



Performance of different varieties of arecanut in Assam

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Arecanut (*Areca catechu* L.) is the most profitable plantation crop grown in humid tropics of India. It is mainly grown for its masticatory nuts popularly known as “betelnut” or “supari” in India, the Middle East and the Far East. The crop performs well in a variety of soils; the laterites of West Coast, the red loams of Tamil Nadu, alluvial soils of Assam and West Bengal and the loams of Orissa. In India, the annual production of arecanut is around 4.39 lakh tonnes from an overall acreage of 3.65 lakh ha with the productivity of 1202 kg per ha (for the year 2003-04, Anon., 2004). In Assam, the area under this crop is about 0.74 lakh ha, with production of 0.69 lakh tonnes and productivity of 952 kg per ha. Though Assam contributes significantly to the arecanut sector (22 % of area and 17 % of production), the productivity is very low compared to the national average of 1.20 tonnes per ha. Arecanut is a cross pollinated crop with heterogenous population, and hence different varieties are to be tested for various locations to identify location specific varieties as their performance over locations is highly inconsistent. Though arecanut varieties were evaluated in different regions, no such evaluation was done under Assam situation. Hence, a study was carried out to compare the performance of released varieties of arecanut with local selection.

The present study was conducted in the research farm of Central Plantation Crops Research Institute, Research centre, Kahikuchi, which is situated at 20° 18' N latitude and 91° 78' E longitude with mean altitude of 48 m from MSL. The soil of the experimental site was texturally classified as clay loam. The average annual rainfall in the region ranges between 2500 to 3000 mm and most of the rainfall occurs during South West

monsoon (June to August/September). There is a dry spell from October to March with occasional showers from March to May.

To evaluate the comparative performance of arecanut varieties under irrigated condition in Assam, a field trial was laid out in randomized block design with five treatments replicated four times. The varieties tested were Mangala, Sumangala, Sreemangala, Mohitnagar and Kahikuchi local selection. Each treatment had six palms/plot. Planting was done during March-April 1993 and the palms were managed with recommended doses of fertilizers and irrigated during dry periods by basin method of irrigation @ 40 l/palm once in ten days for first three years and subsequently @ 125 l/palm at an interval of ten days.

Observations on growth parameters namely plant height (m), girth at 30 cm above ground level and at last node (cm), number of leaves, number of leaflets, leaf length, leaf breadth, number of nodes per 100 cm length, leaf sheath length and breadth were recorded at 9th (2002) and 12th year (2005) of planting. The yield data in terms of chali (dehusked nuts in kg) per palm was recorded from 2002 to 2005. The data were analysed as per the procedure given by Panse and Sukhatme (1985) and the results are given below.

The vegetative growth parameters varied significantly among the varieties except for number of leaves (Table 1). The highest plant height, internodal length at 30 cm above ground, leaf length, number of leaflets, leaflet length and breadth, leaf sheath length and lowest girth at 30 cm above ground was found in Kahikuchi local selection and it was on par with Mohitnagar variety.

Table 1. Morphological parameters of different varieties of arecanut during 2002 and 2005

Parameters	Plant height (m)		Girth at 30 cm above ground (cm)		Girth at last node (cm)		Inter-nodal length at 30 cm above ground (cm)		No. of leaves in the crown		No. of nodes/100 cm length		Length of leaf (m)		No. of leaflets/leaf		Leaflet length (cm)		Leaflet breadth (cm)		Leaf sheath length (cm)		Leaf sheath breadth (cm)	
Variety/Year	'02	'05	'02	'05	'02	'05	'02	'05	'02	'05	'02	'05	'02	'05	'02	'05	'02	'05	'02	'05	'02	'05	'02	'05
Mangala	6.2	8.5	52.5	52.5	42.5	42.62	9.5	9.5	9.9	9.8	12.0	12.0	1.77	1.78	86.6	87.2	86.0	85.7	9.6	9.5	99.2	100.5	35.0	35.1
Sumangala	7.1	10.1	49.1	49.1	36.9	37.5	9.9	9.9	9.8	10.1	10.5	10.5	1.71	1.79	86.7	86.5	88.3	89.0	9.9	10.0	103.2	100.5	35.2	35.3
Sreemangala	7.2	10.1	48.9	48.9	36.9	37.9	10.6	10.6	10.5	10.6	10.1	10.1	2.03	2.00	85.7	85.5	90.0	88.5	10.1	10.5	103.0	101.5	35.2	35.3
Mohitnagar	8.4	10.4	47.4	47.4	39.3	41.0	10.9	10.9	10.5	10.3	9.5	9.5	2.00	2.00	87.0	87.5	90.0	88.0	10.1	9.9	104.7	103.5	37.7	37.8
Kahikuchi	8.4	10.5	46.9	46.9	39.7	41.0	11.2	11.2	10.0	10.4	9.3	9.3	2.02	2.00	90.7	90.0	89.0	87.5	10.1	10.2	107.2	104.2	36.5	36.2
local selection																								
CD (P=0.05)	0.15	0.26	0.79	0.79	0.53	0.99	0.34	0.34	NS	NS	0.66	0.66	0.10	0.07	1.67	1.15	1.7	3.21	0.17	1.29	2.95	2.64	1.37	1.34

NS - Not Significant

The Mangala variety had attained its typical semi-tall nature by recording the lowest plant height, the lowest internodal length, and the highest number of nodes per 100 cm length. It had also the lowest leaf sheath length and breadth, highest girth at 30 cm above ground and at the last node and was on par with Sumangala and Sreemangala. This indicates that the semi-tall character of Mangala is expressed irrespective of different agro-climatic conditions. Similar results have been reported by many workers under different agro climatic conditions (Ananda *et al.*, 2000a and 2000b, Anuradha Sane *et al.*, 2002 and Salvi *et al.*, 1985).

It is evident from Table 2 that significantly the highest chali yield (2.73 kg/palm) was obtained in Kahikuchi local selection during the study. This indicates its adaptability to this region compared to the other varieties. The second highest yield was recorded by

Mohitnagar variety (2.47 kg/palm). The yield obtained from Sreemangala and Sumangala was low in the region. The varieties like Mangala, Sumangala and Sreemangala released for coastal tract of South India did not perform well in this region, may be due to non acclimatization of these varieties to this new environment.

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Table 2. Yield of different varieties (chali, kg/palm) of arecanut

Variety	Year				Mean
	2002	2003	2004	2005	
Mangala	2.53	2.32	2.27	2.22	2.33
Sumangala	1.93	1.87	1.87	1.80	1.86
Sreemangala	1.52	1.70	1.87	1.53	1.65
Mohitnagar	2.62	2.50	2.55	2.20	2.47
Kahikuchi	2.84	2.62	2.72	2.73	2.73
local selection					
CD (P=0.05)	0.11	0.12	0.13	0.19	0.15