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COMPARATIVE EFFICACY OF DIFFERENT SLOW RELEASE FERTILIZERS ON PADDY CROP

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Rice (*Oryza sativa*) is an important staple food crop in many countries of the world. To assure food security in rice consuming countries of the world, rice production should be increased upto 50 per cent by 2025. The additional rice will have to be produced on less land with less water, labour and chemicals. Globally rice is grown over an area of about 149 million ha with an annual production of 600 million tons. Over 90 per cent of world's rice is produced and consumed in Asia, where it provides 35-60 per cent of total calories intake (IRRI,1997). Therefore, efforts are revealed to increase rice production particularly in Asian countries. In India national food security heavily depends on rice and wheat (78% rice alone contributes to about 43 per cent of food grain production and 46 percent of cereal production. Slow release fertilizers are measured with urea and solubility very slowly and enhance the availability of nitrogen to crop for longer time. They are biochemical in nature, thus slow release nitrogen fertilizers and nitrification inhibitors increases the availability to crops and check its losses in low land rice crop.

A pot experiment was conducted at the pot culture house, Department of Soil Science and Agricultural Chemistry, C.S. Azad University of Agriculture & Technology, Kanpur (U.P.) during Kharif season of 2011-12. The soil had pH 7.4, EC 0.28 ds/m organic carbon 0.42 per cent, available nitrogen 250 kg/ha, available phosphorus 75 kg/ha available potassium 280 kg/ha. The experiment was laid out in completely randomized block design (factorial). The treatment comprises ten with three replications. A uniform basal application of half dose of nitrogen, 60 kg P_2O_5/ha and K_2O (40 kg/ha). Apply the urea of different doses 50 kg/ha, 100 kg/ha and 150 kg/ha with control and apply also pulled urea, neem coated urea and sulphur coated urea. Available nitrogen estimated using standard method (1). The growth characters like plant height, no. of tillers at 60 days after and sowing maturity stage and yield attributes were recorded at harvest.

It is evident from the data (Table-1) clearly indicated that the different levels of nitrogen significantly influenced the plant height of rice at 60, DAS. The application of nitrogen 150 kg/ha produced significantly highest plant height 46.48 cm, 65.71 cm and 71.54 cm, over 100 kg/ha 50 kg/ha and control at, 60 DAS respectively. Application of SCU found significantly superior over NCU and prilled urea respectively.

Table-1 : Effect of slow release fertilizers on plant height (cm) of rice at 60 DAS

Treatments	Urea	Neem coated	Sulphur coated	Mean
Control				51.65
Urea 50	56.80	57.80	60.35	58.32
Urea 100	62.25	63.75	64.80	63.60
Urea 150	64.78	65.95	66.40	65.71
Mean	61.28	62.50	63.85	62.54
Level of (N) Control urea (C) NxC Treatment/Control				
SE(d)	1.18	1.18	2.05	1.53
CD (P=0.05)	2.48	2.48	NS	3.21

Table-2 showed that the different levels of nitrogen significantly affect the number of tillers per

Table-2 : Effect of slow release fertilizers on number of tillers per plant of rice at 60 days

Treatments	Urea	Neem coated	Sulphur coated	Mean
Control				4.45
Urea 50	5.77	6.23	7.27	6.42
Urea 100	6.70	7.63	8.13	7.49
Urea 150	6.95	7.93	8.55	7.81
Mean	6.47	7.26	7.98	7.24
Level of (N) Control urea (C) NxC Treatment/Control				
SE(d)	0.23	0.23	0.39	0.29
CD (P=0.05)	0.48	0.48	NS	0.62

Table-3 : Effect of slow release fertilizers on grain yield (q/ha) of rice.

Treatments	Urea	Neem coated	Sulphur coated	Mean
Control				42.24
Urea 50	63.60	65.50	69.67	66.26
Urea 100	66.80	68.60	70.79	68.73
Urea 150	70.50	72.02	75.21	72.58
Mean	66.97	68.71	71.89	69.19
Level of (N) Control urea (C) NxC Treatment/Control				
SE(d)	1.63	1.63	2.83	2.11
CD (P=0.05)	3.43	3.43	NS	4.43

Table-4 : Effect of slow release fertilizers on straw yield (q/ha) of rice.

Treatments	Urea	Neem coated	Sulphur coated	Mean
Control				52.53
Urea 50	72.93	75.30	79.13	75.79
Urea 100	77.40	80.57	82.63	80.20
Urea 150	77.90	80.93	86.30	81.71
Mean	76.08	78.93	82.69	79.23
Level of (N) Control urea (C) NxC Treatment/Control				
SE(d)	1.61	1.61	2.79	2.08
CD (P=0.05)	3.39	3.39	NS	4.38

plant of rice at 60 DAS. The application of 150 kg N/ha significantly highest number of tillers per plant (7.81) tillers per plant over 100 and 50 kg/ha at 60 DAS respectively. Tghe application of SCU significantly highest number of tillers (8.55) at 60 DAS respectively.

Table-3 showed nitrogen significantly influenced the grain and straw yield of rice. The highest level of nitrogen 150 N kg/ha registered significantly highest (72. 58 q/ha) grain yield of rice over 100 Kg N/ha (68.73 q/ha) 50 kg N/ha (66.26 q/ha) and under control 42.24 q/ha respectively. Slow release fertilizers significantly affected grain yield per plant. Application of SCU obtained significantly highest (71.89 q/ha) grain yield over NCU (68.71 q/ha) and prilled urea (66.97 q/ha) respectively.

Table-4 Application of 150 kg N/has significantly highest straw yield (86.30 q/ha) over 100 kg N/ha (82.63 q/ha and 56 kg N/ha (75.79 q/ha) respectively. The SCU significantly highest (82.69 q/ha) straw yield over NCU (78.93 q/ha and PU 76.08 q/ha) respectively.

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