



Influential factors on erosivity of throughfall drops in Japanese cypress plantations

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Severe soil erosion has been reported in monoculture forests without understory vegetation and litter coverage on the soil surface. The objective of this study was to investigate influential factors on erosivity of throughfall drops in Japanese cypress (*Chamaecyparis obtusa* Endl.) plantations using splash cups with similar structures to Tübingen splash cup (Scholten et al., 2011). We first examined relations between erosivity of throughfall drops and loss of sand (LoS) of the splash cups under natural rainfall at an open space. LoS was strongly correlated with kinetic energy and momentum multiplied by the drop diameter of rainfall. We then observed LoS using respective 12–16 splash cups at seven plots in Japanese cypress plantations. LoS at each point was compared with the throughfall amount (Tf) and canopy structures such as canopy openness (Co) and the height to the closest branch (Br). LoS was significantly correlated with Tf in all plots. The slopes between Tf and LoS were similar each other except for a plot (Plot #1) with the smallest heights of canopy and crown base. The smallest heights of canopy and crown base in the other six plots (Plots #2–7) were 15.2 m and 10.5 m, respectively. Our results suggest Tf could be the dominant factor to determine erosivity of throughfall drops when the heights of canopy and crown base were more than 15.2 m and 10.5 m, respectively. In Plot #1, LoS was correlated with not only Tf but also Br. Therefore, in Japanese cypress plantations with low canopy, Br should be also considered when estimating erosivity of raindrops.

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