

Inter-Population Variations in Salt Tolerance of Vigna Marina Seedlings

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Global climate change is the most significant problem for the future of agriculture. Soil salinity would be one of the major problems caused by climate change. Development of salinity-tolerant crops is one of the solutions for increased salinity. *Vigna marina*, a high salinity tolerant crop-wild relative, is an important genetic resource for improvement of *Vigna* crops. Studying inter-population variation in *V. marina* is imperative for their conservation and utilization for crop improvement. In this study, inter-population variation in salinity tolerance of seedlings of four different *V. marina* populations (Unawatuna, Mahamodara, Negombo, and Thalpe) was studied. Seedlings developed from seeds collected from above-mentioned populations (3 replicates with 4 seedlings) were grown under 100, 1000, 2000, 10000, and 20000 ppm NaCl concentrations and with distilled water (0 ppm NaCl), following standard salinity tolerance test procedures. The growth performances: leaf, stem, and root dry mass and seedling height of the seedlings were compared with the two commercialized varieties of *Vigna radiata*. The Leaf dry mass of *V. marina* at 100 ppm salinity was higher compared to that of distilled water treatment in each population and dry masses at each saline condition and in each population were significantly different (Leaf; $P < 0.001$, stem; $P < 0.001$, root; $P < 0.001$). Negombo population showed the highest total dry mass in 20000 ppm and seedlings from each population survived at 20000 ppm salt concentration except those from Mahamodara population. It was shown that *V. marina* has inter-population variation and different populations showed different levels of salinity tolerance. Thus, it is recommended to conserve many populations of *Vigna marina* to conserve the genetic variability. Furthermore, it can be concluded that *V. Marina* survived in high salinity levels better than the salt-tolerant variety of *V. radiata*, which gives evidence for the halophytic nature of *Vigna marina* and shows the potential of this species to be utilized for improvement of *Vigna* crop varieties.

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