



## Effect of Balance Fertilizers application on Yield and Economics of Wheat

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### ABSTRACT

Wheat yield advantage of 20.07 % was obtained under recommended practices over farmers practices, consequently farmers gain additional profit in term of monetary of Rs 7150 and Rs 10248 /ha. This was due to significant increase in yield attributes viz. No. of effective tiller/plant, No. grains/ear, test weight (1000 grains) and yield q/ha 10.5,6.3,2.23 and 20.07 % respectively were recorded under recommended practice as compared to farmers practice. Percentage returns to fertilizers 3.7 to 4.8 % during 2008-2010 which is beneficial in future to farmers and improve their standard of living as per FAI expectation.

**Keywords:** Yield, B: C ratio and percentage return to fertilizers.

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### INTRODUCTION

Wheat is one of the most important cereals crop grown in India, Madhya Pradesh. It is grown in Vindhyan plateau agro climatic zone in soybean -wheat cropping system. The productivity of wheat in the state continues to be quite low on account of several biotic and abiotic stresses besides, unavailability of quality seed of improved varieties (Kumar *et al.*, 2014), imbalance use of fertilizers and seed sowing through broadcast or seed drill (Meena *et al.*, 2013). In such situation demonstration was conducted of balanced dose of fertilizers with improved variety of wheat along with seed cum fertidrill machine on the farmer's field by Krishi Vigyan Kendra against the imbalance use of fertilizers in this zone during 2008-10. Sehora is one of the popular districts for producing quality bread wheat. Total area under wheat crop in the district is about 156480 ha, with the productivity of 2120 kg /ha. But its productivity is quite low as compared to their yield potential of the crop (Kumar, 1997). The important wheat varieties are grown here Lok-1, C- 306, Sujata under limited irrigation or irrigated situation. Fertilizer consumption in rabi season is 95 kg/ha and fertilizer consumption ratio was found 20:15:1 N: P: K kg/ha. This is very low against the recommendation of 100:60:40 N: P: K Kg/ha (irrigated) and 80:40:40N: P: K Kg /ha (Limited Irrigation). Under such circumstances FAI have decided to conduct FLD on 50 farmers of districts Sehora against problems; through IFFCO with technical support of KVK for create awareness and performance of improved variety and technology.

Preliminary survey of farmers field for diagnose to problems of low productivity of wheat crop through discussion and group meeting. After surveyed was found problems low yield of wheat crop due to lack of awareness to improved

technology and variety. A field experiment was conducted on five farmers of each 10 villages for create awareness to improved Variety and technology. Under demonstrations have one acre area with half acre for recommended practices and half acre farmers practice. Collected soil sample for analysis of individual demonstration plot to work out nutrient requirement and applied fertilizer on the basis of soil test value in half acre area of recommended practices. The front line demonstration was laid out RBD design. The study have indicated that the replacement of existing variety and imbalance use of fertilizer of wheat crop by improved variety GW-322, GW-273 and MP-1142 and balance use of fertilizers as per soil test value (10:26:26N:P:K) 50 kg NPK + 50 kg urea+2.5 kg Zinc sulphate /half acre and seed treated with *Azotobactore* and PSB @ 5 g /kg seeds). Full dose of NPK applied in field at the time of sowing. And remain dose of nitrogen through urea broad cast in wheat crop as equal two split application at standing crop. Data were collected from both the demonstration and farmers practices with the help of personal contact and observations on yield and yield component was also recorded at the physiological maturity and threshing time. The on farm primary data was analyzed by percentage return to fertilizers in term of yield and Fertilizers use efficiency on economically was calculated according to (Baligar *et al.*, 2001).

The mean of all yield attributes of both years viz No. of effective tillers/plant, No. of grains/ ears, test weight (1000 grains) were found 6.3 -7.07, 36.7-40.5&.36.8-39.7% respectively under demonstration as compared to farmer practices (5.8- 6.24, 34.1- 38.6 and 35.5-39.7) (Table 1). The enhancement in yield of wheat 20.29 % was recorded in recommended practices over farmers practice. Due to balance dose of fertilizer, because its dose play vital role in photosynthesis and proper uptake of nutrient as per crop demand. Its consequently formation of healthy plant which

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ultimately increase yield and their attributes resulted increased grain and straw yield of wheat these findings are in agreement with those of Dubey and Sharma 1996,

Chitdeshwari and Poongathi 2004, Aulakh and Malhi 2005, Behera *et al.* 2007.

**Table 1:** Effect of balance dose of fertilizers on yield and yield attributes of wheat crop

Yield attributes	2008-09			2009-10		
	RP	FP	Increase in %	RP	FP	Increase in %
No. of effective tillers/plant	6.34	5.88	7.8	7.07	6.24	13.30
No. of grains /ear	36.7	34.1	7.6	40.5	38.6	4.92
Test weight(g)	36.80	35.5	3.66	40.01	39.7	0.80
Yield (q/ha)	38.53	32.03	20.29	51.55	43.01	19.85

RP-Recommended practice FP-Farmer practices

The economic impact as additional cost of both year 1925 to 2150 Rs/ha and additional income from its cost 7150 to 10248 Rs/ha was found respectively under recommended practices (Table 2) during 2008-2010 which indicate the directly response of balance dose of fertilizers. Percentage return to fertilizers was noted 3.7% and 4.8 % under demonstration over to farmers practices. It is directly related to increase fertilizer use efficiency based on economically was found under recommended dose of NPK along with improved varieties leads to improvement in grain yield and consequently the higher nutrients use efficiency by Sharma

**Table 2:** Effect of balance dose of fertilizers on economics of wheat crop

Additional cost (Rs./ha )	1925.0 -2150.0
Additional Yield (q /ha )	6.5 -8.54
Additional Income (Rs ./ha)	7150.0 -10248.0
Percentage return to fertilizers	3.7 to 4.8 - %

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2002, Singh and Agarwal 2005. Adoption of technology has been wide spread in selected as well as cluster villages. In the selected villages (10) spread was evaluated in the year 2008-10 and it was found an extent of nine times. The data collected from MP Agro, Sehore revealed that the sale of seed cum fertilizer drill machine increased from 11 no. In 2008-09 to 98 no. in the year 2009-10. It indicates to more area covered by line sowing with placing the fertilizers of appropriate site which help improve fertilizers use efficiency consequently more percentage returns to fertilizers and yield.

Concerted efforts made by KVK and IFFCO on enhancement of productivity of wheat crop through increasing fertilizer use efficiency in the district found very effective. By adopting the technology farmers got more economic return & had been a spread to other farmers in the district. The KrishiVigyan Kendra still bears the responsibility to provide technical knowledge to farmers, Extension worker of the line departments, NGOs and private institutions through its technical manpower & available resources

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