A COMPARATIVE STUDY ON LITTERFALL AND NUTRIENT STATUS IN EUCALYPTUS CAMALDULENSIS MONOCULTURE, TECTONA GRANDIS MONOCULTURE, A NATURAL FOREST AND A BARE LAND

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There is an apprehension that eucalypt plantations, especially as monoculture will deplete the soil although experimental data are scarce to this effect. Hence, an experiment was conducted to compare the litterfall and nutrient contents of underlying soil, freshly fallen and decomposed litter in a 14 years old Eucalyptus camaldulensis monoculture with similar aged Tectona grandis monoculture and a natural forest in the dry zone of Sri Lanka. A bare land was taken as the control.

Statistically significant differences were observed ($p<0.05$) in moisture content, pH value, percentage organic matter, potassium and calcium contents and cation exchange capacity in soils. Phosphorus content did not show a significant effect. Moisture and organic matter percentages were highest in Tectona followed by natural forest, Eucalyptus and then the bare land. Lowest pH value was encountered in soils under Eucalyptus which was followed by natural forest. The bare land showed the highest. Potassium and calcium contents showed the orders; natural forest> Tectona > Eucalyptus > bare land and Eucalyptus > Tectona > natural forest > bare land respectively. Cation exchange capacity was highest in the natural forest followed by Tectona, Eucalyptus and bare land.

Total litterfall was 1349 kg/ha in Tectona, 370 kg/ha in Eucalyptus and 217 kg/ha in natural forest. Of the nutrients in intact leaves, bark and twigs which comprised the litter, highest phosphorus was observed in Eucalyptus litter followed by that of natural forest and Tectona at the time of fall. Potassium followed the order; Tectona > Eucalyptus > natural forest. Calcium was in the order; Tectona > natural forest > Eucalyptus. Nutrient decomposition rate in litter was highest in the natural forest followed by Eucalyptus. The lowest was in Tectona.