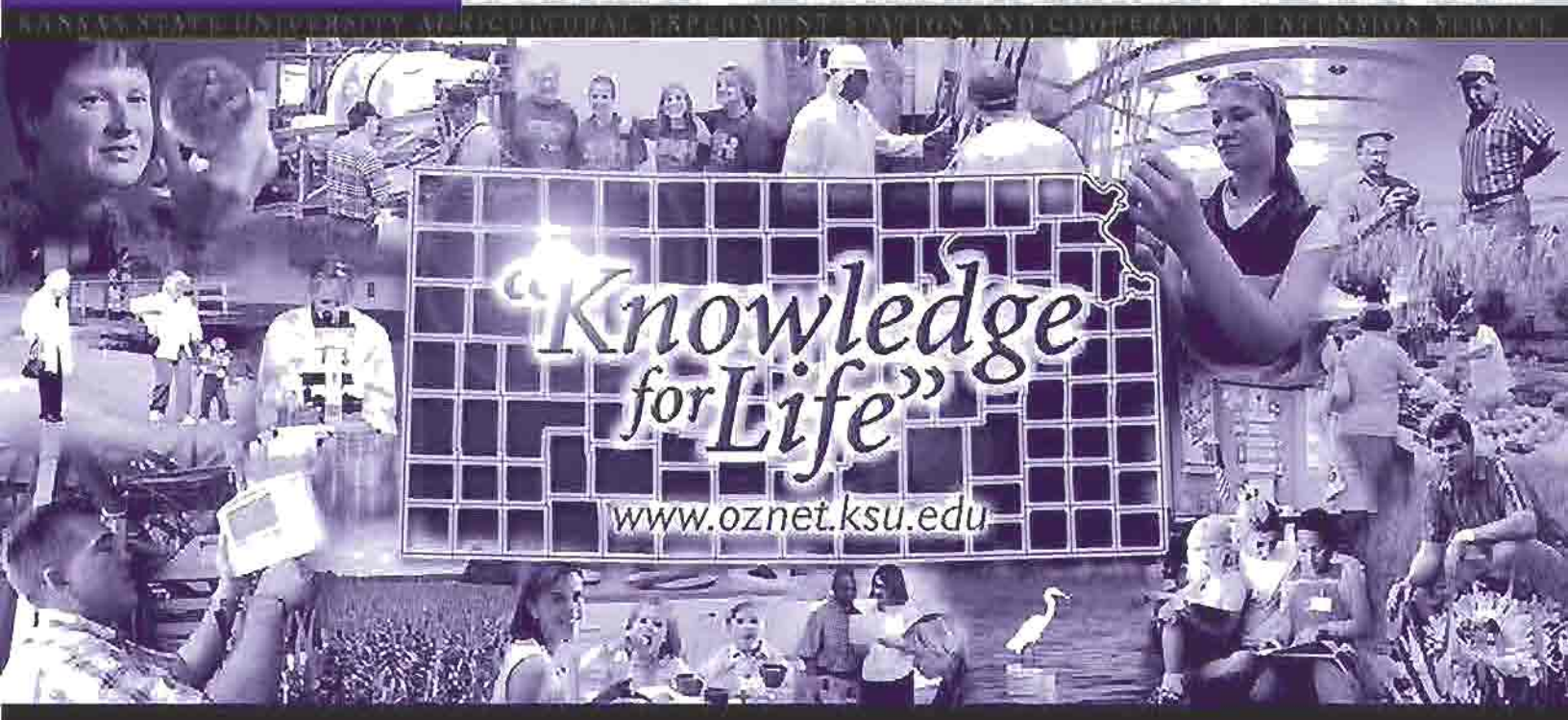


An Informal Report to the Kansas Legislature January 2005

K-STATE
Kansas State University
Research and Extension

Director's Introduction

Because I'm new to the job as Dean and Director and new to the state of Kansas, I'm still learning about the university and the people of Kansas. I've been very impressed by the depth and breadth of programs at K-State and in the Kansas State University Agricultural Experiment Station and Cooperative Extension Service. I have met positive people everywhere I go, people with the right kind of expertise to help the citizens of the state, people with a spirit of cooperation and a can-do attitude. It's my good fortune to be here now.

K-State Research and Extension is engaged with Kansas people and Kansas communities by working with them on their issues, in their neighborhoods, in ways they can understand, and through education to improve the quality of their lives and standard of living.

Each year K-State Research and Extension reports on its progress and showcases selected accomplishments that have an impact on the state of Kansas and its citizens. Federal law requires such reports.

The motto of K-State Research and Extension is to provide "Knowledge for Life." The goal for all of our planning is to set a course that will make the most of our resources and opportunities. The work involves county extension agents; professional staff; state and area researchers; extension specialists; and representatives from administration. Strategic planning is critical to our success as a land-grant university with its tripartite mission of teaching, research, and extension. It allows us to build on core values. And it serves as a guide for us to respond to the needs of Kansas citizens.

This report includes programs and projects being carried out in Manhattan and all counties in the state. We cannot in one report feature all of them, but those included in this report are representative of the work that has been done or is being done to make a difference for the citizens of Kansas and of the region, nation, and world.

Sincerely,

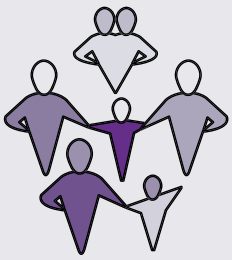
Fred A. Cholick
Dean and Director

Our Four Core Mission Themes for 2000–2004:

Agricultural Industry Competitiveness

Food, Nutrition, Health, and Safety

Natural Resources and Environmental Management



Youth, Family, and Community Development

K-State's Mission as a Land-Grant University

As the nation's first and oldest land-grant university, K-State is distinguished from other Kansas Regents' universities by its College of Agriculture, College of Veterinary Medicine, College of Human Ecology, comprehensive College of Engineering, and the Kansas State University Agricultural Experiment Station and Cooperative Extension Service (K-State Research and Extension, for short). K-State educates professionals in the sciences, engineering, and in business. That education, knowledge, and expertise is applied to the vast agricultural and food industries, including production agriculture; agricultural input supply and finance; agricultural processing for food and materials; agricultural policy and communication; and other fields related to products originating from plants, animals, and natural resources; and youth, families, and communities.

K-State works directly with many Kansas citizens and organizations who have a broad range of philosophy about how best to steward natural resources. K-State applies chemistry, engineering, and business in search of practical ways to add value to Kansas crop and livestock commodities, resulting in higher returns for farm products and jobs in Kansas communities.

- K-State applies science and husbandry methods to improve animal health.
- K-State applies microbiology, toxicology, and engineering to discover cost-effective ways to keep food safe from the farm to the table.
- K-State applies soil science, engineering, and economics to generate cost-effective tools for farms, households, and communities to complete their tasks with environmental responsibility.
- K-State applies molecular biology and biochemistry to improve crop and livestock genetics to keep Kansas agriculture competitive worldwide.
- K-State applies all of its disciplines to educate young people to be effective citizens and creative in the workforce.
- K-State applies all of its knowledge to build youth, communities, families, and agricultural businesses across income levels, sizes, cultures, and philosophies.

Kansas State University remains true to the original mission of the land-grant university system: to generate knowledge and disseminate it to students and every citizen who wants it.

The Role of K-State Research and Extension

As the only statewide university network, K-State Research and Extension conducts research to gain new knowledge and develop new products and provides practical information, education, and training on issues that Kansans consider important and helpful to improve their lives, farms, organizations, businesses, families, or communities.

What kind of information and training?

Our work affects every aspect of life—from ensuring a plentiful, nutritious, safe, and acceptable food supply, to promoting a desirable quality of life and standard of living, to preserving natural resources. Through science-based programs, we address complex and critical problems and deliver our findings in person or by public presentations, demonstrations, publications, computer networks, CD-ROMs, satellite and video technology, newspapers, radio, and television.

Why address current issues and statewide concerns?

K-State Research and Extension is a short name for the Kansas State University Agricultural Experiment Station and Cooperative Extension Service, a partner in the nationwide land-grant system of universities that was created in the 1860s to educate people from all walks of life and to generate and distribute useful public knowledge. K-State scientists and extension faculty can draw on the expertise and accumulated studies and discoveries of the land-grant system, other universities, state and federal agencies, and industry. Headquartered on campus in Manhattan, K-State Research and Extension includes statewide county and district extension offices, research centers, and experiment fields supported by county, state, federal, and private funds.

Our Motto:

"Knowledge for Life"

Our Mission Statement:

K-State Research and Extension is dedicated to a safe, sustainable, competitive food and fiber system and to strong, healthy communities, families, and youth through integrated research, analysis, and education.

K-STATE
Kansas State University
Research and Extension

Contents

Preview of Selected Information in the Following Pages:

Agricultural Industry Competitiveness

In this area, K-State is developing better cropping systems; creating more efficient and profitable livestock production systems while protecting the environment; developing agricultural risk-management strategies; improving agricultural technologies and information systems; evaluating alternative crops and approaches; eliminating pests and diseases; discovering better ways of improving rangeland; investigating the benefits of biotechnology; and adding value to Kansas agricultural goods. Emphasis has been placed on realigning research and educational programming to reflect agriculture's need for synthesized information that affects the entire farm business. Help also is given to assess ever-changing governmental programs that impact Kansas agriculture.

Making Good Use of State, Federal, and Private Support

Selected Examples of Accomplishments in the Fifth Year (1999–2004) of the K-State Research and Extension Five-Year Plan

K-State Named Mad Cow Disease Testing Site

K-State's Veterinary Diagnostic Laboratory was named one of the 12 U.S. labs approved by the USDA to screen and test for bovine spongiform encephalopathy (BSE). USDA area veterinarians-in-charge throughout the country are sending brain samples to K-State and the other screening labs. Those samples are screened by a rapid diagnostic test. Tests for BSE, sometimes called mad cow disease, have recently been developed that provide results in a matter of minutes instead of hours. Previous tests took days. K-State technicians have traveled as far away as Ireland for training in the test kits. K-State is projected to test 2,000 to 5,000 samples per year for BSE. K-State Research and Extension will have a nationwide impact on the analysis and testing of BSE, which further solidifies the organization as a national and world leader in animal and plant disease and food security research. More information about BSE is available from these Websites: *http://www.usda.gov* and *http://www.BSEinfo.org.*

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K-State's National Agricultural Biosecurity Center Receives $1.3 Million

The Department of Defense awarded a $1.38 million two-year contract to the National Agricultural Biosecurity Center at Kansas State University. The project will develop content and software to help the nation's emergency management personnel respond more effectively to an agricultural or zoonotic bioterrorist event. The project is called Situational Competency, Simulations, and Lessons Learned for Food/Agricultural Bioterrorism. The first objective is to scour the nation's emergency response community for examples of significant lessons it has learned from various agrosecurity response efforts, including naturally occurring outbreaks of diseases of plants and production animals. The project involves looking at the full spectrum of agrosecurity issues, emphasizing diseases identified by the government as zoonotic and/or ones particularly threatening to U.S. agriculture and its infrastructure. Federal, state, nonprofit, and private industry groups will be contacted in search of response lessons. Once agricultural bioterrorism lessons have been compiled, existing software and technologies will be adapted to handle agrosecurity issues and to be used by emergency management personnel at all levels who need to access such agrosecurity information. Plans are to create an integrated system accessible to the end-users via the Internet. The lessons-learned database, real-time content aggregations, and continuing education Website applications will give veterinarians, county extension agents, food producers and processors, public health officials, and others, an environment in which they can access relatively static data and also dynamic, relevant, real-time information.

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Researchers Awarded $805,000 to Develop Animal ID System

K-State Research and Extension researchers and the Kansas Animal Health Department (KAHD) received an $805,000 USDA grant to develop a national animal identification system. K-State already was working with the KAHD on a project to evaluate the use of field-based, mobile technologies. Using global positioning satellites (GPS) that mark animal loading and unloading sites, the system will link state health authorities' databases in the central United States with electronic identification of individual cattle, premise identification, and the location of the animals. Once completed, the system will use electronic RFID (radio frequency identification) technology placed on an animal to track it from the farm of origin through the marketing processes and all the way to slaughter. This project complements established research being done by K-State Research and Extension that links animal surveillance to central databases using mobile wireless information technologies. This project will address cattle movement, which is one of the critical issues faced by the national animal identification system. It meets the USDA's emphasis on having 48-hour trace-back capabilities in the event of a national animal disease emergency or as part of ongoing disease surveillance programs. Several companies are working cooperatively with K-State and the KAHD on the project.

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K-State Lab Helps Animals Stay Safe and Healthy

Without the diagnostic laboratory at K-State, agriculture and veterinary practice in Kansas would move much slower. As part of K-State Research and Extension, the lab is responsible for certifying the health of all animals moved in and out of Kansas and also for testing all samples from sick or diseased food and pet animals around the state to find out what's wrong with them. The lab has three main roles: diagnosing and preventing animal disease in Kansas; researching and sharing coronavirus reagents with labs and vaccine creators all over the world; and teaching students through clinical experiences. The lab receives samples from veterinarians all over the state for all species. For example, veterinarians at the lab isolated the first case of West Nile virus in a Kansas horse. They also found the first instances of West Nile virus in sheep—no one thought sheep could get West Nile until K-State proved it to be true. They also knew the SARS outbreak was possible long before it emerged. The diagnostic laboratory checks and issues health certificates for all animals moved in and out of Kansas and also works with large swine farms to do testing for various viruses such as pseudorabies. The lab also is called on for legal investigations to learn the origin of an animal's sickness, and the lab provides many other services.

Contact: Sanjay Kapil, Diagnostic Medicine/Pathobiology, Telephone: 785-532-4457, FAX: 785-532-4039, Email: kapil@vet.ksu.edu

K-State Wins Homeland Security Grant for Crop Biosecurity Training

A $450,000 grant to create a national online training program in crop biosecurity was jointly awarded to K-State Research and Extension, the University of Florida Institute for Food and Agricultural Sciences, and North Carolina State University. The grant from the USDA is to train members of the agricultural industry and land-grant university system to play a pivotal role in helping prevent and minimize crop bioterrorism. The effort will build on the success of the National Plant Diagnostic Network (NPDN), a national network of plant pathogen and pest detection activities in which K-State is a key component. An act of bioterrorism within U.S. agriculture would lead to a cascade of negative consequences, including financial impacts on farmers, shippers, distributors, and retailers. The threat of crop bioterrorism is relatively new, and the United States is vulnerable because it lacks the national infrastructure necessary to quickly detect, diagnose, and limit attacks. That's why such training afforded by this grant is so important.

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Beef Stocker Unit Teaches Cattle Producers about Animal Identification Technology

The recently built Beef Stocker Unit at K-State has helped cattle producers begin seeking more information on animal identification technology. The unit is not a typical cattle facility. Alongside the cattle chute are sophisticated computers and computer-chip readers. An adjacent classroom with large-screen TV allows students, producers, and others to view data on each animal as it passes through the chute. Every steer leaves the chute with an ear tag, with a computer chip that stores health and other individual information that will follow the animal the rest of its life. Information about the unit was provided last September at the annual Beef Stocker Field Day sponsored by K-State Research and Extension. Highlights of the program included demonstration of the animal identification technology; an update on the national animal identification plan; development and implementation of animal health protocols; and breakout sessions on cattle prices, bovine diarrhea virus (BVD), insecticide technology, management, and a survey on predator control.

