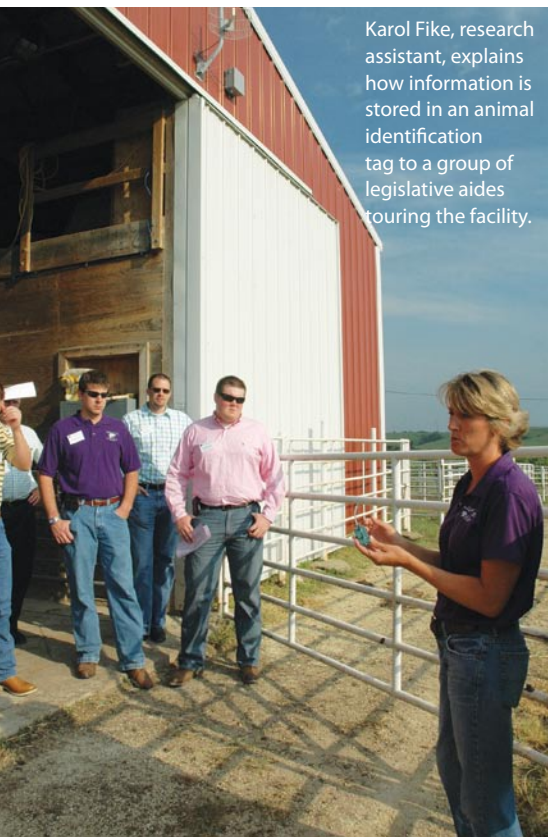


Centers Consolidate Research Efforts

Three new centers have been established within K-State Research and Extension – the Center for Animal Identification, the Center for Biobased Polymers by Design, and the Center for Sustainable Energy – to address issues important to the future of Kansas.



Karol Fike, research assistant, explains how information is stored in an animal identification tag to a group of legislative aides touring the facility.

The Center for Animal Identification will allow researchers to build on the work K-State has already begun in evaluating identification systems, such as radio frequency to trace animal movement, said animal science professor, Dale Blasi.

“Our mission,” Blasi said, “is to discover, develop, and evaluate livestock identification technologies that might have economic value to livestock producers in Kansas and the United States.”

Blasi has headed the university’s Animal Identification Knowledge Laboratory since it was established

in 2003. K-State established the lab – with funding from the U.S. Department of Agriculture – to provide unbiased evaluation of animal identification technologies being considered by livestock industries. The new center is a logical way to expand on the lab’s efforts, he said.

Much of the center’s work will be done at the university’s Beef Stocker Unit, where there is ready access to large numbers of livestock in typical livestock management situations.

The importance of being able to trace an individual animal’s movements has become increasingly apparent, Blasi said. Several high profile events raised consumers’ consciousness about tracing animal movements and reinforced the need for the United States to track an animal’s movement from the beginning of its life to the end.

“Our objective is to give producers good information on existing technologies, as well as any emerging technologies, to help them better manage their businesses,” Blasi said.

“This center also will give K-State students the opportunity to learn about animal identification through working with us during internships and honors classes,” Blasi said.

In addition, researchers plan to provide independent performance evaluation services to vendors of animal identification technology.

K-State collaborators in the new center include Kevin Dhuyvetter and Ted Schroeder in the Department of Agricultural Economics, Jim Higgins in the Department of Statistics, and Tim Sobering in the Electronics Design Laboratory.

Other collaborators include the Kansas Animal Health Department, the Kansas Department of Commerce, numerous meat packing companies, auction markets, and animal identification technology companies.

For more information, contact Blasi at dblasi@ksu.edu.

Center for Sustainable Energy

Researchers in 12 departments in three K-State colleges are collaborating to address energy issues through the Center for Sustainable Energy.

Ron Madl, director of the Bioprocessing and Value-Added Program, and Mary Rezac, head of the Department of Chemical Engineering, are co-directors of the center. Madl and Rezac collaborated with Richard Nelson, Engineering Extension, to secure funding through K-State’s targeted excellence grants in 2007.

