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Assessing the Potential Northwest Minnesota Farm-to-Institution Market

An analysis of the market potential for purchase of locally-raised foods by educational and healthcare institutions in 16 Northwest Minnesota counties

By Ryan Pesch and Rani Bhattacharyya, Extension Educators, University of Minnesota

In partnership with: Statewide Health Improvement Program | SHIP HEALTH REFORM

North Country SHIP and Northwest Regional Sustainable Development Partnership

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January 2014

By Ryan Pesch and Rani Bhattacharyya, Extension Educators, University of Minnesota

Report Reviewers:
Amanda Corbett, Evaluator, Extension Center for Family Development, University of Minnesota
Lynn Mader, Independent Dietician, Montevideo, MN

Sponsors:
North Country SHIP, Bemidji, MN
Northwest Regional Sustainable Development Partnership

Contributors:
Noelle Harden, Extension Educator, University of Minnesota Extension
Linda Kingery, Executive Director, Northwest Regional Sustainable Development Partnership
Josh Larson, Director, North Country SHIP
Dana Rieth, Dietician, Lakes Country Service Cooperative
Brigid Tuck, Analyst, University of Minnesota Extension

Report Editors:
Mary Vitcenda, Educational Materials Coordinator, Extension Center for Community Vitality, University of Minnesota

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OVERVIEW

University of Minnesota Extension conducted a survey of educational and healthcare food service directors in 16 counties of Northwest Minnesota (see Figure 1) in spring 2013 **to profile these institutions' existing food purchasing habits over the previous 12 months and estimate the potential economic impact on the region if these institutions bought more foods from local farms.**

Respondents varied greatly in size from 15 to 3,500 meals served daily, yet all purchased many of the same foods, such as cucumbers, tomatoes, and ground beef. Although some respondents have processing requirements for select kinds of produce (lettuce especially), overall, many said they are willing to buy fresh fruits and vegetable in whole form.

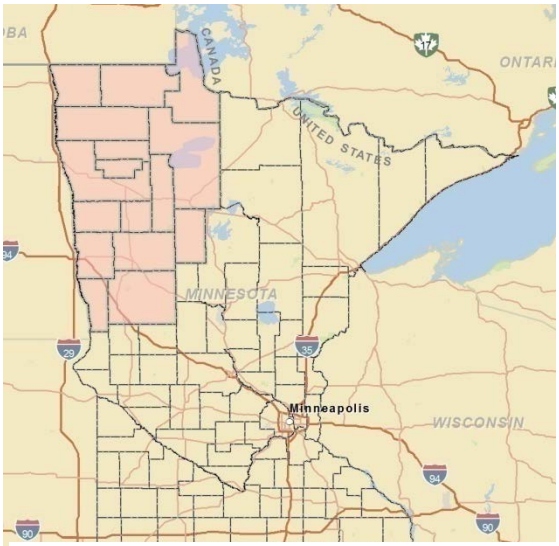

FIG.1: Sixteen-County Study Area

There are 54 educational institutions, including K-12 schools and juvenile detention centers, and 181 healthcare facilities operating in the region highlighted in Figure 1. The findings outlined in this report are based on *completed* surveys we received from 86 food service directors at educational and healthcare facilities *serving meals* – 43 at educational institutions and another 43 at healthcare institutions. This translates to a 79 percent response rate for educational food service directors (43 out of 54 facilities serving meals) and an approximate 34 percent response rate for healthcare food service directors (43 out of 127 facilities serving meals). The response rate for schools is excellent, and while the rate for healthcare facilities was considerably less, both rates provided sufficient data for our analyis.

We estimate that, collectively, institutions serving meals buy from 1-1.5 million pounds of food products that could be grown or raised locally each year. This represents a viable market opportunity, although realistically, local growers and producers would capture only a portion of this market – probably about 20 percent. This rate of market capture would net regional farmers about $480,000 in a standard summer growing season and about $590,000 in an extended growing season. Over half of this potential comes from selling ground beef.

For the region as a whole, a 20 percent capture rate would inject between $360,000-$400,000 into the economy—including the ripple effect of additional sales to regional farm suppliers and the like.

To reach these levels of economic activity, however, the region's institutions and producers have a long way to go – repondents reported buying only $14,000 worth of food directly from local farmers in the 12 months prior to the survey (fiscal year 2012-2013).

KEY FINDINGS

- About 30 percent of total respondents bought foods directly from local farmers in fiscal year 2012-2013, and a majority of both educational and healthcare respondents profess interest in buying locally grown and raised foods.
- Healthcare institutions represent a larger potential market for purchase of locally grown and raised foods than educational institutions. We conclude this because healthcare respondents report buying a broader mixes of foods available in the region than educational respondents. A majority of educational food service directors limit their food purchases to about nine products, while a majority of healthcare food service directors reported buying about 14 products. In addition, healthcare facilities are open year round, thus increasing the potential market for local foods.
- All food service respondents are somewhat willing to purchase fresh fruits and vegetables in whole form (unprocessed), although educational institutions have less flexibility than healthcare facilities. A total of 10 of 23 products were acceptable in whole form to all respondents in either educational or healthcare institutions that reported purchasing those products.
- The 54 educational and 127 healthcare facilities that serve meals in the 16-county region source an estimated 1to 1.5 million pounds of food that could be grown in the region annually under a standard summer produce season and extended season respectively.
- The total market potential of farm-to-institution sales in the 16-county area ranges from $2.4 million for a standard summer produce season to $2.9 million for an extended season. A more realistic 20 percent capture rate of this market would net regional farmers between $480,000 and $590,000 annually. Over 50 percent of this market potential derives from ground beef sales due to its relatively high cost per pound and high demand with institutions.
- The potential economic impact of institutions buying more local foods on the regional economy as a whole could be significant. If institutions bought 20 percent of locally available foods directly from farmers, their purchases would generate between $360,000 and $400,000 in total economic activity in the 16-county region – a majority of which would derive from an increase in sales to regional farm suppliers.
- Season extension offers growers an opportunity to meet market demand from institutions *if* growers use season extension to produce quality products consistently. More than half of the total market potential for selling fresh fruits and vegetables to institutions lies outside the traditional summer growing season in Northwest Minnesota.

BACKGROUND

The need for this study in 2013 emerged from previous collaborative work between the Northwest Regional Sustainable Development Partnership's (RSDP's) Local Foods working group and the Minnesota Statewide Health Improvement Program (SHIP). Because of their work with institutions such as K-12 schools, hospitals, and long-term care facilities, RSDP members and their SHIP counterparts wanted to better understand the economic characterstics of this

potential market for local foods as more institutions orient their menus to local food sources and produce in whole form. This re-orientation of organizational food buying is evident in K-12 schools (IATP, 2012) and healthcare facilities, which offer a promising year-round market (George et al., 2010).

The Northwest RSDP and SHIP sought more information to ground their work in helping communities become more sustainable and improve public health. As Okechukwu Ukaga and Chris Maser said in their 2004 study on evaluating sustainable development, a community "must be able to understand its life support systems and how [those systems] influence and are influenced by a variety of factors" in order to become sustainable. In this spirit of understanding, RSDP did some benchmarking in 2012 in the Northwest region and found low levels of residents buying food from local farms (Singh et al., 2012). Thus, in 2013, RSDP and SHIP sought to learn more about the regional farm-to-institution market and the connection among producers, buyers and intermediaries in order to improve their overall understanding, as well as help the Northwest RSDP and SHIP align their missions.

METHODOLOGY

In May 2013, Extension sent food service directors at 54 K-12 schools and juvenile detention centers in Northwest Minnesota a request to participate in a survey of food-buying practices (Appendix 4). Extension contacted food service directors by mail, first sending a cover letter and survey form, and then following up with a postcard reminder. Extension also included $10 cash as an incentive to participate. In June 2013, Extension sent a near-identical survey to food service directors at 181 licensed healthcare facilities in Northwest Minnesota (Appendix 5) using the same follow-up procedures. Extension did not send a direct incentive to healthcare study participants, but offered entry into a drawing for two $500 incentives and conducted follow-up calls to increase response rate.

