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**Influence of Rainfall and Tree Traits on Stem Flow Production of Selected Urban Tropical Trees**

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**Abstract**

Stem flow is small but important fraction of intercepted precipitation channeled through a tree canopy to the base of the trunk. Given increased impervious covers in cities, quantification of stem flow is necessary for a holistic understanding of hydrology in urban ecosystems. The values of urban trees are increasingly being recognized over the decades and authorities have invested in urban green infrastructure including urban forestry. However, knowledge related to rainfall redistribution by urban trees and reduce storm water are yet to be discovered for topical tree species. Therefore, this study aimed study the effect of canopy traits on stem flow percent and funneling ratios for isolated urban trees in a tropical wet climate. The stem flow of 21 individual trees (7 species with 3 replicates) located in University of Sri Jayewardenepura, Sri Lanka were measured from August 2019 to November 2019 by installing SF collars at diameter at breast height (dbh). The stem flow was measured for 20 individual storm events started with dry canopy condition. Gross precipitation was recorded using an automated weather station located in an open area in University premises. All trees produced stemflow for storm events larger than 4 mm. *Felicium decipiens* generated the highest stem flow and *Pterocarpus marsupium* Roxburgh generated the lowest among studied species. While *F. decipiens* showing negative correlation between rainfall and stem flow others showed positive correlation. In all species, crown volume, dbh and bark thickness showed negative relationship with stem flow. However, individual-tree stem flow percent and funneling ratio values were variable, even for similar rain depths, suggesting that meteorological factors play a role. Our findings highlight the need of careful species selection for urban forestry and importance of infiltration capacity at the base of urban trees when integrating storm water management with vegetation and soils in cities.

**Keywords:** Stem flow percent, Funneling ratio, Urban hydrology, Urban forestry, Storm water management