafeterias*" (USDA Food and Nutrition Service, 2012). While it is not mandatory for schools to participate, opportunities for additional funding and learning experiences encourage participation. Some school districts have seen it as an opportunity to offer more fresh foods of greater variety, merging nicely into the mandated changes covered by the Healthy Hunger Free Kids Act.

The Healthy Hunger Free Kids Act has required many significant changes of food served in school cafeterias. A brief summary of some of the changes includes: the minimum daily serving of fruits and vegetables for various age groups has been significantly increased; served vegetables must be a weekly combination of different colors; grains served must consist of more than 50% whole grain; a minimum and maximum number of calories for each age group has been established; and saturated fat, trans fat sodium, and sugar intake has been limited. Some of the goals established under the new guidelines won't be mandatory for 10 years, but a surprising number of these requirements must be enacted by the end of this school year (USDA Food and Nutrition Service, 2012). This Act serves as a tremendous opportunity for local producers to work with schools as they achieve the new requirements.

Local producers have also seen a future opportunity to sell product to providers of Meals on Wheels. In fact, due in part to an aging population, Todd County has attempted to bond for a kitchen that would prepare local Meals on Wheels. Purchasing supplies from the local food hub could boost local support for both entities, while meeting new nutritional guidelines for meals. The Older Americans Act sets forth nutrition requirements for home-delivered meals, and requires that States which operate nutrition services meet the most recent Dietary Guidelines for Americans (DHHS Administration on Aging, 2012). With the significant change in dietary guidelines that came out in 2011, requiring greater consumption of fruits and vegetables and fresh, whole foods (DHHS Office of Disease Prevention and Health Promotion, 2012), greater market potential of Meals on Wheels providers surfaced.

Buyer Survey

An informal survey was conducted in 2009 with 10 chefs or owners of premier area restaurants, including Craguns, Breezy Point Marina, Norway Ridge, Maucieri's, Grand View Lodge, Quarterdeck, E Squared, Antlers, The Lodge, and Renata. A second survey will be conducted in 2012, and will include institutional buyers, and supermarkets, along with restaurants. With more targeted questions regarding volume requirements and food safety requirements, this survey will further inform business planning. Survey questions are included in *Appendix H: 2012 Buyer Survey*.

In accordance with USDA reports, advantages cited to serving locally raised food included using the freshest produce. Also cited was a strong belief in supporting the local economy and farmers. A disadvantage cited in buying local produce is the inconvenience associated with multiple growers. A food hub could reduce some of this impact, as buyers would be working with one entity representing local farmers, as opposed to many farmers. This represents a marketing advantage for the food hub which will be capitalized on using the phrase, "One face, one invoice."

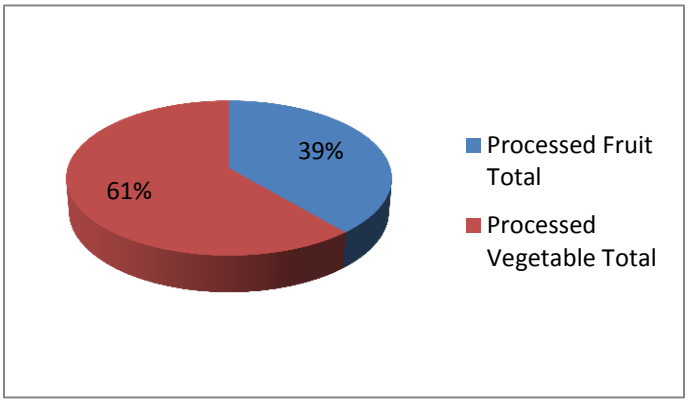
Every respondent indicated that they are interested in expanding their purchases or starting to purchase locally raised foods. Buyers indicated a diverse interest in products, including beef, poultry, and various produce such as cucumbers, tomatoes, lettuce, mushrooms, carrots, potatoes, onions, and celery.

Results were mixed as to whether buyers felt that their customers would be willing to pay more for locally-sourced products. Biggest barriers identified which prevent buyers from purchasing local products included relatively comparable price; reliable product; ease of use; consistent availability that meets quantity requirements; and good quality. While many local buyers would like to offer locally grown proteins, the market is limited due to the high cost of animal products, a direct result of the expense of processing associated with low volumes, among other factors.

Processing

Although this study has been looking in detail primarily at fresh fruits and vegetables, it was earlier established that **Americans** in fact **eat more processed fruits and vegetables** (54%) than fresh fruits and vegetables (46%) (Cook, 2011). Specific processed foods that school systems in particular identified as being interested in purchasing included carrots and cabbage (Tuck, 2010).

Figure 11: Processed Fruit vs. Vegetable Consumption



In terms of processed foods, the market potential is greatest for processed vegetables, which have higher consumption in this form than fruits, as can be seen in *Figure 11: Processed Fruit vs. Vegetable* Consumption (USDA Economic Research Service, 2010). This is good news for the Central MN food hub, as the most commonly processed fruits cannot be grown here (see *Figure 14*).

In examining the market potential for processed foods, we searched for patterns between fruits and vegetables, in the hopes that the most heavily consumed products utilize the same processing method. This would in turn utilize the same, or similar, equipment, minimizing capital investment required, maximizing use of equipment, and allowing for a phased approach to continue adding equipment as the need arose. While the bulk of processed fruits are consumed in juice (see *Figure 12*), processed vegetables are most commonly consumed in canned form (*Figure 13*). The next most common means of processing vegetables is by freezing, while frozen fruits are the least consumed of any fruit processing type.

Figure 12: Processed Fruit Consumption

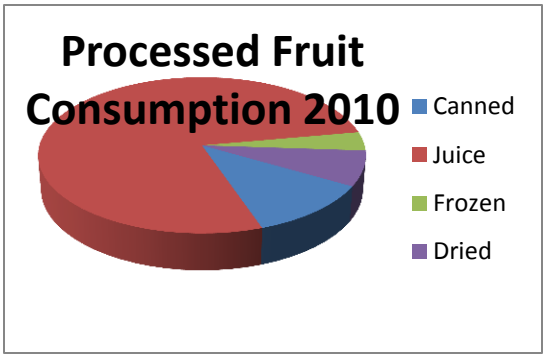
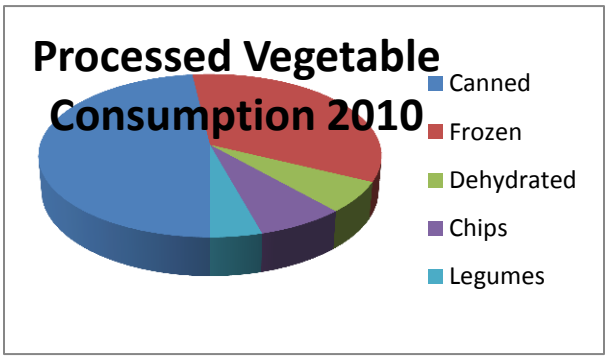


Figure 13: Processed Vegetable Consumption



Detailed below are 10 fruits and vegetables most commonly consumed in processed form (Rickman, 2007). Every one of the vegetables can be grown in Central MN, suggesting that there would be a market for them, particularly for processed tomatoes, of which a substantial percentage are consumed in this form.

Figure 14: Ten Most Commonly Consumed Processed Fruits and Vegetables

Table 2. Economic Research Service consumption data (lb per capita) for 2004 (www.ers.usda.gov/data/foodconsumption/)

Commodity	Fresh	Frozen	Canned
Asparagus	1.0	0.07	0.20
Beans, snap	1.9	1.9	3.7
Carrots	8.9	1.6	1.2
Corn	9.6	9.1	8.2
Green peas	–	1.9	1.2
Mushrooms	2.6	–	1.6
Peaches and nectarines	5.1	0.55	3.6
Pineapple	4.4	–	4.8
Spinach	2.1	0.93[a]	
Tomatoes	19.3	–	70.4

[a] Total for all processed varieties.

Business Model

The three core functions of the food hub will be packing, marketing and distribution.

1. The packing operation receives raw material from growers and packs it according to customer specifications. Depending on the grower's on-farm post-harvest handling capabilities, the product is cooled, washed, graded, packed, palletized and placed in cold storage until it is shipped to or picked up by customers. Farms that field pack may bring pre-packed cases to the food hub for cooling and storage. On-farm pickup will be offered to growers who do not have refrigerated transport for a prescribed per-pound fee.
2. The marketing operation consists of buyers and salespeople who negotiate transactions with growers and customers. They may conduct pre-season crop planning with both groups to more consistently match supply and demand throughout the season.
3. The distribution operation handles logistics of farm and customer pickups and deliveries.

The initial phase of the project assumes packing, marketing and distribution of U.S. Grade No. 1 produce only. Since focus is a key success factor in entrepreneurial strategy, this limitation in scope is to allow the operator to master buying, packing and marketing the largest and most profitable product line. Over time the team can introduce new offerings such as leased storage, private labeling, seconds, retail facility, organic, proteins, processing and more. A processing facility is later discussed in detail as an additional source of product and revenue.

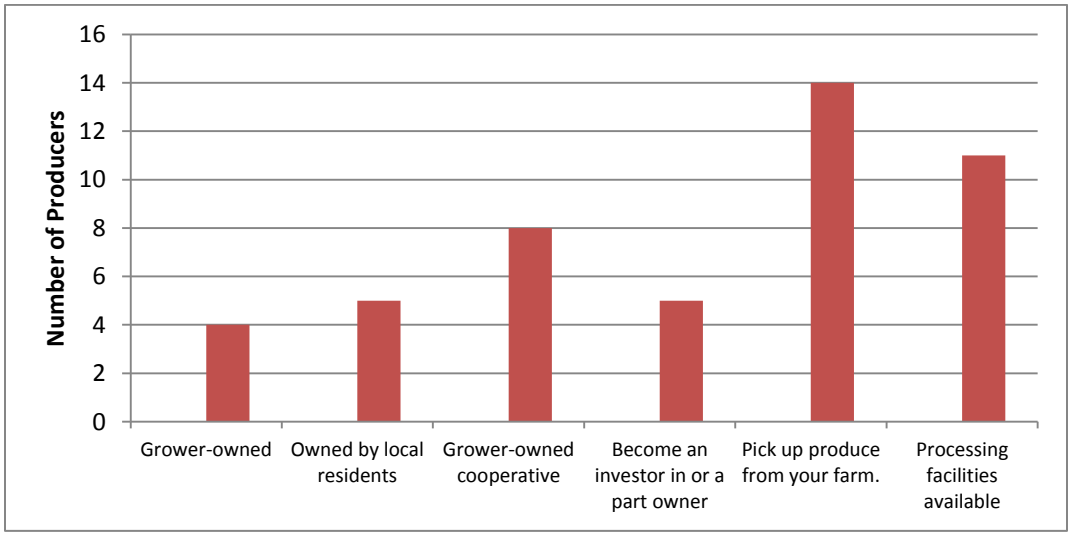
A local food hub can handle two types of purchases: consignment and direct purchase. In a consignment, the food hub facilitates the sale to a buyer on a commission but does not purchase the product from the grower. In a direct purchase the food hub buys the product from the grower at a set price and strives to sell it to a customer at a profit, assuming the risk of not selling the product. With direct purchases from growers, the Perishable Agricultural Commodities Act requires that the grower receive payment within 10 days of delivery to the food hub unless other terms are agreed to in writing.

Following this business model incents the food hub to maximize price and volume, and to boost profit margin by minimizing direct and indirect overhead costs. Growers are incented to improve quality to attract a higher price.

Interest in Ownership or Investment

When asked what factors would make them more likely to participate in a food hub, more growers were interested in having produce picked up from their farm, and having processing facilities available, than were interested in ownership or financial investment opportunities with the food hub, the majority of grower respondents cited interest only in a traditional supplier/customer business relationship. Eight of the 22 growers indicating they currently sell produce claim they would be more likely to participate in the food hub if it were a grower-owned cooperative. However, only 3 of the eight demonstrated an interest along a similar vein, becoming an investor or part owner, both of which would be required in order for there to be cooperative venture. Two respondents interested in investing did not find the cooperative model more appealing.

Figure 15: Producers would be more likely to participate in selling produce through a food hub if…



While the number of responses to this survey was small, leaving somewhat statistically marginal data with high confidence intervals, the overall picture that *Figure 15*: Producers would be more likely to participate in selling produce through a food hub if…provides is that ownership, management and investment are not as prominent issues as practical considerations such as delivery mechanism.

Ancillary Services

Grower Technical Assistance: A food hub can act as a central facility providing knowledge and technical support to its grower community. Ongoing producer education can help ensure quality products, successful crop planning and proper packing and grading. The more producers are educated about growing methods, food safety, and product demand, the better the quality of product a food hub can offer buyers. Food hubs are also well positioned to help growers adapt to upcoming food safety changes, such as adjustments in Good Agricultural Practices (GAPs) certifications.

Private Labeling: Some food hubs develop a brand from products packed and sold through their facility. The food hub may be better able to maintain high demand and ultimately charge a price premium if it can cultivate a strong brand with high buyer and consumer recognition and loyalty. Likewise, some buyers will request packed product with their own company label on it. Many farmers brand their products with their specific farm name, which is highly valued by consumers, so any private labeling strategy should endeavor to keep farm identification on the label as well.

Merchandising: Many food hubs have a merchandising strategy to set them apart from the rest of the produce industry. This can range from creative packaging and colorful cartons, prominent signage in restaurants, or informational or promotional stands in schools. Additionally, the food hub can make visits to the locations where the food is being prepared, to continue building a relationship with consumers and resolve any issues that may arise.

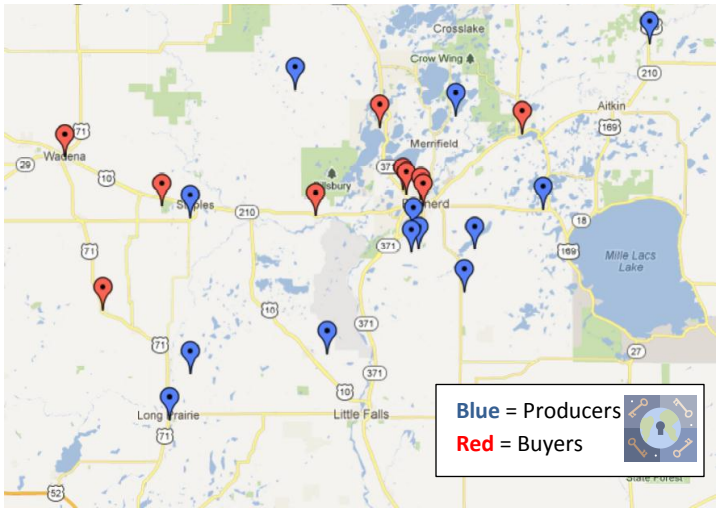
Financing: A food hub's success relies on the producers they are working with, as they cannot scale up sales without reliable and diverse supply. By providing access to financing options, facilities can encourage existing producers to scale up and help aspiring produce growers to convert commodity acreage to fresh produce. Financing support may include providing short-term market-based loans or helping producers access government grants or donations. At the time of writing, Region Five Development Commission has funds available to help producers expand their activities through low-interest loans.

Processing: Institutional buyers frequently wish to purchase fresh cut and/or frozen produce. A food hub can offer processing to satisfy these needs. Local foods processed during peak season can extend food hub sales through off-peak seasons, particularly to institutions.

Facility

The ideal facility is located close to a core group of committed grower-suppliers and near a major transportation route leading to a large customer base. The interior will have zoned refrigeration, ambient storage, a packing floor, and offices. The exterior will have at least one raised loading dock that trucks can easily access for shipping and receiving and a back lot or access road for truck overflow. Technical requirements include commercial or industrial zoning, access to an abundant supply of clean water (proof of testing preferred), adequate electrical service, preference for natural gas heating and adequate weight limits on access roads.

Figure 16: Map of Currently Active Producers and Buyers



It may be advantageous to begin operations as a leaseholder to minimize capital expense and location risk should the core group of growers change its locus of concentration in the first few years of operation.

Most distribution models depend upon an urban market in a large city or cities, with urban centers within a 200 mile radius of the collection site (Cooperative Development Services, August 2007). A challenge for establishing a viable operation in this primarily rural region will be ensuring local demand for local products without needing access to the larger urban market. Although the Brainerd Micropolitan Area is within 130 miles of the Twin Cities Metro, the goal of the Central Minnesota distribution initiative initially is to fulfill the needs of the local markets. At some point in the future, should supply outstrip local demand, Twin Cities and other urban markets are within reach by this metric.

The most central locations to the growers would be in Crow Wing, Morrison, Todd or Otter Tail Counties. In terms of location for the distribution center, a central location for the growers and buyers would be ideal. *Figure 16*: Map of Currently Active Producers and Buyers illustrates the location of currently active producers and buyers, centered around Brainerd/Baxter. These outstate "twin cities," with a population around 21,500, are located in Crow Wing County. This population dwarfs that of the closest large towns in surrounding counties, and simply by population density, Brainerd/Baxter would be the best location, minimizing travel required for delivery from producers and to buyers.

Brainerd/Baxter is located on the four-laned State Highway 371, a major north-south arterial route connecting the urban center of St. Cloud (63 miles) and the Twin Cities (130 miles) with Central Minnesota, up to Bemidji (100 miles). East-west State Highway 210 runs through the center of Brainerd/Baxter, connecting the area to Fargo, 160 miles to the west. Smaller highways connect with Duluth to the east, which is within 120 miles of Brainerd.