Extension received 102 responses total from the two survey samples for a 44 percent response rate overall, but only 86 of 102 were responses from facilities that reported serving meals; the remainder reported not serving meals at all. Thus, **this report and analysis are based on the 86 complete survey responses from facilities serving meals – 43 from food service directors at public K-12 schools and juvenile detention centers and 43 from directors at healthcare facilities.**

Considering our purpose to measure the size of the farm-to-institution market at educational and healthcare facilities, Extension also estimated the total number of meals served at educational and healthcare facilities in the 16-county region that did not respond to our survey. We started by using the Minnesota Department of Health's (MDH's) *Heath Care Facility and Provider Database* and the Minnesota Department of Education's (MDE's) *Organization Reference Glossary* to identify all educational and healthcare institutions in the 16-county region where meals are served on site. (See the Reference list for website addresses.) We complemented online research about healthcare facilities with correspondence directly with facility management.

Extension extrapolated results from the survey sample to estimate the total number of institutional meals served in the region, as well as the total amount of food purchased annually by institutions. We further refined these estimates according to availability of crops during a

standard summer growing season and an extended growing season to identify a realistic market potential for local growers.

Lastly, Extension estimated the economic impact of the previous year's farm-to-institution purchases and the potential impact of 20 percent of institutional food purchases from local growers to the regional economy using an input-output model (IMPLAN).

SURVEY FINDINGS

As noted, Extension received 86 complete and usable surveys from food service directors at K-12 educational and healthcare institutions in Northwest Minnesota.

The 43 educational food service directors who responded serve over 27,000 meals daily, with meal counts ranging from 128 meals served daily at the lowest-volume facility to 3,500 at the highest. As noted, all respondents are employed at public K-12 schools or juvenile detention centers.

The 43 healthcare food service directors who responded serve a total of nearly 13,000 meals daily, with counts ranging from 15 meals served daily at the lowest-volume facility to 1,400 at the highest. All respondents are employed at hospitals or long-term care facilities, such as nursing homes and assisted living facilities.

Majority interest in purchasing from local farmers

A majority of both educational and healthcare respondents indicate interest in purchasing directly from local farmers, although interest is higher among educational respondents (see Figures 2 and 3). This finding may not be a surprising given that advocacy groups and the media have spotlighted farm-to-school food-buying efforts over the past five years, while farm-to-healthcare efforts have only recently been highlighted.

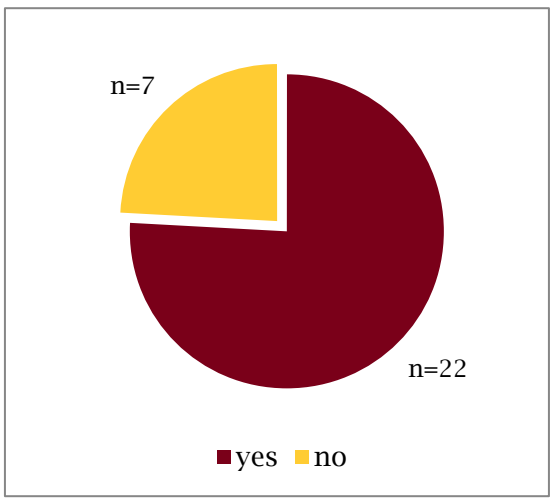

FIG. 2: Educational interest in local food purchasing (> 75 percent)

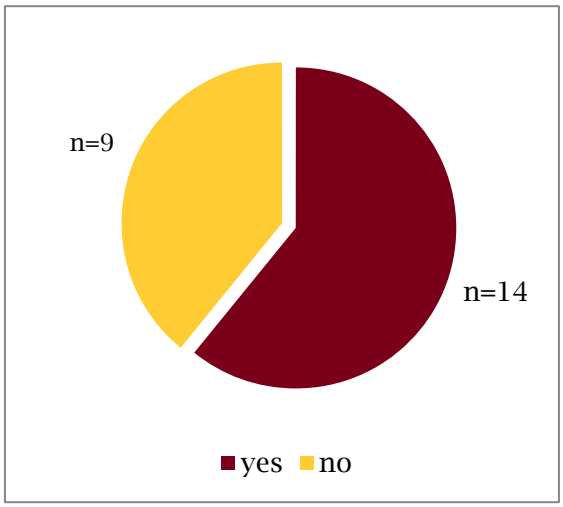

FIG. 3: Healthcare interest in local food purchasing (> 60 percent)

Healthcare facilities buy a broader product mix

The survey asked food service directors about their purchasing habits for a range of food products commonly grown in Minnesota, including fresh fruits, vegetables and meats (see

Appendix 4 or 5 for listing). About half of the foods – apples and lettuce, for example – are in high demand and so are targets for consistent sales to institutions, whereas other crops – such as winter squash and dried beans – would be of interest to only a minority of food service directors. When contrasting the purchasing patterns of healthcare and educational institutions, clearly a larger percentage of healthcare food service directors purchase a broad mix of foods than their counterparts in education. School and juvenile detention center food service directors limit their food purchases to fewer products, with only nine reported by a majority of respondents. In contrast, healthcare food service directors report 14 products purchased by a majority of healthcare facilities (see Figure 4).

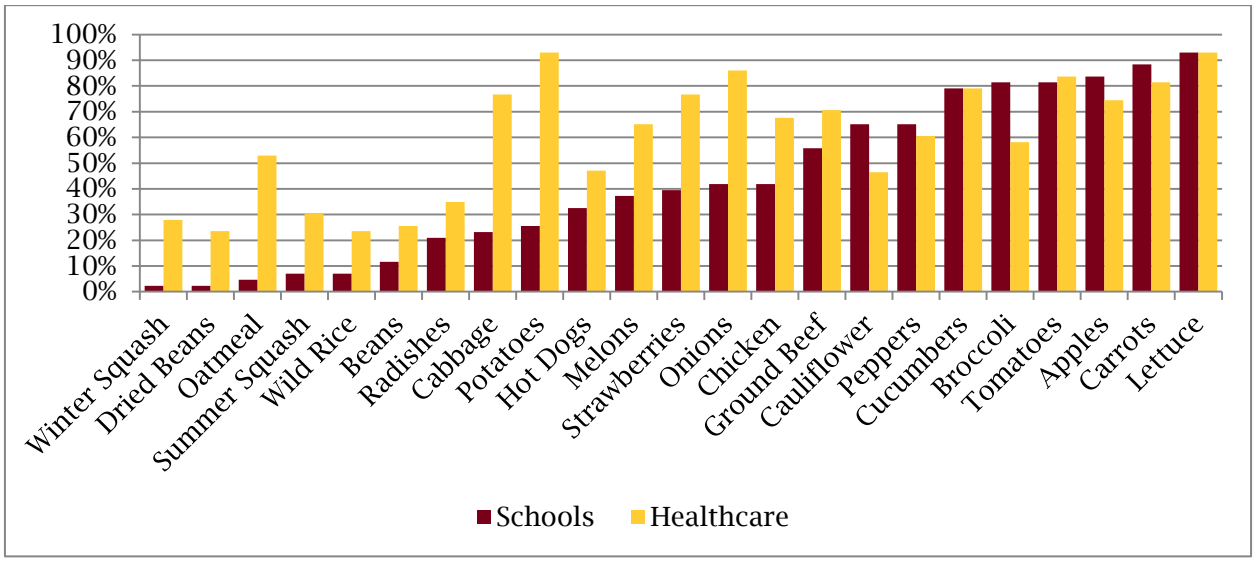

FIG. 4: Food products currently purchased by type and percent of respondents (n=86)

Direct purchasing from local farmers

Both educational and healthcare food service directors reported purchasing directly from local farmers in fiscal year 2012-2013 – 31 percent and 27 percent respectively (see Figures 5 and 6).

