

# **A Feasibility Report for a Food HUB**

---

**Serving a 14 County Region of Northwest Michigan**

**Presented to: The McBain LDFAs and Marilyn Knak**

**Prepared by: Development Economics LLC  
Peter Cambier, Principal**

**October 30, 2013**

## **AUTHORIZATION**

*This Feasibility Report has been compiled and is presented by Development Economics, a Michigan corporation, and it has been conducted under the authority of the Tax Increment Finance Authority of the City of McBain and Marilyn Knak. It was supported in part by a grant from USDA Rural Development.*

## **DISCLAIMER**

*All representations made in this Report are made by Development Economics, LLC, which takes full responsibility for the contents herein, and any errors or omissions found in this Report are the sole and exclusive responsibility of its author.*

## **RECOGNITIONS**

*The author wishes to thank the following persons and organizations who offered generous assistance with this document: The Michigan Field Office of the National Agricultural Statistics Service, Patty Cantrell of Regional Food Solutions, LLC, Colleen Matts and her research staff at the Center for Regional Food Systems at Michigan State University, Evan Smith of Cherry Capital Foods, Dawn Paulin of DP Computer Consulting, Marilyn Knak and the Tax Increment Finance Authority of the City of McBain.*

## TABLE OF CONTENTS

AUTHORIZATION.....	i
DISCLAIMER.....	i
RECOGNITIONS.....	i
TABLE OF CONTENTS .....	ii
TABLE OF TABLES, FIGURES, AND CHARTS .....	iii
EXECUTIVE SUMMARY .....	1
PROJECT HISTORY .....	1
THE MARKET .....	2
Market Channels .....	2
Direct sales .....	2
Intermediate sales.....	3
Institutional Market .....	4
Medical markets .....	4
School markets.....	4
Distribution of Local Foods in the Region.....	11
PRODUCTION .....	11
US Production .....	11
Regional Production .....	13
Produce grown in the region .....	13
Regional grower interest in a HUB.....	13
Competitiveness of Regional Growers .....	18
SAFETY ISSUES.....	24
ECONOMIC VIABILITY .....	25
CONCLUSIONS.....	30
Vegetable Acres Harvested and Operations .....	Appendix A
Fruit Acres Harvested and Operations.....	Appendix B

## TABLE OF TABLES, FIGURES, AND CHARTS

<b>1: TIERS OF THE FOOD SYSTEM</b> .....	<b>3</b>
<b>2: FOOD DISTRIBUTOR TABLE</b> .....	<b>5</b>
<b>3: PROCESSED AND UNPROCESSED FOOD ITEMS</b> .....	<b>6</b>
<b>4: LOCAL VEGETABLES</b> .....	<b>7</b>
<b>5: LOCAL FRUITS</b> .....	<b>8</b>
<b>6: INTEREST IN VEGETABLE PURCHASE</b> .....	<b>9</b>
<b>7: INTEREST IN FRUIT PURCHASE</b> .....	<b>10</b>
<b>8: IDENTIFIED DISTRIBUTOR PURCHASES BY COUNTY, 2012</b> .....	<b>11</b>
<b>9: LAND USED FOR VEGETABLES (2007)</b> .....	<b>12</b>
<b>10: US FRESH PRODUCE TRADE--ANNUAL</b> .....	<b>12</b>
<b>11: PRINCIPAL VEGETABLES TABLE</b> .....	<b>13</b>
<b>12: GROWER SURVEY RESPONSE BY COUNTY</b> .....	<b>14</b>
<b>13: GROWER INTEREST IN SELLING TO A HUB BY ACRES</b> .....	<b>14</b>
<b>14: NUMBER AND SIZE OF VEGETABLES GROWERS INTERESTED IN SELLING TO A HUB</b> .....	<b>15</b>
<b>15: GROWERS VERY INTERESTED IN SELLING TO A HUB BY COUNTY</b> .....	<b>17</b>
<b>16: GROWERS VERY INTERESTED IN CONTRACTING WITH A HUB BY COUNTY</b> .....	<b>17</b>
<b>17: GROWERS INTEREST IN SELLING TO A HUB AND THEIR CAPABILITIES</b> .....	<b>18</b>
<b>18: TRANSPORTATION COST FROM CALIFORNIA AS A PERCENTAGE OF WHOLESALE PRICES</b> .....	<b>19</b>
<b>19: ESTIMATES OF PROFIT WITH AVERAGE YIELDS</b> .....	<b>20</b>
<b>20: LABOR NEEDS OF PRODUCTION</b> .....	<b>20</b>
<b>21: BREAKEVEN COST OF PRODUCTION WITH AVERAGE LABOR COSTS AND VARYING YIELDS</b> .....	<b>21</b>
<b>22: IN SEASON MIDWEST BALANCE OF TRADE OF SELECTED CROPS</b> .....	<b>22</b>
<b>23: CHARACTERISTICS OF REGIONAL FOOD HUBS BASED ON ECONOMIC VIABILITY</b> .....	<b>26</b>
<b>24:PROFORMA OPERATING STATEMENT</b> .....	<b>30</b>

## EXECUTIVE SUMMARY

This report seeks to answer the question of the feasibility of a specific type of food HUB in Northwest Michigan. Specifically, is there a viable for-profit business model for infrastructure that would aggregate the production of the existing farms in the region for the intermediate/wholesale market, i.e. distributors, institutions, retail outlets and restaurants?

It is the finding of this analysis of the potential for a food HUB that two things are necessary before any substantial increase in the consumption of local produce can be realized. The local production of produce must increase dramatically and new infrastructure must be built, or rebuilt, to move that produce into local market channels. A food HUB to aggregate that produce is not feasible at this time given the production of produce in the region, its quantity but more important the way in which it is produced.

## PROJECT HISTORY

There are few concepts in agricultural innovation as popular today as that of the food HUB. HUBs of various types have sprouted across the United States in recent years. They range from virtual entities that seek only to match producers with appropriate market opportunities to HUBs that take physical possession of agricultural products, process, repack and distribute those products. HUBs have been organized as co-ops, non-profit and for-profit organizations.

The Regional Resource Food HUB Guide” (the Guide) published in April, 2012 by the USDA Agricultural Marketing Service defines a food HUB as follows. “A regional food hub is a business or organization that actively manages the aggregation, distribution, and marketing of source-identified food products primarily from local and regional producers to strengthen their ability to satisfy wholesale, retail, and institutional demand.”

According to the Guide:

“Regional food hubs are defined less by a particular business or legal structure, and more by how their functions and outcomes affect producers and the wider communities they serve. Defining characteristics of a regional food hub include:

- ***Carries out or coordinates the aggregation, distribution, and marketing of primarily locally/regionally produced foods from multiple producers to multiple markets.***
- ***Considers producers as valued business partners*** instead of interchangeable suppliers and is committed to buying from small to mid-sized local producers whenever possible.
- ***Works closely with producers***, particularly small-scale operations, to ensure they can meet buyer requirements by either providing technical assistance or findings partners that can provide this technical assistance.
- ***Uses product differentiation strategies to ensure that producers get a good price for their products.*** Examples of product differentiation strategies include identity preservation (knowing who produced it and where it comes from), group branding, specialty product

attributes (such as heirloom or unusual varieties), and sustainable production practices (such as certified organic, minimum pesticides, or “naturally” grown or raised).

- ***Aims to be financially viable while also having positive economic, social, and environmental impacts within their communities***, as demonstrated by carrying out certain production, community, or environmental services and activities.

The surveys done for the USDA Guide found that the legal structures used by HUBs were fairly equally divided between for-profit entities, co-ops and non-profits. The most common activity of a HUB was distribution followed by aggregation.

The original intent of this feasibility study was to examine the feasibility of a for-profit business that would aggregate produce in Northwest Michigan and provide “light” processing as needed to meet market demand. There was and continues to be in many quarters the assumption that growers are handicapped in their efforts to market produce by the lack of the infrastructure needed to 1) aggregate their produce to achieve the volumes desired by the market and 2) accomplish the processing necessary to move that volume effectively in the market (including the conjecture that regional IQF or “individually quick frozen” capacity is needed). This study indicates that, in fact, the major hurdle to increasing the amount of local produce being sold in the region is lack of production.

For the purposes of this feasibility study the term “local” is used to refer to the 14 county region bounded on its four corners by Mason and Clare on the south and Leelanau and Crawford on the north. Although this is the general description of the area from which produce might be aggregated due to the efficiencies of aggregation, the “local” area which might be served by the sales of a HUB in this region would include the sales territory of any distributor that might buy from the HUB, which might reasonably be expected to include much of Michigan.

## THE MARKET

### Market Channels

#### Direct sales

The demand for locally grown food has seen a rapid increase in recent years. In their report titled “Local Food Systems Concepts, Impacts, and Issues. The US Department of Agriculture Economic Research Service, (Economic Research Report No. (ERR-97) 87 pp, May 2010) reported that direct grower to consumer sales of edible farm production almost doubled between 1997 and 2007 from \$5.51 million to \$11.2 million. However this same study reported that these sales accounted of only .8% of the sales of edible farm products. The USDA Food HUB Guide reference above estimates that the total “local” food consumption through all market channels grew from \$4.8 billion in 2008 to \$7 billion in 2011. This growth has occurred at a time when our country’s source for fresh produce has become increasingly international in origin as the national supply infrastructure has declined.

In the diagram of our food systems provided below this activity is shown as the tier one food system activity. There is a good deal of anecdotal evidence that this rate of growth will not continue. It is

probably not a very efficient production/distribution system when all costs are recognized. Some farmers enjoy the activities associated with direct customer sales. They enjoy the direct customer contact of the Saturday farmers market. On the consumer side of the coin, the farmers market is often a recreational activity that has become much in vogue where fresh produce can be a side benefit.

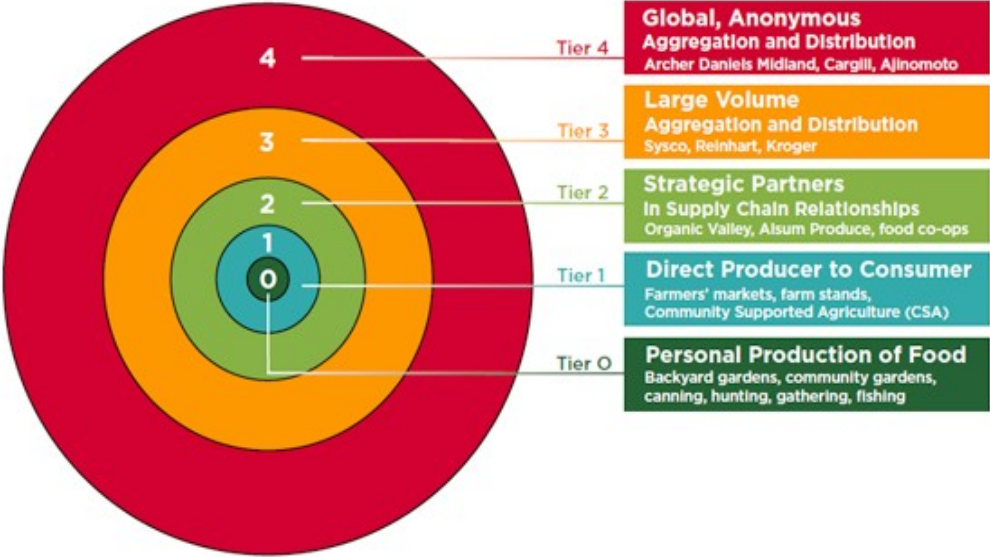
The Economic Research Service recently completed an analysis of the market channels used by different sized farms in the US marketing local foods (Direct and Intermediate Marketing of Local Foods in the United States/ERR-128 Economic Research Service USDA). The analysis found that small farms (farms under 25 acres in size) selling only through direct-to-consumer channels average \$6,737 in sales while those selling only through intermediate channels (sales to regional distributors, grocers and restaurants) average \$10,242 in sales.

**Intermediate sales**

The same study found that intermediate outlets were used for 60% of the value of local foods sales. These channels were dominated by large farms which were responsible for 93 percent of the sales generated exclusively through intermediate channels. Of the local food farms using both direct-to-consumer and intermediate channels, medium and large farms accounted for 88 percent of all sales.

Due to the efficiencies involved, it would seem that the opportunity to significantly expand local produce sales lies with the large broad line distributors. This fact is demonstrated in the region by the survey of “Farm to School participants reported on page 5 below.

**1: Tiers of the Food System**



*(Source: Center for Integrated Agricultural Systems, University of Wisconsin Madison)*

## **Institutional Market**

Institutional markets have been an attractive market for farmers interested in expanding sales of produce for several reasons. They provide larger volume sales than can generally be found at farmers markets or road side stands. Their purchasing policies are usually locally controlled (with the exception of those institutions that contract out their food service operations). However farmers in Michigan have not been very successful in entering this market. A survey of farmers by the MSU Center for Regional Food Systems (MSU CRFS) found that only 7% of the respondents were selling to institutions and that three quarters of those were selling less than \$5,000 of food to those institutions annually.

## **Medical markets**

The Michigan Health and Hospital Association has initiated its Healthy Foods program which recommends that hospitals sign the Michigan Good Foods Charter which commits the institution to the purchase of 20% of its food from Michigan grown and produced sources by 2020. As of December of 2012, 114 of Michigan's nearly 150 hospitals had signed on to this pledge according to the MSU Center for Regional Food Systems.

The hospital initiative has had a slow start in the 14 county region. Although several hospitals have started using fresh produce in their cafeterias only one is known to be using local produce in meals served to patients, the MidMichigan Health Center in Clare. MidMichigan serves 300 to 400 meals per day and purchases \$5,000 to \$6,000 annually from Cherry Capital Foods. They include the local farm source of food on their patient menu daily. It also purchases local foods from GFS. They estimate that they spend from 15% to 20% more for the locally produced foods that they buy. However, in their judgment, their local foods are fresher and of better quality. The major obstacle to growing their local food purchases is the lack of seasonal availability. They would like to have a locally sourced frozen vegetable product available to them. MidMichigan interpretation of the Michigan Food code requires that they purchase food from a third party certified source, thus they do not purchase any foods directly from the farm.

## **School markets**

Nationally there is the Farm to School movement that supports and encourages schools to purchase local foods and in Michigan nearly 90% of schools report that they are purchasing local foods or are interested in doing so according to surveys conducted by the MSU Center for Regional Food Systems (CRFS). These schools report purchasing local food through their broad line distributor in most instances, rather than directly from farmers or specialty distributors. Schools report the most interest in purchasing local fresh whole produce rather than dairy, meats etc.

Center for Regional Food Systems completed a survey of school food system directors in February of 2012. The 14 counties covered by this study were broken out as a subset of those returns. Twenty one out of 48 schools in the region responded to the survey.

Sixteen respondents reported self-managed food service and 5 reported contracted food service. Fourteen represented a public school system; 6 represented a private or parochial school; 1 did not respond. Total student enrollment reported by all respondents was 32, 318.



Respondents reported using about equal amounts of scratch cooking, partially prepared and heat and serve preparation methods. They reported spending an average of 48% of the food service budget to purchase food and 49% for operations. The food portion of the typical meal is about \$1 with 17 to 20 cents of that spent on produce.

When asked what food distributors they used, respondents reported those in the following table:

**2: Food Distributor Table**

Number	Name
13	Gordon Food Service
9	Prairie Farms Dairy
8	Aunt Millie
4	Sysco
3	Country Fresh Dairy
2	Van Eerden, Cedar Crest Dairy, Sarah Lee/Earth Grains
1	Tyson, Pierre, Schwanns, Cherry Capital Foods, Coke, Millers Farm, Lutz Farm, McDonald’s Bakery, Pepsi, McKee Baking, National Food Group

It is clear from this response that the broad line provider, Gordon Food Service, along with Sysco to a much lesser extent serves most of the schools in the region.

Provided with a list of 20 processed (i.e. cut, bagged, dried, frozen, etc.) produce items and 20 unprocessed, fresh, whole produce items, respondents were asked to select and rank the five processed and five fresh items that were most popular during school year 2010-2011. The following table displays the entire list of processed and unprocessed produce items and the number of respondents that selected each item. There was no distinction draw in this question between “local” and “non-local” sourced produce.

