ECONOMICS OF N FERTILIZER APPLICATION IN WHEAT CULTIVATION

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In the context of the present fertilizer demand and supply position in the country as well as the status of the general cultivator to withstand the high cost of recommended doses of fertilizers, it was necessary to ascertain the most economical as well as effective doses giving maximum benefit cost (B:C) ratio out of the crop growth Though maximum yield potential and net return was achieved out of 100 Kg N and 30 Kg P$_2$O$_5$/ha in wheat considering the factors 33% of the above N dose has given best B:C ratio of 6 44 & 9 25 in respective years as compared to 25%, 50% and the recommended dose. It is, therefore, recommended that under stress conditions of fertilizer supply and the purchasing capacity of the cultivator 33% of the recommended dose should be applied atleast than leaving unfertilized crop.

In India no major has crop achieved as high rate of growth in production as wheat has done. Inspite of some efforts fertilizer consumption in relation to arable lands and population in India remained one of the lowest as compared to that of other countries. Wheat as predominating rabi crop in Rajasthan covers 2069 thousand hectare land with the average yield of 13.03Q/ha. The principal causes of low productivity are poor crop husbandry inadequate as well as lack of fertilizer application. Hence, it has become imperative to strike a point where farmers could be asked to use fertilizers in quantities which is capable of giving highest B:C ratio and permits spread of available fertilizer in relatively larger areas, thus yielding total higher profits. Keeping this in view an experiment was coducted at Govt. Agri. Research Farm Tabiji, Ajmar to find out an optimum nitrogen dose for wheat crop.

MATERIAL AND METHODS

The experiment was carried out for two years from 1981 to 1982. The soils of the experimental plots are loamy sand with 8.2 pH containing 0.02% available nitrogen, 25.5 Kg/ha available P$_2$O$_5$ and 235 Kg/ha available K$_2$O. The average rainfall received during the years of experimentation was 54.7 and 136.30mm. in respective years. The variety Kalyan Sona was used in this experiment. The crop received an uniform dose of 30 Kg P$_2$O$_5$/ha through single superphosphate at sowing and nitrogen was applied in three splits half at sowing, 1/4 at first irrigation and 1/4 at second irrigation through urea. The experiment was laid out in randomized block design with four replications and six treatments. Spacing was 22.5 cm in between two rows.

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RESULTS AND DISCUSSION

The results (Table 1) indicate that the yield differences due to different treatments were significant during both the seasons. During both the years control yielded significantly lower than 100% N, 75% N, 33% N, and 25% N. However, the treatmental effect was on par.

The data also indicated that the highest seed yield was harvested from the treatment 100% N application in both the years. However, considering the cost incurred due to application of the fertilizer it was observed that the highest net income occurred from the increasing levels of nitrogen These results were almost in confirmity with those of Malik (1981) who observed yield increas with increasing levels of nitrogen. Prasad and Prasad (1980) reported economic return with the same level of nitrogen. Though the treatment yielded highest, B:C ratio occured from this treatment after calculating additional income over control and dividing this with fertilizer cost is only 5.24 and 6.97 which is less with 6.44 and 9.25 from that of the dose of 33% N application in 1980-81 and 1981-82 respectively However, the maximum efficiency in terms of grain yield per Kg of applied N was highest between 25 and 33% N levels.

REFERENCES

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Table 1. Effect of various splits of N doses and their economics.

Treatment 100 kg. N and 30 Kg P₂O₅/ha	Grain yield Q/ha		Average cost of treatment Rs.	cost of cultivation. Rs.	Gross Return Rs.		Net Return Rs.		B:C Ratio	
	1980-81	1981-82			1980-81	1981-82	1980-81	1981-82	1980-81	1981-82
100% N	26.67	53.75	500	2500	5608	10,757	3108	8257	4.24	5.97
75%	25.55	51.25	375	2375	5027	10,194	2652	7819	4.43	6.78
50%	22.17	47.50	250	2250	4516	9,120	2266	6870	5.11	6.38
33%	21.42	46.44	166	2166	4223	8,975	2057	6809	6.44	9.25
25%	19.75	41.83	125	2125	3715	8,264	1590	6139	4.81	6.91
Control	15.82	37.50	—	2000	2989	7,275	989	5275	—	—
C. D. at 5%	1.54	2.13								

Cost of N has been taken Rs. 5 Kg/N

Selling rate of wheat for 1980-81 and 1981-82 was calculated with Rs. 140 & Rs. 142 per Q.