

Beneficial Partnerships

K-Staters conduct projects throughout Africa



Africa grows many of the same crops as Kansas, including sorghum and wheat. In fact, sorghum germplasm came from Africa, and now Kansas is the No. 1 sorghum producer in the United States.

K-State has expertise in grain storage issues, wheat and grain sorghum milling, and growing crops under dryland and irrigated conditions — vital information for African producers. Faculty secure grant funding to cover travel and other expenses associated with these partnerships. As an added bonus, they bring international experience into the classroom to share with their students. International collaborations help develop networks to share research, establish new markets, build goodwill, draw in graduate students, and establish internships and job opportunities.

Benefits for Students

Faculty and students realize the importance of international connections. The College of Agriculture offers multiple study-abroad tours to give students firsthand international experience.

Professor Ted Cable, who specializes in natural and cultural heritage interpretation, ecotourism, and park and natural resource management, led K-State's first study tour to Africa in 1998.

"I saw how the experience changed the students' lives," Cable said. "Seeing the poverty of Africa made them appreciate what they have. Some developed an emotional connection and became involved with stewardship and philanthropy."

Cable has taught in Mali, where he had a Fulbright Scholarship to help

Common goals and expertise create good partnerships. K-State faculty share with and learn from their counterparts around the globe, including those in African countries.

train tour guides and establish tourism. He also worked with *National Geographic* and the U.S. Forest Service to study Mali's last herd of nomadic elephants to learn how this herd might be used to bring ecotourism money into the impoverished region.

He recently went to Kenya to observe how they manage their national parks and how increased tourism might be able to improve the quality of life for rural Africans.

For students who can't study abroad, the next best thing is for faculty to share their international research, photos, and personal experiences. Cable — like many other faculty — uses his international experiences to supplement traditional teaching materials.

Job Training Opportunities

Approximately 8 percent of the adult population in Kenya is HIV-positive, and 1.2 million children in Kenya have lost one or both parents to AIDS-related diseases. K-State has established a working partnership with the Jomo Kenyatta University of Agriculture and Technology; University of Nairobi; United States International University; and Wangari Maathai, 2004 Nobel Peace Prize winner, to educate AIDS orphans.

Shannon Washburn, associate professor of agricultural education, Ted Cable, and faculty from K-State's Leadership Studies program went to the Children and Youth Empowerment Centre near Nairobi, Kenya, to help with the pilot program.

"The goal is to get these kids off the street," Washburn said. "Educating these children about agriculture gives them employable skills, which will strengthen the national economy. Kenya is emerging as a leader in an area that lacks stability. Our involvement with them is good for them and opens future trade opportunities for us."

New Markets for Sorghum

The K-State College of Agriculture formally established international programs in 1958. It has maintained programs through the International Sorghum and Millet Collaborative Research Support Program

(INTSORMIL CRSP) since it was initiated on July 1, 1979, by the U.S. Agency for International Development, under the authority of the 1975 Title XII amendment to the Foreign Assistance Act of 1961.

"Kansas State University was one of the original U.S. land-grant universities to be included in the program," said John Yohe, INTSORMIL's program director, University of Nebraska-Lincoln. "Currently, we have 15 projects with six U.S. universities and USDA/ARS. Three of our 15 projects with U.S. universities are with Kansas State University.

"K-State has been a key collaborating institution in the INTSORMIL program for the past 32 years."

Agronomists P.V. Vara Prasad, Scott Staggenborg, and Dave Mengel are part of an INTSORMIL-funded project to improve decru sorghum production

regions in Mali and parts of Chad and Niger.

"Their project is a key component of the USAID/Mali Associate Award to INTSORMIL, which focuses on decru sorghum in northern Mali," stated Yohe. "Decru sorghum is planted on receding waters in the Niger water basin after the rainy season. Their project also collaborates in northern Ghana."

"Many of the techniques we employ in our dryland cropping systems in Kansas and the Great Plains region have implications and serve as a background for our collaborations in West Africa," Staggenborg said.

"They are very interested in increasing soil quality and soil organic matter. K-State has two sorghum breeders and support from entomologists and plant pathologists to identify and manage pests when issues arise in West Africa."



