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
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