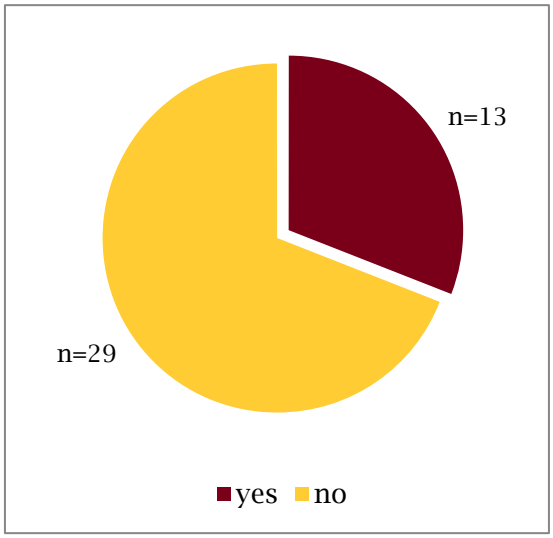

FIG. 5: School direct purchasing in 2013

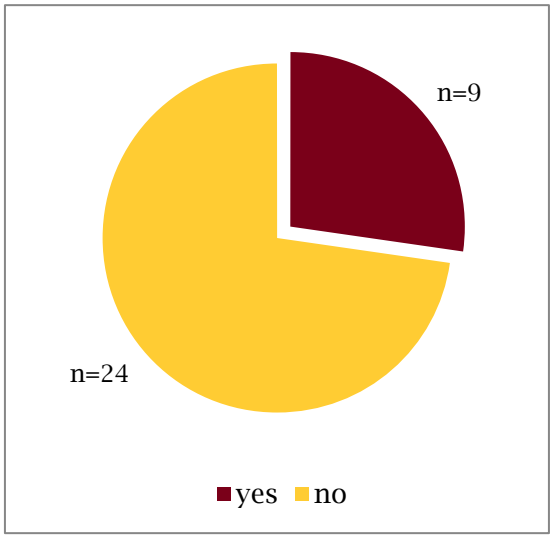

FIG. 6: Healthcare direct purchasing in 2013

The survey also asked respondents to identify which food products they purchased in the previous 12 months. As with general purchasing patterns in the region, healthcare food service directors also report purchasing a more diverse mix of products from local producers than educational institutions (see Figures 7 and 8).

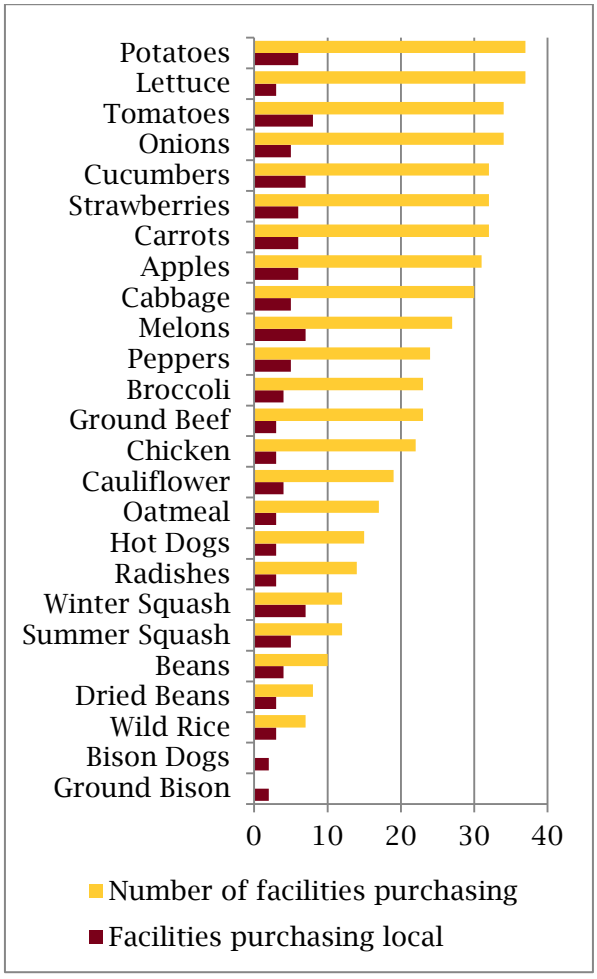

FIG. 7: Healthcare local purchases (n=43)

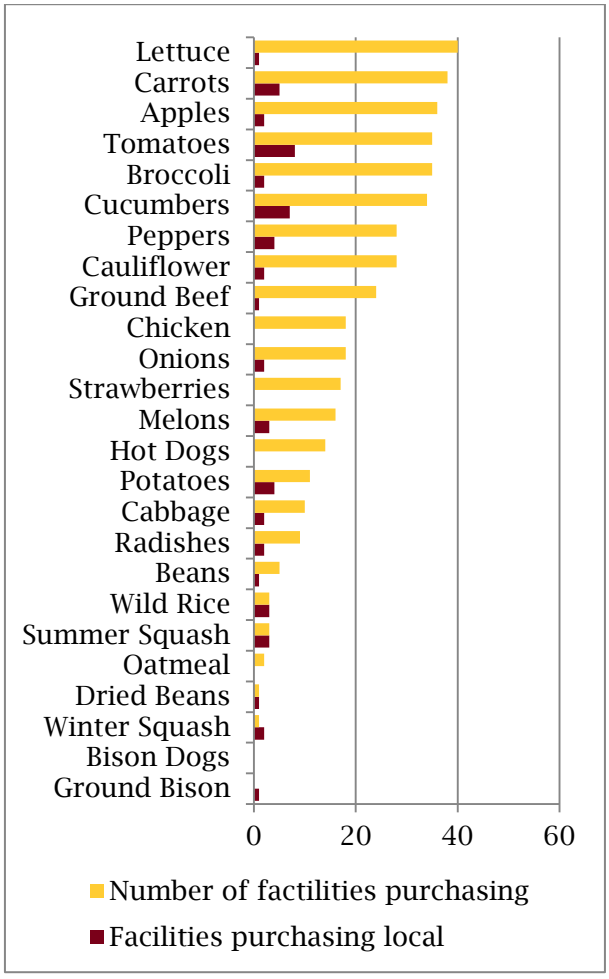

FIG. 8: Educational local purchases (n=43)

Questions about barriers and whole form preferences

The preference for pre-processed produce and procurement policies that prohibit direct food-buying from farms are often cited as major barriers to supplying institutional customers with local foods; these barriers have been noted in past state and national research and through surveys of local growers seeking to supply food service establishments (George, et al., 2010; Pesch, 2012; Strohbehn, et al., 2004). Therefore, the survey asked food service directors to indicate whether they would consider purchasing a product in whole form and whether their contract prohibited them from purchasing direct from a farm. Because very few local growers have processing capacity, our intention was to describe the degree of flexibility among institutions to purchase local foods in unprocessed form.

The survey showed that very few respondents from educational or healthcare facilities have contracts prohibiting purchase of foods from local farmers. Only **4** of 86 food service directors

stated their contracts prohibited purchases from local farms (1 educational and 3 healthcare facilities).

When asked whether whole forms of foods were acceptable, respondents said they are willing to buy some foods in whole form, but are sensitive to others. This was especially true for educational food service directors. Overall, respondents said 10 of 23 products they had purchased before were acceptable in whole form (see Figure 9). For example, all 24 healthcare survey takers (or 100 percent) who had purchased peppers said they would buy them in whole form, compared with only 36 percent of educational survey takers who had bought peppers.

Lettuce is the fruit or vegetable least acceptable in whole form to either respondent – with only 18 percent of educational food service directors saying they would buy lettuce in whole form. A total of 54 percent of healthcare respondents said they would accept lettuce in whole form, reinforcing the contrast in flexibility between the two institutional types.

