



IAEA

International Atomic Energy Agency

Atoms for Peace

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Improving crop, water and soil management in the coastal area of Bangladesh

The challenge...

In the coastal area of Bangladesh, around 90% of arable land remains unused for 6 to 7 months after the rice harvest, due to the shortage of fresh water and the high salinity of the soil. Soil salinization is mainly due to sea water that moves inland along the tidal rivers, spills over to the land and salinizes soil and the shallow groundwater. However, potential exists to produce some additional food crops, such as mustard, mung bean and sesame, which need relatively less water following the early harvest of aman rain-fed rice. To improve farmers' livelihoods, improved water and soil management and additional crop varieties are needed to reduce the long fallow period and to improve food security.

The project...

Through fellowships and scientific visits, staff from the Bangladesh Institute of Nuclear Agriculture (BINA) received training in areas such as plant mutation breeding for salinity improvement, physiology and genetics of plant tolerance to salinity and the use of equipment to estimate soil water content under different soil moisture regimes. Equipment was also provided to assist in the research and development of improved water and soil management and crop varieties.

The soil water content in saline soils at two pilot sites (Satkhira and Noakhali) was efficiently estimated using a soil moisture neutron probe, and carbon isotope discrimination (a surrogate of water use efficiency and a function of plant stomatal opening) was successfully used to assess the ability of different crops and crop genotypes to tolerate a range of soil and water salinity levels during the fallow period.

With the assistance of the IAEA and in collaboration with BINA, a new integrated technology to estimate soil water content for the application of brackish water and to improve plant/water use in coastal areas was tested.

The impact...

Two short duration and salt tolerant varieties each of mung bean, mustard, sesame, chickpea, groundnut and wheat have been identified and are currently being grown by 'champion farmers' at the two pilot coastal sites after the harvest of the aman rice.

Farmers who used to leave the coastal lands in search of job and income security elsewhere are now able to generate additional income by growing the new crop varieties and by applying improved water and soil management techniques.



A farmer harvesting mung bean.