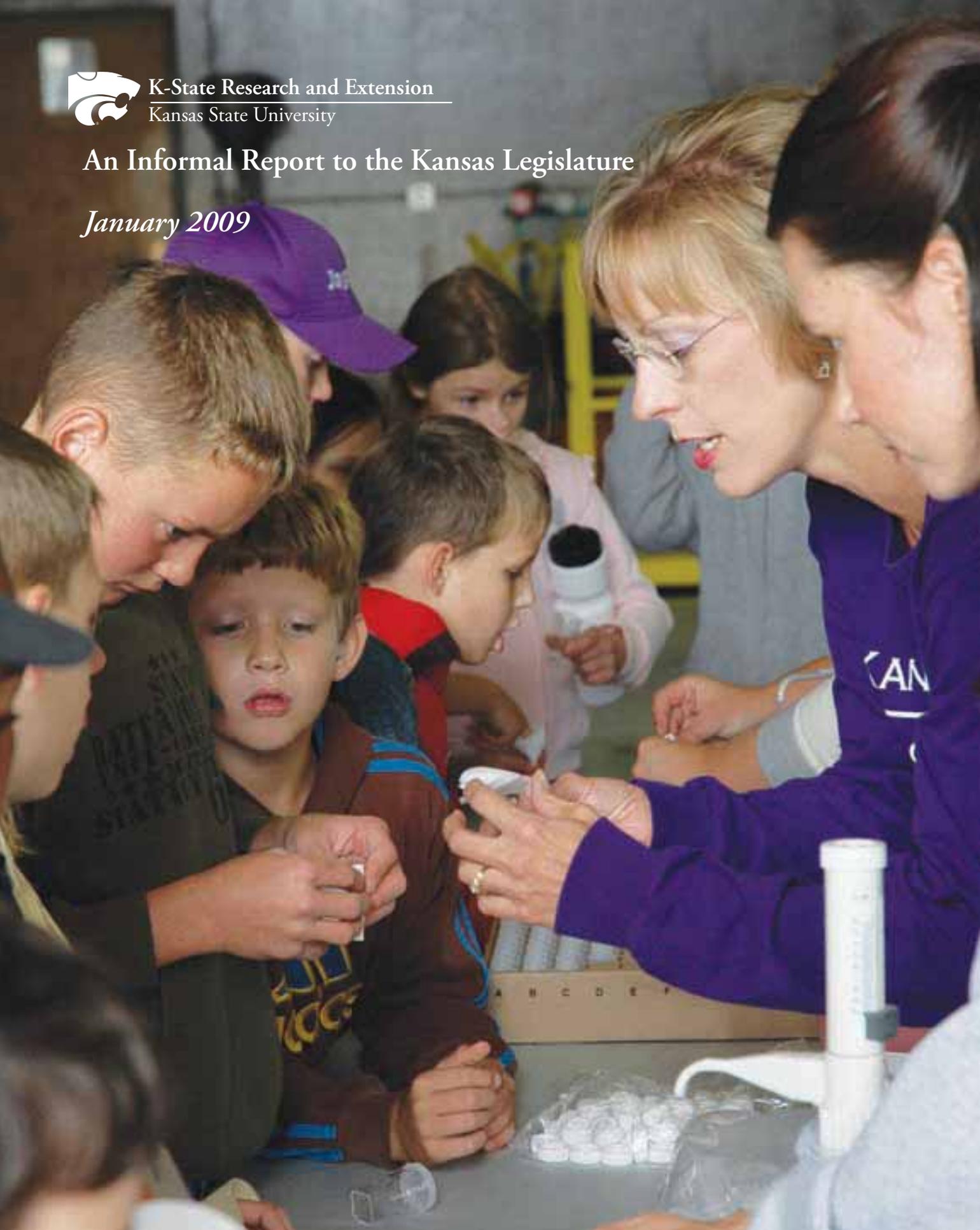




K-State Research and Extension
Kansas State University

An Informal Report to the Kansas Legislature

January 2009



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2 Communities Network to Keep Groceries Local



14 District Approach Promotes In-Depth Programming



4 Researchers Seek Environmentally Safe Pesticides



16 Sorghum Breeder Brings International Experience



6 Healthy Choices Can Change Lives



18 Marinades Reduce Carcinogens in Cooked Meats



8 K-State Gets Research Results to Producers Quickly



20 Conference a Plus for Older Adults, Caregivers



10 Youth Learn the Importance of Agriculture



22 Producers Benefit from Local Research



12 Workshops Help Retain Family Farm Ownership



24 Education Program Boosts Radon Testing

26 Useful Web Sites

27 Calendar of Events

28 Contacts

29 Budget and Maps



Gloria Holcombe

Fred Cholick, director of K-State Research and Extension, visits with Mary Billips, Hill City, foods judge at the Kansas State Fair. As an agronomist and wheat breeder, Cholick knows how important high-quality wheat is to bread bakers.

Director's Introduction

I appreciate the opportunity to share a sampling of the activities and accomplishments of the dedicated faculty and staff of K-State Research and Extension and the College of Agriculture. They truly impact the lives of families, ranchers, youth, and farmers within Kansas communities.

The land-grant university system has a three-part mission of teaching, research, and extension that I like to refer to as learning, discovery, and engagement. To accomplish our mission, we must achieve a private and a public good from all our endeavors.

We continually evaluate our programs to ensure we are making the best use of our resources and reaching out to Kansas citizens. We have many more tools because of technology, but the purpose has not changed – to serve the wants, desires, needs, and dreams of Kansas citizens.

As you look through this report, you will see that we have established valuable partnerships around the state, the nation, and the world.

We accomplish our goals when we have positive impact on individuals, but our ultimate goal is achieved when we also provide social impact. I view new discoveries and engaging people we serve as benefitting both individuals and society. For example, healthy choices positively impacted a 10-year-old girl but also will save society in health-care costs in the future. The workshops to help retain the family farm assisted the Campbells but also will help ensure a viable rural economy by retaining our rural populations.

With an office in each county, K-State Research and Extension has the ability to get research-based information into the hands of Kansans quickly and efficiently. Our programs impact society, improve the standard of living, and elevate the quality of life. We are providing “Knowledge for Life.”

A handwritten signature in cursive script that reads "Fred Cholick".

The Role of K-State Research and Extension

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.

Mission

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.

To accomplish this, K-State Research and Extension focuses its efforts on five core mission themes:

- Natural Resources and Environmental Management
- Healthy Communities: Youth, Adults, and Families
- Safe Food and Human Nutrition
- Competitive Agricultural Systems and
- Economic Development through Value-Added Products

Donald Zerr (l-r), Tracey Noel, Val Branham, Norma Charles, Cheryl Remington, and Marvin Beesley volunteer their time to keep their local grocery cooperative operating.



Bob Holcombe

Communities Network to Keep Groceries Local

The current population of Gove, Kansas, is about 100 people. There used to be a grocery store in Gove, but when the owners retired nearly 30 years ago, it closed. The town was too small to attract a private owner for the store. So the Gove Community Improvement Association was formed in 1986 to do something about it.

Now, thanks to the community-owned grocery, café, and food distribution center, residents have a local source of groceries and a local gathering place. The distribution center receives deliveries from a wholesale supplier and then distributes groceries to several other small stores in the area. This helps the GCIA grocery and the other stores since suppliers charge delivery fees to customers who don't meet a minimum order.

Gove is not unique among Kansas communities. Many community groceries are foundering as rural populations age and decline. And several community-focused organizations, including K-State's Center for Engagement and Community Development, Kansas PRIDE, and the Huck Boyd Institute for Rural Development, are working together to provide resources and support for rural groceries.

Dan Kahl, PRIDE coordinator and liaison to the CECD, said rural groceries are important for many reasons. "We recognized the importance of rural grocery stores for not only the economic well-being of rural communities, but also the social, cultural, and human health-related aspects of rural living."

These organizations, along with the Kansas Sampler Foundation and supported by a grant from USDA Rural Development, conducted a survey of more than 200 rural groceries and nearly 6,000 customers, then convened a Rural Grocery Summit on June 1, 2008. About 85 store owners, government officials, business developers, food distributors, and other citizens met and developed plans to encourage support of local groceries and find ways to help rural stores compete and thrive.

"The summit was unique in that it created a new opportunity for rural grocers to come together to identify common issues they face, and begin to network and learn from one another," Kahl said. "Prior to the summit, there had not been an avenue or network for rural grocers to communicate."

To help stores communicate, CECD developed the Rural Grocery Store Initiative Web site: www.ruralgrocery.org. The Web site features news relevant to store owners, a communication forum, links to resources, and the results of the store and customer surveys.

The surveys revealed what Marvin Beesley, GCIA board member and grocery volunteer, knows from experience. Declining rural populations and the attraction of larger stores in larger towns makes staying in business hard for community groceries. He said his group is trying to highlight ways their store is competitive. One of the board members did some comparison shopping by visiting a grocery in a larger town that uses the same wholesale distributor, then bought the same items in Gove. The shopper saved 10 percent by shopping in Gove, without even factoring in the price of gas to travel to the larger community. Beesley said they're emphasizing this fact in the store.

Still, he said, the store isn't making anybody rich, but it is serving its customers, and that's always been the goal. "We don't need to make money to survive," Beesley said. "We just want to be able to buy groceries."

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Towns Address Local Needs

Residents of the six towns in the Fairfield School District are working together as the Fairfield Area Partnership to maintain local population. The group met and surveyed the area's strengths and weaknesses. After reviewing the results, they identified and voted on their top priorities. They opted to join the Kansas PRIDE program as a single entity.

