

Session 2.2: Breeding New Crop Varieties to Support Food Security: Case of Bangladesh

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Development Problem

- Rice staple crop; but has low productivity, prone to diseases and affected by salinity, submergence and drought, and inadequate soil/water/fertilizer management

Sustained IAEA Support (1985-To Date) Achievements:

- Over many decades Bangladesh made remarkable progress in crop improvement using mutation breeding:
 - Short duration mutant variety of rice eradicated occasional hunger and increased productivity
 - Salt tolerant rice varieties adopted in 20% of saline prone areas
 - Submergence tolerant rice varieties extended in 5% submergence prone areas



Demo of short duration rice variety, Binadhan-7



Demo of salt tolerant rice Binadhan-8

Achievements (continued):

- Mutant variety of irrigated rice helped to accommodate additional crops in-between the existing two rice in a year
- Green Super Rice variety saved 30% nitrogen fertilizer and 40% irrigation
- Improved lentil and mung bean mutant varieties decreased major disease risks and increased yield by 80%.
- Short duration mutant mustard varieties facilitated to cultivate additional crop and increased cropping intensity
- Mutant groundnut (peanut) resolved salinity problems and increased yield by 40%.



Field day of Binamog-8 (mung bean).

Soil Management

- Application of **rice straw** (reduce potassium fertilizer up to 25%)
- Chemical Amendment (**Split application of Gypsum**) in saline areas
- Organic matter (**crop residue, cow dung** etc.) improve water holding capacity and reduce **evaporation & erosion** in drought areas.

Validation and Up-Scaling of Mutant Varieties

- Trained 30 000 farmers and 3000 extension personnel
- Implemented 30 000 demonstrations, 1500 field days and 150 workshops
- Distributed 6000 tons of seeds

The Future Plan

- Development of high yielding, short duration, nutrient-rich, premium quality and climate smart varieties
- Improvement of local cultivars and landraces suitable for unfavorable and under-utilized ecosystems
- Improve soil and water management
- Validation and up-scaling of mutant varieties