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K-State and Other Universities Receive $5 Million NSF Grant to Fund Research Effort to Study How Climate Affects Plant Evolution

Kansas State University is one of several universities that will share an estimated $5 million federal grant to study how plants respond to environmental changes and how the genetic pathways underlying their responses evolve in different climates. Researchers at K-State Research and Extension are working with some of the premier labs in the world on this project, which is being funded by the National Science Foundation. The research involves how a plant's genome integrates environmental signals and evolves so that it blooms when it has the best chance to reproduce successfully. A plant's ability in this regard illustrates an important capacity of many biological systems: the ability to assess multiple signals in responding to complex challenges. The results of the project will be important for predicting how plants will respond to future climate change and will help to inform conservation management and crop improvement strategists. Led by evolutionary ecologist Johanna Schmitt of Brown University, the team includes molecular biologists, evolutionary geneticists, plant modelers, and computer scientists. Researchers at North Carolina State University, the University of Wisconsin, and the Max Planck Institute for Developmental Biology, based in Tubingen, Germany, also are part of the project. Total estimated funding to K-State through September 2009 is $1.4 million.

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Developing Quality Wheat Varieties for Kansas

K-State researchers are responsible for developing more than 70 percent of the wheat varieties grown by Kansas farmers. The university has played a vital role in Kansas wheat production for many years. Thirty-six varieties have been released since 1917, each an improvement in some respect over its predecessors. Producers want K-State Research and Extension wheat varieties because of their productivity, yield, high quality, pest resistance, and ability to withstand adverse weather. It takes about 12 years to develop a new variety. Those involved in the new wheat variety process include breeders, plant pathologists, agronomists, grain scientists, and entomologists. Each new variety begins with a cross-breeding process, inbreeding, followed by several methods of testing, evaluation, and yield trials. Hundreds and thousands of wheat lines are tested and only a few make the grade, and those are the ones that perform consistently well when tested under all types of environments. USDA scientists contribute to K-State's wheat program and cooperate in the development and release of new varieties. The Kansas Crop Improvement Association increases the quantity of seed, distributes quality seed to growers, and provides funds for the program. K-State Research and Extension, through the Kansas Legislature, provides a major amount of funding. The Kansas Wheat Commission, Kansas Crop Improvement Association, and other agencies furnish additional funding for research.

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Variety Testing for Kansas Crops

For many years K-State Research and Extension has conducted performance testing on such important Kansas crops as wheat, sorghum, corn, soybeans, alfalfa, and sunflowers. Testing also is being conducted on such alternative crops as canola. Testing is done around the state at K-State fields and centers and on farms of growers. The performance figures are summarized and published each year in reports of progress and electronically on the Web: *www.ksu.edu/kscpt/*. Variety selection can have a substantial economic impact. For example, if wheat tests in western Kansas show a 3 bushels per hectare advantage for a top-yielding hard white wheat compared to hard red varieties, then shifting only 5 percent of those acres to that variety would produce an additional $1.8 million in gross farm income for western Kansas.

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No-Till Wheat after Soybeans Aids Wheat Yields, Bottom Line

Research conducted by K-State researchers indicates that planting wheat no-till after row crops, especially after soybeans, can save time and money and maintain wheat yields. The ongoing study began in 1996 at the KSU Southeast Agricultural Research Center near Columbus, Kan., with Parsons silt loam soils. Three crops were grown in each two-year period. The seven-year average yield for wheat after soybean, corn, and grain sorghum was 57.1, 55.2, and 53.5 bushels per acre, respectively. While the differences have not been great, there was a 6 percent yield decrease when wheat was planted after grain sorghum, compared to wheat after soybean. Averaged over all of the crops, the wheat yields for no-till and reduced-till were 55.1 and 55.4 bushels per acre, respectively. However, wheat no-till planted after soybean (57.8 bushels per acre), yielded slightly higher than wheat reduced-till planted after soybean (56.4 bushels per acre). Tillage appeared to affect wheat yields very little, so more farmers may prefer no-till planting wheat after row crops, especially after soybean. This practice has the potential to save time and money, while maintaining wheat yields and reducing soil erosion that enhances soil and air quality.

Contact: Ken Kelley, KSU Southeast Agricultural Research Center, Telephone: 620-421-4826. Ext. 215, FAX: 620-421-0136, Email: kkelley@ oznet.ksu.edu

The Importance of Wheat Breeding in Kansas

A majority of the wheat varieties planted in Kansas originate from K-State's wheat-breeding program. One of the newest is the hard white wheat Lakin, which is adapted to southwest Kansas. An economic analysis of K-State wheat-breeding programs revealed that the average yearly economic benefit to Kansas wheat producers is $52.7 million. For each dollar invested in varietal development, nearly $12 was earned by Kansas wheat producers.

Contact: Joe Martin, KSU Agricultural Research Center—Hays, Telephone: 785-625-3425 (Ext. 213), FAX: 785-623-4369, Email: jmartin@ksu.edu.

New Releases from K-State's Soybean Breeding Program

K-State Research and Extension scientists have been studying soybeans for nearly a century and developing improved varieties in the soybean breeding program since the 1960s. K-State has released 10 soybean varieties in the past two years. Several of those varieties possess resistance to soybean cyst nematode, a serious disease affecting soybeans. 2004 is the first year K-State released Roundup Ready, or genetically modified, varieties. Genetic improvement of soybean varieties in Kansas increases yields by about .2 bushels per acre per year and increases farm revenue by over $3 million per year. Yield losses from pathogens, particularly soybean cyst nematode, reduce farm income in Kansas by over $5 million per year. Kansas generally ranks in the top 10 among the states in total soybean production, and production is very competitive on a worldwide scale. Parent seed of K-State's soybean varieties is sold to businesses who increase the seed and sell to farmers. The soybean breeding program receives funding from the Kansas Soybean Commission.

Contact: William Schapaugh Jr., Agronomy, Telephone: 785-532-7242, FAX: 785-532-6094, Email: wts@k-state.edu

Center for Sorghum Improvement

K-State Research and Extension has established a Sorghum Crop Improvement Center. Scientists in eight research programs in four departments are working as an interdisciplinary team to improve grain sorghum production in Kansas. Objectives of the center were identified following discussions with Kansas sorghum producers and commercial sorghum breeders. Interactions are being developed with researchers in private industry to ensure that results from basic research projects are rapidly incorporated into private sorghum breeding programs. The extension component of the center is working to educate sorghum farmers about the most profitable and cost-effective strategies for sorghum production. Specific objectives are to 1. Improve yield potential of sorghum through increased grain fill duration and seed weight; 2. Improve lodging resistance of sorghum and potential for increased harvestable yield through enhanced stalk strength and stalk rot resistance; 3. Develop and identify the most efficient and cost-effective sorghum management and crop-production strategies; and 4. Improve drought and heat-stress tolerance in sorghum.

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The Plant Diagnostic Center—Connected Statewide and Nationally

K-State Research and Extension's new Plant Diagnostic Center connects every Kansas county and district extension office to diagnostic labs on K-State's campus and across the nation through the National Plant Diagnostic Network (NPDN). K-State is one of five regional hubs that make up the NPDN. The region the university serves—termed the Great Plains Diagnostic Network—links labs and county Extension agents from Montana to Texas. K-State developed the software the national network is using. The system allows existing field observers to plug reports of unusual events or developments into a system that can quickly route digital photos, digital microscope views, and video footage of a problem. If the closest lab can't identify the pest or pathogen, the diagnosticians can quickly bring in experts via computer and videoconference links that reach from Alaska to Puerto Rico and from the Eastern Shore to Guam. The network will help quickly counter bioterrorist threats to the nation's food system.

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Invader Geranium Disease Tests New Diagnostic Network

When a bacterial disease in imported geraniums became a threat to U.S. greenhouse and nursery industries as well as the nation's tomato, potato, pepper, and eggplant growers, a nationwide team of experts from the National Plant Diagnostic Network was already on the job, watching out for U.S. nursery plants and field crops. The plant-killing import's name is *Ralstonia solanacearum* Race 3 Biovar 2. The bacterium was first detected in the United States in geraniums shipped from Kenya. As a result, the USDA's Animal and Plant Health Inspection Service (APHIS) had to put 921 greenhouses in 47 states on hold. By May, almost 2 million plants had been destroyed and 127 greenhouses disinfected. Invasive insect, weed, and disease species cost the United States $100 billion every year. New plant problems can have a big impact on our international balance of trade and on the nation's food and fiber supply. During the first *R. solanacearum* outbreak, the network was just beginning to test its abilities. Even so, team members started watching for local cases of geranium disease, too. The network's five regional hubs also organized training on how to handle suspect plants and how to identify the new geranium diseases in the lab. USDA-APHIS confirmed the second *R. solanacearum* outbreak as 2003 ended and 2004 began. Since then, APHIS has traced the contaminated plant materials to the Guatemala facilities of Goldsmith Plants Inc. Goldsmith has voluntarily quarantined the contaminated greenhouses there and suspended shipments until those facilities pass a USDA inspection.

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K-Staters Use of Geographic Tools to Track Plant Pathogens May Help Prepare for an Agroterrorist Attack

The Asian soybean aphid became a new crop pest in 2000 after appearing simultaneously in 11 states. With no natural enemies here to control it, the aphid expanded its range by more than 300 kilometers a year, appearing in soybean fields from the Dakotas to Virginia and causing crop losses of more than $2.2 billion. Nowadays, scientists have to consider that a new plant pathogen like this could be a deliberate introduction, though it was probably carried in accidentally. The aphid invasion was useful as a training exercise for scientists to prepare for an agroterrorist strike that could pit a foreign insect pest against U.S. crops. The soybean aphid carries several viruses that harm other crops. The scientists and others studied this outbreak as if it were a deliberate introduction and determined how fast the aphid moved and where it had been. They then could predict where it was going throughout the country. They also determined its point of entry was Cook County, Ill., home of Chicago's O'Hare Airport. This research is being done through the Plant Pathways Analysis Group of the National Agricultural Biosecurity Consortium housed at K-State and with funding from the USDA Animal and Plant Health Inspection Service. Other consortium members are Purdue University and Texas A&M University.

Contact: Sonny Ramaswamy, Entomology, Telephone: 785-532-6154, FAX: 785-532-6232, Email: sonny@ksu.edu

Research Shows Benefits of Finely Rolled Milo as Cattle Feed

Kansas is one of the leading states in grain sorghum (milo) production. Studies at the KSU Agricultural Research Center—Hays suggest it could play an even greater role in the state's economy. Milo that is coarsely rolled when fed to cattle is only 88 percent the feed value of corn, but researchers have found that for finely rolled milo the relative efficiency to corn was 94 percent. They also found that feeding milo to cattle can be economical, and cattle fed finely rolled milo perform well. There is no trouble feeding the milo because the processing doesn't produce a powder or flour. Milo is the primary diet for the cattle at the Hays Center. Last June, the Hays Center entered five steers and three heifers into the Beef Empire Days beef carcass show to go head-to-head with corn-fed cattle. With those eight head of cattle—which were all fed milo—the center came away with Grand Champion Steer and Heifer and Reserve Champion Steer honors in addition to other top-ten finishes. More than 80 percent of all milo produced in Kansas is used as livestock feed. The market is expanding with new uses including production of ethanol.

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New Traits Developed in Summer Annual Forages

Two new traits have been bred into some types of summer annual forages to give producers more choices in the type of forage they can grow. The traits have been developed by researchers in several states for grazing, haying, and silage. Research done by Texas A&M University in 2002 showed forages that incorporated photo period-sensitive (PPS) and brown mid-rib (BMR) traits generally produced better yields than did corn silage. Both traits have been developed in sorghum, sorghum-sudan grass, and hybrid pearl millet. The BMR trait can also be found in corn. Research into these traits has been conducted in several states. Texas A&M has been the leader over the last few years, with a large number of varieties and types, water use efficiency and some feedlot and grazing work. K-State Research and Extension has studied comparisons of summer annual forages for a number of years at various locations across the state. Oklahoma State University, Purdue University, the University of Wisconsin, and the United States Department of Agriculture Dairy Forage Research Center have also researched PPS and BMR traits.

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Growing Canola Could Have a Major Economic Impact

Canola (or rape as it also is called) is an oilseed that could help spread the economic risk between more than one commodity and therefore have a major economic impact on agriculture in Kansas and the Great Plains if suitable varieties were developed and produced. According to studies, canola included in a wheat rotation will net about $50 per acre more than growing wheat alone. Unlike many other alternative crops, an investment in new equipment is not needed to grow canola. A research project of K-State Research and Extension involves identifying, breeding, and selecting oilseed rape lines that demonstrate superior winter survival abilities and meet the quality guidelines established for canola. K-State also is part of the National Canola Variety Trial planted in 16 states. Lines identified by that project as superior have been used in the K-State breeding program. Nearly 3,000 acres were planted during the fall of 2003. K-State is working to help develop markets for the crop.

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A New International Grains Program Conference Center

The new International Grains Program (IGP) Conference Center building was and dedicated last May. The IGP building, which is part of the Department of Grain Science and Industry, is nearly 20,000 square feet and includes a grain-grading laboratory, a conference room, a tiered auditorium-style classroom, dining and lounge areas, and staff offices. The classroom and grain-grading lab are equipped for simultaneous translation of up to three languages and offer audio, visual, and multimedia equipment for state-of-the-art presentations. The new center also includes communication equipment that will allow the IGP to provide programs and information to sites nationally and throughout the world. The IGP was established by the Kansas Legislature in 1978 and has trained thousands of international grain industry representatives in its 27-year existence. The IGP has established a worldwide reputation as a center of excellence for international programs related to grain marketing, as well as flour and feed milling, processing, and utilization. The program also has a rich tradition in training that's specifically related to the marketing, processing, purchasing, and shipment of corn, grain sorghum, soybeans, and wheat. Key sources of funding for the new $4 million IGP Conference Center were the Kansas Wheat Commission, the Kansas Corn Commission, the Kansas Soybean Commission, and Burlington Northern-Santa Fe Railroad Corp, and Cargill Inc. The Center is one of five buildings that will make up K-State's new Grain Science Complex. The complex includes the Bioprocessing and Industrial Value-Added Program facility. A feed mill, a flour mill, and a teaching and research building that will house K-State's baking science and management program also are planned.

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FAX: 785-532-7010, Email: virgils@wheat.ksu.edu

The New Bioprocessing and Industrial Value-Added Program (BIVAP) Facility

Completed in 2004, the building that houses the Bioprocessing and Industrial Value-Added Program is one of five buildings that will make up K-State's new Grain Science Complex. The BIVAP facility is a place where K-State researchers work with industry to turn the state's crops into marketable products and test new production processes for grain-based food and nonfood products. The BIVAP building has centralized value-added processing, research, and education facilities. In the testing area, raw material and product-quality attributes are assessed based on particle-size distribution, moisture content, color, texture, pasting properties, polarized light microscopy, and image analysis. Processing includes such areas as grinding, mixing, delivery, conditioning, and single- and twin-screw extrusion. Other components of processing done in four places in the building include spray and drum drying, injection molding, thermoforming, and fermentation.

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K-State Begins Work on New Flour Mill and Wheat Quality Laboratory

To provide quality education to students and research for the state's wheat industry, K-State began construction on a new flour mill and wheat quality laboratory. It is the third of five buildings being constructed by the Department of Grain Science and Industry on 16 acres in Manhattan. The facility, to be named the Hal Ross Flour Mill in honor of long-time industry leader and Wichita businessman Hal Ross, will house a state-of-the-art teaching and research facility for dry grain processing. The mill will be a commercial-type, 260-hundredweight-per-day flour mill to serve as a standard mill processing facility and allow flow and equipment changes that will support research in the milling process. The facility also will house a second milling unit for specialty milling of grains such as corn and sorghum. An adjacent area will provide for grain storage and cleaning. Attached to the mill building will be a wheat quality laboratory for evaluation of plant breeder experimental lines in the wheat variety development program. The lab also will be used to evaluate commercial varieties of wheat and analyze their flour characteristics and milling performance. All systems in the mill will be computer-controlled and -automated, including inventory control and in-process monitoring. The mill has been funded by donations from Hal Ross; Archer Daniels Midland Co.; Cargill Inc.; Kice Industries, Wichita; Research Products Company in Salina; the Buhler Group, Uzwil, Switzerland; and other private donors. It is expected to be completed and operational by 2006.

