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Possibilities of Vegetative Propagation in the Coconut (*Cocos nucifera* L.)

THE coconut is a perennial palm which takes 6-8 years to begin bearing, but later continues to bear right through the year and all through its life, extending during a period of 60 years or more depending on local conditions. It is highly cross-pollinated in Nature, particularly the tall variety, and is propagated only through seed. These features, namely, the long interval between generations and the highly heterogeneous nature of the plant population, are proving to be great handicaps in making quick headway in coconut breeding. The perennial nature of the palm, on the other hand, is of advantage, in that the benefit from any improvement can be enjoyed over a very long period.

Vegetative propagation is the one sure method of propagating lines true to type, and it could be very valuable in coconut research, as has been recently pointed out (refs. 1-3). In the coconut, which is a monocotyledonous plant devoid of cambium, the prospect of vegetative propagation is at present remote, but there are indications that the problem is worth following up. In Nature, tendencies on the part of the palm to produce aerial roots under adverse conditions in the environment and/or diseased conditions of the palms have been noticed⁴. Rare cases of the palms producing suckers have also been reported^{5,6}. If these could be produced at will, some definite progress in vegetative propagation of coconut



Fig. 1. Roots formed at the girdled portion on the coconut stem above ground-level where the growth substances were applied

would have been made. That rooting can be artificially induced in the stem of the coconut palm above ground-level through marcottage, has been reported⁴. After the formation of large numbers of roots, the crown can be separated by severing the palm just below the rooted region and planting elsewhere. This procedure, of course, does not permit the multiplication of desirable palms, but may help to rejuvenate and to maintain them for a much longer period than otherwise.

It is now well established, that use of appropriate growth regulators in optimum concentrations can induce rooting and other meristematic activity in a variety of plants. In order to investigate how far their use in coconut will be helpful in inducing meristematic activity leading to rooting and probably suckering too, trials were carried out at this Research Station with mixtures of selected growth regulators, namely, α -naphthalene acetic acid, indole-3-butyric acid and certain purine compounds such as adenine, adenosine, alloxanthine and uric acid, in different concentrations and proportions. The growth regulators were applied as an aqueous spray or in lanolin paste after girdling or debarking the stem near ground-level. The points of application were then covered with soil which was kept moist during the rainless period by artificial watering. Initiation of roots was observed in about 1 yr. in the case of the following formulations only and roots were profuse (Fig. 1) in about eighteen months: 1 per cent indole-3-butyric acid in lanolin; 0.05 per cent naphthalene acetic acid in lanolin; and a mixture of 20 ml. of 80 p.p.m. adenosine, 5 ml. of 20 p.p.m. naphthalene acetic acid and 15 ml. of water applied as spray. There was no sign of suckering seen in any of the treatments so far.

These results thus indicate that inducing meristematic activity in the coconut is possible. Further systematic trials with a larger number of important growth regulators alone and in combinations and mixed in different proportions are under way to assess their relative merits.

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