Table 11: Distance from Brainerd Micropolitan to Nearest Urban Centers

Urban Centers	Population[1]	Distance from Brainerd/Baxter[3]	Direction from Brainerd/Baxter
Fargo, ND	107,349	160 miles	West
Duluth, MN	86,277	120 miles	East
St. Cloud, MN	66,169	63 miles	South
Twin Cities Metro, MN	2,849,567[2]	130 miles	South
Bemidji, MN	13,657	100 miles	North

1 U.S. Census Bureau, Quick Facts, 2011 estimate, except Greater Twin Cities Metro Area
2 2010 population from Metropolitan Council, http://www.metrocouncil.org/news/2011/news_700.htm
3 Google Maps

Alternative locations were also examined to assess whether or not these should be pursued instead of Brainerd. Little Falls is the largest city in Morrison County, with a population of 8,349. Locating the distribution center out of Little Falls would bring the large markets of St. Cloud and the Twin Cities closer; yet would not be centrally located for the currently active growers. Long Prairie, Todd County, has a population of 3,458, and would increase costs associated with delivery to the currently active buyers. Although there are a good number of growers who responded to the surveys represented from

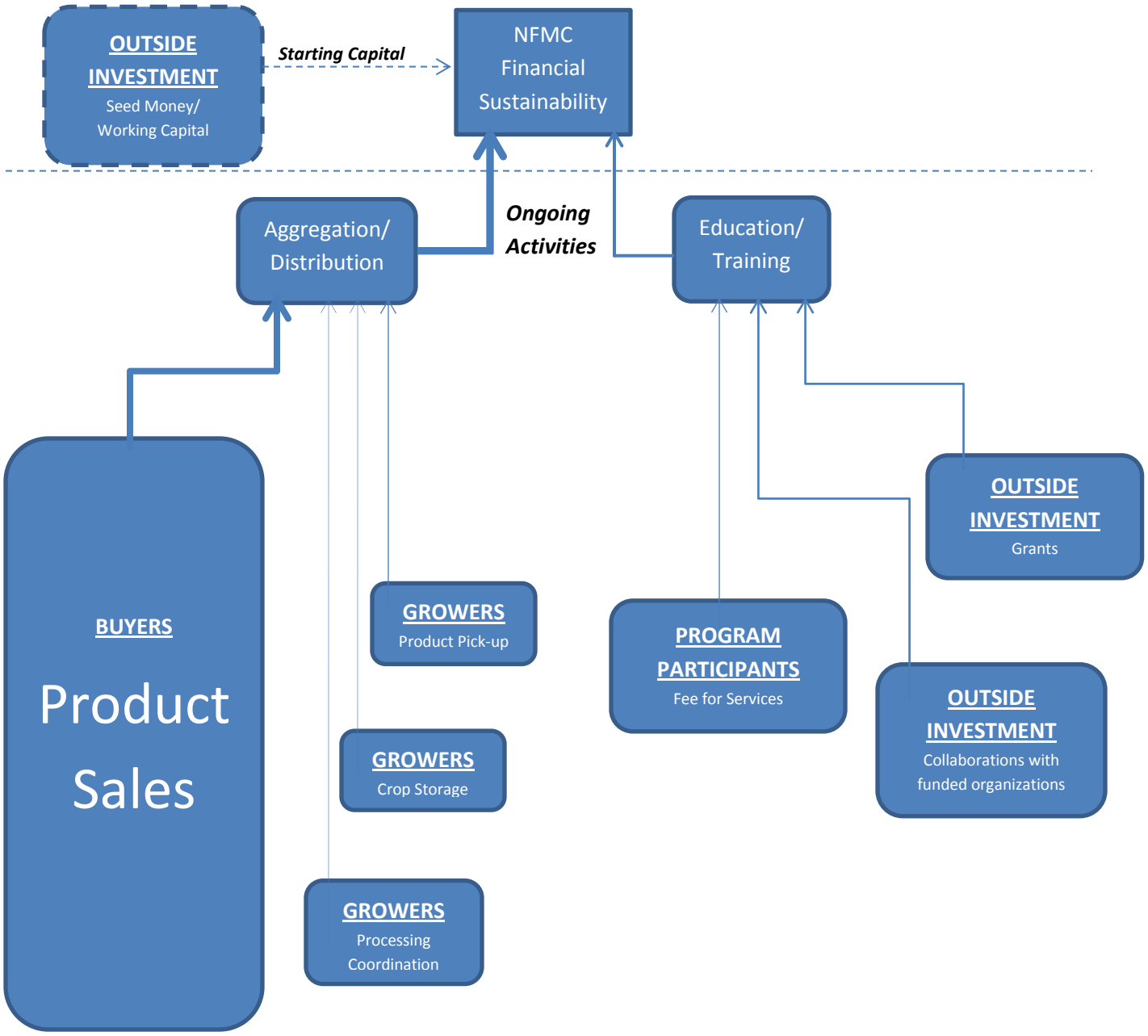
Otter Tail County, none are currently active, and thus would not merit pursuit as a viable operation center. Because Cass County is primarily rural with the largest towns under 1,000 residents, along with fewer growers than some of the other counties, it is not recommended for pursuit as a viable location either.

Financial Model

Revenue Model

Figure 17: REVENUE GENERATION MODEL is the revenue generation model, illustrating the two operating areas that will separately generate income, with the line thicknesses roughly representing portion of revenue. Outside investment will be required to reach capacity and sustainability, and facilitate rapid scale-up.

Figure 17: REVENUE GENERATION MODEL



Revenue: In order for the food hub to scale up to the projected potential level of sales, seed money investment is required. Once operational, the bulk of the food hub's revenue will be generated via the aggregation/distribution system through sale of product. Commodities will be sold both through wholesale operations, and directly to consumers through the CSA. Revenue will also be generated from growers through fees for pick-up of product; charges associated with the operation of the crop storage facility; and for coordination of processing. Revenue generated from growers is anticipated to cover associated costs for providing a valued service, without expectation of profit.

Revenue supporting the ancillary education/training activities will be sought through grant funds, collaborations with funded partners, and fees for service (e.g., $25 fee for GAP training attendees).

Product Sales, Wholesale: Utilizing results from the 2012 Grower Survey, a financial analysis was conducted based upon producer estimates of amounts of specific crops that would be available for sales through the food hub in 2013. As indicated in the section *2012 Survey* above, producers indicated that in 2013, they could make available for sale through the food hub 203,000 pounds of fruits, and 936,000 pounds of vegetables. Acreage required to produce each crop was estimated based upon production averages compiled largely from USDA National Agricultural Statistics Service (NASS) and the University of Minnesota Extension. Refer to *Appendix F: Grower Supply in 2013* by Survey for details.

Grower production estimates were individually analyzed based upon known existing capacity, and food hub capacity. Vegetable and fruit production estimates were thus further reduced, and the resulting conservative estimate of total fresh produce that could be sold through the food hub in 2013 amounted to less than half of what growers indicated could be made available: 411,000 pounds of fresh produce.

In order to achieve the level of production designated by growers, approximately 37 acres would be required. This figure assumes that supplied tomatoes, cucumbers, peppers, and green beans will be grown in high tunnels, accounting for the significantly higher production potential in the protected environment. All production acreage requirements were increased by 1/3 to account for product grown that wouldn't meet high grading standards, which would not be accepted for resale by the food hub. This production adjustment also helps account for differences between Minnesota production and other areas of the nation, since crop production statistics specific to Minnesota are not widely available through the USDA NASS but rather are grouped by high production areas for given crops.

Each crop was then assigned a price based upon a seasonal average of 2012 prices through the USDA Agricultural Marketing Services, using the Chicago Terminal Market as the market with the closest proximity and therefore relevance to Minnesota. Crops were then separated into "Fruits" or "Vegetables," and further divided into sub-groups based on price, required packing materials, and packing labor. Weighted averages of prices by category were calculated based upon the estimated sales volume of each crop. Vegetables were ultimately subdivided into seven distinct groups, while Fruits were subdivided into three groups.

Product Sales, Direct: Two local farms participating in the food hub, The Farm on St Mathias and Great River Gardens, have planned to eliminate their existing Community Supported Agriculture (CSA) programs in 2013 due to time and labor constraints, and challenges associated with growing multiple products. In 2012, these farms respectively filled 50 and 100 CSA subscriptions. Since the food hub will already be re-packing and aggregating produce from multiple farms, the opportunity to offer a CSA for direct sales to consumers was also considered as a source of revenue. It was assumed that the food hub would be able to capture all 150 existing customers from these farms. Gross margin of CSA sales was calculated at 50%.

Facility Size: Facility size imposes a constraint on volume, and is determined by the resources needed during peak season. Since volume is more constrained by supply than demand, facility size was

estimated based upon projected peak season weekly pounds sold. The food hub will handle 75% of its wholesale volume in the 20 weeks roughly between summer solstice and autumn equinox, or June to September, while the 15-week CSA will operate during the same period. Since cooler capacity is the greatest resource constraint, the cooler is scaled to accommodate peak case volume, and the total facility is scaled to accommodate the cooler.

The cooler can accommodate an average of two cases per square foot per week, and the cooler accounts for approximately 20% of the total facility area. Using these metrics, the chart below shows a range of facility sizes needed for the first five years of operation, assuming different growth rates for wholesale versus CSA sales. Wholesale is projected to achieve 75% growth in Year 2, 50% growth in Year 3, and 25% and 15% growth in Years 4 and 5 respectively; CSA sales are projected to sustain 10% growth over the first five years of operation.

A conservative total of projected supply was calculated at 260 acres (see *Table 6: Total Acreage that could be devoted to a food hub, excluding growers who estimated over 50 acres*), and conservative projected demand was calculated at $3.8 million, as discussed earlier.

Table 12: Facility Size

# Acres	% of total projected supply	% of total projected demand	Total Pounds Sold	Peak Season Cooler Size (sf)	Facility Size (sf)
37	14%	11%	544,000	308	1,541
65	25%	18%	889,000	539	2,697
97	37%	26%	1,290,000	809	4,045
121	47%	32%	1,600,000	1,011	5,057
139	53%	37%	1,841,000	1,163	5,815

Rent was assumed at two existing regional facilities from project onset, as these facilities would accommodate anticipated growth. An additional refrigerated cooler would be required in year 4, which could be satisfied with the use of a reefer storage trailer used seasonally.

Fees and Margin: Growers requesting product to be picked up would be charged $0.05/pound of product for this convenience. Returns on wholesale purchases were estimated at 3% of sales, with total sales thus reduced by that amount. The gross margin of sales of produce via wholesale channels was calculated at 25%, although this may range depending on market conditions. The average observed in the industry ranges from 18%-25% (Dane County Planning and Development Department, 2011). Margin on CSA sales will average 50%.

Using Chicago terminal prices as a basis should serve as a significant advantage for the Central Minnesota food hub, since products should hold a longer shelf life and be of better overall quality. Additional benefits for buyers will be the ability to capitalize on consumer demand for local and a values-based transaction that provides a greater share of the proceeds to the grower.

Cost of Goods Sold (COGs): The Cost of Goods Sold are payments made to growers for product, which is the largest cost component of the operation.

Expense: These costs include packing operation and materials, direct labor and overhead (plant utilities, maintenance, taxes, insurance, marketing, etc.). The model assumes the operation employs four people at startup – Manager, Warehouse/Quality Manager, Driver, and Packer – and at specific sales thresholds staff increases to include additional salespeople, buyers, bookkeepers and managers. This represents 27% of sales during year 1, considerably higher than industry standards, but reduces to 11% by year 5 assuming increased efficiencies and systems.

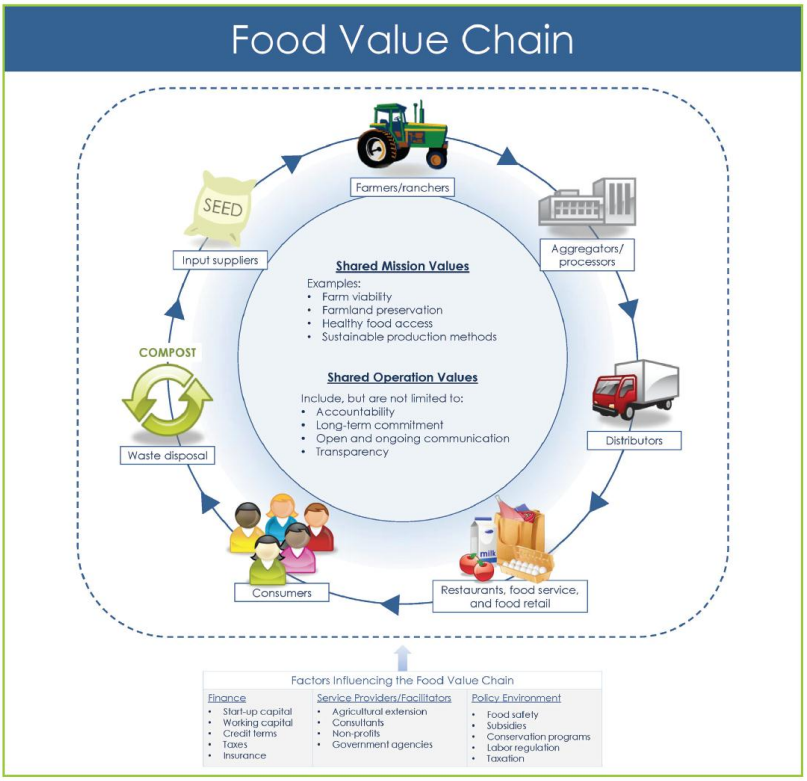
An estimate of labor required included packing labor for wholesale products, packing labor for the CSA, wages for a pick-up and delivery person, a Manager, and an Assistant Manager. With the exception of the Manager, all positions would be seasonal for the first several years at minimum.

Startup Costs: There are two categories of startup costs: Capital Expenditures & Working Capital. Capital Expenditures were designed based on 5-year operation size, and estimated around $200,000. Working Capital required through breakeven is additional, and estimated at $100,000. Because growers responding to the 2012 Grower Survey indicated that they would be more likely to participate in the food hub if it offered farm pick-up of produce, it was assumed that both a refrigerated truck and a delivery van would be required from project onset. Other equipment required includes "limited processing" equipment and office equipment. Facility investment improvements were assumed, particularly heavy in Year 1. Vehicle operation expenses were assumed based upon an estimate of mileage, maintenance, insurance, and fuel costs.

Discussion

Purpose and Vision

Figure 18: An Illustration of Food Value Chains



Designed by the USDA's Agricultural Marketing Service and the Wallace Center at Winrock International for *Food Value Chains: Lessons Learned from Research and Practice* (forthcoming).

According to the USDA, "Food hubs are often at the heart of value chains." (Barham, April 2012) Above is a figure designed by the Agricultural Marketing Service illustrating common components and values of food value chains. The Central Minnesota food hub intends to more-or-less adhere to this model, serving as both aggregator, processor, and distributor, and bypassing the market of restaurants etc. in the case of CSA sales direct to consumers.

Company Vision/Mission Statement

Mission

To promote the health, economy, and self-reliance of Central Minnesota by facilitating the availability of fresh, local foods in the region.

Vision

The Central Minnesota Food Hub will be the backbone of a regional sustainable food system by expanding market opportunities for farmers of Central Minnesota; and helping the community live happier and healthier lives through providing wholesale buyers with the freshest, tastiest, and most nutritious local products.

Organizational Philosophy

Decision-making is guided by triple bottom line standards for success. Economic success as measured with respect to organizational and participating farmers' self-sufficiency and sustainability; social success measured by increased access to and greater understanding of fresh, local foods; and ecological success by minimizing the food supply chain impact on the planet. To become *the* Local Foods aggregator and distributor in Central Minnesota by selling the highest quality, freshest local farm products, supporting the environment and social & economic fairness for all.

The food hub will:

1. Stimulate the local economy;
2. Create jobs;
3. Increase volumes and reduce transaction costs through aggregation, providing growers with access to new markets;
4. Treat growers as strategic partners instead of input suppliers;
5. Increase grower income;
6. Differentiate products through the creation of a local foods brand identity;
7. Have a positive environmental impact through emissions reduction and other measures;
8. Improve the health of local residents.

The food hub will provide regional growers located within a 200 mile radius of the facility with an opportunity to access institutional and commercial markets. It will also provide area businesses with an opportunity to capitalize on current market trends by supplying these businesses with local foods. It will serve as aggregator and distributor initially, with a phased approach to including processing at a later date, and because the region is so expansive, the addition of small regional aggregation facilities.

The establishment of a regional food hub will impact the community, not just growers and consumers. The food hub will directly create 9 jobs within 5 years, and will indirectly create more jobs by expanding grower income. It will reduce the impact of regional food deserts, helping improve the health of local residents by increasing access to high-quality produce. It will enhance nutritional education in the local schools and other institutions, and provide technical assistance to growers to help them expand their operations.

Implications

Overall, the results of the grower surveys provide strong evidence supporting the development of a food hub in Central Minnesota. The food hub would address a gap in Central Minnesota's current food supply chain, enable growers to further expand and diversify their crop base, meet some of the high demand for locally grown produce and provide farming opportunities with more stability, jobs and economic growth and opportunities.

The surveys highlight a high level of immediate interest among growers in the services that would be provided by a food hub. Collectively, a core group of experienced growers would likely devote a substantial amount of acreage to the facility in early years.

Additionally, the survey results reveal a high potential for early success and long-term growth. Buyer demand would outstrip grower supply in early years. The food hub could bring on new growers each year with confidence that there will be a strong market for this additional supply. Season extension will also be a very viable growth strategy for the food hub, and its individual producers, to pursue. The tasks of bringing on new growers and helping them invest in season extension infrastructure will be greatly facilitated by the fact that buyers are open to establishing contracts to guarantee fair market pricing and help farmers hedge against some of the inherent risk associated with growing produce.

The food hub would certainly face many challenges, especially in its earlier years, but these are surmountable. In addition to building out food hub infrastructure, developing sales strategies and providing a conduit for this overwhelming demand, if the facility is to assist in growing the agricultural base it will be important to provide highly trained field management to provide support and guidance to help growers crop plan, establish proper cold chain management protocol and receive certifications necessary to successfully sell to wholesale customers.

These up front investments would pay off over time, for both growers and food hub owners. Buyers are extremely interested in a variety of diversified crops, and their demand is likely to exceed the food hub's supply for at least several years.

In addition to emphasizing season extension and adding private labeling services, other like businesses could be interested in co-locating with the food hub, providing additional future income to the facility.

Business Operations and Structure

Business Entities

As mentioned in "Interest in Ownership or Investment" above, growers responding to the 2012 survey indicated they were more likely to participate in the distribution system if the food hub offered pick-up at their farm, or if there were processing facilities available above any ownership concerns.

The options for legal status of a food hub falls into one of the following categories, as illustrated in *Figure 19: Types of Regional Food Hubs* (Barham, April 2012): Private entity; Nonprofit organization; Cooperative; Publicly held entity; or informally operated. Each of these business formations has its own set of advantages and disadvantages, and a great deal of documentation and literature has been devoted to determining the best form to take. Some of this literature is in the Bibliography section.

Figure 19: Types of Regional Food Hubs

Types of Regional Food Hubs

Food Hub Legal Status	Number	Precentage
Privately held	67	40%
Nonprofit	54	32%
Cooperative	36	21%
Publicly held	8	5%
Informal	3	2%

Market Model	Number	Precentage
Farm to business/institution (F2B)	70	42%
Farm to consumer (F2C)	60	36%
Hybrid (both F2B and F2C)	38	22%

* Based on a working list of 168 regional food hubs identified by the National Food Hub Coolaboration (last updated Dec. 1, 2011).

