

CGAHR Update

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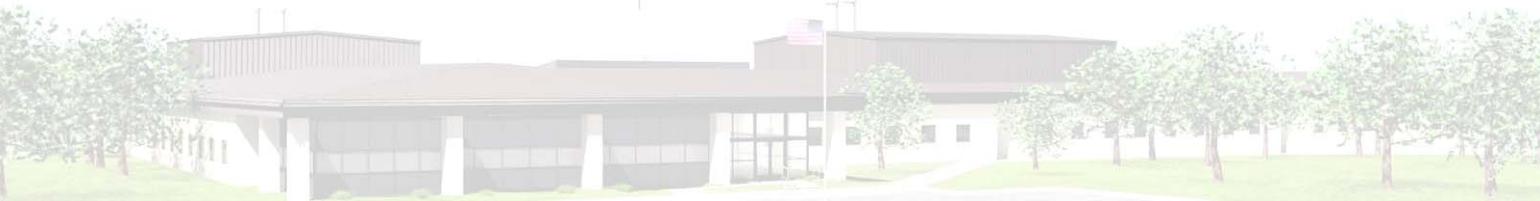
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Fall is a season of change and the USDA-ARS **Center for Grain and Animal Health Research (CGAHR)** has definitely been “seasonally appropriate” this year! Perhaps the biggest change since the Spring Update has been the successful relocation and integration of staff and programs of the **Arthropod-Borne Animal Disease Research Unit (ABADRU)** from Laramie, WY, to Manhattan, KS. Incorporation of ABADRU into CGAHR was one of the key events that prompted our name change.

Other changes have included considerable facility renovations and upgrades. We renovated 19 labs, offices and other work spaces, and added two modular laboratories to accommodate the specific research needs of ABADRU. We have also begun the final phase of construction on our milling laboratory for the **Grain Quality and Structure Research Unit**. We have completed review of the 50% design for a new Wind Erosion Facility. This building will replace the tornado-damaged facility that contains the **Engineering and Wind Erosion Research Unit (EWERU)** wind tunnels. A set of 6 sheds, dubbed “Shed-ville” (below left), has been constructed to support the **Stored Product Insect Research Unit (SPIRU)** research mission. And perhaps most obviously, we have had our iconic grain elevator and pilot plant (below, right) repaired and repainted.



A number of special visitors stopped at CGAHR over the past few months. These include **Dr Kanayo Nwanze**, President of the International Fund for Agricultural Development based in Rome, Italy; **US Senator-elect Jerry Moran**; a delegation from the Kansas Bioscience Authority that included several Kansas state legislators (Sydney Carlin, Sharon Schwartz, Jim Ward, and Tom Moxley). We also had two groups of USDA FAS Cochran Fellows, one each from Nigeria and Jordan.



Grants

Barbara Drolet, in collaboration with Dr. Khalid Saeed (Head of the Regional lab in Alhodeyda and Head of Regional Epi Unit in Tihamah) and Dr. Mansoor Al-Qadasi (Directorate General of Animal Health & Veterinary Quarantine, Ministry of Agriculture & Irrigation), received \$90,000 from the U.S. Department of State Biosecurity Engagement Program for Rift Valley Fever Serosurveillance and Control in Yemen.

William Wilson, in collaboration with Dr. Mona Aly, Director of Animal Health Research Institute, Animal Health Research Institute, Egypt, received \$75,000 from the U.S. Department of State Biosecurity Engagement Program for Rift Valley Fever Serosurveillance and Control in Egypt.

William Wilson, in collaboration with Dr. John Mugambi, Kenya Agricultural Research Institute, Kenya, received \$250,000 from the U.S. Department of State's Biosecurity Engagement Program for immunological control of Rift Valley Fever in African ruminants.

William Wilson and Dr. David Wallace, Onderstepoort Veterinary Institute, South Africa received \$100,000 from the U.S. Department of State's Biosecurity Engagement Program for immunological control of Rift Valley Fever in African ruminants.

William Wilson and collaborators Dr. Patrick Johnson, University of Wyoming, and Dr. Juergen Richt, Kansas State University, received the first \$100,000 of a \$498,917 research development contract from the Kansas Bioscience Authority for development of novel diagnostic tools for Rift Valley Fever.



Meeting/Conferences

Barbara Drolet gave an invited talk at the Kansas City Life Sciences Biosecurity Symposium in August in Kansas City, MO.