Review of a progressive poultry farm in West Africa.

Courtesy of Joe Hancock



At left, recording poultry weights in West Africa.

Help for the Poultry Industry

Joe Hancock, K-State animal scientist, also has grant funding to identify scientists in Senegal, Mali, Burkina Faso, Niger, and Nigeria who can test new materials and concepts, and to promote sorghum and millet to feed poultry. He also trains students and professionals to use sorghum and millet in the poultry industry.

“We live in a global society, and awareness of business opportunities outside the borders of Kansas is imperative,” Hancock said.

Hancock hopes to generate new poultry production knowledge in West Africa, provide technical service to poultry farmers, increase demand to feed the poultry industry, and ensure the evolution of sorghum and millet from a subsistence crop to one that generates disposable household income in rural West Africa.

“Research activities associated with my grant require financial support for graduate and undergraduate students from Costa Rica, Panama, Niger, Missouri, Georgia, Nebraska, Arkansas, and yes ... Kansas,” Hancock said. “Grant funds also cover equipment and other expenses, which helps control the

cost of education at K-State.”

“Hancock’s work has demonstrated to these sorghum-producing countries that modern tannin-free sorghum varieties are excellent feed grain sources in poultry feed,” added Yohe.

Know Your Customer

Agricultural economist Tim Dalton was hired four years ago to conduct international research and teach The Global Agricultural Economy, Hunger

and Poverty course. He teaches during the fall semester and spends much of spring semester and summer traveling.

“Our students are interested in international topics and are world savvy,” Dalton commented. “We encourage them to think strategically about marketing agricultural products and to learn about food preferences in other countries. I consider it a basic business premise — know your customer.”

Dalton has four projects in Africa, including water-efficient maize research funded by the Bill & Melinda Gates Foundation. The project involves Kenya, Uganda, Tanzania, South Africa, and Mozambique, where farmers face a decision Kansas farmers are familiar with — the willingness to pay more for drought-tolerant varieties to get higher yields.

His research found that 60 percent of African farmers he surveyed were willing to pay more for drought-tolerant varieties developed in the United States.

“Dalton’s impact assessment work for us has been very effective,” Yohe stated.

View a video about this project at <http://ageconomics.ksu.edu/p.aspx?tabid=598>



Inspecting a handful of poultry feed.



Children in Mozambique eat fortified porridge.

Courtesy of Joann Gruber

Valuable Collaborations

Since 1988, John Leslie, university distinguished professor and plant pathology department head, has made annual trips to Africa for research. The longest standing collaboration is with the Programme on Mycotoxins and Experimental Carcinogenesis (PROMEC unit) of the Medical Research Council in Tygerberg,

South Africa. The research focuses on identifying the *Fusarium* fungi on sorghum and millets and determining if fungi produce mycotoxins that are harmful to domesticated animals or humans.

“I collaborate with local scientists — who work for their national agricultural research system equivalent to our USDA — on INTSORMIL projects in Mali, Burkina Faso, Ghana, Zambia,

Kenya, and Uganda,” Leslie said. “These efforts resulted in a unique collection of more than 20,000 isolates of *Fusarium*. The support for this research is more than \$1.5 million.”

K-State recently hosted a *Fusarium* Workshop that drew scientists from around the world. The location for the annual workshop alternates between Manhattan and another country.

Leslie has a long-term project with the Plant Pathology Institute of the Agricultural Research Center in Giza, Egypt, focused on *Fusarium* diseases of maize and sorghum, which are both similar to and different from those seen in the United States, and a disease of maize, late wilt, in the Middle East, primarily Egypt. He also works with colleagues in Nigeria, Cameroon, Ghana, and Burkina Faso through the International Institute of Tropical Agriculture.

“These projects relate closely to my work at K-State,” stated Leslie. “In many cases, the diseases and fungi we have are a subset of what is found in



John Leslie (standing at right) with colleagues from around the world at the 11th annual *Fusarium* Workshop in Manhattan.



Kenyan children take turns looking through Ted Cable's binoculars.

colleagues in the Czech Republic, Argentina, Hungary, and Syria to send samples to South Africa for the aphid genome research project, which began in spring 2011.