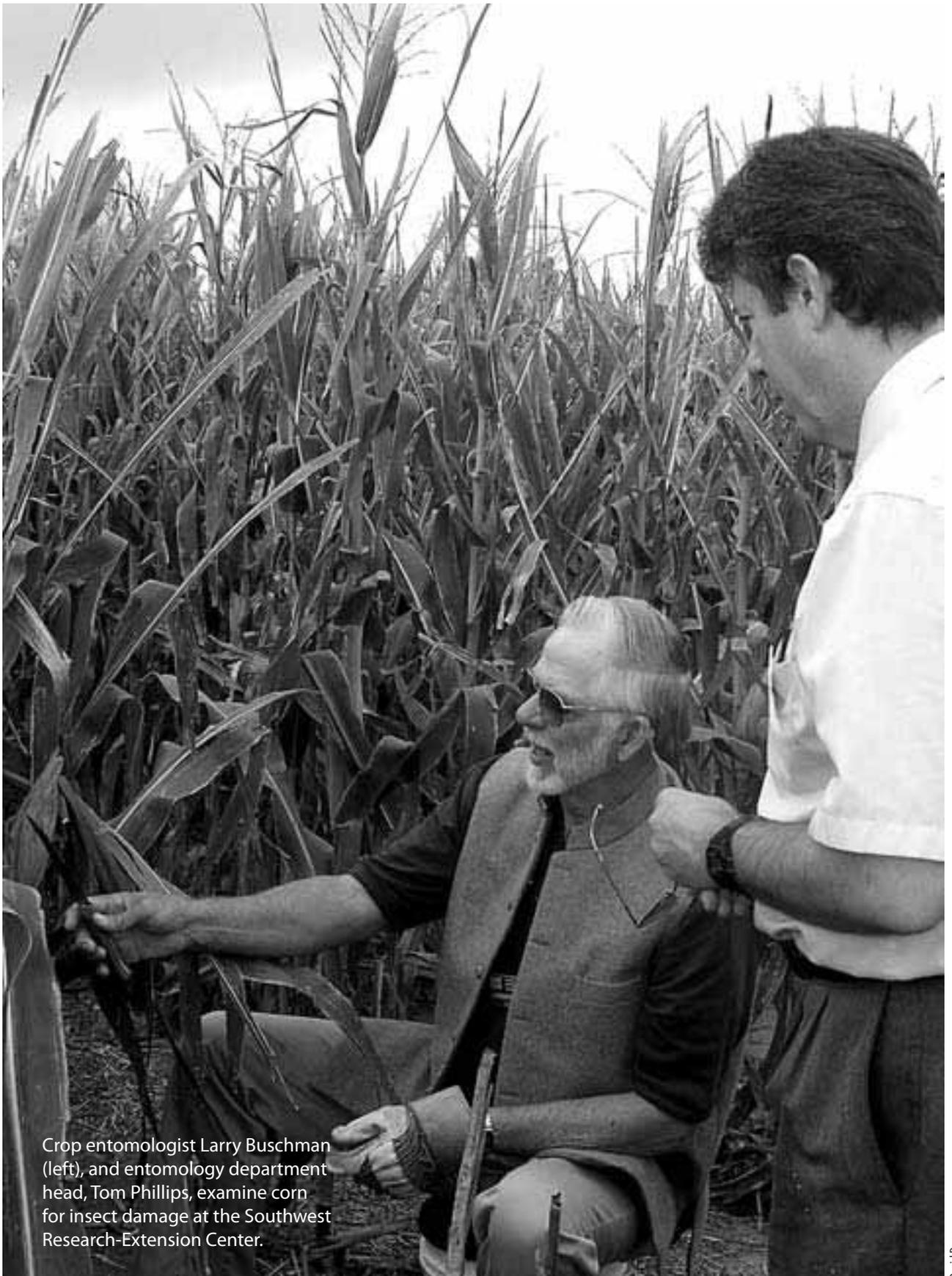
With the help of the Reno County Quest Center for Entrepreneurs and K-State Research and Extension's Reno County office, they secured funding from the Huck Boyd National Institute for Rural Development and K-State's Center for Engagement and Community Development to support a plan of action. Together the towns can promote each other's assets while addressing shared needs. The communities are recruiting young families, promoting special events, and working to upgrade area Internet access.

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Stabilizing Streambanks

The Kansas Forest Service advocates more effective riparian forests to reduce the sedimentation of federal reservoirs in Kansas – the source of municipal and industrial water for two-thirds of the state's population. Riparian forests are more effective than other land cover at stabilizing streambanks during high-water events and can slow flood waters, keeping sediment from depositing in reservoirs. Establishing riparian forests is a less expensive alternative to dredging reservoirs, which could cost \$5.6 million for Perry Lake alone.

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Crop entomologist Larry Buschman (left), and entomology department head, Tom Phillips, examine corn for insect damage at the Southwest Research-Extension Center.

David Dunn

Researchers Seek Environmentally Safe Pesticides

Safer, more effective pesticides may be on the horizon thanks to research being conducted at K-State.

“Recent discoveries in insect genetics show promise for developing new, more environmentally safe, organism-specific insecticides,” said Tom Phillips, professor and head of entomology.

Insect pests cost billions in the form of crop losses and insecticides each year. Although current methods have been highly successful, the threat of insecticide resistance requires continual search for alternative pest management strategies.

“We are learning more every day with new technology about potential mechanisms for controlling insects,” Phillips said. “This will lead to better control of agricultural pests and insect pests of concern to public health.”

K-State has been a leader in genetics research, especially as it pertains to agriculture and managing insect pests, he said. Much of that research has focused on crop-plant resistance to common Kansas agricultural pests. Scientists have been studying wheat, barley, sorghum, soybeans, sunflowers, and corn trying to find out what gives plant species the ability to survive insect attack. This information has been used to develop insect-resistant plants.

Recently, attention has turned to the genetics of the insects themselves and finding ways to manage specific, damaging pests.

“Not all insects and mites cause crop damage,” Phillips said. “It is important to identify which ones are causing the damage and target those. One way to do this is by studying their genes. If we can identify genes that cause damage versus those that don’t, this will allow development of highly selective pest control with much less impact on the environment.”

Using sophisticated techniques from molecular biology and genetics, entomologists are learning how genes are transferred from generation to generation. They are identifying genes to determine what function they perform.

“By studying the functional genomics of insects we have learned about key systems and how to suppress genes that regulate important functions such as reproduction, water balance, or digestion,” he said.

Instead of altering the plant, we are suppressing gene expression in damaging species.

For example, one team led by entomologist Jeremy Marshall has identified a male and female gene involved in the successful induction of egg-laying in females after mating. Reductions in the expression of these genes eliminate or drastically reduce the number of eggs laid by a female. These genes may hold promise as species-specific mechanisms to control insect populations.

“The advantage of this approach is that it allows us to target one species and not kill everything else,” Phillips said.

Such discoveries could lead to the development of pesticides that will be much more effective and have much less impact on the environment.

Larry Buschman, a crop entomologist at the Southwest Research-Extension Center in Garden City, said that compared to traditional methods, new techniques allow scientists to do things better and faster.

“We can select for new varieties faster, identify organisms that have characteristics we’re interested in easier and faster, study pathogens and diseases, and find better ways to kill insects,” he said. “Where selecting for specific traits might have taken 20 generations, now we can do it in three or four.”

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Improving Water Policy

A southwest Kansas irrigation engineer completed a five-month sabbatical with the Kansas Water Office (KWO) and the Risk Management Agency (RMA). He worked directly with those who are developing new state and federal water policy for limited irrigation management, which is needed to extend the life of aquifers in the Great Plains region. As a liaison among the KWO, the RMA, and K-State, he will be able to identify other research activities that would be important for water policy in Kansas and identify gaps in research that are needed for more effective water policy.

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System Speeds Evaluation

K-State Research and Extension irrigation engineers have developed a streamlined center pivot irrigation evaluation procedure to help Kansas producers identify problems in their sprinkler packages. The results and procedures will be presented at a national conference to aid in reevaluating the recommended standards for testing center pivot package performance. The new procedure significantly reduces the labor requirements, making performance testing more feasible as a regular management practice.

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Providing Grains Education

For 30 years, the International Grains Program has been providing education to foreign business leaders and government officials about U.S. grains and oilseeds. Since the IGP Conference Center was dedicated in 2004, the program has hosted 876 participants from 61 countries.

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Bridgette Murphy teaches nutrition and health to children in five Kansas City housing units.



Dan Donner

Healthy Choices Can Change Lives

Imagine a 10-year old asking for fresh spinach or a 6-year-old passing up a carbonated beverage in favor of water.

Learning about food, nutrition, and health is helping youth in the Kansas City metropolitan area choose foods – and activities – that contribute to health, said Peggy Berrier Boyd, a K-State-Research and Extension agent.

The educational afterschool program is part of Healthy Kids in KCK. The effort is funded by a Sunflower Foundation grant to the Kansas City, Kan., Housing Authority, which contracts with K-State Research and Extension to plan and manage the nutrition and health education.

Children attending the afterschool programs range in age from 3 to middle-teen years. To date, 399 children have benefitted. Fifty to 75 percent of the youth who attend return regularly, Boyd said.

A 10-year-old girl, said: “I want to be healthy ... it feels good.”

A young boy said he liked the healthy snacks, including a mini-pizza based on a rice cake with tomato-vegetable sauce and a sprinkling of low-fat cheese.

