College of Agricultural Sciences

INTERNATIONAL PROGRAMS

June 2010 E-Newsletter

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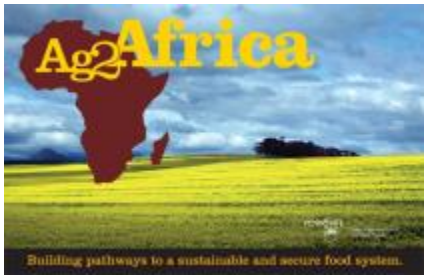
1. College Launches Ag2Africa initiative, receives BREAD grants

Contact Chuck Gill (814-863-2713)

University Park, Pa. -- Africa is home to about 1 billion people, and a recent report by the United Nations Food and Agriculture Organization (FAO) indicates as many as 30 percent of them suffer from chronic hunger or malnutrition. A new initiative announced by Penn State's College of Agricultural Sciences is aimed at working with African institutions to ease this human suffering while enhancing food and economic security through agricultural research and education.



Launch of the college's Ag2Africa initiative coincided with a May 12 announcement that three Africa-related projects involving the college would receive grants from the BREAD program (Basic Research to Enable Agricultural Development), a collaboration between the National Science Foundation and the Bill and Melinda Gates Foundation. The grants were three of just 15 awarded nationwide.

Agriculture is the motor for rural development and reducing poverty and hunger in Africa, according to the FAO report.

"With some of the world's poorest countries, Africa is a key region in terms of feeding the world in the next 50 years," said Thomas Gill, Ag2Africa coordinator in the college's Office of International Programs. "To ignore Africa is to ignore millions who are undernourished and food insecure. This initiative is consistent with the vision we share with Penn State, U.S. and international partners to think globally and to embrace Africa as a neighbor when addressing concerns related to agriculture, trade, the environment, gender equality and other issues."

The Ag2Africa initiative will provide a focal point for new and ongoing collaborations in Africa, Gill said. He cited several overall objectives, among them:

- promote sustainable livelihoods by studying and implementing new technologies that will address such challenges as drought, poor soil fertility, pest damage and low crop yields;
- enhance human-resource capacity in Africa by helping to train and develop leaders, scientists and educators who can solve local problems;
- build extension and outreach programs so that the latest and best scientific information can be translated to practices in the field;
- provide service-learning opportunities for students -- both in the United States and Africa -- to apply what they've learned and become global citizens.

The new BREAD grants will provide a total of more than $2.5 million for Penn State researchers working on three projects. One, led by James Tumlinson, Penn State professor of entomology, will survey native honey bees in Kenya and characterize the distribution of parasitic Varroa mites, viruses and other pathogens that have an important effect on honey bee health. The long-term goal is to develop protocols for sustainable, nonchemical beekeeping practices and to minimize threats to this ecologically and agriculturally critical species.

The research team also includes James Frazier, Maryann Frazier, Christina M. Grozinger and Harland M. Patch, all from Penn State's entomology department, and Daniel Masiga and Elliud Muli from the International Centre of Insect Physiology and Ecology in Kenya.

The second BREAD grant will support a collaboration to develop maize varieties with root traits that will enhance a plant's ability to acquire water and other soil resources while reducing the metabolic cost to the plant of soil exploration. Jonathan Lynch, Penn State professor of plant nutrition, will lead the project, which is designed to develop products and approaches that will help feed hungry people in Africa.

Co-principal investigators include Kathleen Brown, Penn State professor of postharvest physiology, Shawn Kaeppler of the University of Wisconsin-Madison and George Kanyama-Phiri of Bunda College of Agriculture in Malawi.

Mark Guiltinan, professor of plant molecular biology, is a co-principal investigator on a third BREAD project aimed at developing and testing two novel methods for achieving plant resistance to fungal diseases. Promising techniques will be applied to cacao, an important cash crop in west Africa. Ultimately, these new technologies also could be applicable to a broad array of fungal diseases of rice, wheat and other crops important to the developing world.

