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Setting up Elite Coconut Seed Farms

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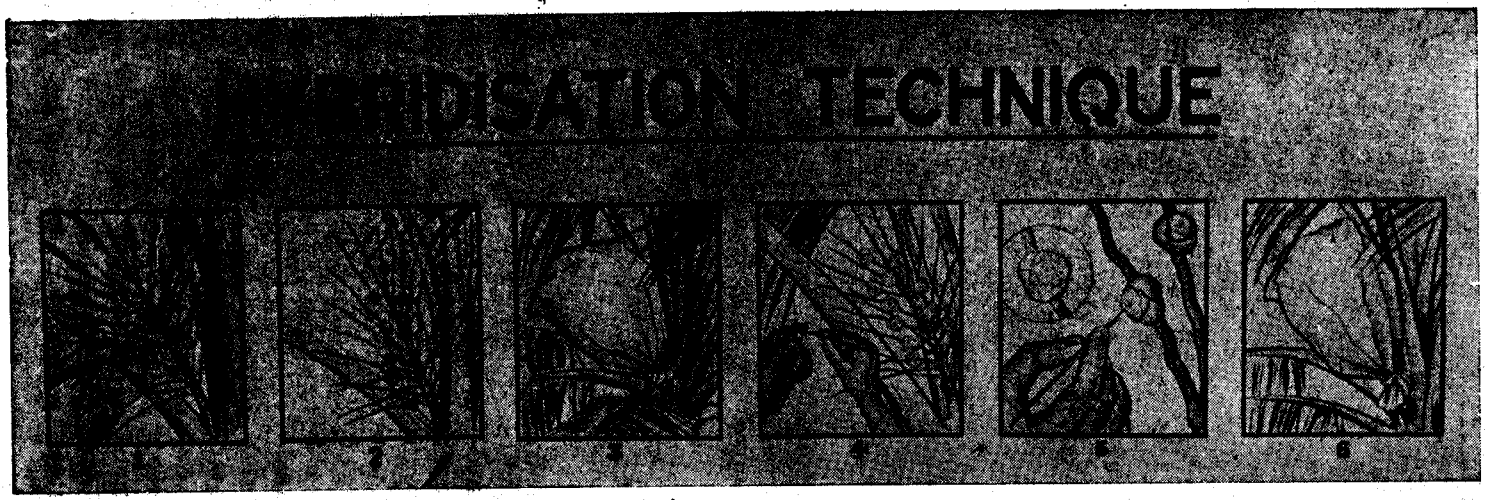
FOR producing quality coconut seedlings on a large scale, the current accepted method is to raise a nursery with naturally pollinated (open pollinated) nuts from mother palms possessing a number of desirable characters (listed in Appendix) and make a rigorous selection among the seedlings on the basis of established criteria such as early germination, larger number of leaves, good girth at collar, vigorous growth etc. This is not claimed to be a perfect method but is being adopted as the only one practicable under the existing conditions and likely to help in producing large numbers of quality seedlings. The one objection that is raised against this procedure is that the coconut crop is cross-pollinated in nature and that with the male parent unknown and the mother palm itself highly heterogeneous, there is no assurance that a genuine high yielding palm will reproduce its performance in the progeny. This is partly due to the possibility of the female flowers of the selected mother palms getting pollinated by the pollen from the poor palms of the neighbourhood, and the progeny inheriting the undesirable features. To obviate this possibility a suggestion has recently been



1. Emasculation (removal of the male flowers) of the inflorescence of the female parent in progress.
2. Inflorescence in which emasculation has been completed.
3. Emasculated inflorescence bagged to prevent the entry of foreign pollen through natural agencies.

4 & 5. Pollen is transferred from the male flower of the male parent to the receptive stigma of the female flower parent.

6. The bag is replaced after pollination.

made to establish nucleus plantations with material obtained by controlled cross-pollination between selected female and male parents, in an isolated area situated far away from all possible contaminations from foreign pollen and permitting interpollination among them. The presumption is that seedlings produced in this way will grow into heavy bearers and since cross-pollination is limited to the group of high yielders seednuts collected from them can straightaway be utilised for large scale propagation. These nucleus plantations which will thus be serving as a foundation stock are called the elite seed farms.