Contact: Virgil Smail, Grain Science and Industry, Telephone: 785-532-6161, FAX: 785-532-7010, Email: virgils@wheat.ksu.edu

Two-Year Study Conducted on Wheat Winterkill

Research conducted by K-State Research and Extension has shown that a percentage of winterkill loss does not result in the same percentage of yield loss. Also, growing conditions in early spring, when tillering is occurring, and during the grain-filling period when kernel numbers and kernel size are being determined, affect the extent to which winterkill damage expresses itself. Thus, 25 percent winterkill damage in one year may not be as damaging as the same percentage of winterkill in another year. The implication for producers is that the research gave a range of expected yield losses over a range of winterkill damage. The study was conducted over a two-year period at the Southwest Research-Extension Center near Garden City. The site was a Ulysses silt loam soil in a wheat-fallow rotation.

Contact: Merle Witt, Southwest Research-Extension Center, Garden City, Telephone: 620-276-8286, Ext. 213, FAX: 620-276-6028, Email: mwitt@ksu.edu

Assisting Producers in Understanding Crop Insurance

When it comes to crop insurance, K-State Research and Extension has expertise to provide information and answer questions. For example, many questions were asked last year about hedge-to-arrive (HTA)contracts. Many wondered if those were the instruments that got some farmers into trouble several years ago. The answer: Hedge-to-arrive contracts based on harvest futures prices did not get growers into trouble. The issue was with the rollover HTAs. The elevators were selling July corn futures and then they were going to roll over to December futures. The contract spread between July and December (futures) did not narrow as forecasted by many marketing experts but instead widened. Because growers could not deliver corn in July, they had to pay the cancellation penalty that was equal to the margin loss on the July futures contract. Growers reduced the financial risk caused by not being able to deliver due to a crop failure if they purchased Revenue Assurance with the Harvest Price Option (RA-HPO) insurance or Crop Revenue Coverage (CRC) insurance before March 15. If the crop fails and market prices increase, growers will receive a larger indemnity payment that will help cover the cancellation penalty and crop production expenses. For more information about crop insurance, interested persons can visit the K-State Research and Extension Website: *http://www.agmanager.info/crops/insurance*.

Contact: Art Barnaby, Agricultural Economics, Telephone: 785-532-1515, FAX: 785-532-6925, Email: abarnaby@agecon.ksu.edu

Insurance Workshops Focus on New Livestock Policies

New livestock insurance policies being offered in Kansas and other states created questions from livestock owners, lenders, and insurance agents. To fill that need, K-State, along with the University of Nebraska and Colorado State University, provided workshops on Livestock Risk Protection (LRP) insurance policies. The Changing World of Crop Insurance: Livestock Insurance, What's Next? workshops were held in Great Bend, Kan., Grand Island, Neb., and Brush, Colo., this past November. In addition to livestock insurance information, the workshops provided crop insurance agents, farmers, ranchers, and agricultural leaders with better risk management information. Workshop topics included next season's drought scenarios; water rights and issues; satellite imagery used by the USDA Risk Management Agency; crop insurance changes from Washington, D.C.; risk management education programs; and an update of federal drought insurance and other public policies. More information about the workshops are available at the K-State Website at *http://www.agmanager.info/crops/insurance/*. Click on Educational Materials and Workshops.

Contact: Art Barnaby, Agricultural Economics, Telephone: 785-532-1515, FAX: 785-532-6925, Email: abarnaby@agecon.ksu.edu

Historical Ag Price, Production Data Available on Website

An easy way to access historical agricultural data is available now online from K-State Research and Extension. It is designed for those who want to calculate seasonal price indices or to refresh their memory about where cattle, hog, or grain prices were at any given time. The Website is at *http://www.agmanager.info/*, then click on "Livestock" or "Grains," followed by "Marketing" and then "Databases." Once there, numerous Excel® spreadsheets with price and production statistics that go back 30 years or more are available. If someone is interested in trends in western Kansas slaughter cattle prices, for instance, a spreadsheet with weekly average prices going back to January 1974 is available. Other statistics on the site include such benchmark data as Dodge City feeder cattle prices. Regional and national statistics also are available, including such key data as average Iowa-southern Minnesota hog prices, national hog prices, boxed beef cutout values, and international meat and livestock trade figures. The newest databases on the Website post cash cattle seasonal prices and cash grain seasonal prices. Plans are to add databases in the future that will allow producers to examine historical crop basis for various locations in Kansas.

Contact: Kevin Dhuyvetter, Agricultural Economics, Telephone: 785-532-3527, FAX: 785-532-6925, Email: kdhuyvet@agecon.ksu.edu

Ag Profitability Conferences at 13 Kansas Sites

Thirteen Ag Profitability Conferences were held last year. K-State Research and Extension county offices worked together and with the Department of Agricultural Economics so that each site's program was designed to fit area producers' needs and interests. The programs all featured five to six speakers, addressing an array of farm management issues and concerns, including land values, ag policy, machinery costs, the crop and livestock outlooks, cow-calf and feeder economics, grain marketing, business planning, and both crop and livestock insurance. Also covered were land leases, no-till leases, livestock leases and recreational leasing. Other topics were bringing the next generation into farming, managing for farm survival, "Farming in the Nearby Future," developing a value-added business, and handling farm finances during drought years.

Contact: Mykel Taylor, Agricultural Economics, Telephone: 785-532-1572, FAX: 785-532-6925, Email: mtaylor@agecon.ksu.edu

Southeast Research Center Hosts Wheat Tour

The Southeast Agricultural Research Center near Parsons hosted a wheat tour last May. Highlights of the day include a tour of 37 wheat variety plots. Information also was provided on No-till Seeded Wheat Research; Improving Profitability of Wheat Production; and Diseases Affecting the 2004 Wheat Crop in Southeastern Kansas. The tour was free and open to the public. Similar tours are held annually.

Contact: Lyle Lomas, Southeast Agricultural Research Center, Parsons, Telephone: 620-421-4826, FAX: 620-421-0136, Email: llomas@oznet.ksu.edu

Adding Value to Ag Businesses

Adding value to any product can make the difference between a business success or failure. To help agribusinesses look at ways to add value to their products, the Kansas Ag Innovation Center at K-State presented a one-day course on Opportunity Scoping: The Art of Discovering Profitable Value-Added Businesses. The course was for those who wanted to extend their agricultural business into the value-added domain but were not sure where to start or what to do. The program was designed to help agribusiness owners and managers identify, select, and focus on the opportunities that fit their strengths.

Contact: Vincent Amanor-Boadu, Agricultural Economics, Telephone: 785-532-3520, FAX: 785-532-6925, Email: Vincent@agecon.ksu.edu

K-State, Missouri Officials Discuss Forage Production

Officials with K-State Research and Extension and the University of Missouri met last winter to discuss forage production for livestock. The meetings in Savannah, Mo., and Seneca, Kan., took place at a time when producers evaluate their regular crop rotations to determine if forage production may be more profitable than traditional row crops. Highlighting the agenda was information on pasture management following three years of drought; the economics of purchasing versus raising forages; maximizing production of alfalfa, brome and fescue; and storage types and techniques of harvested forages. The goals of the meetings were to help increase time efficiency and maximize profitability for forage producers, helping them save money by properly managing pasture, and storing forages to prevent losses from weather.

Contact: Joel DeRouchey, Animal Sciences and Industry, Telephone: 785-532-2280, FAX: 785-532-2461, Email: jderouch@oznet.ksu.edu

Assisting Farmers to Learn about Precision Agriculture Technology

Precision agriculture technologies have become an integral part of some farming operations, but technologies are changing so rapidly that many producers are struggling to keep up with the best and latest. To help farmers and others learn about innovations in precision agriculture technology, K-State Research and Extension teamed with the Kansas Agricultural Research Association and several companies to sponsor an Agricultural Technology Field Day last August in Salina. Presentations at the event included Yield Variation—Can We Manage It? Advancements in Agri-Chemical Application Technologies; Logging Records During Field Operations; Selecting and Comparing Guidance Systems; Making the Most from On-Farm Comparisons; and On-The-Go Sensor Technology. A demonstration area gave producers a chance to operate some of the premier guidance systems available on the market.

Contact: Randy Taylor, Biological and Agricultural Engineering, Telephone: 785-532-2931, FAX: 785-532-5825, Email: rktaylor@ksu.edu

Researchers Track Bacteria Near Round Bale Feeders

By tracking fecal bacteria where cattle are fed, K-State researchers can report findings to help producers maintain their herds' health and performance and also protect nearby waterways. The study indicates that after 60 days fecal bacteria tend to concentrate in a 10-foot area circling stationary round bale feeders. The buildup of fecal bacteria is confined to an area small enough to make cleanup practical for producers. Where fecal bacteria are found, there often are other bacteria that cause disease. That's not just a health risk to cattle but also a risk to the nearby environment. The findings indicate that producers should move feeders throughout a field, if possible. Moving the feeder means bacteria don't form in large concentrations, and most of the bacteria die within 60 days. If feeders can't be moved, producers still can focus cleanup and disposal efforts to the 10-foot circle around the feeder.

Contact: Twig Marston, Animal Sciences and Industry, Telephone: 785-532-5428, FAX: 785-532-2461, Email: twig@oznet.ksu.edu

A Workshop for Kansans Considering Value-Added Processing

Some Kansans are capitalizing on consumers' growing interest in buying products made locally, including such items as bread, baked goods, salsas, baking mixes, jams, and jellies available at local farmers' markets and retail stores. To protect public safety, Kansas Food Code has specific processing and facility requirements for the manufacture of processed foods. K-State Research and Extension held a workshop last December for Kansas producers considering a value-added enterprise such as processing the products they raise. The workshop in Salina was aimed at helping gardeners, vendors, and other producers learn the basics of a certified kitchen. Session topics included food safety and labeling, equipment, and rules and regulations. The workshop was organized by the Guided Explorations of Value-Added Products and Enterprises Project, an effort that helps guide farmers through the stages of product development and other issues pertaining to running a small business. It was a cooperative project of the Kansas Rural Center and K-State Research and Extension and underwritten by the USDA North Central Sustainable Agriculture Research and Education Program.

Contact: Jana Beckman, Kansas Center for Sustainable Agriculture and Alternative Crops, Telephone: 785-532-1440, FAX: 785-532-5780, Email: beckman@oznet.ksu.edu

Weed Software Improves Management Decisions

A software program available from K-State Research and Extension called WeedSOFT can help farmers with each phase of management—from weed identification to selecting the most cost-effective, environmentally sound treatment. The ADVISOR module in WeedSOFT is the main tool. The user, typically a farmer, inputs field-specific soil and environmental information, including soil pH, distance to groundwater and surface-water, soil texture, soil organic matter content, the densities and heights of each weed species, and such economic information as the potential crop yield without weeds and the anticipated crop price. First developed by the University of Nebraska, WeedSOFT later evolved into a regional project with the cooperation of scientists at K-State, the University of Illinois, Michigan State University, the University of Missouri, Purdue University, and the University of Wisconsin. The latest version of the software includes several updates. At $50, it also is 75 percent lower in cost than the previous version. More information on WeedSOFT 2004 is available from the Web at http://weedsoft.unl.edu.

Contact: Dallas Peterson, Agronomy, Telephone: 785-532-0405, FAX: 785-532-6094, Email: dpeterso@oznet.ksu.edu

News Releases Help Farmers and Ranchers and All Kansans

Almost daily, K-State Research and Extension disseminates information through news releases, radio, and television. That news contains material that Kansans can use to improve their lives, the environment, or their finances. For example, one news release was headlined: Kansas Feeder Cattle Prices Seen as Steady This Summer. The information provided included such facts that "Feeder steers weighing 700 to 800 pounds sold in late May at Dodge City in the $105 per hundredweight (cwt) area - 25 percent higher than a year ago. Late May prices were $10 higher than early April's values and about $16 higher than at the start of the year. Prices this summer are expected to trade sideways, likely averaging over $100 per hundredweight (cwt) for 700- to 800-pound steers at Dodge City." The news release noted that "feeder cattle prices were swept higher through spring by strong slaughter cattle prices and tight feeder cattle supplies. Little is expected to change this summer."

Contact for cattle marketing: James Mintert, Agricultural Economics, Telephone: 785-532-1518, FAX: 785-532-6925, Email: jmintert@ksu.edu

Contact for news releases: Mary Lou Peter, Communications, Telephone: 785-532-1164; FAX: 785-532-5633; Email: mlpeter@oznet.ksu.edu

K-State's 91st Cattlemen's Day

An update on how bovine spongiform encephalopathy (BSE) could affect U.S. cattle markets was featured during the 91st annual Cattlemen's Day last March 5 at K-State. K-State researchers discussed the potential impact of BSE, also known as mad cow disease. An overview of ongoing beef research was presented by K-State animal scientists. Other Cattlemen's Day topics included beef quality, beef safety, physiology and nutrition, and management. Keynote speakers included Warren Weibert, owner and general manager of the 38,000 head Decatur County Feed Yard, and Steve Hunt, CEO of U.S. Premium Beef. Weibert discussed individual animal identification. Hunt spoke on capturing value through branded beef programs as well as the importance of selling meat and meals instead of cattle. The event also featured demonstrations at K-State's Beef Cattle Research Center and the special 'K' Bull and Heifer Sale. The 2005 Cattlemen's Day will be March 7, 2005.

Contact: Lois Schreiner, Animal Sciences and Industry, Telephone: 785-532-1267, FAX: 785-532-2461, Email: lschrein@oznet.ksu.edu

Ultrasound Technology Developed By K-State Helps Win Cattle Awards

Upstream ultrasound technology pioneered by K-State Research and Extension has been helping researchers for 12 years win awards for predicting carcass merits of cattle. The most awards were presented during the 2004 Beef Empire Days beef carcass show in Garden City. Researchers with K-State's Western Kansas Agricultural Research Center in Hays selected five steers and three heifers for the Empire Days competition. In the carcass show, the researchers won awards for Grand Champion Steer and Reserve Champion Steer. They placed 4th, 13th, and 26th among 124 entries. The scientists also received the award for Grand Champion Heifer among 112 entries. The ultrasound technology was developed at the Hays Research Center. The importance of ultrasound technology is the ability to predict future carcass potential and cluster cattle into outcome groups for more profitable marketing. The technology allows cattle in feedlots to be evaluated, and an estimate of the number of days to feed each animal for maximum profit is computed. Then, cattle can be sorted according to the optimal number of days they should be kept in feedlots. Sorting and selling the cattle in this fashion allows producers to maximize profit

Contact: John Brethour, KSU Agricultural Research Center—Hays, Telephone: 785-625-3425, Ext. 215, FAX: 785-623-4369, Email: jbrethou@ ksu.edu

Beef Roundup 2004

Last April, the Beef Roundup was held at the KSU Agricultural Research Center—Hays. One of the topics at the event was safe handling for animals as well as producers, presented by noted cattle-handling experts from Nebraska. Other topics included selecting the beef cow herd for meat marbling and results from the latest research. This annual event allows producers to learn about issues in depth.

