New Rain Water Harvesting Method Using Stem Flow of Trees in Tea Lands

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Water is an important factor for all plants and different irrigation methods are practiced when and where necessary to assure the crop growth and development. Irrigation through rain water harvesting is not common in Sri Lankan tea lands at present. However, the need of any kind of irrigation is increasing in tea lands, especially when adapting to climate change. Therefore, the current study was conducted to identify a new rain water harvesting method using stem flow of Tea (*Cammelia sinensis*), Albizia (*Albizia mollucana*) and Gliricidia (*Gliricidia sepium*) at St. Joachim Estate, Ratnapura (6° 44' N, 80° 21' E) from October to December 2019. 20 Tea at same age, 2 Gliricidia and an Albizia were subjected to measure the stem flow. The selected Tea were TRI 2021, TRI 2027, TRI 2023 and TRI 2026 cultivars. Polythene gutters were fixed for each selected plant according to their diameter of the stem base and leak seal glue was applied over those areas using thumb tacks. Then 5 L plastic cans for Tea, 10 L clay pots for Gliricidia and 45 L plastic barrel for Albizia were placed at the end of each gutter to collect the stem flow. Collected water in each container was measured using a standard measuring cylinder. Daily rainfall data were collected from the Agro- meteorological station of the Tea Research Institute, Ratnapura. Finally, collected data were statistically analyzed using correlation coefficient procedure. The highest stem flow recoded from Albizia (10.978 L) while Gliricidia and Tea collected 2.8 L and 1.25 L, respectively under 11.1mm rainfall. Therefore, there is a feasibility to make use of this stem flow of water of Albizia to irrigate some tea plants.

Keywords: Micro irrigation, Rain gutters, Rain water harvesting, Stem flow, Tea