The safe environment is appealing to children, and a snack is a drawing card, said Bridgette Murphy, who travels to five metro area housing family developments three weeks a month to offer the afterschool programs.

Murphy understands the importance of the messages she is sharing – she is a mother of five, who has learned to manage type 2 diabetes with diet and exercise, rather than medication.

In 2007 Murphy and her mother, Bernice, volunteered to lead a summer breakfast and lunch program for youth in their housing area. Then Murphy applied at the K-State Research and Extension office to teach nutrition and health to youth in the five family housing developments.

“Murphy has proved a good fit for the educational effort,” said Nozella Brown, who teaches nutrition, health, food safety, cooking, and teaching skills each month to about 15 community educators, including Murphy.

As a perennial volunteer, Murphy has earned the trust – and respect – of her neighbors, Brown said. Her willingness to help youth in the community enhances her teaching ability, making her an agent of change.

Murphy begins each session with health-promoting physical activity.

“When children get acquainted, it’s easier for families to get to know each other, and that is building community among residents in the developments,” said Murphy

Learning about food safety, including washing hands before and after handling food, and helping with basic food preparation are part of the sessions.

Encouraging children to try new foods hasn’t been a problem, said Murphy, who typically hosts what she calls “a tasting.” The party-like presentations are conducive to trying new foods. Next steps include seeking funding to continue offering the nutrition education sessions, Boyd said. Adding cooking lessons for parents also is on the wish list.

“The kids loved squash, but the parents aren’t familiar with choosing and using the low-cost seasonal vegetables,” Murphy said.

Murphy’s growing skills as a nutrition educator have enhanced her job skills and role in the community, Boyd said. She and her mother have been selected to attend a national leadership conference for family metropolitan housing units.

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Campaign Promotes Saving

On average, U.S. households carry more than \$8,000 in credit card debt, up two-thirds over the last decade. The *Kansas Saves* campaign promotes the message “Save, Reduce Debt, Build Wealth!” Sixty-eight K-State Research and Extension offices are promoting *Kansas Saves*. Agents in Leavenworth, McPherson, Topeka, and Garden City each received \$1,200 grants from the Consumer Federation of America to draw special community attention to the need to save and reduce debt.

Twenty-eight Kansas locations reported hosting 51 events with 3,914 participants and reaching 1,799,425 contacts indirectly through print, radio, and TV messages on saving and debt reduction topics.

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Youth Learn Garden Skills

Gardening projects enable children to learn more about the nutritional importance of fruits and vegetables, while developing a greater appreciation for plants and the environment. The Junior Master Gardener program is a nationally recognized program to help youth gain science skills through hands-on gardening activities. In Kansas, 617 youth are enrolled in JMG groups. JMG also partners with the Family Nutrition Program that works with low-income families.

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Ron and Micki Suther, Blaine, check on newborn pigs in their farrowing house.

Dan Donnet

K-State Gets Research Results to Producers Quickly

In 2006, Blaine swine producers Ron and Micki Suther knew something was hitting their herd, but weren't sure what it was.

"Death loss was gradually increasing," Ron Suther said. "Nothing was really helping, and it was getting worse."

The diagnosis came back as porcine circovirus disease (PCVD). Steve Henry, a veterinarian in Abilene, said he first saw it in this region in November 2005.

"We normally expect 1-2 percent death loss during production in the finishing phase," Henry said. "Once this disease hit, death loss jumped to 10-30 percent of the group. Those pigs that did survive were small and grew poorly."

K-State Research and Extension animal scientist Mike Tokach said this issue was so important to Kansas swine producers that several producers created their own check-off system, which paid for a lot of K-State's initial diagnostic work.

"That seed money allowed our researchers to go to the national pork board and leverage that into additional dollars to help fund the research," Tokach said.

Researchers from K-State's College of Veterinary Medicine and Department of Animal Sciences and Industry began working on this issue. One of the first trials was conducted on the Suthers' farm in 2006. At that point, a vaccine was available in limited supply, and its affect on the disease and benefits of use were still unknown.

"Right away, we could see that not as many pigs were dying, so we knew it was having a beneficial effect," Suther said. "When they showed us the results, we saw that the death loss was normal in the vaccinated pigs, while unvaccinated pigs kept dying at about 17 percent death loss."

"It was a great relief to not have all those dead hogs," Suther said. "Death loss is very costly and demoralizing for those who work on the farm. From an economic standpoint, it was quite a disaster during the time when we were losing all those pigs, especially since many of them were at least half grown when they suddenly died."

Additional research, done throughout 2007, compared available vaccines, determined how different genetics responded, and showed that vaccinating for circovirus not only helped reduce mortality, but also improved pig performance and feed efficiency. Research continues on this virus, including determining optimum timing for administering the vaccine.

Henry said that, while many universities were studying porcine circovirus, K-State took a different approach from others.

"The swine nutrition team took it straight to the producer and identified the economic value as well as health value of these interventions," Henry said. "They provided hands-on, practical, real-life information. That's a unique feature of K-State's research team, and that's why the K-State swine team is held in such high regard internationally."

For 40 years, K-State Research and Extension has hosted Swine Day, which draws a crowd of about 350 to hear the latest on swine production. Through presentations, meetings, and media, Tokach said, K-State Research and Extension gets current swine research in the producer's hands as quickly as possible.

"This is a great example of how K-State can work together with allied industry, veterinarians, and producers," Tokach said.

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Meat Goat Specialist Hired

To meet the needs of producers entering the meat goat industry, K-State Research and Extension hired a sheep and meat goat specialist. Meat goats can be raised on small acreage, and goats help suppress the seed production of noxious weeds, such as *Sericea lespeדה*. Enrollment in the meat goat 4-H project has nearly doubled in the last two years because the animals are easily handled by youth. In his first nine months on the job, the new specialist has done nine goat-related programs and judged goats at 10 county fairs, in addition to his research and teaching schedule.

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Technology Cuts Costs

K-State Research and Extension continues to use technology to deliver information in more effective and cost-efficient ways. The Department of Communications reports that since August 2007, the organization has used a new videoconference technology (Adobe Connect) for more than 430 hours to provide education and information across Kansas and the nation. That translates to just over 33 hours per month and a related savings in travel costs and time.

K-State Research and Extension also developed its own Web-building software, which has made its sites more user-friendly while decreasing staff members' workloads by spreading the work more evenly.

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Elementary students participate in soil testing at the Kids' Field Day at the K-State Agronomy Farm.



Gloria Holcombe

Youth Learn the Importance of Agriculture

What began as a visit by a fourth-grade class to a field day for adult farmers more than 10 years ago has grown into several Web sites to educate children and adults about growing wheat, sunflowers, and other foods, as well as the “Kids’ Field Day on the K-State Agronomy Farm.”

“Now we usually have about 300 kids from 14 classes come from Manhattan and Junction City area schools to the Kids’ Field Day,” said K-State Research and Extension agronomist Jim Shroyer.

“The day of the city cousins going back to visit their country cousins on the farm is long gone,” said Shroyer, adding that because so few people nationwide are involved in agriculture, he was inspired to educate Kansas children and others about growing the food they eat.

This year’s field day had 14 different stations – a crop garden; a display of plants native to Kansas; a rainfall simulator demonstrates how water erodes bare soil versus residue-covered soil; the soil pit, a six-foot trench that students can walk into to see the different soil horizons (layers); a weather station; an exhibit on how insects affect crops; a wind tunnel that demonstrates how wind erodes soil; a grain milling demonstration; a soil microbiology center with microscopes and interactive displays; a weed garden; a comparison of pig and chicken intestinal systems; a soil testing demonstration where kids can detect different elements in soil samples; and the quarter-scale tractor designed by K-State students.

In previous years, a popular display showed kids what crops contributed to things they regularly use or eat, such as their clothing, breakfast cereal, and bread.

“It’s important to reinforce to urban kids how their everyday lives are connected to agriculture,” Shroyer said.

Fourth grade teacher Suzanne Otto said that bringing students to the “Kids’ Day” was helpful in teaching science principles and preparing them for the Kansas Science Assessment.

“Testing for calcite in ‘the pit’ was just what I have been teaching in my Earth Materials module,” said Otto, who teaches at Woodrow Wilson Elementary School in Manhattan. “The different soil types with ‘rain’ coming down was a wonderful example for teaching about erosion.”

When “Kids’ Day” became so popular among local schoolchildren and teachers that Shroyer had to start turning classes away, he recognized the need to reach beyond the local community. The result was several Web sites, where any child or adult with an Internet connection can learn about how crops are grown.

K-State brings the farm field to the children with a virtual field day (www.oznet.ksu.edu/fieldday/kids). Through photos and easy-to-read words, children can learn about the role that soil, weather, weeds, and technology play in growing the food supply. This site logged 259,000 visits in one year.

Another online tool, “Adopt a Wheat Field” (www.oznet.ksu.edu/aawf/), attracted 38,000 visits in one year. It follows the wheat production process from field preparation to planting to harvest and all the way to milling, baking, and export. “Sunflower Scene” (www.oznet.ksu.edu/sunflowerscene/) and “Soybean Scene” (www.oznet.ksu.edu/soybeanscene/) take a similar approach with sunflower and soybean crops. Those sites had 12,000 and 6,000 visits, respectively.

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Help for Military Families

In February 2008, K-State Research and Extension signed a memo of understanding with Fort Riley to create an office on post. Educational programs will be tailored to the needs of military families. A program coordinator, four agents, and support personnel will be located with other army community service agencies and will cover family life, family resource management, child development, and nutrition and health topics.