Contact: John Brethour, KSU Agricultural Research Center—Hays, Telephone: 785-625-3425, Ext. 215, FAX: 785-623-4369, Email: jbrethou@ ksu.edu

Workshops Offered on Basics of Growing Food

The Kansas/Missouri Growing Growers Program presented the first of two in-depth workshops last spring as part of a goal to expand market-garden production in the Kansas City "food shed"—the land within 100 miles of the greater metropolitan area. Soil Building for Vegetable and Fruit Crops program was presented last spring in Lansing, Kan., and Plant Production for the Vegetable Grower program was presented last April in Osceola, Mo. The program was designed to help people learn what they need to know to produce organically grown fresh foods. The target audience for the workshops included existing and aspiring growers as well as advanced home gardeners and horticultural retailers. Topics ranged from soils and soil tests to how to select top-selling varieties, from mechanization for vegetable production to getting horticultural plants started. Funding for the program came from USDA's Sustainable Agriculture Research and Education division. The program was a cooperative venture for K-State Research and Extension, University of Missouri Extension and Outreach, the Kansas Rural Center, and the Kansas City Food Circle.

Contact: Ted Carey, K-State Research and Extension Center—Horticultural Crops and Forestry, Olathe; Telephone: 913-645-0007, Email: tcarey@oznet.ksu.edu

Kansas Fiber Festival Matches Artists with Producers

The 2nd annual Central Plains Fiber Festival was held last March in Phillipsburg, Kan. Classes for producers focused on fiber evaluation and rangeland management. Many producers also brought animals for display or sale. Artists and crafters who attended the festival could learn about wool, alpaca, llama, soy silk, and other fibers. Classes ranged from fleece preparation to machine knitting, four-harness weaving, soysilk felt, creative dyeing, basket weaving, and others. The fiber festival was patterned after similar events held in larger population areas. It was an opportunity to bring fiber artists, crafters, and producers together. The festival was sponsored by the Phillips County K-State Research and Extension office, Phillips County Farm Bureau; the Fleece & Fibers Weavers and Spinners Guild; Great Plains Artisans Inc. (Brandon's Fiber Art Center); Kansas' Biggest Rodeo Association; and The Plum Nelly (a fiber art shop in Hastings, Neb.). The festival Website is *www.centralplainsfiberfest.com*.

Contact: Vicky Overley, Phillips County Extension Office, Telephone: 785-543-6845, FAX: 785-543-6846, Email: voverley@oznet.ksu.edu

Researchers Share $1 Million Grant to Study Control of Insects

K-State Research and Extension and German scientists received a four-year, $1 million award from the USDA to perform studies designed to aid in the control of agronomically important insect pests. The research, which utilizes the red flour beetle, a pest of stored grain and grain products, involves a special genetic element that can be made to "hop" to new locations in the beetle chromosomes, thereby causing new gene mutations and identifying regions important for directing patterns of gene activity. The study has potential to form the basis of new strategies of insect control, as well as important advances in understanding insect genetics and development. The K-State research team won approval from the National Human Genome Research Institute, an arm of the National Institutes of Health, to have the beetle's genome sequenced. This process is under way. That team involves cooperation between the KSU Division of Biology; the Terry C. Johnson Center for Basic Cancer Research; the U.S. Grain Marketing and Production Research Center in Manhattan; and scientists in Gottingen and Erlangen, Germany.

Contact: Susan J. Brown, Division of Biology, Telephone: 785-532-3935, FAX: 785-532-6653, Email: sjbrown@ksu.edu

Responding Quickly to Alfalfa Pests

When increased populations of alfalfa weevils were noted last year in some central Kansas fields, K-State Research and Extension was ready to advise producers about the problem. After several fields were inspected, a news release was distributed to news media, and recommendations were made on how to treat the fields to kill the weevils. Producers were informed that fields treated with most of the registered insecticides should have 14 to 21 days of residual protection. Because freezing conditions can interfere with insecticide effectiveness, growers were advised to check weather forecasts before applying insecticides. For information on insecticides and economic injury levels, growers were advised to check the Alfalfa Insect Management Guide for 2004, available in county K-State Research and Extension offices or check the extension Website: *http://www.oznet.ksu.edu*.

Contact: Jeff Whitworth, Entomology, Telephone: 785-532-5891 or 785-532-5656, FAX: 785-532-6258, Email: jwhitwor@oznet.ksu.edu

Local Extension Offices Offer Research-Based Turf Advice

Local Research and Extension offices are good places for Kansans to learn about lawn care and which turf varieties do well in a particular area or region. In highly agricultural Kansas, horticulture is No. 3 after wheat and corn in gross crop value. As part of that, turfgrass is far and away the leader in the horticulture industry. K-State researchers study weeds, irrigation, and turf management practices. Test plots are maintained across the state to see which turf varieties do best in Kansas' diverse climates. There are 160 different cultivars of tall fescue in trials near Wichita, and Kentucky bluegrass trials are grown near Olathe. Results of test plots are distributed by the university's state and county extension staff. Kansans can find the contact information for their local extension office on the Web at *http://www.oznet.ksu.edu/main/maps.asp*.

Contact: Ward Upham, Horticulture, Forestry, and Recreation Resources, Telephone: 785-532-1438, FAX: 785-532-6949, Email: wupham@oznet.ksu.edu

Natural Resources and Environmental Management

K-State Research and Extension provides research-based, unbiased information and expertise on conservation and ways to protect the land, water, and other natural resources. Programs are in place and being developed to maintain the quality of and conserve surface water and groundwater; promote community residential environmental management; generate systems for improved soil and air quality; and maintain plant diversity. Scientists and extension personnel are working with producers, community leaders, homeowners, and others interested in preserving the environment and natural resources and assuring a better quality of life for themselves and future generations.

The Kansas Environmental Leadership Program (KELP)

K-State's Kansas Environmental Leadership Program (KELP) is a 10-month-long program that focuses on enabling citizens to become better versed in environmental knowledge and hone their leadership skills. Participants participate in a variety of applied leadership projects to gain practical experience. Gratemates and Classmates was one such project in which 100 middle school students were involved in installing and monitoring storm drains to evaluate and demonstrate nonpoint source pollution. Another of the several projects the class undertook was to develop a public education program for Hays, Kan., that educated citizens about the irrigation water needs of various lawn turfgrasses and how to select and use turfgrasses that conserve water. The KELP program received the eighth annual CF Industries National Watershed Award presented by The Conservation Fund. The award recognizes model programs that protect local watersheds. More information about KELP is on the Website: *http://www.oznet.ksu.edu/kelp/*.

Contact: Judy Willingham, Biological and Agricultural Engineering, Telephone: 785-532-2936, FAX: 785-532-5825, Email: judymw@ksu.edu

Identifying Those Pesky Bugs

K-State Research and Extension offers bug and plant identification services free to Kansas residents through the Insect Diagnostic Laboratory, which is part of the Department of Entomology. This facility provides prompt and accurate diagnoses of insects and insect-related problems, including insects found in homes and yards, on people and animals, and in agriculture. In addition to identification, the laboratory provides information on the biology of the insect, its status as a pest or nonpest, and control measures. Assistance also is provided for identification of such noninsect arthropods as spiders, ticks, mites, and centipedes.

Contact: Bobby Brown, Entomology, Telephone: 785-532-4739, FAX: 785-532-6232, Email: bbrown@oznet.ksu.edu

Sustainable Ag Roundup in Tenth Year

Ten years ago, a group of farmers and ranchers came together to learn about how to make a profit while conserving general resources at the same time. Ten years later, the message is still being spread through the Kansas Sustainable Agriculture Roundup. The 2004 Roundup took place last February in Manhattan and involved K-State Research and Extension employees, farmers, ranchers, food advocates, and consumers. The event is sponsored by the Kansas Center for Sustainable Agriculture and Alternative Crops, the Kansas Rural Center, K-State Research and Extension, and the North Central Region Sustainable Agriculture Research and Education Professional Development Program. Jerry Jost of the Kansas Rural Center, said that "Partnering with K-State helps farmers find management and marketing information that integrates good land stewardship and farm profitability." Topics at the event included the new farm bill and policy and trade issues; woodland management; grazing management; water quality protection; and soil quality. More information about Roundup is available from Jerry Jost at 785-865-2555 or email *jjost@myvine.com*. Information can also be found on the KCSAAC Website at *www.kansassustainableag.org*.

Contact: Jana Beckman, Kansas Center for Sustainable Agriculture and Alternative Crops, Telephone: 785-532-1440, FAX: 785-532-5780, Email: beckman@oznet.ksu.edu

Interest in Subsurface Drip Irrigation Growing—SDI Celebrates 15 Years

K-State Research and Extension has been a national leader in research and development of subsurface drip irrigation, a method of conserving water by using underground plastic lines (drip tapes) that run the length and breadth of a field. Holes spaced along the lines precisely drip water into the crop root zone. The interest in subsurface drip irrigation (SDI) is strong enough that an estimated 12,000 to 15,000 acres of the state's farmland are dedicated to the technology. K-State continues to help promote it through publications, websites, and field days, one of which was held last August in Colby. At that free event, K-State researchers and others discussed the latest developments involving SDI. The university began studying SDI 15 years ago. That year researchers installed the first SDI system on a three-acre research plot in Colby, hoping to learn more about a technology that potentially offered higher yields for field crops and less burden on the Ogallala Aquifer, the major source of water for western Kansas. Today, that same underground system in Colby is still operating efficiently and pumping water to farm crops in research trials. The research site has expanded to nearly 20 acres at the KSU Northwest Research-Extension Center. SDI has features that can make management easier, including the ability to uniformly apply small amounts of water and nutrients directly into the crop root zone on a frequent basis, while eliminating or minimizing water losses such as runoff, soil evaporation, and deep drainage.

Contact: Freddie Lamm, KSU Northwest Research-Extension Center—Colby, Telephone: 785-462-6281, Ext. 208, FAX: 785-462-2315, Email: flamm@oznet.ksu.edu

Water Protection Featured at Fall River Workshop

Water quality and problems detracting from it were featured at the Fall River Watershed Protection Workshop last February in Eureka, Kan. The workshop provided information about the watershed—its importance to residents and wildlife in the area and strategies for farmers and homeowners that may guide future water-quality efforts. Located in Greenwood and Wilson counties in southeast Kansas, the Fall River Watershed is the drainage basin for the Fall River and its tributaries. In addition to supporting aquatic life and recreational activities, the watershed is an important source of drinking water for area residents. There are 13 public water supplies in the watershed, many of which draw water from the Fall River and its alluvium (groundwater adjacent to rivers and streams). While most of the surface water resources in the watershed support their designated uses, the Kansas Department of Health and Environment (KDHE) has said that nearly 25 percent of the stream and river segments that are monitored by KDHE have consistently experienced poor water quality and require the establishment of Total Maximum Daily Loads (TMDLs). A TMDL is the maximum amount of pollution that a surface water body can receive and still meet predetermined water quality standards. K-State Research and Extension, the Flint Hills Resource Conservation and Development Council, the Greenwood County Conservation District, the USDA Natural Resources Conservation Service, and the Fall River Watershed District sponsored the program.

Contact: Robert Wilson, Office of Local Government, Telephone: 785-532-2643, FAX: 785-532-3093, Email: rwilson@agecon.ksu.edu

Two Major Outreach Programs in Water-Quality Programming

K-State Research and Extension water-quality programming involves two major outreach programs. The first is technical assistance in the adoption of Best Management Practices by farmers, homeowners, and landowners in high-priority watersheds to reduce nonpoint sources of fecal coliform bacteria. The second program involves technical assistance and facilitation in the development of Watershed Restoration and Protection Strategies (WRAPS) in watersheds throughout the state. The purpose of WRAPS is to develop a plan that will restore impaired water resources (those not supporting designated uses) and to protect water resources currently meeting water-quality standards. Partnerships were built with such groups as Kansas Department of Health and Environment, Kansas Department of Agriculture, State Conservation Commission, USDA Natural Resources Conservation Service, Kansas Department of Wildlife and Parks, and Kansas Water Office.

Contact: William Hargrove, Kansas Center for Agricultural Resources and the Environment, Telephone: 785-532-7419, FAX: 785-532-6563, Email: bhargrov@oznet.ksu.edu

Sustainable Woodland Management

Data from the North Central Forest Inventory and Analysis Program show Kansas woodlands are on the rise, increasing from 1.5 million acres in 1994 to 2.2 million in 2002. Ninety-six percent of those areas are owned by private landowners. Only about 33 percent of the wood volume grown each year in Kansas is harvested. Recent numbers indicate Kansas manufacturing establishments in the lumber and wood industries employ approximately 3,200 people and pay $64 million in wages annually. However, a majority of Kansas woodlands are not managed. K-State Research and Extension provided information and ideas on sustainable woodland management and timber marketing at the 10th annual Kansas Sustainable Agriculture Roundup last February in Manhattan. Topics included wildlife habitat, aesthetics, timber products, water quality, what makes timber valuable, and how to market timber products locally.

Contact: Jana Beckman, Kansas Center for Sustainable Agriculture and Alternative Crops, Telephone: 785-532-1440, FAX: 785-532-5780, Email: beckman@oznet.ksu.edu

Landscape Models Available to Teach About Watersheds

A three-dimensional watershed model is helping to teach adults and children how important water is to communities. K-State Research and Extension, in partnership with the Kansas Association for Conservation and Environmental Education, has made EnviroScape watershed education models available to county and district extension offices, conservation districts, community organizations, local governments, and schools to promote awareness and understanding of water-quality protection issues. The models show how water flows and affects various areas in the landscape, including a follow-up demonstration that shows how to prevent water pollution through the use of Best Management Practices, emphasizing to people of all ages about sharing responsibilities for preventing water pollution. These three-dimensional landscape models are hands-on learning tools that connect land use to what happens in our rivers, lakes, and groundwater. They are ideal for use at water festivals, county fairs, Earth Day activities, organizational meetings, school science fairs, and other events. A user's guide and video accompany each model to aid facilitators in presenting a demonstration. Models include nonpoint sources of pollution, wetlands, hazardous materials, groundwater kit, and riparian kit.

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Konza Prairie Research Shows Ecological Benefits of Burning

Prescribed burning and its effect on the prairie have been studied by scientists with K-State Research and Extension since 1973. Fire, they found, is not just beneficial; it's absolutely essential in maintaining the productivity and biodiversity of the prairie. Current research is showing that the prairie can be burned much earlier than previously thought and still get the benefits from a controlled burn later in the spring. If conditions are right, prescribed burns can start as early as February and be as late as early summer. Long-term data indicate that the abundance of many prairie wildflowers are increased by summer burning. Burning earlier in the year generates a boost in grass production similar to April burning. One of the reasons grass production increases after a fire is that fire removes the dead vegetation that provides a layer of insulation to the soil and impedes soil warming. Early soil warming in spring helps stimulate important microbes that release nutrients in the organic matter left in the soil. Another key component of the Konza research is the study of grazing patterns of bison or cattle and their impact, along with fire's, on the prairie. More information about the Konza Prairie Biological Station, is available on the Web at *http://www.ksu.edu/konza.*

Contact: David Hartnett, Konza Prairie Biological Station, Telephone: 785-532-5925, FAX: 785-532-6653, Email: dchart@ksu.edu

Konza Prairie Facts

Kansas' Konza Prairie Biological Station is predominately native tallgrass prairie, sometimes called bluestem prairie. It provides a unique outdoor laboratory set aside for long-term research and

- Encompasses 8,616 acres or 3,487 hectares. Several adjoining tracts, including the historic 2,923-hectare Dewey Ranch, were purchased between 1971 and 1979. The Nature Conservancy purchased the station lands for K-State.
- Is owned by The Nature Conservancy and K-State and operated as a field research station by the K-State Division of Biology and K-State Research and Extension.
- Is primarily used for ecological research, including the effect of fire, grazing, and climate patterns on the prairie and its watershed areas.
- Has headquarters in a large limestone ranch house built in the early 1900s for the Dewey Ranch, which later became part of the Konza Prairie.
- Is home to more than 600 species of plants and dozens of fish, amphibians, reptiles, and mammals.
- Is home or the resting point for more than 200 species of resident and migratory birds.
- Has 14 miles of hiking trails, open daily from dawn to dusk, weather and conditions permitting.

