



# Nutrient management option for maximizing productivity and profitability of rice – rice system

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**Abstract :** Field experiments conducted consecutively for three years during *Kharif* and *Rabi* seasons on Godavari alluvial soils revealed that during *Kharif*, application of 75 per cent recommended NPK coupled with 25 per cent recommended N through green manure recorded the higher grain yield. During *Rabi*, substitution of 50 per cent N through any of the organic sources to *Kharif* followed by application 100 per cent RDF to *Rabi* resulted in significantly higher grain yield. Substitution of 50 per cent rec. N through green manure during *Kharif* and application of 100 per cent RDF to *Rabi* crop recorded higher system grain yield (12315 kg/ha) as well as protein yield (862 kg/ha) and gross returns (Rs 73890/- per ha), Where as the net returns and B:C ratio of the system were higher with substitution of 25 per cent rec. N through green manure during *Kharif* and application of 75 per cent RDF to *Rabi* and was closely followed by 100 per cent RDF during both the seasons.

**Key Words :** Rice, Nutrient management, Grain yield, Economics

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## INTRODUCTION

Rice (*Oryza sativa* L.) is the main staple food crop of India. In modern agriculture, efficient nutrient management has emerged as one of the most important factors in sustaining high production levels, besides conserving soil fertility of intensive cropping systems. Intensive cultivation of land without conservation of soil fertility would lead to springing up of deserts (Swaminathan, 1987). Continuous use of high level of chemical fertilizers had led to soil degradation problems causing serious stagnation and declining productivity of various rice ecosystems. Integrated nutrient management being an information intensive and location specific, achieves a better synchronization of nutrient release with the crop needs, which is a key step in realizing the production targets on sustainable basis. Keeping the above points in view, the present study was undertaken to find out an effective nutrient management option for rice-rice system.

## MATERIALS AND METHODS

Field experiments were conducted on rice (*Oryza sativa*

L.) consecutively for three years during *Kharif* and *Rabi* seasons of 2005-06, 2006-07 and 2007-08 on Godavari alluvials (Vertic chromusters) at Andhra Pradesh Rice Research Institute, Maruteru, A.P. India (26.38° N, 84. 44° E and 5 m above mean sea level). The soil was clay loam having pH 7.1, organic carbon 0.9 per cent, available P<sub>2</sub>O<sub>5</sub> 38 kg/ha and K<sub>2</sub>O 344 kg/ha. The trial consisted of twelve treatments (Table A) replicated thrice in Randomised Block Design.

MTU 1001 ( 135 days duration) during *Kharif* and MTU 1010 (120 days duration) during *Rabi* were the test varieties planted 24 to 26 days old seedlings at a spacing of 20 cm x 15 cm during *Kharif* 15 x 15 cm during *Rabi* with 2-3 seedlings per hill. Weeds were controlled by application of pre emergence herbicide pretilachlore @ 0.75 kg a.i per hectare followed by one hand weeding at 40 days after transplanting. Water was maintained at a depth of 2 cm up to panicle initiation and 5 cm thereafter up to one week before harvest. The field was drained before application of fertilizers and one week before harvest. Manures and fertilizers were applied as per the treatmental requirement through urea, SSP, MOP. Entire P and K and 1/3 recommended N was applied as basal, remaining

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