

# International Programs in Agriculture



IPIA

Annual Highlights  
2007-2008

## Message from the Director

International agriculture is back in the news. Food prices have skyrocketed around the world. Some countries are banning food exports to ensure supplies for domestic use. The practical and ethical issues of the food versus fuel debate are in newspapers and on radio and TV talk shows. Purdue College of Agriculture (COA) faculty, staff, and students are on the front lines helping the public understand the situation, providing information to guide policy decisions, and conducting research to improve productivity throughout the farm product value chain. The International Programs in Agriculture (IPIA) office coordinates global Purdue Agriculture activities.

For example, in 2007–08:

- With the help of the Bill & Melinda Gates Foundation and partners in Africa, Purdue COA successfully launched dissemination of non-chemical grain storage technology in 200 villages in Niger and Burkina Faso.
- With funding from the U.S. Agency for International Development (USAID), 13 young faculty members

from agricultural universities in Afghanistan came to Purdue in June 2008 for graduate education.

- In spite of post-election violence in Kenya, Purdue COA and Veterinary Medicine students worked with Kenyan colleagues to develop better ways to manage and market livestock. The work in Kenya is supported by the Globe Foundation.

One of three goals in the Purdue University 2008–2014 strategic plan ([http://www.purdue.edu/strategic\\_plan/](http://www.purdue.edu/strategic_plan/)) is “Meeting global challenges by enhancing Purdue’s presence and impact in addressing grand challenges of humanity.” The College of Agriculture leads the way in achieving that goal as IPIA helps faculty, students, and staff find international opportunities and assists in management of multidisciplinary international activities.

*Highlights* is a summary of Purdue Agriculture international activities for the 2007–2008 fiscal year. For more information, please contact IPIA or the department in which the activity originated.

*Jess Lowenberg-DeBoer, Director*

## News from IPIA

Change is the only constant, and IPIA has seen change this year. We’ve added Patricia (Trish) Sipes as IPIA’s secretary/receptionist. Trish replaced Corey Kujawa, who became assistant to the director, a position formerly held by Lonni Kucik. Lonni took a part-time position within IPIA, thanks to the arrival of her adopted daughter, and is now the Advancing Afghan Agriculture Alliance (A-4) program administrator. Other additions included Joern and Ann Seigies, who are chief of party and university development specialist, respectively, for the A-4 project, and are located in Kabul, Afghanistan.

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OFFICE CONTACTS

## Study Abroad

In 2007–08, 25 percent of the College of Agriculture’s undergraduates participated in study abroad programs prior to graduation—a higher percentage than any other college or school at Purdue. Students traveled to all parts of the world and studied on every continent except Antarctica. Courses offered for the first time included:

- “China: Globalization, Energy and the Environment” through the Departments of Agricultural and Biological Engineering (ABE), John Lumkes, and Botany and Plant Pathology (BTNY), Steven Hallett;
- “Science Communication: Focusing on English Food and Agriculture,” England, through Youth Development and Agriculture Education (YDAE), Mark Tucker and Natalie Federer; and,
- “An Overview of the Horse Industry and Extension of Poland,” through YDAE, Colleen Brady, in cooperation with Michigan State University.

Thirty-one scholarships and grants totaling over \$15,000 were awarded through IPIA to agriculture students who participated in long-term programs (eight weeks or longer) in 2007–08.

Thanks to the International Science and Education (ISE) grant received from the U.S. Department of Agriculture, a number of

COA faculty traveled to our partner institutions to become more familiar with and to better promote them to students. With partial funding from the grant, John S. Yaninek (ENTM), John Lumkes (ABE), Steven Hallett (BTNY), and Linda Vallade (IPIA) visited the China Agricultural University. Cale Bigelow (AGRY), visited the Swedish University of Agricultural Sciences, Uppsala, Sweden, the University College Dublin, Ireland, and the University of Wales, Aberystwyth, Wales. Mark Russell (ANSC), visited Leeds Metropolitan University, Leeds, England, the University College Dublin, Ireland, and the University of Wales, Aberystwyth, Wales. Kent Schuette (HLA) visited Leeds Metropolitan University, Leeds, England, and the University of Edinburgh, Scotland.

Also as part of this ISE initiative, all incoming freshman were given a questionnaire to determine their international background, their goals for study abroad while at Purdue, and reasons they may not achieve their goals. Over 60 percent indicated they planned to participate in study abroad programs during their academic careers.

In addition to Purdue students travelling abroad, IPIA hosted 26 students from our partner universities. Students studying at Purdue came from Sweden, Denmark, Austria, The Netherlands, Australia, and Japan.

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## Extension

In October 2007, Gonzalee Martin, Agriculture and Natural Resources educator in Allen County, participated in the USAID Farmer-to-Farmer Agribusiness Development Program to South Africa. During his 14-day stay, Martin conducted conflict and leadership trainings for local farmer groups. In addition, Martin also worked with these groups on business plans for their operations.

In the fall of 2007, three Latino Community Learning Centers (created in 2005 under Purdue International Extension leadership) received funding for continued and expanded operations under an Office of Community and Rural Affairs (OCRA) grant. Led by Literacy Empowering and Advocating Project (LEAP) of Noble County, these centers will work with Purdue to incorporate Spanish-language entrepreneurship and small-business training, Key Train, and ServSafe programming into their current course offerings. In addition, LEAP staff are establishing the Purdue Midwest Regional Network for centers throughout the

Midwest and will be hosting a regional portal for accessibility to the Plaza Comunitaria educational curriculum by these centers.

Under a grant from the USDA, IPIA hosted Oswald Badresingh from the College of Agriculture, Sciences and Education (CASE) in Port Antonio, Jamaica from November 27-30, 2008. Badresingh, the Director of International Programmes at CASE, shared his background as farm manager, extension officer, and lecturer as he highlighted both the present and future of Jamaican agriculture. During his time at Purdue, Badresingh visited the Center for Food and Agricultural Business, the Beck Agricultural Center, and the operations of two local producers, one of which grows tomatoes for processing by Indiana agribusiness giant Red Gold. Badresingh expressed enthusiasm at the opportunity to establish valuable relationships with Purdue faculty and staff, particularly in aquaculture and extension, which he sees as potential points of future collaboration between Purdue and CASE.

In June 2008, the Gardens of France program (previously England and Its Gardens), led by Mike Dana and Rosie Lerner of the Department of Horticulture and Landscape Architecture (HLA), took nearly 30 Purdue Extension Master Gardeners and horticulture enthusiasts on an 11-day program studying garden design in some of the most famous and intricate gardens in France. Stops included Versailles, the Rosarie de l'Hay du Val de Marne, the International Festival of Gardens at Chateau Chaumont sur Loire, and Monet's Garden at Giverny, among numerous others.

May 2008 marked the first year of the Italy for Wine Professionals program, organized by Christian Butzke and Jill Blume of the Department of Food Sciences (FS) and Bruce Bordelon (HLA). The program was developed as an opportunity for wine professionals to expand their knowledge base in viticulture and oenology in the world's largest wine-producing country, Italy. Butzke and Bordelon led 15 members of Indiana's wine industry on a nine-day excursion to various wine production and equipment manufacturing facilities, with visits tailored to help address the needs faced by Indiana's wine industry.

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## Interdisciplinary International Efforts

### **PURDUE IMPROVED COWPEA STORAGE (PICS)**

In FY2008 the (PICS) project trained farmers in 200 villages in Niger and Burkina Faso to store cowpeas in triple-layer plastic bags. In those villages, 1,500 farmers participated in on-farm testing. Each farmer stored one 50 kg bag of cowpeas in a PICS bag. Cowpeas in 100 percent of those bags were in perfect condition when bags were opened in May and June after four to six months of storage.

Joan Fulton, PICS Director, traveled extensively in Burkina Faso and Niger to help train the technicians doing village demonstrations and to participate in the "open-the-bag" demonstrations with Purdue partners: the National Institute of Agricultural and Environmental Research (INERA) of Burkina Faso, the National Agricultural Research Institute of Niger (INRAN), and World Vision in Niger. Project monitoring showed farmers in participating villages report that PICS bags are simple to use, effective, and affordable. Their only request was that in 2008, PICS bags be made available in the 100 kg size, which is standard for cowpea trade in West Africa. The project is working with business consultants to respond to private sector interest in manufacturing and distributing the triple-layer plastic bags.

Prototypes for improved PICS bags were tested by the Purdue on-campus team led by Larry Murdock (ENTM) and Lisa Mauer (FS) and also at the village level by partners in both countries. Use of new, less oxygen-permeable plastics is one of the innovations being tested.