Almost ¾ of all existing food hubs are either privately held or nonprofits. However, based on the findings of the National Food Hub Collaboration, the viability of a food hub was independent of its legal status, and heavily dependent on the number of years in existence.

"Based on the profiles of the [20 food hubs] interviewed, the viability of a food hub was not based on geographic location or type of legal structure (such as privately held company, cooperative, or nonprofit). However – and not surprisingly – food hubs that had been in business for a longer time were more likely to say that they were already economically viable. The median years of operation for

economically viable food hubs was 9.5 years, compared to only 5 years for food hubs that are not yet economically viable. It is also worth noting that all the economically viable food hubs reporting minimum gross sales of $1 million per year and median gross sales of $6 million per year, compared to a median of $500,000 in gross sales for food hubs that had not yet achieved economic viability." (Ibid.)

In the case of the Central Minnesota initiative, a Prioritization Matrix was created to help assess pros and cons of each type of business entity. Ultimately, all formations were basically equal except with respect to the question of procuring capital investment.

While a private entity generally qualifies for few grant opportunities, it could garner private support and investment dollars. A nonprofit entity qualifies for numerous grant opportunities, but according to the literature, many nonprofits invested in infrastructure prematurely because they were awarded grants. This led to operational difficulties due to high overhead costs that necessitated some nonprofits' continued existence on grant dollars. A cooperative generally qualifies for few grant opportunities, and requires member-owner investment in both the organization and governance. In the case of the Central Minnesota initiative, with a dozen local growers currently participating, it was assumed that total investment dollars would not reach $500 per grower, meaning there would be less than $6,000 working capital, which would not be adequate. A publicly held entity would qualify for some grant opportunities, but the Central Minnesota group did not have an interested party.

Since the Central Minnesota initiative has multiple partnerships with 501c3 nonprofit entities and governmental partners, both of which qualify for and could apply for grant dollars on its behalf, becoming an IRS designated 501c3 charity was deemed unnecessary. Upon the recommendation of Moss & Barnett Law Firm, the Central Minnesota initiative plans to file as a Minnesota-based LLC. This formation will facilitate the transfer in the future to a grower-owned cooperative, or multiple-owner LLC as desired by stakeholders. It additionally helps protect the primary risk taker in this initiative to-date.

The law firm also recommended that the food hub establish a nonprofit arm, which would facilitate some ancillary services not anticipated to achieve a level of revenue that would meet associated expenses. The desire to provide these needed services would necessitate external funding through grants and partnerships with funded organizations. While the formation of a nonprofit arm is seen as an important evolution in the development of the food hub, due to the additional complexity of having two separate entities, this will be a long-term goal and won't occur at start-up. Partnerships with area nonprofit organizations will continue to facilitate the delivery of ancillary services in the interim.

Management Team

The ideal manager will have existing relationships with growers and a high level of skill and experience in marketing and sales. At startup, it is anticipated that the following positions will be required:

Manager

Position Overview: Responsible for ensuring the success of the venture, overseeing all activities, accountable to Board. This position will be year-round, full-time, and will provide direct oversight to and plan training for all other employees. The Board will review the position on an annual basis.

1. Oversee all Warehouse staff and procedures.
   Ensure all Tracking, Inventory, Accounting and Quality Control procedures are being implemented and maintained to the required USDA food handling and safety standards.
2. Build and maintain Strategic Partnerships with affiliates, both buyers and growers.
   Ensure maximum amount of product is being utilized by building and maintaining mutually beneficial relationships with all affiliates and encouraging them to remain strong partners. This entails the initial and ongoing training of Driver and Warehouse Coordinator on proper relationship building and maintenance.
3. Ensure all policies and procedures are being implemented.
   Regularly monitor all systems for quality assurance, and keep detailed records of all inadequacies, taking immediate action to address any issues. Hold meetings and training sessions with staff to ensure knowledge of and adherence to systems and procedures.
4. Report all aspects of the Initiative to Board of Directors.
   Understand the role of the Board and report all aspects, both positive and negative, of day-to-day operations to the Board for their review.
5. Monitor financials, assist in preparation of the Annual Budget.
6. Other duties and responsibilities as assigned.

Warehouse Coordinator

Position Overview: Responsible for receiving and coordinating delivery of product from contracted farmers, ensuring that product is received in acceptable condition for storage or processing and future sale. Once received, the product is entered into inventory using appropriate software system which allows consumers immediate access to the fresh product. Coordinator will be responsible for maintaining correct storage conditions for each fresh product until sale takes place. The Coordinator will work with Driver for delivery scheduling and order filling. The Warehouse Coordinator will report

directly to the Manager, and will be reviewed on an annual basis. The position will be seasonal. The primary responsibilities of this position will be:

1. Receipt of incoming merchandise.
   Receive all incoming product and assign proper tag to each receivable ensuring proper credit to all producers.
2. Inspection of all income merchandise for Quality Control issues.
   Inspection of all incoming product to ensure quality is being met in strict accordance with Food Safety guidelines and Food Distribution Initiative policies, and immediately report quality control issues to the Manager. In addition, the monitoring of ongoing quality deficiencies must be reported to the Manager immediately.
3. Entry of merchandise into Inventory/Accounting System.
   After receipt of product, entry into inventory system and accounting system must happen immediately to ensure proper crediting of product to producer.
4. Coordination with Driver.
   Delivery, scheduling, and order fulfillment coordination with Driver.
5. Other duties and responsibilities as assigned.

Driver

Position Overview: Working directly with consumers on a daily basis, and has the responsibility of communicating between the client and Warehouse Coordinator and sales staff, providing any feedback on delivery timing, products, etc. This employee is responsible for maintaining vehicle cleanliness and maintenance along with proper maintenance and temperature control of the product en route. The Driver will report directly to the Manager, and will be reviewed on an annual basis. This position will be seasonal. The primary responsibilities of this position will be as follows:

1. Transportation of all product to and from the Warehouse.
   Receive all product from producer and transport to warehouse for processing, ensuring product is temperature-controlled at all times, and all temperature logs are saved and stored according to proper warehouse procedure. Product will then be transported from warehouse to all buyers and pick-up sites including but not limited to: schools, restaurants, resorts, and hospitals affiliated with the Distribution Center. Has authority to refuse product from suppliers when out of spec.
2. Inventory of all merchandise at pick-up and drop-off.
   Help ensure proper credit and compliance through inventorying of product at pick-up and again at drop-off with both the Warehouse Coordinator, and individually assigned persons at each drop-off location. Any inconsistencies must be reported to Warehouse Manager immediately.
3. Solicitation of all product overages to local restaurant and resort managers.
   Because of the extremely short shelf-life of certain items, it will be essential to solicit any overstock to Distribution Center affiliates to ensure that loss of product is minimal.
4. Other duties and responsibilities as assigned.

These staff positions constitute key positions which, once filled, will be able to implement the project design.

Financing/Funding Opportunities

Opportunities available for procuring funds vary depending upon the type of legal entity established. Since it is currently assumed that the legal status of the organization over the near term will be a Minnesota nonprofit corporation, funding opportunities mentioned below will be geared toward that entity, along with partners' entities. The USDA Regional Food Hub Resource Guide is an excellent resource for further details, wherein there are lists of federal grant opportunities as well as prospects through private funders. Development of the food hub will be conducted with the goal of becoming self-sufficient. However, in the short term working capital will be needed, and will be required again at some point in the future in order to accomplish the phased expansion. Working capital for the Central Minnesota food hub could be procured through one of the following methods:

- Private donations
- Grants
    - Federal
    - Private
- Public investment
- Loans
    - Nonprofit Assistance Fund
    - RSF Social Finance
    - FCS Farm Credit Systems
    - CDFIs Community Development Financial Institutions
    - USDA's Know Your Farmer Know Your Food

Technology

Identified as one of buyer's concerns in purchasing locally grown products, making it easy to purchase product through the food hub will be emphasized from the start in order to obtain and retain buyers. One of the ways to facilitate this will be to utilize an inventory management software system, such as Local Dirt, that allows buyers to quickly evaluate and order from items currently in stock. Investment in the proper software and hardware tools will be critical in order to retain buyers, as well as making certain that inventory updates are promptly and accurately handled by staff.

Business Risks and Mitigation Strategies

"Go out on a limb. That's where the fruit is." (Jimmy Carter)

There are many critical factors which will require vigilant attention in order for the food hub to succeed. The food distribution business is of a precarious nature, where "products are highly perishable, margins are razor-thin, and the vagaries of the weather can have a decisive impact on the success or failure of the business." (Barham, April 2012) These concerns can be mitigated to some extent by establishing a sound business plan at the outset, including back-up plans. It will be critical for the management team to commit to regularly updating that business plan as well as continuing to meet with outside supporters, such as the Small Business Development Center, who can help bolster the plan and cope with curve balls.

As stated earlier, many food hubs are faced with the challenge of matching supply and demand, frequently with greater demand than supply, especially for certain products. Maintaining open communication with, and responding to feedback from buyers will be important.

Growth management is another difficulty encountered by food hub owners and managers. Another challenge closely tied to growth management is difficulty in accessing capital. Access to capital will be required at project onset, and it will be required as the business grows. Additionally, capital will be required in order to purchase commodities from growers, yet it may take several weeks to receive payment from buyers, so some funds will need to be set aside for that purpose. Assuming food hub growth occurs as planned, area growers will also need access to capital in order to fund operation expansion. Fortunately, there are regional organizations, such as the Region Five Development Commission, which have specific farmer-geared loan funds.

Maintaining quality and freshness will be a challenge at the outset, as growers will not be used to grading standards set by the food hub. U.S. Grade No. 1 will be the only type of fresh produce accepted, which will help satisfy buyers' demand for high quality product. The harvesting process for each type of fruit or vegetable will be strictly followed by participating growers in order to ensure maximum shelf life. Grading standards, harvesting and cooling procedures are detailed for 103 crops in a manual published by FamilyFarmed.org, Wholesale Success (Slama, 2012), and this will be one avenue in which to provide needed technical assistance to growers.

According to a Journal Article highlighting distinguishing characteristics that allow small- and medium-sized food wholesalers to continue to compete in the marketplace, suppliers' attributes most valued by buyers were "can fill demand," "prompt notification of changes," and "honor satisfaction guarantee." Least valued qualities included "lowest price products," and "one-stop shopping" (Hinson, 2005). A report commissioned by the Grocery Manufacturers of America in 2003 identified the achievement of the "perfect order" as one of the key distinguishing achievable qualities for small- and medium-sized suppliers, i.e., "complete, on-time, and damage free" (Ibid.). Taking heed from these studies, the food hub should focus on high levels of customer service with buyers as a top priority.

Keeping in mind lessons learned from existing food hubs will help ensure the success of the Central Minnesota hub. In order to maintain demand, the hub will need to ensure:

1. High quality products provided on a consistent, dependable basis.
2. Good communication between supplier and operator.
3. Season extension for produce.
4. Carry liability insurance in the amount of $2 - $5 million.
5. Stronger post-harvest handling, including preparing a HACCP plan for handling food products; and initial processing capacity.
6. More producers able to meet food safety and traceability requirements.
7. A marketing plan for products.

Success will also be dependent upon:

1. The development of a sound business plan to assist in decision making.
2. Development of a production protocol based on customers' preferences.
3. Ensuring there is a market for products.
4. Setting high standards for quality control.
5. Following the cold chain for produce.
6. Developing the brand story, and making it memorable.
7. Getting the right team in place w/ expertise in operations, marketing, & finance.
8. Securing financing and capital. (Food Alliance Midwest, 2009)

Additional Considerations

Much of the regulatory environment surrounding aggregation is focused on farms that supply product. A best practice for farms is to write an on-farm food safety plan that documents procedures to minimize food-borne illness and contamination risks. Each plan is unique to the specific farm and is one of the first steps in a farm acquiring GAP/GHP certification. The food hub may be cited in a farm's plan if their products are being cooled, packed, washed and stored by the food hub's packing facility.

Food Safety Considerations

The level of certification a grower or food hub chooses is largely voluntary; however, buyer requirements will often dictate a specific level. Local entities, such as the University of Minnesota Extension, and the Minnesota Fruit & Vegetable Growers Association, periodically offer various food safety training classes at a reasonable rate for local growers.

Further safety training can be found through the On-Farm Food Safety Project, a comprehensive national program that offers fruit and vegetable farmers, food safety professionals and agricultural extension specialists technical assistance to utilize and teach best practices in food safety. This website includes the bulk of these resources including a free online tool, based on a comprehensive risk-based framework, which generates customized on-farm food safety plans based on user input. The tool is designed for use by small to mid-scale fruit and vegetable growers and provides a full set of record keeping tools to document food safety programs and provide employee training, and is available through their website (On-Farm Food Safety Project, 2012).

Food and Drug Administration

The recent 2011 **Food Safety Modernization Act (FSMA)** expanded the FDA's power to regulate farm and local food production and handling. Operations that have less than $500,000 in annual sales are generally exempt from this legislation, unless there is a specific food safety incident or recall whereby the operation is subject to FDA and local or county health department inspections (U.S. Congress, 2011).

In 2002, the **Bioterrorism Act** mandated all food facilities – not including restaurants, retail stores, farmers markets and farms – **register with the FDA**. Because food hubs aggregate product from multiple farms and most do not operate as a retail store, it is suggested that food hubs register themselves with the FDA. This process can be completed via the FDA's website (DHHS Food and Drug Administration, 2012).

HACCP – Hazard Analysis & Critical Control Points

A food hub may elect to participate in a HACCP (Hazard Analysis and Critical Control Points) program, to follow best practices in handling, storing, and processing meat, dairy, and processed foods. HACCP is required for the following processes or operations: 1. Smoking or curing food; 2. Using food additives or other ingredients to preserve food; 3. Using a reduced oxygen method of packaging food; and 4. Food Establishments that apply for a variance (Minnesota Department of Agriculture, 1999). If an individual is developing a canned product for sale, the requirements include a process authority letter, graduating from the better processing control school, and FDA license/approval. HACCP can be avoided by packaging, storing, and displaying a processed product in a refrigerated section. However, the spirit of HACCP is a preventative measure assuring the safe production of food products.

According to the U.S. Food and Drug Administration,

"*HACCP is a management system in which food safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement and handling, to manufacturing, distribution, and consumption of the finished product. … HACCP is designed for use in all segments of the food industry from growing, harvesting, processing, manufacturing, distributing, and merchandising to preparing food for consumption.*" (FDA, 1997)

Some applicable HACCP sample documents are included in *Appendix L: HACCP Documents*.

USDA

The USDA offers the Good Agricultural Practices and Good Handling Practices (GAPs & GHPs) audit verification program, which focuses on the practices used to produce, handle, and store fresh fruits and vegetables with the utmost safety precautions to help minimize microbial food safety hazards. Certification options vary by audit frequency, Global Food Safety Initiative (GFSI) recognition, and other stipulations.

Whether or not the food hub decides to become GAP/GHP listed immediately, it should be viewed as a long-term goal, and will become a requirement if cash flow projections exceed $500,000 over the next several years. There were twenty-nine farms/food facilities listed in Minnesota for meeting GAP/GHP as of writing. The bulk of those (19) were audited for potato handling, with tomatoes, cabbage, corn, cucumbers, squash, apples, beans, peppers, and other commodities with 4 or fewer listings (USDA, 2010). Other food safety and regulatory compliance requirements are more often required by buyers. **The large majority of buyers require traceability, liability insurance, a farm food safety plan, compliance with labor laws, and HACCP certification.**

Fortunately for Central Minnesota, many of the growers participating in the grassroots food hub have already taken GAP training, although they have not necessarily been through the audit verification program. The University of Minnesota Extension and the Minnesota Fruit and Vegetable Growers Association offer affordable GAP training at $40 per person. This training includes log templates which farmers can put to immediate use (Jones, 2012).

Minnesota Department of Agriculture

The Minnesota Department of Agriculture requires licensing for Wholesale Food Handlers. As part of the licensing process, wholesale dealers must obtain a surety bond that can be used for reimbursement to producers if payment is not made. In addition to the bond and trust claims, the Wholesale Produce Dealers Act provides for mediation and other protections under the law. **Farmer-owned cooperatives do not need to be licensed as Minnesota Wholesale Produce Dealers if 75% of the cooperative's business is with members or stockholder patrons.** Additional information can be found through the Department's website (Minnesota Department of Agriculture, 2012), and is also available locally through the area Food Inspector, Kyle Posterick, 320-262-1172.

Multiple locations must be licensed independently, and the required license for a given location is based upon predominance of business. A **facility** dedicated to **processing** would need a **Wholesale Food Processor/Manufacturer license**. According to the Food Inspector, possession of these licenses would alleviate a leasor (e.g., Brainerd School District or Central Lakes College) of liability in the event of a problem (Posterick, 2012).

Additional requirements, certifications, and licenses are required for individuals wishing to process food. Some of these are issued through the Department of Agriculture, while others are administered through the Department of Health. Since the requirements are complex and vary greatly depending upon product, it is recommended to contact the local food inspector for assistance (Ibid.). A basic overview of requirements is provided in *Appendix M: Licensing & Certification Requirements*, but this is not meant to supplant meeting with a local public health inspector.

The Minnesota Department of Agriculture conducts fruit and vegetable inspections, including GAP/GHP Audits. Any grower, packer, transporter, receiver, repacker, or any other handler of fresh fruits and vegetables can request to be audited for the USDA GAP/GHP Audit Program through the MN Department of Ag. Inspection fees vary, and are detailed at the Department's website (Minnesota Department of Agriculture, 2012).

Producer Compensation

Perishable Agricultural Commodities Act

Enacted in 1930, the Perishable Agricultural Commodities Act (PACA) was designed to regulate the marketing of perishable agricultural commodities. PACA aims to prevent unfair and fraudulent conduct in the marketing and selling of perishable agricultural commodities. PACA is administered and regulated by the USDA Agricultural Marketing Service (The National Agricultural Law Center).

PACA requires wholesalers to provide payment to producers of agricultural commodities in a prompt manner. When purchasing on consignment, payment must be made to the producer "within 10 days after the date of final sale with respect to each shipment, or within 20 days from the date the goods are accepted at destination, whichever comes first." For produce directly purchased from a grower, it requires "payment for produce purchased by a buyer, within 10 days after the day on which the produce is accepted." (US Government Printing Office, 2010).

The PACA requires that all commission merchants, dealers, and brokers obtain a valid and effective license from the USDA Secretary. Additionally, it requires that a trust be established equal to the amount owed to the grower(s) until accounts have been paid. However, if an alternative written payment agreement has been established, and clearly delineated on printed material (such as invoices or receipts of goods), it is generally acceptable to follow the alternative payment.

