

**EFFECT OF THERMAL TIME ON SHOOT GROWTH
AND DEVELOPMENT OF LOW GROWN TEA
[*Camellia sinensis* (L.) O. Kuntze] IN SRI LANKA**

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ABSTRACT

Three field experiments were conducted to study the shoot growth pattern in tea relevant to leaf initiation, shoot extension, leaf expansion and their relationships with thermal time. The experiments were conducted at the Tea Research Institute, Low Country Station, Ratnapura, during the period of May to July 2014. First experiment was carried out to find the relationship between number of shoot developmental stages on the plucking table (leaf initiation) in relation to thermal time in widely grown tea cultivar of TRI 2025. In the second experiment, length of the harvestable tea shoot (shoot extension) with thermal time was investigated. In the third experiment, leaf expansion of a harvestable tea shoot with thermal time was studied. In addition, number of calendar days required to initiate different leaves of a tea shoot and degree days (thermal time) accumulated for producing different leaves and a harvestable tea shoot of TRI 2025 were estimated. Data analysis was done using MS Excel and Minitab 16 software.

Results revealed that there is a relationship between thermal time and number of shoot developmental stages in the plucking table, mean shoot length and leaf area expansion for cultivar TRI 2025 with a high precision ($R^2 = 0.95$). The cumulative thermal time was affect to the number of shoot developmental stages in the plucking table, mean shoot length of the tea shoot and leaf area expansion of the harvestable tea shoot. The shoot became pluckable size with three leaves and a bud recording 112.34 mm length in 41 days. The average Leaf Area (LA) (cm^2) of a shoot at different developmental stages was estimated based on leaf length and width measurements. Bud break was started in 18 days after tagging and unfolding of fish leaf, first, second and third normal leaf were appeared in 24, 28, 32 and 35 days respectively. From the bud break, 153.82, 173.69, 197.28, and 216.17 °C days were required to initiate fish leaf, first normal leaf, second normal leaf and third normal leaf of TRI 2025. A harvestable tea shoot was produced after accumulating 249.56 °C days by the cultivar TRI 2025 at low elevation with mean temperature of 28.4 °C and base temperature of 12.5 °C.

Key words: Leaf Initiation, Shoot Extension, Leaf Expansion, Tea, Thermal Time