

## ON THE FORMS OF NITROGEN SUITABLE FOR KUTTANAD SOILS OF KERALA

Since the relative response of paddy to the different forms of nitrogenous fertilisers in Kuttanad soils is not known fully, a series of experiments were conducted for this purpose during the year 1964 to 1967 at the Rice Research Station, Moncombu, Kerala. The experimental details and results are presented below.

The form of nitrogenous fertilisers used were those given in Table 1. The fertilisers were used so as to supply 40 pounds of nitrogen per acre. They were supplied in two split doses, half the dose as basal dressing at the time of planting and the remaining half as top dressing, three weeks after planting. Besides nitrogen,  $P_2O_5$  at the rate of 40 pounds per acre and  $K_2O$  at 30 pounds per acre were also given in the form of hyperphosphate and muriate of potash, respectively, the entire quantities of which were supplied as basal dressing. The plots which were to receive calcium (Nos. 4 and 5 in Table 1) were supplied with quick lime two days in advance of the application of the basal manures. PTB.10 was the paddy strain used. A randomised block design was used for the experiments which was repeated thrice during 1964—1967. The soil type of the experimental field was alluvial clay of pH 5.1, containing 0.58 percent organic carbon, 104 pounds of available potash per acre and traces of available phosphorus.

Results and their analysis are given in Table 1.

**Table 1**

Yield of paddy in kilograms per hectare in plots treated with  
different forms of nitrogenous fertilisers

| Form of fertilisers         | Yield     |           |           | Mean      |
|-----------------------------|-----------|-----------|-----------|-----------|
|                             | 1964-65   | 1965-66   | 1966-67   |           |
| 1. Ammonium sulphate        | 3768      | 3975      | 3351      | 3698.00   |
| 2. Urea                     | 3637      | 3924      | 3046      | 3549.00   |
| 3. Calcium ammonium nitrate | 3321      | 3370      | 2778      | 3535.66   |
| 4. Ammonium sulphate+Lime   | 3508      | 3811      | 3328      | 3248.66   |
| 5. Urea+Lime                | 3266      | 3630      | 2850      | 3156.33   |
| 6. Control                  | 3126      | 3259      | 2270      | 2885.00   |
|                             | CD 232.86 | CD 336.64 | CD 286.68 | CD 157.54 |
|                             | xx        | xx        | xx        | xx        |

xx Significant at 1 percent level.

*Note:* Quantity of calcium added was equal to that of calcium ammonium nitrate.

It may be seen that in all the years, taken separately or together, the application of fertiliser in one form or other increased the grain yield. Among the fertilisers tried, ammonium sulphate gave the maximum yield and calcium ammonium nitrate the lowest, urea occupying an intermediate position. The treatments in which lime was added to equalise the quantity present in calcium ammonium nitrate, did not show any increase in yield over the treatments in which the fertilisers were applied without lime.

Similar observations on the superiority of ammonium sulphate over other forms of nitrogenous fertilisers as a source of nitrogen for paddy have been reported earlier by Sahadevan and Gopalakrishnan (1958), Vachani (1963), Mahapatra and Sahu (1963) and Mallik and Das (1965).

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#### References

- Sahadevan, P. C. and Gopalakrishnan R. 1958. Chilian Nitrate experiment on Malabar Swamp Rice. *Rice News Teller*, 6 (1) : 5.
- Vachani, M. V. (1963). Effect of Nitrogenous fertilisers on yield of Rice. *Fertiliser News*, 8 (5) : 13-15.
- Mahapatra, I. C. and Sahu B. N. 1963. Efficiency of different Nitrogenous fertilisers for Rice. *Rice News Teller*, 2 (2),
- Mallik and Das, 1965. Relative efficiencies of Ammonium nitrate and their time of application to paddy. *Rice News Teller*, 13 (4).

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