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OMK Supports 4-H Camp

Operation Military Kids is the U.S. Army’s collaborative effort with America’s communities to support children and youth in military families. In 2009, OMK will provide one \$200 camp scholarship for a child with military ties in each local K-State Research and Extension unit.

Youth Experience Outdoors

Since its inception in 1996, the Kansas 4-H Ventures Program has offered outdoor adventure programs for more than 350 teens and adults featuring backpacking, canoeing, and rafting in wilderness areas and focusing on “Leave No Trace” principles of stewardship and wilderness ethics. In 2008, Kansas 4-H’ers joined Arkansas 4-H’ers for a 10-day backpacking adventure in the Pecos Wilderness Area of New Mexico. Participants learned the skills necessary to prepare their meals in outdoor settings; cope with changing weather patterns; use maps, compasses, and GPS units to plan their hiking route at 10,000 foot elevations; and follow low-impact camping techniques.

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Carrol Campbell (seated) goes over daily tasks with his son, Nathan (center) and son-in-law Scott Lowe in the farm's commodity shed.



Workshops Help Retain Family Farm Ownership

Bringing family members into the farm business and passing the farm from one generation to the next can be the best – and worst – of times. To help families develop a plan to suit their operations, K-State Research and Extension and the K-State Farm Analyst Program held workshops in 2007-08, with sessions planned for Garden City, El Dorado, and Chanute in 2009.

“Dad told us these meetings were ‘mandatory’ because he knows how important it is for our entire family to be united in the plan for our farm,” said Holly Martin of Bucklin, who along with her parents, Carrol and Jeanie Campbell, and other family members, attended the 2007-08 workshops. The Campbells own a diversified crop farm and dairy near Winfield.

The Keeping the Family Farming workshops are designed to help participants with such key actions as determining each family member’s role; how to communicate effectively; determining where they stand financially; planning for retirement; deciding who is in charge; evaluating human resources; evaluating strengths, weaknesses, opportunities, and threats (SWOT); and developing a farm game plan – and implementing it.

“Where the farming operation stands financially and where family members want it to be in the future are important considerations for any operation – as are the decisions on who is responsible for what, and how much responsibility he or she has,” said Duane Hund of the Farm Analyst Program. “Much of it comes down to good communication and record-keeping.”

Farm analysts have had requests for information on farm succession since the early 1990s, stated Hund.

A grant from the North Central Risk Management Agency provided the opportunity to present the formal workshops. Two sessions were held at Junction City and Hays 45 days apart to allow for the family to discuss issues the workshops brought forth and perhaps involve a farm analyst to meet with the family before the second session, explained Hund.

“We had 109 participants from 43 farm family units – 31 of those families requested one-on-one assistance from K-State’s farm analyst team to work through their individual farms’ financial analysis,” Hund said.

“We had already discussed farm succession, but this workshop allowed us to make sure that we had a plan of action,” Martin said. “Dad always talks about how grandpa did a good job in turning the farm over to him, and he wanted the next transition to go as smoothly. My aunts were a great example for me in the previous generation.”

In the Campbell family farm’s case – Martin’s parents still run the overall operation, but their son Nathan and his wife Aimee manage the dairy portion. Their daughter and son-in-law, Dana and Scott Lowe, work off-farm but are involved in the crop portion of the business. Daughter Holly and her husband Eric currently have no active role in the family farm, but they own a purebred cattle herd in Ford County.

“With the average age of farm and ranch operators exceeding 56 years of age, there needs to be ongoing education to aid in developing successful transition plans,” said Hund. “Rural communities need every young family to be successful and assist in keeping their communities strong.”

Duane Hund, 785-636-5462, dhund@ksu.edu

Spraying Improves Yield

Because of a freeze, an Ellsworth County farmer planted later than normal, and his wheat was behind others in the county. He sought help from his county agent who informed him of some of the rust problems in the area and suggested that he should watch his crop and spray with a fungicide. He harvested 50 bushel wheat that had high-test weight, while his neighbors cut 15-20 bushel wheat. He earned \$150 more per acre just by spraying fungicide at the correct time.

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Look to KFMA for Answers

The Kansas Farm Management Association is one of the largest farm management programs in the United States. It employs 20 economists who are faculty members in the Department of Agricultural Economics. They work cooperatively with Kansas farm families, providing production and financial management information for improved decision making.

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View Wheat Quality Online

Wheat producers and buyers can access information about the quality of wheat harvested in the Great Plains region at www.plaingrains.org. The program is a joint effort among Plains Grains Inc., K-State Research and Extension, K-State’s International Grains Program and Department of Grain Science and Industry, the USDA/ARS Grain Marketing and Production Research Center, and the Geographic Information Systems Spatial Analysis Lab. The Web site includes data from Texas, Oklahoma, Kansas, Colorado, Nebraska, South Dakota, and Montana.

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Helen Askren (seated) goes over information for Alzheimer's caregivers with Esther Ideker, Jackson County Friends of Hospice.

Pat Melgares

District Approach Promotes In-Depth Programming

Nearly every afternoon, faithfully for the past 18 months, 73-year-old Helen Askren makes her way to The Pines of Holton – a home-care plus facility that cares for patients with various degrees of functioning – to see her husband, Bob.

It was about two years ago that Bob began experiencing the symptoms of Alzheimer's disease, which affects nearly 5 million Americans and 50,000 Kansans, according to statistics from the Alzheimer's Association.

Askren admits she has had feelings of guilt from not being able to keep her husband at home. At one point, she was even unsure if going about daily routines without Bob was the right thing to do.

But a summer 2008 workshop to help caregivers of those with dementia helped change that.

“The speaker convinced us that it's OK to take care of yourself,” Askren said, “because if you don't take care of yourself, you're not going to be able to help them.”

The workshop was sponsored by a coalition of several community groups, including K-State Research and Extension's Meadowlark District, which was formed in 2006 to merge the extension work of Nemaha, Jackson, and Jefferson counties.

In Kansas, 23 counties have formed eight districts. In the Meadowlark District, agent Nancy Nelson quickly found that the shift has allowed her to devote more time and energy to programs such as the dementia workshop.

“Basically, I can spend more time working on promotion and my marketing efforts,” said Nelson, who has worked for K-State Research and Extension's Jackson County office for 30 years. “So, I'm able to provide information for an area larger than Jackson County.”

The summer workshop, in fact, drew nearly 100 participants throughout northeast Kansas. Though the Jackson County Caring Community Council has held one workshop each summer since 2001, the past year's workshop was the most successful.

“Nancy has always been very committed, but the shift to a district has allowed her to provide a greater focus on this particular area,” said Henriette Area, a registered nurse and director of community services at the hospital.

It's the type of success that K-State envisioned when it proposed the concept of districts made of multiple counties.

“Because agents work within a team of district agents who are also focusing their programs, each individual doesn't have to spend his or her time maintaining some programming across all the various programming areas,” said Jim Lindquist, K-State's assistant director for extension field operations. “They now have the time to plan and deliver targeted, in-depth programming to all counties in the district.”

Askren, for one, is grateful. Having gained the confidence to be more independent, she now advocates for other caregivers and freely distributes bound copies of information to help families of Alzheimer's patients.

“It's made a difference for me,” she said.

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Tracking Crop Diseases

A River Valley District agricultural agent worked with wheat farmers in four counties to help them recover from freeze damage in 2007 and Fusarium head scab in 2008. Working across counties helps agronomists understand and track crop diseases better. The River Valley District includes Clay, Washington, Republic, and Cloud counties.

