Growth and Development of *Casuarina equisetifolia* in the Open Sandy Sea Coasts of Cox's Bazar, Bangladesh

M. K.Hossain*, A. A. Mahmud and B. Mohajan
Institute of Forestry and Environmental Sciences
University of Chittagong, Bangladesh
**Email: mkhossain2008@yahoo.com, mkhossain2009@gmail.com*

Abstract

A total of 716 km long coastline of Bangladesh comprising 47,211 km^2 areas with a population of 36 million are vulnerable to frequent violent tropical cyclones and storm surges during pre-monsoon and post-monsoon seasons. Bangladesh is a pioneer in coastal plantation programs to reduce the losses of frequent cyclones, tidal surges and Tsunami. and Keora (*Sonneratia apetala*) is the suitable species for plantation in the newly accreted muddy charlands; whereas, *Casuarina equisetifolia* (Jhau) proved as the only suitable and promising species in the coastal sandy beaches of the open coast and off-shore islands. The open coast of Cox's Bazar sea beach, the longest uninterrupted beach (125 km) of the world is facing the damages of frequent cyclones and tidal surges. Establishment of a green-belt of *C. equisetifolia* appears as the most suitable device to reduce the losses and damages of the natural disasters. A total of 415 ha *C. equisetifolia* plantations were established in 3 Forest Ranges along the sea beach during 1997-2012. The survival percent varies from 56 to 81%. The maximum height (19.2 m) and diameter (19.6 cm) were found for 16 years old plantations at Kosturaghat.

Soil erosion and exposure of roots were severe in the first row plantations of seaside, but the plantations of inwards already stabilized the soil and supports luxuriant ground vegetation indicating the gradual transformation of sandy sites suitable for planting mainland species. Some poor climate and Rohinga refugees are living inside the established *Casuarina* plantations and derive direct benefits from the plantations by collecting small poles, posts for making houses, fishing boats and leaf-litters, twigs for cooking. The sea level rise scenarios are becoming a threat to severe soil erosion, salinity intrusion to the local agro-ecosystems in the coastal areas. But the established *Casuarina* plantations in the sandy beaches are able to halt and reduce these climate change induced impacts and also provide benefits to the local livelihoods by providing litters, twigs and thinned forest produces. The paper examines the growth and development of *Casuarina* plantations along with the environmental amelioration and dependency of local livelihoods on the established plantations.