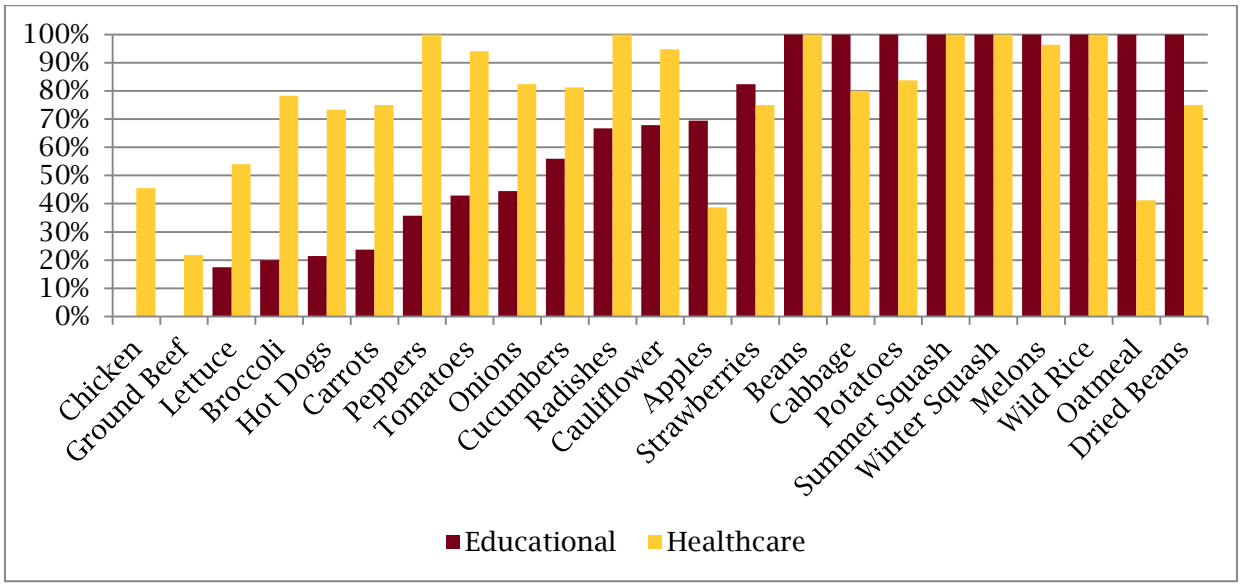

FIG. 9: Products respondents would consider buying in whole form, by type of institution

MARKET ESTIMATES

Extension estimated the market potential for locally-raised foods at educational and healthcare institutions by extrapolating product estimates from our survey research to account for the total number of meals served at these institutions throughout the region.

Quantifying meals served daily at educational institutions

To obtain the number of meals served daily at educational institutions in the 16-county region, we started by identifying the institutions through MDE's *Organization Reference Glossary*, or MDE-ORG. We then quantified meals served daily at the institutions (mostly schools) through numbers supplied by survey respondents and estimates of average daily attendance (membership) at the non-responding educational facilities.

Counting meals reported through educational surveys

In spring 2013, Extension sent its survey to all 54 educational institutions, including K-12school districts and juvenile detention centers, in the 16-county region of Northwest Minnesota – as listed on MDE-ORG. As noted, 43 educational food service directors responded. They said they serve 27,361 meals daily, or 67 percent of an estimated 41,107 meals served daily in the entire region.

Estimating educational meals based on average daily attendance

Extension estimated 41,107 meals served daily by using average daily membership figures from MDE's *Data Reports and Analytics* page (see Reference list for website address). Based on MDE's membership figures, Extension calculated that 1.06 meals are served daily at educational institutions throughout the region and then applied the 1.06 figure to the facilities that did not respond to our survey. The total number of meals identified through this process was 13,746, or 33 percent of the estimated 41,107 meals served in the 16-county region.

Total estimated size of educational food-buying market

As noted, we identified a total of 54 educational facilities in the 16-county region that serve an estimated total of 41,107 meals daily. This represents a significant market for purchase of locally grown and raised foods.

Estimating total meals served daily at healthcare facilities

Extension used a process to estimate the total number of meals served daily at healthcare facilities in the region similar to the one outlined above for educational facilities.

We started by using the Minnesota Department of Health's *Health Care Facility and Provider Database* (see Reference list for website address) to identify the full range of healthcare facilities in the 16-county region, including hospitals and long-term care facilities. We used two methods to identify the size of the establishment and the number of meals: surveys of food service directors and estimates based on online research or correspondence with facility management. These two methods are explained below.

Counting meals reported through healthcare surveys

In summer 2013, Extension sent its survey to 181 Northwest Minnesota healthcare facilities identified in the MDH licensed facility database. A total of 57 food service directors responded, including 14 who indicated their facility does not prepare and serve meals. The 43 respondents who do serve meals reported serving 12,917, or 72 percent, of the estimated 17,823 meals served daily at healthcare facilities in the 16-county region.

Estimating healthcare meals based on online research or correspondence

Extension contacted the remainder of the organizations listed in the MDH facilities database via email or researched them online to identify the size of their establishment by units and number of residents, as well as determine whether they serve meals. Our team used www.MinnesotaHelp.info, a listing of public information targeted to users of senior and social services, as the primary online information source. We created an estimate of meals served for each institution based on the assumption of three meals per day per resident, unless otherwise noted. We discovered many facilities that do not serve meals or have their meals prepared by a nearby healthcare facility – a common practice among small assisted living facilities. The total

number of meals identified through this process was 4,906, or 28 percent of the estimated 17,823 meals served at healthcare facilities in the 16-county region.

Total estimated size of healthcare food-buying market

Although we sent surveys to all 181 healthcare facilities in the licensed facility database, we identified only 127 facilities in the 16-county region that serve meals – for an estimated total of 17,823 meals daily (as noted). A majority of these facilities are small assisted living facilities with 95 of 127 serving less than 100 meals daily and over half serving less than 50 meals daily. Although the healthcare market for purchase of locally grown and raised foods is smaller than that for educational institutions, it still represents a promising market.

Estimating regional product demand

Extension extrapolated the reported food purchasing patterns of all 86 participating institutions (those that serve meals and provided complete responses to the product survey) to estimate the market potential for the whole region.

To estimate the amount of food purchased annually, we assumed that respondents bought a mix and amount of foods every month consistent with survey responses as outlined (see text box to the right). This is a reasonable assumption because participating food service directors indicated anecdotally that their monthly fresh produce and other food purchases are fairly consistent across seasons.

CALCULATING product-buying estimates for educational and healthcare institutions:

1. Convert the number of pounds purchased by time period (weekly, bi-weekly, etc.) for each food into the amount purchased per meal on a monthly basis.
2. Calculate the average number of pounds per meal for those facilities that purchased a particular product. For example, eight of nine facilities that purchased fresh apples averaged less than one hundredth of a pound for all meals served monthly (0.0069 lb. per meal per month).
3. Apply average pounds per monthly meal count to total number of meals served in region.

When applying the purchasing profile to the region, we assumed our sample of survey respondents is representative of all institutional facilities in the 16-county region. In doing so, we assumed other facilities purchase foods in the same proportion; for example, we assumed 93 percent of all facilities purchase fresh lettuce, the same as the proportion of our survey respondents. We also assumed all facilities purchase the same volume of foods by meal as the average for our respondents.

MARKET POTENTIAL BASED ON TWO GROWING SEASONS

Estimating food purchases for an entire year greatly overemphasizes the size of the institutional market potential for local growers because of fruit and vegetable growing conditions in Northwest Minnesota. To account for this, we made estimates based on two scenarios for growing seasons. In our first scenario, we used a standard Northwest Minnesota growing season based on when a fruit or vegetable is typically available for sale, assuming production of a field-grown fruit or vegetable without any season-extending technology or methods. We assumed other food products are available year-round, such as meat and whole grains. In our second scenario, we used an extended growing season that could reasonably be

realized through readily available technologies and methods for growing fruits and vegetables over an extended season or for storing crops for later sale.

Scenario 1: Standard fruit and vegetable growing season

The standard growing season in Northwest Minnesota is relatively short compared with other parts of the nation – generally about 4-5 months from June to October. This is the time that field-grown produce is available, excluding produce grown hydroponically or through some other kind of non-soil-based growing technique. Extension included K-12 school summer feeding program figures in the analysis; nine respondents reported summer feeding programs, which were a modest contribution to the total market (about $10,000 annually).

