

Short Communication

Correlation studies of rice rhizosphere components under selected integrated crop management practices in different rice soils of Tamil Nadu

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A field experiment was conducted on *Entic Chromustert* (Adanur series) at Tamil Nadu Rice Research Institute - Aduthurai, *Udic Haplustalf* (Madukkur series) at Soil and Water Management Research Institute - Kattuthottam and *Typic Ustropept* (Irugur series) at Agricultural Research Station - Bhavanisagar during kharif 2006. The medium duration rice hybrid ADTRH 1 (IR 58025 x IR 66R) and variety ADT 47 (ADT 43 x JEERAGASAMBA) were selected for the study. The experiment was conducted in Factorial Randomized Block Design with sixteen treatmental combinations and three replications. The treatments are (T₁) - Conventional practice (CP) + Inorganics alone (N in four equal splits), (T₂) - CP + Inorganics alone (N by LCC), (T₃) - T₂ with younger (14 days old) seedlings, (T₄) - T₃ with wider spacing (22.5x22.5 cm), (T₅) - T₄ + Mechanical weeding, (T₆) - T₅ + intermittent irrigation, (T₇) - T₆ + INM (N by LCC), (T₈) - T₂ + INM (N by LCC).

The Aduthurai soil was clay loam in texture having CEC 31.4 cmol (P⁺) kg⁻¹, pH 8.3, EC 0.54 dSm⁻¹ and organic carbon 1.22 %. The total N was 0.09 %, total P (0.80%) and total K (0.56%). The available N status in the soil was 240 kg ha⁻¹, available P (80 kg ha⁻¹) and available K (566 kg ha⁻¹). The DTPA extractable Fe (19.4 ppm), Mn (16.9 ppm), Cu (2.90 ppm) and Zn (1.64 ppm). The Kattuthottam soil was sandy loam in texture having CEC 9.0 cmol (P⁺) kg⁻¹, pH 6.18, EC 0.09 dSm⁻¹ and organic carbon 0.55 %. The total N was 0.05 %, total P (0.09%) and total K (0.12%). The available N status in the soil was 215 kg ha⁻¹, available P (9.33 kg ha⁻¹) and available K (108 kg ha⁻¹). The DTPA extractable Fe (15.0 ppm), Mn (7.50 ppm),

Cu (6.70 ppm) and Zn (1.61 pm). The Bhavanisagar soil was sandy loam in texture having CEC 15.3 cmol (P⁺) kg⁻¹, pH 5.6, EC 0.29 dSm⁻¹ and organic carbon 0.54 %. The total N was 0.05 %, total P (0.03%) and total K (0.09%). The available N status in the soil was 225 kg ha⁻¹, available P (26.5 kg ha⁻¹) and available K (202 kg ha⁻¹). The DTPA extractable Fe (45.3 ppm), Mn (10.5 ppm), Cu (4.76 ppm) and Zn (2.22 ppm).

The sowing for mat nursery (14 days old seedlings) and conventional nursery (21 days old seedlings) was made on the same day so as to ensure the uniform age of the crop. In Integrated nutrient management (INM) plots, GLM was incorporated 10 days prior to transplanting. Green manure had the average nutrient status of 3.0% N, 0.25% P and 2.5% K. The LCC measurements were taken on weekly intervals in order to assess the nitrogen status of leaf and nitrogen applied @ 35 kg ha⁻¹ as and when the LCC critical value fall below 4 for treatments T₂ to T₈. Phosphorous @ recommended dose of P₂O₅ ha⁻¹ as SSP, ZnSO₄ @ 25 kg ha⁻¹ and gypsum @ 500 kg ha⁻¹ were applied basally. Potassium was applied @ recommended dose of K₂O ha⁻¹ as MOP in two equal splits. Weeds were removed from the field manually in all the plots at 15 and 30 days after transplanting. Totally three mechanical weeding were given to the respective plots at 10 days interval from 10 DAT. The soil adhering to the roots of the selected hills were wiped out by taking care not to damage the roots. The soil collected were pooled, shade dried, processed and stored for analysis. As the investigation involves nutrient dynamics of rhizosphere region, equilibrated soil solution samples were collected by zero tension sampling (Tiensing *et al.*, 2001)