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Assessment of rates of soil carbon sequestration by litter decomposition of Yagirala forest reserve & Horton plains natural forest in low country wet zone and montane zone of Sri Lanka

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An assessment of rates of soil carbon sequestration by litter decomposition was carried out in 2 forest types; Yagirala Forest Reserve (FR) in the low country wet zone & Horton plains Natural Forest (NF) in Montane zone of Sri Lanka.

Yagirala Natural Forest Reserve was located between $6^0 21'$ to $6^0 26'$ North altitude and $80^0 6'$ to $80^0 11'$ east longitude in the lowland wet climatic zone in Sri Lanka. Horton Plains Natural Forest was located between 6^0 47'- 6^0 50' north latitude and 80^0 46'- 80' 51' east longitude in mid country of Sri Lanka.

Three transects with three plots (100m distance) were established for each forest. Annual litter fall was estimated from 36 litter traps located in Yagirala Natural Forest and 9 litter traps in Horton Plains. Litter decomposition rates were estimated by mesh bag technique. The experiment was conducted in

Yagirala forest reserve from August, 2005 to May, 2006 for a period of 8 months and in Horton plains NF December 2005 to May, 2006 for a period of 5 months.

According to the results, the rate of litter fall in the Yagirala FR was 7.72 tons/ha year compared with 3.13 tons/ha year in Horton Plains Natural Forest. The values for carbon sequestration for the Yagirala Forest Reserve were 2.87 tons $ha^{-1}year^{-1}$ while the Horton Plains NF recorded 0.57 tons $ha^{-1}year^{-1}$.

According to the results, it is clear that Yagirala Forest Reserve situated in the low country wet zone recorded higher carbon sequestration rates compared with Horton Plains Natural Forest situated in the montane zone of the country.

Key words : Annual Maximum Litter Decomposition Percentage, Carbon sequestration, Litter fall rates

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