Barbara Drolet participated in the Scientific CRTI Review Meeting with Canadian Food Inspection Agency in Winnipeg, Manitoba.

William Wilson was an invited speaker at the 2010 American Veterinary Medical Association annual meeting in Atlanta, GA.

Barbara Drolet and **William Wilson** presented ABADRU research overview at the combined American Association for Veterinary Laboratory Diagnosticians/U. S. Animal Health Association annual meeting in Minneapolis, MN. ABADRU Rift Valley Fever research was highlighted at the ARS Symposium on "One Health."



Photos of participants at the **Rift Valley Fever Workshop** held at CGAHR December 7-8, 2010

Visitors

In addition to getting settled into their new offices and laboratories, ABADRU staff hosted a number of visitors including Dr. D. Scott McVey, Director, Nebraska Veterinary Diagnostic Center School of Veterinary Medicine & Biomedical Sciences University of Nebraska; Colonel/Dr. Mustapha Debboun, Director, Center for Health Education and Training Academy of Health Sciences, U.S. Army, Fort Sam Houston, Texas; Drs. Kenneth Linthicum and Lee Cohnstaedt, USDA-ARS Center for Medical, Agricultural and Veterinary Entomology, Gainesville, FL; Dr. Jose Estrada Franco, University of Texas Medical Branch, Corpus Christi, TX; Dr. John Dunn, USDA-ARS Avian Disease and Oncology Laboratory, East Lansing, MI; Dr. David Miller, Clinical Sciences, Colorado State University, Fort Collins, CO; Dr. Luis Rodriguez, USDA-ARS Foreign Animal Disease Research Unit, Plum Island Animal Disease Research Center; Dr. Suzanne Gibbons-Burgener, University of Wisconsin, Madison, WI; and Dr. Barbara Knust, Center for Disease Control and Prevention, Atlanta, GA; Leonard Ateya and Vincent Odendo, Kenya Agricultural Research Institute.

The ABADRU hosted a Rift Valley Fever Workshop on December 7-8, 2010 in Manhattan, KS. The meeting included more than 50 participants from various government agencies and universities from three countries (see photos on Page 2).

FAQs about ABADRU

What type of research does the ABADRU conduct?

The ABADRU works on serious livestock diseases that are spread by biting arthropods or insects. Primarily the scientists work on biting midges and mosquitoes that can spread livestock diseases. We study the molecular biology of these diseases and the insects that spread them, the epidemiology of these diseases, and how the disease affects the animals. This is all in an effort to develop better detection, control, and prevention methods. Diseases of particular interest include bluetongue virus, vesicular stomatitis virus, epizootic hemorrhagic disease virus, and Rift Valley Fever virus. This research is important to protect U.S. livestock, which are key food sources for our nation and the world.

What is the ABADRU's Research Mission?

To solve major endemic, emerging, and exotic arthropod-borne diseases problems in U.S. livestock. Research emphasizes molecular biology of pathogens and vectors, vector biology and competence, epidemiology, and animal pathogenesis. Arboviruses are the major focus of concern because they are especially difficult to control. These include exotic and domestic strains of bluetongue virus (BTV), vesicular stomatitis virus (VSV), and epizootic hemorrhagic disease virus (EHDV), as well as wild type and vaccine strains of Rift Valley Fever virus (RVFV).

Why did the ABADRU move to Manhattan, Kansas?

The research laboratory in Laramie had reached the point that major infrastructure investments would have to be made to ensure that the Laramie facility was suitable for conducting the types of research we needed to do. ARS is a very large organization with more than 100 research locations nationwide, so it is more cost-effective for the federal government, and therefore, for the taxpayer, to relocate this research program to one of our other existing laboratories. Manhattan was especially appropriate because Kansas State has just built a new state-of-the-art biocontainment laboratory where our scientists can work collaboratively with Kansas State University (KSU) researchers. The work that we do, doesn't pose any threat to the public or to local livestock, wildlife or domestic animals. That's the beauty of working in a modern high-containment laboratory such as KSU has just built: what's inside the building stays inside the building. There's absolutely no danger to the community from the work that we do.

Are there any advantages for Manhattan in moving ABADRU?

Obviously, bringing new people into the Manhattan community has and will continue to infuse new dollars to the local economy, valued at approximately \$2 million. As time goes by, job openings could run the gamut from scientific positions to administrative and infrastructure maintenance jobs. In addition, ABADRU scientists have collaborative relationships with the KSU faculty that will result in new cooperative funding proposals.

