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Coconut nursery studies

III Vigour of seedlings in relation to the floating position of seednuts in water

By

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INTRODUCTION

RESEARCH work done in India and elsewhere has established fairly conclusively that even when all possible precautions in the selection of mother palms, collection of seednuts and nursery management, etc., are taken, it is necessary to carry out a rigorous culling of inferior seedlings in the nursery in order to get quality planting material that will on transplanting out in the field grow into heavy bearers. In fact Liyanage (1953) lays great stress on this aspect of nursery selection as, according to him, this alone will increase the yield of the crop by 10 per cent. Though, in general, high yielding mother palms give rise on the average to vigorous progenies, exceptions are not infrequent and this had made testing of individual mother palms for progeny vigour prior to final selection, a necessary step. This work will cost a good deal of money and effort particularly when the number of mother palms to be studied runs into hundreds. If a rough idea about the vigour of seedlings of different mother palms can be had from some easily determinable character of seednuts then it would really be a great advantage. As a part of investigation of this problem, floating position of seednuts in water which could be determined quite easily without any special equipment or skill was taken up for study in the first instance. The results are summarised in this paper.

MATERIALS AND METHODS

The studies were carried out during the years 1953-54 and 1956-57. At the time of harvest of seednuts in the month of April, the seednuts from a large number of mother palms of the Station were actually floated in water contained in a receptacle and were separated into three groups according to the position occupied by the nuts while floating. Nuts which floated with the stalk end almost in a vertical

position are classified as 'vertical', those which floated horizontally with the stalk end lying almost parallel to the water surface are classified as 'horizontal' and those which occupied an intermediate position between the two extremes are classified as 'oblique'. Typical specimens of horizontally floating and vertically floating seednuts are illustrated.

The above groups of seednuts were marked separately, stored for the usual period and planted in the nursery with the commencement of of the South-west monsoon. Detailed observations were made on the germination of seednuts and on seedling characters such as number of leaves, girth at collar and height of seedlings when about an year old.

In 1956-57, studies were repeated with the intention of verifying the main observations from the previous studies and were limited to the study of nuts floating in the vertical and horizontal positions only.

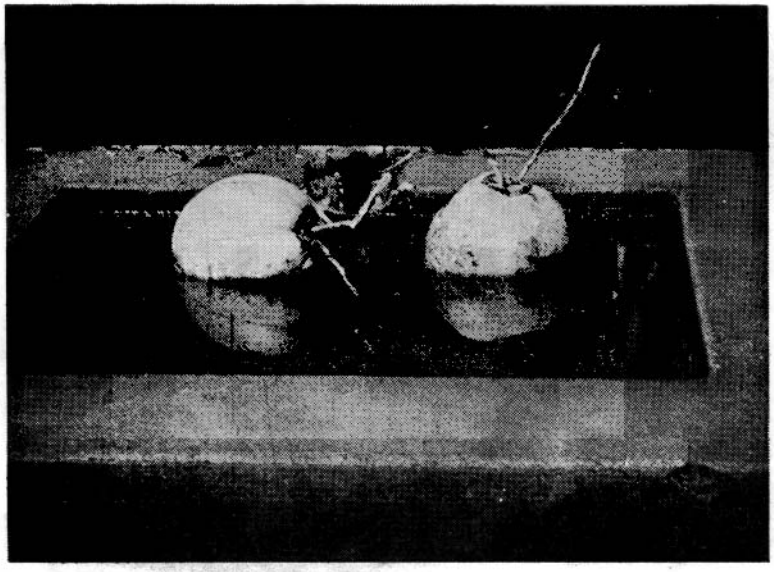
RESULTS

The results of observations made on the germination of seednuts and on seedling characters are summarised below:

Particulars	Floating position of nut		
	Vertical	Oblique	Horizontal
Seednuts			
Germination percentage (total)	97.1	93.2	97.0
Mean No. of days taken for germination	95.0	110.3	99.7
Seedlings			
Girth at collar (cm)	10.7	10.1	9.9
Height (cm)	122.8	102.0	99.9
No. of leaves	5.4	5.0	5.1

Nuts floating in the vertical position have germinated earlier and recorded better germination than the others. The seedlings from the 'vertical' group were also considerably more vigorous than the others and could easily be picked out from the rest by the naked eye. The seedlings from the 'oblique' group were found to be slightly better off than those from the horizontally floating seednuts.

The results from the trial repeated in 1956-57 were in full harmony with the main findings of previous trials as can be seen from the data furnished below.



Floating position of seednuts in water
Left - Horizontal; Right - Vertical

Particulars	Seedling characters		
	Girth at collar (cm)	Height (cm)	No. of leaves
Seedlings from horizontally floating seednuts	96.2	14.3	7.5
Seedlings from vertically floating seednuts	118.0	14.9	7.8

The seedlings from vertically floating seednuts were again outstanding.

DISCUSSION

It is clear from the results furnished in the previous section that seedlings from nuts floating in a vertical position in water give on the average exceptionally vigorous seedlings than those occupying oblique or horizontal positions. Those from nuts floating in the horizontal position are the least vigorous. Why this is so is not clear; but one important factor, viz., the copra content per nut has been reported to be associated with the floating position. Vertically floating nuts have been found to contain much better copra content per nut than those floating in the oblique or horizontal position as can be seen from the figures extracted from the Annual Report of the Agricultural Research Station, Kasaragod for the year 1941-42 and given below:

Floating position of nut	Mean copra content per nut in gm.
Vertical	181.8
Oblique	173.0
Horizontal	139.7

The meat is the chief source of food for the vigorous growth of the seedlings in the nursery, and its highest availability in the vertical and oblique floating nuts may be responsible for the comparatively vigorous growth of seedlings from such nuts. Vertically floating nuts are also found to have generally better weight of husked nuts and a low proportion by weight of husk to unhusked nut.

The above finding is useful in practice in making a preliminary screening of mother palms for seedling vigour without carrying out detailed nursery tests. The mother palms, the nuts of which float in the horizontal position can be rejected outright. Though vertically floating nuts give the most vigorous seedlings, mother palms producing such nuts are found only in small numbers and hence where large scale

production of seedlings is envisaged, mother palms with the oblique floating nuts may have also to be selected.

The floating position has to be determined as soon as the ripe seednuts are harvested. If nuts are allowed to get dried up the floating position may change and may not then be a reliable guide for selection. Again, the test is to be carried out on mother palms which satisfy all the other criteria as it is quite possible that poor yielding palms may also give nuts that float in a vertical or oblique position.

SUMMARY AND CONCLUSIONS

A study of the vigour of seedlings in relation to the floating position of seednuts in water has shown that seedlings from vertically floating nuts are decidedly more vigorous than obliquely or horizontally floating nuts. Horizontally floating nuts give rise to seedlings with least vigour. Where one has to deal with large number of mother palms it may be possible by using this simple method to spot out and discard mother palms that are likely to give rise to poor progenies in the nursery without actually undertaking detailed nursery studies.

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