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Exercise Benefits All Ages

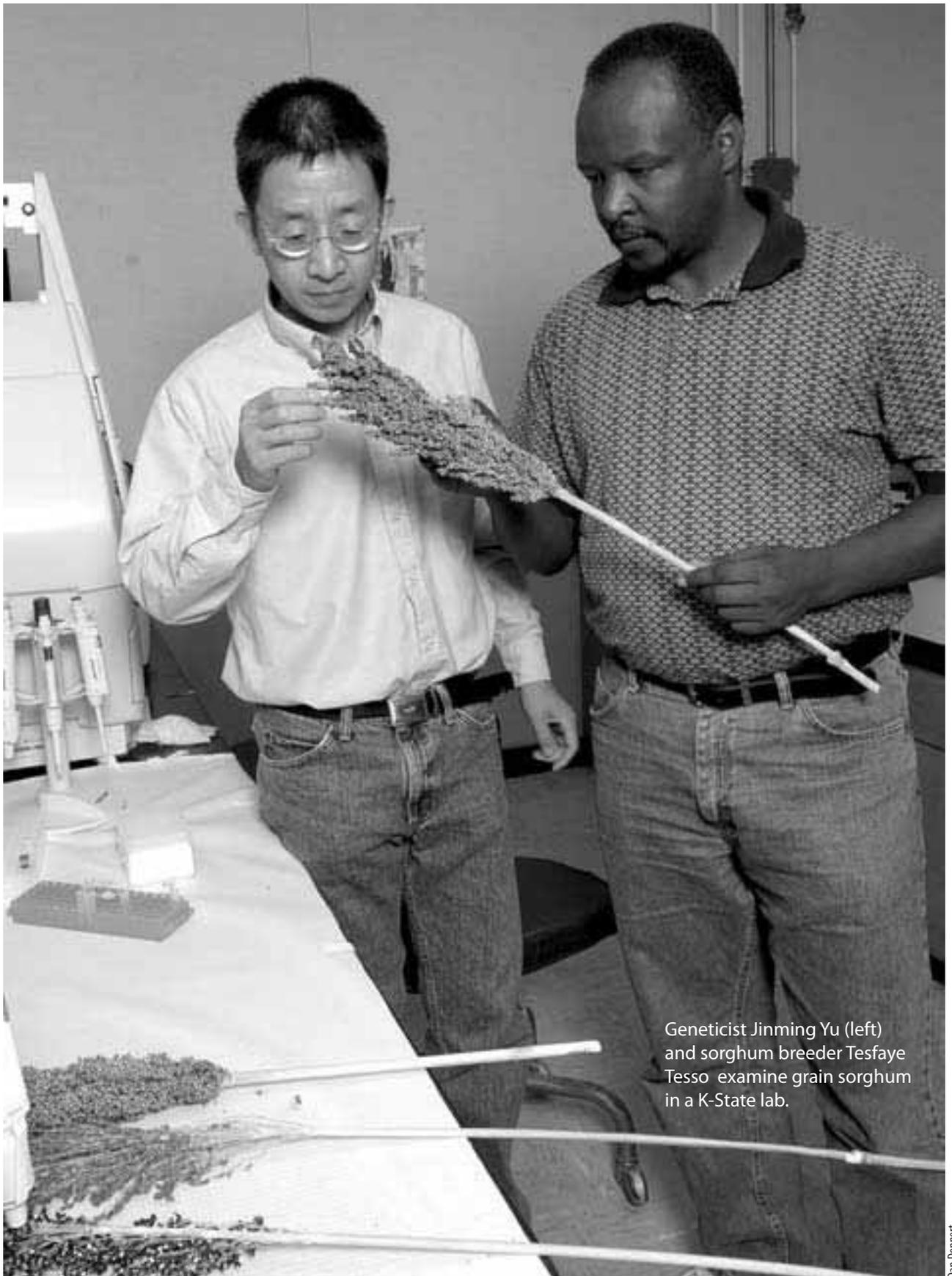
The Sunflower District family and consumer sciences agent is encouraging residents in her area to get up and move. She's put together a weight-bearing and strengthening program that focuses on improving quality of life. One woman shared a positive report from her doctor, who said it has relieved her arthritis pain. The agent also conducts a successful *Walk Kansas* program – where teams walk the 423 miles across Kansas in eight weeks – that reaches 250 residents in Cheyenne, Sherman, and Wallace counties.

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Character Lessons for Youth

Central Kansas District agents are teaching “Character Counts” workshops to preschoolers through second graders. The agents also conduct workshops that incorporate the six pillars of character, endorsed by 4-H, that include older 4-H'ers, parents, and volunteers. They say their work is made possible because, as district agents, they're able to more directly address topics important to residents in their district.

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Geneticist Jinming Yu (left) and sorghum breeder Tesfaye Tesso examine grain sorghum in a K-State lab.

Dan Donnet

Sorghum Breeder Brings International Experience

Ethiopia and Kansas may seem a world apart, but Tesfaye Tesso has found there are commonalities between the two countries. One of them is a need to improve plants grown for food, feed, and fuel – in this case – grain sorghum.

Tesso, who was born in rural western Ethiopia, teaches classes and is the new sorghum breeder for K-State Research and Extension.

His interest in genetics began while he was working toward bachelor's and master's degrees at Alemaya University in Alemaya, Ethiopia.

“Although I always liked genetics, I truly became interested when I was doing my master's research, where I was comparing the relative reaction of teff varieties to moisture stress treatment,” Tesso said.

Teff is a tiny, round grain used as a food grain in Ethiopia.

After several years of research and teaching at Alemaya, Tesso came to K-State to work toward a Ph.D. in sorghum breeding. He then went to Purdue University as a postdoctoral student to work on sorghum improvement for nutritional quality with an emphasis on protein digestibility.

After a year at Purdue, he took a position back in Ethiopia as a sorghum breeder and leader of the Ethiopian National Sorghum Research Program with the Ethiopian Institute of Agricultural Research.

Tesso returned to K-State in 2008 to become the sorghum breeder.

“My research focus at K-State is to continue building on the existing sorghum breeding initiatives,” Tesso said. They include developing elite parent lines that produce high-yielding hybrids that are resistant to drought and stalk rot-induced lodging and continuing work in progress in incorporating traits that are resistant to certain herbicides.

He also plans to develop high-quality food grade sorghum, adapted to temperate growing conditions.

In 2007, Kansas produced 212 million bushels of grain sorghum – 46 percent more than a year earlier. That kept the state in its long-term place as the No. 1 sorghum producer in the United States. In turn, the United States is the No. 1 sorghum producer in the world.

“Although much of the sorghum produced in the United States goes to livestock feed and ethanol production, special markets are emerging for sorghum as gluten-free food,” Tesso said.

That work also will help African countries, where sorghum is already used as an important food staple, he said. Soon he also plans to work on developing high biomass sorghum to be used in biofuels.

“All these initiatives significantly benefit the sorghum industry in Kansas, the United States, and in other countries,” he said. “Our plan is to work toward ensuring maximum yield and to offer more effective and flexible weed management options. The development of food-grade hybrids will benefit both farmers and consumers with special needs, and it will provide a safe food source for people with celiac disease and a special market outlet for sorghum products.”

Other K-State researchers are also working with scientists from several universities and agencies to improve sorghum that is grown domestically and overseas. Much of that work has been funded by the International Sorghum and Millet Improvement Program (INTSORMIL), a U.S. Agency for International Development (USAID) program.

Tesfaye Tesso, 785-532-7238, ttesso@ksu.edu

Model Could Save Millions

K-State leads a multistate team that has developed prediction models, which are used in 24 states, for Fusarium head blight. The Web-based prediction tools at www.wheatcab.psu.edu include the ability for state specialists to add commentary, as well as disease predictions, based on weather forecasts. If the disease prediction models are used by the managers of 10 million acres of wheat, and helped 50 percent of those managers correctly choose not to apply a fungicide at a cost of \$12 to \$20 per acre, then the prediction models could save U.S. producers \$60 million to \$100 million in fungicide applications.

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Project Offers Hope

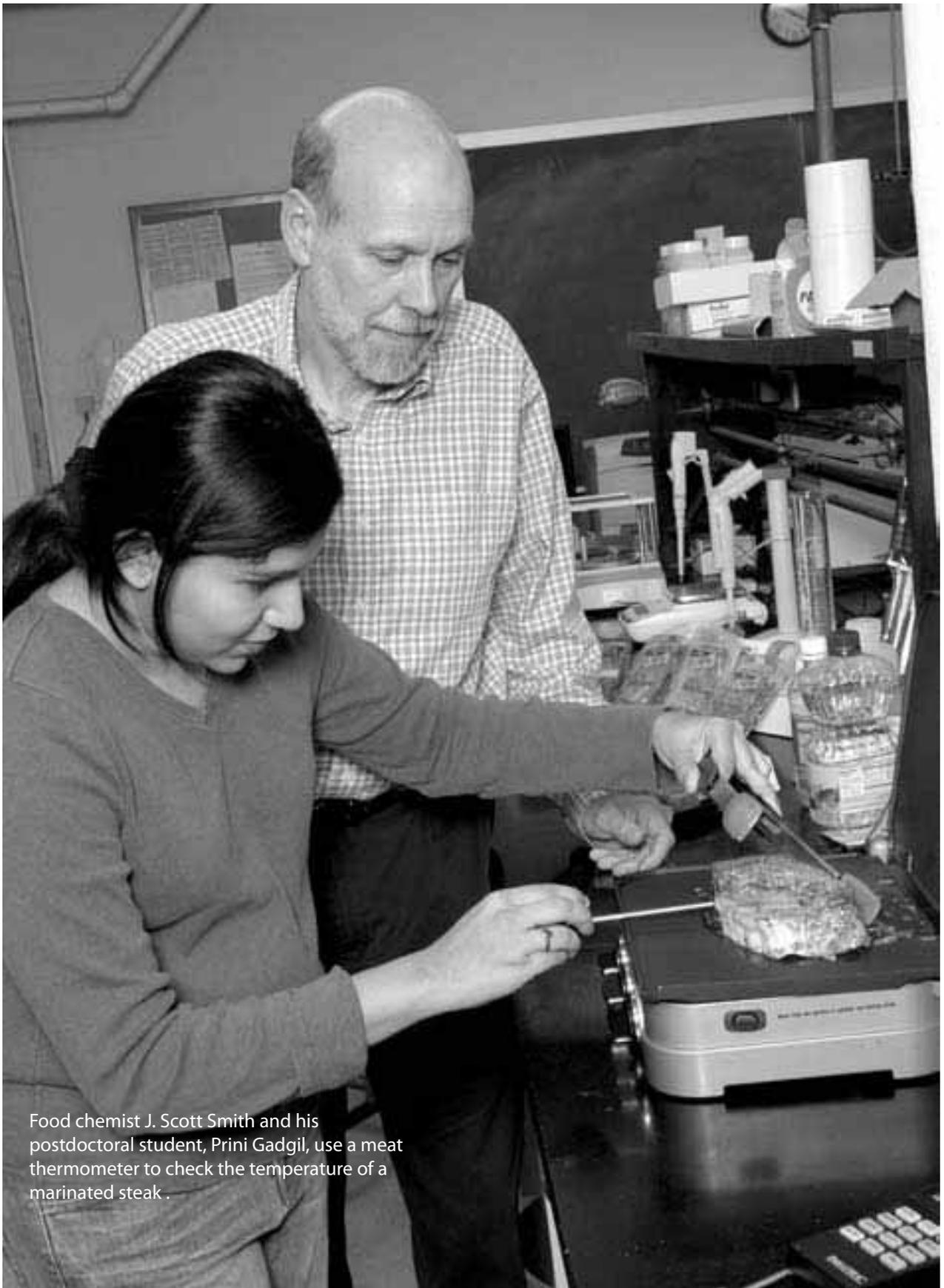
K-State grain scientists collaborated with students from Sabetha High School, researchers at the University of Nebraska-Lincoln, Archer Daniels Midland Co., Wenger Manufacturing, and XIM Group on a program called Grains for Hope. Several shipments of fortified grain have been shipped to Mozambique. The project's goal is to bring together public institutions and private industry to come up with nutritious food products that are economical to produce, taste good, and are easy to cook.