Is ABADRU connected to the new DHS laboratory that will be built in Manhattan?

The ABADRU is not connected with the Department of Homeland Security's (DHS) proposed National Agro- and Biodefense Facility ("NBAF"), which DHS has said would be built here in Manhattan. The ARS scientists and research program that will come to Manhattan with NBAF will provide additional collaborations available to the ABADRU scientists.



Research Highlight

Applying single kernel NIR sorting technology for assessment of *Fusarium* Head Blight resistance in wheat germplasm

We are developing near-infrared (NIR) spectroscopic methods to sort *Fusarium* damaged wheat kernels (FDK) from sound kernels and to nondestructively determine deoxynivalenol (DON) levels. Our objective is to facilitate the rapid and objective evaluation of varieties for *Fusarium* resistance.

We have sorted many samples for *Fusarium* damage from various wheat breeders. DON analysis of sorted FDK fractions confirmed that SKNIR sorted FDK fractions had significantly higher DON levels. Therefore, this technique may be employed to obtain a more detailed characterization of host plant resistance mechanisms compared to characterizations that are based on DON analyses of composite samples.

We investigated the NIR absorbance characteristics of DON and that of sound and *Fusarium* damaged wheat kernels and showed that DON has NIR absorption bands with peaks at 1408, 1904 and 1919 nm. Therefore NIR may be absorbed by DON in *Fusarium* damaged wheat kernels indicating the suitability of NIR spectroscopic technique for objective evaluation of *Fusarium* damage on the basis of kernel DON levels. We have also completed a study to assess the accuracy of SKNIR to sort kernels based on scab and DON levels using our scab and DON NIR calibrations.



Single kernel NIR (SKNIR) sorter.



Wheat kernels undamaged (upper right) and with varying levels of fusarium damage, sorted by the SKNIR system.

We studied the distribution of DON levels among single kernels in artificially inoculated wheat spikes. The concentration of DON among single kernels above and below the point of inoculation varied between two varieties studied. Results indicated the existence of asymptomatic kernels with high DON levels as well as scabby kernels without DON in infected spikes. This may in part explain the failure to observe a consistent relationship between the intensity of scab infestation and DON levels.

We have developed a NIR moisture calibration for the SKNIR to estimate single kernel moisture content in samples having sound and *Fusarium* damaged kernels. This will be helpful to non-destructively estimate DON and other constituent levels of single kernels at a constant moisture basis.

The above results show that the SKNIR technique could be used as a low cost, rapid and nondestructive method for comprehensive evaluation of cultivars for FHB management.

For more information contact Dr. Floyd Dowell (785) 776-2753, Email: Floyd.Dowell@ARS.USDA.GOV
(Collaborators on this work were: K. H. S. Peiris, M. O. Pumphrey, Y. Dong, S. Wegulo, W. Berzonsky, and P. S. Baenziger)

Grants

Mark Casada received \$1,200,000 to develop new stored grain pack factors. This collaborative project with the USDA Risk Management Agency, the University of Kentucky, the University of Georgia, and Kansas State University will refine and validate a procedure based on measurable physical parameters for determining the packing of grains within upright storage structures. Data to validate the procedure will be gathered from commercial and on-farm bins from all of the major grain-producing areas within the U.S.



Tom Pearson initiated a CRADA with National Manufacturing of Lincoln, Nebraska, to transfer technology for low cost high speed sorters developed in EWERU. National Manufacturing has now manufactured 10 high speed sorting machines. These machines have all been sold and are now in place at various breeding programs throughout the country where they are used for separating red and white wheat, removing volunteer barley and durum from wheat, separating scab damaged wheat, and purifying yellow flax seed. National Manufacturing currently has ten additional orders for these sorters that will be shipped in 2011.

Meeting/Conferences

Larry Wagner and John Tatarko attended the American Society of Agronomy-Crop Science Society of America-Soil Science Society of America joint annual meeting in Long Beach, CA.

Tom Pearson and Dan Brabec attended the annual meeting of the Mid-Continent Region of the Federal Laboratory Consortium in Jackson Hole, WY. Tom and Dan received the **Excellence in Technology Transfer Award** for their work "Development and transfer of technology to rapidly detect the presence of insects in stored grain" (see photo at right). Congratulations to Tom and Dan.



Floyd Dowell met with scientists at the Ifakara Health Institute, Ifakara, Tanzania, and conducted a short-course on near-infrared spectroscopy applied to determining mosquito age and species.