Recommendations

Recommendation #1: Establish legal entity.

Establishing the legal entity will facilitate acquisition of capital, thus spurring expansion. Understanding the best legal entity for the area and acting upon it will further regional local foods efforts. Identification of key advisors/board members has already occurred, and the group is well-rounded and diverse.

Recommendation #2: Revisit and significantly revise business plan.

Utilizing some of the information contained in this feasibility study, along with the generated economic scenarios, significant additional details can be added to the business plan. The plan should serve as a blueprint for the first 3-5 years of the organization. The plan will be externally focused, targeting goals important to the organization and to external stakeholders.

Recommendation #3: Acquire capital.

Once the business plan is in place and the legal entity exists, an appropriate level of capital, from suitable sources, can be acquired to bring the plan to fruition.

Recommendation #4: Start working on a marketing strategy.

Branding the organization will be critical for long-term success, as will strategizing with participating farmers to help build regional identity. The Marketing Team may consider partnering with the University of Minnesota Regional Sustainable Development Partnership and working with Buy Fresh Buy Local to build brand identity. The Team could also approach Minnesota Grown for marketing assistance.

Recommendation #5: Continue to build momentum and community support.

With existing partners including nonprofits, local units of government, and area businesses, the grassroots efforts will continue to build momentum up to a successful, operating regional food hub.

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Appendix B: Fruit & Vegetable Consumption

Region	House-holds[1]	Total Food Expenditures[1]	Food Expenditures per Household[1]	Total Household Expenditures Fruit & Veg[2]	Annual Household Expenditures Fresh Fruit & Veg[2]	Annual Household Expenditures Processed Fruit & Veg[2]
US	**117.1 m**	**$794.5 b**	**$6,786**	**$81.6 b**	**$53.5 b**	**$28.1 b**
Minnesota	**2.1 m**	**$14.8 b**	**$7,071**	**$1.4 b**	**$919.8 m**	**$512.4 m**
Central MN	**108,152**	**$721.6 m**	**$6,672[3]**	**$73.7 m**	**$47.4 m**	**$26.5 m**
Aitkin County	7,268	$47.4 m	$6515	$5.0 m	$3.2 m	$1.8 m
Cass County	11,926	$79.2 m	$6641	$8.1 m	$5.2 m	$2.9 m
Crow Wing County	26,148	$176.2 m	$6738	$17.8 m	$11.5 m	$6.4 m
Mille Lacs County	10,196	$68.3 m	$6700	$7.0 m	$4.5 m	$2.5 m
Morrison County	13,078	$88.7 m	$6779	$8.9 m	$5.7 m	$3.2 m
Otter Tail County	24,071	$160.3 m	$6659	$16.4 m	$10.5 m	$5.9 m
Todd County	9,734	$65.1 m	$6691	$6.6 m	$4.3 m	$2.4 m
Wadena County	5,731	$36.4 m	$6359	$3.9 m	$2.5 m	$1.4 m

[1] SimplyMap data compiled from U.S. Department of labor, Bureau of Labor Statistics, Consumer Expenditure Survey (2009); 2010 Census (PL 94-171 files for April 1, 2010); U.S. Census Bureau & Bureau of Labor Statistics Current Population Survey (04/01/2010); U.S. Census Bureau, American Community Survey (5 year, 3 year and 1 year data); U.S. Census Bureau, Population Division, Population Estimates Branch, 2010 Housing Unit Estimates (07/01/2010); U.S. Postal Service Data: Mailable Households derived from a ZIP4 Carrier route File & Delivery Statistics (01/01/2010), courtesy of the James J. Hill Business Reference Library in St Paul

[2] 2010-2011 Consumer Expenditure Survey, United States Department of Labor, Bureau of Labor Statistics, Region of residence: Average annual expenditures and characteristics, http://www.bls.gov/cex/tables.htm

[3] Weighted average

Region	Annual Household Expenditures Fresh Fruit & Veg[3]	Total Fruit & Vegetable Consumption (pounds)[4]	Fresh Fruit Consumption (Pounds)[5]	Domestic Source Fresh fruit consumption (Pounds)[6]	Fresh Vegetable Consumption (Pounds)[5]	Domestic Source Fresh Vegetable Consumption (Pounds)[6]
Minnesota	**$730.8 m**	**3.6 b**	**536.4 m**	**300.4 m**	**919.6 m**	**772.5 m**
Central MN	**$37.1 m**	**167.9 m**	**25.2 m**	**14.1 m**	**18.5 m**	**15.5 m**
Aitkin	$2,750,244	10,936,350	1,639,642	918,200	2,811,047	2,361,279
Cass	$4,504,512	19,282,725	2,890,980	1,618,949	4,956,375	4,163,355
Crow Wing	$9,365,724	42,187,500	6,325,000	3,542,000	10,843,750	9,108,750
Mille Lacs	$3,667,224	17,615,475	2,641,016	1,478,967	4,527,830	3,803,377
Morrison	$4,696,608	22,408,650	3,359,638	1,881,397	5,759,853	4,838,277
Otter Tail	$8,592,468	38,679,525	5,799,064	3,247,476	9,942,071	8,351,340
Todd	$3,502,620	16,804,125	2,519,374	1,410,849	4,319,283	3,628,198
Wadena	$2,073,732	9,280,575	1,391,399	779,183	2,385,452	2,003,779

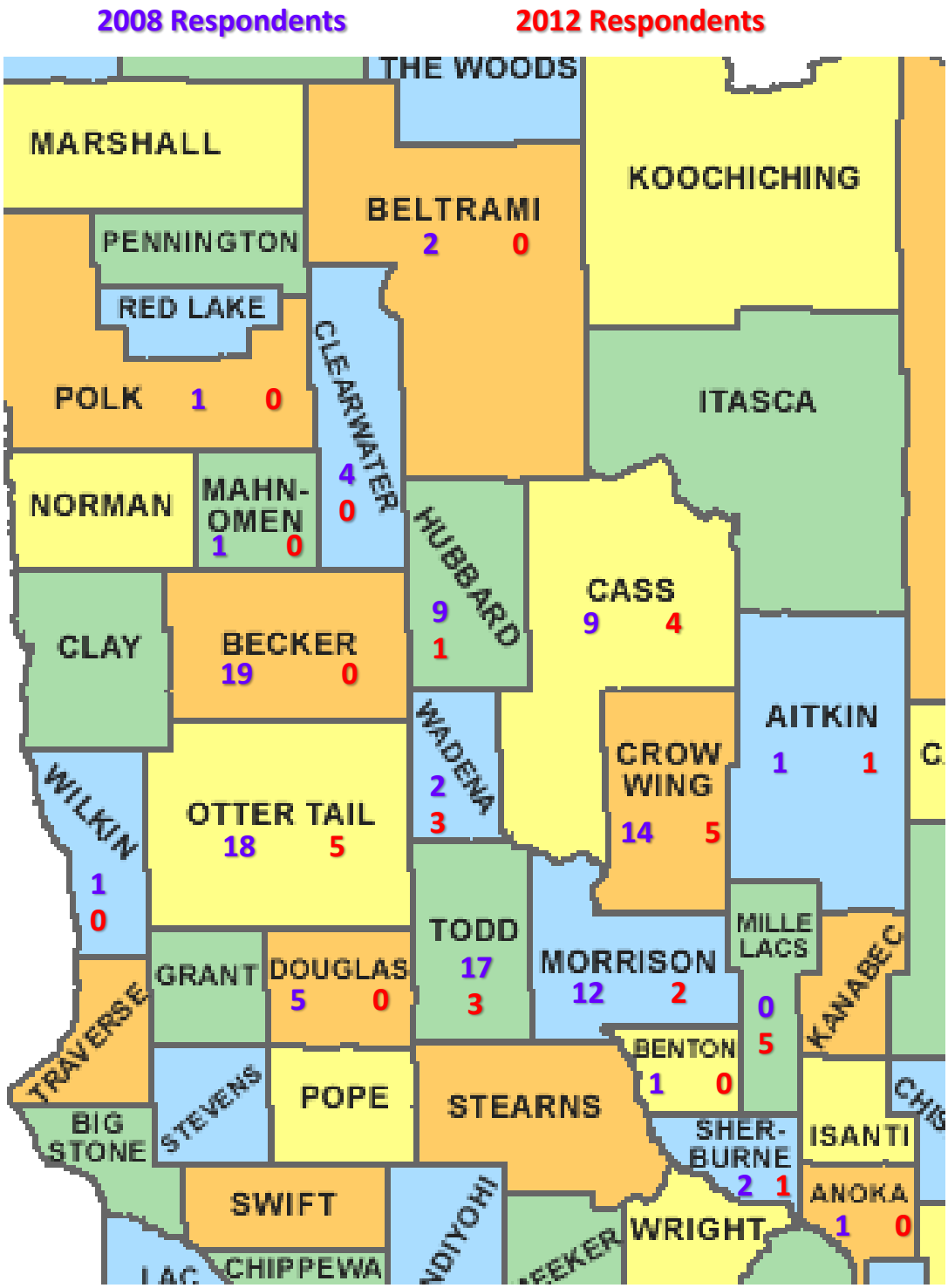
[3] Based on average fresh produce expenditures for the $30,000 - $49,999 household income group, of $348, from U.C. Davis, Tracking Demographics and U.S. Fruit and Vegetable Consumption Patterns, October 2011 http://agecon.ucdavis.edu/people/faculty/roberta-cook/docs/Articles/BlueprintsEoEConsumptionCookFinalJan2012Figures.pdf

[4] Based on average per capita annual fresh and processed fruit and vegetable consumption of 675 pounds, from U.C. Davis, Tracking Demographics and U.S. Fruit and Vegetable Consumption Patterns, October 2011 http://agecon.ucdavis.edu/people/faculty/roberta-cook/docs/Articles/BlueprintsEoEConsumptionCookFinalJan2012Figures.pdf

[5] Based on 2003-'05 per capita fresh fruit consumption of 101.2 pounds, and fresh vegetable consumption of 173.5 pounds, from Increased U.S. Imports of Fresh Fruit and Vegetables, September 2007 http://www.ers.usda.gov/media/187841/fts32801_1_.pdf

[6] Based on 2003-'05 fresh fruit imports representing 44% of total consumption, and fresh vegetable imports representing 16% of total consumption, from Increased U.S. Imports of Fresh Fruit and Vegetables, September 2007 http://www.ers.usda.gov/media/187841/fts32801_1_.pdf

Appendix C: Map of 2008 and 2012 Survey Respondents

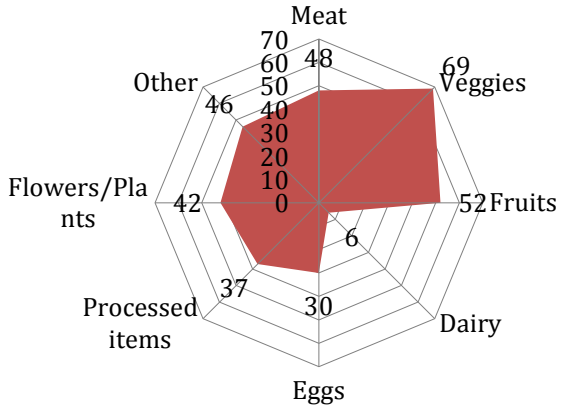


Appendix D: Region Five Development Commission 2008 Local Foods Grower Survey Results

Source: Cureton, *Toward a Food Hub in North-Central Minnesota*, 2012

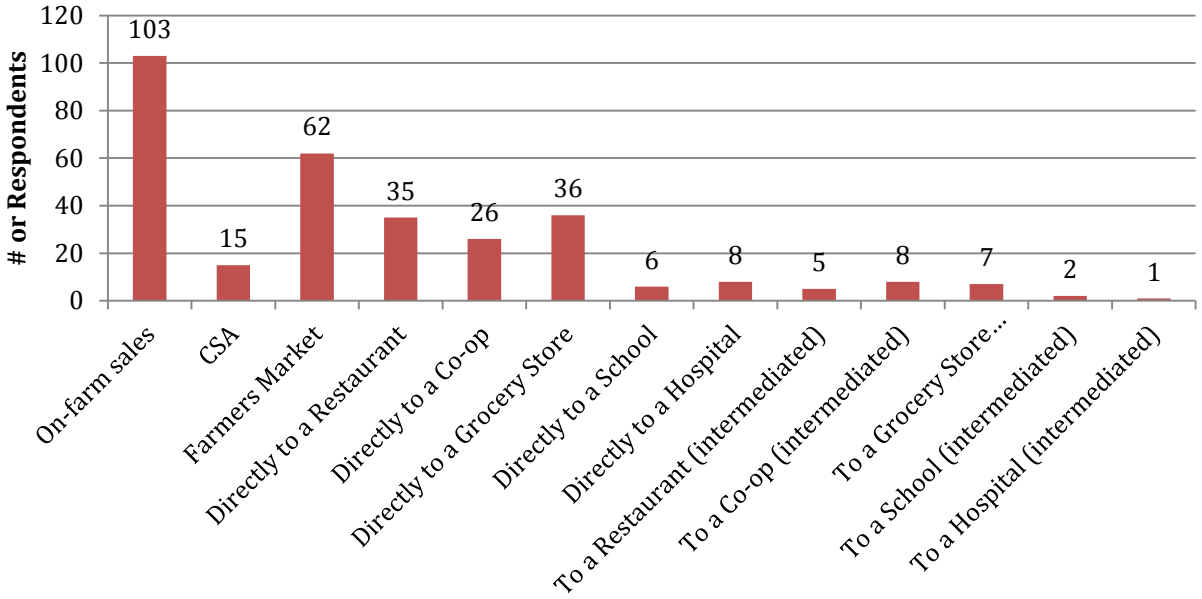
Number of Respondents: 142
Number who sell food products locally: 124
Number who don't sell food products locally: 17
Number who don't sell locally but want to expand to local markets: 17 (100%)

Q1: What do you produce?

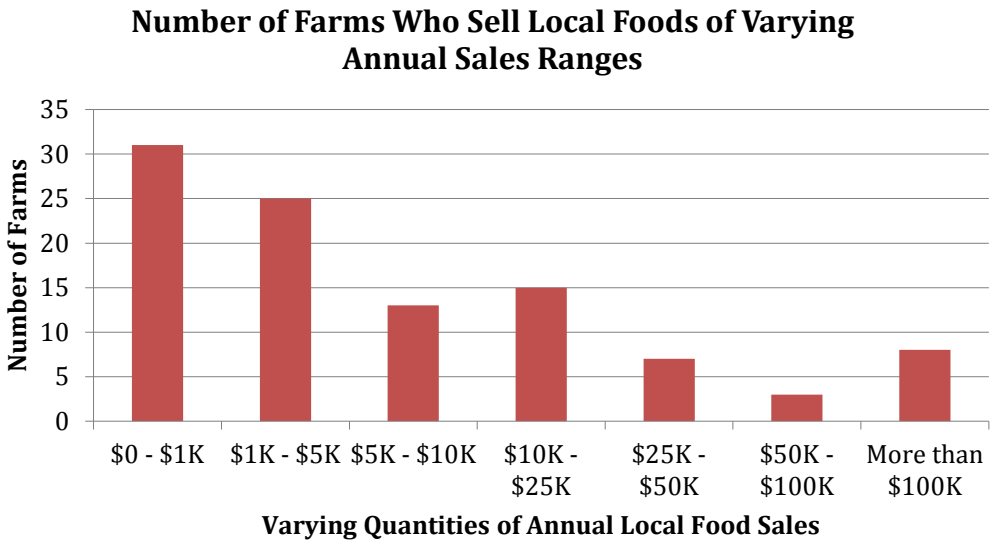


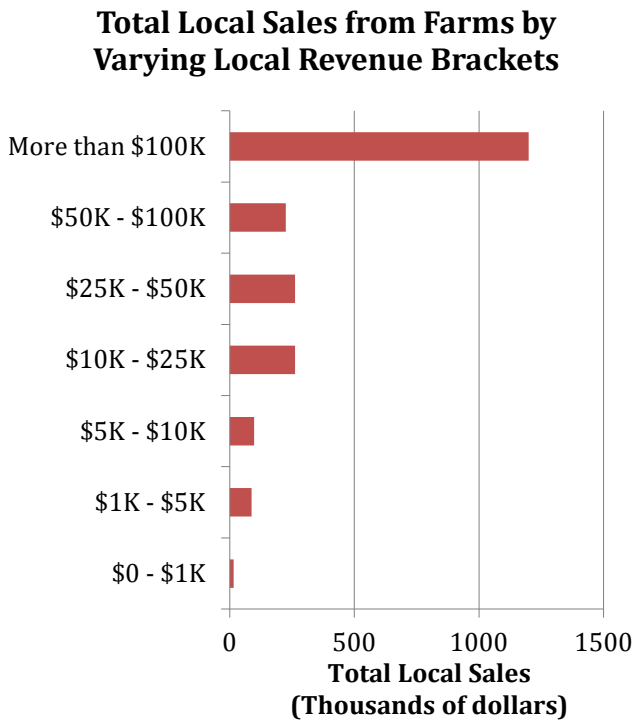
	# of Respondents	% of Respondents
Meat	48	34%
Veggies	69	49%
Fruits	52	37%
Dairy	6	4%
Eggs	30	21%
Processed items	37	26%
Flowers/Plants	42	30%
Other	46	32%

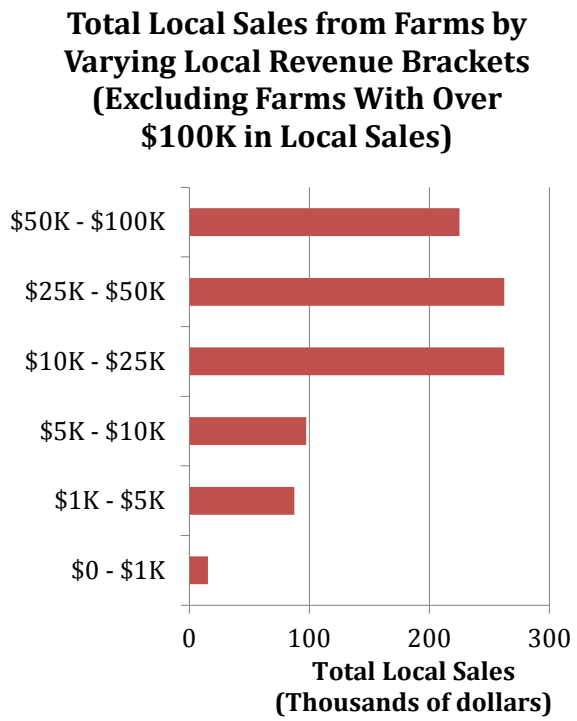
Q2: How do you distribute your products to local buyers?