For FY2009, the team plans to extend PICS demonstrations to 3,000 villages in Burkina Faso and 5,000 villages in Niger, and, in partnership with the International Institute for Tropical Agriculture (IITA) in Nigeria, to have a pilot effort covering 100 villages in Northern Nigeria. This is 15 times as many villages as in 2008.

### **RESEARCH TO SUPPORT LINKING LIVESTOCK MARKETS TO WILDLIFE CONSERVATION**

Katherine Baldwin and Vanessa DeVeau, two graduate students in agricultural economics working with Maria Marshall and Ken Foster, respectively, spent six months collecting data about household income sources and livestock markets in pastoralist communities in north central Kenya. Foster and Marshall also travelled to Kenya to interact with partners, supervise data collection, and evaluate the progress of the project. The project is funded by the Globe Foundation and includes Purdue University, Egerton University, the National Rangelands Trust, and LEWA Wildlife Conservancy. The goal of the project is to improve the well-being of pastoralist communities via diversification of income sources and improvements in livestock productivity and marketing logistics. Both students presented papers based on their research at the Annual Meeting of the American Agricultural Economics Association in July 2008.

### **ADVANCING AFGHAN AGRICULTURE ALLIANCE (A-4)**

Thirteen junior Afghan faculty arrived at Purdue in June as part of the Purdue/USAID Afghan Merit Scholars (AMS) Program. The 13 Afghans, five in agricultural economics, six in agronomy, and two in English, are enrolled in undergraduate classes preparing for application to MS programs. When the AMS Fellows complete their MS degree studies, they will return to their respective universities to teach and help develop academic programs.

Purdue staff working at Kabul University on the USAID-funded A-4 project are redeveloping the Faculty of Agriculture farm facility at Kabul University. The three-acre farm, being developed with assistance from 23 student groups, provides Afghan agriculture students with practical experience in a variety of agriculture production enterprises including horticulture, cereals, and bees. The farm also provides experience with both new and traditional

Advancing Afghan Agriculture Alliance Continued

technologies. Continued farm development plans include livestock production and facilities for fruit and vegetable sorting, grading, and packaging.

Kabul University professors Ghulam Rasoul Samadi and Mohammad Hamed Osman Khil studied at Purdue University under the USDA Faculty Exchange program. They worked with Purdue counterparts in entomology and horticulture to learn new teaching methods and to adapt material used in Purdue undergraduate courses for application in Afghanistan. They are also learning how Purdue Agriculture teaching programs are linked to the broader agricultural economy.

### AQUACULTURE CRSP

The Aquaculture Collaborative Research Support Project (CRSP), now known as Aquaculture & Fisheries CRSP (AquaFish CRSP), was awarded under the new USAID Associates Cooperative Agreement. Kwamena Quagraine (AGEC/FNR) serves as the Lead Coordinator for AquaFish CRSP's Development Theme Advisory Panel (DTAP) on Income Generation for Small-Scale Fishers and Farmers. Quagraine, Jennifer Dennis (AGEC/HORT) and Jeanne Coulibaly (AGEC PhD student) are involved in a study of various marketing platforms for developing aquaculture in Kenya and Ghana. The overall goal of the study is to provide strategies for developing the emerging small-scale commercial aquaculture sectors in Ghana and Kenya including linkage of small-scale commercial farmers into the marketing chain of established commercial aquaculture enterprises, capturing fisheries and seafood markets. Quagraine is also involved in a study in Kenya that examines how small-scale catfish fingerlings can be marketed as bait in the Lake Victoria region for commercial fisheries in Western Kenya. This project is focused on helping small-scale fish farmers gain increased access to the commercial fisheries business sector. Preliminary findings indicate major challenges for commercial aquaculture baitfish production in Kenya due to on-farm predation, lack of formulated feed, absence of quality fingerlings, and competition from wild-capture baitfish that results in unpredictable baitfish prices.

Other aspects of the AquaFish CRSP project coordinated by Quagraine involve a Virginia Polytechnic Institute & State University study in Ghana that focuses on characterizing pond effluents and biological and physiochemical assessment of receiving waters; and a University of Arkansas at Pine Bluff study in Tanzania that examines local plant source fish feed, and verifies of tilapia-catfish predation on-farm.

### INTEGRATED PEST MANAGEMENT CRSP

Ricky Foster, (ENTM), completed a 10 year effort in the IPM CRSP project in Mali, with a lesser effort in Burkina Faso, Niger, Benin, Togo, Ghana, and Senegal. He was a collaborator in the IPM CRSP

West African Consortium of IPM Excellence. The focus of his work has been management of the whitefly-vectored virus complex that has devastated the tomato industry in West Africa. Cooperators in each country are conducting variety trials using tomato germplasm from the University of California, Heinz, various American and European seed producers, and from The World Vegetable Center (AVRDC). The Gemini viruses responsible for the diseases have been characterized as genetically unique from previously identified viruses. The project helps farmers manage the disease by a combination of implementing a virus host-free period, using resistant varieties, timing planting, and limiting use of insecticides for control of the vectors.

In addition to IPM CRSP funds, West Africa research is supported by USAID Agricultural Biotechnology Support Program II (ABSPII). This project came to fruition in 2008 when Foster's student, Moussa Noussourou, earned his PhD with highest honors from the University of Bamako. Farmers in Mali have adopted the use of a host-free period and are planting resistant varieties. They report major increases in tomato supplies resulting in large increases in income for these small farmers.

Steve Weller, Department of Horticulture and Landscape Architecture (HLA), continues his involvement in the CRSP program titled *IPM in Latin America and the Caribbean: Crops for Broad-Based Growth and Perennial Production for Fragile Ecosystems*. Activities include collaborative research with Honduran scientists from Honduran Foundation for Agriculture Research (FHIA) and Zamorano School of Tropical Agriculture on horticulture crops pest management. From January until April, 2008, Weller hosted two Zamorano undergraduate interns who attended classes and conducted research on integrated weed management. Weller also participated the 2008 annual IPM CRSP meeting in Manila, Philippines from May 19-22, 2008.

### PEANUT CRSP

Over the past year, Rick Mattes, Department of Foods and Nutrition, has published four papers:

- "Peanut digestion and energy balance";
- "Effect of peanut oil consumption on energy balance";
- "Regular peanut consumption improves plasma lipid levels in healthy Ghanaians"; and
- "The energetic of nut consumption."

These papers provide evidence that peanuts may be incorporated into the diet without posing a threat for weight gain. Part of the mechanism for this finding entails a lower than expected efficiency of absorption of the energy from peanuts. At the same time, the inclusion of peanuts improves lipid profiles, thereby reducing cardiovascular disease risk.



New work conducted in the United States, Ghana, and Brazil explored the effects of ingestion of peanuts that are raw, roasted and unsalted peanuts, roasted and salted peanuts, honey roasted peanuts, and peanut butter on lipid profiles and appetite. The U.S. researchers also explored the role of mastication on lipid profiles and appetite. Data analyses are currently underway. Preliminary findings suggest the inclusion of peanuts had no effect on body weight, as noted previously. Further, no differential responses were observed between the different forms of peanuts on body weight or lipid profiles.

### INTSORMIL CRSP

John Sanders, Principal Investigator on the International Sorghum/Millet and Other Grains CRSP Program (INTSORMIL) continued to implement the INTSORMIL Production-Marketing Project in Senegal, Mali, Burkina Faso, and Niger in West Africa. This past year, he and Ouendeba Botorou (Purdue graduate) introduced new technologies on 1,170 hectares of land with about 1,170 farmers in Niger, Senegal, and Mali. The new technologies included new cultivars, moderate levels of inorganic fertilizers, water harvesting techniques, and other agronomic improvements. They worked with the national research programs and NGOs in the delivery of the technologies and in monitoring the farmers. The project provides tarps to get the threshing off the ground, thereby providing cleaner grain for processors. The clean grain is first delivered to the village farmers' association, which makes a profit from the cleaner grain and the higher prices from selling later in the year. This successful project employs the following marketing strategies:

- 1) avoid the post-harvest price collapse;
- 2) produce clean grain and get a price premium for it;
- 3) purchase inputs and sell the grain through the farmers' association;
- 4) provide technical services to food processors and intensive poultry producers, and;
- 5) convince national policy makers to reduce their intervention in bad weather years when cereal prices increase.

This project has been most successful in achieving the first four objectives and is making positive impact in the lives of the farm families involved. Sanders looks forward to expanding the work and contributing to the well-being of many more small farm families in West Africa.