Contact: David Hartnett, Konza Prairie Biological Station, Telephone: 785-532-5925, FAX: 785-532-6653, Email: dchart@ksu.edu

Horticulture and the Master Gardner Program

Horticulture is now listed as the part of the Kansas agricultural economy with the third highest gross crop value, behind the state's traditionally strong wheat and feed corn industries. According to the Kansas Agricultural Statistics Service, horticulture's crop value is $586 million (wheat is $939 million and feed corn is listed at $853 million). Master Gardeners have become a vital part of K-State Research and Extension's ability to provide accurate, up-to-date, and research-based information to clientele. Recent figures show that Master Gardeners volunteered more than 64,567 hours. This is equivalent to over 30 full-time extension staff positions and is conservatively estimated to be worth $1,067,938. A Master Gardener volunteer from Johnson County, Beverly Plapp, said the following about the program: "I have been an Extension Master Gardener since 1990, and the program has not only made me a better gardener but also a better volunteer. Working on the hotline, in our demonstration gardens, at garden shows, and on our public tour has allowed me to share my gardening knowledge and skills with the public, and the public has come to rely on the Johnson County Extension Master Gardeners for unbiased, researched-based answers to their gardening questions."

Contact: Chuck Marr, Horticulture, Forestry and Recreation Resources, Telephone: 785-532-1441, FAX: 785-532-5780, Email: cmarr@oznet.ksu.edu

Wildlife Federation Certifies Master Gardener Demonstration

The National Wildlife Federation certified part of the grounds at the Sedgwick County Extension Office in urban Wichita as an official Backyard Wildlife Habitat called Wild Wings Garden. The area already had a slough and a small water garden that wildlife could access for a drink. It had some mature shade trees and a small grove of young redbud trees for roosting. To provide food and cover, Master Gardeners ordered additional bare-root seedlings from the Kansas Forest Service's annual Conservation Tree Planting Program. Wild Wings is an addition to the demonstration gardens, which already included a raised-bed plan that can accommodate a wheelchair-bound person. Plans are to create a walking path with plant tags and other educational material on the fringe of the wildlife habitat. Part of the area is close to the K-State Research and Extension Office's overflow gravel parking lot. The office is at 7001 W. 21st St. N.—at the corner of 21st and Ridge Road in Wichita—but those persons interested in learning more about creating wildlife habitats and the forest service's conservation planting program can contact any local K-State Research and Extension office.

Contact: Bob Neier,
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Research Important to Climate Change Efforts between U.S. and Canada

Last year representatives from the United States and Canada agreed to expand and intensify their cooperative efforts in the development of integrated carbon cycle research. The efforts are toward building a coordinated North American Carbon Program. The working group was established by the United States and Canadian governments. Research at K-State and other universities has shown that successful implementation of soil carbon sequestration strategies can lower the accumulation of greenhouse gases in the atmosphere and help improve valuable cropland. K-State also is the lead institution in the Consortium for Agricultural Soils Mitigation of Greenhouse Gases, which seeks to mitigate greenhouse gases in the atmosphere through carbon sequestration strategies. The federally supported consortium is comprised of expert scientists from K-State, Colorado State University, Iowa State University, Michigan State University, Montana State University, Ohio State University, Purdue University, Texas A&M University System, University of Nebraska, and Battelle-Pacific Northwest National Laboratory, in conjunction with research groups within the U.S. Department of Agriculture's Agricultural Research Service, Economic Research Service and Natural Resources Conservation Service.

Contact: Charles Rice, Agronomy, Telephone: 785-532-7217, FAX: 785-532-6094, Email: cwrice@k-state.edu

What Kind of Plant Is It?

For more than a century, the K-State Herbarium has served as a statewide resource for plant identification. The Herbarium's collection of dried, pressed plants are attached to sheets of papers with information labels. It includes about 170,000 specimens of ferns, conifers, and flowering plants, plus 45,000 specimens of fungi. Anyone wanting to know the identity of a plant can submit a sample to a county extension agent or contact the K-State Herbarium directly if the county office cannot be reached. If the plant is considered undesirable, the identification will be forwarded to a weed scientist for recommendations on control. This service is free to Kansas residents.

Contact: Mark H. Mayfield, Herbarium, Telephone: 785-532-6619, FAX: 785-532-6653, Email: mmayfiel@oznet.ksu.edu

Helping Middle School Students with Environmental Issues

Kansas middle school students use critical thinking skills to become active participants in community environmental issues. During the 2003-2004 school year, 2,000 students in Wichita participated in E.A.R.T.H.—Earth Awareness Researchers for Tomorrow's Habitat, a program that features hands-on learning experiences. Funded by an EPA 319 grant, this K-State Research and Extension program provides teacher training, resources, supplies, and student learning activities that satisfy the Kansas Middle School Science Standards. The course culminates with a student workshop led by local environmental experts. The program is expanding across the state and continues to promote protection of Kansas watersheds and groundwater now and in the future.

Contact: Beth Drescher, Sedgwick County Extension Office, Telephone: 316-722-7721, FAX: 316-722-7727, Email: drescher@oznet.ksu.edu

Watershed Issues Meetings Held at Six Kansas Sites

Improving watershed management through collaborative problem solving and consensus building was the focus of meetings last year in Kansas City, Lawrence, Wichita, Pittsburg, Topeka, and Manhattan. The meetings were designed so that those involved could discuss problems and solutions aimed at restoring and protecting watersheds. Participants included government elected officials and staff and representatives from watershed organizations. Participants were shown how to use Webcast technology to get local governments, watershed organizations, and other stakeholders to work together to improve water quality. In addition to K-State Research and Extension, others sponsoring the meetings included the KDHE Watershed Management Section, the Kansas Biological Survey, and the KU School of Architecture—Urban Planning Program.

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K-State Leads Research on Umbilical Cord Matrix

Mentioning stem cell research can stir up controversy because it is believed by many that a fertilized embryo constitutes a human being. But K-State Research and Extension scientists have discovered a novel and potentially inexhaustible source of stem cells isolated from the matrix of umbilical cords. The emphasis has been on stem cell biotechnology to develop stem cells as a source of replacement cells for somatic cells damaged or lost due to degenerative disease, trauma, or aging and their use in targeted delivery of therapeutic peptides or proteins. Current studies are focusing on characterizing these cells and developing them for stem cell therapies in animals and humans. Animal and human umbilical cord matrix cells exhibit the tell-tale characteristics of all stem cells, the capacity to self-renew and to differentiate into multiple cell types. The cells can be obtained in a noninvasive manner from an abundant source of tissue that is typically discarded. Umbilical cord matrix cells could provide the scientific and medical research community with a noncontroversial and easily attainable source of stem cells for developing treatments for Parkinson's disease, stroke, spinal cord injuries, cancers, and other conditions. The discovery of the matrix stem cells may also lead to important new technologies in animal agriculture and for the preservation of endangered species. The KSU Research Foundation has filed for U.S. patent protection for the recent discoveries, the method of culturing the stem cells, and a kit for salvaging umbilical cord stem cells after birth. Funding for this research has come from the National Institutes of Health and a Centers of Biomedical Research Excellence/ COBRE award to the University of Kansas, with matching support from the state of Kansas, Kansas State University, University of Kansas, the Terry C. Johnson Cancer Center, the K-State College of Veterinary Medicine, and K-State Research and Extension.

Contact: Deryl Troyer, Anatomy and Physiology, Telephone: 785-532-4509, FAX: 785-532-4557, Email: troyer@vet.k-state.edu

Healthy Youth Places

This multi-year, National Institutes of Health-funded project tests the effectiveness of school-based approaches to influence sustained fruit and vegetable consumption and physical activity in middle school children. Sixteen Kansas middle schools participated in the initiative that included building the skills of youth to change their school environments through targeted efforts in classrooms, lunchrooms, and out-of-school settings. Marketing and dissemination videos also were produced by the youth teams in the participating middle schools.

Contact: David Dzewaltowski, Community Health Institute, Telephone: 785-532-7750; FAX: 785-532-7733, Email: dadx@ksu.edu

Food, Nutrition, Health, and Safety

Kansans are concerned about their personal health and safety as well as that of their families and communities. K-State Research and Extension programs are addressing these issues in many ways and helping people to prevent problems by adopting healthy and safe lifestyles. Programs and research address obesity issues as well as eating disorders. Prevention of such chronic disease as arthritis, osteoporosis, heart disease, and cancer is a major emphasis. K-State Research and Extension has been a leader in promoting and educating about a safe food supply from production to consumption. Many educational programs are targeted to limited-resource and near-poverty individuals and families, those without health insurance, the very young, and the aged, all of whom are most at risk for health and safety issues.

The Junior Master Gardener Program

This is a program that teaches young people to garden while encouraging good nutrition and physical activity. Young people improve their social skills while working on hands-on projects with other youth and an adult leader/teacher, and they increase their community involvement through participation in public service projects. The Junior Master Gardener Program curriculum covers such topics as Plant Growth and Development, Soils and Water, Ecology and Environmental Horticulture, Insects and Diseases, Fruits and Nuts, Vegetables and Herbs, Landscape Horticulture, and Life Skills and Career Exploration. A variety of groups may participate in the program, including 4-H programs, school groups, community centers, day camps, scouting programs, and after-school groups. More information about the Junior Master Gardener Program is on the Website *www.oznet.ksu.edu/dp_4hyp/JMG/jmg.htm*.

Contact: Evelyn Neier, 4-H Youth Development, Telephone: 316-722-0932, FAX: 316-722-5981, Email: eneier@oznet.ksu.edu

The Many Resources of the Food Science Institute

Resources of the Food Science Institute are helping agricultural producers market their products directly to consumers and thereby receive maximum profits. The Institute was established to combine the university's existing resources to serve students, consumers, and clientele in the food industry, the scientific community, and government agencies. It has several programs that direct marketers can turn to for help with issues ranging from product development to product packaging. They are:

- **The Value-Added/Product Development Laboratory**—It offers such services as assisting in the production of new foods; consultation on methods of adding value to existing products; reviewing product labels for compliance with state and federal guidelines; and suggesting suppliers for ingredients, packaging materials, and equipment. The lab also offers hazard analysis and critical control point (HACCP) and food safety training and acts as a "processing authority" as defined by the Food and Drug Administration. Many clients request services for business and product development, labeling, processing, safety, and equipment.

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- **The Dairy Processing Plant**—This 9,600-square-foot facility is equipped to make a variety of dairy products, including cheeses, milk, ice cream, and butter. The plant can be used to manufacture new dairy products and also to study functions of new ingredients. Though mainly used to produce dairy foods, it can manufacture or process additional products such as juices. Scientists are on hand to provide technical support and product evaluation. Equipment is tested regularly by the Kansas Department of Agriculture.

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- **The Meat Science and Support Program**—It provides meat processors and producers with opportunities to utilize the K-State Research and Extension meat lab, meat sensory lab, and meat color lab. It also offers a variety of technical assistance to the Kansas meat and poultry industry. The program helps entrepreneurs and processors in the development of value-added meat products and in the evaluation of display lighting and packaging systems on meat color and shelf life. It also serves as a resource to assist with HACCP training and offers training workshops and short courses in HACCP, meat processing, and other subject areas, depending on processor needs. If clients want help with business plans, for instance, then this program can point them in the right direction.

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- **The Sensory Analysis Center**—This facility provides two primary types of services, both related to the evaluation of sensory properties of products. One is the determination of the sensory characteristics of a product. The second relates to product acceptability.

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Patented Starch Technology Used in Low-Carb, High-Fiber Foods

With millions of Americans counting and cutting carbohydrates, there's an enormous push to develop and market new, low-carb food products. The demand for ingredients that increase fiber and lower carbohydrate levels is propelling an Atchison, Kan., company, MGP Ingredients Inc., to expand its production capacity for a specialty wheat-based resistant starch. The company also added a new potato-based resistant starch to its product line. Both specialty starches are based on a technology invented by K-State grain science researchers and subsequently patented in 1999 by the K-State Research Foundation. In March 2003, the Research Foundation licensed the technology exclusively to MGP Ingredients Inc. The resistant starch technology is a way to modify plant-based starches to resist digestive juices. The patent covers a special modification of any starch derived from cereal grains, roots, tubers, and legumes; for example, from wheat, corn, oats, rice, potato, tapioca, and mung beans. Any product that uses flour can be made with these resistant starches, including breads, buns, crackers, cookies, chips, and pastas. When incorporated into food products, the new starches have two potential health benefits. Some of the starch is slowly digested, which results in a sustained, low elevation of blood sugar. That low glycemic load to the blood has been associated with delayed hunger and with a reduced incidence of type-II diabetes, a condition affecting nearly 18 million Americans. Secondly, the portion of the starch that totally resists digestion is fermented in the large intestine and is thought to lower the incidence of colon cancer. In food products, the resistant starches contribute to a lower caloric intake and a higher fiber diet.

Contact: Paul Seib, Grain Science and Industry, Telephone: 785-532-4088, FAX: 785-532-7010, Email: paseib@k-state.edu

K-State and Wichita State Researchers Link Wheat Bran Antioxidants with Cancer Prevention

Preliminary findings of collaborative research being conducted by K-State Research and Extension and Wichita State University suggest that the antioxidant components of wheat may be helpful in preventing colorectal cancer tumors. Colorectal cancer is the third most common cancer in men and women. The current research focuses on an antioxidant class of orthophenolics found in wheat bran that appear to block the formation of mutagenic compounds. The orthophenolics are capable of scavenging free radicals and chelating metals. This effect is in addition to the benefits realized from consuming higher fiber content from the bran. The initial study showed that diets containing the same level of wheat bran but different levels of antioxidants exhibited dramatically different capacity to suppress tumor development. In separate studies, researchers found that intestinal and colon tumors can be prevented in mice when fed diets supplemented with plant-derived, purified orthophenolics. Researchers are now continuing the studies using other animal model systems to test whether these components of wheat can suppress mammary and prostate cancer development. It has been known that whole wheat-based foods are an important part of a balanced diet, but this research suggests that the bran antioxidants may play an even more important role in protecting consumers from cancer. More work is needed to understand why some wheat varieties are more effective than others, thereby enabling wheat breeders to enhance this attribute for future variety releases.

Contact: Ron Madl, Bioprocessing and IndustrialValue-Added Program, Telephone: 785-532-7022, FAX: 785-532-7193, Email: rmadl@ksu.edu

Assisting Farmers with Disabilities or Health Problems

The Kansas AgrAbility Project assists people with disabilities employed in agriculture. The program provides information and assistance to farmers, their family members, and their employees who have any impairment that limits farm work or activities of daily living on the farm. Impairments range from amputation to stroke, from arthritis to Parkinson's disease. AgrAbility helps find ways to modify operations, equipment, or homes so farmers can continue to live and work safely. Each year the program helps hundreds of people and their families to succeed in agricultural production and rural community life. More information is available from Kansas AgrAbility at 800-526-3648 or the Kansas AgrAbility Website at *www.oznet.ksu.edu/agrability.* AgrAbility is a partnership between K-State Research and Extension and Southeast Kansas Independent Living in Parsons.

