

B-108: Water use of coconut (*Cocos nucifera* L.)

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Coconut is grown as a plantation crop in Sri Lanka, under rainfed conditions. The root system of the monocotyledonous coconut palm often extends upto 5 m or more laterally and to depths below 4 m in deep soils. Knowledge on the water use of coconut is meagre. Hence a study was undertaken to evaluate the water use pattern of coconut, with the objective of providing efficient soil water conservation and fertilizer application packages to growers.

The temporal pattern of soil water depletion of coconut palms (cultivar t x t; 10y old) were monitored using a neutron probe. Palms are grown on a deep sandy loam soil (>4 m deep latosol) at Thammenna Estate, Puttalam in the intermediate rainfall zone (1200 mm/y). Fertilizer application and mulching were carried out in accordance with the general recommendations, on the palms which are a part of a cultivar evaluation trial of coconut. Total of 46 aluminium access tubes (3 m long) were installed at 0.5 m intervals from the base of the coconut palms along the rows and diagonally in a 7.5 m x 7.5 m square of 4 coconut palms. Evaporative demand of the environment was monitored using a standard USDA pan evaporimeter.

Results show that with the onset of the rain-free period, root water uptake of the coconut palms under study was initially confined to the top 0-50 cm layer of soil. Two weeks later, roots extracted water mainly from layers of soil below 1 m depth. The soil water depletion (mm of water) in the 2 m depth of soil profile at 1 m distance away from the palm was 91 mm and 122 mm for 2 rain-free periods of 34 and 78 days, respectively. Hence the evapotranspiration rate of coconut was 1.7-2.7 mm/d when the average pan evaporation for the 2 periods was 4-5 mm/d. Results show that the crop factor for coconut is approximately 0.7 under the conditions of the study.

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