### 3: Processed and Unprocessed Food Items

Processed Produce	Respondents Selecting Item		Unprocessed Produce	Respondents Selecting Item	
	Number	Percent		Number	Percent
Carrot sticks/baby carrots	14	66.7	Apples	18	85.1
Apple slices	9	42.9	Bananas	13	61.9
Lettuce - chopped/shredded	9	42.9	Oranges	12	57.1
Potatoes - diced/fries	8	38.1	Grapes	11	52.4
Salad mix	7	33.3	Cucumbers	6	28.6
Pears	5	23.8	Lettuce	5	23.8
Celery sticks	5	23.8	Pears	5	23.8
Strawberries - frozen	5	23.8	Carrots	3	14.3
Tomatoes - sliced/diced	5	23.8	Tomatoes	3	14.3
Broccoli florets/chopped	4	19.0	Onions	3	14.3
Orange wedges	4	19.0	Watermelon	3	14.3
Green beans - frozen	3	14.3	Potatoes	2	9.5
Blueberries - frozen	3	14.3	Broccoli	1	4.8
Cherries - dried	2	9.5	Celery	1	4.8
Cucumbers - sliced	2	9.5	Peppers, bell	1	4.8
Raisins - boxed	2	9.5	Pineapple	1	4.8
Peas - frozen	1	4.8	Spinach	1	4.8
Cole slaw mix	0	0	Cantaloupe	0	0
Cauliflower florets/chopped	0	0	Cauliflower	0	0
Peppers, bell - sliced	0	0	Greens, cooking	0	0

Respondents were provided lists of vegetables fruits, meat products, dairy products, grain products and beans/legumes and were asked to check the ones that they had purchased locally in any form during the 2010-2011 school year. The following tables display the number and percent of respondents who reported purchasing each listed item.

#### 4: Local Vegetables

Local Vegetables	Number that Purchased	Percent that Purchased
Cucumbers	10	47.6
Tomatoes, slicing	9	42.9
Asparagus	9	42.9
Tomatoes, cherry or grape	8	38.1
Onions	8	38.1
Cauliflower	8	38.1
Carrots	7	33.3
Broccoli	7	33.3
Peppers	7	33.3
Salad greens	7	33.3
Corn	6	28.6
Beans, green	6	28.6
Cabbage, green or red	6	28.6
Potatoes	5	23.8
Radishes	4	19.0
Spinach	3	14.3
Greens, cooking (collards, kale, etc.)	2	9.5
Pumpkins	2	9.5
Peas	2	9.5
Herbs (basil, dill, etc.)	2	9.5
Sweet potatoes	2	9.5
Squash, winter	2	9.5
Chard	2	9.5
Rutabaga	2	9.5
Lettuce	1	4.8
Mushrooms	1	4.8
Beets	1	4.8
Parsnips	1	4.8
Turnips	1	4.8
Edamame	1	4.8
Kohlrabi	1	4.8
Brussel Sprouts	0	0
Eggplant	0	0

## 5: Local Fruits

Local Fruits	Number that Purchased	Percent that Purchased
Apples	12	57.1
Peaches	8	38.1
Watermelon	7	33.3
Blueberries	6	28.6
Strawberries	6	28.6
Cherries	5	23.8
Plums	5	23.8
Raspberries	4	19.0
Grapes	4	19.0
Cantaloupe	3	14.3
Blackberries	1	4.8
Rhubarb	1	4.8

Respondents were provided lists of vegetables fruits, meat products, dairy products, grain products and beans/legumes in various forms and were asked to check any items that they would be interested in purchasing locally in the future. The strongest interest in purchasing local foods was for vegetables and fruit. The following tables display the number of respondents interested in purchasing each listed item.

## 6: Interest in Vegetable Purchase

Fresh and Whole Vegetables	Interest in Purchasing Locally		Processed Vegetables	Interest in Purchasing Locally		Frozen Vegetables	Interested in Purchasing Locally	
	Number	Percent		Number	Percent		Number	Percent
Cucumbers	12	57.1	Carrots	7	33.3	Beans, green	7	33.3
Tomatoes, cherry or grape	12	57.1	Salad greens	6	28.6	Corn	6	28.6
Peppers	8	38.1	Cabbage, Green or red	6	28.6	Broccoli	6	28.6
Potatoes	8	31.8	Spinach	5	23.8	Peas	5	23.8
Asparagus	8	31.8	Cauliflower	4	19.0	Asparagus	5	23.8
Lettuce	8	38.1	Lettuce	4	19.0	Cauliflower	5	23.8
Tomatoes, slicing	7	33.3	Sweet potatoes	4	19.0	Carrots	4	19.0
Carrots	7	33.3	Broccoli	4	19.0	Sweet potatoes	3	14.3
Onions	6	28.6	Herbs (basil, dill, etc.)	4	19.0	Onions	2	9.5
Sweet potatoes	6	28.6	Tomatoes, cherry or grape	3	14.3	Chard	2	9.5
Spinach	6	28.6	Potatoes	3	14.3	Edamame	1	4.8
Squash, winter	6	28.6	Tomatoes, slicing	2	9.5	Lettuce	1	4.8
Beans, green	5	23.8	Beans, green	2	9.5	Pumpkins	1	4.8
Cabbage, green or red	5	23.8	Onions	2	9.5	Potatoes	1	4.8
Cauliflower	5	23.8	Peppers	2	9.5	Spinach	1	4.8
Salad greens	5	23.8	Mushrooms	2	9.5	Greens, cooking (collards, kale, etc.)	1	4.8
Herbs (basil, dill, etc.)	5	23.8	Squash, winter	2	9.5	Brussel Sprouts	0	0
Radishes	5	23.8	Peas	2	9.5	Squash, winter	0	0
Broccoli	4	19.0	Corn	1	4.8	Peppers	0	0
Mushrooms	4	19.1	Greens, cooking (collards, kale, etc.)	1	4.8	Cucumbers	0	0
Corn	3	14.3	Radishes	1	4.8	Beets	0	0
Rutabaga	3	14.3	Brussel Sprouts	1	4.8	Cabbage, green or red	0	0
Peas	2	9.5	Pumpkins	1	4.8	Tomatoes, cherry or grape	0	0
Pumpkins	2	9.5	Asparagus	0	0	Mushrooms	0	0
Edamame	1	4.8	Cucumbers	0	0	Parsnips	0	0
Brussel Sprouts	1	4.8	Beets	0	0	Rutabaga	0	0
Beets	1	4.8	Eggplant	0	0	Tomatoes, slicing	0	0
Kohlrabi	1	4.8	Parsnips	0	0	Eggplant	0	0
Greens, cooking (collards, kale, etc.)	1	4.8	Edamame	0	0	Herbs (basil, dill, etc.)	0	0
Chard	1	4.8	Kohlrabi	0	0	Kohlrabi	0	0
Parsnips	1	4.8	Chard	0	0	Radishes	0	0
Turnips	0	0	Turnips	0	0	Salad greens	0	0
Eggplant	0	0	Rutabaga	0	0	Turnips	0	0

## 7: Interest in Fruit Purchase

Fresh and Whole Fruit	Interest in Purchasing Locally		Processed Fruit (chopped, sliced, shredded, etc.)	Interest in Purchasing Locally		Frozen Fruit	Interest in Purchasing Locally	
	Number	Percent		Number	Percent		Number	Percent
Apples	9	42.9	Apples	4	19.0	Strawberries	5	23.8
Strawberries	9	42.9	Cantaloupe	2	9.5	Blueberries	3	14.3
Watermelon	9	42.9	Cherries	1	4.8	Cherries	3	14.3
Peaches	9	42.9	Peaches	1	4.8	Peaches	2	9.5
Cantaloupe	8	38.1	Strawberries	1	4.8	Blackberries	2	9.5
Blueberries	8	38.1	Watermelon	1	4.8	Grapes	1	4.8
Cherries	7	33.3	Grapes	0	0	Apples	0	0
Blackberries	7	33.3	Blueberries	0	0	Plums	0	0
Raspberries	7	33.3	Raspberries	0	0	Cantaloupe	0	0
Plums	6	28.6	Rhubarb	0	0	Rhubarb	0	0
Rhubarb	4	19.0	Plums	0	0	Watermelon	0	0

It is apparent from these tables that there is substantially more interest in whole fresh fruits and vegetables (than frozen or processed) on the part of schools in the region. There is apparently more interest in processed vegetables than in frozen and just the opposite when considering fruit.

Respondents were provided with a list of possible motivators to serve locally grown or processed food in their school/district and each was asked to select the top three motivators for him/herself. The top motivators reported were an interest in supporting local farms, supporting the local economy and the quality of the food to be purchased. The most important barriers identified by the respondents proved to be the lack of availability of foods during the school year, food safety concerns and budget restrictions. Also of lesser concern were state and federal procurement policies, the lack of local producers, and the inconvenience of purchasing from local sources.

Respondents were provided with a list of possible logistical challenges to serve locally grown or processed food in their school/district and each was asked to select the top three logistical challenges motivators for him/herself. The most commonly noted challenges were the lack of a distribution method to get local food to the school, lack of labor to prepare the food and lack of the proper equipment to prepare the food.

A number of things are evident in this survey data. If it can be assumed that the roughly half of the schools surveyed that responded were those most interested in local foods, Gordon Food Service is by far the most important distributor in reaching those schools. Secondly the greatest interest is in “fresh whole” fruits and vegetables. This is consistent with comments from distributors that suggest that processing and freezing makes little sense until they are able to procure enough fresh produce to satisfy

that market segment. Both high quality and food safety are important concerns to food service directors. They think they get a fresher, higher quality product with local produce but they are also concerned with food safety. Of course availability during the school year is a problem in serving this market.

### Distribution of Local Foods in the Region

Although it was difficult to obtain good data on distributor purchases in the region, the following information was available.

#### 8: Identified Distributor Purchases by County, 2012

2012 Produce Purchases	
County	Purchases
Benzie	\$ 31,913.00
Clare	\$ 840.00
Grand Traverse	\$ 52,580.00
Kalkaska	\$ -
Lake	\$ -
Leelanau	\$ 78,328.00
Manistee	\$ 16,380.00
Mason	\$ -
Mecosta	\$ -
Missaukee	\$ 600.00
Osceola	\$ 41,961.00
Roscommon	\$ -
Wexford	\$ 2,825.00
14 County Total	\$ 225,427.00

## PRODUCTION

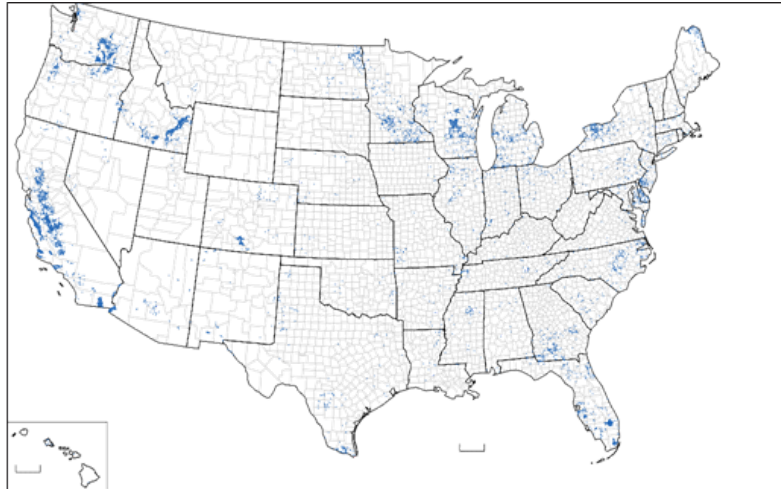
### US Production

Fruits and vegetables are of course grown widely across the United States, mostly for domestic consumption. There is often interest in promoting the development of produce farms because the land use is much more intensive. Because high crop values can be obtained per acre of land, reasoning goes, less land is required than for many field crops such as corn or soybeans and thus it is easier to start up produce farming operations. However the challenges faced by growers in the industry are substantial. For instance, high quality is critical and shelf life is often short.

For vegetable growers especially, the infrastructure for production and moving that production to market no longer exists in most areas of the country. The rule of thumb is that 25 acres of production of a vegetable are needed in order to ship by the truckload quantity wanted by the broad-line distributor. The labor needed to grow from a family operation to a larger scale is difficult to obtain. Although the production risks are very high, our highly subsidized federal crop insurance program is available only in counties with significant production in place. In practice this generally limits insurance to areas of

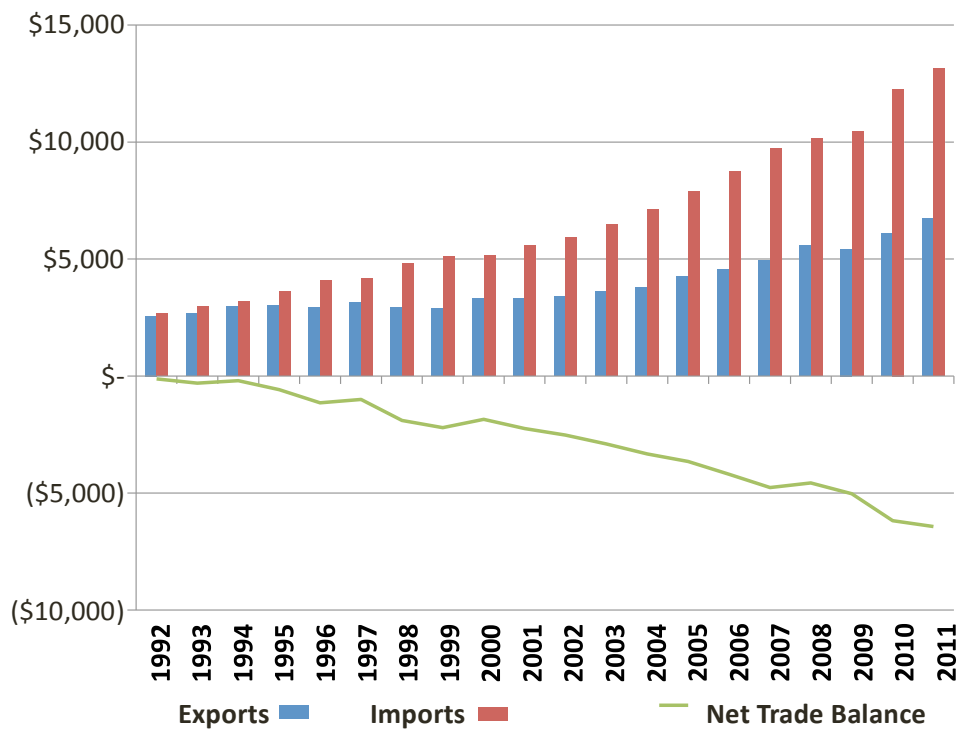
California and Florida. The capital, equipment and knowledge base needed to operate a produce farm of at least 25 acres is often not available.

### 9: Land Used for Vegetables (2007)



(Source: Prepared by USDA, Economic Research Service using data from USDA, National Agricultural Statistics Service, 2002 Census of Agriculture)

### 10: US Fresh Produce Trade--Annual



(Source: USDA FAS)



## 11: Principal Vegetables Table

Principal vegetables, fresh market: Acres, production, and value, 2008-2012 <sup>1</sup>				
Year	Planted	Harvested	Production	Value
	<i>Acres</i>	<i>Acres</i>	<i>1,000 cwt</i>	<i>1,000 dollars</i>
2008	56,700	53,800	8,396	169,990
2009	57,500	54,500	9,100	171,540
2010	57,500	55,200	8,390	174,700
2011	55,800	52,700	8,082	170,667
2012	53,200	49,200	7,916	175,883

<sup>1</sup> Includes dual purpose vegetables.

Principal vegetables, processing: Acres, production, and value, 2008-2012 <sup>1</sup>				
Year	Planted	Harvested	Production	Value
	<i>Acres</i>	<i>Acres</i>	<i>Tons</i>	<i>1,000 dollars</i>
2008	52,700	51,600	413,350	69,240
2009 <sup>2</sup>	53,500	52,400	386,280	77,936
2010 <sup>2</sup>	50,300	49,300	372,810	75,288
2011 <sup>2</sup>	51,800	50,700	334,520	71,201
2012 <sup>2</sup>	51,300	50,000	348,680	68,123

<sup>1</sup> Excludes dual purpose vegetables.

<sup>2</sup> Processing carrots excluded to avoid disclosure of individual operations.

*(Source: Michigan Agricultural Statistics, 2012-2013, USDA National Agricultural Statistics Service)*

Fresh market vegetables included in this table include snap beans, cabbage, carrots, sweet corn, cucumbers, onions and tomatoes. Dual purpose vegetables include asparagus, celery, bell peppers, pumpkins and squash. As indicated by these numbers the “farm gate” average value for these common vegetables in 2012 was \$3,574 per acre harvested. Averaging the value of Michigan fruit in the years 2010 and 2011 provides a value of \$3,470 per acre.

### Regional Production

#### Produce grown in the region

The 2007 census of agriculture revealed that the 14 county region harvested 6,629 acres of vegetables other than potatoes in 2007. Using the average Michigan farm gate value of those vegetables of \$1,916 per acre results in an approximate value of the region’s vegetable harvest at \$12.7 million. In 2010 NASS estimated that 27,547 acres of fruit was harvested in the region for a value of \$76.6 million. These numbers are low because of the NASS practice of withholding information when that information would compromise the confidentiality of any one farm. The Appendices contain the acres harvested and number of operations by fruit and vegetable item by county in the region.

