



Photo: Duckrabbitt

Agricultural Production and Drainage

Problem

Deep and prolonged inundation inhibits cultivation of the short-statured, short duration, high-yielding aman varieties that can enable cropping system intensification, in particular the production of high value rabi crops.

Background

When originally constructed in the 1960s and 70s, the primary function of the polders was to protect life and prevent tidal flooding and salinity intrusion. The design enabled the cultivation of a tall-statured, long duration traditional aman crop that could withstand a water depth of up to 60 cm. Large areas inside the polders were inundated at depths greater than 50 cm for several weeks, preventing farmers from diversifying their farming systems. This continues to be the situation today over much of the coastal zone. While the aman crop remains dominant, it is sometimes followed by a low-input, low-yielding rabi crop. However, planting is often late due to the late maturity of the traditional aman varieties, which frequently leads to serious rabi crop damage or even total destruction from early kharif rains.

Recommendation

Good drainage can reduce inundation depth and duration, which will enable:

- cultivation of early maturing, high-yielding aman varieties
- drainage shortly prior to aman harvest, facilitating soil drying and thus early (timely) establishment of rabi crops; this will result in higher yields for traditional rabi crops and enable diversification to high-yielding, high value crops such as maize, sunflower and watermelon.

Low cost gravity drainage is possible in most of the polder lands because of the large diurnal (tidal) water level fluctuations (up to 2-3 m) in the rivers surrounding the polders. At low tide the water level of the rivers is normally lower than the land level inside the polders. This allows for gravity drainage simply by opening the sluice gates. The gates can be closed again when river levels rise.

Good drainage also requires dredging of the internal polder canal networks (khals). The khals have silted up over the years, and desilting them also greatly increases their capacity to store freshwater for irrigation during the dry season in locations where the river water becomes too saline for irrigation. Secondary, tertiary and field canals also need to be constructed for improved drainage, with the added benefit of serving as irrigation canals.

For more information, please visit : www.waterandfood.org and www.wle.cgiar.org