

IMPACT OF ENVIRONMENTAL TEMPERATURE TO DETERMINE THE CROP DURATION OF SELECTED SRI LANKAN RICE VARIETIES

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Despite a large number of agronomic, physiological and modelling studies on rice (*Oryza sativa* L.), the cardinal temperatures and thermal time (TT) requirements for key developmental processes of Sri Lankan rice varieties are not known. Therefore, TT requirements for flowering and maturity of widely cultivated Sri Lankan rice varieties; Bg300, Bg352, Bg358 were studied. National coordinated rice varietal trial data from 14 locations and corresponding weather data were collected. Results showed that average number of days required for maturity of Bg300, Bg352 and Bg358 was 96 ± 5 , 99 ± 7 and 105 ± 4 , respectively. The optimal temperature for flowering and maturity of all varieties were 27.4°C while the minimal and maximal temperatures obtained from the literature were 14.5 and 35°C , respectively. TT requirements for flowering and maturity during *Yala* season were higher than those estimated for *Maha* season, *i.e.* Bg300, Bg352 and Bg358 required 1593, 1741 and 1831°Cdays for flowering during *Yala*; whereas, 1440, 1457 and 1646°Cdays for the same during *Maha*, respectively. Similarly, TT requirement for the maturity of Bg300, Bg352 and Bg358 during *Yala* were 2345, 2556 and 2588°Cdays while those during *Maha* were 2096, 2153 and 2307°Cdays , respectively. The shortest duration for flowering was observed at *Bombuwela* for Bg300 and Bg358 and *Bathalagoda* for Bg352, and the longest duration for flowering was observed at *Batticaloa*, *Vavuniya* and *Murunkkan* for Bg300, Bg352 and Bg358, respectively during *Yala*. The shortest duration for flowering was observed at *Bombuwela*, *Labuduwa* and *Murunkkan* for Bg300, Bg352 and Bg358 respectively and the longest duration for flowering was observed at *Batticaloa* for Bg300 and *Paranthan* for Bg352 and Bg358 during *Maha*. Higher TT requirement during *Yala* may be due to photoperiod sensitivity of rice. This knowledge of optimal temperature, TT requirements and its seasonal variation is important when designing future physiological and crop modeling studies.

Keywords: Cardinal temperatures, Days to flowering and maturity, Growing season, Rice, Thermal time