

Geographic Information Systems Analysis

A fifteen county region was identified based on physical aspects of the region but the social and cultural nature and functions within this region. Iron County was added to our original fourteen county proposal after a suggestion from an agricultural extension agent with a good understanding of how that county's farmers identified their growing region. A 479,856 (2008 census) human population lives within this 18.6 million acre region. The economic value of the food consumed within this region totals over 1.26 billion dollars (2006 food dollars estimates) while the food production on-the-farm dollars total over 193 million dollars. The USDA 2007 census reveals that this farm value was produced from 5,602 farms averaging crop sales of \$31,903 per farm with the average farm size equaling 216.5 acres. These are the data which we based our research on as we developed our methodology and work plan.

To determine our agricultural land potential, we conducted a geographic information systems overlay process using

variables representing suitable land available for food production. We eliminated land covered by lakes, rivers, or wetlands (35% of our region). We then eliminated all the land with a fifteen percent slope or steeper and developed land, removing another 9% area. Forty-five percent of the land was left in MN (6,093,900 acres) and seventy percent of the area remained in WI (about 3,459,200 acres). We then used county digital soil surveys (SSURGO) with a crop productivity index to further restrict the land to soils with a better than average productivity (by county). Finally, areas were eliminated that were defined as "forest" (any type) by the GAP land use data. In Minnesota a total of 1.232 million acres remained meeting all "suitable" criteria, and in Wisconsin, the total "suitable" was 460 thousand acres. This amounts to about 9% of the total area in the fifteen counties. Table 1 lists the acres meeting all "suitable" criteria by county. Figure 1 illustrates the total of 1.692 million acres, a conservative estimate of the amount of land that is available for future agricultural pursuits in building a regional food system.

Figure 1. Acres meeting "suitable" criteria are shown in brown.

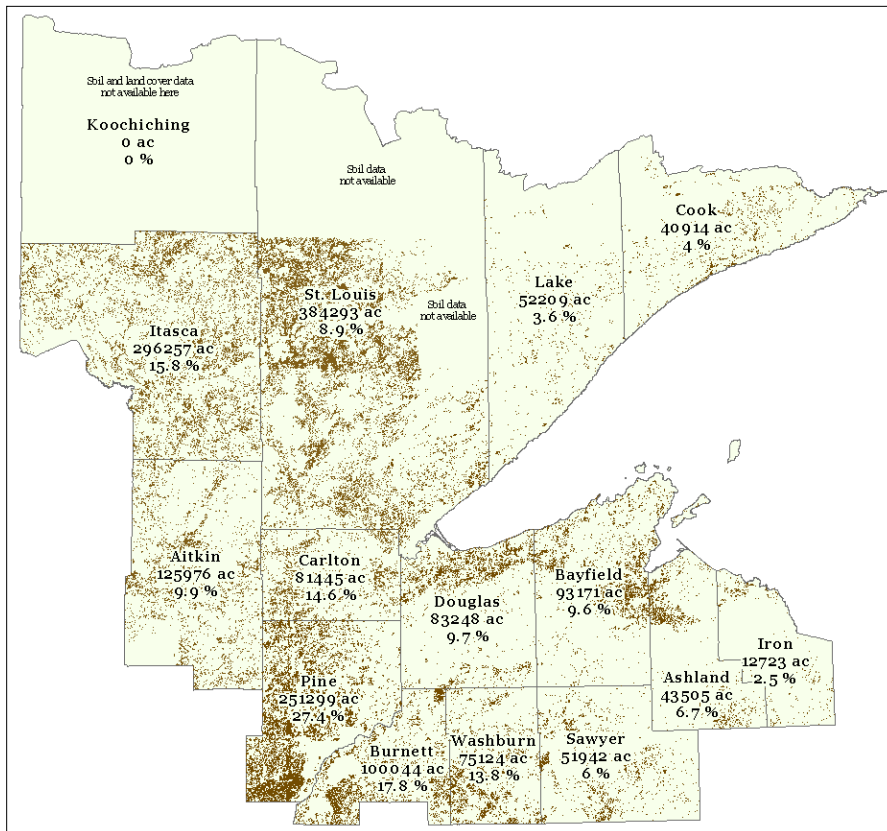


Table 1. Acres meeting "suitable" criteria by county.

