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"A STUDY ON THE EFFECT OF DIFFERENT LEVELS OF NITROGEN AND SLOW RELEASE UREA BRIQUETTES ON RICE FIELDS"

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Application of nitrogen in different levels, significantly increased the yield during *Kharif* and 120 Kg/ha in the form of 0.75 g size urea briquettes recorded the highest yield. During *rabi* season, the increase in yield due to the application of different levels of nitrogen was not significant Hence economical application of 40 Kg/ha of urea briquettes of 2.5 g size is recommended for Thanjavur new area.

Applying urea in split and briquettes were superior to basal application of nitrogenr 2.5 g size provide superior in *rabi* where as 0.75 g size in *Kharif* season.

Rice is the important crop of Tamil Nadu and Thanjavur District consumes the major portion of fertilizers used for rice. Among the application of major fertilizers, nitrogen ranks first. So, efficient and economical utilisation of nitrogenous fertilizers will reduce the demand cost of nitrogenous fertilizers to a great extent upto 50 per cent. According to Rajala and Rajendra Prasad (1970) only 50 per cent of applied nitrogen is utilized and the rest is lost due to leaching, denitrification and volatilization under low land rice culture. The techniques to increase the efficiency of nitrogen uptake are: split application, subsurface placement, slow release materials, foliar application and proper water management practices. Out of these, slow release materials were tried to increase the efficrency of nitrogen uptake in rice and its effects were studied on long range basis.

MATERIAL AND METHODS

An experiment was conducted at the Soil and Water Management Reserch Institure, Thanjavur with an objective to study the relative effeciency of slow release nitrogenous fertilizers for rice and its residual effect on succeeding crop. The experiment was conducted for two years in both rabi and kharif seasons of 1978-'79 and 1979-'80, Sources along with nitrogen as control in main plots and levels in sub plots were allotted in a split plot design and laid out. Four sources of Nitrogen, namely S0 (no-nitrogen) S1 (Urea at planting) S2 Urea 50% basal, 50% in two splits as top dressing), S3 (Urea briquettes 0.75 g size) S4 (Urea briquettes 2.5 g size) and three *levels of nitrogen in Kg/ha* namely L1 (40), L2 (80) and L3 (120) were tested. According to the soil test recommendations P and K were applied as basal doses to all treatments. The recom-

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mended levels of application for both P and K was 50 Kg/ha and 60 Kg/ha for kharif and rabi respectively.

RESULTS AND DISCUSSIONS

From the Tables 1 to 4 it is seen that the application of nitrogen by slow release material significantly increased the yield than the basal application of nitrogen. Further significant increase in yield due to different levels of nitrogen were noticed in the *Kharif* season only. In *rabi* season the increase in yield due to levels of nitrogen was not significant and the 40 Kg N/ha was sufficient for *rabi* season to get economical yield. Application of 2.5 g size of urea briquettes recorded statistically highest yield in both the *rabi* seasons (Tables 2 & 4). Further the treatments of split application of urea and urea briquettes were statistically superior than basal application of urea. Considering the difficulties in application and the labour involved in it and the organisational problems in applying urea briquettes are superior than the split application. The economical application of nitrogen i.e 2.5 g size urea briquettes @ 40 Kg hasrecorded statistical superiority in *rabi* season. During *Kherif* the levels were significant. 0.75 g size urea briquettes to supply 120 kg N/ha proved statistical superiority over other treatments.

REFERENCE

RAJALA, G. BAND and RAJENRAPRASAD 1970. Mineralization of slow fertilizers at varying moisture levels, Fertlit. News., 15 : 38-9.

Table 1 Grain yield (kg/ha)

Sources of N	Levels of N kg/ha			Mean
	40	80	120	
		Kharif 1978		
S_0				
S_1	52.2	56.1	69.0	34.9
S_2	55.7	61.1	63.0	59.1
S_3	61.4	63.1	69 0	59.9
S_4	60.5	60.7	63.3	64.5
Mean	57.4	60.3	66.1	61.5
		Rabi 1971		
S_0				20.0
S_1	24.1	22.8*	25.7	24.2
S_2	29.1	31.9	29 1	30.0
S_3	26.5	30.6	29.0	28.7
S_4	30 6	30.4	30.1	30.4
Mean	28 7	31.7	29.4	
		Kharif 1979		
S_0	—	—	—	24.5
S_1	24.4	30.3	28.9	28.6
S_2	26.6	30.6	29.9	29.0
S_3	26.4	31.1	40.1	32.6
S_4	28.3	31.3	27.0	28.9
Mean	26.4	30.8	31.5	—
		Rabi 1979		
S_0	—	—	—	29.1
S_1	28.6	31.0	30.5	30.1
S_2	32 9	35 0	32.2	33.4
S_3	27 8	31.7	35.1	32.5
S_4	36 1	30.6	31.1	32.62
Mean	31.4	32.1	32.3	
Sources	2.47	1.90	5.04	2.35
Mean	1.83	3.26	2.48	1.04
Control and any level mean	2.15	2.66	3.97	1.82
Levels for same source	3.64	5 65	5.54	2.33
Sources for same level	3.85	4.98	4.98	3.02
Control mean and source mean	1.25	2.77	5.96	2.71