Feeding Rural Communities

According to the U.S. Census Bureau, rural areas are defined as territories that encompass less than 2,500 people. These territories include manufacturing and farming zones, as well as scenic retirement spots. In 2010, the Census Bureau reported that about 59.5 million people, or 19.5 percent of the U.S. population, reside in rural counties, which spread across 72 percent of the nation's land area.[1]

A recent study, "An optimization approach to assessing the self-sustainability potential of food demand in the Midwestern United States" (Midwest study), considered foodshed optimization in an eight-state region surrounding Iowa, including Iowa, Illinois, Missouri, Kansas, Nebraska, South Dakota, Minnesota and Wisconsin.[2]

While the population density for this region as a whole averages 70 people per square mile, more than three-fourths of the population live in areas that average 3,700 people per square mile, including the larger Midwest cities of Chicago, Minneapolis, St. Louis, Kansas City and Des Moines. By comparison, cropland averages 300 acres per square mile in the region and overall cropland accounts for 48 percent of total land throughout the region.[3]

If an area has more people than land available to meet their food demand, their foodshed will have to grow in order to meet these needs. In the Midwest, there is ample land to meet the population's needs, but there is also greater distance between cities and towns, which can often require larger foodsheds due to the need to balance demand and local food supply.

CHALLENGES FOR RURAL COMMUNITIES

Reducing the distance food needs to travel is an important goal of sustainability and resilience, particularly in the context of transportation challenges. Using a foodshed analysis, the Midwest study identified some of the challenges that rural communities can expect as they try to meet dietary needs of local populations in the future, including that:

- Global demand is raising the price of fuel and depleting resources, such as oil.
- There is a lack of funding in rural areas dedicated to highway maintenance, yet many highways in the region are coming up on their 50-year design life and will need to be restored.
- It has become public knowledge that transportation contributes to climate change.
- There is a continuously growing debate of greenhouse gas emissions and their effects on the environment.

COMPARING MIDWEST AND NEW YORK STATE FOODSHEDS

According to the Midwest study, the total amount of land needed to provide food for one person living in the region for a year is about half an acre. The overall total cropland requirement for the region is estimated at 18 million acres. The Midwest study also found that targeted food recommendations throughout the study area could be met by a foodshed with a 13.6-mile radius, while more than half of the population (56 percent) could be supplied from a foodshed with a radius of fewer than 5 miles.

In New York state, the foodshed model found that a diet consisting of 6 ounces of meat and eggs and 30 percent fat would require approximately 1 acre per person to meet the food needs of one person for a year. Thus, the New York land base is too small to support the resident population and will remain a net food importer, getting food from other states and regions. In addition, this research shows that New York City is poorly positioned geographically to compete in a model that is designed to minimize the transport of food.[4] Overall, New York state could meet approximately one-third (34 percent) of its total food needs within a 30.5-mile foodshed.[5]

The significant differences in dietary needs between the Midwest and New York state underscore the variability of foodsheds, which are dependent on population size, land requirements and land resources available for agriculture production. Even if ample land is available, food production must be supported by the necessary infrastructure (input suppliers, storage facilities, processing, extension, etc.). In addition, demand must be sufficient to support farms at the necessary scale. For more information about all resources needed for a complete food system, check out the food system fact sheet.

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1 U.S. Census Bureau. (n.d.). 2010 census urban and rural classification and urban area criteria. Retrieved from http://www.census.gov/geo/reference/ua/urban-rural-2010.html
2 Hu, G., Wang, L., Arendt, S., & Broeckenstedt, R. (2011). An optimization approach to assessing the self-sustainability potential of food demand in the Midwestern United States. *Journal of Agriculture, Food Systems and Community Development, 2*(1), 195–207.
3 Ibid.
4 Peters, C. J., Wilkins, J. L., & Fick, G. W. (2007). Testing a complete-diet model for estimating the land resource requirements of food consumption and agricultural carrying capacity: The New York state example. *Renewable Agriculture and Food Systems, 22*(2), 145–153.
5 Peters, C. J., Bills, N. L., Lembo, A. J., Wilkins, J. L., & Fick, G. W. (2009). Mapping potential foodsheds in New York state: A spatial model for evaluating the capacity to localize food production. *Renewable Agriculture and Food Systems, 24*(1), 72–84.