



## Feed the Future Innovation Lab for the Reduction of Post-Harvest Loss



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### *PHL Innovation Lab Researchers Contribute to 11th IWCSPP*

The Feed the Future Innovation Lab for the Reduction of Post-Harvest Loss was well represented at the 11th International Working Conference on Stored Product Protection which took place November 24-28, 2014, in Chiang Mai, Thailand. Over 400 participants including over 100 from more than 40 countries attended this well organized conference.

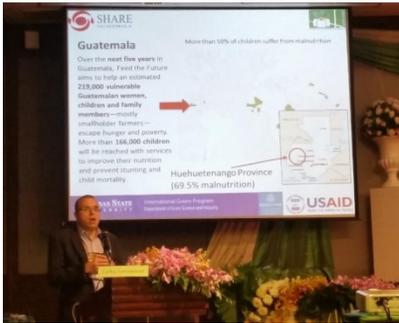
A number of important topics were addressed in the first conference session on Emerging Global Issues in Stored Product Protection. In addition to concerns over increased phosphine resistance in stored product insects around the globe, several speakers addressed food security through the reduction of post-harvest and food losses. Dr. Dirk Maier from Kansas State University and co-director of the PHL Innovation Lab was part of this session and provided an overview of the Feed the Future Initiative and the goals and objectives of our Innovation Lab. The intent was to set the stage for the four country-specific presentations that provided project updates for Bangladesh, Ethiopia, Ghana and Guatemala later in the conference.

These presentations were given in the session on



The Feed the Future Innovation Lab for the Reduction of Post-Harvest Loss is a strategic and applied research and education program aimed at providing global leadership in food security by reducing post-harvest loss and food waste of durable staple crops (grains, oil seeds, legumes, root crops, seeds) and their processed value-added products. This program requires confronting constraints on integrating smallholder farmers (male and female) producer cooperatives, and agribusiness enterprises with market-based value chains from seed to end-user.

## Integrated Pest Management:



Dr. Carlos Campabadal, Kansas State University and co-leader of the Guatemala team, presented on, "Improving food security and food safety of smallholder farmers in the Western Highlands of Guatemala through reduction of post-

harvest losses in corn." His co-authors were Drs. Andreia Bianchini, L. Sabillon, Dirk Maier, Venkat Reddy, Rizana Mahroof, and Jason Ellis.

Dr. George Opit, Oklahoma State University and co-leader of the Ghana team, presented on, "Assessment of maize post-harvest losses in the Middle Belt of Ghana." His co-authors were Drs. Jim Campbell, Frank Arthur, Paul Armstrong, Enoch Osekre, Shannon Washburn, O. Baban, Sam McNeill, George Mbata, Isaac Ayobami, and Venkat Reddy.



Dr. Abdul Baqui, former director general of the Bangladesh Rice Research Institute, presented on behalf of Mr. Al Schmidley, IRRI and co-lead on the Bangladesh team. The presentation was titled, "Reducing losses and improving actor incomes in Bangladesh's post-harvest rice value chains: initial assessment results

and recommendations for the future." His co-authors were Drs. Mobarak Choudhury, Ahmed Salahuddin, and Dirk Maier.

Dr. Subramanyam Bhadriraju, Kansas State University and co-leader of the Ethiopia team, presented on, "Enhancing food security in Ethiopia through reduction of post-harvest losses and food waste." His co-authors were Drs. Rizana Mahroof, Shannon Washburn, Venkat Reddy, Kingsly Ambrose, and Dirk Maier.



Several other scientists and industry experts presented on the topic of food security and highlighted technologies and practices we are and will be using in our PHL Innovation Lab projects including:

Dr. Dieudonne Baribusta from Purdue University gave an excellent keynote address in the Fumigation, Hermetic Storage and Modified Atmosphere session on "Purdue Improved Crop Storage (PICS) - A simple, accessible, low-cost, locally manufactured hermetic storage technology for low-resource people." In two other sessions he presented on "Reducing grain storage losses on smallholder farms" and "Assessing Purdue Improved Crop Storage (PICS) bags to mitigate fungal growth and aflatoxin contamination."

Dr. Bruno Schuler from the German Association for International Collaboration (GIZ) spoke on "Measuring food losses and their ecological footprint - a case study using rice value chains in Nigeria."

Dr. Brighton Mvumi from Zimbabwe, spoke on "The food security challenge in sub-Saharan Africa: The potential contribution of post-harvest skills, science and technology in closing the gap."

Mr. Tom De Bruin from GrainPro, Philippines spoke on "Worldwide developments in ultra hermetic storage and solar drying technologies."

Dr. Kimondo Mutambuki from Kenya spoke on "Evaluation of triple layer hermetic storage bag (PICS) against *Prostephanus truncatus* and *Sitophilus zeamais*."

Dr. Herbert Talwame from Uganda, spoke on "Analysis of smallholder farmer post-harvest pest management systems in Uganda - challenges and opportunities." Dr. Talwame also led a team of African scientists bidding to host the next IWCSPP in Uganda. His conference participation was jointly sponsored by the ADM Institute for the Prevention of Postharvest Loss and the IGP Institute.