Q3: What was your estimated total dollar income from local sales in 2008?



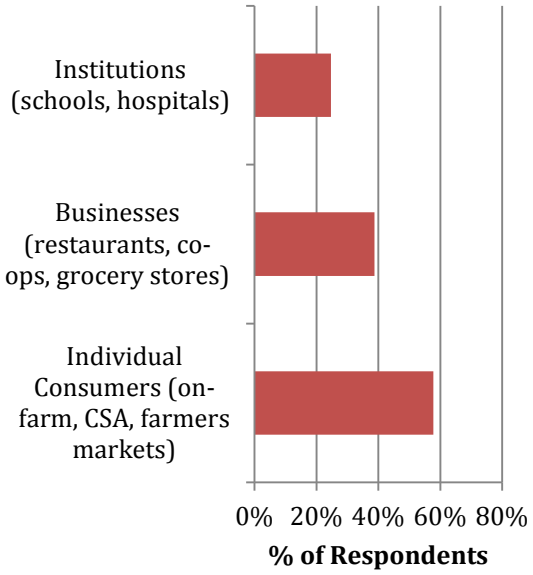




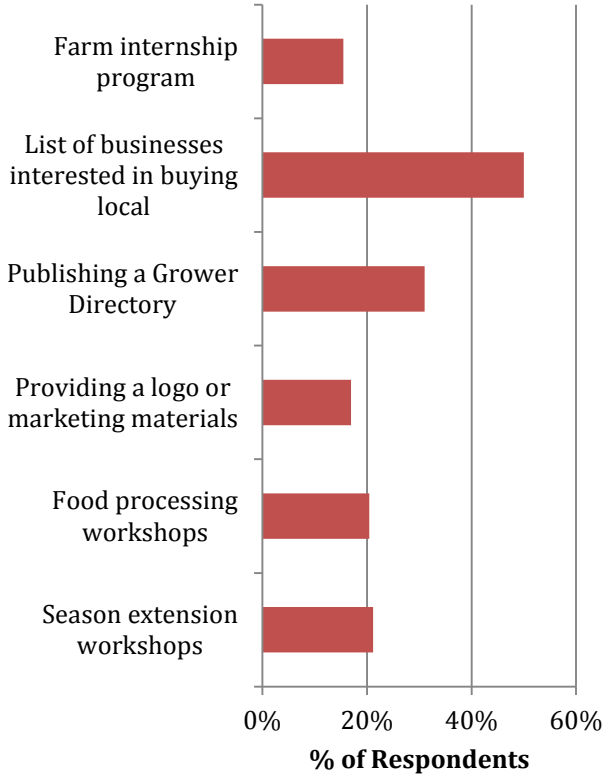
Local Food Sales Ranges	$0 - $1K	$1K - $5K	$5K - $10K	$10K - $25K	$25K - $50K	$50K - $100K	More than $100K	Total
Total Local Food Sales (Thousands of $)	15.5	87.5	97.5	262.5	262.5	225	1200	2150.5

Q4: In what areas would you like to expand your market?

	Number of Respondents	Percent of Respondents
Individual Consumers (on-farm, CSA, farmers markets)	82	58%
Businesses (restaurants, co-ops, grocery stores)	55	39%
Institutions (schools, hospitals)	35	25%

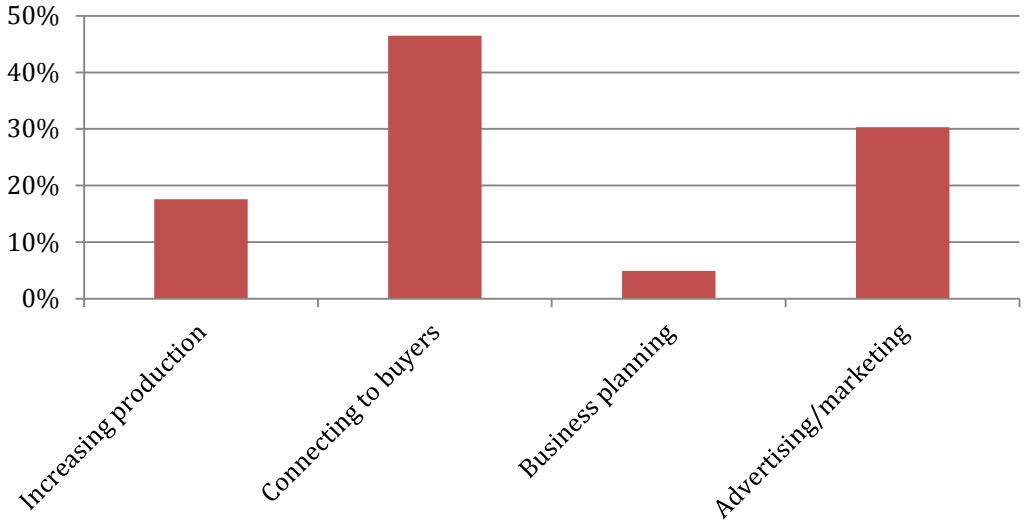


Q5: Would any of the following activities be helpful in increasing local sales?



	Number of Respondents	% of Respondents
Season extension workshops	30	21%
Food processing workshops	29	20%
Providing a logo or marketing materials	24	17%
Publishing a Grower Directory	44	31%
List of businesses interested in buying local	71	50%
Farm internship program	22	15%

Q6: What are your greatest difficulties in expanding sales/markets?



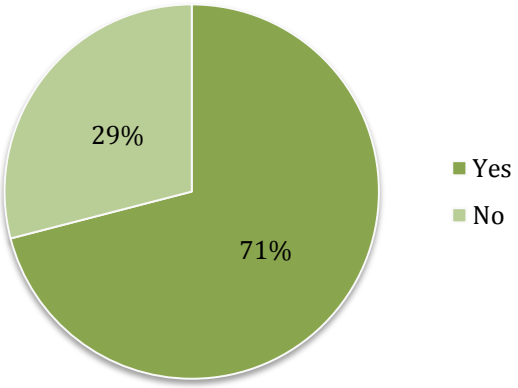
	Number of Respondents	% of Respondents
Increasing production	25	18%
Connecting to buyers	66	46%
Business planning	7	5%
Advertising/marketing	43	30%

Appendix E: Region Five Development Commission 2012 Local Food Hub Grower Survey Results

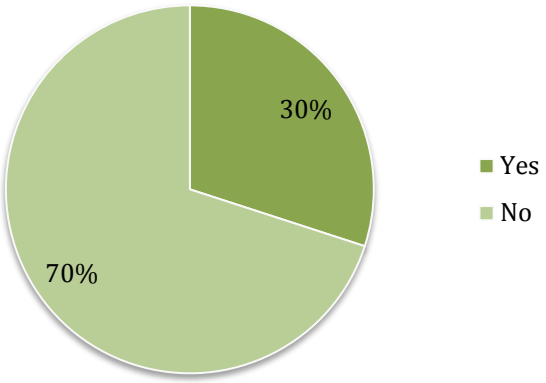
Source: Cureton, *Toward a Food Hub in North-Central Minnesota*, 2012

Number of Respondents= 31

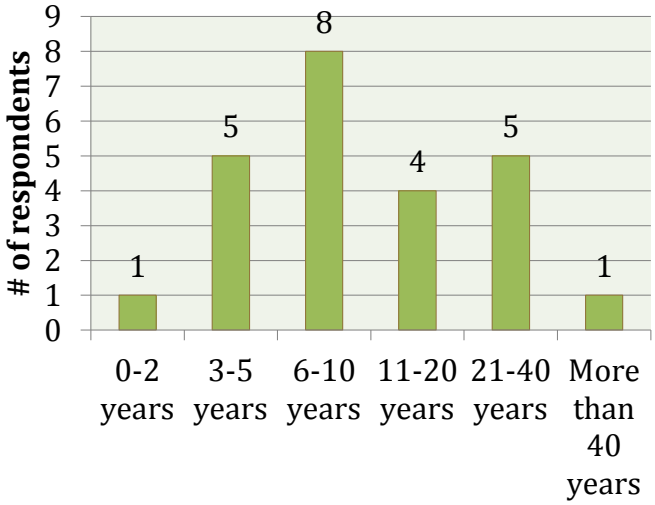
Q1: Do you currently grow and sell fresh produce?

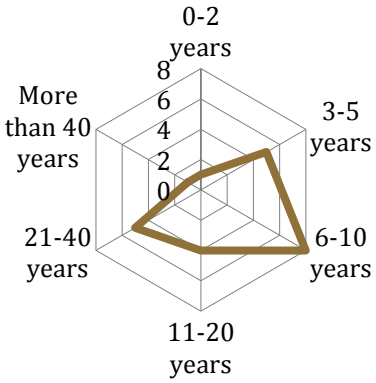


Q2: If you don't currently do so, are you interested in diversifying your farm to grow produce?

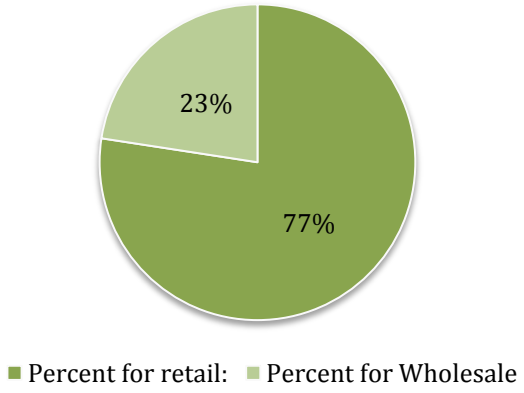


Q3: How long have you been growing fresh produce?

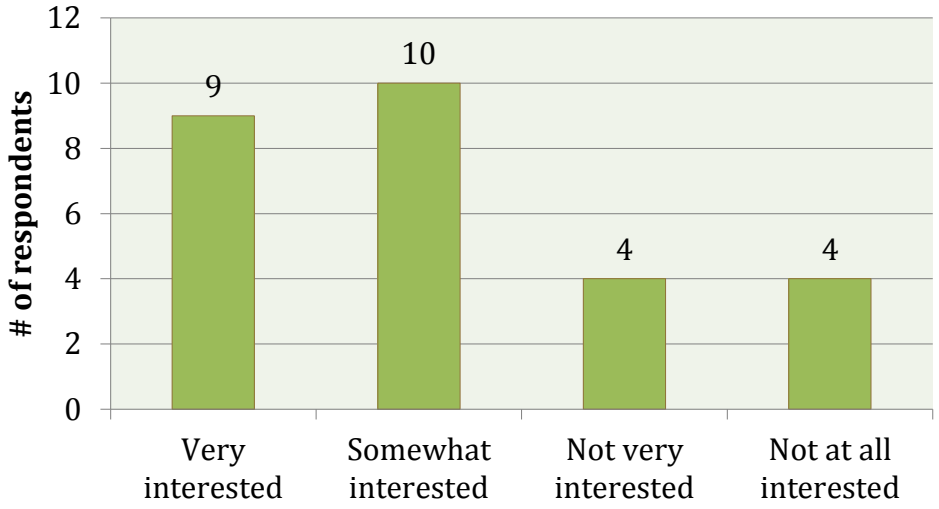




Q4: What percentage of your produce do you currently sell for retail versus wholesale?

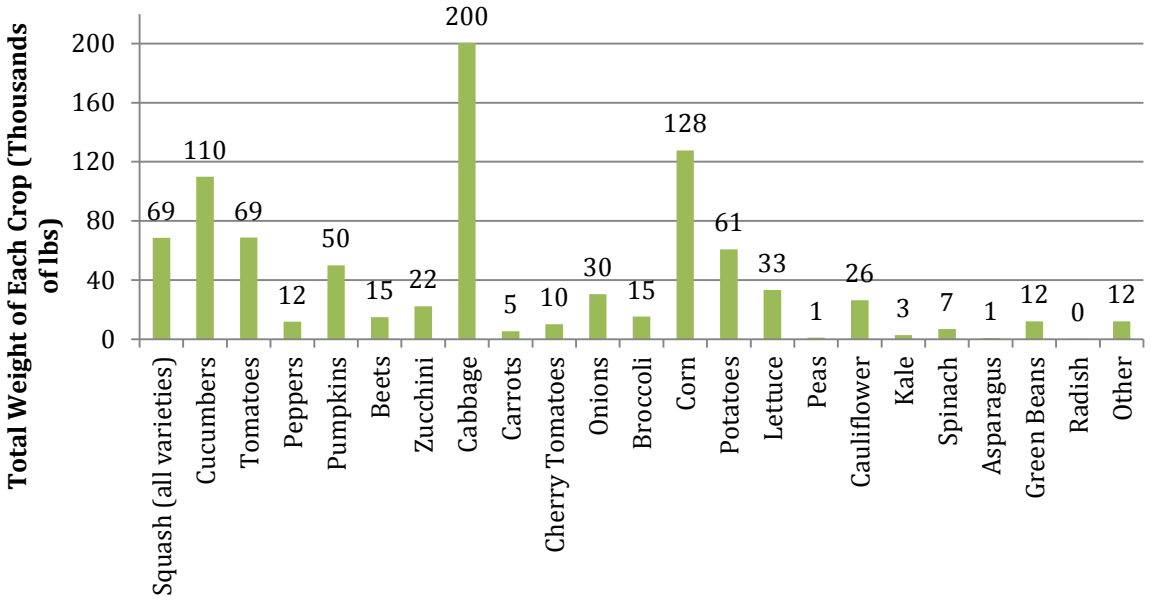


Q5: If a local Food Hub were reasonably accessible and offered a fair price, how would you describe your level of interest in selling your produce through a Local Food Hub?



	# of Respondents	% of Respondents
Very interested	9	33%
Somewhat interested	10	37%
Not very interested	4	15%
Not at all interested	4	15%

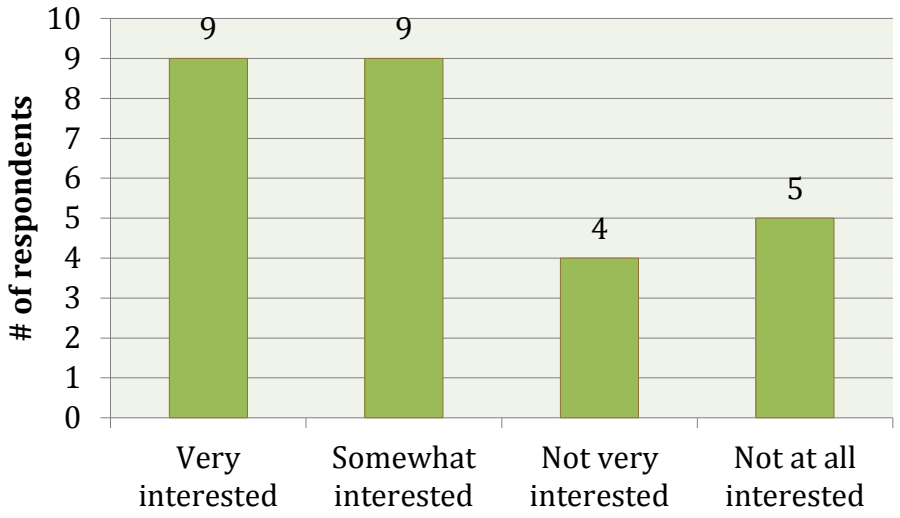
Q6: What amount of the following vegetables could you make available to sell through a Local Food Hub in 2013?



Aggregate weight of vegetables that could be sold to a food hub in 2013 from these 31 respondents: 891,534 lbs

***Note:** Raw, unanalyzed data also exists for fruit, meat, and other products. Charts are not presented here because this data is somewhat more difficult to aggregate into simple, common units of measurement.

Q7: If the Local Food Hub offered facilities to do processing or value-added activities, how interested would you be in using these facilities?



	# of Respondents	% of Respondents
Very interested	9	33%
Somewhat interested	9	33%
Not very interested	4	15%
Not at all interested	5	19%

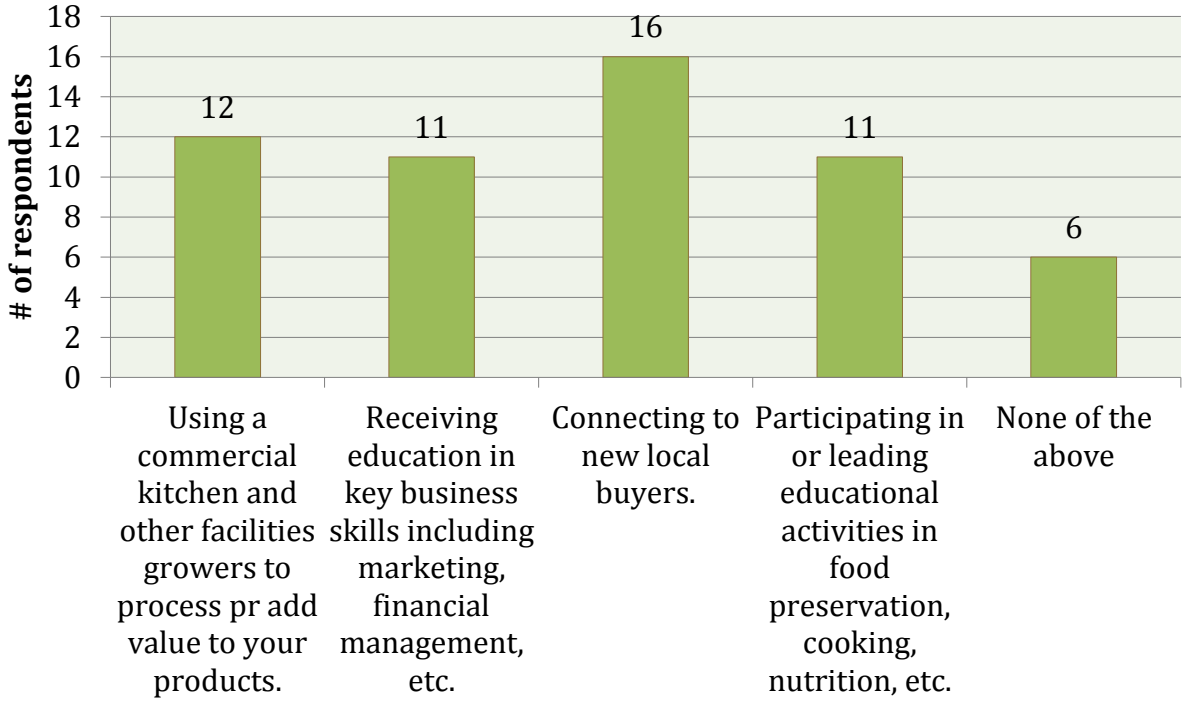
Q8: Assuming a fair price, using your above quantity estimates how many acres could your devote to growing food for a Local Food Hub in 2013? Please provide a low-end estimate and a high-end estimate.

