



News Letter February 2016 Reduction of Post-Harvest Loss Innovation Lab

A Bug Doctor in Ethiopia

The Reduction of Post-Harvest Loss Innovation Lab is involved in long-term training for students in its four core countries – Bangladesh, Ghana, Guatemala and Ethiopia. In Ethiopia, K-State University Distinguished Professor Subramanian Bhadriraju, has been particularly heavily involved in the training efforts. Dr. Bhadriraju's specialty is stored grains and the insects that they contain. As the Lead scientist for the Lab's Ethiopian project, Dr. Bhadriraju has been intimately involved in providing training for students at local Ethiopian universities – Bahir Dar University and Mekelle University – which have now established curricula in post-harvest losses.

Major objectives across all four countries are more effective ways to dry and store grain and to reduce losses to insect and fungal infestation and mycotoxin contamination. Meeting these objectives requires the design and testing of low-cost, sometimes commercially available, technologies under local conditions. In terms of drying, the students are designing dryers that use solar radiation in a profitable manner. Some are home-made, but others are unique Ethiopian designs that can be used for multiple agricultural products throughout the year. Students also routinely manage tests of different storage techniques – primarily specially sealed bags that are so air tight that the insects within them die slowly of asphyxiation as all of the oxygen is consumed and replaced with carbon dioxide.

Recovering and quantifying insect contamination of grains in a repeatable, reliable manner is critical to the assessment of the drying and storage technologies. Dr. Bhadriraju has helped build the entomology labs at both of these universities from four walls and benches. He uses techniques ranging from visual morphological characters to molecular tests to identify the insects present in the grain. Hands on is his favorite mode of instruction but local insect identification guides and the use of simple morphological descriptions have allowed broad partitioning of the types of insects present in the crops of interest – wheat, maize, chickpeas and sesame. With two years of careful mentoring and laboratory equipping, students can now quantify and identify the common insect pests in the four target grains and when to save problems for further work by others. These skills are great for the students' research, but are even more important for identifying problems that local farmers are having and suggesting methods for remediation.

Dr. Bhadriraju is a good example of the highly recognized and accomplished US scientists whose work in locations such as Ethiopia is increasing the amount of high quality food available to increase food security within Ethiopia and other countries in the region.



Figure caption: Dr. Subramanyam Bhadriraju, Kansas State University (second from left), and Dr. Rizana Mahroof, South Carolina State University (far right), working with students (Haile Alebachew, far left, and Tesfaye Tadasse, center) and Ethiopian technical agent (Dr. Dereje Ayalew Zewudie, second from right) to sieve insects from white maize at Bahir Dar University. Photo: Dr. Kingsly Ambrose.