#### Regional grower interest in a HUB

In December 2012 a survey was conducted by the National Agricultural Statistics Service Michigan Field Office (NASS) for this feasibility study. Of the 656 farmers engaged in either fruit or vegetable farming in the 14 county region according to census data, 165 (25.2%) reported that they were either no longer farming or not farming either fruit or vegetables. Those farming one or the other crop and completing at

least part of the survey totaled 302 for an overall response rate of 46% and a response from those still growing produce of 61%. Non-responses or those refusing to respond to the follow up telephone calls totaled 189 (28.8%).

### 12: Grower Survey Response by County

County	Not_farming	No_fruit_veg	refused	no_report	farm_rept	Total	Non-response
Benzie	3	9	1	12	24	49	26.5%
Clare	3	8	0	10	8	29	34.5%
Crawford	1	1	0	0	5	7	0.0%
Grand Traverse	4	16	7	25	50	102	31.4%
Kalkaska	1	10	1	4	12	28	17.9%
Lake	0	6	0	5	3	14	35.7%
Leelanau	6	14	3	28	72	123	25.2%
Manistee	4	10	2	14	29	59	27.1%
Mason	3	14	3	16	44	80	23.8%
Mecosta	0	7	1	18	17	43	44.2%
Missaukee	2	6	1	5	11	25	24.0%
Osceola	2	18	2	20	14	56	39.3%
Roscommon	0	1	2	1	2	6	50.0%
Wexford	3	13	1	7	11	35	22.9%
Total	32	133	24	165	302	656	28.8%
	4.9%	20.3%	3.7%	25.2%	46.0%		

The respondents reported 27,168.5 acres being harvested in 2012, 17,449.1 acres of fruit crops and 9,719.4 acres of vegetable crops. The respondents were asked about their interest in selling to a HUB. The responses indicated that growers representing about 6% of the acres were very interested in selling some portion of their production to a HUB. Of the 240 acres farmed by very interested vegetable growers, farmers interested in selling 100% of their crop to a HUB farm 47.05 acres. Of the 1,496.85 acres harvested by fruit growers very interested in a HUB, growers harvesting just 25.25 acres are interested in selling 100% of their crop to a HUB. The remainder of the growers in each case reported that they were interested in selling less than their entire crop to a HUB.

### 13: Grower Interest in Selling to a HUB by Acres

Interest in selling to a HUB	Fruit Acres	Vegetable Acres	Total acres
Very interested	1,496.85	240.15	1,737.00
Somewhat interested	5,184.00	1,766.95	6,950.95
Not interested	10,762.27	7,711.85	18,474.12

**14: Number and Size of Vegetables Growers Interested in Selling to a HUB**

Vegetable Acres Farmed	Total Number of Farms of this Size	Somewhat Interested in Selling to a HUB	Not at all Interested in Selling to a HUB	Very Interested in Selling to a HUB
	121	37	71	11
0.00	2	1		1
0.10	3		2	1
0.25	5	3	2	
0.30	1			1
0.40	1		1	
0.50	23	8	12	2
0.75	2		1	1
1.00	36	11	14	11
1.50	5	2	1	2
1.70	1	1		
2.00	18	5	5	8
2.50	1	1		
3.00	10	4	4	2
4.00	12	5	1	6
4.50	1		1	
5.00	3	1	1	1
6.00	6	2	2	2
7.00	3		3	
8.00	2	1	1	
10.00	8	4	2	2
12.00	1		1	
13.00	1	1		
14.00	2		2	
18.00	1			1
25.00	2		2	
27.00	1		1	
30.00	2	1	1	
35.00	1	1		
40.00	3	2		1
45.00	1		1	
50.00	2	2		
60.00	1		1	
80.00	2		2	
82.00	1	1		
85.00	2		1	1
110.00	1		1	

112.00	1	1		
168.00	1	1		
177.00	1	1		
200.00	1	1		
370.00	1		1	
400.00	1		1	
465.00	1		1	
500.00	1		1	
640.00	1	1		
750.00	1		1	
4,500.00	1		1	

The farms that report that they are very interested in selling to a HUB are clustered in size between 1 and 4 acres. In fact 70% of the farms of this size expressed some level of interest in doing business with a HUB while only 47% of farms over 25 acres had any interest. Farms between 1 and 4 acres are probably of a size where selling all of their production direct to the consumer is getting to be untenable while at the same time they are not large enough to sell to a processor, thus their interest in aggregation in order to find new market channels. When asked to comment on the concept of a food HUB for aggregation, the most common concern is about price/profitability with labor concerns being the second most common response. Many farms of this size are probably caught in the difficult position of wanting/needing retail prices for their production while at the same time having outgrown their ability to move all of that production at those prices. From the perspective of time and skills there is too much labor involved and too many hats to wear (i.e. marketing, selling, washing, culling, packaging etc.) for the operator. The NASS estimate for Michigan 2012 average farm gate value for the common vegetables is \$3,574 per acre (see above).

The one Michigan example of a profitable for-profit aggregator/distributor for which sales and the number of suppliers are available is Walsma & Lyons. As discussed below this company reports \$20 million in sales and only 15 Michigan suppliers. The company supplements its Michigan sources with off season suppliers out of state, although to a unknown extent. However, if all of their supply came from Michigan farms those farms would average about 370 acres each. This size is in stark contrast to the size of farms expressing interest in selling to a HUB in this survey. It also suggests that farms successful in selling into a wholesale channel are larger than those expressing interest in selling to a HUB in this survey.

### 15: Growers Very Interested in Selling to a HUB by County

County	Number of Vegetable Growers	Acres	Number of Fruit Growers	Acres
Benzie	0	0.00	1	4.00
Clare	2	2.50	1	0.25
Crawford	2	3.00	0	0.00
Grand Traverse	8	23.50	7	402.15
Kalkaska	2	2.00	2	2.00
Lake	1	1.00	0	0.00
Leelanau	9	38.30	11	877.75
Manistee	4	89.00	5	158.10
Mason	3	43.00	1	50.00
Mecosta	1	5.00	0	0.00
Missaukee	2	8.00	2	1.10
Osceola	3	8.75	0	0.00
Wexford	5	16.00	2	1.50
<b>Total</b>	<b>42</b>	<b>240.05</b>	<b>32</b>	<b>1496.85</b>

### 16: Growers Very Interested in Contracting with a HUB by County

County	Number of Vegetable Growers	Acres	Number of Fruit Growers	Acres
Benzie	0	0.00	1	4.00
Clare	2	2.50	1	0.25
Crawford	2	3.00	0	0.00
Grand Traverse	4	14.00	4	307.75
Kalkaska	1	1.50	1	0.50
Lake	1	1.00	0	0.00
Leelanau	4	10.00	6	699.25
Manistee	1	0.10	2	6.10
Mason	2	3.00	1	50.00
Mecosta	1	5.00	0	0.00
Missaukee	2	5.00	2	8.00
Osceola	3	8.75	0	0.00
Wexford	3	14.00	1	1.00
<b>Total</b>	<b>26</b>	<b>67.85</b>	<b>19</b>	<b>1076.85</b>

## 17: Growers Interest in Selling to a HUB and Their Capabilities

Growers with seasonal extension capability, packing facility or refrigerated trucking				Grower Interest in Selling to a HUB		
Season Extend	Pack Facility	Refrig Truck	# of respondents	Not at all	Somewhat	Very
yes	yes	yes	1		1	
yes	yes	no	21	6	10	5
yes	no	yes	1		1	
yes	no	no	40	11	15	14
no	yes	yes	3		1	2
no	yes	no	10	4	4	2
no	no	yes	4	1		3
no	no	no	218	121	67	27

Of those growers who are very interested in selling to a HUB, 4 are GAP certified and 5 are Michigan Safe Food certified. Of those only somewhat interested 11 are GAP certified and 7 are Michigan Safe Food Certified.

Preserving what is called the “cold chain” is critical to preserving high quality in the industry. There are various methods used to cool the product after harvest including hydro coolers and refrigeration, but removing the heat from the field and then maintaining that temperature until the product is in the hands of the consumer is critical to quality. Different products require different temperature ranges requiring that an aggregation facility have refrigeration capacity in three different ranges to handle a wide range of produce.

When growers were asked in the survey if they had refrigeration capacity, 40 of the fruit growers either who were either “very” or “somewhat” interested in selling to a HUB harvesting 2,922 acres reported that they had a combined 94,718 cubic feet of capacity. Of the vegetable growers 51 reporting the same level of interest farming 344 acres reported cooling capacity of 81,198 cubic feet. Many of these growers were producing both vegetables and fruit so the total cooling capacity is not the combination of these two numbers. In fact just 3 producers growing both fruits and vegetables reported a total of 52,000 cf of that cooling capacity.

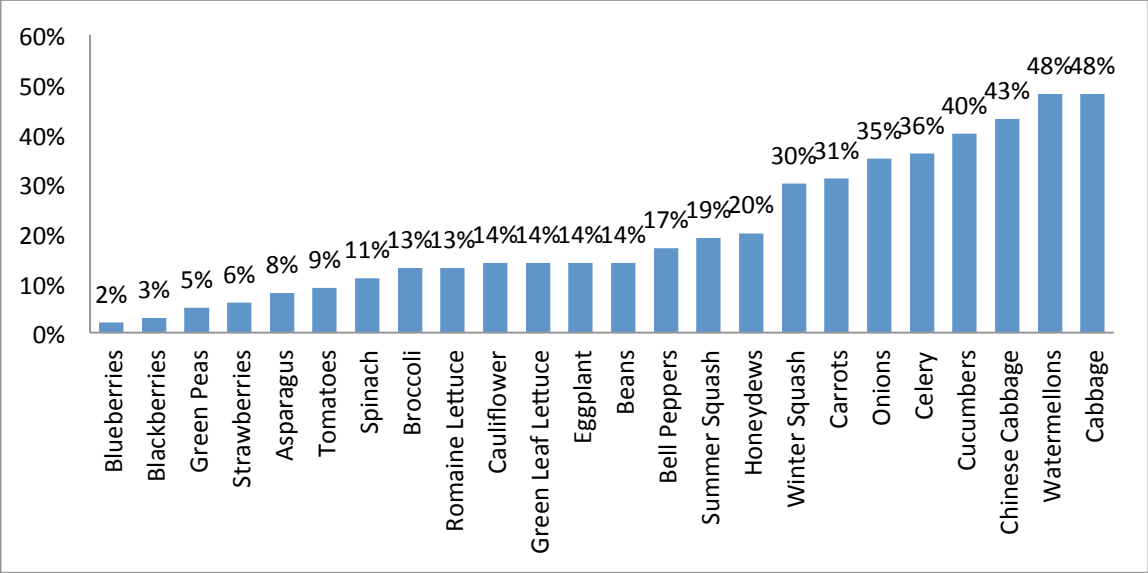
When growers with interest in selling to a HUB were asked for any additional comments or concerns about a HUB, the most common concern was for price. Despite the description of a HUB that was provided some were interested in selling only if they could get a retail price. The second most common concern was the difficulty obtaining adequate farm labor.

### Competitiveness of Regional Growers

Transportation costs make up most of the margin between California farm gate prices and Midwest terminal or wholesale prices. A refrigerated shipment from the west costs about \$6,000 or 15 cents per pound. Because this cost is the same for any produce, a grower in the

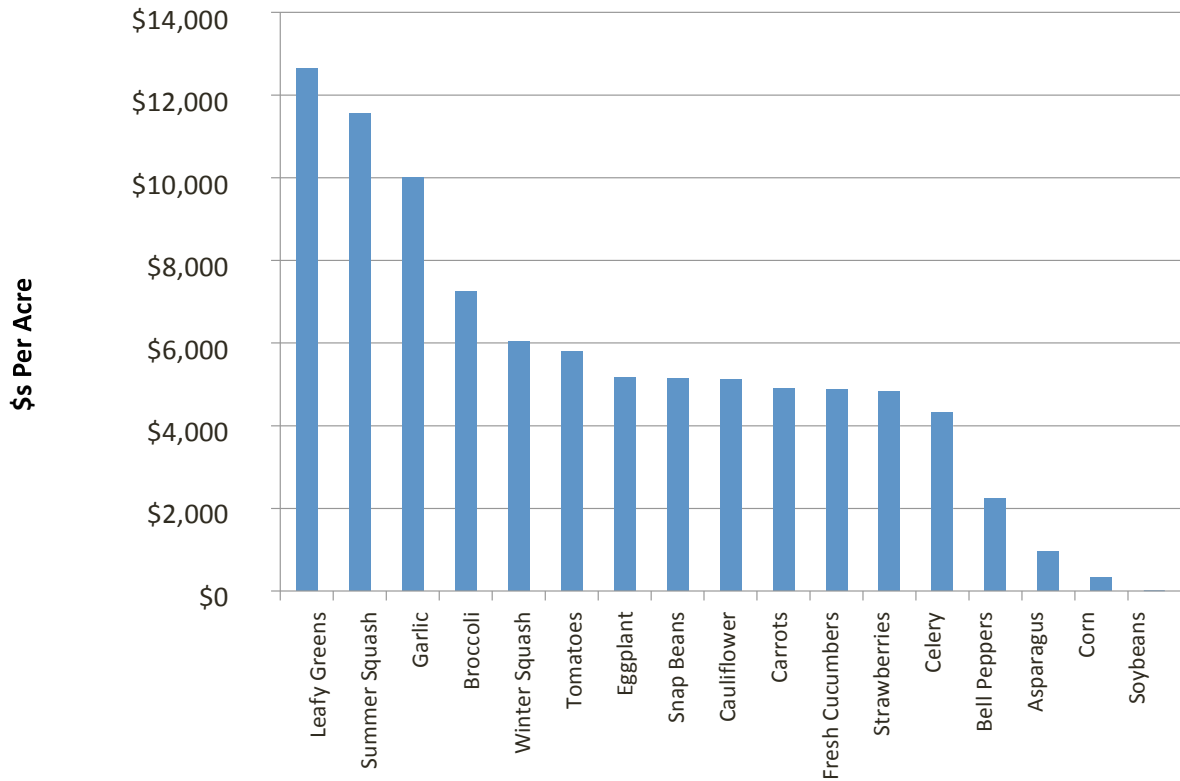
Midwest has a greater competitive advantage with lower value produce. This is because the shipping cost is a greater portion of the wholesale value. The following table provides the portion of wholesale price attributable to the cost of transportation from California.