	Low-end estimate:	High-end estimate:
Total acres	286	854
Average acres per farmer	11	37

	Low-end estimate:	High-end estimate:
Total acres	86	258
Average Acres per farmer	3.58	11.75

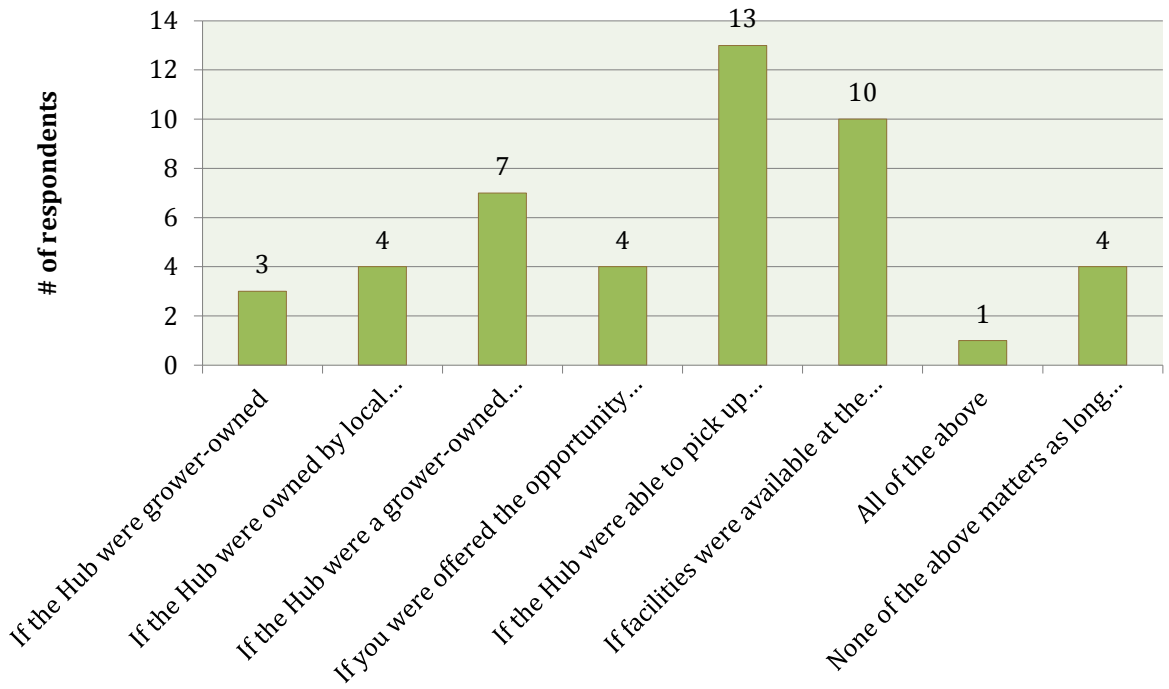
*Excluding any farmer who responded with a low or high estimate over 50 acres

Q9: A Local Food Hub could also offer a variety of other services to help local growers improve their business, increase sales, and strengthen the local food system. Which of the following additional Hub activities would you be most interested in? Choose all that apply.



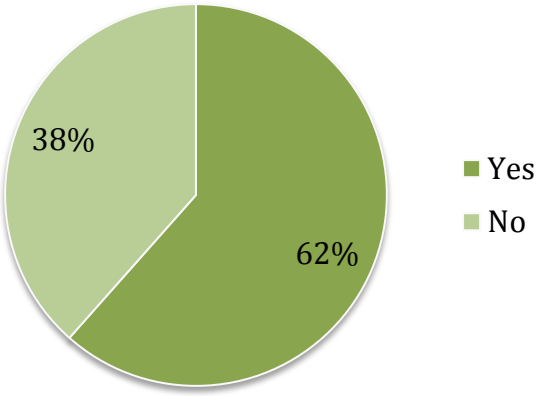
	# of Respondents	% of Respondents
Commercial kitchen and facilities for value-added	12	50%
Business skill education	11	46%
Connecting to new local buyers.	16	67%
Food and nutrition education	11	46%
None of the above	6	25%

Q10: What would make you more likely to participate in selling produce through a local food Hub?

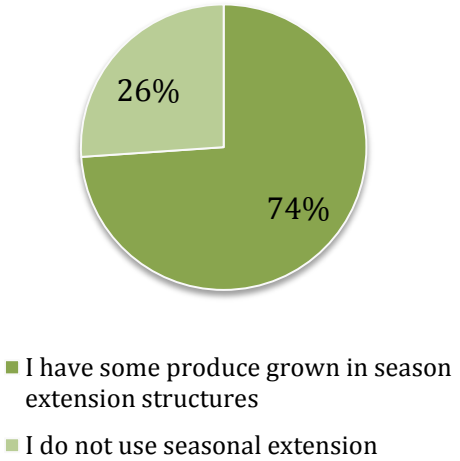


	# of Respondents	% of Respondents
If Hub were grower-owned	3	13%
If Hub were owned by local residents/busineses	4	17%
If Hub were a grower-owned cooperative	7	30%
If you were offered the opportunity to become an investor in or a part owner of the Hub.	4	17%
If the Hub were able to pick up produce from your farm.	13	57%
If facilities were available at the Hub for you to process or add-value to yourn produce.	10	43%
All of the above	1	4%
Nothing matters as long as you get a fair market price for your produce.	4	17%

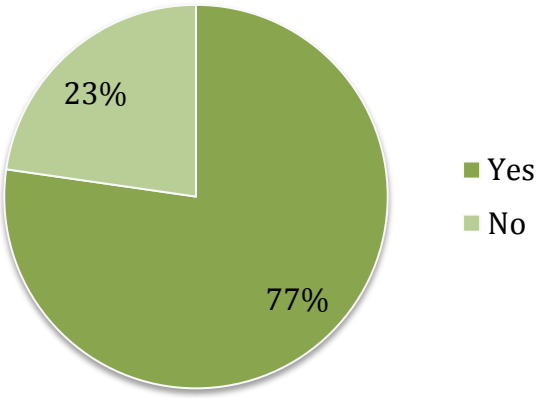
Q11: Would you be willing to participate in preseason crop planning with a Local Food Hub and other growers?



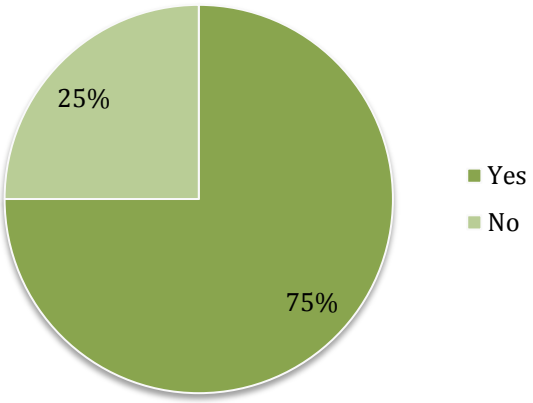
Q12: Which of the following best describes you with respect to season extension:



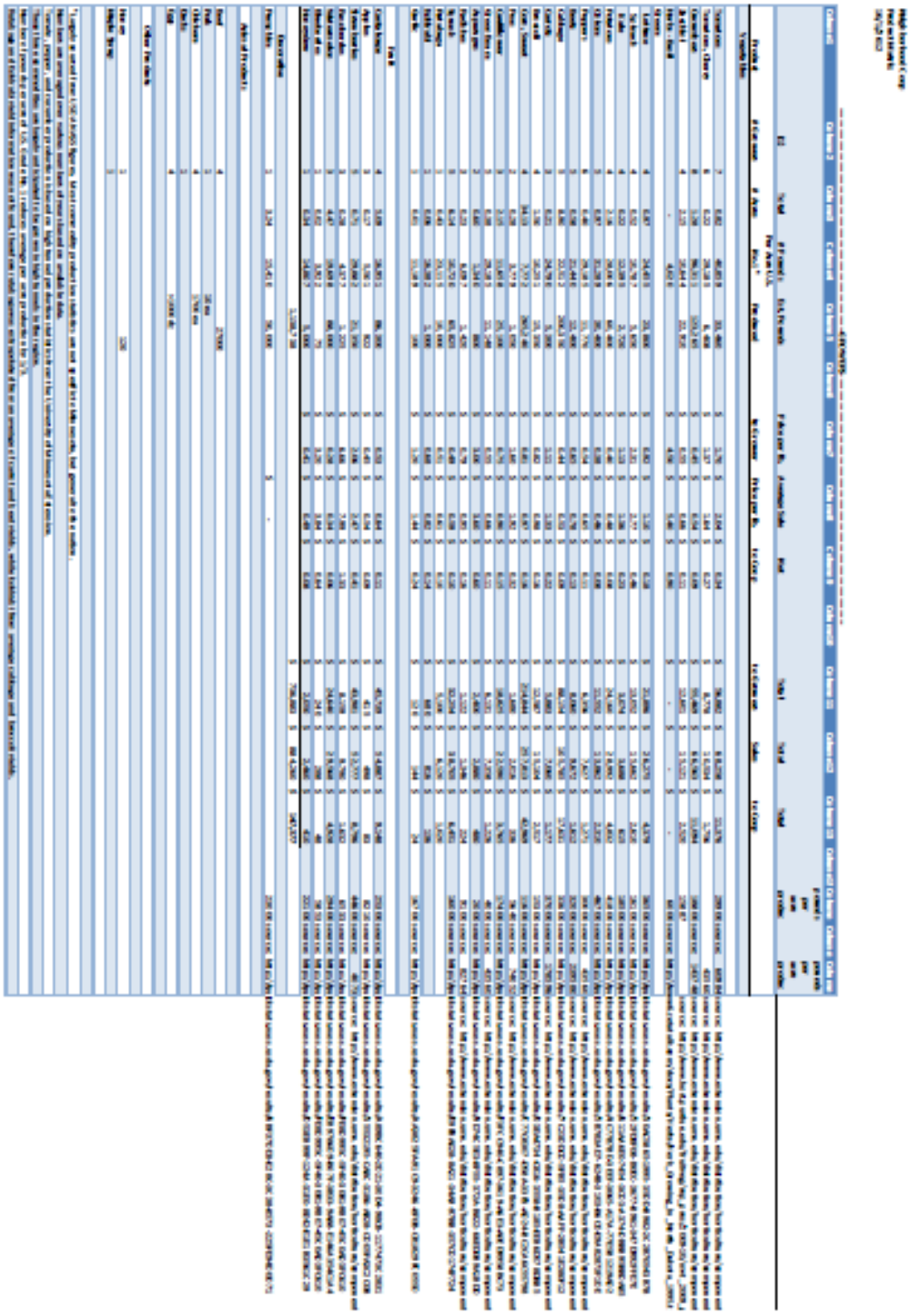
Q13: If demand were identified, would you invest in season extension?



Q14: Can we contact you about...R5DC's work to strengthen the local food system?



Appendix F: Grower Supply in 2013 by Survey



Appendix G: Region Five Development Commission 2009 Buyer Survey

Brittany Borck
Central MN Regional Local Foods *VISTA*

[Buyer Survey] Restaurant Interview Questions

- Do you currently purchase any locally raised or produced food?
  - If so, what do you buy and why?
    - Are there advantages to purchasing and serving locally raised food? What are they?
  - If not, why?
- Are you interested in expanding your purchases or starting to purchase locally raised foods as a way to enter this marketing niche?
- What products are you most interested in?
- Would you be willing to buy direct from farmers or would it be necessary to source through a distributor?
- Do you think that your customers would be willing to pay a premium for locally sourced foods?
- What are the biggest barriers that prevent you from currently buying locally raised food?
- What could the Pine and Lake Country Work Group to do help?
  - Commit to assistance with marketing/advertising if you source locally?
  - Provide a catalog or directory of area farmers and their products?
  - Include you in a directory of potential buyers (to be given to farmers)?
  - Connect you with individual farmers?
  - Connect you with a chef that is currently supplying locally for advice and experiences?
  - Develop a distribution system with one-call orders and one-stop deliveries?
  - Anything else?

Appendix H: 2012 Buyer Survey

1. What are your total annual produce purchases (choose one)?

a. < $10,000
b. $10,000 - $50,000
c. $50,000 - $100,000
d. $100,000 - $200,000
e. $200,000 - $350,000
f. $350,000 - $500,000
g. $500,000 - $1 million
h. $1 million - $5 million
i. > $5 million

2. How many pounds per week of whole produce do you buy (choose one)?

a. < 1,000 pounds
b. 1,000 - 5,000 pounds
c. 5,000 - 10,000 pounds
d. 10,000 - 25,000 pounds
e. 25,000 - 50,000 pounds
f. 50,000 - 100,000 pounds
g. 100,000 - 200,000 pounds
h. >200,000 pounds

3. What is your level of interest in doing business with a hub distributing locally grown produce (choose one)?

a. Extremely interested
b. Very interested
c. Somewhat interested
d. Not very interested
e. Not at all interested

4. What types of whole local produce would you buy from this hub in 2013 (identify all that apply)?

Apples
Carrots
Peppers
Cucumber
Tomatoes
Onion
Broccoli
Strawberries

Cantaloupe
Cherry Tomatoes
Potatoes
Watermelon
Sweet Corn
Lettuce
Asparagus
Cabbage
Spinach
Blueberries
Cauliflower
Zucchini
Butternut squash
Beets
Peas
Kale
Other

5. When are you interested in sourcing Minnesota local produce (identify all that apply)?

Jan
Feb
Mar
Apr
May
Jun
July
Aug
Sept
Oct
Nov
Dec

6. Which of the following sourcing requirements are relevant to you (identify all that apply)?

Certified organic produce?
Traceability?
Liability insurance?
GAP Certification?
HACCP Certification?
Farm Food Safety Plan?

Compliance with farm labor requirements?
Other? - please specify

7. As a means of securing local supply, how interested are you in purchase contracts that specify product, price, timing, and delivery requirements (choose one)?

a. Extremely interested
b. Very interested
c. Somewhat interested
d. Not very interested
e. Not at all interested

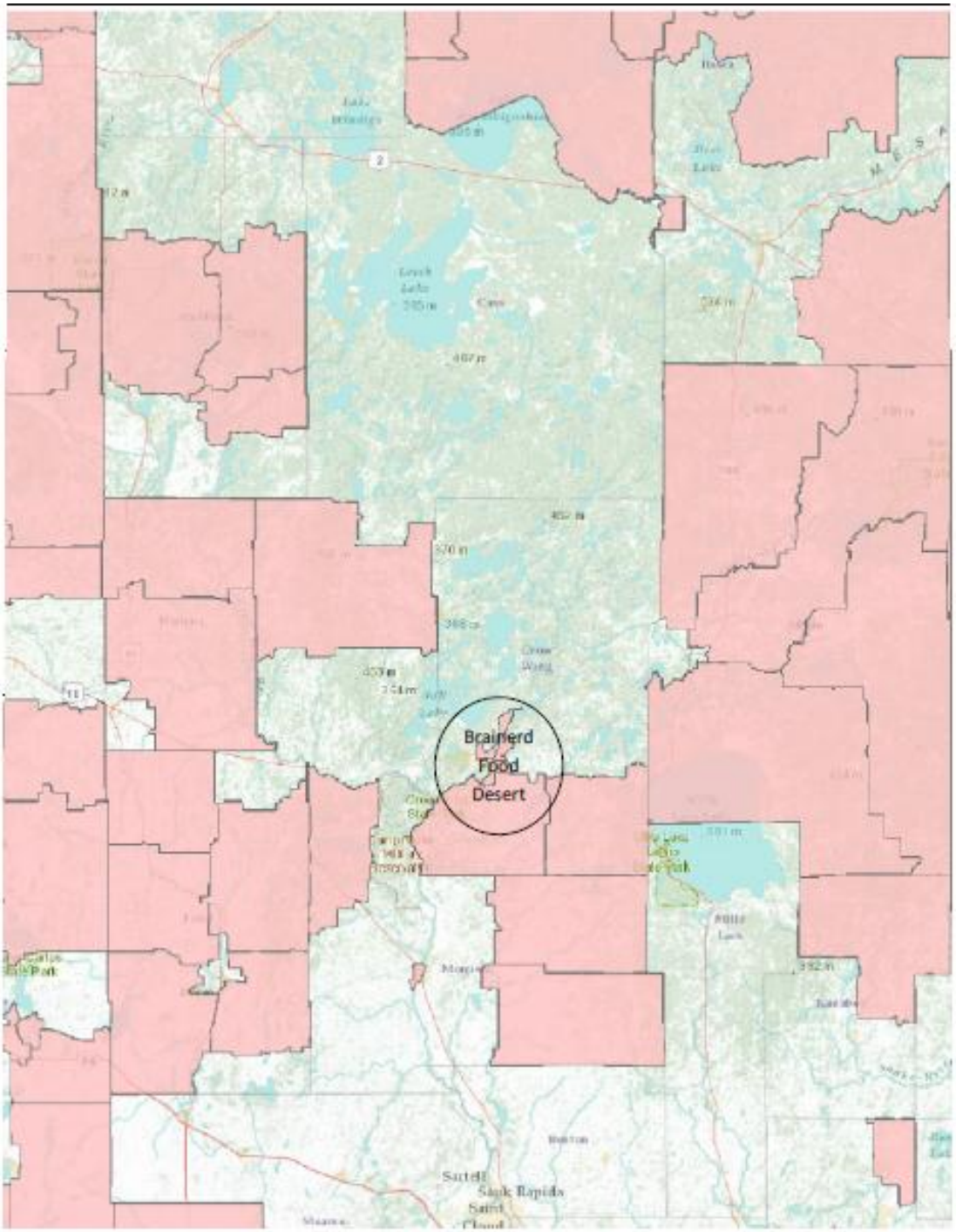
8. As a means of securing local supply, how interested are you in participating in pre-season crop planning to formally arrange products, quantities, packaging, and timing of deliveries (choose one)?

a. Extremely interested
b. Very interested
c. Somewhat interested
d. Not very interested
e. Not at all interested

Appendix I: Regional Food Deserts

Regional Food Deserts, centered around Brainerd/Baxter. Pink areas denote food deserts.

