

## CASHEW : A PROMISING SPECIES FOR THE SUNGRASS INFESTED AREAS OF BANGLADESH

Md. Kamal Uddin

Attempts were made to raise Cashew (*Anacardium occidentale* Linn.) in 1.62 ha (4 acres) of sungrass infested area in Sal (*Shorea robusta* Geartn.) forests of Bangladesh. The object was to find out if the species could profitably be cultivated in such areas. With successful establishment of Cashew, the sungrass was gradually eliminated from the area. About 86 percent trees were found to have survived. The plants attained an average height of 6.28 m (20.6 ft) and an average dbh of 18.5 cm (7.3 in) with a large canopy of average diameter of 6.06 m (19.9 ft) at the age of nine years. The average yield of green nuts at this stage was 4.8 kg (10.6 lbs) per tree and 861 kg (1,896.8 lbs) per acre.

### INTRODUCTION

Sungrass (*Imperata cylindrica* L. Beauv) though brings substantial amount of revenue in Bangladesh, its control is a problem in the forest plantations. Sungrass, by its tangled root-system, retards the growth of seedlings and in addition increases fire hazards (Chowdhury 1960). Area clear-felled for plantation is soon invaded by sungrass unless the soil is covered quickly by a forest species. Moreover, the growth of sungrass

adversely affects the soil quality. During off-seasons, the shoot of sungrass dies exposing the land. The land thus exposed to severe sun tremendously loses soil fertility in various ways—a characteristic of the tropical zones (Rehm 1975). It was, therefore, necessary to find a suitable species for covering the sungrass infested lands by a forest tree crop.

Cashew (*Anacardium occidentale* Linn.) is a good soil-cover (Ohler 1969). Light red soils in the upland provide limitless scope for the establishment of Cashew (Nagarathnam 1958). It is a fast-growing tropical evergreen tree which originates from the northern part of South America. Under favourable conditions, it develops into a tall, single stemmed, symmetrical tree with a large canopy reaching a height of upto 15.2 m (50 ft) whereas on poor soils or when exposed to strong winds, it develops into a low spreading bush (Ohler 1969).

The chief commercial products of the species are Cashew-nut and Cashew-apple. The Cashew-nut is mainly utilized for the manufacture of Cashew-kernel which has a delicate taste, flavour and high nutritive value. The Cashew-apple is also nutritious. The juice of the apple contains Vitamin B and is rich in Vitamin C.

Attempts were made to raise Cashew in sungrass infested areas with the object to find out the possibility of growing it successfully. The present paper reports the performance of Cashew in respect of survival, growth and yield when grown in sungrass infested areas in the Sal forests of Bangladesh.

#### MATERIALS AND METHODS

An area of 1.62 ha (4 acre) of sungrass infested land in Charaljani Silvicultural Research station, Tangail was selected, cleared and burnt. 30.48 cm (12 in) cube pits were

dug at 3.6 m x 3.6 m (12 ft x 12 ft) spacing and direct sowing of seeds was done in June, 1968. In each pit, two seeds were sown. Where more than one seed germinated, the vigorous seedling was retained. Periodic weedings were done in the early stages of their growth.

Measurements on height and survival of seedlings were recorded at intervals of three months. The height of the seedlings was measured from root collar to terminal bud.

The tree height, the dbh and the diameter of the canopy were measured by an Abney's level, a caliper and a measuring tape respectively. For the purpose, 50 trees were selected at random.

The yield of green nuts per tree was determined by collecting mature seeds regularly. In this case, 25 trees were selected at random.

Some information including the data on height growth and survival percentage prior to 1978 were taken from records of the research station.

#### RESULTS AND DISCUSSIONS

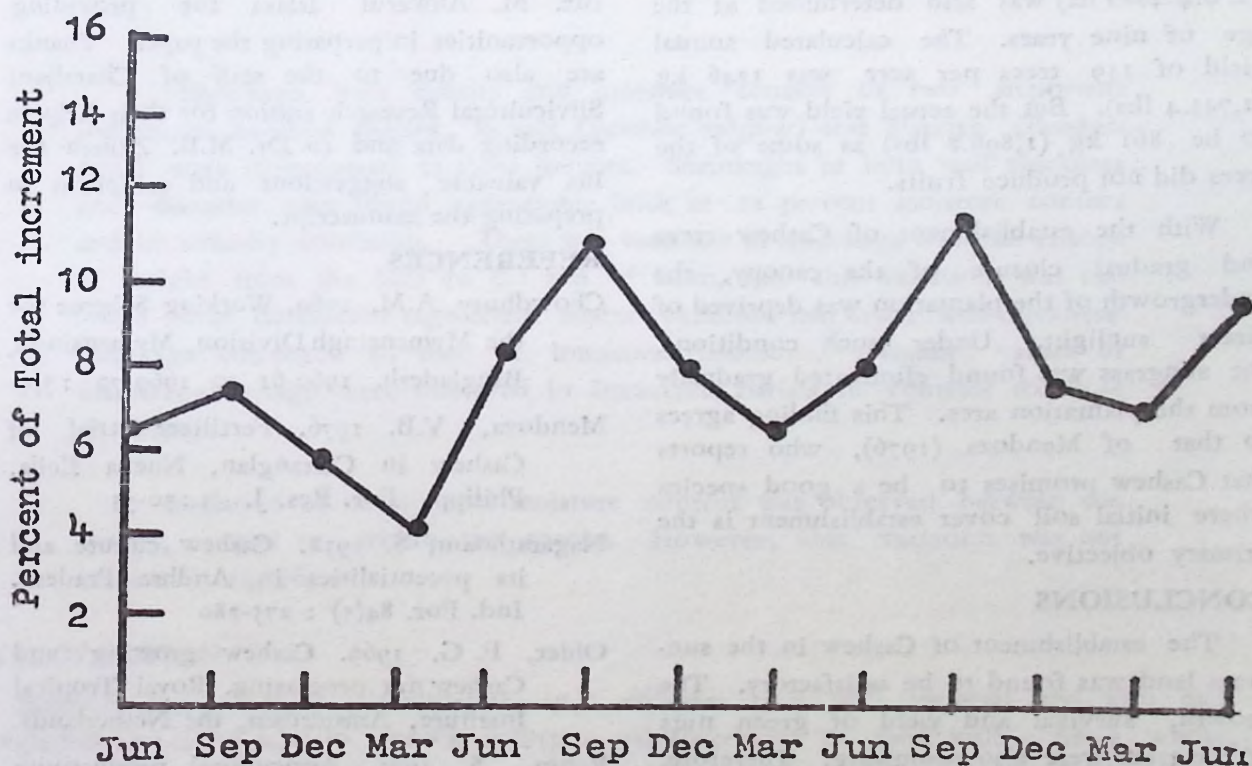
Cashew seedlings under the experiment attained an average height of 219.4 cm (86.4 in) in three years (Table 1). The seedlings grew continuously throughout the year (Fig. 1), even in the dry months, though a strong seasonal growth was evident. The