Tom Pearson attended the American Society of Cereal Chemists International (AACCI) annual meeting in Savannah, GA, and represented the U.S. at the International Association for Cereal Science and Technology (ICC) luncheon held at the AACCI meeting.

Visitors

Dr. Emmanuel Diaz from the Universidad Nacional Autonoma, Mexico City, Mexico, spent 2 weeks this summer working with Dr. John Tatarko on a field sampling campaign to support the newly combined MCCM-WEPS model.

Gerald Hage from Unity Scientific, and Henrick Andrean from Bomill visited to discuss the high-speed NIR sorting system from Bomill.

Sheena Parson, Kansas State University graduate student, spent time in our lab analyzing grasshopper characteristics using visible and NIR spectroscopy.

Research Highlight

Grain Quality factors related to the production of ethanol from sorghum

Sorghum is an important crop in the U.S. and grows well in areas of limited water. However, sorghum has been underutilized compared to many other cereal grains. Sorghum has unique properties that give it potential for use in human foods, human health, and in bio-industrial products. This is especially true with regards to the use of sorghum as a renewable feedstock for bioenergy production. One aspect of our research program on enhancing new uses of sorghum has focused on the production of ethanol from sorghum. We have conducted several research projects with collaborator Dr. Donghai Wang and others at Kansas State University to investigate grain quality factors that govern fermentation yields from sorghum.



For ethanol production from grains, starch is a key factor in determining how much ethanol can be produced. We found that the amount of starch in sorghum was highly correlated ($R^2 = 0.82$) to ethanol yields in sorghum. In the samples we examined starch content ranged from 64 to 74% of the grain (on a dry weight basis). On average, this difference between the lowest and highest starch content would translate into approximately a 15% difference in ethanol yields per unit grain used. However, it was also possible to identify sorghum lines that had similar starch levels, but that differed in the amount of ethanol they produced (over 7% in some cases). This suggests that not all starches behaved the same during ethanol production. This was apparent when sorghum lines with different types of starch were used to produce ethanol. Waxy and heterowaxy sorghum lines, (which differ from normal sorghum lines in their starch composition) had higher ethanol yields than normal sorghum lines, even when compared at the same total starch level. This was attributed to the amount of a specific type of starch, amylose, in the normal sorghum lines.



In addition to starch, we also found that sorghum proteins play an important role in determining fermentation quality of sorghum. At the same protein level, ethanol fermentation efficiency varied up to 8% among samples. We found that fermentation efficiency in sorghum was strongly positively correlated ($R^2 = 0.91$) with protein digestibility. This was attributed to the degree of sorghum protein cross-linking both in the raw flour and new cross-links formed during the fermentation process. Proteins that were not easily digested were thought to be more intensively cross-linked and thus reduced the ability of enzymes to break down the starch to sugar.

We have also conducted research to investigate how processing methods affect ethanol production including the effect of particle size on ethanol yields, extruding before fermentation, and decortication (removing the bran) the grain before fermentation. Decortication was found to improve ethanol yields by up to 20% in some sorghum lines. The bran, or outer layer of the grain, contains fiber and other materials that are not used in the fermentation process. By removing this material before fermentation, more starch is effectively processed, leading to higher fermentation yields. We are currently investigating the impact of this on the dried distillers grains (DDGS) that is left after fermentation to see if decortication leads to DDGS with improved feed quality.

For more information contact: Dr Scott Bean, 785-776-2725,
scott.bean@ars.usda.gov



Grants

Scott Bean received a \$6,000 grant from the Kansas Grain Sorghum Producers Association to work on 'Effect of Decortication on Feed Quality of Sorghum DDGS'.

Meeting/Conferences

Tom Herald attended the Institute for Food Technologists meeting in Chicago IL.

Tawanna Ross attended the National Advisory Council for Office Professionals workshop in Norman, OK.

Scott Bean, Jeff Wilson, Deidre Blackwell and **Rhett Kaufman** attended a mini sorghum symposium at Kansas State University.

Mike Tilley, Richard Chen and **Tom Herald** attended the American Association of Cereal Chemists meeting in Savannah GA.

Scott Bean, Mike Tilley, Jeff Wilson and **Tom Herald** attended the Celiac Sprue Association national meeting in Kansas City, MO.

Mike Tilley was an invited speaker at the 6th International Food Science Symposium in Beijing, China. While in China, he also visited Jiangnan University in Wuxi, China.

