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## **Preliminary study for determination of plot-scale storm runoff at Yagirala Forest Reserves; a secondary lowland tropical wet evergreen forest**

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Surface runoff is an important element in the hydrological processes. Storm runoff is produced when the rainfall intensity exceeds the infiltration rate. The occurrence and quantity of surface runoff is dependent on the climatic and catchment characteristic of a particular watershed, specially the vegetation type. This experiment aims to elucidate the surface runoff generation in two distinct vegetation types, namely secondary Natural Forest (NF) and secondary Natural Forest enriched with *Pinus caribaea* (PF). The study was conducted in Yagirala Forest Reserve (YFR); a secondary Lowland Tropical Wet Evergreen Forest located in the south-west low-country wet zone of Sri Lanka. Six runoff plots (10m ×3m) were installed in hill-slopes of two adjacent NF and PF sites in the YFR. The sites were selected as homogeneous as possible with no changes in topography and canopy conditions. However, special attention was paid to avoid places that are susceptible for rill and gully erosion. Slope of the plots, leaf-litter thickness, tree basal area, sapling density and canopy cover percentage was measured in each plot. Rainfall was measured using automatic weather station located 100 m away from the study site and data were recorded in 5-minutes intervals. Surface runoffs were measured for ten individual storm events from April to December 2018. The data analysis was carried out in the *R*-environment for statistical computing and visualisation. According to the results, surface runoff was strongly correlated with rainfall in both vegetation type. However, there were no significant inter-plot variation of surface runoff in both NF and PF ( $p>0.05$ ). The average runoff percentages were recorded as 68% and 64% in NF and PF respectively and the values were not significantly different ( $p>0.05$ ). Thus the results indicate that vegetation type has no significant influence on surface runoff generation in YFR.

**Keywords:** *Pinus caribaea*, Runoff plots, Surface runoff, Yagirala Forest Reserve

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