Bruce Hamaker, professor in Food Science (FS), and principal investigator for the new Mali AID Mission project, "Transfer of Sorghum, Millet Production, Processing and Marketing Technologies in Mali" collaborated with A. N'Doye, Director of

the Institut de Technologie Alimentaire in Dakar where work towards use of a sorghum high digestibility/high lysine variant with high incorporation into wheat breads is underway, with M. Moussa at INRAN in Niger on development of high quality instant sorghum and millet thin and thick porridges. The latter was part of Moussa's M.S. thesis research that he completed in 2007. The processing portion of the Mali project was recently launched with a workshop in Mopti, Mali involving partner entrepreneurs who are working with project technologists to improve and market competitive sorghum and millet-based products in the region. Hamaker traveled to West Africa two times during the period for project planning and implementation.

Mitch Tuinstra (AGRY) participated in the INTSORMIL West Africa Regional Program Workshop in Bamako, Mali. Tuinstra is also the interdisciplinary research project coordinator to develop improved sorghum varieties with adaptation in West Africa. Field research activities are being conducted in Mali, Burkina Faso, and Niger.

Gebisa Ejeta (AGRY) organized a workshop in Nairobi to develop plans for regional engagement under the new INTSORMIL grant. While in Nairobi, support was sought from both the Regional Office as well as the Country Mission of USAID. Concept notes will be submitted to a couple of the Missions, early in 2009.

Through the Consultative Group for International Agricultural Research (CGIAR) Science Council (SC), Ejeta participated in the CGIAR Change Management process which has been underway through the year. The SC is currently developing an initiative for mobilizing closer linkages between advanced research institutes (ARIs) in the developed world and CGIAR centers for greater synergy and impact.

### BASIS CRSP

In 2008, Jerry Shively (AGEC) received a four-year grant under the Assets and Market Access (AMA) BASIS CRSP for the project Natural Capital and Poverty Reduction. The project will be undertaken in collaboration with colleagues at Bunda College (University of Malawi), Makerere University (Uganda) and the Center for International Forestry Research. Researchers will examine the role of natural resources in the livelihood strategies of smallholders. Students from the host countries will conduct fieldwork in Malawi and Uganda and MS degree training in Agricultural Economics at Purdue.

### SANREM CRSP

Jerry Shively (AGEC) continues to serve as the chairperson of the SANREM CRSP Technical Committee. His research focuses on several aspects of sustainable agriculture and natural resource management in low-income settings of South and Southeast Asia, primarily India, Indonesia, the Philippines, and Vietnam.

# News from Departments



## Agricultural Economics (AGEC)

The Center for Food and Agricultural Business (CAB), led by Jane Anderson, assisted as faculty and staff traveled internationally to conduct research and deliver management development programming, and also hosted numerous international delegations and visitors on campus. This international experience brought a richer perspective and is an important resource for international illustrations and examples that enhance all of the center's programming. Center teams have worked in China, Russia, Poland, Lithuania, Hungary, Kenya, Senegal, Mexico, Honduras, Costa Rica, and Portugal and have hosted delegations and visitors from Brazil, Argentina, Venezuela, India, Thailand, Malaysia, Egypt, France, and The Netherlands. The center nurtures these existing long-term international relationships while seeking to expand and grow new beneficial international relationships.

In May 2008, a Center team traveled to Portugal to launch the first phase of a two-phase project entitled "Strategic AgriMarketing... a Program for Food and Agribusiness Managers of Portugal." The first phase is conducting field research within the food industry in Portugal which will result in case-study development between the Center and institutions in Portugal. The second phase is to plan an executive education program for agribusiness managers in the food sector. The Strategic AgriMarketing program would provide Portuguese managers with new ways of analyzing marketing problems. It would focus on strategy and decision-making tools critical to marketing success. Through advanced case studies, current market research, modeling, and integrated approaches, instructors would work closely with managers in applying concepts and techniques to strategic marketing decisions.

The center provided an orientation and overview program while hosting a delegation from Hidalgo, Mexico. The Indiana Department of Agriculture's Director of Latino Affairs, working with Purdue's International Programs in Agriculture, organized the visit. The Mexican delegation included representatives from universities, government, industry trade organizations, and private enterprise. The program acquainted the delegation with the center's capabilities and set the context for discussions about the needs and interests in Hidalgo and how the center and/or the AICC New Ventures Team could provide programming to help meet those needs. A return visit is planned by the delegation to move into the development phase for specific programming.

Thomas Hertel and Terrie Walmsley are the Executive Director and Director respectively of the Center for Global Trade Analysis (GTAP), the university-based home for GTAP, a global network of

researchers and policy makers conducting quantitative analysis of international policy issues. The project aims to improve the quality of global economy-wide analysis through education and develop analytical databases, economic models, and innovative methodologies. These efforts are supported by funds from 24 international and national organizations, including the World Bank, USDA, the European Commission, and the OECD. This year, Center staff plan to release version seven of the GTAP Data Base, covering 111 countries/regions and 57 commodities. The GTAP Data Base is a global economic database used by academics and institutions from over 160 countries. The GTAP Data Base and models underlie most contemporary analysis of trade issues and are increasingly used to examine the economic impact of global environmental issues, such as bio-fuels and climate change. This year's annual conference was held in Helsinki, Finland, in association with the Ministry of Finance and the United Nations University World Institute for Development Economics Research. There were nearly 250 participants from around the world, and 175 papers were presented at this event.

## Agricultural and Biological Engineering (ABE)

Organized and taught by professors John Lumkes (ABE) and Steve Hallett (BTNY), a group of sixteen students participated in a two-part course in China entitled China: Globalization, Agriculture and Environment. All of the students are pursuing degrees from the College of Agriculture at Purdue University and represented a variety of backgrounds, including Agricultural and Biological Engineering, Agricultural Systems Management, Environmental and Natural Resources, Botany and Plant Pathology, and Wildlife Management.

Students met for a classroom course from March to April, then participated in a 16-day study abroad course in May. Lectures covered the history and general background of China, globalization, Chinese agriculture, and Chinese environmental issues. The travel portion of the program visited three regions of China (Beijing, Xi'an, and the Yangtze River valley between Chongqing and Wuhan) and included travel to agricultural and manufacturing sites, museums, universities, and cultural activities within these regions. During the time in China, students met to present and to discuss various aspects of the trip.

Klein Ileleji and Cedric Ogden (Ph.D. student) visited Zhejiang University in Hangzhou, China, in late June, where Ogden spent one month at the State Key Lab for Clean Energy Utilization at Zhejiang University. While at Zhejiang University, Ogden worked

with Qinhui Wang, who had spent three months earlier working at Purdue. At Zhejiang, Ogden obtained skills in lab methods for fuel property characterization of biomass feedstocks at the Clean Energy Utilization lab, and became familiar with pilot-scale combustion and gasification units for biomass and coal. Switchgrass and DDGS samples were shipped to Zhejiang University for the studies undertaken as part of Ogden's Ph.D. dissertation on fuel preparation from biomass for direct combustion, and part of a larger project with Ileleji to co-fire switchgrass biomass with coal for power generation at Purdue's Wade Power Plant.

Ileleji gave a seminar on his research "Material processing and handling of biofeedstocks for food, feed, fuel, and fiber production" at the Graduate School of Bio-Applications and Systems Engineering, Tokyo University of Agriculture and Technology, Koganei Campus, Japan.

Ileleji also embarked on a trip with representatives from Indiana's BioTown, USA, in Reynolds, Indiana, and Indiana's State Department of Agriculture to Germany from September 17-22, 2007, to meet with residents of the Bioenergy Village in Juehnde. Juehnde is the German version of Indiana's BioTown, USA, in Reynolds. With nearly 750 residents, Juehnde is the first village in Germany to produce all of its heat and electricity supply from bioenergy. Ileleji represented Purdue as part of the nine-member delegation to learn from Juehnde's partners and stakeholders, which included the Center of Sustainable Development at the University of Goettingen; the German Agency for Renewable Resources (FNR); and the German Ministry for Food, Agriculture, and Consumer Protection (BMELV). Ileleji's class, Biomass Feedstock Systems Engineering, has been involved in two service-learning projects with BioTown, USA, and is a member of the Biotown Development Authority board. For more information on the trip, visit the daily blog at <http://www.biotownusa.com>.

The Tenth Scandinavian International Conference on Fluid Power was held in Tampere, Finland, on May 21-23, 2007. Monika Ivantysynova attended with one of her PhD students who presented a paper entitled "The Effect of Pump Efficiency on Displacement-Controlled Actuator Systems."

In April 2008, Ivantysynova was invited by the Academy of Finland (Finnish equivalent to the National Science Foundation) to Chair the International Evaluation Committee, which was responsible for evaluating the research activity of the Finnish schools of mechanical engineering.

In June 2007, Ivantysynova was invited by VDMA (the German national fluid power association) to summarize research activities on fluid power conducted within the United States. She held and currently holds a key leadership position within the Center for Compact and Efficient Fluid Power (CCEFP). The CCEFP, a

research center consisting of seven member universities, is funded through the National Science Foundation.

