Irrigation Management in Coconut Plantation

Ravi Bhat and P. Subramanian
ICAR-Central Plantation Crops Research Institute
Kasaragod - 671124, Kerala

Coconut, being a long duration perennial crop, produces a bunch every month. The nuts of different age groups can be seen at a time on the palm. Generally the initiation and differentiation of vegetative and reproductive primordia and enlargement of cells, which is a continuous process in coconut are sensitive to moisture stress. Thus the crop needs better growing conditions throughout the life period. Water is one of the important resources in coconut cultivation. Though coconut is traditionally grown in heavy rainfall areas receiving about 2500 to 3500 mm rainfall, majority of the rain is received in 5-6 months and the crop is subjected to deficit moisture stress during summer months (January to May). Increased yield of coconut by about 34 - 200% with the application of water alone indicates the importance of water in coconut cultivation. The studies conducted over years have estimated the annual water requirement of coconut as 1093-1126 mm and the annual irrigation requirement as 338-538 mm at different soil and climatic conditions (Saseendran and Jayakumar, 1988 and Liyanage and Mathes, 1989). Flood irrigation was initially adopted in coconut plantations for supplying water to palms. In this method entire field was irrigated and large quantity of water was required for irrigation. Later basin method of irrigation was adopted where the palms were irrigated only in basins around the palm. The quantity of water required was less in this method. With advent of technology and knowledge in irrigation management, sprinkler and perfo irrigation methods came into operational. With this the quantity of water required was much lesser compared to earlier methods. Further the scarcity of water lead to the invention of drip irrigation. Drip irrigation was much useful to the crops planted with wider spacing like coconut, since this method supplied water in the root zone of the crop and avoided wetting of entire field. By adopting drip irrigation method more area could be irrigated with less quantity of water. The studies conducted at ICAR-Central Plantation Crops Research Institute have concluded that providing drip irrigation at 66% pan evaporation is sufficient to meet the water requirement of coconut. Moisture distribution pattern under drip irrigation differed in different soil types. Thus number of drippers to be used should be based on the soil type for better efficiency of the system. Mulching has been found to enhance the efficiency of the drip irrigation system. The drip irrigation is found to be highly economical as it saves substantial quantity of water which can be used to irrigate more area. The method also increased the yield by 25-30%.