Healthcare represents a larger potential market than education

Using retail pricing from USDA statistics for the range of produce listed (USDA Agricultural Marketing Services, 2012), we were able to estimate a market potential not only in volume of food products but also value in dollars. The average retail price data is derived from national supermarket price checks and represents reasonable benchmarks for an analysis such as this; certainly local market conditions may vary significantly between growers and buyers.

One major finding when comparing healthcare and educational respondents is that healthcare facilities represent a larger potential market than educational institutions under both the standard- and extended-season scenarios. This is especially evident when comparing the total months available (see Tables 1, 2, 3 and 4 for details). Although K-12 schools serve more meals daily, healthcare facilities are open year-round and purchase a wider variety of foods from regional farmers.

Product:	Total months available*	Lbs of food	Average retail price	Market potential
Beans	0.5	991	$1.47	$1,457
Broccoli	2	10,028	$1.55	$15,544
Cabbage	2	1,423	$0.81	$1,158
Carrots	2	19,314	$0.85	$16,417
Cauliflower	2	4,740	$1.10	$5,214
Cucumbers	0.5	2,489	$0.67	$1,668
Tomatoes	0.5	2,988	$1.30	$3,874
Peppers	0.5	670	$1.41	$944
Lettuce	1	15,770	$1.33	$20,896
Potatoes	1	5,170	$0.89	$4,610
Onions	1	1,005	$0.68	$684
Radishes	1.5	919	$1.00	$919
Summer Squash	0.5	26	$1.29	$33
Winter Squash	2	12	$0.94	$12
Apples	1	28,460	$1.35	$38,449
Melons	0.5	2,236	$0.56	$1,252
Strawberries	0	160	$2.93	$468
Wild Rice	9	79	$6.69	$531
Oatmeal	9	301	$2.72	$819
Dried Beans	9	65	$2.19	$142
Chicken	9	112,560	$1.48	$166,589
Ground Beef	9	165,492	$3.79	$627,213
Hot Dogs	9	29,216	$3.19	$93,200
Total Purchases		**404,114**		**$1,002,090**

TABLE 1: Educational market potential scenario for standard Northwest Minnesota growing season (n=43)

*Months available during the 9-month school year. Reported summer feeding figures are included in totals for both regular and extended seasons

Product:	Total months available	Lbs of food	Average retail price	Market potential
Beans	2.5	4,842	$1.47	$7,118
Broccoli	4	9,145	$1.55	$14,174
Cabbage	4	10,275	$0.81	$8,357
Carrots	4	17,915	$0.85	$15,228
Cauliflower	4	4,020	$1.10	$4,422
Cucumbers	2.5	7,093	$0.67	$4,752
Tomatoes	2.5	14,390	$1.30	$18,659
Peppers	2.5	3,678	$1.41	$5,186
Lettuce	4	26,367	$1.33	$34,936
Potatoes	3	65,117	$0.89	$58,063
Onions	3	12,341	$0.68	$8,392
Radishes	4.5	2,174	$1.00	$2,174
Summer Squash	2.5	3,195	$1.29	$4,106
Winter Squash	2	1,964	$0.94	$1,850
Apples	2	10,340	$1.35	$13,969
Melons	2	24,021	$0.56	$13,452
Strawberries	1	4,908	$2.93	$14,380
Wild Rice	12	4,834	$6.69	$32,341
Oatmeal	12	39,579	$2.72	$107,655
Dried Beans	12	12,547	$2.19	$27,479
Chicken	12	118,453	$1.48	$175,310
Ground Beef	12	179,321	$3.79	$679,628
Hot Dogs	12	45,031	$3.19	$143,649
Total Purchases		**621,552**		**$1,395,280**

TABLE 2: Healthcare market potential scenario for standard Northwest Minnesota growing season (n=43)

Scenario 2: Extended fruit and vegetable growing season

Over the past decade, growers and researchers have concentrated significant effort on developing season-extension techniques and technologies as demand for local produce increases and growers work to maintain consistent supply (Coleman, 2009; Nennich, 2004). New and rediscovered technologies such as high and low tunnels, as well as cold frames and post-harvest storage facilities, are being deployed to lengthen the produce season, even in cold Minnesota.

For this study, University of Minnesota Extension based the length of the extended season on reasonable produce availability for growers using the aforementioned technologies and also based on information from correspondence with USDA resources and University of Minnesota faculty and researchers. Cindy Tong, a post-harvest handling specialist with the University's Department of Horticulture, provided resources on storage capabilities, including USDA Handbook 66, "The Commercial Storage of Fruits, Vegetables, and Florist and Nursery Stocks,") and "Minnesota Foods in Season" on Extension's Farm to School website (see the Reference list for website addresses). Steve Poppe, a horticulture scientist with the West Central (Minnesota) Research and Outreach Center, estimated strawberry availability based on first-year trials with day-neutral strawberry production near Morris, MN (day-neutral plants produce fruit throughout the growing season).

In the extended season scenario, both the amount of fruits and vegetables and their market potential in terms of dollars almost doubles when compared to the standard Northwest Minnesota growing season. Although most products – tomatoes, for example – increase their growing season by only a month under the extended scenario, the season for some high-volume products more than doubles, which has a significant impact on the total market potential and pounds of produce per season.

The significant impact applies to potatoes, onions, and strawberries. Each of these crops is in high demand among food service directors. In terms of availability under the extended scenario, onions and potatoes increase from three to nine months under ideal storage conditions. Strawberries are also in great demand, and day-neutral varieties grown in low tunnels for season extension promise a four-month picking season.

Product:	Total Months Available*	Lbs of Produce	Average Retail Price	Market Potential
Beans	1	1,944	$1.47	$2,858
Broccoli	3	14,965	$1.55	$23,196
Cabbage	4	2,821	$0.81	$2,294
Carrots	7	66,745	$0.85	$56,734
Cauliflower	3	7,076	$1.10	$7,784
Cucumbers	1	4,845	$0.67	$3,246
Tomatoes	1	5,777	$1.30	$7,491
Peppers	1	1,297	$1.41	$1,829
Lettuce	3	45,508	$1.33	$60,299
Potatoes	7	36,193	$0.89	$32,272
Onions	7	6,818	$0.68	$4,636
Radishes	5	3,062	$1.00	$3,062
Summer Squash	1	51	$1.29	$65
Winter Squash	5	31	$0.94	$29
Apples	4	111,367	$1.35	$150,457
Melons	1	4,364	$0.56	$2,444
Strawberries	1	4,253	$2.93	$12,462
Wild Rice	9	79	$6.69	$531
Oatmeal	9	301	$2.72	$819
Dried Beans	9	65	$2.19	$142
Chicken	9	112,560	$1.48	$166,589
Ground Beef	9	165,492	$3.79	$627,213
Hot Dogs	9	29,216	$3.19	$93,200
Total Purchases		**624,831**		**$1,259,651**

TABLE 3: Educational market potential scenario for extended season (n=43)

*Months available during the 9-month school year. Reported summer feeding figures are included in totals for both regular and extended seasons

Product:	Total Months Available	Lbs of Produce	Average Retail Price	Market Potential
Beans	4	7,748	$1.47	$11,390
Broccoli	6	13,717	$1.55	$21,262
Cabbage	7	17,982	$0.81	$14,625
Carrots	9	40,310	$0.85	$34,263
Cauliflower	6	6,030	$1.10	$6,633
Cucumbers	4	11,349	$0.67	$7,604
Tomatoes	4	23,024	$1.30	$29,854
Peppers	4	5,885	$1.41	$8,298
Lettuce	6	39,550	$1.33	$52,404
Potatoes	9	195,352	$0.89	$174,189
Onions	9	37,024	$0.68	$25,176
Radishes	8	3,864	$1.00	$3,864
Summer Squash	4	5,112	$1.29	$6,569
Winter Squash	5	4,910	$0.94	$4,624
Apples	5	25,849	$1.35	$34,922
Melons	3	36,031	$0.56	$20,177
Strawberries	4	19,631	$2.93	$57,519
Wild Rice	12	4,834	$6.69	$32,341
Oatmeal	12	39,579	$2.72	$107,655
Dried Beans	12	12,547	$2.19	$27,479
Chicken	12	118,453	$1.48	$175,310
Ground Beef	12	179,321	$3.79	$679,628
Hot Dogs	12	45,031	$3.19	$143,649
Total Purchases		**893,135**		**$1,679,436**

TABLE 4: Healthcare market potential scenario for extended Northwest Minnesota growing season (n=43)

Estimates of fruit and vegetable production

Data from a 2012 report on farm financials for assorted produce operations in Minnesota allows us to roughly estimate the necessary acres needed to meet institutional demand for fresh fruits and vegetables. The report data comes from FINBIN, a farm financial database developed by the University of Minnesota Center for Farm Financial Management (FINBIN, 2012). See Appendix 6 for the full report. The gross return per acre or total sales per acre for reporting farms in 2011 was $8,719. Using this as a basic benchmark, growers in the region would need to dedicate a total of 31 to 71 acres to meet potential market demand under the two scenarios as outlined above.