Contact: John W. Slocombe, Biological and Agricultural Engineering, Telephone: 785-532-2906, FAX: 785-532-5825, Email: slocombe@ksu.edu

Oral Health Initiative in Shawnee County

Oral health initiatives have been an important focus of collaborative programs involving K-State Research and Extension for the past four years. Annual visits of the Colgate Bright Smiles, Bright Futures van has provided thousands of free dental screenings to Shawnee County youth and provided a wealth of data that helps support what professionals long believed: A lack of dental insurance and a shortage of dentists have caused many children to miss out on regular dental exams and such prevention strategies as dental sealants and varnishes that can protect teeth. The Shawnee County Healthy Agency used the data collected from the past four years of dental van visits in a grant application, which garnered $125,000 in funding from the United Methodist Health Ministries Foundation to support a free-standing dental clinic. A gift of equipment also was received from a retiring dentist. The new clinic opened in late 2004. In addition, the Kansas Legislature approved $50,000 to fund a state oral health director. K-State Research and Extension agents have served as chairpersons for Early Care and Education, Preventive Health, Nutrition, and Adequate Income action teams, providing leadership and a call to action.

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A Health and Fitness Program for Almost Everyone

Walk Kansas is an easy and inexpensive fitness program developed to encourage people to increase healthful physical activity. Although walking is encouraged because it doesn't require a special time, place, or equipment (other than shoes), aerobic exercise such as running, bicycling, swimming, dance and step aerobics, yoga, Pilates, weight training, and team sports also can count. The eight-week program encourages teams of six (family, friends, neighbors, coworkers, or others in the community) to log miles or equivalent minutes of physical activity to cover the 423 miles across Kansas. The Walk Kansas program costs vary slightly from county to county but are usually $10 or less. Participants receive a mileage log and newsletters with food, nutrition, and health tips during the program. Walk Kansas was introduced in 2002. In its first year, 43 counties—and more than 7,000 people—participated. In 2003, more than 12,000 people representing 82 of the 105 counties in Kansas signed up for the program. For registration or more information, contact your local K-State Research and Extension office.

Contact: Mike Bradshaw, School of Family Studies and Human Services,
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An Example of the Impact of Walk Kansas—Crossing State Lines

Soon after a news release about Walk Kansas went to the Colby Free Press, people from Denver, Colo., asked if they, too, could walk the 423 miles across Kansas. The fitness effort has proven to be one of K-State Research and Extension's most popular programs, and this year 94 of Kansas' 105 counties are participating. More than 16,000 people signed up for the 2004 program, up substantially from 12,000 in 2003. The health and fitness program is easy and fun. Teams of six people log mileage equal to the distance across the state as they learn to make healthful exercise a habit. The folks from Denver aren't the only out-of-county and out-of-state participants in the Thomas County program this past year. Clara Schieferecke, an avid, 95-year-old-walker who lives in neighboring Decatur County, encouraged 17 members of her family, including nine adult children, to enroll. Together, they represent Kansas from east to west, as well as California, Colorado, and Nevada.

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The Community Health Institute

This unit of K-State Research and Extension is working to improve the health of individuals, families, and communities. It focuses on healthy eating, physical activity, youth development, and social behaviors. Its long-term goals are to 1. Improve community policies and practices and create healthy social, economic, and physical environments; 2. Increase healthy nutrition and physical activity; and 3. Improve social development and decrease problem behaviors. Members of the Institute are in various K-State departments and have expertise in kinesiology, human nutrition, sociology, horticulture, regional and community planning, family studies and human services, education, journalism and mass communications, agricultural economics, and statistics. The Community Health Institute offers distance learning networks, help with training, evaluation systems, process surveys, and basic and applied research expertise and support to help communities change unhealthy environments into places that allow children, youths, and adults to make healthy choices when given the option.

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Kansas Economy's Reliance on the Health Sector

Health care is vital not only to the quality of life in Kansas but also to future economic development, according to a study by K-State Research and Extension. Its significance involves the jobs it creates and two crucial areas of economic development: business decisions about relocation and decisions by retirees on where to live. The study looked specifically at health care in an eight-county region in south-central Kansas. The study found that about 43,400 people work directly in health care in that region and are paid $1.6 billion in wages annually. The K-State study computed an economic multiplier of 2.38 for the health care sector, concluding that the total job impact is 88,200 jobs, $2.7 billion in income from wages, and $1.1 billion in retail sales. Statewide, health care is a $10.5 billion industry, and the combined health care sectors generate about $4.5 billion in wages and more than $5.5 billion in all kinds of income and provide jobs for more than 140,000 people. It's expected that the health care industry will continue to grow at a pace that outstrips other economic sectors because the aging baby boomer population will continue to increase demand for services.

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Promoting Physical Activity at Younger Ages

The promotion of physical activity across the lifespan is a central focus of the Community Health Institute. Kansas ranks 29th among 50 states and the District of Columbia for the prevalence of obesity among U.S. adults. The level of Kansas youth who are overweight is steadily increasing, so the need to prevent the likelihood of overweight and encourage lifelong physical activity needs to begin at younger ages. The Community Health Institute, with the K-State School of Family Studies and Human Services, is studying the physical activity levels of preschool age children through funding from the United Methodist Health Ministries Fund. Evaluation research conducted at K-State's Hoeflin Stone House Early Child Care Center will lead to high quality and expanded physical activity programs for preschool age children across Kansas.

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Nutrition Program Helps Families Stretch Food Dollars

The K-State Research and Extension Family Nutrition Program teaches low-income persons—from youth to older adults—how to choose and prepare nutritious meals on a limited budget, how to handle food safely, and how to balance healthy eating practices with physical activity. The program brings nutrition information to people in 85 Kansas counties through a network of county agents who work with Head Start; the WIC (Women, Infants, Children) program; shelters; and other agencies that focus on those struggling financially. When families eat better, they are healthier and have fewer illnesses. Children from those families perform better in school and are better prepared to live productive adult lives.

Contact: Karen Hudson, Human Nutrition, Telephone: 785-532-0177, FAX: 785-532-1674, Email: hudson@humec.ksu.edu

Information about Herbal Remedies

K-State Research and Extension provides unbiased, research-based information on products for Kansans. That includes information about less well-known products such as herbal remedies used for a variety of ailments such as digestive disorders, colds, or the flu. About 70,000 known species of plants have medicinal qualities, but herbs typically fall into one of two categories: culinary or medicinal. Some, like onions, can serve both purposes. In Germany, for example, onions are recommended for treating coughs, colds, and hypertension. Some medicinal plants should be avoided completely. Digitalis, which is a heart stimulant, is an example. It's extracted from the foxglove plant but should be taken only as a pharmaceutical preparation and not as a home remedy. In the United States, herbal remedies fall into a category called dietary supplements. They are not subject to the same testing and approval procedures that drugs are. To help Kansans grow and use herbs, K-State Research and Extension has produced two publications. "Growing Herbs for Home Use" and "Farming a Few Acres of Herbs." Copies of the publications are available at local K-State Research and Extension offices and can be downloaded from the Website: *www.oznet.ksu.edu/catalog.* Copies also can be ordered at *www.orderpub@lists.oznet.ksu.edu*, by fax: 785-532-7938, or telephone 785-532-5830.

Contact: Rhonda Janke, Horticulture, Forestry and Recreation Resources, Telephone: 785-532-0409, FAX: 785-532-6949, Email: rjanke@oznet.ksu.edu

Rural Health Works Come to Kansas

In response to demand from numerous rural hospital administrators, the Kansas Rural Health Options Project, a coalition of health services agencies, teamed with K-State Research and Extension to introduce the Kansas Rural Health Works program. Drawing on the national Rural Health Works initiative active in at least 14 states, the Kansas Rural Health Works program's focus is intended to motivate and support locally driven health care planning for sustainable rural health care systems. The first phase of the program involved the completion of an economic impact analysis of the local health care sector for every county in the state. The reports were delivered to hospital administrators throughout the state. Planning has begun for additional initiatives to be introduced. Funding for Kansas Rural Health Works is provided by the Office of Rural Health Policy, Health Resources, and Services Administration. To learn more about the initiative and to obtain copies of the economic impact reports, visit the Kansas Rural Health Works Website at *www.oznet.ksu.edu/krhw.*

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Helping Older Kansans Improve Their Nutrition and Health

The Senior Farmers' Market Nutrition Program encourages eligible seniors to apply for $30 worth of check-like coupons that can be exchanged for health-promoting fruits, vegetables, and culinary herbs at participating farmers' markets and authorized roadside stands. Developed with a USDA grant for nearly $200,000, the program was expected to help about 7,000 low-income seniors in Kansas improve their nutrition and health. K-State Research and Extension family and consumer sciences agents provide educational information on the relationship between nutrition and health, fresh fruits, and vegetables through newsletters, handouts, or demonstrations. Ten counties participated in 2004, up from six the year before. The counties include a mix of urban and rural residents. The Kansas Department on Aging took a lead role in obtaining the grant funds. Partners in addition to K-State Research and Extension include the Kansas Department of Agriculture; Kansas Fruit and Vegetable Growers Associations; Kansas Department of Social and Rehabilitation Services; Kansas Department of Commerce; Kansas Department of Health and Environment; Kansas Rural Center; Kansas Coordinating Transit District Council; and Kansas Department of Transportation. Kansas fruit and vegetable growers also are expected to benefit from the Senior Farmers' Market Nutrition Program.

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Providing Nutritional Education for Kansans with Limited Resources

The Expanded Food and Nutrition Education Program (EFNEP) provides nutrition education for Kansas youth and young families with limited resources. EFNEP lessons are delivered by paraprofessionals who know both the audience and the subject matter—basic nutrition, food preparation, food budget management, and food safety. EFNEP youth programs help young Kansans develop skills and behaviors needed to improve their diets and effectively manage available resources. Kansas EFNEP nutrition assistants teach in homes, schools, assisted living sites, correctional institutions, clinics, worksites, and libraries. EFNEP dollars are maximized through collaboration with community agencies to strengthen local support of families. EFNEP's mission is to assist families and youth with limited resources in making simple changes in eating behaviors so that over time healthy choices become healthy habits.

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Linking Cigarette Smoke, Vitamin A Deficiency, and Emphysema

While studying the relationship between vitamin A and lung inflammation, a K-State Research and Extension scientist discovered a link between vitamin A and emphysema in smokers. It was found that rats exposed to cigarette smoke became vitamin A deficient and that benzopyrene, a common carcinogen found in cigarettes, is the link to the deficiency. When fed to rats, benzopyrene induces vitamin A deficiency. When the lung content of vitamin A was low, the score of emphysema was high. The hypothesis is that smokers develop emphysema because of a vitamin A deficiency. The rats exposed to cigarette smoke were fed a diet with higher levels of vitamin A. The result was that the areas of emphysema were effectively reduced. The implications are that those who start smoking at an early age are more likely to become vitamin A deficient and develop complications associated with cancer and emphysema. This work also was supported by the USDA and the K-State Center for Basic Cancer Research.

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Kids a Cookin'—A TV Show for Children to Learn to Cook

Kids a Cookin' is an educational television program produced by K-State Research and Extension. Its motto is "To share the fun and skills of cooking with children and those who guide them." The TV show introduces children to the educational and fun world of cooking by teaching cooking skills with the help of kitchen-tested and approved recipes. School-aged children are guided step-by-step in preparing nutritious and delicious recipes. Each week, pint-sized chefs help prepare a different recipe that can easily be made at home. The recipes are simple to prepare and affordable and are an excellent way to share the joys of cooking with children. Preparing quality food together also can provide quality time for parents and their children. Kids a Cookin' is a weekly series on Kansas television stations. The show is produced for K-State Research and Extension's Family Nutrition Program by the Department of Communications and the Kansas Regents Educational Communications Center. The show is produced in English and available for broadcast in Spanish via SAP. More information on recipes, cooking tips, and a link to a Spanish version is available from the Kids a Cookin' Website *http://www.kidsacookin.ksu.edu*.

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K-State Research Targets the Eating Habits of Children

Computers are being used in seven Kansas counties to assess children's eating habits. Kansas is only the second state to use "FIRSSt" (short for "Food Intake Recording Software System"), a dietary software system that measures fruit and vegetable servings that children eat. The assessment targets 180 third through fifth graders enrolled in the USDA's Family Nutrition Program (FNP). If nutrition educators can help children learn to make healthier choices, they also help them improve their health and reduce health risks associated with obesity—heart disease and some cancers are examples. The students in the study are at the ages when children typically begin making their own food choices. Preliminary data from the computer-like game survey identify carrots as the most frequently eaten vegetable and apples as the most frequently eaten fruit. Bananas placed second among the fruits. Students also indicated that they are most likely to eat the fruits and vegetables at home. Findings show that students are eating two fruits and vegetables rather than the five recommended for health. Increasing the intake of health-promoting fruits and vegetables is important. Eighty-five of Kansas' 105 counties currently participate in the FNP program; those participating in the current survey are Franklin, Kiowa, Leavenworth, Reno, Republic, Wallace, Washington, and Wyandotte.

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Certified Kitchen Workshop for Kansas Businesses and Producers

Many people want to supplement their farm income by making value-added foods from their farm produce, which is why K-State Research and Extension provided training on how to start up a Kansas-certified kitchen. The certified kitchen workshop was held last April in the Kansas City area. It was organized by the Guided Explorations of Value-Added Products and Enterprises project, a cooperative effort of the Kansas Rural Center, Kansas Center for Sustainable Agriculture and Alternative Crops, and K-State Research and Extension. It was underwritten by the USDA. To protect public safety, the Kansas Food Code has specific processing and facility requirements for the manufacture of processed foods. Kansas producers considering a value-added enterprise such as processing the products they grow were able at the workshop to learn more about how to comply with the requirements for an inspected and approved facility, often called a certified kitchen. Farmers, processors, educators, and researchers were on hand to discuss necessary equipment, food safety, labeling, and rules and regulations. Participants also had an opportunity to take a firsthand look at a certified kitchen

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Finding Out What's Bugging People in Southeast Kansas

Last fall, K-State Research and Extension teamed with other scientists to discover what's been bugging people in southeast Kansas. They found out it was the straw itch mite. People there were bitten but didn't know it at first until the next day when they suffered from red, itchy welts. The outbreak first made news when a football team from Colorado went home covered with bites after a game at Pittsburg State University in Pittsburg, Kan. Soon after, the Crawford County Health Department fielded calls from area residents complaining of similar bites. The mites are so small they cannot be seen by the naked eye. Some bites might be just tiny bumps, but frequently they are quarter-size reddened welts with a pimple in the middle and most commonly found over the neck and shoulders and areas of the torso where clothing fits loosely. The K-State entomologists worked with scientists from the Crawford County Health Department, Pittsburg State University, epidemiologists from the Centers for Disease Control and Prevention in Atlanta, and the Kansas Department of Health and Environment to identify the pests. In addition to identifying the straw itch mite, the scientists provided information about the pest and what to do when bitten.

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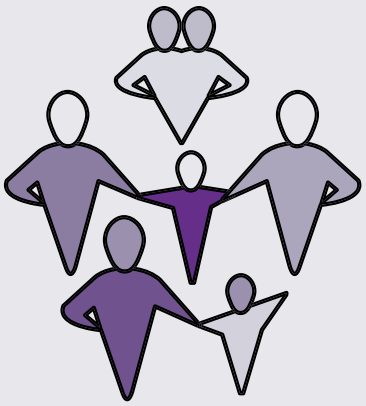

Youth, Family, and Community Development

An educated and knowledgeable citizenry is the foundation of Kansas' economic productivity; democratic character and social system; and quality of life. The focus of Youth, Family, and Community Development has been on building strong, healthy communities; improving parenting skills and family relationships; preparing youth to be responsible citizens; balancing demands of work, family, community, and time for self; and developing consumer and financial management skills. Today's complex issues and problems require new perspectives and skills. K-State Research and Extension provides them by helping communities better themselves through economic development, leadership training, improved housing, quality child care, a skilled workforce, and welfare reform. The work involves delivering educational programs and technical information that result in improved skills in communication, group dynamics, conflict resolution, issue analysis, strategic planning, more effective parenting, developing life skills, and helping youth to grow in healthy, productive ways.

