Feed the Future Country Fact Sheet

Online Version: https://www.feedthefuture.gov/article/weathering-climate-change-effects-stress-tolerant-rice-varieties

Weathering Climate Change Effects with Stress-Tolerant Rice Varieties

In Bangladesh, smallholder farmers are facing more extreme weather shocks and depleted soil, which can lead to devastating crop losses and reduced agricultural productivity. But with newly developed stress-tolerant rice varieties, rural poor farm households have been able to adapt to these new realities and overcome some of the challenges to rice production.

Stress-tolerant rice varieties are part of Feed the Future's broader work in Bangladesh to introduce game-changing agricultural technologies to increasing numbers of smallholder farmers and help them diversify into higher-value, nutrient-dense commodities such as horticulture and fish. But rice remains the country's most important staple crop, and targeted investments in that sector are helping Bangladesh approach self-sufficiency in rice, a remarkable achievement for one of the world's poorest and most densely populated countries.

In 2013, more than 300,000 farmers grew high-yielding rice varieties that were specially bred to help overcome climate-related challenges such as flooding, drought and increasing soil salinity. Compared to traditional rice farming, using stress-tolerant rice varieties is helping smallholders reap higher yields and incomes, and the new varieties are gaining momentum as more and more farmers adopt them.

One of these farmers is Rupai Begum, a widow and agricultural day laborer who cultivates rice on a small homestead farm. In the last few years, Begum's rice harvest was suffering due to severe drought. The decreased rainfall also meant higher production costs, as Begum had to irrigate her land to reduce water stress, which made her crops more vulnerable to pests.

A local NGO supported by the U.S. Agency for International Development under Feed the Future helped Begum learn about and access two new rice varieties – one of them drought-tolerant and the other short duration (i.e. fast-growing) – and she immediately saw an opportunity to reverse her declining yields. She was surprised at how much more quickly the short duration rice grew on her land, requiring only 115 days to mature compared to the minimum 150 days for traditional varieties, leaving less opportunity for pests to cause crop losses. Begum harvested this new rice crop while most other rice fields in her village had just started flowering, leaving her extra time to cultivate a winter crop for additional income.

Aminur Rahman is another farmer who has benefitted from improved rice varieties. In his low-lying village, flash floods damage rice crops almost every year, leaving people at great risk of food insecurity. Before a Feed the Future program helped him access improved rice seeds, Rahman couldn't grow enough on his less than half a hectare of land to feed his five family members, and he struggled to pay school fees for his children.

With new short duration rice seeds, however, Rahman was able to grow rice in a shorter amount of time, leaving him less vulnerable to frequent overflows from the local river. He tripled the amount of rice he could harvest in a calendar year by using varieties that mature in about 90 days. Now, Rahman has increased both his income and his family's food security, and other farmers in his village are receiving training on how to use these new seed varieties.

Innovations like these are one of the reasons Bangladesh is seeing such transformative results in agriculture and food security. Despite increasingly variable climatic conditions, Bangladeshi farmers supported under Feed the Future are seeing greater rice production through the use of new seed and fertilizer technologies, leading to up to 20 percent increases in rice yields and raising farmer incomes from an average of $426 per hectare in 2012 to $587 per hectare in 2013. As these technologies are scaled up, they are helping increasing numbers of vulnerable families become climate-resilient.