

# SUMMER IRRIGATION TO COCONUT PALM

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The coconut palm requires adequate and continuous supply of soil moisture for its proper growth and productivity. Though the actual water requirement of the palm is still not known precisely indications are that the palm requires large quantities of water for its normal function.

## Water requirement of the coconut palm

Root injection studies conducted at the Central Plantation Crops Research Institute, Regional Station, Kayangulam, Kerala State have revealed that a single functioning root of the coconut palm can absorb as much as 400 ml. of water in a day. On giving water through the stem using gravity injection technique, research workers in Trinidad have shown that a healthy coconut palm could take up three litres of water per day. Absorption experiments carried out at Ceylon by Copeland have shown that a coconut palm could absorb as large a quantity as 24 litres of water per day. Studies carried out by Copeland on the transpiration losses of water have shown that the daily loss of water from a mature palm varies from 28 kg. to 74 kg. All these evidences indicate that the actual

water requirement of a 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 it shows signs of distress such as, dropping of leaves, breaking of petioles, shedding of buttons and immature nuts, etc. In Ceylon it was observed that water deficiency affected not only the setting of nuts but also resulted in severe shedding of buttons and immature nuts, especially after a period of prolonged drought. Similar results were obtained from the studies undertaken in Kenya. The absence of adequate moisture in the soil affects the absorption of nutrients also. Potash absorption has been shown to be affected under inadequate moisture availability.

## Excessive drought during summer

In regions where the rainfall is adequate and well distributed all through the year or in soils which are capable of retaining moisture even during the dry periods of the

year, there is hardly any need of irrigation. But, in places where rainfall is meagre and ill-distributed or where long periods of dry spells prevail, irrigation is essential to maintain the vitality of the palm. In sandy or sandy loam soils with very poor water-holding capacity coconut can be grown only under irrigated conditions. At the peak of summer the moisture content of sandy soils goes down to as low as 0.1 per cent in the surface layers.

## Irrigation steps up production

Experimental evidences prove that copious irrigation can considerably increase the yield of the coconut palm. Irrigation trials conducted at the Central Plantation Crops Research Institute, Kasaragod have shown that the irrigated palms gave an increased yield of 20 nuts per tree as compared to unirrigated ones. Beneficial effects of irrigation have also been reported from Agriculture Research Station, Nileshwar (Kerala), where the poor yielding palms which had not responded to any cultural or manurial practices showed remarkable response to irrigation and the yield increased from five nuts to 35 nuts per tree within a period of

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three years. Significant increase in the yield of coconuts, through proper irrigation and drainage control have been reported from Ceylon and Malaya also.

### Method of irrigation

During summer most of the wells and ponds, which are the common sources of water supply, get dried up creating water scarcity. 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.

Bed irrigation or basin irrigation are the other methods widely practised by growers in different coconut tracts. In the bed method the garden is laid out into rectangular plots of convenient size, to which, water is led through small irrigation channels until the soil is well

soaked with water. In the basin system water is applied in basins about two metres in radius formed round the palm. When water is available in plenty and soil is retentive, bed method is preferable and more effective.

### Frequency of irrigation

Frequency of irrigation would depend on the severity of drought conditions and the nature of the soil. When the 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 at one time will lead to wastage of water 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, 90 litres of water per application would be sufficient. Half the quantity of this has been found adequate for the young palms.

### Irrigation with sea water

Experiments conducted at Central Plantation Crops Research Institute, Kasaragod have shown that irrigation with sea water is equally effective for plantations located in well drained sandy soils of the West Coast. There was no evidence of any harmful residual effects due to application of sea water. In sandy loam soil, mixture of sea water and fresh water was found superior to either irrigation with sea water alone or fresh water alone.

In the case of heavy soils irrigation with sea water is reported to give bad effects. It is possible that in heavy soils, due to the lack of proper, drainage, the application of sea water results in the accumulation of sodium and magnesium salts in toxic amounts, leading to injurious effects to the palms.

Amelioration of soil moisture deficit through irrigation is sure to bring about enhanced yields from coconut palms. Growers would do well, therefore, to take steps to irrigate the coconut palms, when summer sets in.

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