

## Studies on yield attributes, yield and economics of wet seeded rice under integrated nutrient management practices

M. SENTHIVELU\* AND A.C. SURYA PRABHA

Department of Agronomy, Tamil Nadu Agricultural University, COIMBATORE (T.N.) INDIA

(Accepted :January, 2007)

### SUMMARY

To study the influence of integrated nutrient management practices on yield attributes, yield and economics of wet seeded rice, a field investigation was conducted during *Rabi* season (Oct. – Jan.) of 2001 -02 at wetland of Central farm, Agricultural College and Research Institute, TNAU, Killikulam (8° 48' N 77°42' E and 40m AMSL). Total of eleven treatments were planned and executed in randomized block design and replicated thrice. Eight integrated nutrient management practices viz., four organic manure sources with two levels (100 % and 150 % recommended dose) in combination of 100 % organic manures with 100 % NPK(150:50:50 kg ha<sup>-1</sup>) and 150 % organic manures with 75 % NPK level (112.5:37.5:37.5 kg ha<sup>-1</sup>) viz., presowing of *Sesbania* @ 50 kg ha<sup>-1</sup> and *in situ* incorporation at 45 DAS + 150: 50: 50 kg NPK ha<sup>-1</sup>, presowing of *Sesbania* @ 75 kg ha<sup>-1</sup> and *in situ* incorporation at 45 DAS + 112.5:37.5: 37.5 kg NPK ha<sup>-1</sup>, intercropping of *Sesbania* in rice @ 25 kg ha<sup>-1</sup> and *in situ* incorporation at 40 DAS + 150: 50: 50 kg NPK ha<sup>-1</sup>, intercropping of *Sesbania* in rice @ 75 kg and *in situ* incorporation at 40 DAS + 112.5:37.5: 37.5 kg NPK ha<sup>-1</sup>, GLM @ 6.25 t ha<sup>-1</sup> + 150: 50: 50 kg NPK ha<sup>-1</sup>, GLM @ 9.38 t ha<sup>-1</sup> + 112.5:37.5: 37.5 kg NPK ha<sup>-1</sup>, FYM @ 12.5 t ha<sup>-1</sup> + 150: 50: 50 kg NPK ha<sup>-1</sup>, FYM @ 18.75 t ha<sup>-1</sup> + 112.5:37.5: 37.5 kg NPK ha<sup>-1</sup> and two levels of inorganic NPK alone i.e., 150: 50: 50 kg NPK ha<sup>-1</sup>, 112.5:37.5: 37.5 kg NPK ha<sup>-1</sup> and absolute control was adopted. The treatment receiving FYM @ 12.5 t ha<sup>-1</sup> (100 %) + 150: 50: 50 kg NPK ha<sup>-1</sup> (100 %) registered significantly the higher number of productive tillers (526 m<sup>-2</sup>), number of filled grains panicle<sup>-1</sup>(94.30), percentage of filled grains (93.26 %), test weight (22.2 g), grain yield (5538 kg ha<sup>-1</sup>) and straw yield (8693kg ha<sup>-1</sup>) than inorganic fertilizer alone at either level and control. However, it was at par with other integrated nutrient management practices in combination of 100% organic manure (any sources) with 100 % recommended NPK (150:50:50 kg ha<sup>-1</sup>). Integrated nutrient management in combination of FYM @ 12. 5 t ha<sup>-1</sup> + 150: 50: 50 Kg NPK ha<sup>-1</sup> recorded highest Gross return (Rs. 42,539), net return (Rs. 26,989) and Benefit –cost ratio (2.74) than any other treatment.

Key words : Wet seeded rice, Integrated nutrient management, Organic sources, Yield attributes, Yield and economics.

Rice feeds more than half the people in the world, but not well and not for much longer. According to the United Nations the demand of rice is expected to rise by a further 38 per cent within 30 years (Thiyagarajan, 2002). The situation calls for profound improvements in the rice packages of practices such as integrate crop nutrient management, integrated soil fertility management, integrated crop management practices and the applicability of various sustainable farming technologies are crucial in attaining this goal (Uphoff, 2003). In the post green revolution periods, India achieved tremendous food grain production with the help of high yielding varieties, synthetic fertilizers and other external inputs and well supplied irrigation facilities. (Basumatary and Talukdar, 1998). But the escalating prices of external chemical inputs and it's dangerous to environment urged the scientists to develop alternative remedy practices such as integrated nutrient management for reducing the environment pollution and to improve the rice yield in sustained manner (Fageria and Baligar, 1997; Balasubramanian and Veerabadran, 1997). Bulky organic

manure with any sources definitely improves the rice productivity (Jose Mathew *et al.*, 1993) and the integrated use of organic and inorganic fertilizers can make contribution to increasing and sustaining rice production and reduce the nutrient loss from the rice ecosystem (Dhane *et al.*, 1995). Therefore, to study the influence of integrated nutrient management practices on yield attributes, rice yield and economics of wet seeded rice a field experiment was conducted in wet seeded (drum seeding) rice in *rabi* (*Pishanam*) season rice grown in Southern parts of Tamil Nadu.

### MATERIALS AND METHODS

A field experiment was conducted during *rabi* season (*Pisahn* rice) of 2001 -2002 at the wetlands (field number 48 b of 'B' block) of Central farm, Agricultural College and Research Institute, Tamil Nadu Agricultural University, Killikulam (8° 48'N latitude, 77°42' E longitude and 40 m above mean sea level). The soil of the experimental field were moderately deep and sandy clay in texture, with slightly alkaline in reaction

\* Author for correspondence.