Agri. Res. J. Kerala, 1976 14 (1) 5—8

STUDIES ON THE EFFECT OF **UREA** AND **NEEM** CAKE COATED UREA ON THE NITROGEN UPTAKE OF RICE VARIETY - *TRIVENI*

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Split application of nitrogen has been reported to increase the nitrogen content of plant as compared to complete basal application. Taira *et al* (1970) reported that application of nitrogen at heading stage resulted in increased protein content of rice. But studies revealed that about 40% of the nitrogen applied to the crop at planting is lost by various means. Repeated application of nitrogen during different growth phases of rice plants results in repeated losses of nitrogen from the soil. This situation calls for a method to minimise the losses of nitrogen and thereby conserve and make available nitrogen during the later stages of growth of crops. The use of nitrification retarders like neem cake is a novel approach to the problem of reducing losses of nitrogen and thus increasing its efficiency (Kelkar, 1974). With this object in view an experiment was conducted at the College of Agriculture, Vellayani during 1973.

Materials and Methods

The experiment was conducted during *Virippu* season of 1973 using 4 levels of nitrogen (0, 40, 80 and 120 kg/ha) and five methods of application viz. (1) complete basal application of urea (2) complete basal application of neem cake coated urea (3) 75% basal urea + 25% urea as top dressing (4) 75% basal urea + 25% neem cake coated urea as top dressing (5) 75% basal neem cake coated urea + 25% neem cake coated urea as top dressing. The soil of the experimental site was sandy clay loam containing 0.078% total nitrogen, 0,0025% available phosphorus and 0.0027% available potash with a pH of 5.4. The experiment was laid out in a randomised block design with 3 replications. Neem cake was mixed with urea at the rate of 20% of the weight of the urea. Phosphorus and potash were applied at the rate of 34 kg/ha each as basal dressing. Nitrogen was applied as urea and neem cake coated urea as per the treatment.

The short duration high yielding rice variety *Triveni* was used for planting. Nitrogen content of the plants was estimated at four stages viz, maximum tillering stage, panicle initiation stage, flowering stage and at harvest by Micro - KjeldahPs method. From this the nitrogen uptake was worked out.

Table 1

Effect of levels of nitrogen and methods of application at various growth stages on nitrogen uptake by plants (in kg/ha).

Treatments	Maximum tillering	Panicle initiation	Flowering	Harvest		Total
				Straw	Grain	
Nitrogen levels						
0 kg N/ha	13.267	20.980	28 610	14.690	28.500	39.860
40 ,,	23.291	33.930	46.463	20.950	45 850	66.810
80 ,,	35.081	45.598	53 566	32.520	53.270	85.790
120 „	34 683	42.397	52.866	39.580	52 370	91 820
F test between Levels	Sig	Sig	Not. Sig	Sig	Sig	Sig
S. Em ±	2.68	2.89	2,63	1.15	1.86	2.33
V: D. (0.05)	7.74	7.76		3,32	5.37	6.44
F. Treatments	Sig	Sig	Sig	Sig	Sig	Sig
Vs. control						
S. Em +	6.01	4.64	5.87	2.58	3.74	4.97
C. D. (0.05)	J7.35	13.40	16.95	7.45	10.80	14.35
Methods of application						
M_1	29.568	31.539	46,426	28.260	47.240	75.270
M_2	26.563	41.019	51.555	34.700	54.130	88.830
M_3	34.188	40.897	50.088	33.130	48.010	81.160
M_4	20.124	46.961	52.165	30.550	50.820	81.370
M_5	26.240	43.018	54.592	33.450	52.270	85 720
F Test	Not sig	Not sig	Not sig	Not sig	Not sig	Sig
S. Em ±	3.47	3.38	3.40	1.50	2.40	2 87
C. D. (0.05>	..			,.	.	8.29

Results and Discussion

The data On nitrogen uptake by the crop at various stages of growth are given in Table 1. It is seen from Table that nitrogen levels exerted a profound influence on nitrogen uptake by the crop. Nitrogen uptake by straw increased upto 120 kg level and the nitrogen uptake by grain increased upto 80 kg level. Total nitrogen uptake by the plant was significantly increased upto 80 kg level. The nitrogen uptake pattern showed an increasing trend from maximum tillering stage to harvest. Russel (1961) pointed out that nitrogen uptake will increase with stages of development of plants. The uptake values were at the peak at harvest.

The methods of application of nitrogen failed to influence the nitrogen uptake at the earlier stages. But at harvest, the total nitrogen uptake was significantly influenced by methods of application. In all the treatments except control a minimum of 75% nitrogen was given basaliy and it might have been sufficient for proper vegetative growth in the earlier stages. This might be the reason for absence of significance to methods of application in the early stages. But at harvest, the total nitrogen uptake was significantly influenced by methods of application. Minimum nitrogen uptake was noted for full basal urea which was significantly lower to all other methods. The others were on par. This suggests that full basal neem cake coated urea is as good as split application of nitrogen. This might be due to the lesser losses of nitrogen and consequent extended availability of it in the later stages in the case of neem cake coated urea.

Summary

An experiment to study the effect of urea and neem cake coated urea on the nitrogen uptake of rice variety *'Triveni'* was conducted at the College of Agriculture, Vellayani, Kerala during *viruppu* season of 1973. From the study it was found that nitrogen uptake was increased with stages of the plant. At all stages, higher levels of nitrogen increased the nitrogen uptake by the plants. At maximum tillering, panicle initiation and flowering stages, the methods of application did not influence nitrogen uptake. At harvest, the total nitrogen uptake was significantly influenced by methods of application. The split application and complete basal application of neem cake coated urea were significantly superior to application of complete basal urea.

സംഗ്രഹം

യൂറിയ തനിയേയും, യൂറിയ വേപ്പിൻപിണ്ണാക്ക് പൂശിയും നൽകുന്നതുകൊണ്ട് 'ത്രിവേണി' നെല്ല് വലിച്ചെടുക്കുന്ന നൈട്രജന്റെ അളവിലുണ്ടാകുന്ന വ്യത്യാസം മനസ്സിലാക്കുന്നതിനുവേണ്ടി ഒരു പരീക്ഷണം 1973-ലെ വിരിപ്പുകൃഷിയിൽ വെള്ളായണി കാർഷികകോളേജിൽ നടത്തുകയുണ്ടായി.

പരീക്ഷണത്തിൽനിന്നും വേപ്പിൻപിണ്ണാക്ക് പൂശിയ യൂറിയ തവണയായി നൽകുന്നതും, മുഴുവനായി raroslcnioocnaJgiBocfi/l നൽകുന്നതും, യൂറിയ തനിയേ അടിസ്ഥാനവളമായി നൽകുന്നതിനേക്കാളും പ്രയോജനപ്രദമാണെന്ന മനസ്സിലാക്കുകയുണ്ടായി.

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(M. S. *received:* 28-1-1973)