ECONOMIC CONTRIBUTION OF FARM-TO-INSTITUTION ACTIVITY

The economic contribution of an industry consists of direct and secondary effects. Direct effects are economic activities generated by the industry itself. In this case, we are measuring the effect of activities generated by institutions shifting the payments made for food from wholesale businesses to regional farmers under two scenarios: (1) 2012 reported food purchases with local growers, and (2) potential economic impact of institutions purchasing 20 percent of locally-available foods in season.

Economic impact methods and terminology

To estimate economic impact for our two scenarios we first calculated the direct impact to the region (a measure of new economic activity in the 16-county region in this instance). Since institutions are shifting their spending from one industry to another, we calculate direct impact by (1) calculating total increased sales made by regional farmers, and then (2) calculating the loss to wholesalers due to institutions substituting local foods for food currently supplied by the wholesaler. In this model we are assuming the institutional buyers are paying a 25 percent premium above their typical wholesale pricing. Therefore, the loss to wholesalers is 75 percent of the increased farm sales. For example, educational institutions purchasing $100,000 in potatoes would have a $25,000 direct effect since $75,000 in sales is being subtracted from the region's wholesalers and we need to account for this loss on the regional economy.

With direct impacts quantified, the data can be entered into an input-output model. Input-output models trace the flow of dollars throughout a local economy and can capture the indirect and induced, or ripple effects, of an economic activity. We used input-output modeling software and data from IMPLAN (MIG, Inc.) for this report.

Indirect effects are those associated with a change in economic activity due to spending for goods and services. In this case, these are the changes in the local economy occurring because of an increase in farm production that calls for an increase in farm inputs like seeds or hardware and related services like construction or accounting. These are business-to-business impacts.

Induced effects are those associated with a change in economic activity due to spending by the employees of businesses (labor) and by households. For this study, induced effects are primarily economic changes related to spending by input suppliers and farm households. These are business-to-consumer impacts.

Modest economic impact in previous year

In fiscal year 2012-13, food service directors reported nearly $14,000 in purchases from local growers and producers ($10,367 at educational facilities and $3,625 at healthcare facilities). This reflects a total economic contribution of farm-to-institution activities of about $9,000 to the region. This, in turn, includes about $7,400 in labor and proprietor income (a measure of how much goes into workers' pockets), as shown in Table 5. These are net effects. Farm-to-institution programs created positive economic activity even when accounting for lost wholesaler receipts.

	Employment	Labor & Proprietor Income	Total Economic Contribution
Direct effect	0	$6,037	$ 3,498
Indirect effect	0	$438	$ 1,951
Induced effect	0	$916	$ 3,502
Total effect	0	$7,391	$ 8,951
Estimates by Brigid Tuck, University of Minnesota Extension			

TABLE 5: Total economic effects of 2012-13 farm-to-institution sales

Significant potential sales, but modest employment effects

To estimate the potential economic impact of farm-to-institution activity in the region, Extension modeled institutions purchasing 20 percent of locally available foods in season for both the

standard and extended season scenarios. Considering the current pledge of hospitals such as St. Luke's in Duluth to make 20 percent of *all* food purchases locally available foods by 2020 and similar pledges such as the Real Food Campus Commitment and the Lake Superior Good Food Network's Superior Compact Purchasing Commitment modeling purchase of 20 percent of foods that are *both* locally available and in season seems a reasonable goal. (See the Reference list for website addresses.)

Twenty percent of all institutional sales add up to nearly $500,000 during a standard summer growing season, or nearly $600,000 during an extended growing season due to the longer fruit and vegetable season (see Table 6).

	Full Standard Season	Full Extended Season	20% Standard Season	20% of Extended Season
Vegetables and Melons	$ 275,549	$ 629,172	$ 55,110	$ 125,834
Fruits	$ 67,266	$ 255,359	$ 13,453	$ 51,072
Whole Grains	$ 168,966	$ 168,966	$ 33,793	$ 33,793
Beef/Bison	$ 1,543,690	$ 1,543,690	$ 308,738	$ 308,738
Poultry	$ 341,899	$ 341,899	$ 68,380	$ 68,380
Total:	**$ 2,397,371**	**$ 2,939,087**	**$ 479,474**	**$ 587,817**

TABLE 6: Combined educational and healthcare institutional food purchases in Northwest Minnesota

The total sales of institutions, however, are not evenly distributed across the Northwest region. Instead, contributions to total sales are commensurate with the number of meals served in each sub-region (see Figure 10). Healthcare, for example, is disproportionally represented in the PartnerSHIP4Health sub-region of Clay, Becker, Otter Tail, and Wilkin Counties.

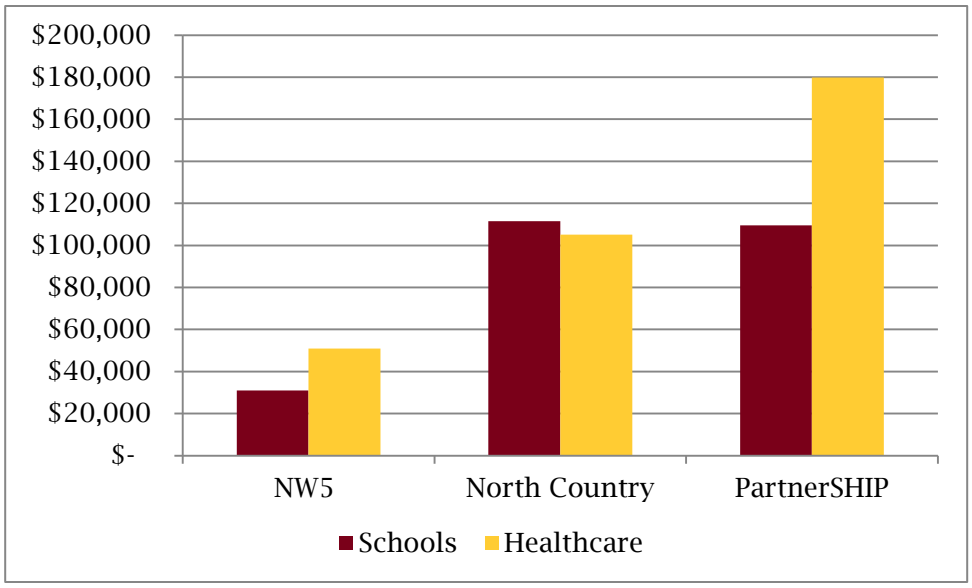

FIG. 10: Contributions to 20 percent local purchases in extended season scenario by sub-region and institutional type

After subtracting 75 percent of total sales from the region's wholesale industry, the total economic contribution of farm-to-institution activities would be about $360,000 or $400,000 to the region under the standard and extended seasons respectively as shown in Tables 7 and 8.

