

Preliminary Studies on the Method of Selection of Mother palms and Seedlings.

P. K. NARAYANAN NAMBIAR AND P. GOPINATHAN NAIR
(Agricultural Research Station, Pilicode)

Introduction

The importance of seed selection in a perennial crop like coconut is well recognised. Though there are various methods like introduction of better varieties and strains, artificial self **pollination** and selection in self-fertilised **lines**, hybridisation natural and **artificial**, mass selection and strain building, plant to row methods and close line breeding for coconut **improvement**, the only short **term practical** method for the planter to adopt, on a large scale is **mass selection**.

This method formed the practice from the earliest days due to its merits, **According** to the common practice, nursery is raised from selected seednuts collected from **selected** mother palms growing in selected gardens in **selected localities** and **seedlings** are selected from such nursery. Until **recent** years the workers on coconut were unanimous in their opinion regarding the need for selecting **high yielding** mother

palms for collecting **seednuts**. Recently the workers from **Ceylon** disagreed on the necessity of mother palm selection and in their opinion it is enough to do the **selection** only at the seedling stage. A trial was laid out to verify whether the selection of parent trees on the basis of observed characters such as high yield is **necessary** or a system of **selecting good seedlings** in the nursery alone is sufficient.

Based on the preliminary observations made so far an attempt is made in this paper to **stress** the **importance** of **mother palm** selection under the **Indian** conditions.

Materials and Methods :—

The trial was started at the Agricultural Research Station, Pilicods in 1955. The soil of the station is gravelly **laterite**. The annual **rainfall** at this station is 355 cm. and coconut is **cultivated** purely under **rained conditions**. The following nine treatments were adopted.

- | | |
|----------------------------------|-------------------------------|
| 1. Selected mother palm | — Vigorous Seedlings . |
| 2. -do- | -- bulk seedling. |
| 3. -do- | -- poor seedling. |
| 4. Bulk mother palm | -- vigorous seedling. |
| 5. -do- | -- bulk seedling. |
| 6. -do- | -- poor seedlings. |
| 7 Poor mother plam | -- vigorous seedling. |
| 8. -do- | -- bulk seedling. |
| 9. -do- | -- poor seedling. |

The selected mother palms are those which give an average annual yield of 80 nuts and more each and the poor mother palms are those which give an average annual yield of 20 nuts and less each. The bulk mother palms are selected at random. Six seedlings under each treatment were planted in 1956 in duplicate sets and their performance studied.

Observation :—

The mortality counts taken in case of various treatments at the end of each year of the planting are furnished below, in table 1.

TABLE I
*Mortality in cocount seedlings

Treatment	Number planted in 1956	Mortality recorded during the year ending				Percentage
		Dec. 57	Dec. 58.	Dec- 59.	Total dead	
1	6	—	—	—	—	
2	6	—	—	1	—	
3	6	—	—	—	—	
Total	18	—	—	1	1	5.5
4	6	—	—	1	1	
5	6	—	—	1	1	
6	6	1	1	—	2	
Total	18	1	1	2	4	22.2
7	6	—	—	1	1	
8	6	—	—	—	—	
9	6	2	2	1	5	
Total	18	2	2	2	6	33.3

*Mortality occurred not due to pest, disease or accident,

The measurable vegetative characters of the seedlings recorded at the time of planting and three years after planting are presented in table II for comparison.

TABLE II
Measurable vegetative characters of cocount seedlings

Treatment	At the time of planting in 1956			On 31st December 1969		
	Mean girth in cm.	Mean height in cm.	Mean No. of functioning leaves.	Mean girth in cm.	Mean height in cm.	Mean No of functioning leaves.
1	14.9	346.3	6.5	57.0	293.5	8.8
2	13.2	110.7	6.2	63.4	305.4	7.2

3	10.9	83.5	5.0	26.3	179.6	5.2
4	14.9	132.8	6.2	64.0	299.8	8.6
5	13.4	123.9	5.7	62.8	297.6	8.5
6	10.9	92.5	4.5	45.0	269.3	7.0
7	11.9	119.3	3.6	43.6	255.8	6.6
8	12.1	112.5	3.8	52.2	261.3	7.0
9	7.8	75.8	2.6	33.0	186.0	6.0

The above figures show that mortality is maximum in the progenies obtained from low yielding mother palms and minimum in case of the progenies of high yielding mother palms. It is also observed that mortality is minimum in selected seedlings in case of all the parental groups.

It will be seen from the above table that the seedlings of low yielding mother palms are poorer in vegetative characters than those of high yielding mother palms.

Discussion

The observations so far made reveal that in the mortality count and in the vegetative characters, the progenies of high yielding mother palms are distinctly superior to the progenies of the Low yielding mother palms. This indicates the necessity of the selection of mother palms based on their high yields.

In a trial laid out at the Agricultural Research Station, Nileshwar II with progenies obtained from the mother palms belonging to various yield groups it was observed that the progenies from high yielding mother palms are superior to those from poor yielding ones in vegetative characters and in early flowering habit. These observations also support the necessity of the selection of mother palms based on their high yields. The heritability estimate of

yield in the coconut has shown that the yield in the coconut is largely governed by heridity which also can for some extent be taken to provide some sort of justification to the method of selection of mother palms.

By selecting mother palms the trees with serious defects like persistent production of barren nuts or nuts with very low copra content can also be discarded.

It is found that in the mortality count and in the vegetative characters, the selected vigorous seedlings are superior to the poor seedlings in all the mother palm groups. This stresses the importance of the selection of seedlings in the nursery in addition to the selection of mother palms.

By using selected nuts from selected high yielding mother palms with desirable characters, there is greater chance for obtaining superior progenies at the nursery.

SUMMARY

A preliminary study was made on the selected, poor and unselected progenies of selected, poor and unselected mother palms at Agricultural Research Station, Pilicode.

The mortality count and vegetative characters of the seedling were studied.

The progenies of high yielding mother palms are superior to the progenies of poor

yielding mother palms. The selected seedlings are best in case of all mother palms studied.

Based on these findings the importance of the selection of mother palms in addition to the selection of seedlings at the nursery is stressed.

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