

## YIELDING BEHAVIOUR OF 'MANGALA' ARECANUT IN COMPARISON WITH LOCAL SOUTH KANARA TYPES \*

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### ABSTRACT

Yield performance of individual areca palms of 'Mangala' arecanut plantation in comparison with local South Kanara types was studied at the Central Plantation Crops Research Institute, Regional Station, Vittal for continuous period of six years beginning from 1981. The study revealed that the 'Mangala' variety of arecanut gives a mean yield of 12.67 kg of ripe nuts per palm as compared to South Kanara local which gives 8.59 kg per palm. About 50 per cent of the palms yielded more than 12 kg of ripe nuts/palm which was accounted to 70.17 per cent to the total garden yield while 29 per cent gave less than 10 kg of ripe nuts/palm with a contribution of 9.13 per cent of yield to that of total. Studies on the yielding behaviour of palms also revealed that 43.13 per cent of palms are regular bearers and the rest were found to be having alternate bearing habit and 7.5 per cent of palms had given less than 3.0 kg of yield of fresh nuts per palm while 1.6 per cent of palms yielded more than 30.0 kg/palm.

### INTRODUCTION

'Mangala' is a high yielding variety of arecanut released from the Central Plantation Crops Research Institute, Regional Station, Vittal during 1972. It has a number of desirable characters such as earliness in bearing, more number of female flowers per inflorescence, higher percentage of nut set, initial and cumulative higher yields, quicker stabilisation of production and lower height, in comparison with the local South Kanara cultivar (Bavappa, 1977). A unique feature of this type is the short stature (semi dwarf) and the smaller internodal distance, partially drooping crown and well spread leaves that accommodate more number of leaflets. (Murthy and Mohan 1982).

Due to the above characters Mangala has become popular among the areca growers. However, the performance of

individual trees in a plantation was not studied while the yield pattern of individual trees in a yield stabilised garden of local variety of arecanut was carried out and reported by ShamaBhat (1968). It was reported that, maximum yield in terms of no. of nuts ranges between 201 to 400 per palm in South Kanara local type and 33.1 per cent of the palms yield only 11.9 per cent of the total crop, whereas 59.1 per cent of the trees give 71.1 per cent of the produce and 7.8 per cent of the population share 17.0 per cent of the total yield. It is further seen that 16.1 per cent of the palms produce less than 100 fruits per year. Further 2.0 per cent of the trees were non-yielding throughout and 4.0 per cent bore fruits only once during the period of three years.

### MATERIALS AND METHODS

The observations were recorded from a garden planted during 1967 at CPCRI,

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Regional Station, Vittal. The progenies of open pollinated 'Mangala' palms were used for planting. The seedlings of 1½ years old were planted with a recommended spacing of 2.7 x 2.7 m in pits of 90 cm. cube, filled with top soil to a height of 60 cms from the base during the month of September. The palms received all the recommended package of practices.

There were 320 palms in the garden. Fully ripe nuts were harvested at regular intervals from 320 experimental palms and the data on yield were recorded for a continuous period of six years beginning from 1981-82 to 1986-87. Yield both in terms of weight and number of ripe nuts were recorded from all the 320 palms and pooled into different yield groups. The percentage of palms as well as the percentage of yield to the total garden yield under each group were compiled and compared to the yields of local South Kanara palms of same

age raised with recommended package of practices. The results are presented in this paper.

#### RESULTS AND DISCUSSION

The data on yield of nuts are presented in Figure 1. The results on weight of nuts revealed that the mean yield of nuts per palm in Mangala was 12.67 kg as against 8.59 kg ripe nuts in South Kanara Local and 30.58 per cent of palms gave an yield of less than 12.01 kg of nuts (less than average yield). The number of palms observed under the yield group of 12.01 to 15.00 kg were 18.40 per cent (Table I). It can also be seen from the tables that 29.0 per cent of the palms yielded only 12.07 per cent of the total produce and 11.30 per cent of the population had resulted in 21.85 per cent of the total yield.