Total local food purchases	$ 490,164		
Decreased wholesaler sales (75% of total)	$ 367,623		
	Employment	**Labor Income**	**Output**
Direct effect	-0.5	$ (22,366)	$ 122,537
Indirect effect	0.9	$ 31,229	$ 234,981
Induced effect	0.1	$ 1,447	$ 5,640
Total effect	0.4	$ 10,309	$ 363,158
Estimates by Brigid Tuck, University of Minnesota Extension			

TABLE 7: Total economic effect of 20 percent of farm-to-institution sales for regular season

Total local food purchases		$	598,507		
Decreased wholesaler sales (75% of total)		$	448,880		
	Employment		**Labor Income**		**Output**
Direct effect	-0.5	$	25,683	$	149,623
Indirect effect	0.8	$	30,668	$	225,655
Induced effect	0.2	$	7,861	$	30,026
Total effect	0.7	$	64,212	$	405,304
Estimates by Brigid Tuck, University of Minnesota Extension					

TABLE 8: total economic effects of 20 percent of farm-to instituion sales for extended season

Note: Tables for farm-to-institution economic impact by sub-regions are listed in Appendices 1-3.

RESEARCH LIMITATIONS

The primary purpose of this study is to provide basic estimates for the size of the local food market for healthcare and educational facilities in Kittson, Roseau, Marshall, Pennington, Red Lake, Lake of the Woods, Beltrami, Hubbard, Clearwater, Mahnomen, Norman, Clay, Wilkin, Ottertail, Becker, and Polk counties. These estimates may not reflect the market in other regions of Minnesota or the nation.

These market estimates are based on sound survey research methods and reliable secondary data sources. However, some assumptions and secondary data used to estimate market size may not accurately represent the conditions of individual institutional buyers or growers.

Individual growers may face factors quite different from those used to produce the estimates for this report, especially when it comes to production and pricing; these factors can have a significant impact on the ability of growers to serve the institutional markets. Any sales arrangements between individual institutional buyers and growers should be based on mutually agreed-upon terms and conditions, such as price, delivery times, and product quality. It's important to consider the individual needs of potential institutional buyers when entering this market for local foods.

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APPENDIX 1: FARM-TO-INSTITUTION MARKET POTENTIAL BY SUB-REGION

Market Potential for Northwest Minnesota 5-County Sub-Region

	Full Standard Season	Full Extended Season	20% Standard Season	20% Extended Season
Vegetables and Melons	$ 39,369	$ 89,225	$ 7,874	$ 17,845
Fruits	$ 8,914	$ 33,968	$ 1,783	$ 6,794
Whole Grains	$ 25,542	$ 25,542	$ 5,108	$ 5,108
Beef/Bison	$ 213,409	$ 213,409	$ 42,682	$ 42,682
Poultry	$ 47,041	$ 47,041	$ 9,408	$ 9,408
Total:	**$ 334,275**	**$ 409,185**	**$ 66,855**	**$ 81,837**

Market Potential for North Country SHIP Sub-Region

	Full Standard Season	Full Extended Season	20% Standard Season	20% Extended Season
Vegetables and Melons	$ 95,920	$ 223,716	$ 19,184	$ 44,743
Fruits	$ 26,088	$ 100,854	$ 5,218	$ 20,171
Whole Grains	$ 53,081	$ 53,081	$ 10,616	$ 10,616
Beef/Bison	$ 576,685	$ 576,685	$ 115,337	$ 115,337
Poultry	$ 128,475	$ 128,475	$ 25,695	$ 25,695
Total:	**$ 880,249**	**$ 1,082,811**	**$ 176,050**	**$ 216,562**

Market Potential for PartnerSHIP4Health Sub-Region

	Full Standard Season	Full Extended Season	20% Standard Season	20% Extended Season
Vegetables and Melons	$ 140,260	$ 316,231	$ 28,052	$ 63,246
Fruits	$ 32,264	$ 120,538	$ 6,453	$ 24,108
Whole Grains	$ 90,344	$ 90,344	$ 18,069	$ 18,069
Beef/Bison	$ 753,596	$ 753,596	$ 150,719	$ 150,719
Poultry	$ 166,383	$ 166,383	$ 33,277	$ 33,277
Total:	**$ 1,182,846**	**$ 1,447,092**	**$ 236,569**	**$ 289,418**

APPENDIX 2: FARM-TO-INSTITUTION ECONOMIC IMPACT OF 20 PERCENT OF STANDARD SEASON BY SUB-REGION

Economic Impact for North Country SHIP Sub-Region

Total local food purchases $ 176,050

Decreased wholesaler sales (75% of total) $ 132,037

Impact Type	Employment	Labor Income	Output
Direct Effect	-0.1	($8,017)	$44,011
Indirect Effect	0.3	$9,172	$63,954
Induced Effect	0	$271	$1,058
Total Effect	0.2	$1,426	$109,023

Economic Impact for PartnerSHIP4Health Sub-Region

Total local food purchases $ 236,569

Decreased wholesaler sales (75% of total) $ 177,427

Impact Type	Employment	Labor Income	Output
Direct Effect	-0.3	($7,057)	$59,141
Indirect Effect	0.3	$10,949	$87,719
Induced Effect	0	$616	$2,383
Total Effect	0.1	$4,508	$149,243

Economic Impact for NW 5-County Sub-Region

Total local food purchases $ 66,855

Decreased wholesaler sales (75% of total) $ 50,141

Impact Type	Employment	Labor Income	Output
Direct Effect	-0.1	($4,510)	$16,713
Indirect Effect	0.1	$6,180	$46,360
Induced Effect	0	$170	$718
Total Effect	0	$1,840	$63,792

APPENDIX 3: FARM-TO-INSTITUTION ECONOMIC IMPACT OF 20 PERCENT OF EXTENDED SEASON BY SUB-REGION

Economic Impact for North Country SHIP Sub-Region

Total local food purchases $ 216,562

Decreased wholesaler sales (75% of total) $ 162,422

Impact Type	Employment	Labor Income	Output
Direct Effect	-0.1	$12,478	$54,139
Indirect Effect	0.3	$10,320	$67,635
Induced Effect	0.1	$3,401	$13,050
Total Effect	0.3	$26,199	$134,824

Economic Impact for PartnerSHIP4Health Sub-Region

Total local food purchases $ 289,418

Decreased wholesaler sales (75% of total) $ 217,064

Impact Type	Employment	Labor Income	Output
Direct Effect	-0.4	$21,261	$72,353
Indirect Effect	0.4	$12,048	$90,950
Induced Effect	0.2	$4,673	$17,660
Total Effect	0.1	$37,982	$180,962

Economic Impact for NW 5-County Sub-Region

Total local food purchases $ 81,837

Decreased wholesaler sales (75% of total) $ 61,378

Impact Type	Employment	Labor Income	Output
Direct Effect	-0.2	$3,079	$20,458
Indirect Effect	0.1	$6,581	$47,893
Induced Effect	0	$1,009	$4,146
Total Effect	0	$10,669	$72,497

APPENDIX 4: SURVEY INSTRUMENT FOR EDUCATIONAL INSTITUTIONS

Instructions: Please feel free to estimate and answer the questions to the best of your knowledge. Once complete, please return in the stamped and self-addressed envelope included with the survey.

