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SLOW RELEASE NITROGEN FERTILIZERS FOR TRANSPLANTED RICE

The recovery of applied nitrogen by lowland rice is rather low. In India, it rarely exceeds 50 per cent (Katyal and Pillai, 1975). This emphasizes the need for proper agronomic manipulations for increasing nitrogen recovery by the crop. The use of slow release fertilizers is one of the means for minimising nitrogen losses (De Datta, 1975; Huffman *et al.*, 1976). This paper embodies the results of an experiment conducted at the Rice Research Station, Pattambi during the autumn season of 1975—76 with the object of studying the relative merits of sulphur coated urea (a TVA product containing 34% N; 14.6% S) and isobutylidene diurea (a condensation product of urea and isobutyraldehyde containing 32% N) as compared to granular urea.

Table 1

Number of panicles/m², panicle weight and grain yield as influenced by sources and timings of nitrogen application

Treatment	Nitrogen (Kg/ha) applied at			Panicles per m ²	Panicle weight (g)	Grain yield (Kg/ha)
	Plant-ing	Tiller-ing	Panicle initiation			
1	—	—	—	249	1.67	3172
2	60	—	—	308	1.77	3815
5	60*	—	—	260	1.94	4160
4	30*	15	15	288	1.66	4023
5	40*	—	20	286	1.57	4185
6	60@	—	—	259	1.67	3913
7	40	—	20	308	1.59	3705
8	40	—	20F	264	1.77	3760
9	30	15	15	261	1.75	3666
10	—	30	30	267	1.87	3885
C. D. (0.05)			46	0.25	121	

* Sulphur coated urea, @ isobutylidene diurea, F foliar application of 6% urea

The experiment had 10 treatments (Table 1) with each treatment replicated 4 times in a randomised block design. The test variety was Rohini, a dwarf *indica* rice of about 110 days duration. A spacing of 20 cm x 10 cm was adopted for planting. The net plot size was 18.22m². The crop was grown under intermittent flooding.

Application of the entire dose of nitrogen (60Kg N/ha) at planting (treatment 2) resulted in a mean grain yield of 3815 Kg per hectare which was equivalent to an yield response of hardly 10.7 Kg per Kg of N. Incorporation of the same dose of nitrogen in the form of sulphur coated urea (treatment 3) increased the yield response by 5.8 Kg per Kg of N (16.5 Kg/Kg of N). The difference between the sources of nitrogen was statistically significant. The other slow release source of nitrogen (isobutylidene diurea) was not as efficient as sulphur coated urea. It produced 12.3 Kg of grain per Kg of applied nitrogen.

The highest yield of grain was recorded by treatment 5 which received 40 Kg N/ha as sulphur coated urea at planting and 20 Kg N/ha as granular urea at panicle initiation. This treatment, however, was on par with treatments 3 and 4 which received nitrogen in the form of sulphur coated urea at 60 and 30 Kg, per hectare, respectively, at planting.

Split application of granular urea generally did not improve the nitrogen use efficiency probably due to rapid nitrification and subsequent denitrification of the applied nitrogen. The results reveal that sulphur coated urea can be effectively used for increasing nitrogen use efficiency in lowland rice,

സംഗ്രഹം

രോഹിണി എന്ന ഗ്രന്ഥകാല നെൽദിനസ്സുപയോഗിച്ചു പട്ടാമ്പി നെല്ലുഗവേഷണ കേന്ദ്രത്തിൽ നടത്തിയ ഒരു പഠനത്തിൽ ഗന്ധകംപുശിയ യൂറിയ സാധാരണ യൂറിയായേക്കാൾ കൂടുതൽ ഫലപ്രദമാണെന്ന് കണ്ടു. ഈ രാസവളം ഉപയോഗിക്കുന്നതുമൂലം നെല്ലിന്റെ പാക്യജനകോപയോഗക്ഷമത വർദ്ധിക്കുന്നതായും അനുഭവപ്പെട്ടു.

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