**18: Transportation Cost from California as a Percentage of Wholesale Prices**



(Source: AMS Trucking Rate Report, AMS Terminal Market Price Report)

### 19: Estimates of Profit with Average Yields



(Source: University of Wisconsin Madison-Extension, Iowa State University, North Carolina State University, University of California-Davis, University of California-Berkeley, and USDA ERS)

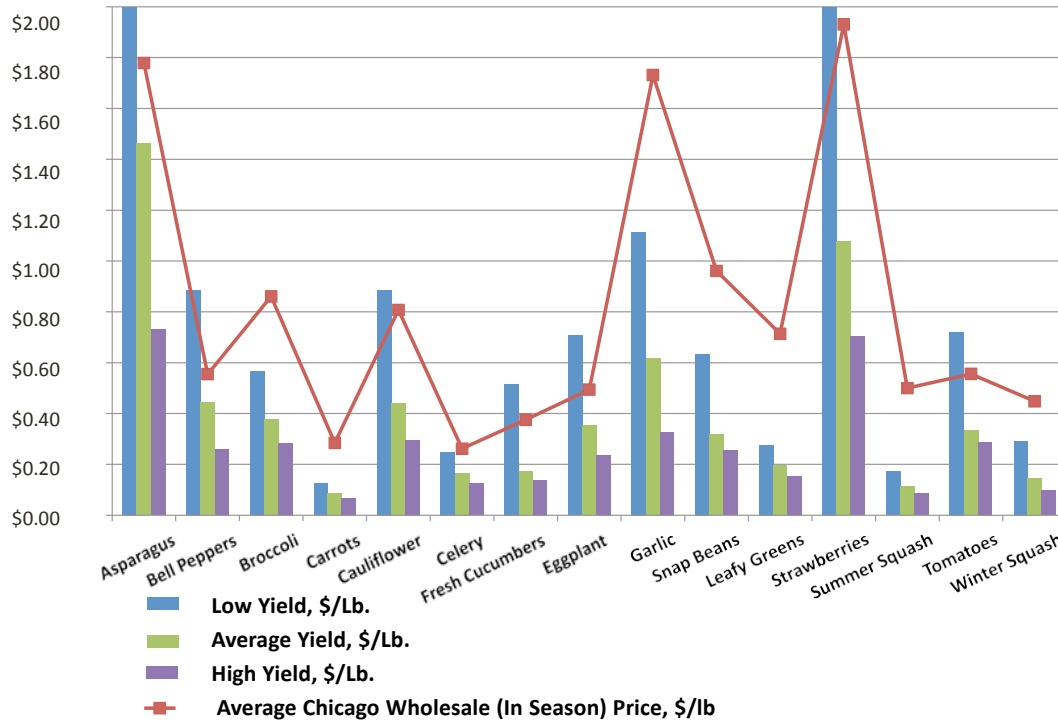
### 20: Labor Needs of Production

Labor Needs	Hours Labor (25 Acres)	Full Time Equivalent (2,000 Hours Per Unit)	Part Time Equivalent (600 Hours Per Unit)
Winter Squash	2,921	2	5
Fresh Cucumbers	4,319	3	8
Leafy Greens	4,650	3	8
Broccoli	5,553	3	10
Cauliflower	5,731	3	10
Tomatoes	6,313	4	11
Eggplant	6,635	4	12
Bell Peppers	8,162	5	14
Labor Needs for Select Crops (25 acre production)			

(Source: University of Wisconsin Madison-Extension, Iowa State University, North Carolina State University, University of California-Davis, University of California-Berkeley, USDA ERS)



## 21: Breakeven Cost of Production with Average Labor Costs and Varying Yields



(Sources: University of Wisconsin Madison-Ext., Iowa State University, North Carolina State University, University of California-Davis, University of California-Berkeley, USDA ERS) Reprinted from the Local Food Prospectus for the Tri-State Region

The authors of the study "Local Food Prospectus for the Tri-State Region" (an analysis of the prospects of increasing local produce production in the Wisconsin/Illinois/Iowa/region) looked in some detail at the efficiencies of the current national and increasingly international food distribution system as compared to the common "local" food system in this country. It was their finding that the inefficiencies of moving 200 pounds of local food 20 miles are equivalent to moving 30,000 pounds 3000 miles.

As we have seen, the local food system in the region is typified by small producers that focus on retail market channels. The "buy local" movement has provided additional market opportunities for local growers as well as potentially premium prices. However, local growers are failing to take advantage of their market opportunity by failing to gain access to the traditional distribution system where the vast majority of produce is moved to market. The industry faces significant challenges to exploiting these market opportunities. Although the cost of shipping produce from the west coast is easily apparent, the inefficiencies of the typical "local food" distribution system can be just as great. Food produced in relatively small amounts in scattered locations is expensive to accumulate. It is also difficult to manage such things as quality and production schedules among many independent operators. Traditional broad-line

distributors are accustomed to handling truck load shipments from the west coast. It has been

estimated that for many produce items it requires 25 acres of production to provide that level of volume. Getting than 25 acres from a number of sources increases the logistical challenge faced by the local food system.

**22: In Season Midwest Balance of Trade of Selected Crops**

Produce	Chicago Price Change since 2003	In Season Midwest Balance of Trade
BLACKBERRIES	-11.13%	Net Export
BEANS	2.31%	Net Export
HONEYDEWS	9.53%	Net Import
LETTUCE, ROMAINE	11.04%	Net Import
BLUEBERRIES	14.02%	Net Export
PEPPERS, BELL TYPE	19.68%	Net Import
CUCUMBERS	21.15%	Net Export
EGGPLANT	25.00%	Net Import
STRAWBERRIES	25.68%	Net Import
LETTUCE, GREEN LEAF	26.02%	Net Import
LETTUCE, ICEBERG	26.77%	Net Import
POTATOES	27.95%	Net Export
CABBAGE	49.20%	Net Export
CAULIFLOWER	64.37%	Net Import
GARLIC	64.49%	Net Import
SPINACH	69.14%	Net Import
BROCCOLI	84.60%	Net Import
TOMATOES	127.01%	Net Import

*(Source: USDA AMS and USDA ERS)*

Table 22 shows the fresh market crops that are in shortage in the Midwest during the seasonal production periods. There is a stark correlation between produce that is in shortage and wholesale price changes since 2003. Crops in shortage have had an average price increase of 46% from 2003 to 2012 compared to 17% for crops produced region- ally.<sup>17</sup> The vast majority of this difference is attributable to rising transportation costs for refrigerated long-haul freight.

Researchers at Ohio State published a report in 2011 (Scaling-up: Connections between Regional Ohio Specialty Crop Producers and Local Markets: Distribution as the Missing Link, August 1, 2011, Jill K. Clark, Shoshanah Inwood, Jeff S. Shar, The Ohio State University) that was the product of substantial surveys of both retailers and distributors in the State. Their findings are probably instructive for neighboring Midwest States such as Michigan.

Their retailer surveys revealed the following:

- As retailers grow in size, distribution becomes increasingly formalized and vertically integrated. As a result, the opportunities for small and medium-sized Ohio farmers to service large-scale retailers are reduced.

- The regional and national chains we interviewed have longstanding direct relationships with larger farms, grower- shippers, and co-ops, able to supply the quantity and quality products desired.
- Among the retailers we interviewed who were committed to purchasing from local growers and supporting the local community, the challenge of purchasing from multiple farmers and managing too many vendor accounts is a potential limitation and frustration.
- Retailers emphasized the desire to have a relationship and know the farmers they are purchasing from, but have a consistent and efficient ordering and distribution system.
- While food safety is a concern for all retailers, the larger retailers seek formalized certifications, especially those purchasing from large-scale farmers or companies not in close proximity. The greater physical and social distance from the actual producers creates the need for extra security, often achieved via third-party certification.
- Many of the retailers interviewed are slowly embracing the trend of identity preservation of local produce by not only marketing “local” but also creating signage that identifies the specific farm on which the food was grown.

The distributor survey completed as part of that study revealed the following:

- Thirty-nine fruit and vegetable distributors responded to the survey. These distributors represent 219 distribution facilities in Ohio and employ 753 full-time and 37,620 part-time workers.
- Many of the distributor respondents are distributing more than just fruits and vegetables, often carrying dairy and eggs.
- Almost all respondents are supplying produce to supermarkets that focus on general line food, followed by convenience or corner stores and greenmarket or specialty produce stores. Only about a quarter of surveyed distributors are supplying discount supermarkets and supercenters, superstores, and warehouse clubs, which follows the dominant model where these types of stores rely on their own distribution capacity.
- The majority of all surveyed distributors agreed that their transportation costs are lowered by using Ohio produce.
- All respondents reported similar requirements for food safety, traceability, and inventory management.
- Many of the surveyed distributors are interested in partnering with growers and agencies to develop infrastructure that would increase the flow of Ohio-grown produce.
- Creating relationships of trust between distributors and producers is key to expanding market opportunities for Ohio-grown fruits and vegetables.
- All large distributors surveyed require third-party food safety certification. Certification requirements were more variable with other sized distributors.
- To a small degree, desire to source produce from a central aggregation center declined with firm size, although the majority of all distributors, no matter what type, were interested.
- Motivations for purchasing Ohio produce varied by the size of distributor.

- Large distributors reported a desire to purchase Ohio because they feel their customers care that produce is raised in Ohio. Yet these same distributors were less likely themselves to believe Ohio produce is inherently a better product.
- The rest of distributors believe that Ohio produce is fresher in season. Furthermore, they are more committed to purchasing Ohio produce.
- Distributors indicated they do not use farmer directories to source new products.

## SAFETY ISSUES

There are three standards that are important in the industry, they are “Good Agricultural Practices referred to as GAP”, “Current Good Manufacturing Practices or CGMP” and a “Hazard Analysis and Critical Control Point (HACCP)” system. The GAP standards establish good practices for growers while the CGMPs establish practices for processors who manufacture, process, pack, or hold processed food. HACCP is a “prevention-based food safety system designed to prevent, reduce to acceptable levels, or eliminate the microbial, chemical, and physical hazards associated with food production. One strength of HACCP is its proactive approach to prevent food contamination rather than trying to identify and control contamination after it has occurred.” (Guide to Minimize Microbial Food Safety Hazards of Fresh-cut Fruits and Vegetables, Feb 25, 2008, FDA)

The Food and Drug Administration has published a document entitled a “Guide to Minimize Microbial Food Safety Hazards of Fresh-cut Fruits and Vegetables”. The guide distinguishes between “whole fresh” or raw agricultural commodities (RAC) and “fresh cut” in how it advises the industry on HACCP/CGMP

The FDA defines whole fresh as “fresh produce that is likely to be sold to consumers in an unprocessed (i.e., raw) form. Fresh produce may be intact, such as whole strawberries, carrots, radishes, or tomatoes, or cut from roots or stems during harvesting, such as celery, broccoli, lettuce, or cauliflower.”

It defines fresh-cut fruits and vegetables as having “been minimally processed (e.g., no lethal kill step), and altered in form, by peeling, slicing, chopping, shredding, coring, or trimming, with or without washing or other treatment, prior to being packaged for use by the consumer or a retail establishment.” A raw agricultural commodity (RAC) on the other hand is defined as a “fresh produce that is likely to be sold to consumers in an unprocessed (i.e., raw) form. Fresh produce may be intact, such as whole strawberries, carrots, radishes, or tomatoes, or cut from roots or stems during harvesting, such as celery, broccoli, lettuce, or cauliflower.”

Fresh cut produce must follow the requirements of CGMP as stipulated by the FDA while a RAC does not. The HACCP process is encouraged by the FDA and is becoming a standard practice in the industry. The HACCP process is more prevention oriented than the CGMP and is designed to reduce to acceptable levels, or eliminate the microbial, chemical, and physical hazards associated with food production.

Thus a produce aggregation facility need not legally comply with either CGMP or HACCP protocol to the extent that it only handles fresh whole produce or raw agricultural commodities. The local distributor on which the facility might rely for most of its distribution handles only fresh whole at this time. However

that distributor is currently third party certified for its CGMP compliance (it's more aggressive "eat local" customers require certification, especially in the health care industry) and would expect any aggregator to be thus certified and to use HAACP procedures to safeguard its operations. In the event that the aggregation facility were to supply a broad line distributor such as Sysco third party CGMP certification would be required.

In January the FDA published proposed new rules to update the 1986 rules for Current Good Manufacturing Practices, regulations regarding the manufacturing, processing, packing, or holding of food for human consumption. For the first time these proposed rules would require a HACCP like plan for facilities required to register as a food facility under the Food Safety Modernization Act (FSMA). Facilities would have to have a food safety plan prepared by a qualified individual, the facility would have to perform a hazard analysis and institute preventive controls for the mitigation of hazards. Facilities would have to monitor those controls and maintain documentation to demonstrate that the controls are effective and to record corrective actions. The application of preventive controls would be required only in instances where the facility determines that hazards are likely to occur.

The proposed rule includes exemptions that could, if adopted, exempt a start-up food HUB.

## **ECONOMIC VIABILITY**

In 2011, the USDA Agricultural Marketing Service completed telephone interviews of 20 more mature established Food HUBs (diverse in organizational structure and geographical location) in the preparation of their Regional Food HUB Resource Guide. Of the 20 interviewed, 10 identified themselves loosely as economically viable, that is, revenue generated from sales covered costs associated with aggregating, distributing and marketing or were on track to cover those costs (it should be recognized that such a definition is fairly subjective and that even these 10 may not be close to true profitability). The following figure compares those who describe themselves as viable and those who were not. Predictably the significant differentiating factors were longevity and the level of gross sales.

## 23: Characteristics of Regional Food HUBs Based on Economic Viability

	Currently Viable <sup>1</sup>	Not Yet Viable
<b>Region</b>	<ul style="list-style-type: none"> <li>• 4 hubs in the Midwest</li> <li>• hubs in the South</li> <li>• hubs in the Northwest</li> <li>• 2 hubs in the West</li> </ul>	<ul style="list-style-type: none"> <li>• 5 hubs in the Northeast</li> <li>• hubs in the Midwest</li> <li>• 1 hub in the Southwest</li> <li>• 1 hub in the West</li> </ul>
<b>Legal Structure</b>	<ul style="list-style-type: none"> <li>• 4 hubs are LLCs</li> <li>• hubs are nonprofit</li> <li>• hubs are cooperatives</li> <li>• 1 hub is a C corporation</li> </ul>	<ul style="list-style-type: none"> <li>• 4 hubs are nonprofit</li> <li>• hubs are LLCs</li> <li>• hubs are cooperatives</li> <li>• 1 hub is S corporation</li> </ul>
<b>Age of Hub</b>	<ul style="list-style-type: none"> <li>• Median: 9.5 years</li> <li>• Mean: 13.4 years</li> <li>• Range: 34</li> <li>• 8 of 10 hubs are at least 5 years old</li> </ul>	<ul style="list-style-type: none"> <li>• Median: 5 years</li> <li>• Mean: 7.1 years</li> <li>• Range: 23</li> <li>• 6 of 10 hubs are at least 5 years old</li> </ul>
<b>Annual Gross Sales</b>	<ul style="list-style-type: none"> <li>• Median: \$6 million</li> <li>• Mean: \$12.6 million</li> <li>• Range: \$1 million to \$40 million</li> </ul>	<ul style="list-style-type: none"> <li>• Median: \$500,000</li> <li>• Mean: \$950,000</li> <li>• Range: \$102,000 to \$5.5 million</li> </ul>

<sup>1</sup>Of those who considered themselves economically viable, all had gross sales of at least \$1 million and their median gross sales were \$6 million.

This study has focused on the feasibility of a for-profit HUB. Recent legislation has provided an additional option in the form of an L3C, (Dawn can you make this an upper case 3) or low profit Limited Liability Company. This option allows investors and entrepreneurs to pursue socially responsible and environmentally sustainable goals together with building equity for investors. In contrast with for-profit corporations the board of directors is not required to maximize profits for the investors. It allows better access to capital markets, makes it easier to pay higher compensation and provides potential exit strategies for investors. An L3C can qualify as a 501(C)(3) under some circumstances.

Financial models for a small for-profit local food aggregator are hard to find. The USDA Regional Food HUB Resource Guide provides some useful information as a result of their survey work. They provide the following examples;

- Local Food HUB – A Charlottesville VA non-profit distributor that purchased \$850,000 in local food in their first 28 months of operation. They operated out of a 3,500 sq. ft. warehouse.
- Tuscarora Organic Growers - Located east of Pittsburgh, PA, Tuscarora is a 40 member producer co-op established in 1988. It reports a 25% gross profit margin, retuning 75 % of sales to its members. It did about \$2 million in sales in 2010-2011.

- Intervale – A Burlington VT non-profit, the distributor/CSA works with 22 farmers with gross sales in 2010 of \$300,000. It reported a 15% gross profit margin on its distribution sales, returning 85% of sales to its growers.
- Walsma & Lyons – A for-profit fresh produce aggregator/distributor located in the Grand Rapids area, they are privately held. Established in 1979 they report \$20 million in sales. They sell to broad-line distributors as well as major retailers in the Great Lakes Region. They supplement their long term relationships with 15 growers with off season produce from southern and western states. They repack to provide smaller orders for institutional food service customers, preserve regional identity and provide their growers with liability insurance coverage. They assure their growers meet GAP standards.

While in practice the revenues of a NW Michigan food HUB would be divided between produce purchased from the farm and produce cross docked, that is produce that would continue to be owned by the farmer but on which the HUB would earn a commission for its collection, storage, and distribution or delivery to another distributor. Produce packed on the farm would be purchased outright from the grower. Produce packed by the HUB would be “on consignment” and the HUB would earn a packing fee and commission when it is sold. Currently the produce that moves to distributors is generally packed on the farm given the lack of available packing facilities in the region.

Identified purchases by distributors from growers in the region in 2012 were in excess of \$225,000. Theoretically a HUB engaged in aggregation/packing only and not distribution could capture those sales by agreement with distributors. In addition an aggregator engaged in packing activities could grow this volume by providing the following services for growers not currently available:

- Grading, washing, chopping, etc.
- Separation of produce into grades appropriate for specific markets (for example produce not appropriate for retail shelves (with cosmetic imperfections) can be used by food service operations as “ingredients”
- Repacking into delivery sizes appropriate for individual customers (many food service customers cannot utilize a full case at one time)
- At the point at which the fresh retail market is satisfied individual quick freeze technology could be engaged

There are not many examples of for-profit aggregator/distributors in the marketplace. Those that have demonstrated an ability to survive long term have, like the example of Walsma & Lyons above, done so through substantial volume. None of them in the USDA Agricultural Marketing service survey results described above had sales of under \$1 million with median sales of \$6 million. The volumes of produce entering the wholesale distribution market in the 14 county region appear to be substantially below this threshold at this time.