Mike Tilley attended the 2010 Tortilla Industry Association Technical Conference in Las Vegas, NV.



Visitors

Recent visitors to the GQSRU have included sorghum producer and NuLife Foods CEO, Earl Roemer; Tim Welby and Kevin Bracken from Foss, Inc.; Mark Hodges, CEO of Plains Grains Inc.; Jill Barnhardt, Kansas Sorghum Commissioner, Aaron Harries of the Kansas Wheat Commission; and Jim McKenna and Muyiwa Talabi; U.S. Wheat representatives from Cape Town, South Africa, and Lagos, Nigeria. Dr. Martin Scanlon, University of Manitoba, Winnipeg, Canada, also visited with GQSRU staff and toured the facilities.

Research Highlight

In September, 2010, **Dr. Jesse Poland** joined the Hard Winter Wheat Genetics Research Unit (HWWGRU) as the new Research Plant Geneticist. Jesse replaces Mike Pumphrey, who accepted a wheat breeding position at Washington State University. Jesse is a Kansas native and grew up in the Chapman area. He obtained a B.S. in Agronomy from Kansas State University and later an M.S. in Plant Pathology from KSU under the direction of Scot Hulbert. Jesse obtained his Ph.D. from Cornell University under the guidance of Rebecca Nelson and Ed Buckler working on quantitative resistance in maize using a new technique called Nested Association Mapping (NAM). This method takes advantage of new high throughput genotyping technologies to collect a large set of molecular marker data on a structured plant population. This was combined with information on disease resistance to identify numerous genes that contribute to resistance to leaf blight in maize.



Jesse will take responsibility for regional hard winter wheat germplasm development, with an emphasis on resistance to new African races of wheat stem rust. In addition, Jesse is interested in increasing the efficiency of wheat breeding and germplasm development using a new method called Genomic Selection (GS). GS attempts to extract maximum information from genetic markers (genotyping data) and field performance (phenotyping data) to select the best progeny for advancing to the next generation in the breeding program. Eventually, breeding programs will depend more and more on genotyping data as it becomes cheaper and cheaper while field trials are becoming more expensive.

Grants

Guihua Bai, Robert Bowden, and Jesse Poland will be participants on the new Triticeae-Coordinated Agricultural Project that was recently funded by USDA-NIFA. This is a five-year, multi-institution research and education grant for wheat and barley that will bring together next generation genotyping with an extensive database of cultivar performance to identify important genes and DNA markers to accelerate breeding efforts.



Meeting/Conferences

John Fellers attended the ASA Meeting in Long Beach, California. He was also invited to Columbia, MO, to give a lecture. John traveled to Boston, MA, and St. Paul, MN, to collaborate on Puccinia Triticina Genome Grant. John Fellers also traveled to San Diego, CA, to present a paper at the Entomological Society of America annual meeting. John also served on an RPES panel in San Francisco, CA.

Jaime Mitchell traveled to Norman, OK, to attend the annual NACOP Training Workshop, as well as to Fort Collins, CO, for the annual NPACOP meeting to revise the Quick Reference Guide.

Jesse Poland attended the Agronomy Society of America annual meeting in Long Beach, CA.

Robert Bowden traveled to St. Louis, MO, to serve on an RPES Panel.

Visitors

Dr. Shuyu Liu, Assistant Professor from Texas A & M University, and Professor Jing Luo from National Natural Science Foundation of China visited in November. They both came here to visit our high-throughput genotyping lab.

