



RESEARCH PAPER

Differential growth performance of rice genotypes under low phosphorus ecosystem on soil available micronutrients in vertisols (*Vertic ustochrept*)

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Abstract : Phosphorus (P) is essential for maximizing crop yield, however, many areas dedicated to rice cultivation suffer from a scarcity of plant-accessible inorganic phosphate (Pi) due to its fixation in the soil. Conversely, regions with ample P fertilization often resort to excessive application to compensate for deficiencies, leading to adverse environmental impacts. In light of this, a field experiment was conducted at the Paddy Breeding Station, Tamil Nadu Agricultural University (TNAU), Coimbatore, to evaluate the rice genotypes with two levels of phosphorus application on major and secondary soil nutrients. The study involved 22 rice genotypes, namely CB06732, TNRH180, AS06034, CB08536, CB08513, CB08504, CB08509, CB06535, TP08010, AD07038, TM07333, AS06035, AD08010, TM07278, ACM07001, AS06016, CORH-3, ADT-47, ADT-43, ASD-16, CO-47, and ADT-45, at 0 and 50 kg P₂O₅ ha⁻¹ in the P deficient soil of the Noyyal series. The application of 50kg P₂O₅ ha⁻¹ increased plant height and resulted in a progressive increase in panicle initiation, flowering, and harvest stage. The results revealed that the higher soil available micronutrients viz., Fe, Mn, Zn and Cu was recorded in rice genotypes viz., CB06732(7.92ppm), CB06732(9.66ppm), TNRH-180 (1.54ppm) and CB08504 (1.23ppm) and it was followed by TM07278, AS06035, TM07248 and AS06032. The plots received 0 kg phosphorus, ADT - 47, AS06035, TM07278 performed better when compared to other rice genotypes. The least response was registered in ADT – 45, CB08536, CB08504 and AS06016, respectively.

Key Words : Phosphorus, Vertisols, Micronutrients, Rice genotypes, Noyyal soil series

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