County Name	Acres Meeting Criteria
Aitkin MN	125,976
Carlton MN	81,445
Cook MN	40,914
Itasca MN	296,257
Koochiching MN	0
Lake MN	52,209
Pine MN	251,299
St. Louis MN	384,293
Ashland WI	43,505
Bayfield WI	93,171
Burnett WI	100,044
Douglas WI	83,248
Iron WI	12,723
Sawyer WI	51,942
Washburn WI	75,124
TOTAL	1,692,150

Ethnographic Interviews

We interviewed 26 farmers, 13 conventional farmers and 13 organic or certified organic producers of meat, dairy, fruit, grain, CSA vegetable, vegetable greenhouse production and wild harvests. The interviews revealed a wide range of perspectives and some common threads.

Strengths of the existing food production landscape in our region include:

1. Dedicated producers who have years of commitment and knowledge of their soils, customers and climate;
2. Independent and experimental producers who learn effectively both from trial and error and by using available educational resources (i.e. agricultural extension; publications; nonprofit agricultural groups, such as Sustainable Farming Association; fellow farmers, etc.);
3. Diverse lands, soils, and microclimates that lend themselves to a variety of crops, production scales and approaches;

Constraining conditions on the local/regional food system include:

1. Cool, short growing season and challenging soils;
2. Meager economic benefits of producing food under current commodity-market driven system;
3. Limited labor resources for intensive production (related to 2)
4. Minimal presence of infrastructure for processing and distributing foods;
5. Limited access to mass consumer markets (related to 4);
6. A population of producers without clear plans or fiscal means for their own retirement and/or succession for their operations.

Nutrition Research: Western Lake Superior Healthy Diet (“regional pattern”) diet

A group of individuals were identified and asked to participate in the development of a “Western Lake Superior Healthy Diet” (WLSHD) that would address growing, health and cultural issues. The group of doctors, nutritionist and dietitians along with expertise with Native American medical issues including diabetes and heart disease was formalized. The group was given the task to answer some broad questions that will likely lead to subsequent nutritional research on Western Lake Superior regional foods:

1. Quantify this region’s food consumption based on the average Standard American Diet (SAD) pattern?
2. What would be an optimal diet pattern for WLSR that focuses as much as possible on local, seasonally available foods?
3. How would a regional diet particularly benefit people of the region in addressing health problems (e.g. diabetes) that particularly trouble indigenous populations?”

All task force members agreed that the most significant aspect of the WLS Healthy Diet is the total reduction of calories as compared to the Standard American Diet (SAD). This fact alone would provide many benefits for health. The other aspect of the new diet is that it contains no additional (added) calories of sugar. This recommendation as well, will help reduce suffering from health issues throughout our region. The group developed a healthy diet that can be 100% grown in our limited growing region. This diet provides the basis of a statistical comparison of building a local food system using the Standard American Diet (SAD) and the new regional diet. A graph summarizing elements of this diet in comparison to the Standard American Diet is shown in Figure 3.

We evaluated the amount of land that would be needed to meet the local portion of the Standard American Diet (SAD) and the new regional (WLSHD) diet. The final results show that a total of 500,671 regional acres, or 1.04 acres per person to provide the

