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Seedling that received 22½ litres of water once in two days and red earth

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RED EARTH APPLICATION

a short-cut to more coconut production in sandy soils

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APPLICATION of red earth in pits to coconut palms growing on sandy soils has been found to benefit them greatly.

Coconut grows on a wide variety of soils, ranging from clayey to deep littoral coarse sands. While in the former the problem is to provide for proper drainage, in the latter it is conservation of soil moisture that requires attention. In these freely drained light soils, the soil moisture, during dry summer months sometimes records as low a level as 0.2 per cent. Newly planted coconut seedlings in such soils suffer severely during the first two or three summers due to drought as their roots are yet to reach the sub-soil horizon that contain enough moisture or the water table which is two to eight metres below ground level. Irrigation is extremely necessary during the summer months to get them established.

The usual practice with coconut growers is to provide shade to the newly planted young palms and irrigate them twice a week with 20 to 25 litres of water per irrigation, during the rainless months extending from November-December to May. Even then, the young palms are found to make slow and stunted growth and require a much longer period to attain the bearing stage.

To determine the optimum frequency at which

the newly planted young palms in sandy soils are to be irrigated to ensure their quick and vigorous growth from the very early stages, an experiment was conducted at the Central Coconut Research Station, Kasaragod in a block very close to the sea coast. The frequencies of irrigation tried were two days, four days and eight days with 22½ litres, 45 litres and 90 litres of water, respectively, per irrigation, so that at the end of an eight-day cycle, every young palm would have received the same total quantity of irrigation water.

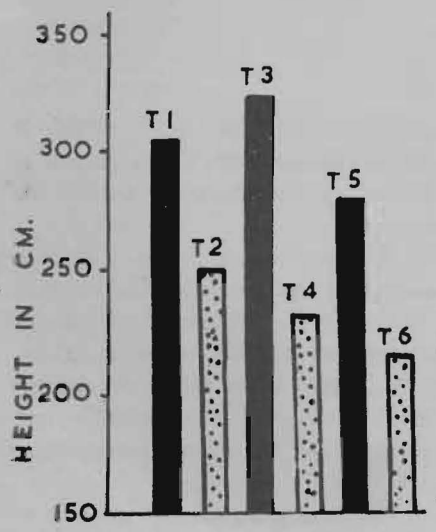
In these parts, water is scarce in summer. Most water sources dry up or may have only scant supply. Hence it is very necessary that the available quantity of water is utilized to get the maximum benefit. Application of silt, clay or red earth improve the structure and texture of coarse sandy soils and consequently may increase the water-holding capacity of these light soils. With this object in view, another treatment, application of red earth, was superimposed on the above three frequencies of irrigation.

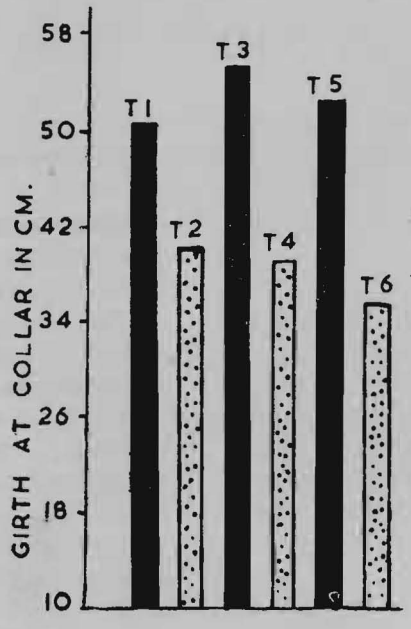
As square pits do not retain their shape for long in this type of soil, circular pits with 60 cm radius and 45 cm depth were dug, giving a spacing of 7.62 metres either way under the square system of planting. Planting pits receiving the treatment of red earth application were deepened to a further 30 cm and 1.15 m³ of red earth put in, so that the final depth of these pits also remained at 45 cm from ground level.

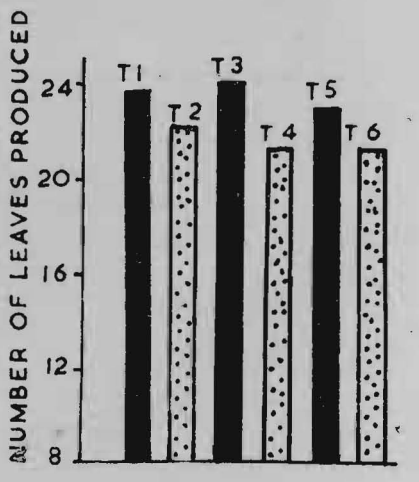
Selected seedlings of he Tall variety palms were planted in July, 1964 in such a way that the nut portion remained just below the soil surface in the pit. Irrigation, as per experimental details, given earlier, was carried out from November-December to May, during the following three years. Shade was also provided to the young palms in summer. The usual doses of fertilizers were applied in August-September each year at uniform level to all the young palms.

This seedling received 45 litres of water once in four days and also red earth. Below: Histogram showing mean value of growth characters of the palms recorded at the end of three years :—

T.1—22½ l in two days + red earth
T.2—22½ l in two days
T.3—45 l in four days + red earth
T.4—45 l in four days
T.5—90 l in eight days + red earth
T.6—90 l in eight days







This seedling received 45 litres of water once in four days and the one on the right 90 litres once in eight days and red earth. The seedling below received 90 litres once in eight days

The growth characters of the young palms, viz., height, girth at collar and number of leaves produced were recorded at six month intervals. The data recorded at the end of the three-year growth are represented in the histogram on the previous page.

Young palms, planted in red earth applied pits, have made much better growth than the others, irrespective of the frequency of irrigation with regard to all the three growth characters studied. Among the frequencies of irrigation tried, the shorter intervals were superior to the longer ones. But combined with red earth application, the frequency once in four days with 45 litres of water, gave the highest values for all the three characters. The lowest values for all the characters were recorded by the young palms that received irrigation with 90 litres of water once in eight days. The latter set of palms were nearly $1\frac{1}{2}$ years behind the former with regard to the rate of growth.

It is, therefore, established that the application of red earth in the planting pits, at 1.15 m^3 per pit, prior to planting, benefits the young palms to a great extent in sandy soils. With irrigation, such palms make fast and vigorous growth, the optimum frequency being once in four days with 45 litres of water. It is especially important in an altogether practical sense that a perennial palm like the coconut grows rapidly from the very start. The early vigour of the palms is related to its later performance, viz., early bearing and high productivity.