



Effect on N regimes and green leaf manure application on the mineral N content (NH₄-N and NO₃-N) of the rice soil

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ABSTRACT

Field experiment was conducted during samba season of 2001 (*Rabi*) to study the effect of N regimes and Green leaf manure (GLM) application on the mineral N (NH₄-N and NO₃-N) content of the soil. The treatment consisted of nine N regimes *viz.*, control, 100 kg N ha⁻¹, 150 kg ha⁻¹, application of N through LCC critical values of 3, 4, and 5 and through SPAD critical values of 33, 35 and 37 in two cultivars *viz.*, ADT 39 and CORH 2. These treatments were tried with or without the application of green leaf manure at 6.25 Mg ha⁻¹. The plots which received N through SPAD 37 treatment, resulted in numerically higher NH₄-N content. Incorporation of green leaf manure significantly increased the NH₄-N content of the soil. The maximum concentration of NO₃-N was noticed in the plots which received N at the rate of 100 kg N ha⁻¹. The highest NO₃-N content was registered 15 days after fertilizer application. Green leaf manure application did not result in any change in NO₃-N content of the soil.

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Key words : N levels, SPAD, LCC, Green leaf manure, and Mineral N content (NH₄-N and NO₃-N).

INTRODUCTION

Rice is the prime food of the world, occupying an area of 146.5 M ha, with a total production of 534.7 Mt (Rangaswamy *et al.*, 1996). In India, it occupies an area of 44 M ha, which represents 41 per cent of the area cropped to cereals with production of around 80 Mt (James Martin *et al.*, 1996). It forms the food for more than half of the global population and in particular, it is the staple food for majority of the Indians, next to wheat. Since it shares the major proportion of food grain cereals, its demand towards the burgeoning population is also very high and there is always a growing need to increase its productivity. It is only possible by concentrating our research efforts towards the major crops like rice, as well as by improving the technologies of production. Among the different management practices, fertilizers management alone could determine more than 50 per cent of the rice productivity (Randhawa and Velayutham,

1989). In which, nitrogen management play an important role for the rice production. In addition nitrogen (N) is the king pin for rice production and the role of this nutrient to agriculture needs no emphasis.

Since, it is seen that almost all crops under all situations respond to N application. In addition, use of recommended N management tools with green leaf manure addition have shown the increased efficiency of applied N fertilizers (Lian, 1994). It was established that the N content of the leaf could be directly linked to the chlorophyll content of leaf. The chlorophyll meter or soil and plant analysing department meter (SPAD meter) (Follet *et al.*, 1992) and leaf colour chart (LCC) (Furuya, 1987) are the most reliable tools that measures the green colour intensity of rice leaves. Hence, the present investigation was undertaken to study the effect of N regimes and green leaf manure application on the mineral N content of the rice soil.

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