1. How many meals does your school district serve daily?

   _____ meals per day

2. Do you have a summer feeding program? ☐Yes ☐ No
   a. If yes, how many meals are served per day? _____ meals per day
   b. If yes, how many weeks? _____weeks per summer

3. How much of the following *fresh* fruits and vegetables *on average* do you purchase each week? *Please note that the list is focused on produce we commonly raise in Minnesota. Please answer in the units you commonly use, such as case or pounds.*

Product	Unit of purchase per week (example: lbs, case)	Average Amount Purchased per week (example: cases, lbs)	Preferred form (example: shredded, diced, etc.)	Would you consider buying in *whole or unprocessed* form? (check if yes)	Have you purchased from a local farm in past year? (check if yes)
Fresh Vegetables:					
Beans				☐	☐
Broccoli				☐	☐
Cabbage				☐	☐
Carrots				☐	☐
Cauliflower				☐	☐
Cucumbers				☐	☐
Tomatoes				☐	☐
Peppers				☐	☐
Lettuce				☐	☐
Potatoes				☐	☐
Onions				☐	☐
Radishes				☐	☐
Summer Squash (zucchini, yellow)				☐	☐
Winter Squash (acorn, buttercup)				☐	☐
Other vegetable(s):				☐	☐

Product	Unit of purchase per week (lbs, case)	Average Amount Purchased per week (cases/lbs)	Preferred form (shredded, diced, etc.)	Would you consider buying in *whole* form? (check if yes)	Have you purchased from a local farm in past year? (check if yes)
Fresh Fruits:					
Apples				☐	☐
Melons				☐	☐
Strawberries				☐	☐
Other fruit: _____				☐	☐
Whole Grains:					
Wild Rice				☐	☐
Oatmeal				☐	☐
Dried beans				☐	☐
Meat:					
Chicken				☐	☐
Ground Beef				☐	☐
Beef hot dogs				☐	☐
Ground Bison				☐	☐
Bison dogs				☐	☐

4. Do you have a contract with a food vendor that prohibits you from making purchases directly from local growers?
☐ Yes ☐ No

5. Have you purchased foods from a local farmer or producer in the last year?
☐Yes (go to 5a) ☐No (go to 5b)

5a. If yes, how much did you spend on purchases from local farmers or producers in the past year?

Food Category	$0	$1-$250	$251-$500	$501-$750	$751-$1,000	Over $1,000
Vegetables and Melons	☐	☐	☐	☐	☐	☐
Fruits	☐	☐	☐	☐	☐	☐
Whole Grains	☐	☐	☐	☐	☐	☐
Beef/Bison	☐	☐	☐	☐	☐	☐
Poultry	☐	☐	☐	☐	☐	☐

5b. If no, do you have interest in purchasing from a local farmer as part of a farm-to-school program? ☐ Yes ☐ No

Please return in the stamped and self-addressed envelope included. If lost, please return to Rani Bhattacharyya, University of Minnesota Extension, Valley Technology Park, 510 County Rd 71, Ste 119, Crookston, MN 56716

APPENDIX 5: SURVEY INSTRUMENT FOR HEALTHCARE INSTITUTIONS

Instructions: Please feel free to estimate and answer the questions to the best of your knowledge. Once complete, please return in the stamped and self-addressed envelope included with the survey.

4. Does your healthcare facility prepare and serve meals?
   ☐ Yes (*please continue with survey*) ☐ No *(Please return in self-addressed envelope)*

5. How many total meals does your institution serve daily?

   _____ meals per day (*Example: Breakfast and Lunch to 100 people = 200 meals per day*)

6. How much of the following products *on average* do you purchase?

   Please estimate the amount your institution purchases regardless of the seller, whether from a distributor or another source. Please answer in the units and time period you most commonly use. For example, each week you may buy carrots by the pound and apples by the case. See the first row for an example of how to fill out the following table.

Product	Quantity purchased	Units (example: cases, lbs)	Time Period (week, month, year)	Preferred form (example: shredded, diced, etc.)	Would you consider buying in *whole or unprocessed form*? (check if yes)	Have you purchased this product from a local farm in past year? (check if yes)
Fresh Vegetables:						
EXAMPLE: Lettuce	***40***	***lbs***	**Week**	***Shredded***	☒	☒
Beans					☐	☐
Broccoli					☐	☐
Cabbage					☐	☐
Carrots					☐	☐
Cauliflower					☐	☐
Cucumbers					☐	☐
Tomatoes					☐	☐
Peppers					☐	☐
Lettuce					☐	☐
Potatoes					☐	☐
Onions					☐	☐
Radishes					☐	☐
Summer Squash (zucchini, yellow)					☐	☐
Winter Squash (acorn, buttercup)					☐	☐
Other: _____					☐	☐

Product	Quantity purchased	Units (example: cases, lbs)	Time Period (week, month, year)	Preferred form (example: shredded, diced, etc.)	Would you consider buying in *whole or unprocessed form*? (check if yes)	Have you purchased this product from a local farm in past year? (check if yes)
Fresh Fruits:						
Apples					☐	☐
Melons					☐	☐
Strawberries					☐	☐
Other fruit: _____					☐	☐
Whole Grains:						
Wild Rice					☐	☐
Oatmeal					☐	☐
Dried beans					☐	☐
Meat:						
Chicken					☐	☐
Ground Beef					☐	☐
Beef hot dogs					☐	☐
Ground Bison					☐	☐
Bison dogs					☐	☐

4. Do you have a contract with a food vendor that prohibits you from making purchases directly from local growers?
☐ Yes ☐ No

5. Have you purchased foods from a local farmer or producer in the last year?
☐Yes (go to 5a) ☐No (go to 5b)

5a. If yes, how much did you spend on purchases from local farmers or producers in the past year?

Food Category	$0	$1-$250	$251-$500	$501-$750	$751-$1,000	Over $1,000
Vegetables and Melons	☐	☐	☐	☐	☐	☐
Fruits	☐	☐	☐	☐	☐	☐
Whole Grains	☐	☐	☐	☐	☐	☐
Beef/Bison	☐	☐	☐	☐	☐	☐
Poultry	☐	☐	☐	☐	☐	☐

5b. If no, do you have interest in purchasing from a local farmer as part of a farm-to-institution program? ☐ Yes ☐ No

Please return in the stamped and self-addressed envelope included. If lost, please return to Rani Bhattacharyya, University of Minnesota Extension, Valley Technology Park, 510 County Rd 71, Ste 119, Crookston, MN 56716

APPENDIX 6: 2011 FINBIN REPORT ON ASSORTED VEGETABLE OPERATIONS

Crop Enterprise Analysis
(Farms Sorted By Years)

Vegetables, Assorted

Avg of	All Farms	2011
Number of fields	8	8
Number of farms	6	6
Acres	4.13	4.13
Yield per acre ($)	6,962.22	6,962.22
Operators share of yield %	100.00	100.00
Value per $	1.25	1.25
Total product return per acre	8,719.11	8,719.11
Gross return per acre	8,719.11	8,719.11
Direct Expenses		
Seed	532.94	532.94
Fertilizer	248.88	248.88
Crop chemicals	29.79	29.79
Irrigation energy	11.95	11.95
Packaging and supplies	328.12	328.12
Fuel & oil	639.05	639.05
Repairs	246.22	246.22
Custom hire	11.18	11.18
Hired labor	1,024.82	1,024.82
Land rent	21.52	21.52
Machinery leases	6.21	6.21
Utilities	224.73	224.73
Hauling and trucking	148.97	148.97
Marketing	51.76	51.76
Operating interest	9.15	9.15
Miscellaneous	372.88	372.88
Total direct expenses per acre	3,908.15	3,908.15
Return over direct exp per acre	4,810.96	4,810.96
Overhead Expenses		
Hired labor	364.98	364.98
Building leases	44.24	44.24
RE & pers. property taxes	39.64	39.64
Farm insurance	95.49	95.49
Utilities	133.58	133.58
Dues & professional fees	116.05	116.05
Interest	380.89	380.89
Mach & bldg depreciation	457.85	457.85
Miscellaneous	147.09	147.09
Total overhead expenses per acre	1,779.82	1,779.82
Total dir & ovhd expenses per acre	5,687.97	5,687.97
Net return per acre	3,031.14	3,031.14
Government payments	-	-
Net return with govt pmts	3,031.14	3,031.14
Labor & management charge	2,460.61	2,460.61

Net return over lbr & mgt	570.53	570.53
Cost of Production		
Total direct expense per $	0.56	0.56
Total dir & ovhd exp per $	0.82	0.82
Less govt & other income	0.82	0.82
With labor & management	1.17	1.17
Net value per unit	1.25	1.25
Machinery cost per acre	1,343.07	1,343.07
Est. labor hours per acre	362.28	362.28

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Data Source(s): Riverland Community and Technical College, 5 farms
South Central and Minnesota West Community and Technical College, 1 farms

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Report Summary

1. Report number	245097
2. Location	
State:	Minnesota
3. Farm Characteristics	
Year(s):	2011
Farming practice:	All