A Sought-After Resource

K-State Research and Extension is increasingly valued by state agencies, regional health providers, the Legislature, and private organizations as the most engaged entity in local communities. As a result, K-State Research and Extension receives an increasing number of requests to convene, facilitate, or broker comprehensive planning efforts that assist local residents in sorting out and prioritizing the programs and technical assistance needed for healthy individuals, families, and communities. Mobilized with a continuum of knowledge for their lives, Kansans can tap deep sources of knowledge and skills beginning with prenatal care and extending to making decisions regarding the long-term care of seniors.

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K-State Marriage Enrichment Sessions

When it comes to relationships, K-State Research and Extension is ready to help. For example, couples in Pottawatomie County who wanted to improve their marriages or relationships took part in free marital enrichment groups offered by K-State's Kansas Marital Preservation Project. The three-week marital enrichment group sessions were for couples who are in committed relationships, married or otherwise. The groups used the CoupleTalk program developed by K-State Research and Extension. The sessions were conducted by marriage and family therapy interns from the K-State Family Center. The objective of such sessions is to provide couples with an edge in making their relationships the best they can be. Couples also were invited to participate in research that will help therapists and family life educators know how to better serve couples and families in rural areas.

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New Program Focuses on Reducing Debts and Managing Money

Kansas Saves: Financial Management for Life is a K-State Research and Extension project that helps Kansans reduce and eliminate debt while they learn about money management. The program is open to any Kansas resident. Depending on the county, the training involves seminars and a workbook that will provide guidance on how to reduce and stay out of debt and how to build savings. Some of those participating in the program have credit card debt from consumer spending. Others have experienced a job loss or layoff and placed basic living expenses on a credit card. More information and how to enroll in Kansas Saves: Financial Management for Life is available from local K-State Research and Extension offices.

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Workshops for Farm Families Feature Risk Management and Other Topics

Managing a family farm challenges owners and managers to know the land, the latest in crop and livestock research and production techniques, and savvy business and communication skills. At various times last year, K-State Research and Extension offered free workshops, with complimentary lunches, to help farm families improve risk management, decision-making, and communications skills. Business decisions that affect the farm also affect the family. When family members are in business together, it's important for them to be able to talk about their relationships with each other, their expectations within the business, and their respective roles, which the workshops also helped with. The workshops involved the combined efforts of K-State and the Kansas Rural Center. The project was funded by the Risk Management Agency and was one of the 2003 Commodity Partnerships for Risk Management Education announced by the USDA. Additional partners included the Kansas Rural Family Helpline; Kansas Farmers Union; Kansas Agricultural Mediation Services; Kansas Center for Sustainable Agriculture and Alternative Crops; Kansas Farm Bureau; Kansas Farm Management Association; and National Farmers Organization.

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Program Helps Farmers Through Financial, Legal Issues

Farmers' worries about paying their bills have been partly increased by drought, which has hit the state—especially western Kansas—for the better part of four years. The state's Farm Service Agency reported that 17.8 percent of their customers in Kansas are delinquent on paying back loans. In some regions of western Kansas, as many as 32 percent of the borrowers were behind in paying their FSA loans, according to the agency. To help those farmers, the Kansas Agricultural Mediation Service (KAMS) at K-State provides resources that include free help from professional farm analysts, reduced costs for legal help, and referrals to other free or reduced pay services. As its name suggests, KAMS helps bring creditors, bankers and borrowers together to mediate an agreement that can help the farm stay in business. KAMS has a toll-free hotline at 1-800-321-FARM (3276). Kansas farmers also may contact their local K-State Research and Extension offices for information or help in contacting KAMS. Information provided by farmers is confidential. KAMS is funded by the USDA as part of the national agricultural mediation service in 29 states. Agricultural mediation help is available to all Kansans, whether or not they are behind on paying back loans. Information also is available online at *http://www.oznet.ksu.edu/kams*.

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Studying How Couples Make Decisions and Manage Money

Researchers with K-State Research and Extension began a study last summer on how couples manage risk and create the decision-making processes within a marriage. The study also focuses on how the perception of risk impacts an individual's solo decisions and decisions made as part of a couple. Those taking part in the study must be in a stable marriage of at least five years. Both members of the couple are not needed to participate in the study. All participants receive $20 for their time and assistance.

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Office of Local Government Opens New Website

The Office of Local Government, a part of K-State Research and Extension, opened a new Website as part of an expanded marketing initiative. It can be found at *www.oznet.ksu.edu/olg*. The site features an expanded Direct Resource Referral Service section with links to many useful resources to support community and business development. Additional resources related to rural tourism, alternative income opportunities, entrepreneurship, and other topics have been included as well. Other site features include resources related to community economic development, local government assistance, environmental planning and management, Office of Local Government publications, and more. The extensive resource listing associated with the Urban Water Quality Protection Initiative also was updated and consolidated at the site.

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Bringing Children and Older Adults Together

A K-State Research and Extension program helps to create bonds between children and older adults in Kansas. Evaluations of that program show that such interactions are valuable and meaningful. More than 50 sites across Kansas receive funding through the program. Each site develops its own plan for the interactions. Personal Actions to Health (PATH) is an intergenerational program funded by the Kansas Health Foundation. Children who participate have said they are less fearful of older adults—they recognize that older adults have knowledge to share. Children reported a positive view of aging and older adults. Older adults reported developing meaningful relationships with the youth, an indicator of positive well being. Also, older adults feel they are contributing to the children's lives in a meaningful way. They viewed their interactions with youth as a uniquely supportive relationship for the youth in their community.

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Tenderhearts: A Caregiving Support Project

Caregiving to our frail elderly population is a burgeoning problem. A new program called Tenderhearts was developed by K-State Research and Extension late last year. This statewide caregiver assistance program is currently being designed to educate and empower family caregivers in their role of caregiving. Tenderhearts provides the family caregivers with information tailored to the primary disease-base they are working with and the community where they are administering the care. The program consists of two educational components, an informational tote bag, and a Website. The information packet involves the primary disease the caregiver is working with (e.g., Parkinson's disease) and the resources available at the local, state, and national level (e.g., nearest Parkinson's support group). The caregiver journal houses pertinent information on the one being cared for (e.g., current medications, dietary needs, durable power of attorneys, etc.) and a personal entry section for the caregiver so that the older adult's physical and behavioral changes across time can be tracked. The promotional products and services available assist the caregivers in their daily routine of caregiving (e.g., pill organizer, local coupons for respite care, housecleaning services, etc.). The tote bag with all the information will be disseminated across Kansas with the assistance of local extension agents, primary care physicians' offices, senior citizen centers, and various aging organizations. The Tenderhearts Website, *www.tenderheartscaregiving.com*, is designed to provide the same information as that packaged in the tote bag but in greater detail.

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The Healthy Marriage Initiative

The federal government's Healthy Marriage Initiative focuses on helping married couples to acquire the skills and knowledge for forming and sustaining a healthy marriage. K-State Research and Extension is working with county agents to help them build or contribute to community coalitions for offering couples skill-building and marital enrichment education as part of this national initiative. K-State Research and Extension curricula are among the educational resources that are available for offering this type of education.

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Attendance Up at Youth Conference

During the 2003-2004 4-H year, the Kansas Youth Leadership Forum at Rock Springs 4-H Center saw attendance rise from 202 participants the year before to 240. Its one-of-a-kind sessions address issues and concerns that teens face. The youth can choose from dozens of hour-long classes that help them polish up communications skills, learn how to fill out a scholarship application that will shine, or learn to lead a meeting successfully. Social times and motivational speakers also are part of the program The Forum is planned by the Kansas 4-H Youth Council, but teens need not be 4-H members to attend. More than half of Kansas' 105 counties were represented.

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Kansas 4-H Hosts National Camping Institute

Summer camp often is a child's first time away from home and first exposure to the outdoor world. This past summer, Kansas 4-H, which is part of K-State Research and Extension, hosted the National 4-H Camping Institute at Rock Springs 4-H Conference Center near Junction City. The event was an opportunity for camp professionals to plan experiences that will offer opportunities for a camper's personal growth and development in a safe environment. 4-H camps have an enviable history of providing experiences that offer educational value and skill-building programs. Nationally, the number of 4-H campers has increased from slightly more than 250,000 in 1996 to nearly 400,000 in 2001. This was the first time Kansas hosted the camp gathering, which is held every two years. The five-day program offered 49 workshops that focused on everything from planning and pacing activities and training camp counselors to food safety, nutrition, landscape architecture, and electronic enrollment programs. The educational sessions are planned to benefit day and residential camp managers and staff and environmental program planners and managers. Participants traveled to Kansas from nearly 30 states, including Alaska, California, New York, Texas, and North Dakota.

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Kansas 4-H, a Model Program

Kansas 4-H has 7,264 certified adult volunteers working with youth. Those volunteers have completed a formal screening and orientation process, and that system is being considered as a model for all other K-State Research and Extension volunteers. Taking a greater leadership role, the volunteers have developed a statewide Volunteer Association with their mission being the education and development of the individual volunteer. The association has 90 members and coordinates an annual Volunteer Forum along with coordinating the new Master Volunteer Program. It also provides scholarships for state and regional volunteer training.

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4-H Members Travel to Washington, D.C.

Forty-one Kansas 4-H members, ages 15-18, traveled to Washington, D.C., last summer to get a first-hand look at how government works. Each was selected for the 2004 Citizenship Washington Focus, a 10-day educational tour that includes historical sites on the way to and from the nation's capitol. The trip was planned to give 4-H members a close-up look at history and government. Members visited Capitol Hill and met with the Kansas congressional and senate delegations to learn more about the legislative process and current issues. They also visited historical sites in the Washington, D.C., area and participated in workshops at the National 4-H Center with members from other states. Upon returning home, the students were asked to set up a community service project to apply what they learned on the trip. The projects are ways members can show the community what they learned and put their citizenship and leadership skills to work by giving back to the community

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A Day at the Kansas Legislature for 4-H Teens

Spending a day at the state capital last March proved to be an educational experience for nine members of the state 4-H Youth Council. The benefit from such a venture is that the youth got to see government in action. It helps them to understand firsthand how decisions are made and laws and bills are passed. Plus they got to see the Kansas Capitol and tour its dome. Michelle Sullivan, from Miami County, said she was impressed with the number of legislative districts, and Amanda Sullivan, from Grant County, said that she "gained greater respect for the people that run our state and country and the work they do." 4-H Youth Council members are elected each year and charged with helping to plan 4-H programs and the 4-H Leadership Forum, an annual professional development opportunity for teens. More information on educational 4-H programs open to students ages seven and up is available from local K-State Research and Extension offices or on the 4-H Website: *www.oznet.ksu.edu/4hyp/.*

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Kansas Teen Leadership for Physically Active Lifestyles

With a five-year grant from USDA, the Community Health Institute and 4-H Youth Development are piloting a community-based initiative to reduce/prevent overweight among rural teens in Kansas. The peer-to-peer community youth development program will be delivered in the out-of-school hours with teams of youth and adults in Ellsworth, Meade, and Morris counties. The project encourages teens to adopt the skills necessary to incorporate regular physical activity in their own lives. The project also focuses on models for physically active lifestyles involving younger children participating in after-school programs and clubs throughout the communities.

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Funds Target Improving After-School Programs

Through the National 4-H Council, the J. C. Penney Company has awarded K-State Research and Extension (KSRE) $10,000 to help four Kansas counties that have value-added after-school programs mentor four counties that want to improve after-school programs. Kansas is one of only 15 states to receive the award. KSRE is matching the J.C. Penney after-school grant with in-kind support to help Atchison, Douglas, Leavenworth, and Riley counties mentor Neosho, McPherson, Sheridan, and Shawnee counties. The goal is to help counties identify resources and build collaborations to improve after-school opportunities. The long-term goal is to help youth develop life skills that will enable them to be responsible citizens and contributing members of their communities

Contact: Elaine Johannes, Community Health Institute and 4-H Youth Development, Telephone: 785-532-7720, FAX: 785-532-7733, Email: ejohanne@oznet.ksu.edu

Livestock Judging and Oral Reasons Camps for Youth

Livestock Judging and Oral Reasons Camps were held last summer on the K-State campus. The camps have been designed for 4-H and FFA members (ages 14-18) who are seriously interested in enhancing their livestock judging and oral communication skills. Species covered included beef cattle, swine, and sheep. The camp focused on the proper format, terminology, and presentation of oral reasons. Camp participants also were exposed to livestock evaluation skills and the use of performance records in breeding livestock. A beginning camp on livestock judging also was offered. That one-day camp was for youth of all ages who had little or no training in livestock judging. Participants learned the fundamentals of swine, cattle, and sheep evaluation and were exposed to proper note taking and terminology used to describe livestock. The objective of the beginning camp was to equip each participant with the necessary information to become more confident with livestock judging and oral reasons.

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Focusing on Leadership

The first-ever Kansas Leadership Forum (KLF) Leadership Roundtable was held last April in conjunction with the 8th annual K-State Leadership Seminar at K-State. The program provided a full day of leadership dialog and ideas to help strengthen the capacity of state and local leadership development programs and help build a stronger network among leadership programs in the state. The first of two panel discussions focused on state leadership initiatives. The second panel discussion focused on leadership education delivery to targeted audiences. The Leadership Seminar featured Margaret Wheatley, considered one of the nation's leading thinkers about community development and service. She spoke on "Community and Leadership."

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Couples' Program Available at Extension Office

Kansans often associate their county's K-State Research and Extension office with lawn and garden information, 4-H activities, or food safety and preservation tips. There's more, of course, as this publication shows, including the CoupleTalk program, a six-session course to help couples reduce their everyday stresses and tensions and, at the same time, strengthen their relationships. The self-help course is available through the Internet so couples can practice new skills in the convenience of their own home at a time that works for them. Lesson materials also are available at any county's K-State Research and Extension office. Couples can enroll on the K-State Research and Extension Website (*www.oznet.ksu.edu/ctalka*) or at their local K-State Research and Extension office.

Contact: Charlotte Shoup Olsen, School of Family Studies and Human Services, Telephone: 785-532-5773, FAX: 785-532-5505, Email: colsen@oznet.ksu.edu

FireWorks—A Course on Anger Management

FireWorks is an online, noncredit course sponsored by K-State Research and Extension that examines anger management with a special emphasis on adult-child relationships. The course is integrated into The WonderWise Parent, a Website for parents and teachers: *www.ksu.edu/wwparent/wondhome.htm*. There is no cost for taking this course and formal enrollment is unnecessary. The course is called FireWorks because anger is similar in some ways to fire. Fire works when properly contained. Plus, the feeling of anger can sometimes feel like internal fireworks going off. This course is organized around 10 lessons. Each lesson is composed of several conversational frames. There are more than 150 frames in the course. The Website for FireWorks is *http://www.ksu.edu/wwparent/courses/fireworks/index.htm*

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KARL Participants Study Unfamiliar Territory

The KARL program, which is part of K-State Research and Extension, trains people to be better, more well-informed leaders for the future of Kansas. The KARL program is an intensive two-year study and training experience for emerging leaders of the agricultural industry and rural communities. The parent organization, Kansas Agriculture and Rural Leadership Inc. (KARL Inc.) is a private, not-for-profit organization dedicated to identifying and developing leadership in order to enhance the quality of life for all Kansans. This past year, for example, Glennis Zimmerman, KARL participant and school administrator in the Winfield public schools, found out what it was like to attend class at the U.S. War College at Fort Leavenworth. She also can say she spent a day in prison—as a visitor, that is. Zimmerman was a member of KARL Class VII. She joined 29 associates in the Tools for Peace Seminar in Leavenworth and Lansing. Of her experience, she said, "We were able to see the best and brightest of the branches of the military and attend classes with them. We are truly in good hands." She noted that they toured the prisons of Lansing and the Federal Marshall's holding facility, which gave them an opportunity to experience the consequences of wrong goals and choices. The KARL program started in 1990. More information on KARL is on the Website at *www.karlprogram.com*.

