

Establishment of rainfall partitioning parameters for Tea

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March 8, 2022

Abstract

Tea is a popular cash crop in Asian and African countries that can be grown from tropical to subtropical climates with high humidity and heavy rainfall. India is the second-largest producer of Tea worldwide, having approximately 567 thousand hectares under tea cultivation. Interestingly, rainfall partitioning parameters (i.e., throughfall (TF), stem flow (SF) and interception (IC)) for Tea plantation do not appear to have been investigated. Therefore, this study aims to experimentally monitor TF, and SF for Tea. For this study, a Tea plantation of nearly 27-year-old grown in an area of 1.3 acres at the experimental farm of IIT Kharagpur campus, West Bengal, India was selected. IC was derived from the in-situ measured TF and SF values, against the 106 nos. rainfall events (RE) recorded during 2017-2018. RE depth varied from 3 mm- 60 mm with a coefficient of variance (CV) of 84%. However, relative portion of rainfall as TF (TF%), SF (SF%), and I (IC%) varied from 59-89%, 0.1-2%, 10%-40% with CV as 10%, 29% and 27%, respectively. Thus, the portion of rainfall that reaches SF was insignificant ([?]2%) than TF. Therefore, SF can be omitted considering a negligible portion, and IC can be derived directly from TF for Tea plantation. Average values of TF and IC were obtained as 72% and 27% of incident R. Furthermore, the response of all these partitioning parameters were analyzed against RE characteristics such as RE depth, intensity, and duration. These results are the first of their kind in respect of TF, SF, and IC values for Tea plantation besides being also consistent with those reported elsewhere for other plantations, and are useful for pragmatic applications.

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