

Agro-morphological responses of Iranian local and improved rice genotypes to salinity of the nutrient solution

Sh. Kazemi¹, H. R. Eshghizadeh^{1*} and M. Zahedi¹

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Abstract

An experiment was conducted to determine the responses of 27 Iranian local and improved rice genotypes to two salinity levels (0 and 100 mM NaCl) at Soilless Culture Research Center of Isfahan University of Technology. The treatments were arranged as factorial in a completely randomized design with three replications. The results showed that there was considerable variation in agro-morphological characters among Iranian rice genotypes under saline and non-saline conditions. A great variation in salt tolerance was observed among local genotypes of north, improved genotypes of north and local genotypes of center of Iran. Root growth was more sensitive to salt stress than shoot growth and responds more quickly to the stress. The salt-tolerant rice genotypes had more green leaf area duration as a major factor for salinity tolerance. Average total biomass of local genotypes of north, improved genotypes of north and local genotypes of center of Iran under non-saline conditions were 0.94, 1.09 and 1.38 and under saline conditions were 0.46, 0.59 and 0.58 g/plant, respectively. The highest and lowest tolerance to 100 mM NaCl salinity among local genotypes of north were observed in Daylamani and Domsorkh, among improved genotypes of north in Neda and Shiroodi, and among local genotypes of center of Iran in Jozdan and Zayandehrood, respectively. The genetic variation for salinity tolerance in Iranian rice genotypes may improve salt tolerance and increase rice production under saline conditions.

Keywords: Salinity tolerance, Genetic diversity, Agronomic management, Green leaf area duration.

1. Dept. of Agron. and Plant Breed., College of Agric., Isfahan Univ. of Technol., Isfahan, Iran.

*: Corresponding Author, Email: hr.eshghizadeh@cc.iut.ac.ir