The research program in the Department of Agricultural Economics aims to create practical, empirical knowledge that will increase the efficiency and productivity of Oklahoma agriculture and rural communities and improve the well-being of Oklahomans.

We also aim to contribute knowledge in the discipline of agricultural and applied economics. Through collaborations in interdisciplinary projects, we make significant contributions to the research literature in many disciplines.

Our faculty address issues in agribusiness, agricultural policy, food and consumer economics, marketing, natural resources and environmental economics, production and farm management, and rural development.

In 2012, we had articles published in more than 30 different journals, including the profession’s flagship journal, the American Journal of Agricultural Economics. In this newsletter, you’ll read highlights of a few of the many impactful projects in the department.

This summer we began a project with the OSU library to digitize older departmental research and technical bulletins to make our rich history more accessible. While the project is not yet complete, you can view currently uploaded documents at http://dc.library.okstate.edu/cdm/search/collection/AEPapers

Use the Advanced Search features to look for articles by specific authors, titles, or years.

We hope you enjoy this brief update on OSU Agricultural Economics research.

Damona Doye

Department Head Comments

In this issue of Research Update, topics include rural health care, whole-chain traceability systems, the U.S. cattle procurement market, green and sustainable manufacturing, and alternative or specialty crops.

The National Center for Rural Health Works (NCRHW), located at OSU, provides services in Oklahoma and nationwide. One research focus has been on the economic impact of rural primary care physicians.

A service provided by ag econ Extension is facilitating community health needs assessments in Oklahoma using a toolkit developed by NCRHW.

Food safety is an important issue, and two research projects have addressed that topic: one to develop a traceability system for the cow/calf, stocker, feedlot, processor, and retailer and the second to study the relationship between animal welfare and food safety.

Research in manufacturing by the New Product Development Center at OSU is geared to expanding existing resources for new product development and to make process and service-development strategies more accessible to manufacturers in Oklahoma.

A research project on specialty crops attempts to determine for Oklahoma researchers and farmers the economic and financial feasibility of horticultural crops and other alternative crops under various production strategies.

Other publications and presentations by the researchers in this issue and other ag econ authors can be accessed at http://agecon.okstate.edu/faculty/publications. Enter the author’s name in the database search.
Food safety is of the highest importance to today’s consumers and to the many industries that provide the food we eat day after day, year after year. The concept of food traceability—being able to follow a product and provide transparent and reliable information from its origin to its point of consumption—is a critical element of food safety. For livestock, a traceability system could be critical to limiting the spread of industry-devastating animal diseases.

To achieve whole chain traceability, trading partners must be able to link products with locations and times through the supply chain. Advanced whole-chain traceability technology being developed at OSU will provide this capability.

Researchers
Researchers at OSU, the Noble Foundation, and the University of Arkansas, together with private industry partners Top 10 Produce and Stoner Family Farms, were awarded a half-million dollar competitive grant to build a pilot whole-chain traceability system for beef cattle. The system will allow producers to store information about their animals and other transactions in OSU servers. A key feature of this technology is that it permits those who put the information into the system to choose who they share it with (if anyone), and then choose what specific information they want to share with them.

Researchers from OSU include the following:

- Tim Bowser (Biosystems and Ag Engineering and FAPC)
- Mike Buser (Biosystems and Ag Engineering)
- Brian D. Adam (Agricultural Economics)
- Blayne Mayfield (Computer Science)
- Johnson Thomas (Computer Science)
- Samuel Roberts Noble Foundation
- University of Arkansas

Issues
Increasingly, major beef producing and trading countries are implementing traceability systems. Of the eight largest beef exporters, only the U.S. and India have not adopted some form of mandatory animal ID and traceability system.

Moreover, major beef importers are stepping up preferences or even requirements that imported products be traceable back to the farm of origin. Thus, several studies have concluded that, in order to maintain competitiveness in international trade, the U.S. needs to adopt animal ID and traceability.

Following a BSE incident and the accompanying steep decline in U.S. market share, the U.S. developed the National Animal Identification System (NAIS) in 2005. However, many beef producers resisted the system because of concerns about cost, confidentiality, and liability, and the NAIS was abandoned in 2010.

In fact, while several studies have shown that U.S. livestock industries would benefit much more economically from adopting a traceability system than the system would cost, other studies showed that those who had to shoulder most of the costs (for example, small cow/calf producers) would benefit the least. Thus, while the industry as a whole would benefit, it was not clear that individual beef producers would benefit.

The goal of this project is to reduce costs to producers and increase benefits.
that information would benefit the operation, it can share it. For example, if a cow/calf producer has animals with genetics that will perform above average in the feedlot, and the feedlot operator is willing to pay a premium for those animals, the cow/calf producer can choose to share information about only those animals, with only that feedlot operator.

The system also allows processors or feedlot operators to share information with producers who supplied their cattle, so that those producers could find out how well their animals performed in the feedlot or how they graded at the processor.

Value-added opportunities may exist that would more than cover the cost of putting Radio Frequency ID (RFID) tags in the animals’ ears. A pharmaceutical company, for example, may want to know the weaning weight of animals that used its product, and is willing to pay for that information.

Project
The project is to advance a whole-chain, stakeholder-driven traceability system for agricultural commodities as a beef cattle demonstration.

Objective
The objective of this research is to develop a traceability system that will integrate cow/calf, stocker, feedlot, processor, and retailer data management systems.

Specific objectives are to:

- Deploy the traceability system as a pilot beef cattle demonstration
- Develop consumer information links to the traceability system using mobile and social media
- Identify value added opportunities that make participating in the system profitable
- Evaluate the benefits and costs of using the system
- Transfer lessons learned about benefits and costs of using the system to producers, industry professionals, retailers, and other stakeholders, with the goal of extending the technology to other commodities and products
- Improve food safety
- Improve disease traceability
- Improve supply chain management
- Improve cattle production practices
- Enhance marketing activities, including two-way communication between producers and consumers

Initial Findings

- The costs to cow/calf producer of implementing a traceability system are five times more than stocker and feedlot producers. Tagging material and labor are the major costs.
- Benefits are highest for downstream producers (stockers and feeders).
- Sharing benefits with all participants (made possible by a traceability system) results in net profits for all participants.

Impact
Research at Kansas State U. by Pendell et al. (2010) indicates that adoption of an animal identification system could increase export demand for U.S. meat products. Alternatively, it could prevent losing access to specific international markets or may allow a more rapid resumption of exports following future animal disease or food safety outbreaks.

The cost of a traceability system would be more than paid for if it prevents losing access to one large...
importer, such as Japan. This result does not even consider the gains from improving food safety and gains to individual producers from improved supply chain management, improved cattle production practices, and value-added marketing opportunities. Thus, gains to the industry, and to individual producers, could be large if this research is successful.

**Publications**


**Presentations**

“Whole-chain traceability – information sharing from farm to fork and back again”, expert testimony to the Mid-Continental Association of Food and Drug Officials, February 26, 2013, Springdale, AR.

“Demonstration of a whole-chain traceability system that protects confidential information”, invited Keynote presentation to the Arkansas Association for Food Protection on September 11, 2012, Fayetteville, AR.

**Source of Funding**

Funding for this project has been received from a USDA-National Integrated Food Safety Initiative grant and a Provost’s Oklahoma State University Planning Grant for Establishing an Interdisciplinary Program.