



SUCCESS STORY

Breaking New Ground: Field Trials in Bangladesh

Since 2013, the Feed the Future Innovation Lab for Applied Wheat Genomics has been implementing and evaluating replicated wheat field trials in Mexico, India and Pakistan. In 2015, the team was able to break ground in neighboring Bangladesh, successfully establishing the largest wheat testing nursery in the country.

Mohammad Mokhlesur Rahman, a graduate student from Kansas State University through the USAID BHEARD program, led the initiative to establish the new trials, train researchers, inform area farmers, researchers and policy makers, and collect data throughout the season.

The grand challenge the lab is addressing is the need for rapid development of heat tolerant, high-yielding, and farmer-accepted wheat varieties for South Asia. Through the development of advanced genomics tools, new breeding methodologies and through the largest public database of elite candidate wheat varieties in the history of wheat, the team aims to cut the timeline from research bench to farmer by up to 30%.

The lab now has trial sites in four countries and six locations. Each field site presents unique climate pressures and environments and allows the team to evaluate the same 600 candidate wheat varieties under these varying conditions.

Information from the replicated field trials in each country, along with historical data, is fed into the database of elite candidate wheat varieties. That database is enabling better prediction models, which will lead to higher-yielding, climate-resilient varieties quicker than ever before. The more candidate varieties and environments tested and entered in the database, the more accurate the predictions become, so adding an additional trial site makes a huge impact on accuracy.

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Dr. Jesse Poland

“Bangladesh is a high stress environment for heat, especially for wheat, temperatures are above optimal for most of the growing season,” said Poland. “A specific objective in Bangladesh is to find the candidate varieties that would perform well under high heat stress and very short growing season.”



In Bangladesh there are only 120 parental materials, making the genetic base narrow.

“With a very few number of genetic lines we have a lower chance of finding ones that are really good,” said Rahman. “So this project is facilitated in order to have a more diverse germplasm, which will make our genetic base broader. Ultimately we will be able to follow the genomic selection approach which will accelerate our genetic gain in the wheat breeding program in Bangladesh.”

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Field visit by scientists of the Regional Agriculture Research System, Jamalpur and Director General, Bangladesh Agriculture Research Institute. Demonstrations were made on taking phenotypic measurements like plot yield and spike length with the barcode scanner, vegetation index data collection and using the Phenocart.

