

## RELATIVE EFFICIENCY OF NEEM COATED UREA PRODUCTS FOR RICE GROWN IN DIFFERENT SOILS

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### ABSTRACT

The field experiments conducted to assess the influence of neem coated urea products on yield and nitrogen use efficiency in rice grown in different soils at TNAU, Coimbatore (ADT 46) and SWMRI, Kattuthottam, Thanjavur (ADT 36) revealed that the highest per cent increase in grain yield over prilled urea was recorded under 0.1% neem gold coated urea, P<sub>4</sub> (19.9) and 0.2% neem gold coated urea, P<sub>5</sub> (20.4) in Noyyal and Madukkur soil series, respectively. Apparent nitrogen recovery was highest at P<sub>3</sub>, P<sub>4</sub> and P<sub>5</sub>. Thus, the application of 0.3% neem oil coated urea, 0.1% and 0.2% neem gold coated urea at 125 kg N ha<sup>-1</sup> to rice crop, increased the grain and straw yield and nitrogen use efficiency in Noyyal and Madukkur soil series in corporation to prilled urea.

**Key words :** Rice, Neem, Urea, Efficiency.

Rice is the global grain which occupies a pivotal place in Indian Agriculture as it is the staple food for more than 70 per cent of population and as a source of livelihood for about 120 to 150 millions. The controlled use of N fertilizers without sacrificing the yield is of prime importance in efficient nitrogen management for rice. The current trend in fertilization of nitrogen research is to develop more efficient modified urea fertilizers for minimizing N losses. With the current thrust on sustainable agriculture and organic farming, the use of natural products like neem has achieved a great practical significance, especially in augmenting the nitrogen efficiency which is abysmally low under predominantly sub-tropical agriculture. This situation warrants the need for evolving strategies and policies to supply nitrogen timely and in sufficient quantities and for evolving technologies to increase the fertilizer use efficiency.

Southern Petrochemical Industries Corporation Ltd. (SPIC), Tuticorin, Tamil Nadu, India has evolved such a strategy by bringing slow release N fertilizers, which are new formulations containing N source as neem coated urea products with neem oil and neem gold. Keeping these facts in perspective, field experiments were conducted to study the influence of neem coated urea products on the yield and nitrogen use efficiency in rice grown in different soils.

### MATERIALS AND METHODS

Two field experiments one at wetland, ACRI,

Coimbatore during Late Thaladi (Nov, 2004-Mar, 2005) in heavy textured soil with ADT 46 rice and another one at SWMRI, Kattuthottam, Thanjavur during Kuruvai (July-Oct, 2005) in light textured soil with ADT 36 rice were conducted. The physico-chemical characteristics of the experimental soil are depicted in Table 1. The experiments were conducted in a factorial randomized block design with three replications. There were six slow release nitrogen sources viz., product 1 to 6 tested in comparison with locally prepared neem cake coated urea and prilled urea. These eight sources were applied at three nitrogen levels viz., 100, 125 and 150 kg N ha<sup>-1</sup>. Thus, there were 24 treatment combinations along with common control (Table 2). The entire dose of P<sub>2</sub>O<sub>5</sub> was applied as SSP at the time of transplanting. Potassium was applied as MOP in two equal splits at transplanting and panicle initiation stage of the crop growth. Zinc sulphate @ 25 kg ha<sup>-1</sup> and gypsum @ 500 kg ha<sup>-1</sup> were applied basally to all the plots uniformly for two experiments. Rice crop was harvested and yields of both grain and straw were recorded. Apparent nitrogen recovery percent was calculated.

### RESULTS AND DISCUSSION

#### Yield :

The grain and straw yields are given in Table 3 and Table 4, respectively. Yield was significantly influenced by N application which might be due to higher availability of N. Increased levels of N enhanced the grain yield significantly up to 125 kg ha<sup>-1</sup> over control. Kaushik *et al.* (1984) and Tyagi and Agarwal (1989) also observed