Responses of selected traditional Rice (*Oryza sativa*) accessions to short day photoperiods at early vegetative phase of the plant

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Abstract
Photoperiod sensitivity is a major factor determining spatial and seasonal adaptation of rice. Most of traditional rice is grown under *Maha* season, during which the short day photoperiods are available. Determination of effective photoperiod for traditional rice is important for the optimization of their productivity. This study was carried out to determine the effect of minor variations of short day photoperiods on vegetative growth of selected traditional rice. Six traditional rice accessions (4666, 8541 and 8543 of *Maha ma wee*, 4561 of *Ma wee samba* and 4134 and 4136 of *Ma wee*) from Plant Genetic Resources Centre, along with a new improved rice variety Bg 300 were grown in three replicates in mud pots. The pots were placed in a photoperiod chamber, which received sunlight with controlled exposure times of 11.66, 11.75 and 11.83 hours from October 2020 to December 2020. Days to fifth leaf (DFL) and plant height at fifth leaf (HFL) were recorded. The highest and the lowest DFL were 40±1.53 (4561) and 30 (4134) days, respectively. The DFL of accessions 4134, 4666 and 8543 were significantly affected by photoperiod as 11.66 hours of light increased the DFL. Accessions 4136, 4561, 8541 and Bg 300 were not affected by photoperiod for DFL. The variation of HFL was 41.83, 0.44 (4134) to 60.17±1.58 (8543) cm, respectively. HFL of 4134, 4136, 4561 and 8541 were significantly increased under the 11. 75 hours of light, while that of 8543 was increased under the 11.83 hours of light. HFL of 4666 was not affected by photoperiod. HFL values of Bg 300 under the 11.75 hours and 11.83 hours (37.83±1.17 and 36±0 cm, respectively) were significantly higher than that of 11.66 hours (31.67±1.2 cm). According to the above results, there is a variation in measured responses of rice accessions to the three photoperiods, which is useful for breeding rice for desirable agronomic characters.

Keywords: Days to fifth leaf, Early vegetative phase, Photoperiod, Sri Lankan traditional rice

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