Krakow University of Technology located in Krakow, Poland, hosted the 5th Fluid Power Net International (FPNI) PhD Symposium on July 1-5, 2008. Ivantysynova brought 12 graduate researchers to the symposium where she served as a session chair. Among her researchers, nine presented papers on their work and two presented posters. One researcher won the best paper award for the entire PhD symposium and two were awarded honorable mention. The symposium is a biennial event and is hosted by different members of FPNI around the world. Ivantysynova is a member of the Scientific Board of FPNI as well as the Editor and Chief of the International Journal of Fluid Power, which is published by FPNI. Under her lead, Purdue University will host the 6th FPNI PhD Symposium in West Lafayette, Indiana, in the summer of 2010.

Rabi Mohtar spent a sabbatical year (August 2002-August 2003) at CIRAD and IRD, which resulted in a long-term collaboration with Montpellier, France. Currently, CIRAD supports a computer scientist and an agronomist to implement the modeling algorithm that Mohtar and his co-investigators developed. The group has met twice a year since to continue with model evaluation. Partial funding for this continued project is provided by the French Embassy in Washington, D.C., and the French Consulate in Chicago. The technology being developed is state-of-the-art soil water modeling that will help to improve the way researchers characterize and model soil water. This technology has been adopted by SEAMLESS, the largest EU modeling group.

Mohtar was invited by Qatar Foundation (<http://www.qf.edu.qa/output/Page1.asp>) to help establish a network of Immigrant Arab Scientists in support of scientific research in the Arab world. Mohtar was invited by Her Highness Sheikha Moza of Qatar to be on the executive committee and leads a research group on developing a strategic plan for the research initiative. A second international meeting to announce the Qatar National Research Fund was held in April 2007. Mohtar hosted the Vice President for Research and the Head of Civil Engineering, Qatar University, August 5-6, 2007, at Purdue.

Lindsay Birt, a Ph.D. student, participated in a two-week bioremediation project in Pantnagar, India. She was a part of a 15-member team consisting of six graduate students, several undergraduate students, and faculty (Rabi Mohtar from Purdue University, Prasanta Kalita and Richard Cooke from University of Illinois-Urbana Champaign). Together, they worked closely with students and professors at the GB Pant University of Agriculture and Technology (GBPUAT) to design, install, and evaluate the efficiency of the bioremediation treatment system in reducing chemical contaminants from agriculture watersheds without reducing agriculture production. This project is part of the



Agricultural and Biological Engineering continued

US-Indo Agricultural Knowledge Initiative grant that Purdue is working on with five other US universities and six Indian Institutions.

### Agronomy (AGRY)

Cale Bigelow went on an exploratory mission with Mickey Latour on behalf of the COA to determine the feasibility of an Agriculture study abroad course in Southern India, April 24–May 3, 2008. Bigelow also attended and presented papers at the 1st European Turfgrass Research Meeting in Pisa, Italy, May 19–20, 2008 with student Jared Nemitz.

Melba Crawford was a member of a delegation from the Office of the Science and Technology Adviser to the Secretary at the U.S. State Department that participated in an initiative on Global Dialogues in Emerging Science and Technology (GDEST), which focused on Geospatial Sciences for Sustainable Development in Africa. During the three-week program, two teams traveled to ten countries in sub-Saharan Africa to be briefed by government agencies, universities, and NGOs on the current status of infrastructure and applications in GIS and remote sensing technologies and to explore opportunities for collaborative initiatives. Several initiatives have been launched as a result of the program, including data support grants from NASA and the U.S. State Department, support of workshops to train instructors, formal MOUs between professional societies, and preliminary discussions of collaborative educational programs between universities.

John Graveel participated in a cooperative project with Brigham Young University (BYU) to collect soil samples of Mayan ruins in the Yucatan Peninsula in January 2008. As part of the project, he worked with Rich Terry from BYU focusing on an area called Xtobo. Soil sampling was carried out at Xtobo to determine the location of a common market place. Preliminary results are inclusive and will require more extensive soil sampling to determine the activities of Xtobo.

Scott Jackson was co-organizer of a Legume Genomics Conference in Puerto Vallarta, Mexico, held in December. He was also an invited speaker at the International Crop Science Meeting in Jeju Island, Japan, in April. In addition, he was invited to participate in World Class University's proposal with Seoul National University in Korea, which is an ongoing project. Several times from August to January, Jackson visited faculty at University of Perpignan in Perpignan, France. He spoke in a Plant Genetics Series at Max Planck institute in Cologne, Germany, in September. Jackson was also Co-organizer of the Rice Genome meeting in Narbonne, France, that took place in September.

Brad Lee was invited to present a paper at The 2nd International Workshop on Criminal and Environmental Forensics, held in Edinburgh, Scotland, October 29–November 1, 2007. In May 2008, Allen LeRoy released from his breeding program a new soybean variety that has good characteristics for making soymilk and tofu. The variety, IN 3C61Y, received attention from specialty grain producers in Argentina. It will be tested in Argentina during the winter of 2008.

Jianxin Ma organized the Transposable Elements Workshop in the International Plant and Animal Genome XVI Conference held in San Diego, CA, January 2008. He was also invited to visit the soybean genetics and genomics laboratories at the Chinese Academy of Agricultural Sciences in Beijing. He served as a graduate examination committee member for seven graduate students and performed collaborative research on soybean germplasm diversity studies in May 2008.

Dev Niyogi initiated an India Climate Portal as a media content provider working with a media group, Mediasphere Pvt. Ltd., in Pune, India. The Portal (<http://iclimat.net>) provides climate change and monsoon-related information to local (Indian) Web and print media.

With the National Center for Atmospheric Research and National Weather Service International programs, Niyogi co-hosted a postdoctoral visitor from the Indian Institute of Technology (Delhi). The collaboration led to adding a new satellite and surface data integration technique to weather-forecasting models over the Indian monsoon region.

Niyogi was also an invited participant for the Gates Foundation-sponsored NRC Committee to Study Technologies to Benefit Farmers in Sub-Saharan Africa and South Asia in Washington, D.C., at the Keck Center of the National Academies. He talked about remote sensing technology and climate/hydrological monitoring for Sub-Saharan Africa and Southeast Asia as part of the National Academies Workshop on Animal Health, Soils, Water, and Energy Technologies.

Herbert Ohm was invited to present a summary of research on genetics and breeding for Hessian fly and yellow dwarf resistance at the North American Wheat Workers Conference, Saskatoon, Sask., March 11–14. He was also invited to present lectures on wheat breeding incorporating new developments in genetics, and explored student exchange possibilities at Shandong University, Jinan, P.R. China, March 28–29. Ohm then visited Zhang Zengyan at the Key Lab of Crop Genetics and Breeding, Institute of Crop Breeding and Cultivation, CAAS, Beijing, regarding research on wheat improvement, transferring resistance to yellow dwarf disease from related grass species to wheat, March 30–31. Prior to visiting Shandong University and at Beijing, Ohm attended the 2<sup>nd</sup> International Conference on Plant Molecular Breeding,



Sanya City, P.R. China, and displayed two research posters, one on backcrossing new useful traits using marker assisted selection, and a second poster on the U.S. National Wheat Coordinated Agricultural Project.

Ohm hosted Mirjana Jankulovska, wheat breeder from Ss. and Methodius University, Skopje, Macedonia, as a Borlaug Fellow, at Purdue University, September to October, 2007. Ohm participated in a regional conference organized by USDA and USAID at Skopje, May 19–21, 2008, and was interviewed by a local news organization. Ohm was asked to write an article on wheat improvement for drought stress, which appeared in the Skopje local monthly news magazine. Ohm presented a seminar on wheat genetics/breeding research at Purdue University at the university at Skopje. Ohm and Jankulovska continue to develop active research collaborations related to improving wheat for drought stress, which will likely be of importance to Indiana given the widely accepted global warming.

Gilbert L. Rochon presented several papers, including those in Barcelona, Spain, July 23–27, 2007; Ouagadougou, Burkina Faso, September 16–18, 2007; Chiang Rai, Thailand, September 20–22, 2007; Cairo, Egypt, March 16, 2008; Berlin, Germany, May 4–9, 2008; and Brussels, Belgium, at the North Atlantic Treaty Organization (NATO) Headquarters, June 2, 2008.

