Clustering of Rice (*Oryza sativa L.*) Varieties Cultivated in Jaffna District of Sri Lanka based on Salt Tolerance during Germination and Seedling Stages

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Abstract: Twenty three rice (*Oryza sativa L.*) varieties cultivated in Jaffna district of Sri Lanka were screened for salt tolerance at the germination and early seedling stage using different salinity levels (0, 4, 8, 12, 24 and 45 dSm^{-1}). Cluster analysis was done for germination energy, speed of germination, final germination percentage, root length, root dry weight; plumule length and plumule dry weight. All the tested variables, except sodium concentration in grains, decreased with increased salt levels and had significant differences ($p<0.05$) among the varieties at EC level of 24 dSm-1. The osmotic effect and toxic effect due to sodium, in combination, played a major role in germination of seeds and early seedling growth due to inhibitory effect in absorption of water. Among the cultivated rice varieties in Jaffna, Pachchaperumal, At 362, Bg 250, Bg 352, H4, Bg 304, Bg 360 and CO 10 have higher germination energy, speed of germination, final germination percentage, average root length, plumule length and low sodium concentration in grains and were categorized into high tolerant group. The rice varieties At 353 and Addakari were in the tolerant group. Varieties Morungan, Periavellai, At 308 and Moddaikarupan were grouped under the salt sensitive group whereas varieties At 402 and At 303 were in highly sensitive group to salt at 24 dSm^{-1} during their germination stage.