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Category	: International Rice Research Conference
Select Theme	: Sustainable and equitable farming systems
Endorsement email	:
Keyword 1	: Nutrient management
Keyword 2	: Soil and soil health
Keyword 3	: Sustainable management practices
Title of Entry	: Diagnosing Nutrient Limitation Through C: N: P Ratios Under Different Fertility Levels in Irrigated Puddled Transplanted Rice
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: 15 minute oral presentation

Abstract

: Rice has a general need of nitrogen (for large leaf area index, photosynthesis, high nutrient uptake), and considerable amount of phosphorus and potassium for high grain yield. In Rice-wheat system these days NPK, micro-nutrients along with FYM are required to avoid multi nutrient deficiency. An experiment with eight treatments viz. control (no NPK), P40K40 (subscript shows application rate in kg/ha), N120K40, N120P40K40, N120P 40K40+foliar zinc (ZnF) 5kg ZnSo4+2.5kg slacked lime dissolved in 1000 l of water/ha, N120P40K40+ZnF+farm yard manure (FYM) 5t/ha in rice, N120P40K40 ; P through diammonium phosphate (DAP), and N150P40K40 has been maintained in fixed layout since 1984 in a Randomized Block Design with three replications. The N, P and K were supplied through urea, single super phosphate and DAP and muriate of potash, respectively. Since, C, N and P are strongly coupled in their biochemical functioning (Güsewell, 2004) and their balance generally affects crop production and food-web dynamics (Elser et al, 2000), the C:N:P stoichiometry is the most investigated factor in ecological interactions. Among C:N:P ratios, N: P ratio is widely considered as having high diagnostic value for nutrient limitation (Sadras, 2006). Experimental findings suggest that there is negative correlation between C:N, N:P and C:P ratios and grain yield. The root and stem-leaf C:N:P and panicle C:N ratios showed overall uptrends with a peak at harvest whereas the panicle N:P and C:P ratios decreased from grain filling to harvest. Thus, during 30, 60 and 90 days stage of crop, root and shoot N:P ratio range of 10-20 (as given by Gu`sewell, 2004) holds good for having an understanding of nutrient limitation but during maturity the range of 4-6 given by Aulakh and Malvi, (2005) holds true. Based on shoot N:P ratio it can be concluded that in all the treatments except N120P40K40+ZnF+FYM, N120K40, both N and P were limiting but in N120P40K40+ZnF+FYM only N was limiting while in N120K40, P is limiting. Although N120P40K40+ZnF+FYM treatment produced best yield still further yield enhancement is possible through better N management.

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