**Table 1. Average height of Cashew seedlings upto 3 years**

Age (yr)	0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00
Height (cm)	29.9	42.7	51.8	70.1	81.8	112.7	124.9	143.3	168.6	184.4	198.1	219.4
(in)	11.8	16.8	20.4	27.6	32.2	44.4	49.2	56.4	66.4	72.6	78.0	86.4

growth rate gradually declined in March and increased immediately with rainfall. It was also evident that the growth was slower in the first growing season and faster from the second growing season onward.

After the dry period of the first year, there was no mortality of seedlings and 85.8% seedlings were found to have survived finally (Table 2).



**Figure : 1. Seasonal increment of Cashew as percentages of total height increment upto three years**

Table 2. Survival percentage of Cashew seedlings upto 3 years

Months	Sep	Dec	Mar	Jun	Sep	Dec	Mar	Jun	Sep	Dec	Mar	Jun
Survival (%)	98.0	96.0	90.0	85.8	85.8	85.8	85.8	85.8	85.8	85.8	85.8	85.8

The trees attained an average height of 6.3 m (20.6 ft) and an average dbh of 18.5 cm (7.3 in) with an average canopy of 6.1 m (20 ft) at the age of nine years. The trees began to produce fruits from the third year. The average annual yield of nine-year old trees was 4.8 kg (10.6 lbs) per plant (Nagarathnam 1958).

The yield of green nuts per acre (= 0.404686 ha) was also determined at the age of nine years. The calculated annual yield of 259 trees per acre was 1246 kg (2,745.4 lbs). But the actual yield was found to be 861 kg (1,896.8 lbs) as some of the trees did not produce fruits.

With the establishment of Cashew trees and gradual closure of the canopy, the undergrowth of the plantation was deprived of direct sunlight. Under such conditions, the sungrass was found eliminated gradually from the plantation area. This finding agrees to that of Mendoza (1976), who reports that Cashew promises to be a good species where initial soil cover establishment is the primary objective.

### CONCLUSIONS

The establishment of Cashew in the sungrass land was found to be satisfactory. The growth, survival and yield of green nuts of the trees were also promising. Therefore, Cashew may be considered as a suitable species for controlling sungrass infestations.

Due to the shifting cultivation practices in the past, extensive areas have been invaded by sungrass in the forests of Bangladesh. There are more than 809 ha (2,000 acres) of land under sungrass cover, scattered over the Sal forests alone. Cultivation of Cashew in these areas may be profitable.

### ACKNOWLEDGEMENTS

The author is thankful to Mr. S.M. Hasan for suggesting the problem and to Mr. M. Anwarul Islam for providing opportunities in preparing the paper. Thanks are also due to the staff of Charaljani Silvicultural Research station for their help in recording data and to Dr. M.B. Zaman for his valuable suggestions and criticisms in preparing the manuscript.

### REFERENCES

- Chowdhury, A.M. 1960. Working Scheme for the Mymensingh Division, Mymensingh, Bangladesh. 1960-61 to 1969-70 : 5pp
- Mendoza, V.B. 1976. Fertilizer trial of Cashew in Carranglan, Nueva Ecija. Philipp. For. Res. J. 1 : 30-33
- Nagarathnam, S. 1958. Cashew culture and its potentialities in Andhra Pradesh. Ind. For. 84(5) : 275-280
- Ohler, F. G. 1969. Cashew growing and Cashew nut processing. Royal Tropical Institute, Amsterdam, the Netherlands.
- Rehm, S. 1975. Agricultural productivity in tropical countries with high rainfall, Plant research and development. 2 : 7-16

*Md. Kamal Uddin, Junior Research Officer, Forest Research Institute, Chittagong, Bangladesh*