

B-48: Use of neutron scattering technique to evaluate water extraction pattern of coconut seedlings (*Cocos nucifera* L.)

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Neutron scattering method has been successfully used to determine soil moisture depletion in perennial crops as tea, rubber and coconut. This study was conducted to (1). calibrate the neutron moisture meter for Madampe soil series; (2). evaluate the water extraction pattern of seedlings of 2 coconut cultivars (CRIC 60 (TxT) & CRIC 65 (DxT) with coir dust and top soil potting medium.

The soil profile of the Madampe series widely spread in the premises of Coconut Research Institute, Lunuwila was sampled at 20 cm intervals down to 1 meter depth for soil texture (hydrometer method) and bulk density (core sample method) measurements. Neutron counts and moisture content by gravimetric method were measured to obtain the calibration curves for soils of Madampe series and potting medium. Coconut seedlings of 2 cultivars were

planted in large plastic barrels with a potting mixture of 1:1 top soil and coir dust. The moisture extraction pattern was measured using the neutron probe.

The linear calibration curve obtained for all the depths together for the Madampe soil series showed a high correlation coefficient indicating that the bulk density and clay variation affects the calibration. Predicted calibration graph for the Madampe series was extremely useful to evaluate the water extraction pattern of adult coconut palms. The moisture extraction pattern for seedlings of the 2 cultivars showed that CRIC 65 (DxT) extracted more water from soil than CRIC 60 (TxT) under similar conditions. It indicated that water absorption efficiency of CRIC 65 is higher than CRIC 60 and it is more suitable for the drought prone areas.