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Milestone Report Published

In 2008, K-State Research and Extension published the thousandth report of progress. This series of publications includes crop performance tests, livestock management updates, and other timely research results for producers.

*Ernie Minton, 785-532-6148,
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Food chemist J. Scott Smith and his postdoctoral student, Prini Gadgil, use a meat thermometer to check the temperature of a marinated steak .

Dan Donnet

Marinades Reduce Carcinogens in Cooked Meats

Backyard cookouts and fall tailgate parties wouldn't be complete without juicy steaks or burgers cooked on the grill. A K-State Research and Extension scientist is looking at ways to improve the health aspects of those family get-togethers.

Research by food chemist J. Scott Smith suggests that adding spices to meat before cooking reduces cancer-causing compounds that are produced when meat is broiled, fried, or grilled at temperatures higher than 350 degrees.

There is growing concern that consuming carcinogenic compounds known as heterocyclic amines (HCAs) contributes to several cancers and colon polyps in humans. Another study has shown carcinogens may lead to the onset of type 2 diabetes.

"The addition of various substances to the meat before cooking may reduce the HCAs," Smith said. "Marinating steak before grilling is a practical way to reduce HCA contents of even well-done beef for many consumers."

Smith found that marinating the steaks with commercial products reduced the HCA level in the cooked product. A Caribbean spice mixture reduced the level of HCAs by 88 percent, an herb marinade by 72 percent, and the southwest marinade by 57 percent.

"The marinades we used worked because they contain significant amounts of spices from the mint or *Lamiacea* family," Smith said. "Many of these are culinary herbs, such as basil, mint, rosemary, sage, savory, marjoram, oregano, thyme, lavender, and perilla."

"We have shown that the inhibitory effect was due to the spices and not other components of the marinade. All the spices contain antioxidants that are known to inhibit the reactions involved in HCA formation. Chemically, they are similar to the antioxidants in berries, red grapes, wine, coffee, green tea, and dark chocolate."

His students made a presentation at an Institute of Food Technologists (IFT) conference, where it was named the best presentation by the food safety and toxicology division.

Because of the practical applications for this research, IFT has helped get the word out about Smith's research. Jeannie Houchins, IFT's media relations director, has coordinated many of the media requests with Smith.

Smith's research findings have been featured in scientific journals, such as the *Journal of Agricultural and Food Chemistry* and the *Journal of Food Science and Popular Magazines*, including *Prevention*, *Women's Health*, and *Self*.

K-State's teaching, research, and extension expertise in food science, including Smith's research, is part of the Food Science Institute. FSI was established in 2001 and now includes 40 faculty from 13 departments in five K-State colleges.

"Dr. Smith's research is one example of how we address issues that help ensure the safety of Kansas beef," said Curtis Kastner, FSI director.

"Virtually all of our research with the USDA-funded Food Safety Consortium is focused on beef safety. Another research initiative funded by the Department of Defense Natick Soldier Center focuses on detecting and modeling food safety threats in military food systems."

"In addition to on-campus activities, FSI offers distance education degrees and training for those working in industry. IFT recently recognized K-State as having the most comprehensive food science distance education program in the United States."

J. Scott Smith, 785-532-1219, jsschem@ksu.edu

Improving Beef Jerky Safety

With funding provided by the USDA's Food Safety and Inspection Service, K-State food scientists have validated a new way for small-scale jerky producers to keep both *E. coli* O157:H7 and *Salmonella* out of the food chain. Jerky is made using a combination of heating and drying. The research focused on validating a process that would effectively destroy pathogens, without being more burdensome to small producers.

In order to ensure that both pathogens were destroyed, researchers found that an additional hour and a half of drying time at 68 degrees Celsius was needed.

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Site Has Varied Information

The Ag Manager Web site (www.agmanager.info) contains research and extension information and tools for the competitive business. This central source provides users a one-stop location for the latest agricultural economics information. Areas of interest on this Web site include:

- Agricultural economics news
- Livestock and meat marketing
- Grain outlooks
- Crop insurance
- Land buying and leasing
- Livestock marketing graphs
- Kansas Farm Management Association reports
- 2008 farm bill information
- Farm management guides
- Energy and biofuels information
- Crop basis maps and tools

This site averages 48,000 visits a month. In April and May 2008, it broke 60,000 visits in a month.

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Conference participants practice rhythm therapy to improve mind-body coordination.

Bob Holcombe

Conference a Plus for Older Adults, Caregivers

In 2008, a northwest Kansas conference – “Growing Older ... but Not Old!” – attracted older adults and their caregivers from nine counties.

The conference concept evolved after a K-State Research and Extension needs assessment survey, said Libby Curry, northwest area family and consumer sciences specialist.

“Prior to the survey, we knew the population in western Kansas was aging, but we didn’t realize that the number of older adults, ages 65 and older had grown to represent 23 percent of the population in the area,” Curry said.

The change in demographics also had piqued the interest of Curry’s colleague, Tranda Watts, a multicounty food, nutrition, health, and safety specialist.

To help residents face the life changes associated with the natural aging process, the K-State Research and Extension staff collaborated with the area agency on aging and other relevant service providers to develop a one-day, regional conference on aging healthfully and adding quality to life.

The conference focuses on older adults and their caregivers and education, which includes gathering facts, identifying resources, and evaluating opportunities, Watts said.

The conference is affordable (\$25, which includes educational materials and a noon meal) and offered in regional locations to make attending convenient for participants and help them hold down travel costs.

“The variety of topics and practical, research-based how-to’s have helped the conference to grow,” Curry said.

Since its introduction four years ago, 225 area residents from 28 counties have attended the educational sessions.

With a mix of general and breakout sessions, 2008 topics included fitness, lifestyle, and estate planning; animal-assisted therapy; legal documents needed to ensure end-of-life choices; and tips for growing older from Waldo McBurney, an active, energetic 106-year-old Kansan, Curry said.

Popular sessions this year also included drumming, a rhythm therapy effective in enhancing short-term memory and mind-body coordination, and improving impaired speech, and tips for nurturing a more positive attitude.

Another session, titled “Who Gets Grandma’s Yellow Pie Plate,” addressed a difficult topic for families, said Kathy Lupfer-Nielsen, agent in the Post Rock Extension District, who presented the session.

“The simplest of possessions – a worn pie plate, for example – can serve as a tangible reminder of a family member,” she said.

Disagreements about how such possessions (termed “untitled property”) are divided can cause hard feelings that linger in families, said Lupfer-Nielsen, who offered tips and suggestions for bringing up the touchy topic and an easy-to-follow form for making wishes known.

Some attendees have returned to learn still more about aging healthfully, Curry said.

Lesa Juenemann, from Thomas County, is an example. Juenemann is a social worker who frequently works with older adults. She was attracted to the conference to earn continuing education credits, but has returned because of the timeliness – and usefulness – of the conference content, she said.

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Tranda Watts, 785-462-6281, twwatts@ksu.edu*

Clarifying Insurance Choices

The K-State Research and Extension office in Sedgwick County hosts a 1-800 call center in collaboration with the Kansas Department on Aging. The SHICK (Senior Health Insurance Counseling for Kansas) program reached 2,512 people through phone calls, public presentations, and one-on-one counseling for Medicare beneficiaries from October 2007 to September 2008. During the 2008 selection period, SHICK volunteers saved beneficiaries an average of \$1,095 per person on their annual drug costs by switching them to a new drug program.

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Resources for Caregivers

A K-State gerontologist received a Big 12 Faculty Fellowship to work with the Texas AgriLife Extension Service to create national, Web-based interactive materials for family caregivers of older adults. The resources will become part of the eXtension initiative, an educational partnership of 74 universities in the United States.

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Giving Tax Prep Assistance

The Asset Building Coalition of Shawnee County provides free tax assistance. With funding and equipment donations from the United Way of Greater Topeka and Security Benefit Group, tax volunteers completed 9,004 federal tax returns filed in 2008, which helped taxpayers receive \$7.174 million in federal refunds and pay more than a \$1 million in tax liabilities. Two of the targeted audiences were the disabled workers at the Kansas Neurological Institute and Head Start parents.

*Cindy Evans, 785-232-0062,
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John and Cindy Epler, with their dog Willy, take a break from fall harvest at their home near Hallowell.



Dan Donnet

Producers Benefit from Local Research

1974 was a banner year for John Epler and Cindy Busset. They graduated from K-State, got married, and purchased their current homestead near Hallowell in Cherokee County.

They went into partnership with John's father. After John's brother, Mark, graduated from K-State, he also joined Pioneer Stock Farm – the family's crops and livestock operation.

