A Comparative Study of Soil Moisture Depletion and Root Growth in Nursery Plants of Oil Palm, Rubber and Tea under Greenhouse Conditions

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Abstract

This study was conducted to find the root growth and soil moisture extraction by Oil palm (*Elaeis guineensis*), Rubber (*Hevea brasiliensis*) and Tea (*Camellia sinensis*) under greenhouse conditions. Test plants were planted in poly bags in which the sizes were determined according to planting densities of these crops. Another set of rubber plants were grown in recommended bag sizes for nursery. Half the numbers of plants were provided with adequate water during the study period whilst the other plants were watered to the saturation only at the commencement of measurements. At commencement of study, highest soil moisture content was observed in tea while lowest in oil palm. In bag sizes determined according to planting density, the percentage soil moisture content depletion rate was the highest in tea followed by oil palm and rubber crops. In 100 g of dry soil, the lowest moisture depletion rate was found in oil palm and lowest root dry weight was found in rubber. Average soil water loss per bag per day and total root dry mass in a bag was the highest in oil palm and the lowest in tea. The estimated soil water loss per hectare of land was the highest in tea and the lowest in oil palm. The lowest total estimated root dry mass per hectare was observed in rubber. The total root dry mass and estimated soil water loss from a hectare of land were not significantly different in oil palm and rubber.

Keywords: Moisture content, Moisture depletion rate, Nursery plants, Planting density, Root dry mass

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