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Screening Traditional Rice Cultivars for Salinity Tolerance at Vegetative Stage

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Abstract

Salinity is one of the most serious problems which limit rice production of the world. In the present study, salinity tolerance in twenty traditional rice cultivars were evaluated at the vegetative stage. The experiment was carried out according to the randomized complete block design with four replications and 10 plants were included into each replicate. Drilled plastic pots with 15 cm X 11 cm dimensions were filled with soil and were kept in tap water tank. Ten dormancy broken surface sterilized pre germinated seeds were placed on the soil surface of each pot. When the seedlings were 21 day old, water in the tank was siphoned out. Twelve hours were allowed for draining out the water completely. Salinized water solution with EC 10 dS/m was applied to the water tank and pots were kept back in the water tank for 10 days. Green plant height and survival percentage of plants were evaluated on the 10th day after salinization. Data were analyzed using ANOVA with Statistical Analysis System. *Pokkali* was used as a reference tolerant rice cultivar and control experiment was carried out without salnization. *Mas samba, Galpa wee, Mahasudu wee, Goda wee, Rathkara* and *Handiran* scored more than 35% survival rates and the highest survival rate was recorded by Mas samba (53.42%). *Kaluheenati* was totally died during the stress period. Significantly highest green plant height (7.59 cm) at salinity stress was recorded by *Galpa wee* (α=5%). There was a correlation in between survival percentage and green plant height (r =0.910, α=5%). Among all the tested rice cultivars Mas samba was the most salinity tolerant rice cultivar at the vegetative stage. *Mas samba, Galpa wee, Mahasudu wee, Goda wee, Rathkara* and *Handiran* were scored more than 35% survival rate and these cultivars can be used for further studies.

Keywords: *Salinity tolerance, Traditional rice cultivars, Vegetative stage*

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