

Short Communication

GROWTH, NATURAL THINNING AND WOOD PRODUCTION IN A KEORA (*Sonneratia apetala*) STAND

During 1976 keora (*Sonneratia apetala* Buch.-Ham.) seedlings were planted at 1.2 m x 1.2 m spacing along the coastal belts of Bangladesh by the Forest Department. Though large scale mangrove plantations were initiated during the past ten years, thinning could not be undertaken owing to a lack of a thinning schedule. Currently, thinning is being carried out experimentally in different plantations. Data relating to growth and natural mortality are being collected and will form the basis of a thinning prescription.

This communication is based on data collected from three sample plots (20 m x 20 m each) located at Char Kukri Mukri of the Coastal Afforestation Division, Barisal. Data on survival, height and girth increments were collected at quarterly intervals for six years from 1981 to 1986. Final data were collected when the plantation was ten years old (Table 1; Figs. 1 and 2).

After five years, (in 1981) the stand attained a mean girth of 16 cm at breast height (1.3 m from ground). Girth increased to 37 cm in the next five years, i.e., at ten years age. Annual girth increment during the period was 4.20 cm.

Average heights of the trees were 5.57 m and 10.25 m after five and ten years respectively. Annual height growth during this period was 0.936 m.

After five years 69% of the trees were surviving. However, at ten years, only 31% of the trees survived. The mortality rate was particularly high during the last two years. Crowns spread sufficiently and possibly trees died due to competition for light as the stand was maintained unthinned. However, changes in soils and duration of inundation of forest floor might have also influenced the mortality of trees. There was no indication that mortality resulted from pests or diseases during the life of the stand.

After five years, wood volume available per hectare was 38.40 m³. The stand attained a maximum volume during the ninth year (123.5 m³/ha). After ten years, wood available was 114.75 m³/ha. Clearly, the heavy natural mortality in the stand had caused a decline in total volume production. In other words, while volume per tree continued to increase (Fig. 2), the total volume per hectare after the ninth year declined (Fig. 1).

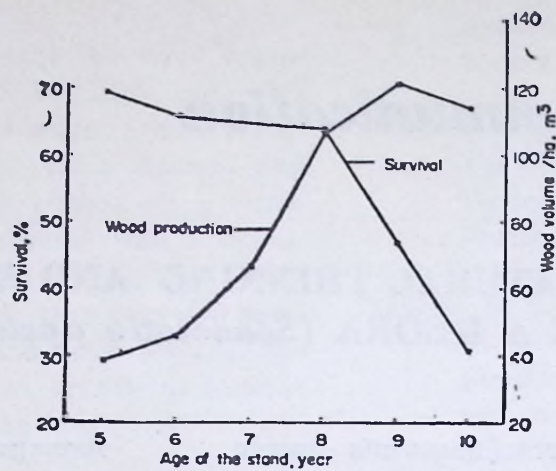


Fig. 1. Survival performance and wood production in keora (*Sonneratia apetala*) stand of different ages

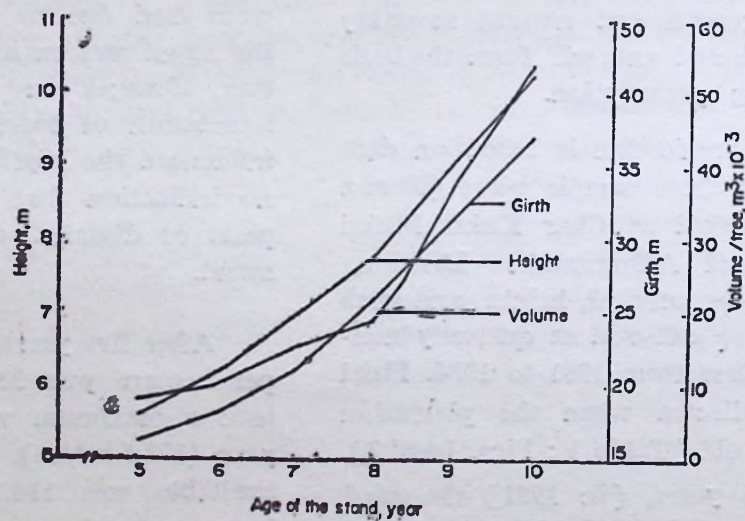


Fig. 2. Average height and girth increment and volume production per tree in a keora (*Sonneratia apetala*) stand

These findings indicate that, to optimise total wood production for maximum economic returns, thinning should be

carried out before the eighth year to avoid the onset of excessive natural thinning mortality.

Table 1. Height growth, girth increment at breast height, magnitude of natural thinning and wood production in a keora (*Sonneratia apetala*) stand

Data collection time	Average trees/plot	Average survival/plot	Mean height/plot	Mean girth/plot	Mean wood volume/plot	Wood volume/ha	Wood volume/year/ha
	No.	%	m	cm	m ³	m ³	m ³
May, 1981	192	69.23	5.57	16	1.536	38.40	7.68
May, 1982	182	65.63	6.15	18	1.820	45.50	7.58
May, 1983	178	64.18	6.98	21	2.670	66.75	9.54
May, 1984	178	64.18	7.76	26	4.272	106.80	13.35
May, 1985	130	46.88	9.10	32	4.940	123.50	13.72
May, 1986	85	30.65	10.25	37	4.590	114.75	11.48

Note : Wood volume was measured as per keora Volume Table of Barisal Coastal Afforestation Division (M. A. Latif, Personal Communication)

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