How are elite seed farms established

The establishment of the elite seed farms follows the general principles laid down for starting new plantations excepting for two special features viz., selection of site and use of planting material. These are briefly dealt with below.

Selection of site

The site for locating the proposed elite seed farms should not have any coconut palms within a radius of about a mile. The soil, climate and topography should be ideally suited for the crop and these considerations should never be sacrificed just to satisfy the condition of isolation. The chosen site should then be properly laid out and fenced and got ready for planting sufficiently in advance.

Production of planting material

The seedlings to be planted in the elite seed farms should be produced by controlled cross-pollination. The mother palms to be pollinated should be the very best ones and should conform to the exacting requirements set forth in Appendix. Besides about 10 best palms may be reserved for collecting pollen. The technique of pollination is briefly described below and is also illustrated in Fig. to bring out the essential steps. In this connection it may be stated that the staff allotted for this work should gain practical experience of the technique from seeing the work actually in progress at the Central Coconut Research Station, Kasaragod or other Regional Coconut Research Stations where such work is in progress.

The inflorescence of the mother palms selected for artificial pollination is emasculated immediately after the opening of the spathe and bagged with a close meshed cloth bag to prevent the entry of foreign pollen. When the female flowers of this become receptive as indicated by the exudation of honey from stigmatic pores, the pollen collected from the palms reserved for the purpose is dusted by hand on to the stigmatic surface. The flowers are dusted in this way for three successive days. The inflorescence is kept covered by the cloth bag for a further period of a fortnight after the completion of pollination and then removed to allow the buttons to develop under normal conditions. Though this account may seem simple, meticulous attention to a number of details is necessary to achieve success. During the seednut season of 4 to 5 months on the west coast it may be possible to operate only three or four inflorescences, on each mother palm. Hybridisation work cannot be carried out properly in rainy weather.

Planting and management of the farm

Optimum conditions for the growth of the palm should be provided by adopting

all the improved practices of coconut cultivation. It should be borne in mind that the plantation will last for a good number of years and that sustained attention should be given to it right through.

Programme of work

Since hybridisation is a time consuming work it is necessary to phase the work properly. Suppose within a 5-year period 100 acres of elite seed farm have to be established. In the first year hybridisation work will be done and in the second year the pollinated nuts will be sown in the nursery, and the first batch of seedlings will become available for planting out in the field only in the third year. This means that the proposed 100 acres will have to be covered during the third, fourth and fifth years i. e., at an average rate of 33 acres every year. To achieve this target about 2,000 controlled pollinated seedlings have to be produced every year which would require about 3,000 seednuts to be planted in the nursery. To produce this number of nuts it may be necessary to select 150 mother palms for hybridisation work and another 10 palms to serve as pollen parents. These details indicate roughly the quantum of work involved as may have to be modified in relation to local conditions.

APPENDIX

Selection of mother palms

1. The trees from which seednuts are to be selected for raising seedlings should be located in centres reputed for coconut cultivation and production. Mother palms should be selected from gardens under rainfed conditions which contain a fairly large proportion of healthy, middle-aged and properly bearing trees. This is important in that it will reduce the chances of inferior pollen fertilising the nuts in the mother palms and thereby giving rise to inferior progenies or daughter palms.

2. The mother trees should be heavy yielders giving over 100 nuts per tree per year. The yearly yield of a tree can be roughly estimated by counting all the nuts on the tree from the oldest to the youngest, as the coconut palm bears a year's crop in its crown.

3. The trees should be regular bearers yielding heavy crops every year instead of in alternate years.

4. The trees should be healthy-looking, vigorous and robust with thick-set crowns, spherical in outline having many leaves borne on short, thick stalks. The peduncles or stalks of bunches must be stout and short and should not have a tendency to buckle or droop down.

5. Trees having medium-sized nuts with nearly round shape are better than others, because such nuts have been found to be associated with heavy yield and high copra content.

6. Trees growing close to houses, cattle-sheds or under other favoured conditions may be avoided, as it is difficult to differentiate under such conditions, palms which are intrinsically good.

7. Trees producing barren nuts, i. e., nuts which are empty or do not contain well developed kernel inside or trees that shed the nuts before the nuts attain full maturity should not be selected as mother palms.