Smith, who also has aphid research collaborators in Egypt and Kenya, will teach and conduct research on Russian wheat aphid genomics at the University of Stellenbosch in South Africa in September 2011. He also has research grants through the Kansas Wheat Commission and USDA, with the bulk of the research funded through South Africa.

Promote Kansas and Its Products

Whenever agricultural economist Vincent Amanor-Boadu travels, he sees himself as an ambassador of Kansas agriculture and the agri-food sector.

"I look for opportunities to sell and create linkages for our producers to secure markets," Amanor-Boadu said. "As I travel to Zambia and other countries, I'm advertising and talking up what we do here in Kansas in areas that would otherwise be closed to Kansas. As I interact with the agribusiness sector in Africa, I continuously search for opportunities for Kansas wheat, beef, soybean, and other agriculture products. We have three Zambians in our Masters in Agribusiness program and six undergraduates who are considering K-State graduate education opportunities."

The short-term goals of his project, funded by the U.S. Agency for International Development, include understanding how smallholder farmers in Africa do business — and why they do it the way they do — and identifying opportunities for increasing efficiencies and effectiveness.

"The challenges confronting these African smallholder producers are similar to challenges confronting our small farmers in urban Kansas — in how they relate to their upstream and downstream supply chain partners and create value for themselves and the rest of the chain," commented the

Africa. The pathogens present in the United States appear to be a subset of those found in Africa, as the pathogens were probably imported along with the crop hundreds of years ago. The African pathogen populations often are larger, more diverse, and more complete than their counterparts here."

Combating the Russian Wheat Aphid

Wheat producers in northwest Kansas are familiar with the Russian wheat aphid and the damage it can

cause. In South Africa, the damage is more intense. Entomologist Mike Smith has been collaborating with researchers in South Africa to find genes in wheat that could kill the insect or disrupt its reproductive process. Now they are turning their attention to the genome of the aphid itself and hope to find weak links in the aphid's genes that will help wheat resistance genes work better.

He contributed Russian wheat aphid DNA from Kansas and contacted

economist. “We are collecting data in Zambia that will be used by our students. We plan to send a master’s student to help collect field data, exposing him or her to the challenges of working in low-resource environments.”

Soybeans for Dinner

In 2000, the American Soybean Association created the World Initiative for Soy in Human Health (WISHH) to bring the benefits of U.S. soy protein to the more than 800 million people worldwide, including 200 million children, who are undernourished. Soy is well suited to provide the protein, calories, and other nutritional needs for this population.

Through WISHH-sponsored trips to the South African region and funding from the National Sorghum Checkoff Program and Kansas Grain Sorghum Commission, grain scientist Sajid Alavi has developed extensive contacts with

nonprofit organizations involved in food aid. He researches new fortified foods such as sorghum/soybean porridge mixes and precooked bean analog products.

Adding hot water to these foods produces a nutritious meal that can help combat micronutrient and caloric deficiencies and conditions such as anemia and stunted growth.

Alavi supervises K-State’s extrusion lab and has worked with Sabetha high-school students and industry partners to produce and ship fortified products to Mozambique and Haiti through the Grains for Hope project.

Alavi explained that K-State also is involved in trilateral efforts, where K-State partners with a more-developed country in closer proximity, such as South Africa or India, to help less-developed countries like Mozambique. Part of this effort is funded by the

USDA International Science and Education program.

“These efforts have multiple benefits,” Alavi said. “We create good will toward the United States, promote physical and food security, and create new uses for U.S. grains and equipment.”

And countries that are food secure — able to feed their populations — are less prone to conflict, Alavi added.

Nina Lilja coordinates international programs in the College of Agriculture and promotes lunch-time presentations for faculty to share their projects. She also created a database that identifies faculty in the college and K-State Research and Extension who have international ties. To access the database, go to www.ag.ksu.edu/INT/.

—Gloria Holcombe

Villagers in Kathonzwani, Kenya, listen intently during a presentation. The patterns hanging from the ceiling are used to make clothing.



Courtesy of Timothy Dillon