



RESEARCH PAPER

Screening of rice (*Oryza sativa* L.) genotypes for root characters related to phosphorus use efficiency under hydroponics solution culture method

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Abstract : Soil phosphorus (P) deficiency has emerged as one of the major limiting factors in rice production. The development and deployment of tolerant cultivars are one of the plausible approaches to combat low P-tolerance in rice. Thus, the study was carried out to identify P-stress-tolerant rice genotypes through hydroponics solution culture method. Hydroponics experiment was conducted at Radio Isotope laboratory, Department of soil Science and Agricultural Chemistry, Tamil Nadu Agricultural University, Coimbatore. The treatment comprised of fertilizer levels viz., 0, 2.5 and 10 ppm P and seven rice genotypes viz., TNRH-18, ADT-47, CB08509, CB08504, AD07038, ASD-16 and AS06016. This lab experiment was laid out in completely randomized block design (CRBD) with three replications. The rice seeds were germinated in a germination paper by roll towel method and kept in beaker containing water in slanting position. Yoshida nutrient medium was prepared and pH adjusted to 4.5 by Nitric acid (100%) and NaOH. This experiment was conducted for 60 days. The results revealed that the plant height registered higher in rice genotypes viz., TNRH-180 (29.20 cm) and it was followed by CB08504. The root dry weight, shoot dry weight and total plant dry weight recorded higher in ASD-16 (0.21g, 0.13g and 0.34g) and it was followed by AS06016 and CB08504. The root shoot ratio found superior in CB08509 (2.01). Among the rice genotypes viz., ASD-16, CB08509 and TNRH-180 adopt under low phosphorus condition (0ppm P). Regarding phosphorus at higher concentration level AS06016, CB08504 and ADT-47 performed well.

Key Words : Root architecture, Yoshida nutrient solution, Phosphorus levels, Rice genotypes, Plant enzymes

View Point Article : Sanjivkumar, V., Manikandan, M. and Saliha, B. Bhakiyathu (2025). Screening of rice (*Oryza sativa* L.) genotypes for root characters related to phosphorus use efficiency under hydroponics solution culture method. *Internat. J. agric. Sci.*, 21 (2) : 287-293, DOI:10.15740/HAS/IJAS/21.2/287-293. Copyright@2025: Hind Agri-Horticultural Society.

Article History : Received : 05.01.2025; Revised : 12.04.2025; Accepted : 15.05.2025