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Abstract

Screening of salinity tolerant tossa jute (Corchorus olitorius) genotypes via phenotypic assisted procedures at germination stage

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Abstract:

Salinity is a serious abiotic stress threatening the cultivation of field crops in the world. Six tossa jute (Corchorus olitorius L.) genotypes (Acc. 1141, Acc. 1089, Acc. 3801, Acc. 4584, Acc.1192 and Acc. 1407) were evaluated to investigate the salinity stress at germination stage in artificial condition under six levels of salt concentrations i.e. control 0.00 or d.H2O, 8.0, 10.0, 12.0, 14.0 and 16.0 dSm-1 NaCl (T0, T1, T2, T3, T4, T5, resp.) in RCB design at Bangladesh Jute Research Institute during March, 2020. Seeds were collected from the Gene Bank of BJRI and allowed to germinate in laboratory condition. The more NaCl concentrations increased the adverse effects on seed germination. The delay of germination prolonged with increasing salt concentrations. In control varieties, seeds were germinated up to 14.0 dSm-1 salt solution. Among all genotypes, Acc. 1141 and Acc. 3801 gave the highest germination ability (86.67%) under 14.0 dSm-1 salt solution. The highest root length (17.0mm), dry biomass (6.37mg) were recorded in Acc. 3801; the highest shoot length (10.0mm), fresh weight (43.93 mg), salt tolerance index (60.69%) were recorded in Acc. 1089 under 14.0 dSm-1. Both the Acc. 1141 and Acc. 3801 showed maximum relative salt harm rate for seed germination under 14.0 dSm-1 salinity indicating highly tolerance to salinity. The Acc. 1141, Acc. 3801 and Acc. 1089 showed good performance under salinity stress at germination stage and would be used as breeding materials for salinity tolerant varietal development. The study revealed that salinity stress has inhibitory effect on both seed germination and seedling growth of tossa jute genotypes.

Biography:

Md. Mukul Mia is a Scientific Officer, Breeding Division, Bangladesh Jute Research Institute (BJRI), Ministry of Agriculture, Manik Mia Avenue, Dhaka, Bangladesh working on Jute (Corchorus spp. L.) breeding to develop biotic-abiotic stress tolerant climate smart high yielding varieties since 19 January, 2017.

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