

Fine root dynamics in undisturbed and disturbed stands of a tropical wet evergreen forest in northeast India

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Abstract: Biomass, production and turnover of fine roots were estimated in undisturbed and disturbed stands of a tropical wet evergreen forest and were shown to differ significantly ($P < 0.001$) between the stands. In the highly disturbed stand, more than 90 % of the fine root biomass was recorded in the surface soil layer, whereas in the moderately disturbed and undisturbed stands the proportion averaged 67 %. In the undisturbed stand, higher concentrations of fine roots in the surface soil layer were associated with higher nutrient concentrations and moisture retention in the undisturbed stand. Root turnover also decreased with increasing soil depth, root size and intensity of stand disturbance. In the undisturbed, moderately disturbed and highly disturbed stands the annual fine-root turnover was 3181, 1701 and 822 kg ha⁻¹ yr⁻¹, respectively. The study revealed that growth and accumulation of fine roots varied with species composition, tree density and basal area. In this region, the contribution of fine roots in the build-up of soil organic matter and nutrient enrichment may be important for the reclamation of these degraded tropical wet evergreen forests.

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