Research Highlight

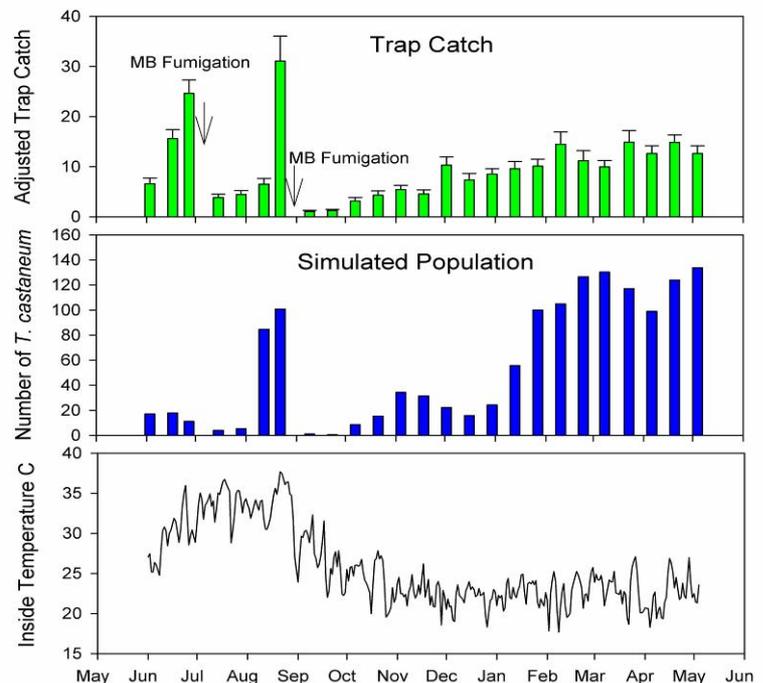
Predicting Red Flour Beetle Population Growth in Flour Mills

The red flour beetle is one of the most common insect pests infesting flour mills in the U.S. Fumigations with methyl bromide, sulfuryl fluoride, or heat, are used to control the red flour beetle. These structural treatments do not provide any residual action and, thus, any surviving insect stages can rebound rapidly depending on the temperature. We have developed a computer simulation model for the red flour beetle in wheat flour mills that can be used to predict the effects of various structural treatments on insect mortality and subsequent population rebound. The model predicts insect numbers for each floor of the mill based on air temperatures inside the mill. We tested the model's predictions by monitoring actual beetle numbers in a flour mill before and after fumigations.



Trap catch field data showed that the two methyl bromide fumigations knocked down the red flour beetle population. The simulated numbers of adult red flour beetle tended to follow trap catch fairly well. Both the actual population and the simulated red flour beetle numbers increased rapidly in August following the first fumigation. The rapid increase was probably due to warmer temperatures. Population growth following the second fumigation was slower; this was probably due to lower temperatures inside the building during the fall and winter.

In the future, we will use the model to look at the effects of other treatments, such as enhanced sanitation, heat treatments and aerosol treatments on population dynamics in flour mills.



For more information contact Dr Paul Flinn 785-776-2707 or paul.flinn@ars.usda.gov. (Collaborators on this work were: Drs. Jim Campbell, Jim Throne, Frank Arthur, and Bhadriraju Subramanyam.)

Grants

Dick Beeman and **Jim Campbell** were awarded ARS HQ-funded postdocs. These awards provide partial funding for scientists to hire a postdoc for two years. Beeman's proposal on developing a red flour beetle cell culture line was the top rated proposal in the agency, and he won the T.W. Edminster Award. Campbell's proposal was for meta-analysis of data on monitoring insect populations in flour mills.

A new Grant "Evaluation, integration, and implementation of non-fumigation based pest management approaches for food-processing facilities" for \$782,019 from the USDA-NIFA Methyl Bromide Transitions program was awarded to **Frank Arthur**, **Jim Campbell**, **Paul Flinn**, and **Emily Fontenot** from CGAHR along with Bh. Subramanyam and K. Y. Zhu from Kansas State University and Brian Adam from Oklahoma State University. This was top-ranked proposal submitted to this program.

Frank Arthur was awarded \$16,000 from BASF Corporation in a Trust Fund for the project "Residual efficacy of aerosol formulation of new neonicotenoid insecticides to control stored product insects".

Meeting/Conferences

Frank Arthur presented the talk "Insects of stored products" to the Manhattan Chapter of the Philanthropic Educational Organization (PEO International) in March. PEO International is a women's service organization founded in 1869. The mission of the organization is to promote educational opportunities for women. The group owns a two-year college, Cottey College in Nevada, MO, and sponsors several programs that provide financial assistance to help women obtain higher education.

Jim Campbell met with members of the Food Protection Committee of the International Association of Operative Millers in Las Vegas, NV, in April to discuss current ARS research results and their research needs. He presented the invited talk "Impact of fumigation on the red flour beetle populations" at the IAOM Annual Conference. **Jim Throne** attended the fall meeting of this group in September in Ft. Collins, CO.

SPIRU scientists made several invited presentations at the Hands-on Workshop on Methyl Bromide and Alternatives sponsored by the Kansas State University Department of Grain Science and Industry in May. **Jim Throne's** talk was "Stored-product insect pest management research at USDA-Center for Grain and Animal Health Research, Manhattan, KS"; **Frank Arthur** gave a talk "Effectiveness of aerosols for insect control in the food industry"; **Jim Campbell's** talk was "Traps for gauging fumigation effectiveness in commercial facilities"; and **Paul Flinn** gave a talk "Modeling insect population rebounds".