The region’s distributor specializing in local foods, Cherry Capital Foods, regards itself as a matchmaker and not an aggregator. They would like to see the development of an aggregator in the region because they believe one could make more local food available for distribution. As the financial analysis included

below suggests a good deal more local produce would have to be grown in the region to make aggregation feasible unless it was highly subsidized.

Most of the examples of for-profit aggregators in the marketplace would also suggest that that substantial increase in produce production would need to be concentrated geographically and in a relatively small number of farms in order to control transportation costs.

The Marketing Services Division of the Agricultural Marketing Service, USDA, published a paper in March of 2012 (Moving Food Along the Value Chain: Innovations in Regional Food Distribution) of the results of a series of case studies they wrote looking at various food HUB initiatives. The HUBs they looked at represented a range of organizations driven by both retail and producer interests. They included eight non-profits and co-op business models. Although no for-profit organizations were included in the paper, there appear to be a number of lessons learned from these case studies that are instructive to this present analysis. They include:

- Informal networks of farmers can be effective in meeting the needs of both growers and the marketplace. Farmers can benefit from being part of a network that does not require them to sell all of their production into one market channel, i.e. the food HUB aggregator/distributor. The HUB can be more flexible in meeting the needs of its market if it is not committed to purchase all of their member's production, especially when a wide variety of products are being traded..
- Non-profits especially have tended to make heavy and inappropriate investments in infrastructure. As a result a number of these distributors have had to convert their operations to facilitation of trading activity rather than physically operating warehouses and trucking fleets.
- The New North Florida Cooperative which associates itself strongly with small farmers has demonstrated that a HUB need not necessarily engage in a high level of specific farmer identification.

Sysco and Cherry Capital Foods have voiced a desire to work with an aggregator in the region. In the case of Sysco, they require GAP certification on the part of the farmer or at least the prospective of certification within a year's time. Those distributors foresee a growing market for local foods and want to develop the supply chain to meet that demand. The disconnect comes in the current market place where:

- Most customers are not willing to pay a premium for local produce
- The local food infrastructure is generally inefficient and thus costly
- The local farm business model is largely not oriented to wholesale production
- A local farm business model designed to compete in the international produce market is not likely to be developed until the infrastructure is developed to serve them. This infrastructure would include such things as a labor force, crop insurance, investment capital, the experience and skills base needed to operate the necessary farm business model, a regulatory climate that makes relatively small farms cost effective, and of course aggregation and distribution.



The development of this infrastructure is likely to be slow in developing given that both the growers and the infrastructure to support those growers will have to be developed simultaneously. Apparently the market side of the equation seems to be out in front of the development of the supply side.

The feasibility of a food HUB in the region begs the question of what a pro forma profit and loss statement might look like given the current circumstances identified in this report. Although such a P&L is largely conjecture at this point without a specific business plan, some inputs are known or can be reasonably estimated. The best available financial survey information comes from a survey of 15 HUBs across the country recently made available by the National Good Food Network (NGFN). The National Good Food Network Food Hub Benchmarking Study team included the Farm Credit Council, Farm Credit East, Morse Marketing Connections, and the Wallace Center at Winrock International.

Although it is the most useful data available, the survey has some obvious weakness for the purposes of this study. It was of a small sample size of both for-profit and non-profit HUBs. These organizations surveyed had the following characteristics:

- The average age of the HUBs was 11 years
- They operated an average of 301 days a year
- Their average revenues were \$1.65 million
- Average facility size was 9,018 sq. ft.
- Twenty percent were strictly organic
- Seventy three percent took ownership of the product they handled
- They were about evenly divided between for-profit and non-profit companies
- Their average food shed was 521 miles and they traveled an average of 54,000 miles a year for pick-ups and deliveries
- They had little in-house processing or value added sales
- Thirty three percent of their vendors had some sort of third party food safety certification
- They were primarily distributors while a smaller portion reported that they also aggregated
- Their 10 largest vendors supplied 50% of their product
- Product mix included meat and dairy as well as produce
- All reported using some volunteer labor

In short, these HUBs look a lot like the existing regional distributor identified in this report. They do not look like the aggregator envisioned in this report whose costs will be greater for in house packing activities. While these shortcomings are recognized, the financial metrics identified in the NGFN network were used for a proforma breakeven P&L.

Their financial metrics gathered in that survey included the following:

- Their gross margins averaged 21.3% for a mark-up multiple of 1.24%, fairly good numbers for a distribution business
- Overhead averaged 24.3 % of sales, a comparatively high number
- Labor averaged 17.4% of sales and sales per FTE averaged \$286,788

In the development of a projected break-even P&L the following assumptions were used;

- Breakeven sales were estimated just over \$700,000. This is substantially more than the current sales of regional produce identified as being moved through distributors
- A facility in the neighborhood of 5,000 sq. ft. would be needed
- The assumption is made that a turnkey facility can be leased. No interest or amortization are included.

#### 24:Proforma Operating Statement

Sales		718,000		718,000
Cost of Goods			488,240	
Cost of Sales				
Pick-up/Delivery Vehicle Cost		12,926		
Warehouse/Packing Labor	2FTE @ \$11	22,440		
Collection	2 FTE @ \$13	26,520		
Fringe Benefits		5,385		
Supplies		9,700		
	Other	2,000		
Total Cost of Sales			78,971	
Total Direct Costs				567,211
Gross Margin				150,79
Indirect Costs				
Manager/Sales	\$20/1530 hours	30,600		
Office/IT	\$15/1020 hours	15,300		
Fringe Benefits		5,049		
Lease		17,496		
Utilities		67,500		
Office Supplies		104		
Insurance		2,400		
Shrinkage at 2%		12,340		
Total Indirect Cost			150,789	150,789
<b>Profit/Loss</b>				<b>0</b>

### CONCLUSIONS

The financial model used in the table above would suggest that annual sales of at least \$.7 million would be needed to break even (this is probably a very conservative estimate). Data collected as part of this study indicate that a volume of less than \$250,000 is currently being purchased by distributors in the region. This breakeven would require about 250 acres harvested for the HUB if a HUB were supplied

solely from the region's growers. This 250 acres would also be about 15% of the acres harvested by growers identified as "very interested" in selling to a HUB. For the most part these growers are now selling into the retail market and are probably not prepared to sell to a HUB. Furthermore these growers are not generally GAP certified, which would be required for sales to grow significantly beyond current levels.

Schools are a good market but limited due to the school year and price sensitivity. It would appear that most school purchases of local foods occurs through the broad line distributors, a market channel that requires GAP certification.

Hospitals are probably less price sensitive than schools but are still reluctant to buy local due to food safety among other issues. In most cases hospitals that do buy local only serve that food in their cafeterias.

A produce aggregation HUB selling only local produce cannot be operated profitably in the region under current conditions. Substantially more produce will have to be grown or a much wider produce supply shed will have to be used. A wider produce supply shed will work to defeat the economics of a HUB because it will increase either its operating costs or the transportation costs of its grower suppliers.

A HUB that procures its produce outside the region during the off season to become a year round supplier could improve the economics of its operation. However one would question whether Northern Michigan would be a reasonable location for such an operation because of distance from broad line distribution centers. A southern Michigan location might prove to be a more advantageous location for a year round operation. A seasonal operation as a satellite facility of one of the established houses, i.e. Wilsma and Lyons, might make sense. Such an operation could be used to funnel northern Michigan local foods into the larger market. It could also control some of its costs by sharing such things as sales, software and management with a larger operation.

The collective acreage volume, skill, equipment, investment and business model will have to be assembled to allow growers to prosper in a wholesale market.

## Appendix A

### Vegetable Acres Harvested and Operations

County	Data Item	Value for County	Total for Category All Counties
<b>KALKASKA</b>	ASPARAGUS - ACRES HARVESTED	(D)	
<b>MANISTEE</b>	ASPARAGUS - ACRES HARVESTED	175	
<b>LAKE</b>	ASPARAGUS - ACRES HARVESTED	(D)	
<b>MECOSTA</b>	ASPARAGUS - ACRES HARVESTED	(D)	
<b>BENZIE</b>	ASPARAGUS - ACRES HARVESTED	(D)	
<b>MASON</b>	ASPARAGUS - ACRES HARVESTED	1,714	1889
<b>MASON</b>	ASPARAGUS - OPERATIONS WITH AREA HARVESTED	32	
<b>MECOSTA</b>	ASPARAGUS - OPERATIONS WITH AREA HARVESTED	3	
<b>BENZIE</b>	ASPARAGUS - OPERATIONS WITH AREA HARVESTED	3	
<b>KALKASKA</b>	ASPARAGUS - OPERATIONS WITH AREA HARVESTED	1	
<b>OSCEOLA</b>	ASPARAGUS - OPERATIONS WITH AREA HARVESTED	1	
<b>LAKE</b>	ASPARAGUS - OPERATIONS WITH AREA HARVESTED	1	41
<b>MECOSTA</b>	BEANS, GREEN, LIMA - ACRES HARVESTED	(D)	
<b>MECOSTA</b>	BEANS, GREEN, LIMA - OPERATIONS WITH AREA HARVESTED	2	2
<b>GRAND TRAVERSE</b>	BEANS, SNAP - ACRES HARVESTED	776	
<b>CLARE</b>	BEANS, SNAP - ACRES HARVESTED	(Z)	
<b>OSCEOLA</b>	BEANS, SNAP - ACRES HARVESTED	(D)	
<b>KALKASKA</b>	BEANS, SNAP - ACRES HARVESTED	(D)	
<b>BENZIE</b>	BEANS, SNAP - ACRES HARVESTED	(Z)	
<b>MECOSTA</b>	BEANS, SNAP - ACRES HARVESTED	2	
<b>MISSAUKEE</b>	BEANS, SNAP - ACRES HARVESTED	344	
<b>ROSCOMMON</b>	BEANS, SNAP - ACRES HARVESTED	(D)	
<b>MANISTEE</b>	BEANS, SNAP - ACRES HARVESTED	3	
<b>WEXFORD</b>	BEANS, SNAP - ACRES HARVESTED	1	
<b>LEELANAU</b>	BEANS, SNAP - ACRES HARVESTED	1	
<b>MASON</b>	BEANS, SNAP - ACRES HARVESTED	1,688	2815
<b>MASON</b>	BEANS, SNAP - OPERATIONS WITH AREA HARVESTED	19	
<b>LEELANAU</b>	BEANS, SNAP - OPERATIONS WITH AREA HARVESTED	9	
<b>MISSAUKEE</b>	BEANS, SNAP - OPERATIONS WITH AREA HARVESTED	5	
<b>BENZIE</b>	BEANS, SNAP - OPERATIONS WITH AREA HARVESTED	3	
<b>OSCEOLA</b>	BEANS, SNAP - OPERATIONS WITH AREA HARVESTED	8	
<b>GRAND TRAVERSE</b>	BEANS, SNAP - OPERATIONS WITH AREA HARVESTED	15	

<b>MECOSTA</b>	BEANS, SNAP - OPERATIONS WITH AREA HARVESTED	14	
<b>CLARE</b>	BEANS, SNAP - OPERATIONS WITH AREA HARVESTED	3	
<b>KALKASKA</b>	BEANS, SNAP - OPERATIONS WITH AREA HARVESTED	8	
<b>ROSCOMMON</b>	BEANS, SNAP - OPERATIONS WITH AREA HARVESTED	2	
<b>MANISTEE</b>	BEANS, SNAP - OPERATIONS WITH AREA HARVESTED	7	
<b>WEXFORD</b>	BEANS, SNAP - OPERATIONS WITH AREA HARVESTED	9	102
<b>WEXFORD</b>	BEETS - ACRES HARVESTED	(D)	
<b>CLARE</b>	BEETS - ACRES HARVESTED	(D)	
<b>MANISTEE</b>	BEETS - ACRES HARVESTED	(Z)	
<b>MECOSTA</b>	BEETS - ACRES HARVESTED	2	
<b>LEELANAU</b>	BEETS - ACRES HARVESTED	1	3
<b>LEELANAU</b>	BEETS - OPERATIONS WITH AREA HARVESTED	5	
<b>MANISTEE</b>	BEETS - OPERATIONS WITH AREA HARVESTED	3	
<b>WEXFORD</b>	BEETS - OPERATIONS WITH AREA HARVESTED	2	
<b>CLARE</b>	BEETS - OPERATIONS WITH AREA HARVESTED	1	
<b>MECOSTA</b>	BEETS - OPERATIONS WITH AREA HARVESTED	10	21
<b>MANISTEE</b>	BROCCOLI - ACRES HARVESTED	1	
<b>ROSCOMMON</b>	BROCCOLI - ACRES HARVESTED	(D)	
<b>MISSAUKEE</b>	BROCCOLI - ACRES HARVESTED	(D)	
<b>GRAND TRAVERSE</b>	BROCCOLI - ACRES HARVESTED	(D)	
<b>MECOSTA</b>	BROCCOLI - ACRES HARVESTED	(D)	
<b>WEXFORD</b>	BROCCOLI - ACRES HARVESTED	(D)	
<b>MANISTEE</b>	BROCCOLI - ACRES HARVESTED	1	
<b>MISSAUKEE</b>	BROCCOLI - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	BROCCOLI - ACRES HARVESTED	1	2
<b>LEELANAU</b>	BROCCOLI - OPERATIONS WITH AREA HARVESTED	5	
<b>MANISTEE</b>	BROCCOLI - OPERATIONS WITH AREA HARVESTED	5	
<b>WEXFORD</b>	BROCCOLI - OPERATIONS WITH AREA HARVESTED	1	
<b>MISSAUKEE</b>	BROCCOLI - OPERATIONS WITH AREA HARVESTED	1	
<b>GRAND TRAVERSE</b>	BROCCOLI - OPERATIONS WITH AREA HARVESTED	2	14
<b>KALKASKA</b>	BRUSSELS SPROUTS - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	BRUSSELS SPROUTS - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	BRUSSELS SPROUTS - OPERATIONS WITH AREA HARVESTED	1	
<b>KALKASKA</b>	BRUSSELS SPROUTS - OPERATIONS WITH AREA HARVESTED	2	3
<b>LEELANAU</b>	CABBAGE, CHINESE - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	CABBAGE, CHINESE - OPERATIONS WITH AREA HARVESTED	1	1
<b>MISSAUKEE</b>	CABBAGE, HEAD - ACRES HARVESTED	(D)	
<b>MANISTEE</b>	CABBAGE, HEAD - ACRES HARVESTED	(D)	
<b>BENZIE</b>	CABBAGE, HEAD - ACRES HARVESTED	(Z)	
<b>KALKASKA</b>	CABBAGE, HEAD - ACRES HARVESTED	(D)	

<b>LEELANAU</b>	CABBAGE, HEAD - ACRES HARVESTED	(Z)	
<b>MASON</b>	CABBAGE, HEAD - ACRES HARVESTED	6	6
<b>MASON</b>	CABBAGE, HEAD - OPERATIONS WITH AREA HARVESTED	3	
<b>LEELANAU</b>	CABBAGE, HEAD - OPERATIONS WITH AREA HARVESTED	3	
<b>BENZIE</b>	CABBAGE, HEAD - OPERATIONS WITH AREA HARVESTED	3	
<b>MISSAUKEE</b>	CABBAGE, HEAD - OPERATIONS WITH AREA HARVESTED	1	
<b>MANISTEE</b>	CABBAGE, HEAD - OPERATIONS WITH AREA HARVESTED	1	
<b>KALKASKA</b>	CABBAGE, HEAD - OPERATIONS WITH AREA HARVESTED	1	12
<b>KALKASKA</b>	CARROTS - ACRES HARVESTED	(D)	
<b>WEXFORD</b>	CARROTS - ACRES HARVESTED	1	
<b>MANISTEE</b>	CARROTS - ACRES HARVESTED	1	
<b>GRAND TRAVERSE</b>	CARROTS - ACRES HARVESTED	(D)	
<b>MISSAUKEE</b>	CARROTS - ACRES HARVESTED	(Z)	
<b>LEELANAU</b>	CARROTS, ACRES HARVESTED	1	
<b>MASON</b>	CARROTS - ACRES HARVESTED	194	197
<b>LEELANAU</b>	CARROTS, OPERATIONS WITH AREA HARVESTED	5	
<b>LEELANAU</b>	CARROTS, OPERATIONS WITH AREA HARVESTED	5	
<b>MASON</b>	CARROTS - OPERATIONS WITH AREA HARVESTED	3	
<b>MANISTEE</b>	CARROTS - OPERATIONS WITH AREA HARVESTED	3	
<b>MISSAUKEE</b>	CARROTS - OPERATIONS WITH AREA HARVESTED	3	
<b>KALKASKA</b>	CARROTS - OPERATIONS WITH AREA HARVESTED	2	
<b>WEXFORD</b>	CARROTS - OPERATIONS WITH AREA HARVESTED	3	
<b>GRAND TRAVERSE</b>	CARROTS - OPERATIONS WITH AREA HARVESTED	2	26
<b>MANISTEE</b>	CAULIFLOWER - ACRES HARVESTED	(D)	
<b>MISSAUKEE</b>	CAULIFLOWER - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	CAULIFLOWER - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	CAULIFLOWER - OPERATIONS WITH AREA HARVESTED	1	
<b>MANISTEE</b>	CAULIFLOWER - OPERATIONS WITH AREA HARVESTED	1	
<b>MISSAUKEE</b>	CAULIFLOWER - OPERATIONS WITH AREA HARVESTED	1	3
<b>LEELANAU</b>	CELERY - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	CELERY - OPERATIONS WITH AREA HARVESTED	1	1
<b>MANISTEE</b>	CUCUMBERS - ACRES HARVESTED	189	
<b>MISSAUKEE</b>	CUCUMBERS - ACRES HARVESTED	(D)	
<b>KALKASKA</b>	CUCUMBERS - ACRES HARVESTED	1	
<b>WEXFORD</b>	CUCUMBERS - ACRES HARVESTED	1	
<b>GRAND TRAVERSE</b>	CUCUMBERS - ACRES HARVESTED	1	
<b>BENZIE</b>	CUCUMBERS - ACRES HARVESTED	1	
<b>LEELANAU</b>	CUCUMBERS - ACRES HARVESTED	1	194
<b>LEELANAU</b>	CUCUMBERS - OPERATIONS WITH AREA HARVESTED	3	
<b>BENZIE</b>	CUCUMBERS - OPERATIONS WITH AREA HARVESTED	4	