Dr. Corinne Alexander from Purdue University spoke on "Evaluating the profitability of on-farm storage pest management in developing countries."

Dr. Georgina Bingham Zivanovic from Vestergaard Frandsen and a collaborator in the PHL Innovation Lab, spoke on "Impact of a novel tool, ZeroFly® storage bags, within multi country field trials; controlling key target post-harvest storage pests on various commodities."

Dr. Rick Hodges from the Natural Resources Institute, United Kingdom gave an excellent keynote address in the Grain Quality and Food Safety session on "Responding to the current food crisis: better grain quality for post-harvest loss reduction in Sub-Saharan Africa."

His presentation was followed by Mr. Sam Cook, M.S. student in grain science at Kansas State University and part of our PHL Innovation Lab who spoke on "Utilizing the African postharvest loss information system (APHLIS) to document postharvest losses and evaluate intervention projects in Feed the Future countries."

In addition to giving oral and poster presentations, Dr. George Opit, Oklahoma State University and Dr. Rizana Mahroof, South Carolina State University served as moderators of the Integrated Pest Management session, Dr. Jim Campbell, USDA-ARS Center for Grain and Animal Health Research served as co-moderator of the Biology, Ecology and Behavior session, Dr. Dirk Maier, Kansas State University served as co-moderator of the Engineering for Stored-Product Protection session, and Dr. Subramanyam Bhadriraju

served as co-moderator of the Workshop on Khapra Beetles.

Additionally, Drs. Campbell and Maier serve on the Permanent Committee of the IWCSPP which met several times during the conference to among other things hear proposals from potential organizing teams to host the 12th IWCSPP, which will take place in 2018 in Berlin, Germany.

Last but not least, Dr. Frank Arthur, USDA-ARS Center for Grain and Animal Health Research, did an outstanding job serving as chair of the Scientific Committee for the 11th IWCSPP. He spent tremendous amounts of time and effort reviewing abstract submissions and assisting session chairs to select oral presentations. It was his idea to have each of the PHL Innovation Lab country teams present updates at this important international conference.

Thank you, Dr. Arthur!

### *Visit to IRRI and GrainPro in The Philippines*

On their way to Thailand, Drs. Maier and Campabadal, Kansas State University, visited The Philippines. Dr. Maier visited the International Rice Research Institute (IRRI) which collaborates with the PHL Innovation Lab in Bangladesh. He had the opportunity to meet with high level administrators including Dr. Robert Ziegler, Director General, who previously served as head of K-State's plant pathology department before joining IRRI, and Dr. Matthew Morell, Deputy Director for Research, who recently joined IRRI after leading the Future Grains Flagship Research Initiative for CSIRO in Australia. Dr. Morell is a cereal scientist and regularly participates in the AACCI International. Dr. Maier also spent time with members of the IRRI post-harvest team to learn more about the development of the solar bubble dryer.

Drs. Maier and Campabadal had an all-day visit to GrainPro's manufacturing facility in Subic Bay. In addition to in-depth discussions about how GrainPro

might collaborate with our PHL Innovation Lab, they had an opportunity to visit with members of their global sales team during their annual meeting. They toured the manufacturing plant and learned about how the various hermetic storage technology products are manufactured. GrainPro has an extensive display of current and new technology that is being demonstrated and further refined on-site. Three technologies of particular interest to current PHL Innovation Lab country projects are the Solar Bubble Dryer, SuperGrainbag Farm, and Cocoon.



Carlos Campabadal with Tom De Bruin, President, Grain Pro Philippines, and Phil Villers, President, GrainPro in front of the long-term Cocoon storage display at GrainPro's manufacturing facility in the Philippines.

### *Visit to Harvest Centers in Laos*

On their way back from Thailand, Drs. Maier and Campabadal and Mr. Sam Cook visited Laos to learn more about Harvest Centers that have been established by XP Trading, a Lao-owned company. These centers have in-bin drying capacity for corn and paddy grown locally by smallholder farmers. Even though Laos is not a Feed the Future country, the entrepreneurial approach for establishing community-based harvest centers; locally fabricating grain handling, drying, cleaning and storage equipment; providing drying, storage and trading services to smallholder producers; and manufacturing feed for smallholder pig, poultry and aquaculture producers should have application for our PHL Innovation Lab value chain projects. While there, they also visited with

a USAID representative in Laos to share about the PHL Innovation Lab and to learn about USAID's priorities in Laos.

Dr. Maier also stopped by the regional USAID Mission office in Bangkok to provide a briefing on observations and recommendations for Laos, to share about the goals and objectives of the PHL Innovation Lab, to learn about USAID's priorities for the region, and to explore opportunities for post-harvest loss reduction and value chain projects in Feed the Future countries



Sam Cook, Kirby Rogers, Dirk Maier and Carlos Campabadal in front of four grain bins that were sent by K-State's Department of Grain Science and Industry about two years ago to one of the harvest centers in Central Laos. The bins were disassembled when the new K-State feed mill was built and are now used for drying wet corn and storing it for feed processing for smallholder Lao farmers.

Kirby is from Kansas and a partner in XP Trading.

of the region.



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