

DI 06 Preliminary observations on the responses of some Sri Lankan traditional rice cultivars to submergence at seedling stage

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Flooding due to excessive rainfall is a frequent hazard in the flood plains of Sri Lanka. Lowland rice cultivation is badly affected by unpredicted flood and improved modern rice cultivars give no yield under such flooding conditions. Some traditional rice cultivars those were excluded from farmer field due to poor yield and unfavorable plant architecture may possess good submergence tolerance which could be utilized for the improvement of submergence tolerant rice cultivars in modern rice improvement programs. This study was done to identify submergence tolerant traditional rice cultivars through systematic screening. Seeds of 41 traditional rice cultivars from PGRC, Gannoruwa were multiplied at Regional Agricultural Research Station Angunakolapelessa and the experiment conducted at Faculty of Agriculture. Germinated seeds were planted according to randomized complete block design. Four replicates were arranged for each variety with 20 plants per each replicate. Two week old plants were completely submerged for 9 days and 14 days separately in outdoor concrete tank. De-submerged plants were allowed 2 weeks for recovery under normal growth condition. Height gain or height reduction during submergence stress, height gain during recovery period, survival percentage at the end of each stress condition was evaluated. Control experiment was conducted without submergence stress. Among evaluated 41 rice cultivars 26 rice cultivars were able to survive even after 14 day submergence stress. Among them, *Induru Karayal* (65%), *Kirikara* (50%), *Kahata Samba* (45%), *Kiri Naran* (40%) recorded the higher survival percentages. During submergence stress, 92.7% of submergence tolerant rice cultivars were elongated. *Kirikara* recorded the highest culm elongation (43 cm) during 14 day submergence period and *Induru Karayal* recorded the highest survival rate (65%) while keeping the plant height in minimum length (25 cm) compare to its control plant height (20 cm). The strategy of submergence tolerance with regards to its plant height must be studied in future.

Keywords: submergence tolerance, traditional rice, abiotic stress