



STUDIES ON APPLICATION OF DIFFERENT SOURCES OF NITROGEN TO EVALUATE THE YIELD OF WHEAT

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Abstract

A field experiment was in farmers field of Hoshangabad district at five location to evaluate the effect of Neem coated urea (NCU) on yield of wheat during *Rabi* season. The results revealed that the maximum grain yield 42.40 q/ha was recorded in T_4 (100% N through NCU), followed by T_3 (100% N through urea) 37.37 q/ha and T_2 (80% N through NCU), 35.36 Q/ha over farmer practice, which has recorded minimum grain yield 34.77q/ha. The percent increase in yield was recorded 24.52% in T_4 , 9.75% in T_3 , 3.84% in T_2 and 2.09% in T_1 , over farmer practice.

Key words : Wheat, neem coated urea and urea.

Introduction

Nitrogen is extremely dynamic in soil always changing or moving. Hardly, 30-40% of applied N is actually utilized by the crops. There is imperative need to minimize this loss to increase the efficiency of fertilizers inputs to a considerable extent. Nitrification inhibitors of slow release nitrogenous fertilizers may play a dual role by safe guarding environment and increasing fertilizer use efficiency. These materials check the nitrification process and are very slowly soluble in water (Singh and Kumar, 2012).

Permanent manorial experiments provide valuable information on the impact of continuous use of inorganic fertilizers or organic manure alone could not be sustain in crop production. The use of chemical fertilizer in balance form or conjoint use of inorganic fertilizers along with organic manure not only sustain higher levels of productivity, but also improves soil health and hence the nutrient use efficiency (Sing *et al.*, 2008). Earlier importance of use of organic manures and fertilizers was not realized as nutrients removed were very low due to subsistence farming and crop nutrient requirement was easily met through fertilizers application. The present use of high yielding and intensive cultivation changed the scenario-giving rise to the development of integrated nutrient management system comprising of the use of fertilizers alongwith organic manures and slow release

nitrogenous fertilizer lie neem coated urea etc. Keeping this in view, the study was undertaken to evaluate the performance of different sources of nitrogen in wheat.

Materials and Methods

A field experiment was conducted in *rabi* season at five location at Powarkheda, Hoshangabad. Experiment was conducted on fairly uniform in medium black soil having pH 7.3 in RBD with five replications. Wheat variety MP1142 was planted using one lakhs plant/ha with spacing as 30 × 10 cm in 4.4M × 3.5M plot size. Five treatments combinations were T_1 -80% Nitrogen through urea +100% P_2O_5 +100% K_2O (96:60:40 NPK kg/ha), T_2 -80% Nitrogen through NCU + 100% P_2O_5 + 100% K_2O (96:60:40NPK kg/ha), T_3 -100% Nitrogen through urea + 100% P_2O_5 + 100% K_2O (120:60:40 NPK kg/ha), T_4 -100% Nitrogen through NCU + 100% P_2O_5 + 100% K_2O (120:60:40NPK kg/ha) and T_5 - Farmer's practice (control). In all treatments except farmers practice (T_5) basal doses of 60kg P_2O_5 through single super phosphate, 40 kg K_2O through murate of potash and half quantity of N as per treatment through urea/NCU were given and remaining quantity of N was applied in two equal spilt doses at the time of first and second irrigation. In farmers practice treatment (T_5) 23 kg N, 69 kg P_2O_5 and 25 kg K_2O /ha were given as basal dose and rest of 75kg N was applied in two split doses at the time of first and second irrigation.

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Table 1 : The two years (2007-2008) pooled mean of yield of wheat.

S. no.	Treatments	Yield q/ha		
		2007-08	2008-09	Mean
1.	T ₁ - 80% Nitrogen through urea + 100% P ₂ O ₅ + 100% K ₂ O (96:60:40 NPK kg/ha)	33.52	36.02	34.77
2.	T ₂ - 80% Nitrogen through NCU+100% P ₂ O ₅ +100% K ₂ O (96:60:40NPK kg/ha)	34.1	36.61	35.36
3.	T ₃ - 100% Nitrogen through urea +100% P ₂ O ₅ + 100% K ₂ O (120:60:40 NPK kg/ha)	36.12	38.62	37.37
4.	T ₄ - 100% Nitrogen through NCU + 100% P ₂ O ₅ + 100% K ₂ O (120:60:40NPK kg/ha)	41.25	43.55	42.4
5.	T ₅ - Farmer's practice (control)	32.74	35.36	34.05
	S.Em.±	3.42	3.27	
	CD @ 0.01%	7.25	6.94	

Results and Discussion

Fertilizers use efficiency refers to the proportion of applied nutrients recovered by the crops. A recent review of world wide data on nitrogen use efficiency for urea crops reported that single year fertilizer N recovery efficiencies average 65% for corn, 57% for wheat and 46% for rice (Ladha *et al.*, 2005). Data from table 1 shows the two years of pooled mean of yield of wheat. The results revealed that the maximum grain yield 42.40 q/ha was recorded in T₄ (100% N through NCU), followed by T₃ (100% N through urea) 37.37 q/ha and T₂ (80% N through NCU), 35.36 Q/ha, significantly increase in the grain yield due to nitrogen were reported by Pandey *et al.* (2003) over farmer practice, which has recorded minimum grain yield 34.77q/ha. The per cent increase in yield was recorded 24.52% in T₄, 9.75% in T₃, 3.84% in T₂ and 2.09% in T₁, over farmer practice. These results are in conformation with the findings of Katyal *et al.* (2002) and Nag *et al.* (2007). Performance of N- serve treated urea was best with respect to grain and straw yield of paddy as well as test weight of paddy grains (Singh and Kumar, 2011; Prasad, 1979).

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