Darrell Schulze was invited to lecture at the International Summer School on Forest Soils and Global Change held at the University of Molise, Campo Basso, Italy, from September 9–23, 2007. He was also an invited participant in the Alliance for a Green Revolution in Africa (AGRA) Soil Health Stakeholder Workshop in Nairobi, Kenya, June 16–18, 2008. Schulze attended a meeting of collaborators, Sylvie Brouder and Pamela Obura, involved with the McKnight Collaborative Crop Improvement Project entitled New Approach for Improving Phosphorus Acquisition and Aluminum Tolerance of Plants in Marginal Soils, and presented results of their work. The meeting was held in Eldoret, Kenya, from June 30 to July 3, 2008. Afterwards, Schulze and Obura sampled soils on smallholder farms in Uganda and Tanzania from July 4–9, 2008.

In August 2007, Lori Unruh Snyder traveled to Atlanta, Georgia, to discuss creating a consortium with 10 other universities at EARTH University in Costa Rica to focus on sustainable agriculture. In October 2007, she was awarded a grant for study abroad and international learning to visit both Honduras and Costa Rica. The grant focused on creating a capstone experience in entrepreneurship and service learning to promote sustainable agriculture in the tropics. In March 2008, Unruh Snyder organized the spring-break study abroad program for IPIA to Honduras. This group of 12 students from across the College of Agriculture and three students from the University of Florida visited Zamorano University during the one-week program, and toured local farming

communities and historical sites such as Copan. The focus of the class was sustainable agricultural production systems. Brad Lee also accompanied the group and shared knowledge of soil science and land use practices. In July 2008, Unruh Snyder visited EARTH University in Costa Rica to prepare for a three-week Maymester course to be held in 2009.

Mitch Tuinstra presented a paper at the “Health, Research and Entrepreneurship: Sorghum food for celiac patients” conference in Naples, Italy, and participated in a research extension tour of participating farmers. He also participated in the West Africa Sorghum, Millet and Other Grains (INTSORMIL) West Africa Regional Program Workshop in Bamako, Mali. Field research activities are being conducted in Mali, Burkina Faso, and Niger.

In August 2007, Jeffrey J. Volenec visited Taiwan for a week-long stay focused on program improvement and international cooperation. At National Taiwan University, discussions focused on curriculum improvement and student exchange programs. Volenec also visited the National Livestock Research Institute to explore possibilities for cooperative research on herbaceous biofuels and forage-livestock production, and presented two invited lectures: the first was an overview of Purdue University, the College of Agriculture, and the Department of Agronomy, and the second was an overview of his research program.

For three months, Qianlai Zhuang hosted Professor Guangsheng Zhou, a prominent ecosystem scientist from the Chinese Academy of Sciences. Zhou’s visit was supported by a Visiting Indian and Chinese Scholars (VICS) grant funded by the Office of the President of Purdue University.

### Animal Sciences (ANSC)

Alan Grant and David Gerrard presented seminars and discussed collaborative research at CCL Research in The Netherlands in November 2007. They also were invited to the University of Podlasie in Siedice, Poland, in November 2007 to discuss collaborative research in meat science.

Bill Muir taught an international course, Principles of Quantitative Genetics, to the Scandinavian Institute in Statistical Genetics University of Liege, Belgium, September 3–5, 2007. Muir also presented an invited paper to the European Association of Animal Production, Symposium Statistical Analysis of Genomic Data entitled “Genomic Selection: A breakthrough for application of marker assisted selection to traits of low heritability, promise and concerns” in Dublin, Ireland, August 27, 2007. He also presented an invited seminar to Neutreco/Hendrix Poultry, entitled Genomic Selection Benefits and Pitfalls, in Boxmere, The Netherlands, August 31, 2007.

Animal Sciences continued

Shawn Donkin presented an invited lecture at the Brazilian Society of Animal Science held in Lavras, Belgium, titled Glycerine: the New Corn for Dairy Cattle? He interacted with faculty at Universidade Federal de Lavras (UFLA) to initiate programs to bring UFLA students to Purdue to engage in research as part of a “sandwich grant” program.

Brian Richert was invited to speak at a pork producer manager’s conference in Curitiba, Brazil, May 29–30, 2008. His presentation was entitled “Impact of Genetics, Management, and Nutrition on Achieving Full Value Pigs.” While in Brazil, Richert also provided presentations to Perdigão and Cargill on the latest research and application of Paylean® in pork production.

Layi Adeola, at the invitation of Tanta University, gave lectures to faculty, graduate students, and undergraduate students in the Faculty of Agriculture at three universities: Tanta University, Cairo University (Faculty of Veterinary Medicine), and Alexandria University, Egypt. The interaction with faculty and students at Tanta University involved discussions on animal science curricula, research planning, research data interpretation, opportunities for collaborative exchange of staff and students and serving on an advisory committee of graduate students in the Animal Science Department at Tanta University. There were meetings with the University Administration at Tanta on establishing collaboration with Purdue Agriculture. Adeola also gave talks at the European Symposium on Poultry Nutrition in Strasbourg, France; chaired discussion groups at the Energy and Protein Metabolism and Nutrition conference in Vichy, France; and visited and had valuable discussions and interactions with French National Institute for Agricultural Research (INRA) scientists in Rennes, France. Adeola also served as external examiner to a PhD student at the University of Alberta, Edmonton, Alberta, Canada. Adeola visited and gave lectures at four universities: Obafemi Awolowo University, University of Ibadan, University of Agriculture in Abeokuta, and Ladoko Akintola University in Ogbomosho, Nigeria. There were discussions on collaboration, graduate student training, visiting scientist exchange and collaboration with the primary aim of improving human capacity for teaching and research. Adeola was also an invited speaker at FEDNA Conference, Spanish Foundation for the Development of Animal Nutrition in Madrid, Spain.

Todd Applegate hosted 16 Chinese students from Zhejiang University for the 2008 Summer Intern Program for Chinese Students. Applegate also hosted four students from National Taiwan University for the 2008 Summer Intern Program for Taiwan Students.

Barry Delks hosted 40 Chinese students in collaboration with Novus for a three-day industry tour. He also hosted a group of Chinese students in his home and participated in the international student orientation.

Heng-wei Cheng gave a presentation entitled “Farm Animal Welfare” at the School of Animal Science and Technology, Zhejiang University. Cheng and Alan Grant met with Dr. Lui, Dean of the College of Animal Sciences, Zhejiang University. Bilateral collaborations in research and education were discussed.

Mickey Latour and Cale Bigelow went to Delhi and Bangalore, India, April 24 to May 3, 2008, to investigate the possibilities of agriculture student studies abroad. India provided a wide range of agricultural goods for students to examine.

Mark Russell conducted clinics and was an official at the National Appaloosa and Quarter Horse Italian Championships in Arezzo, Italy, in June 2008. He visited the University College Dublin on a USDA ISE grant to promote semester student exchanges with Purdue, July 2007. He spent time on sabbatical in the Extension and Communications Centre of Wageningen University and Research Centre, the Netherlands, October 2007. He was invited to speak at the Opportunities and Perspectives in Animal Production International Symposium at the University of Agricultural Sciences & Veterinary Medicine in Iasi, Romania, in April. He also visited the University of Wales, Aberystwyth, Wales, Leeds Metropolitan University, England, and the University of Edinburgh, Scotland, on a USDA ISE grant to promote semester student exchanges with Purdue, July 2007.

In November, Tamilee Nennich traveled to Amman, Jordan, as part of an Iraq Agriculture Revitalization Project. While in Jordan, Nennich was the co-instructor for a four-day intensive program aimed at educating Iraqi extension agents and agricultural professionals about the dairy cattle industry. The training was attended by 16 agricultural professionals from the Kurdish region of Iraq and included both classroom instruction and farm visits.

Michael Schutz began collaboration with Vasile Maiuc of the faculty of Animal Sciences at the University of Agricultural Sciences and Veterinary Medicine in Iasi, Romania. They collaborated on genetic and immunogenetic evaluation of the native local cattle population.

### Biochemistry (BCHM)

In October 2007, Andy Tao was invited to speak at the 12th BCEIA (Beijing Conference and Exhibition of Instrumental Analysis) in Beijing, China. He gave seminar talks at several universities (Beijing University of Chemistry and Chemical Engineering, Tsinghua University, Beijing University, and Nankai University).

Tao returned to Beijing, China, in March 2008 to meet with a research collaborator and give a presentation at the Institute of Chemistry, Chinese Academy of Science. He was also an invited speaker for the 2nd Annual Life Analytical Chemistry Conference in Beijing.

In June and July 2008, Tao traveled to Taipei, China (R.O.C.), where he presented a talk, “In total isolation of phosphopeptides on soluble nanopolymers,” at the 2nd World Chinese Forum on Mass Spectrometry. He also presented the talk “Proteomics approaches to phosphorylation-dependent protein-protein interactions” at Yang-Ming University.

Henry Weiner traveled to Mexico City to discuss research with a colleague in November 2007.

Dave Krogmann traveled to Cuernavaca, Mexico, in February 2008 to teach a three-week course entitled “How to Write and Publish a Scientific Paper in English.”

