

## Studies on the bio-efficacy of neem coated urea on rice

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### ABSTRACT

In rice ecosystem about 60-70% of the applied nitrogen got lost due to different losses viz., leaching, volatilization etc. The increase in nitrogen use efficiency by 1% will lead to a substantial increase in rice productivity. Therefore a field experiment was conducted to study the effect of different product of neem based nitrification inhibitors to increase the nitrogen use efficiency along with the recommended practice of inorganic N application in rice during *Pishanam* 2003-04. The study on the effect of nitrogen source on the yield parameters, yield, nutrient uptake and B-C ratio of rice in Tamirabarani tract revealed that the application of 120 kg N / ha as neem coated urea in 3 splits recorded the highest plant height, number of tillers/plant, productive tillers/plant (13.9) and the grain (7.59 t/ha) and straw (11.5 g/ha) yields, total uptake of N (93.4 kg/ha), P (26.0 kg/ha) and K (132 kg/ha) and B-C ratio of 1.21 rupees per rupee invested in rice (var. ADT 39). Although the nitrogen use efficiency was found marginally lower (13.9) in neem coated urea at 120 kg/ha than the application of 96 kg N / ha (80% of the recommended N) as nimin coated urea in 3 splits (15.1), the highest B-C ratio of 1.61 rupees per rupee invested was recorded over the normal recommended practice of applying urea at the rate of 120 kg N/ha in 3 splits (1.00) and found economically viable.

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The use efficiency of nitrogenous fertilizers is 25 to 40 % depending on the situation, and the rest goes to losses. Therefore, to minimise the losses and to increase the use efficiency coating of urea with neem oil, modified urea products viz., USG etc., were tried and efficiency increased (Velu and Ramanathan, 1996). Here in this paper the bio-efficiency of neem-coated urea (product from Godrej Agrovet, Mumbai) on rice is discussed.

### MATERIALS AND METHODS

The field trial was conducted in the farmer holding of Tamirabarani tract using ADT 39 rice variety. As polagraph, the experiment was conducted in Randomized Block Design with these replications. The experimental treatments, details are furnished below:

T<sub>1</sub> - No nitrogen control, T<sub>2</sub> - Recommended dose of nitrogen through uncoated urea – all basal, T<sub>3</sub> - Recommended dose of nitrogen through uncoated urea in recommended splits, T<sub>4</sub> - Same as T<sub>2</sub> but nitrogen through NCU (NFL's material – oil water emulsion coated urea) – all basal, T<sub>5</sub> - Same as T<sub>4</sub> but in recommended splits, T<sub>6</sub> - Same as T<sub>4</sub> but nitrogen through *Nimin* Coated Urea (RCF's material) – all basal, T<sub>7</sub> - Same as T<sub>6</sub> but in recommended splits, T<sub>8</sub> - Same as T<sub>6</sub> but nitrogen only 80% of recommended, T<sub>9</sub> - Same as T<sub>7</sub> but nitrogen only 80% of recommended

The observations on the yield parameters, viz., plant height and number of tillers/plant were recorded at 30 and 60 days after transplanting, the number of productive

tillers/plant was recorded at harvest. The grain and straw yields were also recorded, and NUE was calculated. The Benefit-Cost ratio for the various treatments was also calculated.

The initial soil characteristics of the experiment field was pH - 6.4, EC - 0.40 dS m<sup>-1</sup>, CEC - 9.2 c mol(p<sup>+</sup>) kg<sup>-1</sup>, Org. C - 0.45 %, Av. N - 115 kg ha<sup>-1</sup>, Av. P - 12.5 kg ha<sup>-1</sup> and Av. K - 205 kg ha<sup>-1</sup>.

### RESULTS AND DISCUSSION

**Effect of treatments on biometric characteristics :**  
*Plant height :*

The data on plant height recorded at 30 and 60 days after sowing revealed that the highest plant height of 59.0 cm was recorded by the application of 120 kg N / ha as neem coated urea in 3 split doses (T<sub>5</sub>). This was followed by the application of the same dose of N and 3 splits through nimin coated urea (57.9 cm). At 60 days after transplanting the same treatment recorded significantly higher plant height of 96.0 cm than the other treatments (Table 1).

**Tillers and productive tillers / plant :**

The number of tillers/plant at 30 days after transplanting was the highest with the application of neem coated urea at 120 kg N / ha in 3 splits (T<sub>5</sub>) (20.3). This was followed by application of 120 kg N/ha as nimin coated urea in 3 splits(T<sub>7</sub>). But the effect of treatments on 60 days after transplanting was found to be non-