Brett Tyler, Virginia Tech professor of plant pathology, physiology and weed science is the principal investigator. Researchers on the project also include Shunyuan Xiao at the University of Maryland and Brian Bailey of the U.S. Department of Agriculture's Agricultural Research Service in Beltsville, Md.

Gill pointed out that the College of Agricultural Sciences has other collaborations underway in several African countries, focusing on such areas as food security, plant physiology and molecular biology, integrated pest management, agribusiness, sustainable agriculture and forestry, livestock management and agroecology.

"Projects under the Ag2Africa umbrella work through in-country partnerships with universities and other research institutions, government agencies, nongovernmental organizations, and other public and private-sector groups," he said. "There's excellence around the world, and these types of global collaborations enhance all the partners' abilities to make a difference in people's lives." (Return to Index)

2. Director of International Programs receives Award for Internationalization Efforts

University Office of Global Programs

Penn State's University Office of Global Programs (UOGP) recently held its third annual breakfast in celebration of International Women's Day. Over 100 attendees from Penn State and the greater Centre County community enjoyed the event---the breakfast's largest turn-out to date. The keynote speaker was Ann Tickamyer, professor of rural sociology and head of the Department of Agricultural Economics and Rural Sociology, who spoke on the timely subject of "Women in Disaster Relief and Recovery."

Later in the program, six highly-deserving women were honored with Spirit of Internationalization Awards. These annual awards honor women with international interests who have shown extraordinary strength of character and commitment to the cause of internationalization.

The 2010 Spirit of Internationalization award winners include:

- Benta Abuya—Graduate Student in Education Theory and Policy, College of Education
- Deanna Behring—Director of International Programs, College of Agricultural Sciences
- Polly Dunn—Volunteer Coordinator, Global Connections
- Eva Letwin—Community Volunteer, Centre County United Nations Association
- Jacqueline McLaughlin—Associate Professor of Biology, Penn State Lehigh Valley
- Emily Tarconish—Graduate Student in Counselor Education, College of Education

Left to right: Jacqueline McLaughlin, Deanna Behring, Eva Letwin, Polly Dunn, Benta Abuya, Emily Tarconish
Photo by Alanna Shea, journalism student

The International Women's Day Breakfast was made possible by sponsorship from the Center for Women Students, the Penn State Federal Credit Union, the Centre County United Nations Association, and the Women in the Sciences and Engineering Institute. In addition, in-kind contributions were made by Woodrings Floral Gardens, Hair DeZigns Salon & Spa, The Hair Loft by Charles, and Kate Penkala, independent beauty consultant with Mary Kay. (Return to Index)

3. College's Graduate Students Win International Achievement Awards

(Adapted from Penn State Live and the University Office of Global Programs press release)

Jessica Bagdonis, a doctoral candidate in agricultural and extension education and comparative and international education, won the 2010 W. LaMarr Kopp International Achievement Award for graduate students. David Fleming, a graduate student in Agricultural, Environment, and Regional Economics, won the 2010 Ardeth and Norman Frisbey International Student Award.

The Kopp award recognizes graduate and undergraduate students who have contributed significantly to the advancement of the international mission of the University. It is named for the retired deputy vice president for international programs. The designated achievement includes, but is not limited to, the display of excellence in: graduate research, or an undergraduate academic course of study and/or research, with a significant international component; participation in international programs and/or field projects; graduate student teaching with significant international content, or undergraduate student leadership in improving relations among peoples from different regions of the world; and service to the international community.

In 2009 Jessica Bagdonis taught a senior-level class to a mixed group of U.S. and Russian students in Moscow. She also assisted with the evaluation of The Russian American International Seminar course that took place in Moscow through distance education. She created and leads Penn State's International Agriculture Grad Student Forum, which meets monthly to discuss ideas about international agriculture development policies, research and work opportunities. She traveled to Brazil to collect data for her dissertation, which compares U.S. and Brazilian knowledge of food safety practices, and has published many of her experiences. Bagdonis was named one of the "Future Leaders" of international agriculture in 2009 by the Association for International Agriculture and Rural Development. In 2008, she was one of 10 participants selected by the National Science Foundation to attend a special course at the International Rice Research Institute in the Philippines. One nominator noted that he has not known another student with her level of international experience in managing and directing development projects.