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Spreading the Word about K-State Research and Extension

In 2003, the K-State Research and Extension News Unit set a goal to raise the profile of K-State Research and Extension and its programs that benefit Kansas and U.S. citizens through news releases to urban media. The unit has had unprecedented success: In the first five months of 2004, a total of 66 K-State Research and Extension news stories or parts of news stories appeared in the Kansas City Star (daily circulation more than 270,000); numerous stories in the Topeka Capital-Journal (Kansas newspaper of record/ circulation of more than 61,000); a front page story in the Topeka Capital-Journal (with photos) about a research project (Great Plains Diagnostic Network) ongoing at K-State; a favorable editorial in the Topeka Capital-Journal about the Great Plains Diagnostic Network and K-State's role in it); numerous articles in the Wichita Eagle (circulation more than 96,000). In addition, all commercial television stations in the Kansas City area and throughout Kansas were contacted and asked if they would like to receive K-State Research and Extension news releases. Every one of them said yes. The result has been television news coverage of such research as a K-State agricultural economist's work in community development; the dedication of the university's new International Grains Program Conference Center; and Kansas 4-H's After School Program.

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New Program Wins Award for the K-State Radio Network

In September 2003, the K-State Radio Network, which is part of K-State Research and Extension, created a new Family and Consumer Sciences program for airplay on commercial radio stations in Kansas. In 2004 it became an award-winner. The Association of Communications Excellence gave it a silver award for the program Sound Living, which airs each Sunday morning on KUDL-FM 98.1 and KXTR-AM 1660 in Kansas City and is distributed to stations throughout Kansas via the K-State Radio Network. All of the materials produced by the K-State Radio Network are available on the network's homepage: *http://www.kstateradionetwork.com.* There, users can click to hear the program Agriculture Today (which airs on KFRM-AM and KDCC-AM), live on the Web each weekday at 10:03 a.m., or they can listen to past editions of Agriculture today, Sound Living, Perspective, and Up from the Ground. Also available are weekly sound bites and features that are sent to network affiliates each week.

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Reporting on Economic Prosperity in Kansas

K-State Research and Extension released a report last year that detailed economic prosperity in the state's 105 counties. Called the Strength Index (SI) report, it can help communities focus on strengths and meet economic goals. The SI is calculated by combining three measures: Kansas counties' Wealth Index, Employment Index, and Personal Income Index. Data have been gathered every year since 1991 to build the yearly report. The Strength Index is determined not only by compiling the key economic indicators in each county, but also comparing those measures against the state's per capita economic progress. If a county had a score of 1.00 for all three indices, then it would perfectly reflect the values for the state of Kansas and have a Strength Index of 3.00. A score above 3.00 indicates a county is prospering at a greater rate than the entire state; below 3.00 indicates a slower rate of economic growth. Johnson County ranked highest in the SI at 4.53. The next best measure in Kansas was Ellis County's 3.17. Only seven of the 105 counties had an SI number at 3.00 or higher, including Miami (3.15), Douglas (3.13), Saline (3.07), Shawnee (3.04), and Jackson (3.00). The bottom five were Chautauqua (1.94), Elk and Woodson (1.98), Greenwood (2.02), and Kearny (2.06). The 105-county average is 2.45. The state average in 1992 was 2.55. The full report is available online at *http://www.agecon.ksu.edu/ddarling* (click on CD Study Reports and select from Strength Index Reports).

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Partnering with Local News Media to Deliver Educational Information

K-State Research and Extension local office personnel work with the news media to address timely subjects and reach more people. For example, Shawnee County Research and Extension staff developed partnerships with local newspapers and television stations on

- A weekly gardening column published each week in the Topeka Capital-Journal since 1978. It currently appears in the Saturday "At Home" section that is sent to 60,000 subscribers and distributed free at 75 locations. It also is posted on the newspaper's Website. According to a newspaper source, the value of the space this column appears in would cost $1,500 each week and $78,000 annually.
- A weekly gardening segment on KSNT-TV called "Healthy Gardening" began in 2003 and airs during the Saturday evening news. This program reaches 27 counties in northeast and north-central Kansas with a viewing audience of 27,000 people The value of the 90 second spot is $500 each week.
- Since 1996, family and consumer sciences agents have partnered with WIBW-TV to feature extension and research information on the program "Midday in Kansas." K-Staters appear twice a month to present information to more than 21,000 people in northeast Kansas.
- A monthly nutrition column by K-State Research and Extension agents appears in the "Hers Kansas" monthly magazine of the Topeka Capital-Journal that has a circulation of 65,000. The value of the space for the column is $1,263.60 each month or $15,163.20 annually.

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Brief History of K-State Research and Extension

1862 The Morrill Act was passed paving the way for a land-grant university in every state.

1863 Bluemont College was renamed the Kansas State Agricultural College. Teaching and Research begins.

1868 Kansas State begins statewide extension work.

1887 The Kansas Agricultural Experiment Station was created at Kansas State Agricultural College under the provision of the Hatch Act.

1914 The Smith-Lever Act created the Cooperative Extension Service.

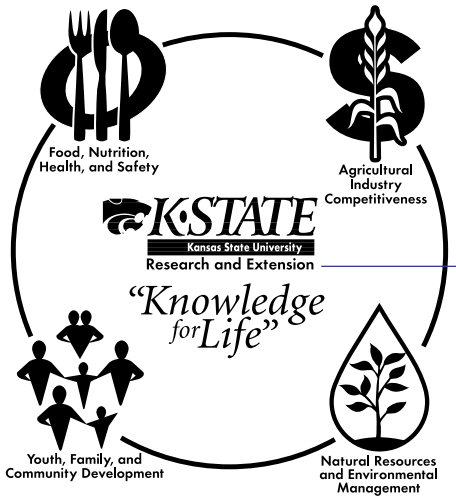
1924 First 4-H Clubs chartered.

1959 The official university name was changed to Kansas State University of Agriculture and Applied Science.

1996 The Kansas Agricultural Experiment Station and Kansas Cooperative Extension Service merged to form the Kansas State University Agricultural Experiment Station and Cooperative Extension Service.

1997 Customer interaction leads to formation of K-State Research and Extension.

Today, K-State Research and Extension employs more than 300 research scientists, approximately 180 faculty specialists and program leaders, nearly 270 county and area specialists, and more than 400 support staff in 23 departments in five different colleges. In addition to main campus, K-State Research and Extension personnel are located in 105 county offices, eight experiment fields, four area offices, three research centers, and three research-extension centers.



Our Mission Statement:
We are "dedicated to a safe, sustainable, competitive food and fiber systems and to strong, healthy communities, families and youth through integrated research, analysis, and education."

Fiscal Year 2005 Budget

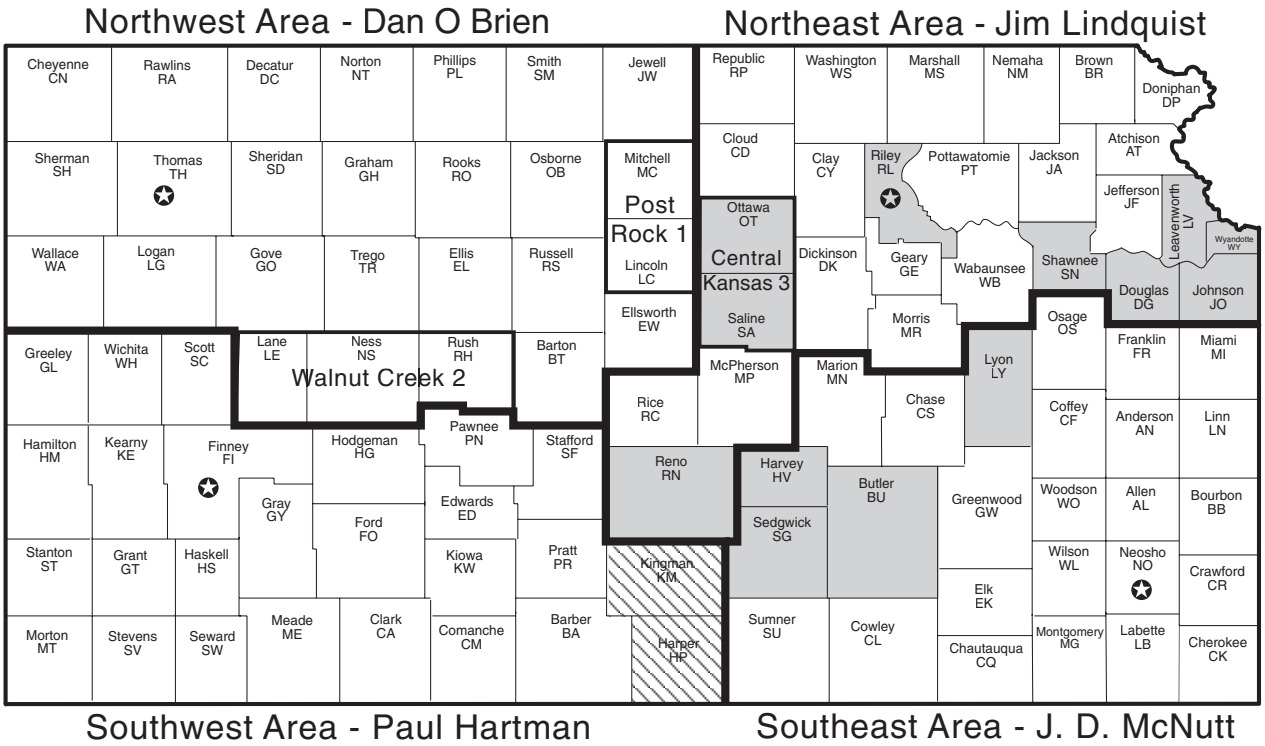
		Amount	Percent	FTE's
Agricultural Experiment Station				
State Appropriation		29,676,506	42.35%	410.64
Federal Appropriation (Hatch, RRF, McStennis)		3,369,233	4.81%	73.25
Grants, Contract, Other Funds	Note 1	37,024,239	52.84%	251.88
Total Agricultural Experiment Station		70,069,978	100.00%	735.77
Cooperative Extension				
State Appropriation		18,511,367	54.25%	285.92
Federal Appropriation (3b&c, Special Needs)		4,615,599	13.53%	36.87
Grants, Contract, Other Funds	Note 1	10,996,008	32.22%	148.07
Total State & Federal Budget		34,122,974	100.00%	470.86
Funds Provided by Counties\Districts				
Agent Salary & Benefits		8,488,013	48.54%	160.06
Clerical Support		4,000,000	22.87%	0.00
Operating Support		5,000,000	28.59%	0.00
Total County Budget		17,488,013	100.00%	160.06
Total Cooperative Extension		51,610,987		630.92
Physical Plant State Funds		772,695		24.00
Total K-State Research & Extension		122,453,660		1,390.69
K-State Research & Extension Combined FY 2005 Budget				
State Appropriation (AES\CES\Physical Plant)		48,960,568	46.64%	720.56
Federal Appropriation (AES\CES)		7,984,832	7.61%	110.12
Subtotal General-Use Funds		*56,945,400*	54.25%	*830.68*
Grants & Services		48,020,247	45.75%	399.95
Total State & Federal Budget		104,965,647	100.00%	1,230.63
Funds Provided by Counties\Districts				
Agent Salary & Benefits		8,488,013	48.54%	160.06
Clerical Support		4,000,000	22.87%	0.00
Operating Support		5,000,000	28.59%	0.00
Total County Budget		17,488,013	100.00%	160.06
Total K-State Research & Extension		122,453,660		1,390.69

Note 1: Includes state, federal and private grants and contracts, plus fee for service income.
AES includes establishment of University Federal Fund to accurately budget actual expenses.

Budget by Classification	Amount	Percent	FTE's
General-Use State and Federal Fund			
Faculty & Administrative Salaries & Benefits	40,821,270	71.68%	590.94
Classified & Student Salaries & Benefits	9,445,444	16.59%	239.74
Operating Expenditures	6,678,686	11.73%	0.00
Total General-Use State and Federal Fund	56,945,400	100.00%	830.68

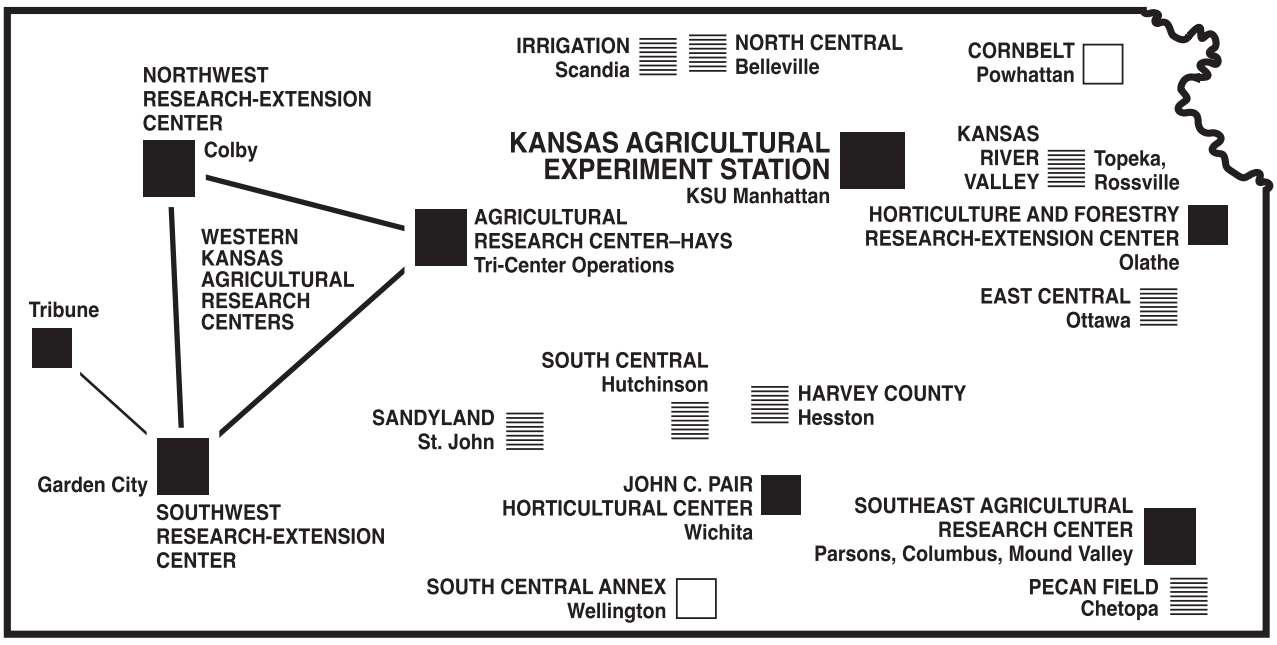
K-State Research and Extension Statewide Operations

Counties Administered by Area Directors



KANSAS STATE UNIVERSITY

STATEWIDE AGRICULTURAL RESEARCH SERVICES



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Kansas State University Agricultural Experiment Station and Cooperative Extension Service

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