Maximizing Freight Movements in Local Food Markets

A study of distribution practices the Upper Midwest food system

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A collaboration between UW-Madison’s Center for Freight & Infrastructure Research & Education (CFIRE) and Center for Integrated Agricultural Systems (CIAS)
Setting the Stage

The 2009 UW-CIAS & Extension report “Scaling Up: Meeting the Demand for Local Food” identifies 8 challenges to scaling up local food systems:

- Controlling for product quality & consistency
- Seasonality
- Matching supply & demand
- Marketing & branding
- **Supply chain infrastructure**
- Capital
- Capacity development
- Information flow and transparency
Setting the Stage

Supply chain infrastructure challenges:

- Inaccessibility of healthy foods
- Lack of temperature-controlled storage
- Inadequate processing facilities
- Need for distribution center of appropriate size/locations
- Inefficiencies in regional food transport & logistics
The Maximizing Freight Movements in Local Food Markets Project

Objective: To understand how the local food supply and distribution system works in the Upper Midwest, and identify means by which local food transportation movements can become more efficient.

Tasks:
- Characterize several specialized supply chains
- Following needs assessment, devise a tool or suite of tools to foster more efficient local food freight movements
Research Question and Process

- What can freight industry tell us about regional food movements?
- Specific look at distribution component of supply chain at different scales
  - Direct, intermediated and mainstream
- Macro analysis using mapping
- Micro analysis using case studies
- Articulation of potential tools
- Potential next steps
Macro View: Mapping

- Spatial relationship between supply (producers), demand (buyers) and transportation networks

- Consider:
  - Road hierarchies
  - Volume to Capacity Ratio (VCR)
  - Alternative modes, such as short-line railroad
Supply Chain Scales

- 2010 USDA study
- Classified supply chain into three types
  - Direct
  - Intermediated
  - Mainstream
- Useful classifications that are also used in this report

Image courtesy of USDA
Micro View: Case Study Interviews

- Ecker’s Apple Farm *(Trempealeau, WI)*
- Grass Run Farms (beef, pork) *(Spring Grove, MN; Dorchester, IA)*
- Driftless Organics (produce) *(Soldiers Grove, WI)*
- Keewaydin Farms (produce) *(Viola, WI)*
- Bix Produce *(St. Paul, MN)*
- Local Harvest Supply *(Coralville, IA)*
- Edina Couriers *(Eden Prairie, MN)*
- Sodexo *(Gaithersburg, MD / France)*
Focus: Freight and Logistics Component

- **Freight**
  - Mode of transport and who owns equipment
  - Distribution frequency
  - Backhauling
  - Collaboration and aggregation

- **Logistics & Operations**
  - Inventory management systems
  - Route planning strategies
Case Study Conclusions: Trends

- Intermediated supply chains are innovative and dynamic
- Strategic partnerships are important
- Product aggregation is beneficial
- Seasonality and weather events affect supply chain
Case Study Conclusions: Key Findings

- Product representation in the field vs. efficient distribution
- Related to scale:
  - Route-planning strategies
  - Inventory management system usage
  - Strategies for retention of product origination information
- Backhauling: beneficial but challenging
- Interstate trucking regulations pose challenges for smaller-scale distribution
- Aggregation through hubbing could improve route-planning & distribution efficiencies for producers and distributors in the Driftless Region
Next Steps and Potential Tools

- Articulation of distribution variables for different supply chain partners
  - Aid LSP with articulation of “cost of distribution” model
- Creation of audience-based fact sheets
  - Identify distribution variables, route planning strategies, etc.
- Food hub siting decision tree
- Exploration of online tools
  - 123LoadBoard.com example
- Pilot these tools with mid-sized producers in Driftless region
Key Themes from the Making Good Food Work Conference

Business models designed to help producers retain a larger percentage of the retail Food dollar typically operate at price points that make their products unaffordable to low-income markets.

- Interest in financing strategies inclusive of non-traditional investors and business structures conducive to for-profit and for-benefit missions.
- Desire for resources to increase financial & business literacy of food business start-ups.
- **Asset-based, collaborative approaches to food-oriented community & economic development are favored in today’s economic climate.**
- “**Food hubs**” show promise as a strategy for improving time and cost efficiencies in the aggregation and distribution of local and regional food.
- **Strategic network development and information exchange can increase resource efficiency.**
- Programs designed to increase consumers’ healthy food purchasing power can be beneficial to both low-income households and local food producers.
Improvements in local food freight & transportation as solutions to…

- The fair pricing dilemma
- The lack of physical infrastructure
- The lack of communication within local & regional food systems and across supply chains
- The need for low-cost resources
  - Route-planning tools, cost of distribution workshops, decision trees for rural food distribution planning, and more
Collective Next Steps?

- What are 3 “Next Steps” (planned and funded or unplanned and unfunded) that you would like to take to address distribution challenges in the Driftless Region?

- What research needs and/or collaborative grant opportunities could help us reach these goals?