Source: USDA Food Desert Locator http://www.ers.usda.gov/data/fooddesert/



Appendix J: Processing Facility Information

Public Health Contacts & Licensed Kitchens

The Minnesota Department of Health licenses commercial kitchens, although there may be local jurisdiction which supersedes the State level. Within Central Minnesota, the State Department of Health is responsible for licensing in Cass, Crow Wing, Mille Lacs, and Otter Tail Counties. Local jurisdiction authorities license commercial kitchens in Aitkin, Morrison, Todd, and Wadena Counties.

Due to the complexity of having multiple entities responsible for licensing, finding the applicable authority can present a challenge. Therefore, contact information is listed here, with Public Health contact information for the local regional authority first, followed by State level contacts. Then, potential kitchens are detailed, including only the most likely cooperators.

VFWs listed are limited to those that allow Hall Rental within 100 miles of Brainerd; source: https://www.vfw.org/oms/findpost.aspx Most regional American Legions are listed.
The Central Lakes College Administrator who would be able to help make a lease agreement at CLC Staples Campus is listed. Note that CLC prefers to make lease agreements with 501c3 nonprofit organizations.

Local Jurisdiction

Aitkin County

Aitkin County Environmental Services
209 Second Street NW
Aitkin, MN 56431
218-927-7342
Terry Neff, Director
tneff@co.aitkin.mn.us
Michelle Leitinger, Sanitarian
michelle.leitinger@co.aitkin.mn.us

Morrison & Todd Counties

Morrison County Public Health
200 East Broadway
Little Falls, MN 56345
320-632-6664
Bonnie Paulsen, Manager
bonniep@co.morrison.mn.us
Michelle Fussy, Sanitarian
michellef@co.morrison.mn.us
Michelle Warnberg, Sanitarian
michellew@co.morrison.mn.us

Wadena County

Wadena County Public Health
22 Dayton Avenue Southeast
Wadena, MN 56482-1592
218-631-7629
Cindy Pederson, Director
cindy.pederson@co.wadena.mn.us
Shawn Neumann, Sanitarian
shawn.neumann@co.wadena.mn.us

State Jurisdiction

Cass County

Minnesota Department of Health
Bemidji District Office
705 Fifth Street NW, Suite A
Bemidji, MN 56601-2933
218-308-2100
Paul Herr, San Supervisor
paul.herr@state.mn.us
Jason Naasz, Northern Cass Sanitarian
jason.naasz@state.mn.us
Jeff Peterson, Southern Cass Sanitarian
jeffrey.peterson@state.mn.us

Crow Wing County

Minnesota Department of Health
St. Cloud District Office
Midtown Square
3333 West Division Street, Suite 212
St. Cloud, MN 56301-4557
320-223-7300
Lee Ann Austin, Sanitarian
leeannaustin@state.mn.us
Peter Lindell, San Supervisor
peter.lindell@state.mn.us

State Jurisdiction (cont'd.)

Mille Lacs County

Minnesota Department of Health
St. Cloud District Office
Midtown Square
3333 West Division Street, Suite 212
St. Cloud, MN 56301-4557
320-223-7300
Jolene Hoepner, Sanitarian
jolene.hoepner@state.mn.us

Otter Tail County

Minnesota Department of Health
Fergus Falls District Office
1505 Pebble Lake Road, Suite 300
Fergus Falls, MN 56537
218-332-5150
Rick Toms, San Supervisor
Rick.toms@state.mn.us
Glenn Donnay, Sanitarian
glenn.donnay@state.mn.us
Rebecca Tonneson, Sanitarian
rebecca.tonneson@state.mn.us
Dave Wroblewski, Sanitarian
david.wroblewski@state.mn.us

Licensed Kitchens

Aitkin County

VFW Post 1727
36558 410th Avenue
Aitkin, MN 56431
(218) 927-2323

American Legion
20 1st Avenue Northeast
Aitkin, MN 56431
(218) 927-2965

VFW Post 2747
3rd & Railroad St
McGregor, MN 55760
(218) 768-3500

Cass County

American Legion
426 Wren Trail Northwest
Backus, MN 56435
(218) 947-3156

Pine Mountaineer Senior Center
131 Front Street
Backus, MN 56435
218-947-3844

American Legion
200 1st Street South
Hackensack, MN 56452
(218) 675-9191

Cass County Agricultural Society
Pillager Fairgrounds
207 East 2nd Street
Pillager, MN 56473
218-746-3348

American Legion
407 Front Street
Walker, MN 56484
218-547-1011
Large kitchen remodeled about 4 years ago; have experience in sub-letting

Walker Area Community Center
105 Tower Ave E
Walker, MN 56484
218-547-1853
Large kitchen designed for senior meals program, new in 2009

Crow Wing County

American Legion
708 Front Street
Brainerd, MN 56401
218-829-2249

Brainerd Elks Club
215 South 9th Street
Brainerd, MN 56401
218-829-2643

TCC Brainerd Head Start
2410 Oak Street
Brainerd, MN 56401
218-829-2410

VFW Post 1647
309 South 6th Street
Brainerd, MN 56401
(218) 829-6393
brainerdvfw.com

Community Center
222 Second Street NW
Crosby, MN 56441
218-546-5855

American Legion
35112 County Road 3
Crosslake, MN 56442
(218) 692-2555

American Legion
23659 Forest Road
Deerwood, MN 56444
(218) 534-3215

Emily Wesleyan Church
40141 State Highway 6
Emily, MN 56447
218-763-4673

VFW Post 1816
27234 Monroe Street
Garrison, MN 56450
(320) 692-4414

American Legion
232 Fourth Street
Ironton, MN 56455
218-546-5975

VFW Post 3839
3341 Veterans Street
Jenkins, MN 56456
(218) 568-8664

Nisswa Community Center
25628 Main Street
Nisswa, MN 56468
(218) 963-0085

American Legion
4435 Main Street
Pequot Lakes, MN 56472
(218) 568-9881

Mille Lacs County

VFW Post 955
38692 U.S. 169
Onamia, MN 56359
320-532-4171

VFW Post 806
133 Rum River Drive N
Princeton, MN 55371

Morrison County

American Legion
108 1st Street Northeast
Little Falls, MN 56345
(320) 632-5944

VFW Post 9073
401 Pacific Avenue
Randall, MN 56475
(320) 749-9546

American Legion
103 North Maple Street
Royalton, MN 56373
(320) 584-5135

Otter Tail County

Lakeside Camp
40225 Purlieu Road
Dent, MN 56528
218-758-2112
Large commercial kitchen for rent by the day, week, or month.

VFW Post 3289
120 S Boardman Ave
New York Mills, MN 56567
(218) 385-3510

Todd County

VFW Post 7902
701 E 8th Ave
Osakis, MN 56360
320-859-2117

Wadena County

American Legion
100 Frontage Road
Sebeka, MN 56477
(218) 837-9670

Central Lakes College
1830 Airport Road
Staples, MN 56479
(218) 894-5100
clcmn.edu

VFW Post 3922
213 1st Street SE
Wadena, MN 56482
218-632-6951

Minnesota State Community & Tech
405 Colfax Avenue Southwest
Wadena, MN 56482
(218) 631-7800
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Central Lakes College Contact

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Appendix K: High value crops

Figure 2. Acreage, Market Value and Value per Acre, Selected California Crops, 2006

	Acreage	Market Value			Value per Acre	
Product	Acres (000)	2006 ($ mil)	Change, 01-06	% Crop Category	2004-2006 Average	2006
High Value - Fruits and Tree Nuts						
Strawberries	35,600	1,194.4	44.5%	11.7%	$32,484	$33,363
Lemons	44,000	374.7	47.6%	3.7%	$8,782	$8,517
High Value - Vegetables						
Celery	24,300	312.2	22.0%	4.5%	$11,122	$12,849
Peppers, Bell	28,000	286.2	57.0%	4.1%	$10,701	$10,222
Lettuce, All	232,100	1,607.6	21.2%	23.1%	$6,373	$6,926
Carrots	83,300	524.1	25.0%	7.5%	$6,384	$6,292
Cauliflower	38,300	211.3	33.2%	3.0%	$5,196	$5,516
Avocados	62,100	342.0	0.7%	3.3%	$5,416	$5,507
Medium Value - Field Crops						
Potatoes, Except Sweet	41,400	197.5	6.1%	7.1%	$5,008	$4,770
Medium Value - Fruits and Tree Nuts						
Pistachios	110,000	454.6	179.6%	4.4%	$4,896	$4,133
Grapes	797,000	3,032.7	13.7%	29.6%	$3,753	$3,805
Oranges	181,000	633.3	83.2%	6.2%	$3,279	$3,499
Almonds	585,000	2,040.4	175.7%	19.9%	$3,894	$3,488
Walnuts	216,000	553.6	62.1%	5.4%	$2,422	$2,563
Medium Value - Vegetables						
Broccoli	127,000	599.4	36.4%	8.6%	$4,586	$4,720
Onions	49,100	217.4	32.3%	3.1%	$4,086	$4,427
Tomatoes	323,000	1,138.6	46.1%	16.4%	$3,401	$3,525
Tomatoes, Fresh	*41,000*	*505.1*	*78.9%*	*7.3%*	*$11,051*	*$12,320*
Tomatoes, Processing	**282,000**	**633.5**	**27.5%**	**9.1%**	**$2,266**	**$2,247**
Low Value - Field Crops						
Grain corn	**110,000**	**62.6**	**6.0%**	**2.3%**	**$517**	**$569**
Cotton	557,000	556.8	-9.6%	20.0%	$978	$1,000
Rice	523,000	464.5	128.5%	16.7%	$755	$888
Hay, All	1,580,000	1,002.8	0.2%	36.1%	$666	$635
Hay, Alfalfa	*1,050,000*	*828.2*	*-1.8%*	*29.8%*	*$843*	*$789*
Wheat	315,000	88.6	-20.1%	3.2%	$296	$281

*Only crops with at least 3% proportion of major crop categories included. Value thresholds are as follows:

High Value – More than $5,000 per acre

Medium Value - $1,000-$5,000 per acre

Low Value – Less than $1,000 per acre

Source: California Agricultural Statistics, 2006

Appendix L: HACCP Documents

Cooling Temperature Log

Instructions: Record temperatures every hour during the cooling cycle. Record corrective actions, if applicable. If no foods are cooled on any working day, indicate "No Foods Cooled" in the Food Item column. The foodservice manager will verify that the foodservice staff is cooling food properly by visually monitoring foodservice employees during the shift and reviewing, initialing, and dating this log daily. Maintain this log for a minimum of 1 year.

Date	Food Item	Time/ Temp	Time/ Temp	Time/ Temp	Time/ Temp	Time/ Temp	Time/ Temp	Corrective Actions Taken	Initials	Verified By/ Date

Damaged or Discarded Product Log

Instructions: Foodservice employees will record product name, quantity, action taken, reason, initials, and date each time a food or food product is damaged and/or will be discarded. The foodservice manager will verify that foodservice employees are discarding damaged food properly by visually monitoring foodservice employees during the shift and reviewing, initialing, and dating this log daily. Maintain this log for a minimum of 1 year.

Date	Time	Vendor or School	Product Name	Temperature	Corrective Action Taken	Initials/Date	Manager Initials/Date

Employee Food Safety Training Record

Date: _____

Location: _____

Directions: Use this form to record food safety training provided to employees. Maintain this record for a minimum of 1 year.

Employee Name	Length of Training	Training and Materials Provided

Food Contact Surfaces Cleaning and Sanitizing Log

Instructions: Record time, temperatures/sanitizer concentration, as appropriate and any corrective action taken on this form. The foodservice manager will verify that food workers have taken the required information by visually monitoring foodservice employees and preparation procedures during the shift and by reviewing, initialing, and dating this log daily. Maintain this log for a minimum of 1 year.

Date and Time	Wash Temperature	Rinse Temperature	Final Rinse (Sanitization) Temperature	Heat Sensitive Tape (place here)	Sanitizer Concentration (in ppm)	Corrective Action	Employee Initials	Verified By/ Date

FOOD SAFETY CHECKLIST

Date_____ Observer_____

Directions: Use this checklist daily. Determine areas in your operations requiring corrective action. Record corrective action taken and keep completed records in a notebook for future reference.

PERSONAL HYGIENE	Yes	No	Corrective Action
• Employees wear clean and proper uniform including shoes.	☐	☐	_____
• Effective hair restraints are properly worn.	☐	☐	_____
• Fingernails are short, unpolished, and clean (no artificial nails).	☐	☐	_____
• Jewelry is limited to a plain ring, such as wedding band and a watch and no bracelets.	☐	☐	_____
• Hands are washed properly, frequently, and at appropriate times.	☐	☐	_____
• Burns, wounds, sores or scabs, or splints and water-proof bandages on hands are bandaged and completely covered with a foodservice glove while handling food.	☐	☐	_____
• Eating, drinking, chewing gum, smoking, or using tobacco are allowed only in designated areas away from preparation, service, storage, and ware washing areas.	☐	☐	_____
• Employees use disposable tissues when coughing or sneezing and then immediately wash hands.	☐	☐	_____
• Employees appear in good health.	☐	☐	_____
• Hand sinks are unobstructed, operational, and clean.	☐	☐	_____
• Hand sinks are stocked with soap, disposable towels, and warm water.	☐	☐	_____
• A handwashing reminder sign is posted.	☐	☐	_____
• Employee restrooms are operational and clean.	☐	☐	_____

FOOD PREPARATION	**Yes**	**No**	**Corrective Action**
• All food stored or prepared in facility is from approved sources.	☐	☐	_____
• Food equipment utensils, and food contact surfaces are properly washed, rinsed, and sanitized before every use.	☐	☐	_____
• Frozen food is thawed under refrigeration, cooked to proper temperature from frozen state, or in cold running water.	☐	☐	_____
• Thawed food is not refrozen.	☐	☐	_____
• Preparation is planned so ingredients are kept out of the temperature danger zone to the extent possible.	☐	☐	_____
• Food is tasted using the proper procedure.	☐	☐	_____
• Procedures are in place to prevent cross-contamination.	☐	☐	_____
• Food is handled with suitable utensils, such as single use gloves or tongs.	☐	☐	_____

- Food is prepared in small batches to limit the time it is in the temperature danger zone. ☐ ☐ _____
- Clean reusable towels are used only for sanitizing equipment and surfaces and not for drying hands, utensils, or floor. ☐ ☐ _____
- Food is cooked to the required safe internal temperature for the appropriate time. The temperature is tested with a calibrated food thermometer. ☐ ☐ _____
- The internal temperature of food being cooked is monitored and documented. ☐ ☐ _____

HOT HOLDING	**Yes**	**No**	**Corrective Action**
• Hot holding unit is clean.	☐	☐	_____
• Food is heated to the required safe internal temperature before placing in hot holding. Hot holding units are not used to reheat potentially hazardous foods.	☐	☐	_____
• Hot holding unit is pre-heated before hot food is placed in unit.	☐	☐	_____
• Temperature of hot food being held is at or above 135 ^{o}F.	☐	☐	_____
• Food is protected from contamination.	☐	☐	_____

COLD HOLDING	**Yes**	**No**	**Corrective Action**
• Refrigerators are kept clean and organized.	☐	☐	_____
• Temperature of cold food being held is at or below 41 ^{o}F.	☐	☐	_____
• Food is protected from contamination.	☐	☐	_____

REFRIGERATOR, FREEZER, AND MILK COOLER	**Yes**	**No**	**Corrective Action**
• Thermometers are available and accurate.	☐	☐	_____
• Temperature is appropriate for pieces of equipment.	☐	☐	_____
• Food is stored 6 inches off floor or in walk-in cooling equipment.	☐	☐	_____
• Refrigerator and freezer units are clean and neat.	☐	☐	_____
• Proper chilling procedures are used.	☐	☐	_____
• All food is properly wrapped, labeled, and dated.	☐	☐	_____
• The FIFO (First In, First Out) method of inventory management is used.	☐	☐	_____
• Ambient air temperature of all refrigerators and freezers is monitored and documented at the beginning and end of each shift.	☐	☐	_____

FOOD STORAGE AND DRY STORAGE	Yes	No	Corrective Action
• Temperatures of dry storage area is between 50 ^{o}F and 70 ^{o}F or State public health department requirement.	☐	☐	_____
• All food and paper supplies are stored 6 to 8 inches off the floor.	☐	☐	_____
• All food is labeled with name and received date.	☐	☐	_____
• Open bags of food are stored in containers with tight fitting lids and labeled with common name.	☐	☐	_____
• The FIFO (First In, First Out) method of inventory management is used.	☐	☐	_____
• There are no bulging or leaking canned goods.	☐	☐	_____
• Food is protected from contamination.	☐	☐	_____
• All food surfaces are clean.	☐	☐	_____
• Chemicals are clearly labeled and stored away from food and food-related supplies.	☐	☐	_____
• There is a regular cleaning schedule for all food surfaces.	☐	☐	_____
• Food is stored in original container or a food grade container.	☐	☐	_____

CLEANING AND SANITIZING	Yes	No	Corrective Action
• Three-compartment sink is properly set up for ware washing.	☐	☐	_____
• Dishmachine is working properly (such as gauges and chemicals are at recommended levels).	☐	☐	_____
• Water is clean and free of grease and food particles.	☐	☐	_____
• Water temperatures are correct for wash and rinse.	☐	☐	_____
• If heat sanitizing, the utensils are allowed to remain immersed in 171 ^{o}F water for 30 seconds.	☐	☐	_____
• If using a chemical sanitizer, it is mixed correctly and a sanitizer strip is used to test chemical concentration.	☐	☐	_____
• Smallware and utensils are allowed to air dry.	☐	☐	_____
• Wiping cloths are stored in sanitizing solution while in use.	☐	☐	_____

UTENSILS AND EQUIPMENT	Yes	No	Corrective Action
• All small equipment and utensils, including cutting boards and knives, are cleaned and sanitized between uses.	☐	☐	_____
• Small equipment and utensils are washed, sanitized, and air-dried.	☐	☐	_____
• Work surfaces and utensils are clean.	☐	☐	_____
• Work surfaces are cleaned and sanitized between uses.	☐	☐	_____
• Thermometers are cleaned and sanitized after each use.	☐	☐	_____

- Thermometers are calibrated on a routine basis. ☐ ☐ _____
- Can opener is clean. ☐ ☐ _____
- Drawers and racks are clean. ☐ ☐ _____
- Clean utensils are handled in a manner to prevent contamination of areas that will be in direct contact with food or a person's mouth. ☐ ☐ _____

LARGE EQUIPMENT	Yes	No	Corrective Action
Food slicer is clean.	☐	☐	_____
Food slicer is broken down, cleaned, and sanitized before and after every use.	☐	☐	_____
Boxes, containers, and recyclables are removed from site.	☐	☐	_____
Loading dock and area around dumpsters are clean and odor-free.	☐	☐	_____
Exhaust hood and filters are clean.	☐	☐	_____

GARBAGE STORAGE AND DISPOSAL	Yes	No	Corrective Action
Kitchen garbage cans are clean and kept covered.	☐	☐	_____
Garbage cans are emptied as necessary.	☐	☐	_____
Boxes and containers are removed from site.	☐	☐	_____
Loading dock and area around dumpster are clean.	☐	☐	_____
Dumpsters are clean.	☐	☐	_____

PEST CONTROL	Yes	No	Corrective Action
Outside doors have screens, are well-sealed, and are equipped with a self-closing device.	☐	☐	_____
No evidence of pests is present.	☐	☐	_____
There is a regular schedule of pest control by a licensed pest control operator.	☐	☐	_____

Personal Hygiene
(Sample SOP)

PURPOSE: To prevent contamination of food by foodservice employees.