The Eplers have a long history with K-State Research and Extension. Cindy's father, Glenn Busset, had a 40-year career with 4-H Youth Development. John and Cindy's son, Mike, is continuing the tradition as an agriculture and natural resources agent in Leavenworth County.

John said he relies on K-State's research-based information to run a profitable operation.

"My dad used the extension service for soil testing and research reports on variety crop testing," he said. "I grew up looking to K-State for advice on farming and ranching."

The Southeast Agricultural Research Center (SEARC), with facilities at Parsons, Mound Valley, and Columbus is a nearby resource for the Eplers.

The SEARC was established in 1950 on a surplus Air Force landing field near Mound Valley to serve a 15-county area – Cherokee, Labette, Montgomery, Chautauqua, Elk, Wilson, Neosho, Crawford, Bourbon, Allen, Woodson, Greenwood, Coffey, Anderson, and Linn counties.

Why that particular area of the state?

The southeastern corner of Kansas has a significantly different climate than the rest of the state, said Mary Knapp, who maintains the K-State Research and Extension Weather Data Library. One major difference is the average rainfall, usually between 40 and 45 inches per year. In 2008, the rainfall topped 60 inches.

In addition to the higher rainfall, southeastern Kansas also has a longer growing season. For example, Independence in Montgomery County has 198 frost-free days, compared to Atwood in northwestern Kansas with 144 frost-free days, said Knapp.

"The longer growing season allows us to double-crop; for example, most of the soybeans are planted after the wheat is harvested," said Lyle Lomas, who has supervised the research center since 1979. "Our climate and soil type are more like the southeastern states than the rest of Kansas."

The SEARC team provides timely information to producers by hosting field days to showcase their research on traditional and alternative crops, forage, soil and water management, soil fertility and tillage, and cattle issues, such as what effect grazing treatment has on feedlot performance.

Lomas and the other four scientists at the center – Ken Kelley, Joe Moyer, Dan Sweeney, and Jim Long – have a long history of serving southeast Kansas. They have a combined total of 137 years at the center.

Epler described the SEARC researchers "as good people doing good work. They are always looking for ways to improve the livelihood of area producers.

"I served two terms on the advisory council for the research center, and this is my third year on the steering committee. "I've served on a lot of boards and councils. Working with Lyle and the other researchers at the center has been one of my more pleasurable community service activities. I tell people that I've learned so much, I should pay them for the education I received."

Lyle Lomas, 620-421-4826, llomas@ksu.edu

Soil Testing Improves Profit

From January 2006 through December 2007, Osage County residents sent more than 1,400 soil samples to K-State for testing. The county agent then makes recommendations after soil tests.

Applying too much or too little fertilizer can reduce profit. If a soil test represents a 10-acre field and recommendations for nitrogen are 10 pounds per acre lower than what the producer would normally apply for a certain yield, and if nitrogen prices are 50 cents per pound, this would mean a savings of more than \$70,000 in fertilizer costs for the soil tests completed over the last two years.

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BMPs Reduce Runoff

- In 2008, 95 farmers in the Little Arkansas River Watershed committed to implementing best management practices (BMPs) for atrazine herbicide. In 2007, 74 farmers participated, and 41 farmers participated in 2006.
- Two integrated agricultural management sites were established to demonstrate and evaluate BMPs for pesticides, sediments, and nutrients.
- In 2006, 18% less atrazine was applied. Atrazine use was reduced 14% for 2007 and 19% for 2008.
- Water-quality monitoring of treated and untreated watersheds found approximately 66% lower atrazine concentrations in treated watersheds in 2006, 40% in 2007, and 65% in 2008.

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Tom and Mary Bonner talk with Diane Burnett (right) outside the Bonners' former home near Hillsdale. The home has been treated for high radon levels.

Dan Doernert

Education Program Boosts Radon Testing

Mary Bonner went to the doctor last year for a recurring backache. Her diagnosis of lung cancer was a staggering shock. The Paola, Kan., resident had always despised smoking – lung cancer’s No. 1 cause.

She wasn’t an isolated case, however, so her oncologist already knew the probable answer – radon.

Radon exposure is the No. 1 cause of lung cancer among nonsmokers and the No. 2 cause overall. An estimated 21,000 Americans die each year because they’ve breathed in too much of it too long.

Radon is an unusual air pollutant because it has a natural source, and it’s radioactive. It mostly results from the decay of uranium-238 in soil and rock. It can seep into mines, caves, and homes, sometimes building to dangerous levels.

People can’t see, smell, or taste radon. Exposure provides no warning symptoms, such as nausea or headache. Humans’ only known reaction is cell damage that can lead to lung cancer.

“The U.S. Environmental Protection Agency says radon causes nearly 100 times more deaths each year than carbon monoxide poisoning. Yet, lots of people still don’t know much about radon – much less take it seriously,” said Diane Burnett, a K-State Research and Extension Miami County agent.

The Kansas Radon Program uses K-State’s statewide network of county and district offices to offer one-on-one information and do-it-yourself radon test kits – at cost. As budget allows, the KRP also solicits mini-grant proposals to help agents build local awareness and promote radon testing.

Burnett said the Bonners learned that the home they’d moved into two years ago was fine. But their previous home – where their daughter, son-in-law, and grandchildren now live – tested well above the EPA danger level.

Tom Bonner, a Paola planning commissioner, became both an inspiration and a supporter, Burnett said. He was a persistent force in propelling friends, coworkers, and mere acquaintances toward K-State’s radon-related programs.

“Because of Diane’s efforts, some people won’t have to deal with cancer,” said Tom Bonner.

Burnett and agents throughout Kansas have received training from Bruce Snead, residential engineer, and coordinator Brian Hanson, who head the Kansas Radon Program. Snead provides the majority of the state and region’s technical training. Hanson coordinates Kansas’ education efforts and works with radon programs in other states. The KRP is funded in part by an EPA grant, under contract with the Kansas Department of Health and Environment.

Snead and Hanson have provided training for more than two-thirds of the radon measurement professionals and more than 80 percent of the radon mitigation professionals, as well as K-State Research and Extension’s staff. They’ve provided no-cost continuing education for hundreds of real estate agents. They’ve assisted state legislative and community efforts and continue to promote real-estate testing and radon-excluding building codes.

“The EPA estimates that one in four Kansas homes has dangerous levels of radon,” Hanson said. “That’s much worse than the national average of one in 15, but better than the averages in Iowa, Missouri, and Nebraska.”

Radon mitigation usually costs about the same as a good-quality washing machine. Typically, it combines sealing house leaks with installing an under-house system of pipes and venting fans.

Bruce Snead, 785-532-6026, bsnead@ksu.edu

Profitable Crops for Kansas

Horticulturists are working to develop a seed system to supply Kansas producers with high-quality sweet potato planting material. Conditions in the Kaw River Valley and Arkansas River Valley (in Kansas) are well suited to both organic and conventional sweet potato production. It is an appealing crop because it is susceptible to very few diseases or pests.

Benefits of High Tunnels

Horticulturists are promoting high tunnels (unheated greenhouses) as essential tools for extending the growing season and protecting high-value fruit and vegetable crops. While most fruit and vegetables come from out of state, high tunnels can provide a protected local production environment. Research suggests that these structures have great potential to help producers meet the growing demand for fresh, local produce.

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Volunteers Get Training

4-H Master Volunteers receive 19 hours of intensive, in-depth training at the state level, then conduct a project for the local 4-H program. Recent projects include in-depth clothing project training for more than 25 members in three rural counties, development of materials and activities to strengthen the woodworking project, training for other volunteers to enhance the 4-H project experience, and improved 4-H club use of constitutions and by-laws. This year’s training class included professionals from Indiana and Texas who have replicated the program and training in their states.

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Check out these Web sites for more information

A growing number of Kansans are turning to the Internet for information. To provide information to Kansans when and how they need it, K-State Research and Extension maintains or links to numerous helpful Web sites. Our main site is www.oznet.ksu.edu. Other useful sites are listed below:

Bioprocessing and Industrial Value-Added Program

<http://www.grains.ksu.edu/bivap>

Links to projects specializing in the development of biomaterials processing technology and using agricultural-based materials.

Engineering Extension

<http://www.engext.ksu.edu>

Answers to energy concerns, such as energy conservation and renewable energy, pollution prevention, and indoor air quality.

Entomology

<http://www.entomology.ksu.edu/Extension>

Links to hot topics, newsletters, crop and household pests, 4-H and youth insect collecting techniques, and insect identification.

Financial Management

www.oznet.ksu.edu/financialmanagement

Helps people build financial security by improving their financial skills and changing their behaviors.

Food Science Institute

<http://foodsci.k-state.edu>

K-State's food science resources in 13 departments and five K-State colleges are combined under the Food Science Institute.

Great Plains Diagnostic Network

<http://www.gpdn.org>

A nine-state consortium that coordinates diagnostics, secure communications, and training for plant disease first detectors.

Horticulture Information Center

<http://www.hfr.ksu.edu/HortInfo>

Includes links to the weekly Horticulture Newsletter, common plant and pest problems, and horticulture-related publications.

International Grains Program

<http://www.ksu.edu/igp>

Lists the upcoming short courses offered to foreign business leaders and government officials on grain storage and handling, milling, marketing, and processing.

Kansas Saves

www.kansassaves.org

Assistance for those who wish to pay down debt; build an emergency fund; or save for a home, an education, or retirement.

Kansas Center for Agricultural Resources and the Environment

<http://www.kcare.ksu.edu>

Links to publications, conferences, and contacts about Kansas environmental issues.