<b>GRAND TRAVERSE</b>	CUCUMBERS - OPERATIONS WITH AREA HARVESTED	6	
<b>KALKASKA</b>	CUCUMBERS - OPERATIONS WITH AREA HARVESTED	8	
<b>WEXFORD</b>	CUCUMBERS - OPERATIONS WITH AREA HARVESTED	3	
<b>MISSAUKEE</b>	CUCUMBERS - OPERATIONS WITH AREA HARVESTED	1	
<b>MANISTEE</b>	CUCUMBERS - OPERATIONS WITH AREA HARVESTED	12	37
<b>MISSAUKEE</b>	EGGPLANT - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	EGGPLANT - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	EGGPLANT - OPERATIONS WITH AREA HARVESTED	1	
<b>MISSAUKEE</b>	EGGPLANT - OPERATIONS WITH AREA HARVESTED	2	3
<b>BENZIE</b>	GARLIC - ACRES HARVESTED	(D)	
<b>MANISTEE</b>	GARLIC - ACRES HARVESTED	(D)	
<b>WEXFORD</b>	GARLIC - ACRES HARVESTED	(D)	
<b>GRAND TRAVERSE</b>	GARLIC - ACRES HARVESTED	2	
<b>LEELANAU</b>	GARLIC - ACRES HARVESTED	(D)	2
<b>LEELANAU</b>	GARLIC - OPERATIONS WITH AREA HARVESTED	1	
<b>BENZIE</b>	GARLIC - OPERATIONS WITH AREA HARVESTED	2	
<b>MANISTEE</b>	GARLIC - OPERATIONS WITH AREA HARVESTED	1	
<b>GRAND TRAVERSE</b>	GARLIC - OPERATIONS WITH AREA HARVESTED	3	
<b>WEXFORD</b>	GARLIC - OPERATIONS WITH AREA HARVESTED	1	8
<b>LEELANAU</b>	GREENS, COLLARD - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	GREENS, COLLARD - OPERATIONS WITH AREA HARVESTED	1	1
<b>BENZIE</b>	GREENS, KALE - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	GREENS, KALE - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	GREENS, KALE - OPERATIONS WITH AREA HARVESTED	1	
<b>BENZIE</b>	GREENS, KALE - OPERATIONS WITH AREA HARVESTED	2	3
<b>BENZIE</b>	HERBS, FRESH CUT, IN THE OPEN - ACRES HARVESTED	(Z)	
<b>GRAND TRAVERSE</b>	HERBS, FRESH CUT, IN THE OPEN - ACRES HARVESTED	(D)	
<b>WEXFORD</b>	HERBS, FRESH CUT, IN THE OPEN - ACRES HARVESTED	(Z)	
<b>BENZIE</b>	HERBS, FRESH CUT, IN THE OPEN - OPERATIONS WITH AREA HARVESTED	3	
<b>GRAND TRAVERSE</b>	HERBS, FRESH CUT, IN THE OPEN - OPERATIONS WITH AREA HARVESTED	1	
<b>WEXFORD</b>	HERBS, FRESH CUT, IN THE OPEN - OPERATIONS WITH AREA HARVESTED	3	7
<b>WEXFORD</b>	LETTUCE - ACRES HARVESTED	(D)	
<b>GRAND TRAVERSE</b>	LETTUCE - ACRES HARVESTED	(D)	
<b>MANISTEE</b>	LETTUCE - ACRES HARVESTED	1	
<b>KALKASKA</b>	LETTUCE - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	LETTUCE - ACRES HARVESTED	1	2
<b>LEELANAU</b>	LETTUCE - OPERATIONS WITH AREA HARVESTED	4	
<b>MANISTEE</b>	LETTUCE - OPERATIONS WITH AREA HARVESTED	3	

<b>GRAND TRAVERSE</b>	LETTUCE - OPERATIONS WITH AREA HARVESTED	3	
<b>KALKASKA</b>	LETTUCE - OPERATIONS WITH AREA HARVESTED	1	
<b>WEXFORD</b>	LETTUCE - OPERATIONS WITH AREA HARVESTED	3	14
<b>GRAND TRAVERSE</b>	LETTUCE, HEAD - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	LETTUCE, HEAD - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	LETTUCE, HEAD - OPERATIONS WITH AREA HARVESTED	2	
<b>GRAND TRAVERSE</b>	LETTUCE, HEAD - OPERATIONS WITH AREA HARVESTED	2	4
<b>KALKASKA</b>	LETTUCE, LEAF - ACRES HARVESTED	(D)	
<b>WEXFORD</b>	LETTUCE, LEAF - ACRES HARVESTED	(D)	
<b>GRAND TRAVERSE</b>	LETTUCE, LEAF - ACRES HARVESTED	(D)	
<b>MANISTEE</b>	LETTUCE, LEAF - ACRES HARVESTED	1	
<b>LEELANAU</b>	LETTUCE, LEAF - ACRES HARVESTED	(D)	1
<b>LEELANAU</b>	LETTUCE, LEAF - OPERATIONS WITH AREA HARVESTED	3	
<b>GRAND TRAVERSE</b>	LETTUCE, LEAF - OPERATIONS WITH AREA HARVESTED	1	
<b>WEXFORD</b>	LETTUCE, LEAF - OPERATIONS WITH AREA HARVESTED	2	
<b>KALKASKA</b>	LETTUCE, LEAF - OPERATIONS WITH AREA HARVESTED	1	
<b>MANISTEE</b>	LETTUCE, LEAF - OPERATIONS WITH AREA HARVESTED	3	10
<b>WEXFORD</b>	LETTUCE, ROMAINE - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	LETTUCE, ROMAINE - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	LETTUCE, ROMAINE - OPERATIONS WITH AREA HARVESTED	1	
<b>WEXFORD</b>	LETTUCE, ROMAINE - OPERATIONS WITH AREA HARVESTED	1	2
<b>GRAND TRAVERSE</b>	MELONS, CANTALOUPE - ACRES HARVESTED	1	
<b>MANISTEE</b>	MELONS, CANTALOUPE - ACRES HARVESTED	(D)	
<b>KALKASKA</b>	MELONS, CANTALOUPE - ACRES HARVESTED	(D)	
<b>GRAND TRAVERSE</b>	MELONS, CANTALOUPE - ACRES HARVESTED	1	
<b>KALKASKA</b>	MELONS, CANTALOUPE - ACRES HARVESTED	(D)	
<b>MANISTEE</b>	MELONS, CANTALOUPE - ACRES HARVESTED	(D)	
<b>ROSCOMMON</b>	MELONS, CANTALOUPE - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	MELONS, CANTALOUPE - ACRES HARVESTED	(D)	2
<b>LEELANAU</b>	MELONS, CANTALOUPE - OPERATIONS WITH AREA HARVESTED	1	
<b>KALKASKA</b>	MELONS, CANTALOUPE - OPERATIONS WITH AREA HARVESTED	1	
<b>MECOSTA</b>	MELONS, CANTALOUPE - OPERATIONS WITH AREA HARVESTED	8	
<b>GRAND TRAVERSE</b>	MELONS, CANTALOUPE - OPERATIONS WITH AREA HARVESTED	4	
<b>ROSCOMMON</b>	MELONS, CANTALOUPE - OPERATIONS WITH AREA HARVESTED	2	
<b>MANISTEE</b>	MELONS, CANTALOUPE - OPERATIONS WITH AREA HARVESTED	2	18



<b>MANISTEE</b>	MELONS, WATERMELON - ACRES HARVESTED	1	
<b>GRAND TRAVERSE</b>	MELONS, WATERMELON - ACRES HARVESTED	(D)	
<b>KALKASKA</b>	MELONS, WATERMELON - ACRES HARVESTED	(D)	
<b>MECOSTA</b>	MELONS, WATERMELON - ACRES HARVESTED	2	
<b>MISSAUKEE</b>	MELONS, WATERMELON - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	MELONS, WATERMELON - ACRES HARVESTED	1	4
<b>LEELANAU</b>	MELONS, WATERMELON - OPERATIONS WITH AREA HARVESTED	3	
<b>CRAWFORD</b>	MELONS, WATERMELON - OPERATIONS WITH AREA HARVESTED	-	
<b>GRAND TRAVERSE</b>	MELONS, WATERMELON - OPERATIONS WITH AREA HARVESTED	2	
<b>KALKASKA</b>	MELONS, WATERMELON - OPERATIONS WITH AREA HARVESTED	1	
<b>MANISTEE</b>	MELONS, WATERMELON - OPERATIONS WITH AREA HARVESTED	3	
<b>MECOSTA</b>	MELONS, WATERMELON - OPERATIONS WITH AREA HARVESTED	10	
<b>MISSAUKEE</b>	MELONS, WATERMELON - OPERATIONS WITH AREA HARVESTED	1	
<b>CLARE</b>	MELONS, WATERMELON - OPERATIONS WITH AREA HARVESTED	-	25
<b>WEXFORD</b>	ONIONS, DRY - ACRES HARVESTED	(Z)	
<b>GRAND TRAVERSE</b>	ONIONS, DRY - ACRES HARVESTED	(Z)	
<b>KALKASKA</b>	ONIONS, DRY - ACRES HARVESTED	(D)	
<b>MECOSTA</b>	ONIONS, DRY - ACRES HARVESTED	1	
<b>LEELANAU</b>	ONIONS, DRY - ACRES HARVESTED	1	2
<b>LEELANAU</b>	ONIONS, DRY - OPERATIONS WITH AREA HARVESTED	3	
<b>KALKASKA</b>	ONIONS, DRY - OPERATIONS WITH AREA HARVESTED	2	
<b>GRAND TRAVERSE</b>	ONIONS, DRY - OPERATIONS WITH AREA HARVESTED	3	
<b>WEXFORD</b>	ONIONS, DRY - OPERATIONS WITH AREA HARVESTED	3	
<b>MECOSTA</b>	ONIONS, DRY - OPERATIONS WITH AREA HARVESTED	10	21
<b>MECOSTA</b>	ONIONS, GREEN - ACRES HARVESTED	1	
<b>LEELANAU</b>	ONIONS, GREEN - ACRES HARVESTED	1	2
<b>LEELANAU</b>	ONIONS, GREEN - OPERATIONS WITH AREA HARVESTED	3	
<b>MECOSTA</b>	ONIONS, GREEN - OPERATIONS WITH AREA HARVESTED	6	9
<b>MANISTEE</b>	PARSLEY - ACRES HARVESTED	(D)	
<b>MANISTEE</b>	PARSLEY - OPERATIONS WITH AREA HARVESTED	2	2
<b>MECOSTA</b>	PEAS, CHINESE (SUGAR & SNOW) - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	PEAS, CHINESE (SUGAR & SNOW) - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	PEAS, CHINESE (SUGAR & SNOW) - OPERATIONS WITH AREA HARVESTED	1	

<b>MECOSTA</b>	PEAS, CHINESE (SUGAR & SNOW) - OPERATIONS WITH AREA HARVESTED	2	3
<b>MANISTEE</b>	PEAS, GREEN (EXCL SOUTHERN) - ACRES HARVESTED	(D)	
<b>MECOSTA</b>	PEAS, GREEN (EXCL SOUTHERN) - ACRES HARVESTED	(D)	
<b>BENZIE</b>	PEAS, GREEN (EXCL SOUTHERN) - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	PEAS, GREEN (EXCL SOUTHERN) - ACRES HARVESTED	1	1
<b>LEELANAU</b>	PEAS, GREEN (EXCL SOUTHERN) - OPERATIONS WITH AREA HARVESTED	3	
<b>BENZIE</b>	PEAS, GREEN (EXCL SOUTHERN) - OPERATIONS WITH AREA HARVESTED	2	
<b>MANISTEE</b>	PEAS, GREEN (EXCL SOUTHERN) - OPERATIONS WITH AREA HARVESTED	1	
<b>MECOSTA</b>	PEAS, GREEN (EXCL SOUTHERN) - OPERATIONS WITH AREA HARVESTED	3	9
<b>MISSAUKEE</b>	PEPPERS, BELL - ACRES HARVESTED	2	
<b>BENZIE</b>	PEPPERS, BELL - ACRES HARVESTED	1	
<b>CLARE</b>	PEPPERS, BELL - ACRES HARVESTED	(Z)	
<b>WEXFORD</b>	PEPPERS, BELL - ACRES HARVESTED	1	
<b>MANISTEE</b>	PEPPERS, BELL - ACRES HARVESTED	2	
<b>MECOSTA</b>	PEPPERS, BELL - ACRES HARVESTED	1	
<b>KALKASKA</b>	PEPPERS, BELL - ACRES HARVESTED	1	
<b>GRAND TRAVERSE</b>	PEPPERS, BELL - ACRES HARVESTED	2	
<b>ROSCOMMON</b>	PEPPERS, BELL - ACRES HARVESTED	(D)	
<b>OSCEOLA</b>	PEPPERS, BELL - ACRES HARVESTED	2	
<b>LEELANAU</b>	PEPPERS, BELL - ACRES HARVESTED	3	
<b>MASON</b>	PEPPERS, BELL - ACRES HARVESTED	(D)	15
<b>MASON</b>	PEPPERS, BELL - OPERATIONS WITH AREA HARVESTED	2	
<b>LEELANAU</b>	PEPPERS, BELL - OPERATIONS WITH AREA HARVESTED	10	
<b>WEXFORD</b>	PEPPERS, BELL - OPERATIONS WITH AREA HARVESTED	7	
<b>GRAND TRAVERSE</b>	PEPPERS, BELL - OPERATIONS WITH AREA HARVESTED	8	
<b>OSCEOLA</b>	PEPPERS, BELL - OPERATIONS WITH AREA HARVESTED	4	
<b>MANISTEE</b>	PEPPERS, BELL - OPERATIONS WITH AREA HARVESTED	6	
<b>CLARE</b>	PEPPERS, BELL - OPERATIONS WITH AREA HARVESTED	3	
<b>MECOSTA</b>	PEPPERS, BELL - OPERATIONS WITH AREA HARVESTED	6	
<b>BENZIE</b>	PEPPERS, BELL - OPERATIONS WITH AREA HARVESTED	5	
<b>ROSCOMMON</b>	PEPPERS, BELL - OPERATIONS WITH AREA HARVESTED	2	
<b>MISSAUKEE</b>	PEPPERS, BELL - OPERATIONS WITH AREA HARVESTED	3	
<b>KALKASKA</b>	PEPPERS, BELL - OPERATIONS WITH AREA HARVESTED	9	65
<b>OSCEOLA</b>	PEPPERS, CHILE - ACRES HARVESTED	(D)	
<b>GRAND TRAVERSE</b>	PEPPERS, CHILE - ACRES HARVESTED	2	
<b>CLARE</b>	PEPPERS, CHILE - ACRES HARVESTED	(D)	