The Frisbey Award, established in the early 1990s by Mrs. Frisbey, recognizes exemplary contributions to international understanding by full-time graduate and undergraduate international students.

David Fleming is the founder and first president of the Latin American Graduate Student Association (known as LA GRASA). This recently-formed group helps students to better understand Latin culture and provides opportunities for its members to get involved in U.S. culture and the State College community. Fleming has another leadership role as organizer of a soccer team called PATADA. Over 100 international and American graduate and undergraduate students have played for the team in various tournaments.

David is a 2010 Future Leader and will be attending the AIARD meeting and symposium in Washington, D.C. next month. (Return to Index)

4. Visiting international delegation learns about food safety

Posted: April 19, 2010

An international delegation from south Asia visited the College of Agricultural Sciences recently to learn about best practices and new technologies for ensuring food safety.

Tom Palchak, manager of the Berkey Creamery, explains creamery operations to a visiting delegation from five Asian countries.

Policymakers from Bangladesh, India, Kazakhstan, Kyrgyz Republic and Tajikistan toured facilities in the Department of Food Science and heard presentations from faculty members about research and educational programs to enhance food safety at the
farm, processing, distribution and consumer levels.
The delegates were invited under the auspices of the U.S. Department of State's International Visitor Leadership Program, and their itinerary was arranged by the Academy for Educational Development.

The goal was to provide information and knowledge that can inform food-safety, food-security and public-health policies in the visitors' respective countries. (Return to Index)

5. IPM scientists combat pest of highly prized cacao in Ecuador

Written by Lexi Hollar and Miriam Rich

Rachel Melnick learned one thing about spending long days in Ecuadoran cacao orchards: do not work past 4:00 pm. “Once, we made the mistake of working past 4 pm in the field. We quickly realized why no one did this – that is when all of the mosquitoes come out!”

Working with Penn State plant pathologist Paul Backman, Melnick, a graduate student, is studying how to use beneficial bacteria to fight diseases that attack the cacao trees. The program is part of the IPM CRSP, funded by USAID and managed by the Office of International Research, Education and Development at Virginia Tech.

Rachel Melnick working in Ecuadoran cacao orchards.

The cacao tree, of course, is the plant from which we get cocoa, the foundational component of chocolate. And chocolate is big business in Ecuador and becoming more so by the day.

In 2009, Ecuadoran President Raphael Correa began an initiative to expand the production of cacao in the country by having 50,000 additional hectares – the equivalent of 123 acres – planted in cacao. This venture alone will require the planting of at least 50 million new cacao shoots, according to Backman.

However, a serious pest has wreaked havoc with cocoa production in Ecuador in recent years. Witches' broom, a fungus disease caused by Moniliophthora perniciosa, has devastated the cacao industry in Latin America. Witches’ broom arrived in Ecuador in 1918, and since then has catastrophically affected the cacao production – reducing output by 50 to 90 percent.

Melnick and Backman used the bacterial treatments as spray treatments applied to young and developing cacao pods as biological control agents, an environmentally effective way to reduce pests through the use of natural enemies. "I sprayed the bacteria onto the cacao trees with an adjuvant – a connecting agent – that allowed the bacteria to colonize the internal tissue of the tree. From there, it could be a natural enemy to the fungal diseases." Melnick says.

One key advantage of the bacteria is its robustness. The bacteria was applied a few hours before a rainfall and survived after the rainfall both on the surface and inside the cacao pods. These results are encouraging, because they indicate that the bacteria will likely be able to persist through Ecuador's rainy season.

Although none of the trials reduced pod disease for a whole season, there was significant suppression and delay in the development of infections that lasted through mid season. "We were really excited the day we learned it reduced the disease," said Melnick. "It had never been reduced before." For witches' broom on the leaves and stems, the news was even better: Application of one of the bacteria reduced the disease throughout the entire rainy season.