Figure 2. WLSHD vs. SAD

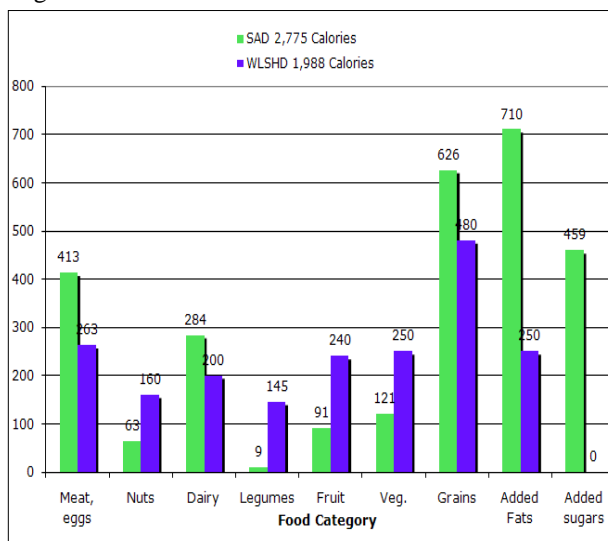
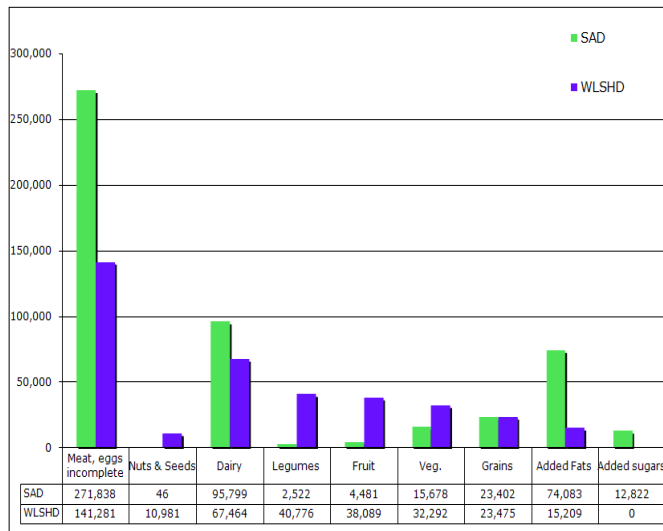


Figure 3. Acres needed for WLSHD vs. SAD diet



local portion (84 percent) of the Standard American Diet (SAD).

For the Western Lake Superior Healthy Diet, 369,567 regional acres, or 0.77 acres per person would be needed to grow the food for our current population (Figure 4).

Economic Analysis

We attempted to analyze the economic impact of building a local food system by using the IMPLAN model, a business tool that calculate direct, indirect, and induced impacts of increased local food production at the county level.

Unfortunately, the baseline farming numbers generated through the model could not be reconciled with other

sources and local knowledge. For example, Lake County’s agricultural baseline in IMPLAN amounted to \$2,596,392 for the farming sectors needed in the food production analysis, including \$1,777,686 of poultry and egg production. There are no significant poultry and egg production facilities in Lake County other than a few homesteads and farms that offer a few dozen eggs each week. This and other unsubstantiated numbers caused us to abandon the model.

Building a local food system would indeed have a significant economic impact for our region. We developed economic scenarios using alternative, manual methods to determine that a 100% local diet would add thousands of additional jobs and additional revenues of over \$952,559,068 per year. The non-farm portion of the food dollar and the health care impacts of embracing a 100% local food system is over 1 billion dollars per year for the Western Lake Superior Region.

Discussion

The qualitative data gathered is significant primarily for the ways that they point to a local food production system that is fragmentary and largely dependent on the efforts of people who have a commitment to food production that outweighs actual economic sustainability. Food producers in our region work long hours for economic returns usually not sufficient to support their households. Such conditions do not result in an economic sector that draws new producers willing to expand the overall productivity of the regional food system.

Growers/producers who have been in business for more than a few years have carefully honed their production to focus on products that they know do well under their conditions, and for which they know they have a viable market. While certain crops (i.e. potatoes) have been historically grown at larger scales in parts of our region, current producers largely focus on higher value crops (i.e. greenhouse tomatoes, raspberries, smoked fish) that can be directly sold to consumers in order to maximize the return on their labor. Most of the producers interviewed report that they are at or near maximum productive capacity for their circumstances, and few report intentions to appreciably expand their operations. In fact, many regional food sectors have seen significant decline in the numbers of producers (i.e. the number of commercial fisherman on western Lake Superior has fallen from a reported early/mid-20th century peak of several hundred to less than 20, with only a few making close to a full-time living from fishing).

For the regional food system to grow, food production will need to become more economically viable (through consumer willingness to pay premiums for “local” food; through value added processing opportunities for producers; through enhanced labor resources, etc.) to motivate current and/or new producers to expand.

Despite these recognized challenges, this grant provided our region with enough information to begin to focus on the “right” questions. We now know that our region can produce enough food for the people that live in this region today and on into the future. We also have given birth to a new regional diet that can provide a local healthy diet choice as we move to more fully develop a regional food system.