

CONSERVATION OF SOIL MOISTURE HELPS INCREASE COCONUT YIELDS

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The proper growth and productivity of the coconut palm depend to a large extent on the availability of sufficient moisture content in the soil. Scientific cultivation of coconut definitely warrants proper care and suitable management practices, designed to conserve maximum soil moisture. Only under adequate and continuous supply of soil moisture can a sustained high yield be obtained from the coconut palm.

Water requirement of the coconut palm

Though the actual water requirement of the coconut palm is still not known precisely indications are that the palm, with its massive structure and perennial nature, requires large quantities of water for its normal growth and functioning. Root injection studies conducted at Central Plantation Crops Research Institute, Regional Station, Kayamkulam have revealed that a single functioning root of coconut can absorb as much as 400 ml of water in a day. It is known that an adult coconut palm normally produces 4,000-7,000 roots. By giving water through the stem

using gravity injection technique research workers in Trinidad have shown that a healthy coconut palm could take up three liters of water per day. Absorption experiments carried out in Sri Lanka by Copeland have shown that a coconut palm could absorb as large a quantity as 24 litres of water in a day. Copeland has also shown that the daily loss of water from a mature coconut palm, by way of transpiration, varies from 28 to 74 kg. All these experimental evidences go to indicate that the actual water requirement of the coconut palm is very high.

Soil moisture deficit affects productivity

A deficiency of water in the soil adversely affects the growth and productivity of the coconut palm to a considerable extent. When unfavourable moisture conditions prevail and in times of severe drought, coconut palms show symptoms of stress such as wilting, yellowing and drooping of leaves, breaking of petioles etc. Studies conducted in different parts of the world have revealed that water deficiency affected not only the setting of nuts but also resulted in



Application of green leaves.

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severe shedding of buttons and immature nuts. The absence of adequate moisture in the soil affects the absorption of nutrients also. Potash absorption has been shown to be never optimum under inadequate moisture availability.

Methods of moisture conservation in coconut soils

1. Summer irrigation

Coconuts in the West Coast are generally grown in sandy, sandy loam and laterite soils. In all these cases, especially in sandy soils, water often becomes a limiting factor for successful coconut cultivation. It is true that on the West Coast of India we get fairly good rains for about 7 months a year, but during the remaining 5 months drought conditions prevail. Along the coastal tracts, which form the main habitat of the coconut palm, there are large areas having a very loose sandy soil. In such areas moisture content during summer months goes down to 0.1 per cent and the palms growing in this type of soil are subjected to severe drought. Proper supply of soil moisture through artificial means becomes necessary under such situation.

Irrigation during summer months is the best method to conserve soil moisture in coconut gardens and to maintain the vitality of the palms. Experimental evidences have accumulated to prove that summer irrigation can substantially increase the yield of coconuts. Non-availability of sufficient quantity of water for irrigation may sometimes pose problems to the coconut growers. Wells and ponds, which are the common sources of water supply, may get dried up during summer. Under such circumstances underground water could be tapped to the maximum extent possible. The possibility of installing filter point tube wells or digging large wells, from which water could be pumped for irrigation by means of oil engines or electric motors should be explored for irrigation on a large scale. In places where the number of palms in a holding is small

even hand watering from small ponds and water channels could be done.

Frequency of irrigation would depend on the severity of drought conditions and the nature of the soil. When drought is only normal watering of palms twice a week in sandy or loamy soils and once a week or once in 10 days in more retentive soils will normally be sufficient.

The quantity of water to be applied per irrigation may be decided in relation to soil types. In loose soils application of large quantities of water will lead to wastage by leaching. In such soils, water sufficient to wet the root zone, need alone be applied. For adult palms growing in sandy or sandy loam soils 200 litres of water per application is reported to be sufficient. Half the quantity of this has been found adequate for young palms.

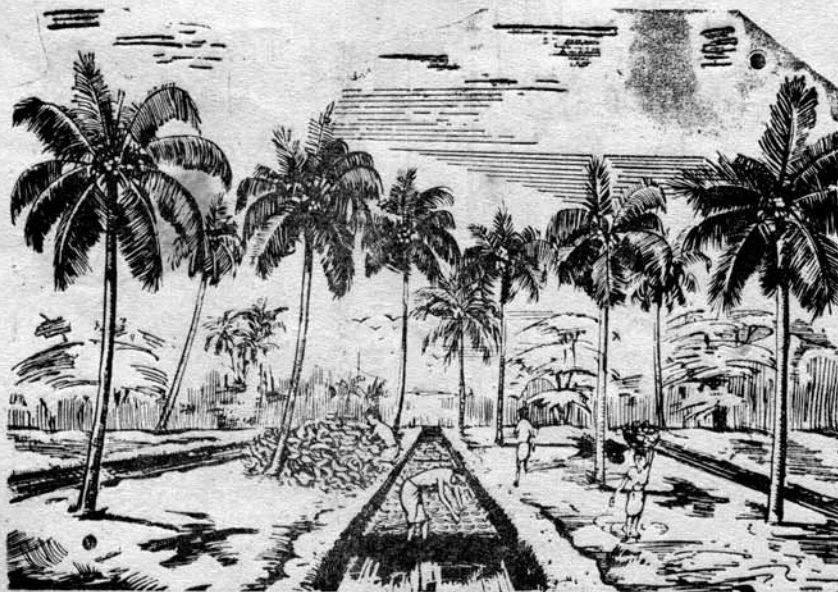
2. Application of bulky organic manures and green leaves

The moisture content of a soil depends upon its water holding capacity. If the water holding capacity is increased by one per cent, one acre foot of soil is reported to hold about 2500 gallons or more of water. Hence it is clear that all possible methods for increasing this capacity should be used with advantage. Bulky organic manures like farm yard manure and compost, apart from steadily supplying the plants with nutrients, increase the capacity of soil for retaining more moisture. Green manure also brings about the same effect. The addition of bulky organic manures and green leaves improves the texture of the soils in such a way that clayey soils are made loose and their aeration increased, while porous soils have their porosity reduced and their water holding capacity increased.

3. Husk burial

Coconut husks have the capacity of absorbing and retaining large quantity of water. It has been reported

(Contd on page 22)



Husk burial