The research has been very successful so far. It has developed methods to reproduce cacao that can be used by both large and small scale production facilities and allows for the use of materials and technologies that are available to farmers. Furthermore, interesting results have surfaced from other IPM trials showing that intercropping cacao with plantain reduced diseases on both crops, and also reduced nematodes (microscopic roundworms) that were attacking plantain. One of the trials also indicated suppression of black pod rot, which is a disease that is responsible for the most significant losses in cacao worldwide.

Melnick, the key researcher for this project, has completed her Ph.D. and accepted a post-doctoral position at the United States Department of Agriculture, Agricultural Research Service, Sustainable Perennial Crops Lab in Beltsville, Maryland, where she plans to continue her work on cacao disease control.

Melnick worked long hours while in the field in Ecuador. In addition to not staying out past 4:00 pm, she also learned to bring lots of sun block! (Return to Index)

6. New intern in the Office of International Programs talks about Food Security as National Security

Written by Nikolay Boyadzhiev

Since the dawn of time, most conflict and wars were started because of struggle and competition over food resources-access to arable land, rivers, and hunting grounds. It is all about access to food, and whoever controls it sets the rules.

Studies have shown that in countries where endemic poverty exists there is at times, a higher chance for conflict and instability. The impossibility in providing for their families has pushed many people into a downward spiral of anti-Western indoctrination and extremism. We all remember cases such as Somalia, and especially Afghanistan.

The case of Afghanistan is complicated. The lack of deep involvement of the West in development of agricultural capacity for sustainable food crops has led to an increased production of poppy to fill the vacuum. Viewed as the only feasible source of sustenance, the poppy crop has provided steady income not only to the poor farmers but also has financed and fueled the Taliban activities in the region. If I could paraphrase the words of Lieutenant General Peter Chiarelli, the former number two U.S. commander in Iraq: The best way to prevent conflict and maintain peace is to "take the angry young man out of the street." But this question raises another one: How to do it?

New government initiatives such as "Feed the Future" as well as the Senators Lugar and Casey "Global Food Security Act" are taking steps in addressing those issues. The Lugar-Casey legislation develops a framework for comprehensive engagement to act upon the local and global food security challenges. It

creates a new Global Food Security Strategy, which emphasizes improvements in planning and coordination of the response of the U.S. in event of food crises, thereby ensuring the sustainable livelihood of the population in a number of developing and unstable countries. Also important is the President Barack Obama's $3.5 billion "Feed the Future" initiative aimed at reducing hunger and poverty in developing nations. This initiative concentrates on 20 focus countries spread on four continents: Nepal, Bangladesh, Cambodia, and Tajikistan in Asia; Ethiopia, Ghana, Kenya, Liberia, Mali, Malawi, Mozambique, Rwanda, Senegal, Tanzania, Uganda, and Zambia in Africa; and Guatemala, Haiti, Honduras, and Nicaragua in Latin America.

The plan acknowledges the urgent need of action. Because of growing global population and rising global temperatures, we are witnessing rising global food shortages. According to the U.S. Department of State, for every one-degree rise in temperature, we get a 10% decline in agriculture production. As oil becomes more expensive, the cost of food will soar. Water shortages threaten to reduce the global food supply by more than 10% in the next 25 years. In poverty-stricken areas, the growth of agriculture productivity isn't keeping up with population spurts. If we don't work to counteract these effects, we will lose our ability to grow enough affordable food on our planet.

Actively engaging and supporting the development of sustainable and comprehensive capacities for food production is the best way of securing the thrust countries in need and, at the same time, dramatically reduce the threat of anti-American attitudes. Acting in the name of humanity could be the best way of guaranteeing our security.