SPIRU scientists made several invited presentations at the 10th International Working Conference on Stored Product Protection held in Estoril, Portugal, in June. **Frank Arthur's** presentation was "Residual efficacy of aerosols to control *Tribolium castaneum* and *Tribolium confusum*." **Dick Beeman** gave a keynote address "Implications of the Tribolium genome project for pest biology." **Jim Campbell's** talk was "Structural fumigation efficacy against *Tribolium castaneum* in flour mills." **Paul Flinn** gave a talk "Simulation model of the red flour beetle in flour mills". **Jim Throne** gave a keynote address "Overview of North American stored product research."

Jeff Lord gave the talk "Occurrence of *Nosema oryzaeaphili* in *Cryptolestes ferrugineus*, its pathogenicity to stored-product insects and transfer to the genus *Paranosema*" at the annual meeting of the Society for Invertebrate Pathology in Trabzon, Turkey, in July.

SPIRU scientists attended the 2010 Annual International Research Conference on Methyl Bromide Alternatives and Emissions Reductions in November in Orlando, FL. **Jim Campbell's** presentation was "Impact of structural fumigation on pest populations in food processing facilities" and **Frank Arthur's** presentation was "Residual efficacy of pyrethrin-methoprene aerosols on packaging surfaces."

Visitors

Simon McKirdy, Chief Executive Officer for the Cooperative Research Centre for National Plant Biosecurity (CRC-NPB) in Canberra, Australia, visited SPIRU in April for a tour and to discuss research collaborations.

Mike Pierce and James Peterson from Trece, Inc., visited SPIRU in May for a tour and to discuss research collaborations.

Rob Emery, Senior Entomologist from the Department of Agriculture, Government of Western Australia, South Perth, WA, visited SPIRU in July for a tour and to discuss research collaborations.

Christos Athanassiou, Assistant Professor at the University of Thessaly in Greece, visited SPIRU from 30 September – 3 November 2010, and Nickolas Kavallieratos visited for 3 weeks in November. They conducted research on biology and control of stored-product insect pests in collaboration with Frank Arthur, Jim Campbell, and Jim Throne.

John McCutcheon from the University of Montana visited SPIRU in September for a tour and to discuss research collaborations. John works with bacterial endosymbionts in insects.

Manuel Campos from Trece, Inc., Adair, OK, visited SPIRU during October to work with Jim Campbell on evaluating new insect trap and attractants.

Yas Arakane and Miyoung Noh from Chonnam National University in South Korea, visited SPIRU in November for a tour and to discuss research collaborations.

Dr. Kimondo Mutambuki from the Kenya Agricultural Research Institute in Nairobi also visited SPIRU in November for a tour and to discuss research.

Community Service

Adopt-a-Highway CGAHR staff picked up litter along a 2.1 mile section of highway in Manhattan this fall. Adopting a section of highway requires a 3X per year commitment to remove accumulated litter along the road. This is the 3rd year that CGAHR staff have helped to keep our community's road clean and litter-free.

Food Drive CGAHR staff collected more than 1400 lbs of non-perishable food and other items in support of the **USDA Feds and Farmers Feeding Families Food Drive** this summer. The items were donated to the **Flint Hills Breadbasket** in Manhattan, Kansas (the final pickup load shown below on right). Our drive was organized as a competition among research units and location support staff. Lots of creative ideas were developed to spur canned good donations, and in the end, the GQSRU won the coveted traveling trophy (below, left) with the largest total collection.



Personnel News

Tilman Schober, **Sara Harmer** and **Jasper Tallada** left at the completion of their post-doctoral assignments. **Elaine Liddell** retired from SPIRU after many years of dedicated service. We miss her and wish her well in retirement.

Trevor Wilkey left CGAHR for a position in law enforcement; **Rachel Herrell** left GQSRU for a position in the health industry.

Jesse Poland joined the HWWGRU as a Research Geneticist (see story in HWWRU News section).

Vincent Tracey joined CGAHR as an IT Specialist.

Amare Retta is a visiting scientist in EWERU.

Guihua Bai, Research Geneticist in HWWGRU, was elected a 2010 Fellow of the Agronomy Society of America.

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