<b>BENZIE</b>	PEPPERS, CHILE - ACRES HARVESTED	1	
<b>MISSAUKEE</b>	PEPPERS, CHILE - ACRES HARVESTED	(D)	
<b>MANISTEE</b>	PEPPERS, CHILE - ACRES HARVESTED	3	
<b>WEXFORD</b>	PEPPERS, CHILE - ACRES HARVESTED	1	
<b>KALKASKA</b>	PEPPERS, CHILE - ACRES HARVESTED	1	
<b>LEELANAU</b>	PEPPERS, CHILE - ACRES HARVESTED	1	9
<b>LEELANAU</b>	PEPPERS, CHILE - OPERATIONS WITH AREA HARVESTED	6	
<b>MANISTEE</b>	PEPPERS, CHILE - OPERATIONS WITH AREA HARVESTED	9	
<b>CLARE</b>	PEPPERS, CHILE - OPERATIONS WITH AREA HARVESTED	1	
<b>WEXFORD</b>	PEPPERS, CHILE - OPERATIONS WITH AREA HARVESTED	5	
<b>BENZIE</b>	PEPPERS, CHILE - OPERATIONS WITH AREA HARVESTED	5	
<b>KALKASKA</b>	PEPPERS, CHILE - OPERATIONS WITH AREA HARVESTED	6	
<b>GRAND TRAVERSE</b>	PEPPERS, CHILE - OPERATIONS WITH AREA HARVESTED	4	
<b>OSCEOLA</b>	PEPPERS, CHILE - OPERATIONS WITH AREA HARVESTED	1	
<b>MISSAUKEE</b>	PEPPERS, CHILE - OPERATIONS WITH AREA HARVESTED	1	38
<b>CLARE</b>	POTATOES - ACRES HARVESTED	(Z)	
<b>MECOSTA</b>	POTATOES - ACRES HARVESTED	(D)	
<b>OSCEOLA</b>	POTATOES - ACRES HARVESTED	(D)	
<b>BENZIE</b>	POTATOES - ACRES HARVESTED	1	
<b>GRAND TRAVERSE</b>	POTATOES - ACRES HARVESTED	4	
<b>KALKASKA</b>	POTATOES - ACRES HARVESTED	1,256	
<b>LEELANAU</b>	POTATOES - ACRES HARVESTED	8	
<b>MANISTEE</b>	POTATOES - ACRES HARVESTED	12	
<b>MISSAUKEE</b>	POTATOES - ACRES HARVESTED	10	
<b>WEXFORD</b>	POTATOES - ACRES HARVESTED	3	
<b>MASON</b>	POTATOES - ACRES HARVESTED	8	1302
<b>WEXFORD</b>	POTATOES - OPERATIONS WITH AREA HARVESTED	2	
<b>MISSAUKEE</b>	POTATOES - OPERATIONS WITH AREA HARVESTED	(D)	
<b>MANISTEE</b>	POTATOES - OPERATIONS WITH AREA HARVESTED	2	
<b>LEELANAU</b>	POTATOES - OPERATIONS WITH AREA HARVESTED	(D)	
<b>KALKASKA</b>	POTATOES - OPERATIONS WITH AREA HARVESTED	(D)	
<b>GRAND TRAVERSE</b>	POTATOES - OPERATIONS WITH AREA HARVESTED	9	
<b>BENZIE</b>	POTATOES - OPERATIONS WITH AREA HARVESTED	4	
<b>OSCEOLA</b>	POTATOES - OPERATIONS WITH AREA HARVESTED	6	
<b>MECOSTA</b>	POTATOES - OPERATIONS WITH AREA HARVESTED	15	
<b>CLARE</b>	POTATOES - OPERATIONS WITH AREA HARVESTED	3	
<b>MASON</b>	POTATOES - OPERATIONS WITH AREA HARVESTED	2	43
<b>WEXFORD</b>	PUMPKINS - ACRES HARVESTED	7	
<b>CRAWFORD</b>	PUMPKINS - ACRES HARVESTED	(D)	
<b>MECOSTA</b>	PUMPKINS - ACRES HARVESTED	7	

<b>MISSAUKEE</b>	PUMPKINS - ACRES HARVESTED	9	
<b>OSCEOLA</b>	PUMPKINS - ACRES HARVESTED	(D)	
<b>CLARE</b>	PUMPKINS - ACRES HARVESTED	5	
<b>GRAND TRAVERSE</b>	PUMPKINS - ACRES HARVESTED	38	
<b>BENZIE</b>	PUMPKINS - ACRES HARVESTED	(D)	
<b>KALKASKA</b>	PUMPKINS - ACRES HARVESTED	1	
<b>MANISTEE</b>	PUMPKINS - ACRES HARVESTED	12	
<b>LEELANAU</b>	PUMPKINS - ACRES HARVESTED	23	
<b>MASON</b>	PUMPKINS - ACRES HARVESTED	58	153
<b>MASON</b>	PUMPKINS - OPERATIONS WITH AREA HARVESTED	8	
<b>LEELANAU</b>	PUMPKINS - OPERATIONS WITH AREA HARVESTED	11	
<b>CLARE</b>	PUMPKINS - OPERATIONS WITH AREA HARVESTED	4	
<b>CRAWFORD</b>	PUMPKINS - OPERATIONS WITH AREA HARVESTED	2	
<b>OSCEOLA</b>	PUMPKINS - OPERATIONS WITH AREA HARVESTED	4	
<b>MISSAUKEE</b>	PUMPKINS - OPERATIONS WITH AREA HARVESTED	3	
<b>WEXFORD</b>	PUMPKINS - OPERATIONS WITH AREA HARVESTED	6	
<b>MANISTEE</b>	PUMPKINS - OPERATIONS WITH AREA HARVESTED	9	
<b>MECOSTA</b>	PUMPKINS - OPERATIONS WITH AREA HARVESTED	8	
<b>BENZIE</b>	PUMPKINS - OPERATIONS WITH AREA HARVESTED	4	
<b>GRAND TRAVERSE</b>	PUMPKINS - OPERATIONS WITH AREA HARVESTED	19	
<b>KALKASKA</b>	PUMPKINS - OPERATIONS WITH AREA HARVESTED	5	83
<b>MECOSTA</b>	RADISHES - ACRES HARVESTED	(D)	
<b>KALKASKA</b>	RADISHES - ACRES HARVESTED	(D)	
<b>GRAND TRAVERSE</b>	RADISHES - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	RADISHES - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	RADISHES - OPERATIONS WITH AREA HARVESTED	1	
<b>MECOSTA</b>	RADISHES - OPERATIONS WITH AREA HARVESTED	2	
<b>GRAND TRAVERSE</b>	RADISHES - OPERATIONS WITH AREA HARVESTED	1	
<b>KALKASKA</b>	RADISHES - OPERATIONS WITH AREA HARVESTED	2	6
<b>BENZIE</b>	RHUBARB - ACRES HARVESTED	(D)	
<b>KALKASKA</b>	RHUBARB - ACRES HARVESTED	(D)	
<b>MECOSTA</b>	RHUBARB - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	RHUBARB - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	RHUBARB - OPERATIONS WITH AREA HARVESTED	1	
<b>BENZIE</b>	RHUBARB - OPERATIONS WITH AREA HARVESTED	2	
<b>MECOSTA</b>	RHUBARB - OPERATIONS WITH AREA HARVESTED	2	
<b>KALKASKA</b>	RHUBARB - OPERATIONS WITH AREA HARVESTED	2	7
<b>MECOSTA</b>	SPINACH - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	SPINACH - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	SPINACH - OPERATIONS WITH AREA HARVESTED	1	

<b>MECOSTA</b>	SPINACH - OPERATIONS WITH AREA HARVESTED	2	3
<b>CLARE</b>	SQUASH - ACRES HARVESTED	(D)	
<b>MISSAUKEE</b>	SQUASH - ACRES HARVESTED	(D)	
<b>BENZIE</b>	SQUASH - ACRES HARVESTED	(D)	
<b>WEXFORD</b>	SQUASH - ACRES HARVESTED	1	
<b>OSCEOLA</b>	SQUASH - ACRES HARVESTED	(D)	
<b>MANISTEE</b>	SQUASH - ACRES HARVESTED	(D)	
<b>ROSCOMMON</b>	SQUASH - ACRES HARVESTED	(D)	
<b>KALKASKA</b>	SQUASH - ACRES HARVESTED	(D)	
<b>GRAND TRAVERSE</b>	SQUASH - ACRES HARVESTED	5	
<b>MECOSTA</b>	SQUASH - ACRES HARVESTED	4	
<b>LEELANAU</b>	SQUASH - ACRES HARVESTED	(D)	
<b>MASON</b>	SQUASH - ACRES HARVESTED	862	872
<b>MASON</b>	SQUASH - OPERATIONS WITH AREA HARVESTED	13	
<b>LEELANAU</b>	SQUASH - OPERATIONS WITH AREA HARVESTED	5	
<b>GRAND TRAVERSE</b>	SQUASH - OPERATIONS WITH AREA HARVESTED	5	
<b>KALKASKA</b>	SQUASH - OPERATIONS WITH AREA HARVESTED	1	
<b>ROSCOMMON</b>	SQUASH - OPERATIONS WITH AREA HARVESTED	2	
<b>MECOSTA</b>	SQUASH - OPERATIONS WITH AREA HARVESTED	14	
<b>WEXFORD</b>	SQUASH - OPERATIONS WITH AREA HARVESTED	3	
<b>MANISTEE</b>	SQUASH - OPERATIONS WITH AREA HARVESTED	1	
<b>CLARE</b>	SQUASH - OPERATIONS WITH AREA HARVESTED	1	
<b>OSCEOLA</b>	SQUASH - OPERATIONS WITH AREA HARVESTED	2	
<b>MISSAUKEE</b>	SQUASH - OPERATIONS WITH AREA HARVESTED	1	
<b>BENZIE</b>	SQUASH - OPERATIONS WITH AREA HARVESTED	4	52
<b>BENZIE</b>	SQUASH, SUMMER - ACRES HARVESTED	(D)	
<b>MISSAUKEE</b>	SQUASH, SUMMER - ACRES HARVESTED	(D)	
<b>MANISTEE</b>	SQUASH, SUMMER - ACRES HARVESTED	(D)	
<b>WEXFORD</b>	SQUASH, SUMMER - ACRES HARVESTED	(D)	
<b>ROSCOMMON</b>	SQUASH, SUMMER - ACRES HARVESTED	(D)	
<b>CLARE</b>	SQUASH, SUMMER - ACRES HARVESTED	(D)	
<b>GRAND TRAVERSE</b>	SQUASH, SUMMER - ACRES HARVESTED	(D)	
<b>MECOSTA</b>	SQUASH, SUMMER - ACRES HARVESTED	2	
<b>OSCEOLA</b>	SQUASH, SUMMER - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	SQUASH, SUMMER - ACRES HARVESTED	(D)	
<b>MASON</b>	SQUASH, SUMMER - ACRES HARVESTED	(D)	2
<b>MASON</b>	SQUASH, SUMMER - OPERATIONS WITH AREA HARVESTED	3	
<b>LEELANAU</b>	SQUASH, SUMMER - OPERATIONS WITH AREA HARVESTED	2	
<b>MECOSTA</b>	SQUASH, SUMMER - OPERATIONS WITH AREA HARVESTED	14	
<b>OSCEOLA</b>	SQUASH, SUMMER - OPERATIONS WITH AREA HARVESTED	2	

<b>MANISTEE</b>	SQUASH, SUMMER - OPERATIONS WITH AREA HARVESTED	1	
<b>CLARE</b>	SQUASH, SUMMER - OPERATIONS WITH AREA HARVESTED	1	
<b>MISSAUKEE</b>	SQUASH, SUMMER - OPERATIONS WITH AREA HARVESTED	1	
<b>GRAND TRAVERSE</b>	SQUASH, SUMMER - OPERATIONS WITH AREA HARVESTED	4	
<b>WEXFORD</b>	SQUASH, SUMMER - OPERATIONS WITH AREA HARVESTED	1	
<b>ROSCOMMON</b>	SQUASH, SUMMER - OPERATIONS WITH AREA HARVESTED	2	
<b>BENZIE</b>	SQUASH, SUMMER - OPERATIONS WITH AREA HARVESTED	3	34
<b>KALKASKA</b>	SQUASH, WINTER - ACRES HARVESTED	(D)	
<b>GRAND TRAVERSE</b>	SQUASH, WINTER - ACRES HARVESTED	(D)	
<b>MECOSTA</b>	SQUASH, WINTER - ACRES HARVESTED	2	
<b>MANISTEE</b>	SQUASH, WINTER - ACRES HARVESTED	(D)	
<b>BENZIE</b>	SQUASH, WINTER - ACRES HARVESTED	(D)	
<b>WEXFORD</b>	SQUASH, WINTER - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	SQUASH, WINTER - ACRES HARVESTED	(D)	
<b>MASON</b>	SQUASH, WINTER - ACRES HARVESTED	(D)	2
<b>MASON</b>	SQUASH, WINTER - OPERATIONS WITH AREA HARVESTED	13	
<b>LEELANAU</b>	SQUASH, WINTER - OPERATIONS WITH AREA HARVESTED	4	
<b>MECOSTA</b>	SQUASH, WINTER - OPERATIONS WITH AREA HARVESTED	10	
<b>KALKASKA</b>	SQUASH, WINTER - OPERATIONS WITH AREA HARVESTED	1	
<b>MANISTEE</b>	SQUASH, WINTER - OPERATIONS WITH AREA HARVESTED	1	
<b>WEXFORD</b>	SQUASH, WINTER - OPERATIONS WITH AREA HARVESTED	3	
<b>GRAND TRAVERSE</b>	SQUASH, WINTER - OPERATIONS WITH AREA HARVESTED	1	
<b>BENZIE</b>	SQUASH, WINTER - OPERATIONS WITH AREA HARVESTED	1	34
<b>KALKASKA</b>	SWEET CORN - ACRES HARVESTED	1	
<b>MECOSTA</b>	SWEET CORN - ACRES HARVESTED	75	
<b>ROSCOMMON</b>	SWEET CORN - ACRES HARVESTED	(D)	
<b>CRAWFORD</b>	SWEET CORN - ACRES HARVESTED	(D)	
<b>MANISTEE</b>	SWEET CORN - ACRES HARVESTED	42	
<b>WEXFORD</b>	SWEET CORN - ACRES HARVESTED	12	
<b>OSCEOLA</b>	SWEET CORN - ACRES HARVESTED	15	
<b>BENZIE</b>	SWEET CORN - ACRES HARVESTED	(D)	
<b>MISSAUKEE</b>	SWEET CORN - ACRES HARVESTED	(D)	
<b>CLARE</b>	SWEET CORN - ACRES HARVESTED	25	
<b>GRAND TRAVERSE</b>	SWEET CORN - ACRES HARVESTED	106	
<b>LEELANAU</b>	SWEET CORN - ACRES HARVESTED	46	
<b>MASON</b>	SWEET CORN - ACRES HARVESTED	(D)	322
<b>MASON</b>	SWEET CORN - OPERATIONS WITH AREA HARVESTED	5	
<b>LEELANAU</b>	SWEET CORN - OPERATIONS WITH AREA HARVESTED	11	
<b>MISSAUKEE</b>	SWEET CORN - OPERATIONS WITH AREA HARVESTED	1	
<b>MANISTEE</b>	SWEET CORN - OPERATIONS WITH AREA HARVESTED	11	