In May 2008, Clint Chapple traveled to Alberta, Canada, to attend the Designing Oilseeds for Tomorrow’s Markets scientific advisory board meeting. In June 2008, he traveled to Toronto, Canada, to attend the Canadian Plant Genomics Workshop.

Steve Broyles attended an International Poxvirus Symposium in Grainau, Germany, in June 2008 where he presented a talk entitled, “Translational regulation in vaccinia virus-infected cells.”

Sandra Rossie spent the fall semester in Novosibirsk, Serbia on a Fulbright Scholarship award. She collaborated with scientists on a research project and taught a workshop on writing scientific manuals in English. Her research focuses on how cells’ biochemical responses change when they receive signals from hormones and neurotransmitters. Rossie’s initial collaboration with Russia was partially funded by International Programs in Agriculture.

### Botany and Plant Pathology (BTNY)

Guri Johal was invited September 17–22, 2007, by the International Plant Nutrition Institute at Piracicaba, Brazil, to present a talk during a symposium on Mineral Nutrition and Disease Problems in Modern Agriculture: Threats to Sustainability. The title of his talk was: “Glyphosate induced changes in plant resistance to diseases.” October 21–22, 2007, he was invited to present a talk at the BC Regional Canadian Phytopathological Society Meeting in Vancouver. The title of his talk was “A guardian of grasses: specific origin and conservation of a unique disease resistance gene in the grass lineage.”

Jody Banks gave a talk at the Department of Molecular Biology, Catholic University of Chile, Santiago, Chile (2008).

In 2008, Janna Beckerman established a collaborative effort with the Centro Agronómico Tropical de Investigación y Enseñanza (CATIE) in Costa Rica to develop acceptable sanitation and exportation processes for clean stocks of *Dracena* and pineapple.

Nick Carpita continues international collaboration with Marcos Buckeridge (Institute of Botany, São Paulo, Brasil) in the study of the biosynthesis in vitro of plant cell wall polysaccharides and with Peter Ulvskov, Jack Egelund, Henrik Schiller, and Susanne Sørenstam (KVL, Copenhagen, Denmark) on characterization of three families of glycosyl transferase gene family in *Arabidopsis*. Carpita collaborates with Tony Bacic (University of Melbourne, Australia) on characterization of the AGP and fasciclin-like protein gene families in *Arabidopsis*. He continues to collaborate with Catherine Rayon (University of Picardie-Jules Verne, Amiens, France) on purification of the catalytic domains of cellulose synthase for crystallization. He collaborates with George Haughn (University of British Columbia, Canada) on the structure of a mucilage mutant caused by a defective  $\beta$ -galactosidase. Carpita collaborates with Tamara Western (McGill University, Canada) on the structure of mucilage mutants. His past collaborations with Mike Bevan (John Innes Centre, UK), Keith Roberts (John Innes Centre, UK), Reg Wilson (Institute of Food Research, UK), Tony Kavanagh (University College Dublin, Ireland), Röbi Dudler (University Zürich, Switzerland) all resulted in publications. He is co-organizer for the Pan-American Congress on Plants and BioEnergy to be held in Mérida, Mexico, in June 2008. He was an invited speaker for the Plant Polysaccharide Workshop, Stockholm, Sweden, in August, and for the Latin American Plant Physiology meeting, Rosario, Argentina, in September 2008.

Ray Martyn, in his role as President of the American Phytopathological Society, is developing joint collaborations between the APS and the Chinese Society of Plant Pathology.

In late 2007, Jin-Rong Xu joined a program on pathogenicity factors in *Fusarium graminearum* and the wheat stripe rust fungus funded by the Chinese Ministry of Education to Zhen-Sheng Kang at Northwest Agriculture and Forestry University, Yangling, China. He was invited to give presentations at symposia on Plant-Microbe Interactions held in Korea, Taiwan, in 2008. In 2007, he served as a member of the organizing committee for the 4th International Rice Blast Conference held in China. He was an invited lecturer at the workshop on plant-pathogen interactions at Northwest Agricultural and Forestry University, Yangling, Shaanxi, P. R. China, April 29–May 2, 2008. Xu became an adjunct professor at Northwest Agricultural and Forestry University, Yangling, Shaanxi, China, as part of the Chang Jiang (Yangtze) Scholar’s Award granted by the Ministry of Education of the People’s Republic of China.



Botany and Plant Pathology continued

Kevin Gibson co-taught a summer course focused on biodiversity in natural and agricultural systems. The course rotates between Costa Rica and Trinidad and Tobago. He has served on the thesis committees of two graduate students at CATIE in Costa Rica and collaborates with Dr. Tamara Benjamin of CATIE on a clean stock program for Costa Rican ornamental exporters. Weeds serve as important vectors for insect infestations in key ornamental crops. In May 2008, Gibson and Benjamin will examine weed management systems that might promote beneficial insects while decreasing infestations of harmful insects.

William Johnson gave invited presentations at the 2007 Rothamsted Resistance Conference in Harpendon, UK.

In 2007, Tesfaye Mengiste presented a plenary lecture at the International Congress on Molecular Plant-Microbe Interactions in Sorrento, Italy, and seminars at Gregor Mendel Institute of Molecular Biology in Vienna, at the University of Geneva–Austrian Academy of Sciences, and at the planning group meeting for non-host resistance to wheat rust sponsored by CIMMYT in Mexico.

Bob Pruitt gave invited lectures at MBSJ Spring Symposium, Awaji, Japan, in 2007, and at HUGO Asia-Pacific Meeting, Cebu, Philippines in 2008.

Mary Alice Webb was invited to give a talk and poster presentation entitled “Calcium oxalate crystallization in kidney-like organs of the model organism silkworm (*Bombyx mori*)” at the 5th eULIS Symposium/12th European Symposium on Urolithiasis, held in Cascais, Portugal, July 2007.

### Entomology (ENTM)

Steve Yaninek served as the Entomology representative on a College of Agriculture team exploring study abroad opportunities in China and Japan during the summer of 2007. This resulted in a new Maymester study abroad course in China offered for the first time this past spring and several new scientific initiatives with collaborators at Beijing Normal University and Wuhan Agricultural University.

Yaninek established a working group on invasive species of hardwood forest systems with Rumei Xu at Beijing Normal University. The purpose of this working group was to improve communications and foster scientific exchanges between scientists with common interests and responsibilities for invasive insect pests of hardwood forest systems. The first collaboration is intended to be an invasive species training workshop in Wuhan, China.

Yaninek and Jeff Stuart led a group of 10 individuals to visit Mexico City and the Monarch butterfly sanctuaries in the

mountains of Michoacan in Mexico in late December and early January. The visit included five days in Mexico City to learn about the history and culture of the country, then four days in Michoacan where the group stayed at Alternare, a non-governmental organization near Angangueo that works with campesinos in the region to teach sustainable alternatives to current agricultural practices and illegal logging. The group visited the Monarch sanctuaries at Sierra Chincua, El Rosario, and Cerro Pelon along with some of the development activities of Alternare working with the local communities to assure the viability of the monarch sanctuaries.

Grzesiek Buczkowski attended the International Congress of Entomology meeting in Durban, South Africa, July 4–12, 2008, and presented a talk entitled, “The diminutive supercolony: the Argentine ants of the Southeastern U.S.”

Buczkowski participated in a workshop on Argentine ants “The biology of a global invader: the Argentine ant,” July 13–18, in the Stellenbosch Institute for Advanced Study at the University of Stellenbosch, Stellenbosch, South Africa. The meeting was organized jointly by the University of Illinois at Urbana-Champaign and the DST-NRF Centre of Excellence for Invasion Biology (RSA).

Gary Bennett and Changlu Wang collaborated with Chinese institutions (Guangdong Academy of Agriculture and South China Agricultural University) on fire ant ecology and management. Last summer they visited Guangzhou, conducted research, and worked with faculty and graduate students on the recent fire ant problem in that area of China. This was the third year of the program that has been funded by the National Chinese Science foundation.

C. Richard Edwards continues to work with colleagues in European countries on the development of management strategies for the western corn rootworm (WCR), *Diabrotica virgifera virgifera* LeConte. He spent the summers of 2007 and 2008 in the Lombardy Region, Brescia Province, Northern Italy, working with Italian colleagues on studies to improve farmers’ abilities to determine when economic populations of WCR are present and what strategies need to be employed to manage the problem. Activities included several research projects on management strategies and WCR biology and population dynamics. He and Italian colleagues continued their work with Pioneer Hi-Bred Italy, Bayer Crop Sciences Italy, Syngenta Italy, and Monsanto Italy on determining the response of WCR to different management strategies and hybrids. All collaborative programs have global implications. He will return to Italy in 2009 to continue this work. He also serves as co-convener of the IOBC International Working Group on Ostrinia and Other Maize Pests (IWGO). IWGO will meet in Munich, Germany, in 2009. Over 120 corn insect scientists from all over the world are expected to present their research findings on various corn insect pests. Edwards will co-present a paper with colleagues from Italy.