Konza Prairie Biological Station

<http://www.k-state.edu/konza/>

Information about the tallgrass prairie preserve owned by The Nature Conservancy and Kansas State University.

K-State Research and Extension Publications Library

<http://www.oznet.ksu.edu/library/>

Provides access to K-State Research and Extension publications and videos that can be downloaded or ordered.

Mobile Irrigation Lab

<http://www.oznet.ksu.edu/mil/>

Educational programs and technical assistance for Kansas agricultural producers who use irrigation.

North American Institute for Beef Economic Research

www.naiber.org

North America's source for beef industry economic information, analysis, and opinion.

Office of Local Government

www.oznet.ksu.edu/olg

The OLG provides Fiscal Condition and Trend reports and Situation and Trend reports .

Rapid Response Center

<http://www.rrc.ksu.edu/>

Timely information on food science and nutrition, and links to other health-related sites.

Sustainable Agriculture Reference Library

<http://www.kansassustainableag.org/library.htm>

Links to information on more than 300 topics related to sustainable agriculture.

Walk Kansas

<http://www.walkkansas.org>

Learn about the successful eight-week walking program plus tips to stay fit and healthy throughout the year.

Western Kansas Agricultural Research Centers

<http://www.wkarc.org>

Links to research conducted at centers in western Kansas.

Weather Data Library

<http://www.oznet.ksu.edu/wdl/>

Weather-related information, such as precipitation, frost-free dates, drought, and forecasts.

Calendar of Annual Events

K-State Research and Extension offers training and information for producers and other scientists on various topics throughout the year. This list offers a sample of the annual events held on campus and at locations around the state.

Grain Elevator Short Course	Early January	Spring Field Day, Northwest Research-Extension Center (NWREC)	Early June, even years
Four-State Beef Conference	Mid-January	Real-Time Polymerase Chain Reaction Workshop	Late June
Calving Management Schools	January	Swine Classic	First weekend in July
Spotted Microarray Workshop	January	Open House, Olathe Horticulture Center	Late July
Ag Profitability Conference	Jan.–Feb., six locations across Kansas	Risk and Profit Conference	August
State 4-H Horse Panorama	February	Open House, John Pair Horticulture Center	Mid-August
Swine Profitability Conference	First Tuesday in February	K-State Beef Conference	Early August
KOMA Beef Conference	Mid-February	Turfgrass Field Day	Early August
By-Products Nutrition Conference	Mid-February	Dryland Ag Day, SWREC-T	Mid-August, odd years
Cattlemen's Day	First Friday in March	Limited Irrigation Day, SWREC-T	Mid-August, even years
FFA Competition	March	KSU/KLA Ranch Management Field Days	Mid-August
Sheep Day	Second Saturday in March	4-H Livestock, Horticulture, and Meats Judging Contests	August
Youth Sheep Day	Second Saturday in March	Feedyard Negotiation Skills Conference	August
Youth Meat Goat Day	Second Saturday in March (even years)	North Central Experiment Field Day, Scandia	August
Junior Swine Producer Day	Third Saturday in March (odd years)	Kansas River Valley Field Day, Topeka/Rossville	August
Grain Purchasing Short Course	Late March	East Central Field Day, Ottawa	August
Wildlife Habitat Contest	Early April	Harvey County Field Day, Hesston	August
Roundup, Agricultural Research Center-Hays (ARC-H)	Mid-April	South Central Field Day, Hutchinson	August
Conference on Applied Statistics in Agriculture	Late April	North Central Experiment Field Day, Belleville	August
Beef Cattle/Forage Crops Field Day, Southeast Agricultural Research Center (SEARC)	Early May	Fall Field Day, NWREC	Late August, odd years
Iris Day	Mid-May	Horticulture Night, NWREC	Late August
Grain Elevator Managers Short Course	Mid-May	Fall Field Day, ARC-H	Late August
South Central Field Day, Hutchinson	May	Fall Field Day, SWREC-GC	Late August
Harvey County Field Day, Hesston	May	Horticulture Night, ARC-H	Late August
Wheat Day ARC-H	Late May	Kansas State Fair 4-H Judging and Events	Early September
Wheat Tour, Southwest Research-Extension Center, Garden City (SWREC-GC)	Late May	KSU Beef Stocker Conference	Mid-September
Wheat Tour, SEARC	Late May	Grain Production Field Day, SEARC	Late September
Discovery Days	Late May	Pesticide Applicator Recertification Program	October
4-H Camps (14)	June	Ag Lenders Conference	October, various locations across Kansas
Citizenship Washington Focus	June	Tax Institutes	Oct.–Dec., various locations across Kansas
North Central Experiment Field Day, Belleville	Early June	Dairy Day	Mid-November
International Fusarium Workshop	June, odd years	Insurance workshops	Nov.–Feb., various locations across Kansas
International Workshop on Rapid Methods and Automation in Microbiology	June	MAST: Management Analysis and Strategic Thinking	Nov.–Feb.
Beef Empire Days	Early June	Swine Day	Third Thursday in November
Spring Field Day, Southwest Research-Extension Center, Tribune (SWREC-T)	Early June	Junior Beef Producer Day	Mid-December (even years)

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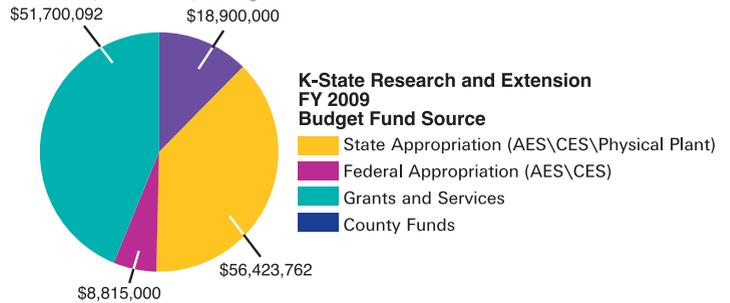
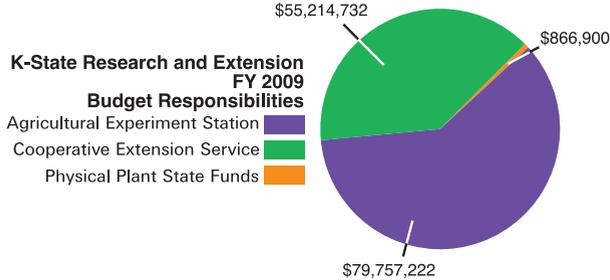
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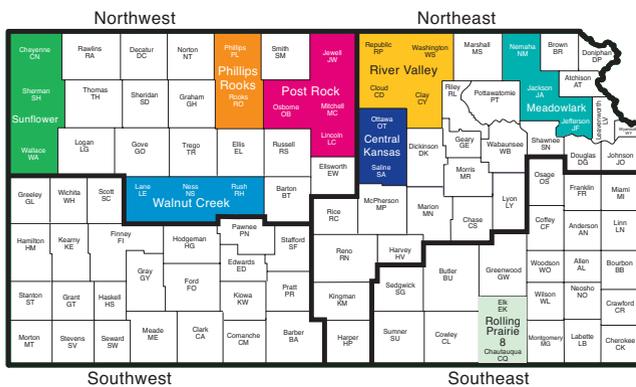
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K-State Research and Extension Budget Data for Fiscal Year 2009

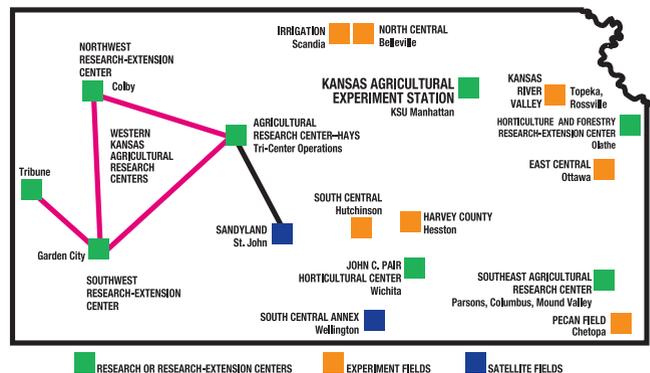
Source: Doug Elcock, Business/Fiscal Officer, 785-532-7139, delcock@ksu.edu



Statewide Offices



Research Facilities



Facilities Across the State: 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. K-State Research and Extension supports faculty in 23 academic departments across five K-State colleges. Research conducted on campus and at off-campus facilities is shared with Kansas citizens through meetings, field days, publications, newsletters, Web sites, news releases, radio, and television.

Districting – Finding new ways to work together to serve Kansans: Since 1991, any two or more Kansas counties can legally work together to form an extension district. In an effort to increase efficiency and effectiveness, 23 counties have formed eight districts.

- Post Rock District #1 (1994) – Mitchell and Lincoln counties; Jewell and Osborne counties joined in 2005.
- Walnut Creek District #2 (1997) – Lane, Ness, and Rush counties.
- Central Kansas District #3 (2004) – Saline and Ottawa counties.
- River Valley District #4 (2005) – Clay, Cloud, Republic, and Washington counties.
- Phillips-Rooks District #5 (2005) – Phillips and Rooks counties.
- Sunflower District #6 (2005) – Sherman and Wallace counties; Cheyenne County joined in 2006.
- Meadowlark District #7 (2006) – Jackson, Jefferson, and Nemaha counties.
- Rolling Prairie District #8 (2008) – Chautauqua and Elk counties.

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