The Economic Impact of Reducing Salmonella Cross-Contamination During Transportation of Live Hogs
A Proposed Research Project

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New public and private initiatives to improve food safety are emerging in the pork industry. One potential control point for food safety hazards is during transportation of live animals. Research underway in the College of Veterinary Medicine at the University of Illinois is examining the effects of transportation stress in spreading Salmonella among hogs. The research proposed below will utilize the results of this ongoing work to investigate the impacts of alternative transportation methods on costs, food safety, and transportation flows in the pork industry.

The research has three specific objectives: 1) to develop a map of the existing transportation flows, transport methods, and associated marketing procedures in the hog industry, with a focus on the Midwest; 2) to construct a linear programming model that determines optimum transportation flows in the Midwest, and compare the model results to current transportation flows for hogs, to understand the existing economic and operational determinants; 3) to determine the changes in transportation flows that would be associated with reducing the Salmonella contamination risk prior to processing.

To accomplish objective 3, the model will incorporate the effects of changes in transportation costs associated with adoption of stress reduction measures. Such measures will include altering transportation methods, medication of animals before shipment, or limiting distance traveled. These changes might be adopted differentially by producers, depending upon their distance from processors and the constraints on contamination imposed by different kinds of processors. The model will determine the impact of such changes on market flows and the competitive position of producers in different locations or with different initial levels of contamination.

This research will utilize data from the Census of Agriculture and of Manufactures to create a map of transportation flows. If possible, the base model will draw on work already carried out by USDA/ERS in cooperation with USDA/GIPSA to model hog procurement in the eastern corn belt. Data from USDA/APHIS NAHMS will be used to understand the relationships among on-farm contamination, distance transported, method of transportation, marketing channel, and farm characteristics.

The results will be of use to public policy makers in identifying cost-effective contamination control policies and feasibility of policy choices, and to private firms and industry organizations in understanding the implications of new food safety initiatives for production and marketing. For example, the results might reveal whether there would be incentives for locating new production or processing facilities more closely together or whether there would be greater incentives for farm level control of contamination when hog production is more distant from processing.