Madl listed the center’s three primary goals:

- to conduct fundamental and applied research for development of global, sustainable energy systems and lower greenhouse gas emissions;
- to educate students and the public about sustainable energy issues; and
- to facilitate the adoption of new technology by industrial users.

“The center will provide more education for the general public,” said Madl. “The colleges of Agriculture and Engineering are working together on curricula and certificates – interdisciplinary degree programs that industry needs. These programs will be available by distance for people working in the industry.”

The center improves coordination across K-State departments, other



K.N. Ananda, a PhD student studying under Praveen Vadlani, uses a fermentor in a lab in the Bioprocessing and Industrial Value-Added Program building.

universities, and industry partners.

Much of the work to date has dealt with ethanol, an alcohol fuel made when the starch in grain is converted to sugar, then fermented. That process also produces distillers grains and carbon dioxide.

Distillers grains (DG) are fed to livestock as a partial replacement for other feed grains; however, increased ethanol production could create an overabundance of DG. Grain scientist Praveen Vadlani and his graduate students are looking for ways to add value to DG and to find new and better uses for it.

Plant geneticist Bikram Gill is developing ways to modify plants so that more of the carbohydrate structural material can be converted into fuel. Today's ethanol is made from the starch in grain. Agricultural materials such as wheat bran or straw, and dedicated energy crops like switchgrass can be converted into what is called cellulosic ethanol.

"It has taken thousands of years for the domestication of plants for use as food. We haven't selected them for their potential to produce fuel," said Madl. "Our goal now is to develop plant resources designed for more efficient conversion to energy or bio-based products."

For more information, go to <http://www.sustainable-energy.ksu.edu>

Center for Biobased Polymers by Design

X. Susan Sun, director of the Center for Biobased Polymers by Design, received a K-State targeted excellence grant for "biomaterials by design" through the provost's office in 2004.

"That grant was the catalyst for the creation of the center, along with the collective effort made by Kenneth Klabunde, professor in the Department of Chemistry and associate director of the center," said Sun. "The goal is to take leftover plant materials to produce products without using fossil fuels."

As a professor in the Department of Grain Science and Industry, Sun has been conducting research since 1996 on how to design plant-based products that will replace petroleum-based. She coauthored a text book, "Bio-Based Polymers and Composites," which is a major reference book for the field.

The center will coordinate faculty working on similar projects in the departments of Biochemistry, Biological and Agricultural Engineering, Chemical Engineering, Chemistry, Grain Science and Industry, Mechanical Engineering, and Physics.

"Center faculty have targeted biomolecules derived from crops – proteins, carbohydrates, lipids, and fibers," said Sun. "These polymers cannot be used in their original form for industrial products like adhesives, resins, composites, or coatings. They must be converted into specific material with desirable properties. It takes a chemical or enzymatic conversion of the raw materials to create biobased materials with desirable performance."

The fundamental research involves studying the structure, chemistry, and physics related to the processing and to

systematically design the material for a specific application, said Sun.

The center's vision, she continued, is to promote widespread use of biobased materials and products from renewable resources to meet future national and environmental needs, and to educate young people in this cutting-edge field.



Susan Sun shows some of the products made from agricultural products instead of fossil fuels.

Sun's graduate students work with campus scientists associated with the center to stimulate interdisciplinary education.

"This is an important field," said Sun. "I would like to have more applications from U.S. students who want to study this field."

"We plan to start a seminar series soon," said Sun. "We will invite world-class scientists to share ideas with our faculty and graduate students, and our faculty and graduate students also will make presentations."

"Kansas is an agriculture-based state," said Sun. "We hope to use agricultural commodities as a basic resource to produce value-added products rather than exporting raw materials."

For more information on CBPD, go to <http://www.k-state.edu/cbpd/>