### Food Science (FS)

Christian Butzke and his colleague Bruce Bordelon (HORT) lead a group 15 winery owners and winemakers from Indiana and Michigan on an international extension class to the heart of Europe. Italy for Wine Professionals was 10-day whirlwind tour of the world's largest wine-producing country. In May 2008, the vintners visited ultra-modern equipment manufacturers as well as famous vineyards and wineries in the Piedmont (Asti, Barolo, Barbaresco) and Tuscany (Montepulciano, Montalcino). The delegation enjoyed a lecture by their Italian extension collaborator before paying a visit to Rome and Vatican City as well as the Frascati wine region in the Roman hills. The group learned about Italian diversity in artisan wine production and techniques applicable to Midwestern winegrowing and winemaking. The organizational tour template will be used in upcoming years for Purdue engagement trips to other relevant wine regions such as Argentina, Chile, and New Zealand.

Butzke was invited in April 2008 to speak to an elite group of winemakers in Bordeaux, France, traditionally the international center of fine wine production. His talk entitled "Protecting the Quality of the World's Greatest Wines" addressed the logistic challenges of global wine distribution. He had a chance to compare the wines of Indiana to their international competition during visits to Châteaux Margaux, Lafite-Rothschild, and Latour.

Li-Fu Chen was an invited speaker for three talks in Taiwan and China over the past year: 1) "How to Avoid Competition between Food Supply and Energy Production from Corn," October 5, 2007, Chung Hsing University, Taichung, Taiwan; 2) "Increase Food Supply by Converting Corn Starch to Ethanol," October 11, 2007, China Agriculture University, Beijing, China, and 3) "Future Trend of Food Processing Research and Development," May 5, 2008, Chung Hsing University, Taichung, Taiwan.

On a trip to Thailand and China in November 2007, Bruce Hamaker gave keynote presentations regarding his research in carbohydrates and health at two international meetings: 1) the 10<sup>th</sup> International Symposium on the Properties of Water in Food, Health, Pharmaceutical and Biological Systems in Bangkok, Thailand, and 2) the 7<sup>th</sup> International Conference for Food Science at Technology at Southern Yangtze University in Wuzi, China. Hamaker also gave the plenary lecture in March 2008, at Starch 2008, the 4<sup>th</sup> International Meeting on Starch Structure and Functionality, organized by the Royal Society of Chemistry in Nottingham, United Kingdom. As part of Hamaker's responsibilities in the INTSORMIL CRSP, he made two trips to West Africa in spring 2008.

Richard Linton gave invited talks over the past year in Brazil, China, and Hong Kong: "Thermal Processing and Aseptic Processing and Packaging Technologies" (Sao Paulo, Brazil);

"Emerging International Issues in Retail Food Safety" (Sao Paulo, Brazil); "Detection and Control of Food borne Hazards and the Role of the Center for Food Safety Engineering" (Shanghai, China); "Establishing Relationships and Partnerships Among Academia, Industry, and Regulatory Agencies to Promote Better Food Safety Research" (Hong Kong); "Microbial Detection Technologies" (Hong Kong).

Suzanne Nielsen gave an invited talk at two universities in Taiwan in May 2008, "Innovations and Trends in Chemical Analysis of Foods," at the Graduate Institute of Food Science and Technology, National Taiwan University in Taipei, and Chung-Sun Medical University of Taichung. She also served in May 2008 on an external panel that reviewed the curriculum of Zamorano University located just outside Tegucigalpa, Honduras.

### Forestry and Natural Resources (FNR)

James DeWoody gave a presentation at the University of Selcuk, Konya (Turkey). John Dunning, Douglass Jacobs, Richard Meilan, Goufan Shao, and Rob Swihart gave presentations at Taiwan National University, Taiwan. Bryan Pijanowski gave presentations in Australia, China, East Africa, Kenya, New Zealand, Sweden, Tanzania, and Uganda. Michael Saunders gave a presentation at Waldbau-Institut, Universität Freiburg, Germany, Also Shao gave a presentation at the Chinese Academy of Sciences, China.

DeWoody co-authored with scientists from Costa Rica and Kazakhstan. Dunning and Meilan taught in Sweden. Meilan explored collaborative research in Spain. Pijanowski traveled to Moldova (twice) to establish ties with the Moldova Academy of Sciences, Moldova State University, and Comrat State University. Shao conducted research in China and co-authored with Chinese scientists.

FNR faculty received six graduate students, two post docs, and nine visiting scientists from the following countries: Australia, Chile, China, Costa Rica, Egypt, India, Israel, Sweden, Switzerland, Turkey, and the United Kingdom.

Between September 2 and 9, Dunning, Jacobs, Meilan, Shao, and Swihart returned a visit to National Taiwan University. They attended a research symposium at Sitou Research Station, September 3–4, which was jointly organized by National Taiwan University, Purdue University, Michigan State University, and the University of Illinois. They visited the Experimental Forest of National Taiwan University in central Taiwan, September 5–6. They visited Taiwan long-term Ecological Research Network (TERN) in northeast Taiwan, September 7–8. The Experimental Forest covers 32,781 ha with a mountainous terrain ranging from 220 m to 3,952 m in elevation. The high biodiversity and modern facility at the Experimental Forest provides unique opportunities

Forestry and Natural Resources continued

for research and teaching. As a part of an international long-term ecological research (LTER) network, TERN is open for international collaborative research activities. In addition, the five faculty members experienced a shocking earthquake!

For about 15 years, the FNR department has sponsored a collaborative study abroad course where the students are mixed with those of North Carolina State University and the Swedish University of Agricultural Sciences (SLU) to study an issue in natural resource management. The course alternates locations and topics each year. In the summer of 2007, SLU hosted the course in the Abisko National Park, northern Sweden, on the topic of climate change in the Arctic. Thirty-five students participated, including students from Finland, Spain, Germany, and Italy, in addition to SLU, Purdue, and North Carolina State.

### Horticulture and Landscape Architecture (HLA)

Ray Bressan was an invited speaker at numerous international universities and scientific symposia during 2007–08 on topics surrounding the role of plant stress genes in drought and salinity tolerance, and the identification of such genes by reverse and forward genetic screening methods. Presentations were given at Doorn, The Netherlands; The University of Naples, Italy; University of Pisa, Italy; China Agricultural University, Beijing; the Plant Genetics Institute, Shijiazhang, China; University of Guangji, Korea; Dongha University, Bosan, Korea; and Tsinghua University, Beijing, China.

Michael Dana has continued his departmental leadership of the HORTECUS Program (HORTiculture in EC and US). This consortium of seven horticulture departments from universities in the United States and the European Union facilitates student and faculty exchange programs and international course development. Participant institutions include TEI (Crete), Hogeschool Delft (The Netherlands), KVL (Denmark), and the University of Hannover (Germany) as well as three U.S. universities (Alabama A&M University, Oklahoma State University, and Purdue University). In addition to their cultural diversity, the cooperating educational institutions' geographical locations provide a unique palette of horticultural industries, and thus experiential opportunities, for exchange students and faculty to interact.

Natalia Dudareva and Steve Weller traveled to Eastern Europe from October 12–26, 2007, on a grant from Purdue University International Programs for their proposal "Strategic Recruitment Program for Outstanding International Graduate Students from Eastern Europe." They visited Russia, Czech Republic, and Hungary to develop a recruitment mechanism to attract and sustain long-term relationships. Universities and research institutes they visited were: Moscow State University, St. Petersburg

University, Charles University, Masaryk University, and Szent István University. The program fosters scientific collaborations and exchange between faculty and undergraduate students to promote increased matriculation of qualified graduate students.

Dudareva was an invited speaker at numerous international universities and scientific symposia during 2007–08 on topics related to the biosynthesis of plant volatile compounds. She made presentations on the regulation of metabolic networks that control the emission of floral volatiles as well as on the work that has led to both gene discoveries and the resulting practical applications. Invited lectures were given at Amsterdam, The Netherlands; Szent Istvan University, Hungary; St. Petersburg State University, Russia; The Russian Academy of Sciences, Moscow; Les Diablerets, Switzerland; Montpellier, France; the Public Research Institute of Health, Luxembourg; Max Planck Institute for Chemical Ecology, Jena, Germany; and Leibniz Institute for Plant Biochemistry, Halle, Germany.