<b>GRAND TRAVERSE</b>	SWEET CORN - OPERATIONS WITH AREA HARVESTED	12	
<b>BENZIE</b>	SWEET CORN - OPERATIONS WITH AREA HARVESTED	6	
<b>ROSCOMMON</b>	SWEET CORN - OPERATIONS WITH AREA HARVESTED	2	
<b>KALKASKA</b>	SWEET CORN - OPERATIONS WITH AREA HARVESTED	3	
<b>OSCEOLA</b>	SWEET CORN - OPERATIONS WITH AREA HARVESTED	8	
<b>CRAWFORD</b>	SWEET CORN - OPERATIONS WITH AREA HARVESTED	1	
<b>CLARE</b>	SWEET CORN - OPERATIONS WITH AREA HARVESTED	5	
<b>MECOSTA</b>	SWEET CORN - OPERATIONS WITH AREA HARVESTED	23	
<b>WEXFORD</b>	SWEET CORN - OPERATIONS WITH AREA HARVESTED	9	97
<b>BENZIE</b>	SWEET POTATOES - ACRES HARVESTED	(D)	
<b>MECOSTA</b>	SWEET POTATOES - ACRES HARVESTED	(D)	
<b>BENZIE</b>	SWEET POTATOES - OPERATIONS WITH AREA HARVESTED	2	
<b>MECOSTA</b>	SWEET POTATOES - OPERATIONS WITH AREA HARVESTED	2	4
<b>CLARE</b>	TOMATOES, IN THE OPEN - ACRES HARVESTED	2	
<b>GRAND TRAVERSE</b>	TOMATOES, IN THE OPEN - ACRES HARVESTED	5	
<b>BENZIE</b>	TOMATOES, IN THE OPEN - ACRES HARVESTED	11	
<b>OSCEOLA</b>	TOMATOES, IN THE OPEN - ACRES HARVESTED	19	
<b>KALKASKA</b>	TOMATOES, IN THE OPEN - ACRES HARVESTED	4	
<b>WEXFORD</b>	TOMATOES, IN THE OPEN - ACRES HARVESTED	2	
<b>MECOSTA</b>	TOMATOES, IN THE OPEN - ACRES HARVESTED	8	
<b>MANISTEE</b>	TOMATOES, IN THE OPEN - ACRES HARVESTED	16	
<b>MISSAUKEE</b>	TOMATOES, IN THE OPEN - ACRES HARVESTED	4	
<b>LEELANAU</b>	TOMATOES, IN THE OPEN - ACRES HARVESTED	7	
<b>MASON</b>	TOMATOES, IN THE OPEN - ACRES HARVESTED	1	79
<b>MASON</b>	TOMATOES, IN THE OPEN - OPERATIONS WITH AREA HARVESTED	3	
<b>LEELANAU</b>	TOMATOES, IN THE OPEN - OPERATIONS WITH AREA HARVESTED	13	
<b>GRAND TRAVERSE</b>	TOMATOES, IN THE OPEN - OPERATIONS WITH AREA HARVESTED	18	
<b>MECOSTA</b>	TOMATOES, IN THE OPEN - OPERATIONS WITH AREA HARVESTED	19	
<b>MISSAUKEE</b>	TOMATOES, IN THE OPEN - OPERATIONS WITH AREA HARVESTED	4	
<b>CLARE</b>	TOMATOES, IN THE OPEN - OPERATIONS WITH AREA HARVESTED	3	
<b>WEXFORD</b>	TOMATOES, IN THE OPEN - OPERATIONS WITH AREA HARVESTED	12	
<b>MANISTEE</b>	TOMATOES, IN THE OPEN - OPERATIONS WITH AREA HARVESTED	16	
<b>KALKASKA</b>	TOMATOES, IN THE OPEN - OPERATIONS WITH AREA HARVESTED	11	

<b>OSCEOLA</b>	TOMATOES, IN THE OPEN - OPERATIONS WITH AREA HARVESTED	10	
<b>BENZIE</b>	TOMATOES, IN THE OPEN - OPERATIONS WITH AREA HARVESTED	13	122
<b>MECOSTA</b>	TURNIPS - ACRES HARVESTED	(D)	
<b>KALKASKA</b>	TURNIPS - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	TURNIPS - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	TURNIPS - OPERATIONS WITH AREA HARVESTED	1	
<b>MECOSTA</b>	TURNIPS - OPERATIONS WITH AREA HARVESTED	2	
<b>KALKASKA</b>	TURNIPS - OPERATIONS WITH AREA HARVESTED	2	5

“D” Data withheld to avoid disclosing data for individual farms

“Z” Less than half of the unit shown

“X” Not applicable



## Appendix B

### Fruit Acres Harvested and Operations

County	Data Item	Value for County	Total for Category all Counties
<b>CLARE</b>	APPLES - ACRES BEARING	(D)	
<b>MECOSTA</b>	APPLES - ACRES BEARING	(D)	
<b>OSCEOLA</b>	APPLES - ACRES BEARING	36	
<b>ROSCOMMON</b>	APPLES - ACRES BEARING	3	
<b>BENZIE</b>	APPLES - ACRES BEARING	754	
<b>GRAND TRAVERSE</b>	APPLES - ACRES BEARING	789	
<b>KALKASKA</b>	APPLES - ACRES BEARING	(D)	
<b>MANISTEE</b>	APPLES - ACRES BEARING	644	
<b>WEXFORD</b>	APPLES - ACRES BEARING	12	
<b>LAKE</b>	APPLES - ACRES BEARING	(D)	
<b>LEELANAU</b>	APPLES - ACRES BEARING	1,421	
<b>MASON</b>	APPLES - ACRES BEARING	1,356	5015
<b>MASON</b>	APPLES - OPERATIONS WITH AREA BEARING	27	
<b>LEELANAU</b>	APPLES - OPERATIONS WITH AREA BEARING	84	
<b>CLARE</b>	APPLES - OPERATIONS WITH AREA BEARING	2	
<b>MECOSTA</b>	APPLES - OPERATIONS WITH AREA BEARING	8	
<b>OSCEOLA</b>	APPLES - OPERATIONS WITH AREA BEARING	23	
<b>ROSCOMMON</b>	APPLES - OPERATIONS WITH AREA BEARING	3	
<b>BENZIE</b>	APPLES - OPERATIONS WITH AREA BEARING	34	
<b>GRAND TRAVERSE</b>	APPLES - OPERATIONS WITH AREA BEARING	52	
<b>KALKASKA</b>	APPLES - OPERATIONS WITH AREA BEARING	2	
<b>MANISTEE</b>	APPLES - OPERATIONS WITH AREA BEARING	35	
<b>WEXFORD</b>	APPLES - OPERATIONS WITH AREA BEARING	6	
<b>LAKE</b>	APPLES - OPERATIONS WITH AREA BEARING		276
<b>OSCEOLA</b>	APRICOTS - ACRES BEARING	(D)	
<b>BENZIE</b>	APRICOTS - ACRES BEARING	(D)	
<b>GRAND TRAVERSE</b>	APRICOTS - ACRES BEARING	(D)	
<b>MANISTEE</b>	APRICOTS - ACRES BEARING	(D)	
<b>LEELANAU</b>	APRICOTS - ACRES BEARING	(D)	
<b>MASON</b>	APRICOTS - ACRES	3	3
<b>MASON</b>	APRICOTS - NUMBER OF OPERATIONS	6	
<b>LEELANAU</b>	APRICOTS - OPERATIONS WITH AREA BEARING	7	

<b>OSCEOLA</b>	APRICOTS - OPERATIONS WITH AREA BEARING	1	
<b>BENZIE</b>	APRICOTS - OPERATIONS WITH AREA BEARING	2	
<b>GRAND TRAVERSE</b>	APRICOTS - OPERATIONS WITH AREA BEARING	1	
<b>MANISTEE</b>	APRICOTS - OPERATIONS WITH AREA BEARING	4	21
<b>CLARE</b>	BERRY TOTALS - ACRES	5	
<b>MECOSTA</b>	BERRY TOTALS - ACRES	11	
<b>OSCEOLA</b>	BERRY TOTALS - ACRES	13	
<b>CRAWFORD</b>	BERRY TOTALS - ACRES	(D)	
<b>ROSCOMMON</b>	BERRY TOTALS - ACRES	(D)	
<b>BENZIE</b>	BERRY TOTALS - ACRES	8	
<b>GRAND TRAVERSE</b>	BERRY TOTALS - ACRES	29	
<b>KALKASKA</b>	BERRY TOTALS - ACRES	8	
<b>MANISTEE</b>	BERRY TOTALS - ACRES	118	
<b>MISSAUKEE</b>	BERRY TOTALS - ACRES	2	
<b>WEXFORD</b>	BERRY TOTALS - ACRES	15	
<b>LAKE</b>	BERRY TOTALS - ACRES	(D)	
<b>LEELANAU</b>	BERRY TOTALS - ACRES	73	
<b>MASON</b>	BERRY TOTALS - ACRES	89	371
<b>MASON</b>	BERRY TOTALS - NUMBER OF OPERATIONS	10	
<b>LEELANAU</b>	BERRY TOTALS - NUMBER OF OPERATIONS	40	
<b>CLARE</b>	BERRY TOTALS - NUMBER OF OPERATIONS	8	
<b>MECOSTA</b>	BERRY TOTALS - NUMBER OF OPERATIONS	31	
<b>OSCEOLA</b>	BERRY TOTALS - NUMBER OF OPERATIONS	15	
<b>CRAWFORD</b>	BERRY TOTALS - NUMBER OF OPERATIONS	2	
<b>ROSCOMMON</b>	BERRY TOTALS - NUMBER OF OPERATIONS	3	
<b>BENZIE</b>	BERRY TOTALS - NUMBER OF OPERATIONS	4	
<b>GRAND TRAVERSE</b>	BERRY TOTALS - NUMBER OF OPERATIONS	14	
<b>KALKASKA</b>	BERRY TOTALS - NUMBER OF OPERATIONS	8	
<b>MANISTEE</b>	BERRY TOTALS - NUMBER OF OPERATIONS	26	
<b>MISSAUKEE</b>	BERRY TOTALS - NUMBER OF OPERATIONS	4	
<b>WEXFORD</b>	BERRY TOTALS - NUMBER OF OPERATIONS	9	
<b>LAKE</b>	BERRY TOTALS - NUMBER OF OPERATIONS	1	175
<b>OSCEOLA</b>	CHERRIES, SWEET - ACRES BEARING	1	
<b>BENZIE</b>	CHERRIES, SWEET - ACRES BEARING	299	
<b>GRAND TRAVERSE</b>	CHERRIES, SWEET - ACRES BEARING	1,766	
<b>MANISTEE</b>	CHERRIES, SWEET - ACRES BEARING	(D)	
<b>LAKE</b>	CHERRIES, SWEET - ACRES BEARING	(D)	
<b>LEELANAU</b>	CHERRIES, SWEET - ACRES BEARING	3,763	
<b>MASON</b>	CHERRIES, SWEET - ACRES BEARING	351	6180
<b>MASON</b>	CHERRIES, SWEET - OPERATIONS WITH AREA BEARING	18	

<b>LEELANAU</b>	CHERRIES, SWEET - OPERATIONS WITH AREA BEARING	142	
<b>OSCEOLA</b>	CHERRIES, SWEET - OPERATIONS WITH AREA BEARING	4	
<b>BENZIE</b>	CHERRIES, SWEET - OPERATIONS WITH AREA BEARING	23	
<b>GRAND TRAVERSE</b>	CHERRIES, SWEET - OPERATIONS WITH AREA BEARING	84	
<b>MANISTEE</b>	CHERRIES, SWEET - OPERATIONS WITH AREA BEARING	18	
<b>LAKE</b>	CHERRIES, SWEET - OPERATIONS WITH AREA BEARING	1	290
<b>OSCEOLA</b>	CHERRIES, TART - ACRES BEARING	(D)	
<b>BENZIE</b>	CHERRIES, TART - ACRES BEARING	1,389	
<b>GRAND TRAVERSE</b>	CHERRIES, TART - ACRES BEARING	3,248	
<b>MANISTEE</b>	CHERRIES, TART - ACRES BEARING	755	
<b>LAKE</b>	CHERRIES, TART - ACRES BEARING	(D)	
<b>LEELANAU</b>	CHERRIES, TART - ACRES BEARING	7,940	
<b>MASON</b>	CHERRIES, TART - ACRES BEARING	1,509	14841
<b>MASON</b>	CHERRIES, TART - OPERATIONS WITH AREA BEARING	18	
<b>LEELANAU</b>	CHERRIES, TART - OPERATIONS WITH AREA BEARING	143	
<b>OSCEOLA</b>	CHERRIES, TART - OPERATIONS WITH AREA BEARING	2	
<b>BENZIE</b>	CHERRIES, TART - OPERATIONS WITH AREA BEARING	27	
<b>GRAND TRAVERSE</b>	CHERRIES, TART - OPERATIONS WITH AREA BEARING	103	
<b>MANISTEE</b>	CHERRIES, TART - OPERATIONS WITH AREA BEARING	23	
<b>LAKE</b>	CHERRIES, TART - OPERATIONS WITH AREA BEARING	3	319
<b>LEELANAU</b>	CRANBERRIES - ACRES HARVESTED	(D)	
<b>LEELANAU</b>	CRANBERRIES - NUMBER OF OPERATIONS	1	1
<b>LEELANAU</b>	CURRANTS - ACRES	(D)	
<b>LEELANAU</b>	CURRANTS - NUMBER OF OPERATIONS	2	2
<b>LEELANAU</b>	GRAPES - ACRES BEARING	384	
<b>MASON</b>	GRAPES - ACRES BEARING	(D)	384
<b>MASON</b>	GRAPES - OPERATIONS WITH AREA BEARING	2	
<b>LEELANAU</b>	GRAPES - OPERATIONS WITH AREA BEARING	42	44
<b>LEELANAU</b>	NECTARINES - ACRES BEARING	(D)	
<b>MASON</b>	NECTARINES - ACRES	(D)	
<b>MASON</b>	NECTARINES - NUMBER OF OPERATIONS	1	
<b>LEELANAU</b>	NECTARINES - NUMBER OF OPERATIONS	3	4
<b>OSCEOLA</b>	PEACHES - ACRES BEARING	2	
<b>BENZIE</b>	PEACHES - ACRES BEARING	22	
<b>GRAND TRAVERSE</b>	PEACHES - ACRES BEARING	22	
<b>MANISTEE</b>	PEACHES - ACRES BEARING	(D)	
<b>LAKE</b>	PEACHES - ACRES BEARING	(D)	
<b>LEELANAU</b>	PEACHES - ACRES	69	
<b>MASON</b>	PEACHES - ACRES	245	360
<b>MASON</b>	PEACHES - OPERATIONS WITH AREA BEARING	15	

<b>LEELANAU</b>	PEACHES - OPERATIONS WITH AREA BEARING	31	
<b>OSCEOLA</b>	PEACHES - OPERATIONS WITH AREA BEARING	7	
<b>BENZIE</b>	PEACHES - OPERATIONS WITH AREA BEARING	10	
<b>GRAND TRAVERSE</b>	PEACHES - OPERATIONS WITH AREA BEARING	17	
<b>MANISTEE</b>	PEACHES - OPERATIONS WITH AREA BEARING	22	
<b>LAKE</b>	PEACHES - OPERATIONS WITH AREA BEARING	3	105
<b>OSCEOLA</b>	PEARS - ACRES BEARING	(D)	
<b>BENZIE</b>	PEARS - ACRES BEARING	(D)	
<b>GRAND TRAVERSE</b>	PEARS - ACRES BEARING	(D)	
<b>MANISTEE</b>	PEARS - ACRES BEARING	(D)	
<b>WEXFORD</b>	PEARS - ACRES BEARING	(D)	
<b>LAKE</b>	PEARS - ACRES BEARING	(D)	
<b>LEELANAU</b>	PEARS - ACRES BEARING	41	
<b>MASON</b>	PEARS - ACRES	91	132
<b>MASON</b>	PEARS - OPERATIONS WITH AREA BEARING	10	
<b>LEELANAU</b>	PEARS - OPERATIONS WITH AREA BEARING	13	
<b>OSCEOLA</b>	PEARS - OPERATIONS WITH AREA BEARING	8	
<b>BENZIE</b>	PEARS - OPERATIONS WITH AREA BEARING	7	
<b>GRAND TRAVERSE</b>	PEARS - OPERATIONS WITH AREA BEARING	7	
<b>MANISTEE</b>	PEARS - OPERATIONS WITH AREA BEARING	6	
<b>WEXFORD</b>	PEARS - OPERATIONS WITH AREA BEARING	3	
<b>LAKE</b>	PEARS - OPERATIONS WITH AREA BEARING	3	57
<b>LEELANAU</b>	PLUMS & PRUNES - ACRES BEARING	145	
<b>MASON</b>	PLUMS & PRUNES - ACRES	63	208
<b>MASON</b>	PLUMS & PRUNES - NUMBER OF OPERATIONS	7	
<b>LEELANAU</b>	PLUMS & PRUNES - NUMBER OF OPERATIONS	22	29
<b>LEELANAU</b>	RASPBERRIES - ACRES	20	
<b>MASON</b>	RASPBERRIES - ACRES	(Z)	20
<b>MASON</b>	RASPBERRIES - OPERATIONS WITH AREA HARVESTED	3	
<b>LEELANAU</b>	RASPBERRIES - OPERATIONS WITH AREA HARVESTED	20	23
<b>LEELANAU</b>	STRAWBERRIES - ACRES HARVESTED	33	
<b>MASON</b>	STRAWBERRIES - ACRES HARVESTED	(D)	33
<b>MASON</b>	STRAWBERRIES - NUMBER OF OPERATIONS	2	
<b>LEELANAU</b>	STRAWBERRIES - NUMBER OF OPERATIONS	20	22

“D” Data withheld to avoid disclosing data for individual farms

“Z” Less than half of the unit shown

“X” Not applicable