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Rainfall Interception by Natural and Planted Forest in the Middle Mountains of Nepal

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Measurements of gross rainfall, throughfall and stemflow were made in semi-deciduous natural and ever-green planted forest stands located in a complex topography in the Middle Mountains of Nepal during the rainy season of 2011. For the period of observation, measured throughfall, stemflow and interception loss in the natural forest were 76.2 %, 1.26 % and 22.5 % of the total incident rainfall respectively. Corresponding values for planted forest were 82.6%, 0.46 % and 16.8 %. The revised version of Gash's analytical model of interception loss was calibrated and validated for the two forest stands for the first time in the monsoonal mountainous condition using the derived forest and weather parameters. The results of the modelling corresponded well with observed values, provided the optimized value of average wet canopy evaporation rate was used. The model was also used to calculate the annual interception loss from both forest stands. The model estimates of annual interception loss for planted and natural forest are 273 mm and 319 mm and represented 18.4 % and 22.6 % of the total incident rainfall respectively. The high annual interception loss (18.4 %) from the planted forest could be a reason for the drying water resources in the Middle Mountains of Nepal. Additional long-term detailed work is recommended to validate the currently obtained model based annual interception loss.
Keywords: Interception loss; Middle Mountains; Gash's analytical interception model