Avtar Handa helped organize an international symposium entitled 21<sup>st</sup> Century Challenges of Sustainable Agricultural Systems held in Bangalore, India, in 2007. Handa presented the results of work from his laboratory on modulating plant responses to heat stress to enhance crop productivity and biomass.

Jules Janick received an honorary doctor of philosophy degree from The Hebrew University of Jerusalem in 2007. He was recognized for his contributions as a horticultural scientist and a leading researcher in the exploration and development of new food crops whose pioneering insights and discoveries have had a significant impact on biotechnology, breeding and genetics, and medicinal drug development. Director of the Center for New Crops and Plant Products at Purdue University, Janick is renowned for his extraordinarily wide-ranging activities in horticultural science, encompassing basic and applied scientific research in areas such as orchard and forest trees, fruits, vegetables, and ornamental plants.

Angus Murphy's research program focuses on the regulation of hormone transport in plants as well as the mechanisms underlying plasma membrane peptide processing. These fundamental questions also have applied aspects, including modifications of plant architecture that may enhance nutrient efficiency, herbicide tolerance, and production of biomass for biofuels. Like many other research programs in HLA, this effort is highly international in focus and has resulted in numerous invitations to speak at academic institutions and scientific meetings, including: McGill University, Montreal, Quebec, Canada; the University of Calgary, Alberta, Canada; the University of Zurich, Switzerland; the European Plant Endomembrane Meeting, Oxford, UK; the University of Nottingham, UK; and the Society for Experimental Biology, Glasgow, Scotland.

Wendy Peer leads a research program that seeks to discover the fundamental cellular and molecular biology of flavonoid compounds in plants, as well as their potential impacts on human health. Health benefits of traditional diets rich in flavonoids may derive from their capacity to scavenge free radicals and from their activity on specific targets in mammalian signal transduction pathways. The work resulted in an invitation to speak at the 10<sup>th</sup> European Endomembrane Meeting, Oxford University, UK, in September 2007.

K.G. Raghothama participated in a Rockefeller-sponsored symposium on root traits in Bangalore, India, and he also delivered lectures at the Indian Agriculture Research Institute, New Delhi. Further, Raghothama attended an international meeting in Vienna on Mutation Induced Breeding, and he served as an advisor to the plant stress research group sponsored by the International Atomic Energy Agency.

An ongoing project funded by the McKnight Foundation on “New approaches for improving phosphorus acquisition and aluminum tolerance of plants in marginal soils” is led by Raghothama, Cliff Johnston, and Daryl Schulze of Agronomy, with collaborators in Brazil, China, and Africa. Raghothama attended an international symposium on soil health supported by McKnight Foundation in Eldoret, Kenya.

Raghothama serves as a visiting professor at Nanjing Agriculture University, China. He delivered scientific talks at Nanjing Agriculture University; China Agriculture University; Tsinghua University; the National Institute of Biological Sciences, Beijing; and South China Agriculture University.

David Salt leads a research program that seeks to understand the genetic basis of natural ionic variation within plant populations and to identify genes that function to regulate mineral nutrient accumulation in rice, a crop that provides a major source of nutrition for a large proportion of the world’s population. These efforts are characterized by numerous international collaborations and have resulted in many invitations to speak at academic institutions and scientific meetings including: Zhejiang University, Hangzhou, China; HarvestPlus–Rice, Bangkok, Thailand; the Plant Genome European Meeting, Tenerife, Spain; keynote address, Congress of the Brazilian Society of Plant Physiology, Gramado, Brazil; Sant Anna University, Pisa, Italy; and the University of Agricultural Sciences, Bangalore, India.

Paul Siciliano, Matthew Jenks, and Christopher Petrakos (History) participated in the development and offering of a three-credit, four-week undergraduate course titled “In the English Landscape” in Corsham, Wiltshire, UK, and the surrounding area. Students explored the history of English landscapes and gardens in the context of post-medieval British history. This course has been team-taught every other year by Purdue faculty from the

Horticulture, History, and Landscape Architecture programs. This interdisciplinary approach serves to broaden students’ understanding of historic gardens. Excursions to landscape, garden, and cultural sites provided the primary basis for student discovery. Pre-travel readings and lectures prepared students for in-country, site specific worksheets, class discussions, quizzes, and the final course project.

Steve Weller, along with a Purdue University team headed by Jess Lowenberg-Deboer, visited Kenya in June 2007 to discuss the potential to develop an agriculture development program with the Indiana University program called Academic Model for the Prevention and Treatment of HIV/AIDS (AMPATH) program in Eldoret, Kenya. Visits included planning sessions with AMPATH and visits to their farms and meetings with officials from World Vision, Rockefeller Foundation, Moi University, Kenya Agriculture Research Institute (KARI) and various USAID programs. The Purdue University team is currently seeking funding for developing an agriculture program with AMPATH.

Weller visited Nanjing University, Nanjing, China, May 21–24, 2008. He discussed potential research collaboration with scientists at Nanjing University and the Biological Fertilizer Engineering Center on manure composting technology for use of these techniques in the United States. Dr. Yangchuan Xu hosted Weller.

Weller also visited Tokyo University of Agriculture and Technology (TAT) from May 28–30, 2008, to discuss development of a Maymester class “Agriculture in Tokyo and Iwate: In the Past, Present, and for the Future.” Professors from TAT and Iwate University were involved in the discussion and the class may be offered in 2009. Weller also discussed continuation of the TAT/Purdue student exchange program with TAU administrators and faculty.

Kim Wilson and Purdue alumnus David Witte led 15 students on a Maymester Study Abroad course in Ecuador focused on sustainable village-base planning and design. Partnering with local NGO Verde Milenio, this service-learning course used a “grassroots” participatory process where students, in collaboration with local villagers, assessed needs and developed plans to implement short- and long-term eco-tourism projects. Service-learning projects initiated during this visit included: a development plan for the rainforest village of San Miguel, a stormwater management plan for the upland village of Mascarilla, a community plan for Canoa, and a waterfront design for the coastal village of Bahia. Students gained direct personal experience regarding how service can help to improve community health and quality of life and make a difference in the lives of people. Joan Jurich, CIE assessment specialist, joined the class for one week and conducted an assessment focused on the role commitment plays in reciprocity for all partners, including students, instructor, local liaison, and villagers.



Youth Development and Agricultural Education (YDAE)

B. Allen Talbert and Mark Balschweid led 13 students on an international study-abroad undergraduate teacher preparation course in agricultural education in Jamaica. The Maymester course was headquartered at CASE, the College of Agriculture, Science, and Education in Port Antonio, Jamaica. This was the fourth year for the course, which has had 48 students total.

Talbert hosted a Borlaug Fellow from the Indira Gandhi Agricultural University in Raipur, India. Dr. Saxena was in residence at Purdue University for six weeks in the fall, learning about various methods of delivering agricultural instruction through distance technologies. During the spring of 2008, Talbert traveled to Raipur, India, to observe the progress of the project and establish possible teaching and research connections.

Neil Knobloch participated in a professional development program in The Netherlands, Belgium, and in France with colleagues from the University of Illinois, Urbana-Champaign. The purpose of the 10-day trip was to develop research collaborations with faculty at Wageningen University and E.I. Purpan and explore the opportunities to develop a bioenergy curriculum.

Natalie Federer and Mark Tucker led 10 Agricultural Communication students on a new two-week Maymester course titled “Science Communication: Focusing on English Food and Agriculture.” Students studied the news content of various agricultural and mass-media outlets in the United States

and England, visited the BBC Network, met with agricultural communication professionals, and experienced various aspects of British culture. An agricultural communication faculty member from the University of Nebraska-Lincoln (UNL) traveled with the Purdue group to England, and tentative plans are to partner with UNL in 2009. The course will be offered on a biennial basis.

Twenty-two Japanese youth ranging in age from 15 to 18 spent four weeks in Indiana as part the Purdue/Meiji Gakuin Summer 4-H International Program. This 4-H-based International Exchange Program is to provides a “glimpse” into the everyday life of American families while developing lasting friendships and cultural bridges for Indiana youth. Each Japanese participant stayed with an Indiana host family during the exchange.

During June 2008, 10 youth and five adults traveled to Poland as part of the annual Indiana/Poland 4-H youth exchange program. The program allowed the Indiana delegation to study Polish agriculture, experience Poland’s culture and heritage, and learn about 4-H in Poland. Each Indiana delegate spent two weeks with their host family

Jerry Peters, Roger Tormoehlen, and Lee Stanish from YDAE, along with Kira Everhart-Valentin (IPIA) and Mark Russell (ANSC), represented Purdue University at the annual conference for the Association for International Agriculture and Extension Education. Russell, Stanish, and Everhart-Valentin presented a poster on their research/extension project to partner Indiana businesses with Costa Rican producers and businesses.

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