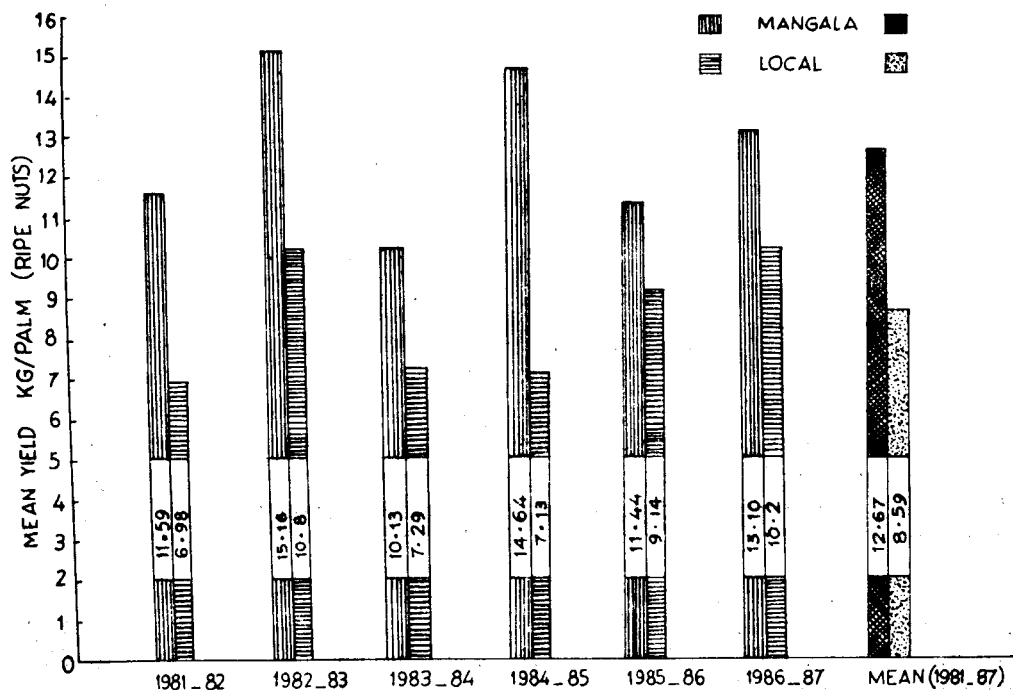


Fig. 1. Year-wise mean yield of individual palms (from 1981-82 to 1986-87)

Table I. Yield pattern of individual areca palms in 'Mangala' (weight of ripe nuts)

Sl. No.	Wet wt. of nuts (kg/palm)	No. of palms in the group	Per cent of palms	Total Yield (kg)	Per cent yield to the total garden yield
1.	0-3	24	7.5	32.2	0.75
2.	3-6	26	8.1	122.83	3.05
3.	6-9	43	13.4	333.26	8.27
4.	9-12	68	21.3	715.57	17.76
5.	12-15	56	17.5	741.19	18.40
6.	15-18	43	13.4	731.97	18.17
7.	18-21	24	7.5	473.24	11.75
8.	21-24	23	7.2	512.46	12.72
9.	24-27	6	1.9	152.70	3.79
10.	27-30	2	0.6	57.81	1.43
11.	> 30	5	1.6	157.66	3.91
<b>Total</b>		<b>320</b>	<b>100.0</b>	<b>4028.9</b>	

The yield figures on number of nuts showed that 6.88 per cent of palms gave less than 100 nuts per palm. The highest percentage of palms (17.19%) comes under the yield group of 301-400 nuts per palm (Table II). But in the case of South Kanara (local) highest percentage of palms (24.3%) comes under the yield group of 201-300 nuts per palm (ShamaBhat, 1968) (Table III). It was also seen that more than 900 nuts per palm in local type was 0.2% (Shama Bhat, 1968) whereas in the case of Mangala it was 3.12% and also 1.56% of palms gave more than 1000 nuts per palm (Table II).

#### Alternate bearing habit

The yield data showed alternate bearing nature in 'Mangala' (Fig. 1). During 1981-82 season viz., after 14 years of planting the mean yield per palm obtained was 11.59 kg and during the next year it has increased to a mean yield of 15.16 kg per palm and in subsequent years the above figure has

again fallen to 10.13 kg. The same trend was maintained throughout on all the six years to which this study is related (1981-82 to 1986-87).

It was further seen that out of 320 palms 138 (43.13%) were regular bearers and the remaining 181 palms (56.87%) were alternate bearers.

The above observations though they do not appear very significant but if we consider vis-a-vis the economics of raising arecanut plantation the importance could well be realised. The cost of maintaining one hectare of Mangala arecanut garden works out to Rs. 24,140/- per annum. Thus the cost of maintaining each tree of the garden with 1300 trees per hectare works out to be Rs. 18.57 per annum. To meet this expenditure the palms has to yield at least more than 3 kg of ripe nuts under the present market price. In the present study 7.5 per cent of the palms gave less than 3 kg of nuts per palm which

Table II. *Yield pattern of individual areca palms of 'Mangala'*

Sl.No.	No. of nuts per palm	No. of palms in the group	Per cent of palms to the total No. of palms in the group
1	0-100	22	6.88
2	101-200	22	6.88
3	201-300	35	10.94
4	301-400	55	17.19
5	401-500	47	14.69
6	501-600	41	12.81
7	601-700	43	13.44
8	701-800	26	8.12
9	801-900	14	4.37
10	901-1000	10	3.12
11	> 1000	5	1.56
<b>Total</b>		<b>320</b>	

Table III. *Yield pattern of individual trees in South Kanara local (Mean of 3 years)*

Yield groups (No. of fruits)	No. of palms in the yield group	Percentage of palms to total	Percentage of yield to total
100 & Less	92	16.1	2.6
101 to 200	97	17.0	9.3
201 to 300	139	24.3	22.2
301 to 400	127	22.2	28.3
401 to 500	72	12.6	20.6
501 to 600	27	4.7	9.5
601 to 700	10	1.8	4.1
701 to 800	6	1.1	2.8
801 to 900	—	—	—
901 & above	1	0.2	0.6
<b>Total</b>	<b>571</b>		

means Rs. 1810.57 invested on every hectare of the garden runs on loss as the yield obtained per tree was less than 3.00 kg of ripe nuts. The present practice of areca growers is to maintain all the palms in a garden irrespective of their individual performance. Therefore, in the case of 'Mangala' it will be advantageous to replace the palms yielding less than 3 kg of ripe nuts with fresh stocks. Shama Bhat (1968) also recommended for the replanting of palms yielding less than 100 nuts in the case of local varieties. This investigation revealed that in Mangala decline in yield was not noticed as the palms grow older.

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