

Conventional versus Local Supply Chains for Fruits and Vegetables: A Comparative Study of Environmental, Nutritional and Economic Issues

Consumer interest in locally grown fruits and vegetables (F&V) has increased sharply in recent years. This interest is reflected in public discourse on issues related to environmental issues, health, and community. Local foods are prominently featured in various recent best-selling books (e.g. *The Omnivore's Dilemma* by Michael Pollan and *Deep Economy* by Bill McKibben). The growing demand for local foods is prompting rapid changes in supply chains for F&V. The growth in local food is highlighted by the recent increase in the number of farmers markets and Community Supported Agriculture (CSA) programs in the United States. The number of farmers markets increased from 1,775 in 1994 to 4,385 in 2006 (USDA-AMS, 2007) and the number of CSA programs increased from 50 in 1990 to over 1,900 in 2008 (Hartman Group, 2008). In addition, a growing number of supermarkets and restaurants feature a wide array of local food products.

In spite of their rapid growth, very little is known about the impact of F&V local supply chains on the environment, on economic welfare of channel members (from farmers to consumers), and on the nutrition of the end consumer. Given the diversity of stakeholders involved, as well as significant technical, institutional, and funding issues, the magnitudes and the scope of the impacts are uncertain. In particular, we do not know how local supply chains for F&V perform in these three dimensions with respect to conventional supply chains.

The goal of this research project is to form an interdisciplinary group of researchers that will develop a collaborative approach to compare local versus conventional supply chains, integrating environmental, economic and nutritional aspects. A first output will be the identification of tools to address the pros and cons of local food systems. These tools may include an estimation of production functions for local versus conventional supply chains; an economic analysis to address how welfare is distributed among supply chain members; a transportation model that incorporates environmental and energy use consequences; a systematic comparison of the nutrient content of locally produced and conventionally supplied fruits and vegetables; and an analysis of the effects of eating locally on the composition of peoples' diets. A second output will be the application of these tools to a particular fruit or vegetable supply chain. The study will combine a series of new scientific models and empirical data into an integrated economics, transportation, emissions, air quality, and nutrition modeling system to quantify the overall impacts from this potential conventional to local supply chain shift. For example, nutritional impacts may include increased intakes of fruits and vegetables which could reduce risks for obesity, cancer, and heart disease. Geographic information systems (GIS) will be used to assist the project researchers to communicate the research findings to government agencies, the public, and industry. We believe that achieving these two outputs will give us a strong position to seek for long-term external funding. Moreover, this project will allow us to identify researchers in other disciplines that may join the group in the future.