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ON THE GROWTH AND YIELD OF WEST COAST TALL COCONUT IN RELATION TO DEPTH OF PLANTING

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There is much difference of opinion about the procedure to be adopted in planting the coconut seedlings. The size and depth of the holes (pits) in which the seedlings are to be planted are debated by various workers. Surface planted trees did not fare satisfactorily under rainfed conditions while trees planted one foot deep were better in leaf production and yield (Anon, 1924-1927). In sandy soils, pits 1—1½ feet deep were recommended for planting coconut seedlings by Patel (1938). Samson (1923) recommended large planting boles in less fertile soils and holes not less than 4 feet across on the surface and 3 feet at the bottom of a 3 feet deep hole in very light sandy soils. A depth of one foot was suggested by Child (1964) in Ceylon. It thus appears that the depth of planting should be guided by the type of soil. The present studies were hence undertaken to detemine the effect of depth of planting in the sandy soils of Kerala.

Material and Methods

The studies were made at the Central Coconut Research Station, Nileshwar, in the typical marine sandy soil which was poor both in minerals and organic matter. Two depths of 3 and 6 feet were tried using a paired plot design with six replications. The seedlings used were of the West Coast Tall variety. The seedlings were planted in July 1939 in triangular pattern with a spacing of 30 feet between them. The trees were irrigated properly. Results were assessed in terms of the vegetative growth and yield, which were periodically recorded. The root growth also was observed for which the number of primary roots of one tree each from the different treatments in 100 sq. cm area in consecutive 10 cm depths was counted.

Results

The trees started bearing regularly from the year 1960. The data on the production of leaves and nuts by the trees under the different treatments are given in Table I. It may be observed that the trees planted 3 feet deep produced significantly more number of leaves and nuts than those planted 6 feet deep. The yield in general is seen to be low which was due to the poor fertility of the soil.

Table 1

Total number of leaves and nuts produced by coconut trees planted in two depths

Depth of planting (feet)	Total Number of leaves 1949-58	Total number of nuts 1962-66
3	5409	3369
6	4332	2887

Table 2

Number of coconut trees planted at two depths coming to flowers at different occasions

Depth of planting (Feet)	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	Total
3	1	Nil	3	11	Nil	4	1	1	3	3	27
6	Nil	Nil	1	2	Nil	1	Nil	6	5	5	20

Table 2 shows that the trees planted 3 feet deep flowered earlier than those planted 6 feet deep. Thus by 1955 twenty trees of the former lot flowered as against four of the latter lot.

Table 3

Number of primary roots in 100 sq cm area of soil at different depths

Depth of planting (Feet)	No. of roots at different depths (cm)							
	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
3	6	1	9	18	12	20	23	18
6	21	15	8	7	4	8	19	8
(Contd.)	80-90	90-100	100-110	110-120	120-130	130-140	140-150	150-160
3	21	11	...	...	...	...	...	...
6	10	15	24	29	31	24	12	...

From Table 3 it is found that there was root growth from the trunks immediately below the soil surface. Intense root development in trees planted 3 feet deep took place between 30 and 90 cm below the soil surface. In the case of trees planted 6 feet deep two zones of intense root growth were seen and these were between the soil surface and 20 cm deep and between 60 and 150 cm deep. The maximum production of roots was observed on the bole area. The roots at depth of 20 to 60 cm of tree planted 6 feet deep were seen to be old and dried up. These roots might have developed in the early vegetative growth period and the trunk-forming stage of the tree and they might have later become ineffective due to the formation of fresh roots on the trunk above them.

Summary

Studies conducted in sandy soil (at the Central Coconut Research Station Nileshwar, Kerala State) with the West Coast Tall variety of Coconut showed that the seedlings planted at a depth of 3 feet produced significantly more number of leaves and nuts during a period of 10 years (1949-58) and 5 years (1962-66) respectively than those planted 6 feet deep. The former trees produced flowers earlier than the latter trees. The roots were more deep set in the case of trees planted 6 feet deep -than those planted 3 feet deep.

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