Nikolay Boyadzhiev is an intern in the Office of International Programs for the summer, 2010. Nikolay is originally from Bulgaria, but lived in Chicago for several years before coming to Penn State for a Master of International Affairs Degree from the School of International Affairs. He has a B.A. in Political Science from the Plovdiv University "Paisii Hilendarski" and is interested in international development, security, technology and European Affairs. Apart from his academic interests he is involved with open source technology, martial arts, hiking and scuba diving. (Return to Index)

7) Ag students, clubs fund Heifer Project International Gift Ark

Penn State Live - Jeff Mulhollem/Chuck Gill

University Park, Pa. -- According to the ancient Chinese proverb, if you give a man a fish you will feed him for a day, but if you teach a man to fish you will feed him for a lifetime.

In a sense, Penn State's Agricultural Student Council, in collaboration with other student organizations, recently accomplished both of these feats.

After nearly three semesters of fundraising, this coalition of students and student-run organizations raised $5,000 in an effort to sponsor the "Gift Ark" with the Heifer Project International. The Gift Ark "helps families start on a journey to fulfill a seemingly impossible dream -- to secure food and a source of dependable income."

The Gift Ark is comprised of 15 pairs of animals ranging from dairy cows and sheep to goats, chickens and even camels. These pairs are distributed across the globe to various impoverished or disaster-stricken communities, and each family that receives livestock will pass on one or more of the animal's offspring to other families in need throughout their community.

In theory, every pair of animals will reproduce for years to come, not only providing food, but a consistent source of income.

According to Robin Bechtel, a senior Animal Sciences major from Martinsburg, Pa., the recipients of each pair of livestock are given not only a "gift" animal and an accompanying breeding animal, but more importantly they are taught the foundations of proper animal husbandry.

"These families are taught to raise the animal and then give the offspring to their neighbor," she said. "This cycle should continue to multiply and hopefully create a self-sustaining community."

The Heifer Project International, a nonprofit charitable organization based in Little Rock, Ark., was founded in 1944 by Daniel West. A farmer and relief worker stationed in Spain during the Spanish Civil War, West became frustrated with the lack of food aid and livestock available to the communities he visited. Upon returning to the United States, West established the Heifer Project by sending the first shipment of livestock to Puerto Rico.

Lester Griel, professor of veterinary science, who is program coordinator for the Veterinary and Biomedical Sciences and the Animal Bioscience programs at Penn State, remembers how the Gift Ark initiative got started in the College of Agricultural Sciences.

"It only takes a spark to get a fire going," he said. "My recollection of the development of this project begins with the initial officers meeting of the Pre-Vet Club for the 2007-08 academic year. Lauren Aldinger, the elected vice president for the year, came back to school very enthusiastic about getting the club involved in a fundraising effort to assist other countries. This was based on experiences that she had the previous summer that involved Heifer Project International."

Aldinger, a Palmyra, Pa., native who currently is a second-year student at the School of Veterinary Medicine at the University of Pennsylvania, convinced the club leadership to begin fundraising efforts to make a contribution to the Heifer project.

"After a few months, this was expanded to involve more student organizations in the college," Griel said. "The funds that the Pre-Vet Club had raised to that point were transferred to Ag Student Council, and all student organizations that became involved channeled the funds to the Ag Student Council treasury with the goal of reaching the $5,000 (mark)."

The "Gift Ark" fundraising effort grew to include nearly a dozen student clubs, fraternities and sororities at Penn State. Led by Bechtel, Justin Valentine, a junior Veterinary and Biomedical Sciences major from Tamaqua, Pa., and Deidre Hepler, a junior Agricultural Science major from Pitman, Pa., the project accumulated the majority of its revenue through various fund-raising events, including spaghetti dinners.

"This project supports agriculture in underdeveloped areas. It directly impacts so many cultures, and since so many of these organizations share ties through agricultural clubs, it made sense to pursue the effort," said Bechtel.

Although the fundraising project was a long-term endeavor, Bechtel hopes future Penn State students will continue to support the Heifer Project.

"It was a fun experience," she said. "It is a great cause both in the immediate and in the long run. These families get a sense of pride establishing a consistent livelihood, and the community benefits from food and developing sources of income." (Return to Index)