SCOPE: This procedure applies to foodservice employees who handle, prepare, or serve food.

KEY WORDS: Personal Hygiene, Cross-Contamination, Contamination

INSTRUCTIONS:

1. Train foodservice employees on using the procedures in this SOP.
2. Follow State or local health department requirements.
3. Follow the Employee Health Policy. (Employee health policy is not included in this resource.)
4. Report to work in good health, clean, and dressed in clean attire.
5. Change apron when it becomes soiled.
6. Wash hands properly, frequently, and at the appropriate times.
7. Keep fingernails trimmed, filed, and maintained so that the edges are cleanable and not rough.
8. Avoid wearing artificial fingernails and fingernail polish.
9. Wear single-use gloves if artificial fingernails or fingernail polish are worn.
10. Do not wear any jewelry except for a plain ring such as a wedding band.
11. Treat and bandage wounds and sores immediately. When hands are bandaged, single-use gloves must be worn.
12. Cover a lesion containing pus with a bandage. If the lesion is on a hand or wrist, cover with an impermeable cover such as a finger cot or stall and a single-use glove.
13. Eat, drink, use tobacco, or chew gum only in designated break areas where food or food contact surfaces may not become contaminated.
14. Taste food the correct way:
    - Place a small amount of food into a separate container.
    - Step away from exposed food and food contact surfaces.
    - Use a teaspoon to taste the food. Remove the used teaspoon and container to the dish room. Never reuse a spoon that has already been used for tasting.
    - Wash hands immediately.
15. Wear suitable and effective hair restraints while in the kitchen.

Personal Hygiene, continued
(Sample SOP)

MONITORING:

- A designated foodservice employee will inspect employees when they report to work to be sure that each employee is following this SOP.
- The designated foodservice employee will monitor that all foodservice employees are adhering to the personal hygiene policy during all hours of operation.

CORRECTIVE ACTION:

1. Retrain any foodservice employee found not following the procedures in this SOP.
2. Discard affected food.

VERIFICATION AND RECORD KEEPING:

The foodservice manager will verify that foodservice employees are following this SOP by visually observing the employees during all hours of operation. The foodservice manager will complete the Food Safety Checklist daily. Foodservice employees will record any discarded food on the Damaged or Discarded Product Log. The Food Safety Checklist and Damaged or Discarded Product Logs are to be kept on file for a minimum of 1 year.

DATE IMPLEMENTED: _____ BY: _____

DATE REVIEWED: _____ BY: _____

DATE REVISED: _____ BY: _____

Receiving Deliveries
(Sample SOP)

PURPOSE: To ensure that all food is received fresh and safe when it enters the foodservice operation and to transfer food to proper storage as quickly as possible.

SCOPE: This procedure applies to foodservice employees who handle, prepare, or serve food.

KEY WORDS: Cross-Contamination, Temperatures, Receiving, Holding, Frozen Goods, Delivery

INSTRUCTIONS:

1. Train foodservice employees on using the procedures in this SOP.
2. Follow State or local health department requirements.
3. Schedule deliveries to arrive at designated times during operational hours.
4. Post the delivery schedule, including the names of vendors, days and times of deliveries, and drivers' names.
5. Establish a rejection policy to ensure accurate, timely, consistent, and effective refusal and return of rejected goods.
6. Organize freezer and refrigeration space, loading docks, and store rooms before deliveries.
7. Gather product specification lists and purchase orders, temperature logs, calibrated thermometers, pens, flashlights, and clean loading carts before deliveries. Refer to the Using and Calibrating Thermometers SOP.
8. Keep receiving area clean and well lighted.
9. Do not touch ready-to-eat foods with bare hands.
10. Determine whether foods will be marked with the date arrival or the "use by" date and mark accordingly upon receipt.
11. Compare delivery invoice against products ordered and products delivered.
12. Transfer foods to their appropriate locations as quickly as possible.

Receiving Deliveries, continued
(Sample SOP)

MONITORING:

1. Inspect the delivery truck when it arrives to ensure that it is clean, free of putrid odors, and organized to prevent cross-contamination. Be sure refrigerated foods are delivered on a refrigerated truck.
2. Check the interior temperature of refrigerated trucks.
3. Confirm vendor name, day and time of delivery, as well as driver's identification before accepting delivery. If driver's name is different from what is indicated on the delivery schedule, contact the vendor immediately.
4. Check frozen foods to ensure that they are all frozen solid and show no signs of thawing and refreezing, such as the presence of large ice crystals or liquids on the bottom of cartons.
5. Check the temperature of refrigerated foods.
    a. For fresh meat, fish, and poultry products, insert a clean and sanitized thermometer into the center of the product to ensure a temperature of 41 ºF or below. The temperature of milk should be 45 ºF or below.
    b. For packaged products, insert a food thermometer between two packages being careful not to puncture the wrapper. If the temperature exceeds 41 ºF, it may be necessary to take the internal temperature before accepting the product.
    c. For eggs, the interior temperature of the truck should be 45 ºF or below.
6. Check dates of milk, eggs, and other perishable goods to ensure safety and quality.
7. Check the integrity of food packaging.
8. Check the cleanliness of crates and other shipping containers before accepting products. Reject foods that are shipped in dirty crates.

CORRECTIVE ACTION:

1. Retrain any foodservice employee found not following the procedures in this SOP.
2. Reject the following:
    - Frozen foods with signs of previous thawing
    - Cans that have signs of deterioration, such as swollen sides or ends, flawed seals or seams, dents, or rust
    - Punctured packages
    - Foods with out-dated expiration dates
    - Foods that are out of safe temperature zone or deemed unacceptable by the established rejection policy

Receiving Deliveries, continued
(Sample SOP)

VERIFICATION AND RECORD KEEPING:
Record the temperature and the corrective action on the delivery invoice or on the Receiving Log. The foodservice manager will verify that foodservice employees are receiving products using the proper procedure by visually monitoring receiving practices during the shift and reviewing the Receiving Log at the close of each day. Receiving Logs are kept on file for a minimum of 1 year.

DATE IMPLEMENTED: _____ BY: _____

DATE REVIEWED: _____ BY: _____

DATE REVISED: _____ BY: _____

Washing Fruits and Vegetables
(Sample SOP)

PURPOSE: To prevent or reduce risk of foodborne illness or injury by contaminated fruits and vegetables.

SCOPE: This procedure applies to foodservice employees who prepare or serve food.

KEY WORDS: Fruits, Vegetables, Cross-Contamination, Washing

INSTRUCTIONS:

1. Train foodservice employees on using the procedures in this SOP.
2. Follow State or local health department requirements.
3. Wash hands using the proper procedure.
4. Wash, rinse, sanitize, and air-dry all food-contact surfaces, equipment, and utensils that will be in contact with produce, such as cutting boards, knives, and sinks.
5. Follow manufacturer's instructions for proper use of chemicals.
6. Wash all raw fruits and vegetables thoroughly before combining with other ingredients, including:
   - Unpeeled fresh fruit and vegetables that are served whole or cut into pieces.
   - Fruits and vegetables that are peeled and cut to use in cooking or served ready-to-eat.
7. Wash fresh produce vigorously under cold running water or by using chemicals that comply with the *2001 FDA Food Code.* Packaged fruits and vegetables labeled as being previously washed and ready-to-eat are not required to be washed.
8. Scrub the surface of firm fruits or vegetables such as apples or potatoes using a clean and sanitized brush designated for this purpose.
9. Remove any damaged or bruised areas.
10. Label, date, and refrigerate fresh-cut items.
11. Serve cut melons within 7 days if held at 41 ºF or below. Refer to the Date Marking Ready-to-Eat, Potentially Hazardous Food SOP.
12. Do not serve raw seed sprouts to highly susceptible populations such as preschool-age children.

Washing Fruits and Vegetables, continued

(Sample SOP)

MONITORING:

1. The foodservice manager will visually monitor that fruits and vegetables are being properly washed, labeled, and dated during all hours of operation.
2. Foodservice employees will check daily the quality of fruits and vegetables in cold storage.

CORRECTIVE ACTION:

1. Retrain any foodservice employee found not following the procedures in this SOP.
2. Remove unwashed fruits and vegetables service and washed immediately before being served.
3. Label and date fresh cut fruits and vegetables.
4. Discard cut melons held after 7 days.

VERIFICATION AND RECORD KEEPING:

The foodservice manager will complete the Food Safety Checklist daily to indicate that monitoring is being conducted as specified in this SOP. The Food Safety Checklist is to be kept on file for a minimum of 1 year.

DATE IMPLEMENTED: _____ BY: _____

DATE REVIEWED: _____ BY: _____

DATE REVISED: _____ BY: _____

Washing Hands
(Sample SOP)

PURPOSE: To prevent foodborne illness by contaminated hands.

SCOPE: This procedure applies to anyone who handle, prepare, and serve food.

KEY WORDS: Handwashing, Cross-Contamination

INSTRUCTIONS:

1. Train foodservice employees on using the procedures in this SOP.
2. Follow State or local health department requirements.
3. Post handwashing signs or posters in a language understood by all foodservice staff near all handwashing sinks, in food preparation areas, and restrooms.
4. Use designated handwashing sinks for handwashing only. Do not use food preparation, utility, and dishwashing sinks for handwashing.
5. Provide warm running water, soap, and a means to dry hands. Provide a waste container at each handwashing sink or near the door in restrooms.
6. Keep handwashing sinks accessible anytime employees are present.
7. Wash hands:
   - Before starting work
   - During food preparation
   - When moving from one food preparation area to another
   - Before putting on or changing gloves
   - After using the toilet
   - After sneezing, coughing, or using a handkerchief or tissue
   - After touching hair, face, or body
   - After smoking, eating, drinking, or chewing gum or tobacco
   - After handling raw meats, poultry, or fish
   - After any clean up activity such as sweeping, mopping, or wiping counters
   - After touching dirty dishes, equipment, or utensils
   - After handling trash
   - After handling money
   - After any time the hands may become contaminated

Washing Hands, continued
(Sample SOP)

INSTRUCTIONS, continued:

8. Follow proper handwashing procedures as indicated below:
   - Wet hands and forearms with warm, running water at least 100 ºF and apply soap.
   - Scrub lathered hands and forearms, under fingernails, and between fingers for at least 10-15 seconds. Rinse thoroughly under warm running water for 5-10 seconds.
   - Dry hands and forearms thoroughly with single-use paper towels.
   - Dry hands for at least 30 seconds if using a warm air hand dryer.
   - Turn off water using paper towels.
   - Use paper towel to open door when exiting the restroom.
9. Follow FDA recommendations when using hand sanitizers. These recommendations are as follows:
   - Use hand sanitizers only after hands have been properly washed and dried.
   - Use only hand sanitizers that comply with the *2001 FDA Food Code*. Confirm with the manufacturers that the hand sanitizers used meet these requirements.
   - Use hand sanitizers in the manner specified by the manufacturer.

MONITORING:

1. A designated employee will visually observe the handwashing practices of the foodservice staff during all hours of operation.
2. The designated employee will visually observe that handwashing sinks are properly supplied during all hours of operation.

CORRECTIVE ACTION:

1. Retrain any foodservice employee found not following the procedures in this SOP.
2. Ask employees that are observed not washing their hands at the appropriate times or using the proper procedure to wash their hands immediately.
3. Retrain employee to ensure proper handwashing procedure.

VERIFICATION AND RECORD KEEPING:

The foodservice manager will complete the Food Safety Checklist daily to indicate that monitoring is being conducted as specified. The Food Safety Checklist is to be kept on file for a minimum of 1 year.

Washing Hands, continued

(Sample SOP)

DATE IMPLEMENTED: _____BY: _____

DATE REVIEWED: _____ BY: _____

DATE REVISED: _____ BY: _____

Appendix M: Licensing & Certification Requirements

License Title	Licensing Agency	Purpose/Use	Exemptions
Food Manager Certification (applicable only to direct sales such as coffee shops and restaurants)	MDH	The State of Minnesota requires a Minnesota Certified Food Manager in most food establishments. An owner or operator, through the certified food manager, is responsible for ensuring that : Hazards in the day-to-day operation of the food establishment are identified; Policies and procedures to prevent foodborne illness are developed and implemented; Employees are trained to ensure that there is at least one trained individual present at all times food preparation activities are conducted who can demonstrate the knowledge required in the Code; Food preparation activities are directed and corrective action is taken, as needed, to protect the health of the consumer; and In-house self-inspections of daily operations are conducted on a periodic basis to ensure that food safety policies and procedures are followed.	Some of the establishments that do not have to employ a certified food manager are: Food establishments where food preparation activities are only one or more of the following: heating or serving precooked hot dogs or sausages, popcorn, nachos, pretzels or frozen pizza; preparing or serving continental breakfast; preparing or serving beverages or ice; grinding coffee beans; packaging non-potentially hazardous foods; serving bulk foods; processing raw meat, poultry, fish or wild game intended for further cooking after sale; heating as the only preparation of a bakery product; providing prepackaged food units original package; cleaning or sanitizing eating, drinking or cooking utensils. **Also, Boarding establishments, bed and breakfast facilities, child care or adult day care facilities that serve 18 or fewer meals per mealtime; Food carts, mobile food units, seasonal permanent or temporary food stands, special event food stands, retail food vehicles, portable structures, carts or vending machines; An establishment that provides no more than one meal per week and its main purpose is not food service.
Health License	MDH	Physical inspection of facility with independent licensing under the Department of Health.	You cannot start operation until the application and fees are submitted and approval is granted.
The **Predominance of Business** is the delinating factor, e.g., if 51% of the business is retail, the license would fall under retail food handler; if 51% of the business if wholesale, then wholesale food handler applies. If manufacturing of food occurs, then a wholesale manufacturer license is required. Determinator is prepackaging of sales, MN Department of Ag. If direct sales (coffee shop, restaurant), MN Department of Health. No double licensing between agencies.			
Food Broker	MDA	Individual who never actually possesses the food they are brokering and facilitate sales only.	Not applicable for this study.
Retail Food Handler	MDA	Facilities who sell directly to direct consumer, a brick and morter facility.	The food handling of retail food establishments are regulated primarily by the Minnesota Department of Agriculture (MDA). "Food Establishment" means an operation that: (1) stores, prepares, packages, serves, vends, or otherwise provides food for human consumption, including a market, grocery store, convenience store, special event food stand, vending machine and vending location, and retail bakery (2) relinquishes possession of food to a consumer directly or indirectly through a delivery service, including the home delivery of grocery orders or restaurant takeout orders, and a delivery service that is provided by common carriers.
Retail Mobile Food Handler	MDA	Fair vendors, arts and craft fair vendors. Split between MDA and MDH.	The food handling of retail food establishments are regulated primarily by the Minnesota Department of Agriculture (MDA). "Food Establishment" means an operation that: (1) stores, prepares, packages, serves, vends, or otherwise provides food for human consumption, including a market, grocery store, convenience store, special event food stand, vending machine and vending location, and retail bakery (2) relinquishes possession of food to a consumer directly or indirectly through a delivery service, including the home delivery of grocery orders or restaurant takeout orders, and a delivery service that is provided by common carriers.

Wholesale Food Handler	MDA	Warehoused food.	Wholesale food handlers are persons who sell food to others for resale. Minnesota food wholesalers are regulated primarily by the Minnesota Department of Agriculture (MDA). Many food wholesalers are also subject to regulation by their own city or county ordinances. A food wholesaler that is engaged in the interstate sale of its own manufactured or processed food products is also subject to regulation by the U.S. Food and Drug Administration.
Wholesale Food Processor/Manufacturer (and USDA)	MDA	Warehoused food where processing within the facility also occurs.	If manufacturer processes foods for wholesale (to other entities), this is the only license required for the manufacturing. If you sell both retail and wholesale, you would need both licenses (and USDA where required)
Wholesale Produce Dealers	MDA	Large food distributors (Bix, Apperts, Sysco)	The Wholesale Produce Dealers Act and the Wholesale Produce Dealers Rules are designed to provide economic protection to Minnesota producers, farm marketing cooperatives and licensed dealers who do not receive payment after selling their perishable agricultural products. As part of the licensing process, wholesale dealers must obtain a surety bond that can be used for reimbursement if payment is not made. In addition to the bond and trust claims described below, the Wholesale Produce Dealers Act provides for mediation and other protections under the law.
If you're going to process this item:	**Licensing Agency**	**You need this (in addition to a licensed facility by MN Department of Health <u>and</u> a Food Manager Certificate for facility):**	Minnesota Retail Food Code: http://www.health.state.mn.us/divs/eh/food/code/index.html Good Manufacturing Practices in Manufacturing, Packing or Holding Human Food: http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/cfrsearch.cfm?cfrpart=110
Bakery	MDA	Good Manufacturing Practices and a MDA retail or wholesale license as above.	
Dry Packaged Goods	MDA	Good Manufacturing Practices and a MDA retail or wholesale license as above.	Labeling requirements apply based on auantity (number of employees and gross sales) including common name along with trade name, place of manufacturing (including contact information), ingredient statement in decending prominence and net weight with standard weight first and metric listed second.
Non food items	MDA	MDA licensing under animal division if processing animal feed (dog bisquits).	
Pickled items, jams/jellies, tomato items, salsa	MDA	Any item that is low acid, acide, juice or seafood would require an acidified foods HACCP Plan (Hazard Analysis & Critical Control Points).	Additional requirements would include a Process Authority Letter and attendance at a Better Processing and Control School program. Would also need to register process with the Federal Drug Administration. Exception: If you can package, store and display under refrigeration, you would not be required to have an acidified foods HACCP Plan.
Frozen goods (green beans, carrots, etc)	MDA	Good Manufacturing Practices and a MDA retail or wholesale license as above.	