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Research notes

TESTING FOR PREPOTENCY IN COCONUT PALM*

The present practice of collecting seed nuts for commercial production of seedlings is from mother palms possessing superior phenotypic performance. Being an essentially cross pollinated crop, this practice has its own disadvantages that can be tracked to higher degree of segregation. The best solution for this drawback is to identify genotypically superior individuals from among the phenotypically identified superior mother palms mentioned above. The present investigations were undertaken to formulate an efficient method for evaluation of the genetic superiority of mother palms through early seedling progeny analysis.

Forty Komadan palms of about twentyfive years old and their seedling progenies constituted the material for the experiment. The palms were classified as follows. i) Low yielders with annual mean nut yield less than 80 ii) Medium yielders with annual mean nut yield between 80 and 120 and iii) High yielders with annual mean nut yield above 120. Progeny rows were raised using nuts collected from each palm and data were collected from samples of size 10 representing the rows. Vigour index was computed for each seedling on the basis of the principle of descriminent function. The seed nut weight, height, collar girth and number of split leaves in one year old seedling were used as the parameters in this index formulation. Index coefficients were worked out for each character viz., fresh weight of seednut (3.124), height (0.1419), collar girth (0.9501) and number of split leaves (9.2607) after the model suggested by Smith (1936). The values for the indices ranged from 4.83 to 90.03. The overall mean (37.13) was taken as the critical value for identifying the vigorous seedling from the less vigorous ones. Seedlings having an index value higher than the mean (37.13) were considered as vigorous. The palmwise mean value for seedling vigour index was made use of in identifying prepotent palms that included only these values higher than the critical value (37.13). The percentage recovery of vigorous seedlings was more in the high yielding group (59.30%), followed by the medium yielding group (45.10%). The low yielding group registered the lowest recovery (40.74%). The percentage recovery of prepotent palms was maximum in the high yielding group (66.67%) followed by the medium yielding category (36.36%) and the lowest recovery was in the low yielding group (33.33%). The findings of the investigation indicate the possibility of identifying prepotent palms through seedling progeny analysis. Similar view has been reported earlier (Ninan and Pankajakshan, 1961; Liyanage, 1957, Sathyabalan *et al* 1975). In the light of the present study

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it is evident that all phanotypically superior palms are not prepotent and individual palms differ in their genetic superiority to transmit desirable characters to the progeny. Views similar to this have been expressed by Harland (1957) in coconut and Bavappa and Ramachander (1967) in arecanut. The major finding of the present study is that prepotency in mother palms in coconut is expressed in the

Table 1

Vigorous seedling recovery of selected prepotent palms

Sl. No. of selected prepotent palms	No. of vigorous seedlings recovered (out of 10)	Percentage of vigorous seedlings
1	5	50
2	7	70
3	5	50
4	8	80
5	6	60
6	8	80
7	7	70
8	6	60
9	5	50
10	5	50
11	6	60
12	6	60
13	8	80
14	6	60
15	6	60
16	8	80
17	5	50
Mean	6.29	62.94

greater recovery of vigorous seedlings from it. In this study, 17 prepotent palms were identified. But the superior performance of the progeny of such palms could be confirmed only after the adult progeny analysis is completed. This aspect can form the future line of work. The number of vigorous seedlings recovered from each identified prepotent palms is furnished in Table 1. The percentage recovery of vigorous seedlings ranged from 50% to 80% with an average of 62.94%. It shows that all the seedling progenies of identified prepotent palms need not be superior. Hence a vigorous selection of vigorous seedlings coupled with the outright rejection of the inferior ones should be practised even among the seedling progeny of identified prepotent palms. Thus the information of practical usefulness of the present investigation is that selection of mother palms should be confined to those possessing superior phenotypic attributes. From among these palms, prepotent ones can be identified through early seedling progeny analysis. Confining seed nut collection to these palms and selection of vigorous seedlings alone for planting will definitely increase the yield of the crop.

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