INVESTIGATION ON THE IMPACT OF AUTOMATED DRIP IRRIGATION OVER RAIN-FED IRRIGATION ON TEA CULTIVATION

(*Camellia sinensis*)

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ABSTRACT

In tea cultivation areas, water is a scarce resource, and the current system largely depends on rainfall and natural springs, with no formal techniques documented. While continuous watering is not necessary for healthy tea plants, the first year of growth is critical, requiring reliable irrigation. Climate changes, such as global warming and deforestation, have made rainfall patterns in Sri Lanka unpredictable, posing a threat to rain-fed agriculture. This unpredictability can lead to water stress in tea plants, potentially harming their health and productivity, ultimately affecting future tea production. Nowadays, many estates owners are focusing and trying to adopt drip irrigation at their tea estates. Based on this, the present study was conducted to study the impact of automated drip irrigation over natural rainfed irrigation on tea cultivation area. A Randomized Complete Block Design was employed with ten replications and three treatments (T1: without drip irrigation, T2: with drip irrigation, T3: drip irrigation with fertigation). The growth parameters measured included the number of branches per plant, length of plant, number of leaves per plant, leaf area per plant, and yield parameters of the tea leaves length, tea leaves grith, tea leaves weight, tea leaves yield per plant. These findings suggest that there is no significant difference in plant growth and yield parameters with different treatments ($P>0.05$) during this growth stage of the plant. It also found that continuous irrigation is not always necessary for healthy tea plants and it might be more useful for the first twelve months of the young plants and irrigation needs to be dependable and effective while the tea plants are growing at the initial stage.

Key words: Drip irrigation, Fertilizer, Rain-fed irrigation, Tea yield

TABLE OF CONTENTS