

Determination of Optimum Water Application Interval for Young Tea Plants

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Tea productivity is highly vulnerable to changes in precipitation. With limited availability of water for irrigation, identification of optimum irrigation interval is necessary to increase water use efficiency. Therefore, a pot experiment was conducted at the Tea Research Institute, Rathnapura to determine the optimum water application interval for young tea plants using one year old uniform tea plants of cultivar, TRI 2027 under controlled environmental conditions (Max and Min temperatures, 32.1 °C and 23.1 °C, respectively; Average sunshine hours, 3.15 h day⁻¹). The experiment was laid out according to Complete Randomized Design with four replicates. Four irrigation treatments were applied as daily watering (175 ml plant⁻¹), watering at a 4-day interval (750 ml plant⁻¹), watering at a 7-day interval (1150 ml plant⁻¹), and none watering (control). Plant growth performance was evaluated during the experimental period. The highest evapotranspiration rate (3.02 mm day⁻¹) was recorded at daily watering followed by watering at a 4-day interval (2.33 mm day⁻¹). Plants watered daily showed significantly higher ($p < 0.05$) plant height (51.4 cm), girth (6.1 mm), leaf dry weight (5.7 g), leaf area (550.5 cm²), stem dry weight (3.1 g) and leaf nitrogen percentage (3.15%) compared to control (35.3 cm, 4.1 mm, 1.33 g, 119 cm², 1.3 g, 2.14%, respectively). Interestingly, growth performances of plants that watered daily were not significantly deviated ($p > 0.05$) from plants that watered at the 4-day interval. There was no significant difference ($p > 0.05$) in root volume and dry weight among different treatments. The results of this experiment suggest that frequent irrigation at least once in four days is important for better establishment of young tea plants. However, before drawing any firm conclusion it is suggested to continue such trials for at least three dry spells.

Keywords: Evapotranspiration, Growth performance, Irrigation interval, Young tea plants, Water availability