



Front Line Demonstrations of Different Crop Management Practices in Malwa Region of Madhya Pradesh

KEYWORDS

Garlic, Management, Nutrients, Soybean, Weed, Wheat

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ABSTRACT The front line demonstrations (FLD) were conducted in the selected village Udpura District Mandsaur (MP) on soybean, wheat and garlic crops at the selected farmer's fields during the Kharif and Rabi seasons of 2008-09 involving farmers with their resources as active participants. The results revealed that sulphur application significantly increased the yield of soybean as compared with no application of sulphur. There was 15.69 per cent increase in seed yield compared with control (farmer's practice). Application of quizalofop butyl 50 g ai/ha at 20 DAS + one hand weeding at 35 DAS in soybean significantly increased the yield of soybean as compared to farmers practice i.e. 2 Hand weeding. There was 19.01 per cent increase in seed yield than control (farmer's practice). During rabi 2008-09, application of 10 t FYM + 120 kg N + 60 kg P₂O₅ + 40 kg K₂O + 5 kg Zn/ha significantly increased the yield of wheat as compared with no use of balanced application of fertilizer. There was 25.49 per cent increase in grain yield than control (farmer's practice). The application of 2.5 t vermi compost + 100 kg N + 50 kg P₂O₅ + 50 kg K₂O/ha significantly increased the yield of garlic as compared with no use of balanced application of fertilizer. There was 36.49 per cent increase in bulb yield of garlic than control (farmer's practice).

Materials and Methods

The participatory verification and front line demonstrations were conducted on the farmer's field in the selected village Udpura District Mandsaur (MP). The demonstrations on soybean, wheat and garlic crops were conducted at the selected farmer's fields during the Kharif and Rabi seasons of 2008-09 involving farmers with their resources as active participants. In all, two treatments viz. T-1 Farmer's practice and T-2 Improved practice in each crop were tested on farmer's field under their own management and resources. The critical input was provided by KVK. These treatments were replicated to 10 farmer's fields. During Kharif season 2008 average rainfall was 668 mm in 29 rainy days while it was only 19 mm in 2 rainy days during Rabi season of 2008-09. The economics of treatments was calculated on the basis of prevailing market of produce. The soil was clay loam in texture with available nitrogen, phosphorus and potassium contents given in table.

Table 1: Details of field operations and nutrient status of

soil at farmer's fields (averages)

Crop	Season	Status of soil (Kg/ha)			Previous crop	Sowing date	Harvest date
		N	P	K			
Soybean	Kharif, 2008	218.2	15.35	490.7	Wheat	12-14/06/08	20-24/09/08
Soybean	Kharif, 2008	220.8	16.41	458.0	Wheat	12-14/06/08	20-24/09/08
Wheat	Rabi, 2008-09	225.6	15.62	508.4	Soybean	05-07/11/08	14-18/03/09
Garlic	Rabi, 2008-09	200.2	13.52	492.8	Soybean	15-18/10/08	15-21/03/09

Result and Discussion

Sulphur application in soybean

The sulphur application significantly increased the yield of soybean as compared with no application of sulphur. There was 15.69 per cent increase in seed yield than control (farmer's practice). The significant response of sulphur on yield of soybean was due to the fact that sulphur is constitute of amino acids and thus vital for protein and oil production. Sulphur

increased photosynthates and their subsequent translocation to storage organ resulted in better filling of seeds. The favourable effect of sulphur on oil seed crops were also reported by Scherer (2001) and Ganeshamurthy and Sammi Reddy (2001). Results revealed that grain yield of soybean is highly associated with seeds per pod, 1000 seed weight, primary branches per plant, harvest index and pods per plant.

Table 2: Nutrient and weed management in soybean (averages of 10 farmers)

Practices	No. of farmer	Treatment	Plant height (cm)	Pods / plant	Seeds / pod	Test weight (g)	Grain Yield (q/ha)	Net return (Rs/ha)	B:C Ratio
Sulphur application in soybean (Glycine max L.)	10	No use of sulphur	69.7	18.9	2.42	142.5	11.50	7748	1.67
		Application of 20 kg S/ha	82.9	24.0	2.84	143.6	14.32	11699	1.94
Management of weeds in soybean (Glycine max L.)	10	2 Hand weeding	66.6	21.8	2.30	146.8	11.78	8219	1.71
		Quizalofop butyl 50 g ai/ha at 20 DAS + one hand weeding at 35 DAS	79.8	24.4	2.82	148.1	14.02	10794	1.84

Management of weeds in soybean

Application of quizalofop butyl 50 g ai/ha at 20 DAS + one hand weeding at 35 DAS in soybean significantly increased the yield of soybean as compared to farmers practice i.e. 2 Hand weeding. There was 19.01 per cent increase in seed yield than control (farmer's practice). The significant response of quizalofop butyl 50 g ai/ha at 20 DAS + one hand weeding at 35 DAS on yield of soybean was due to the fact that growth and population of weed is significantly reduced. This results in higher vegetative growth of soybean during early growth period, ultimately higher pods per plant and seeds per pod with higher test weight resulted into higher seed yield of soybean. In Soybean, Application of quizalofop herbicide decreased the number of weeds during early growth period and also decreased the number of labours to be engaged for manual weeding at 40 – 45 DAS. The favourable effect on yield of soybean and weed control in soybean crop were also reported by Tracy *et al.* (1989)

K₂O + 5 kg Zn/ha significantly increased the yield of wheat as compared with no use of balanced application of fertilizer. There was 25.49 per cent increase in grain yield than control (farmer's practice). The significant response of balanced dose of fertilizer i.e. 10 t FYM + 120 kg N + 60 kg P₂O₅ + 40 kg K₂O + 5 kg Zn/ha on yield of wheat was due to the fact that balance use of fertilizer with organic manures increased the yield and increased the availability of moisture for better growth. Application of potassium with nitrogen and phosphorus maintained a proper supply of nutrient as well as balanced the water potential of cell thereby, reduced the competition for photosynthates during flowering and grain formation stages and resulted in higher number of effective tillers per metre row length. The significantly higher test weight is also recorded due to higher uptake of potassium, nitrogen and other nutrients. The favourable effect of balanced nutrition on wheat crop was also reported by Nehra *et al* (2001) and Dadhania *et al* (2003).

Integrated nutrient management in wheat

The application of 10 t FYM + 120 kg N + 60 kg P₂O₅ + 40 kg

Table 3: Integrated nutrient management in wheat (averages of 10 farmers)

Practices	No. of farmers	Treatments	Plant height (cm)	Effective tillers / plant	Test weight (g)	Grain Yield (q/ha)	Net return (Rs/ha)	B:C Ratio
Integrated nutrient management in wheat	10	No use of balanced fertilizer (80 kg N + 46 kg P ₂ O ₅ /ha	92.2	2.56	43.9	28.72	19578	2.46
		10 t FYM + 120 kg N + 60 kg P ₂ O ₅ + 40 kg K ₂ O + 5 kg Zn/ha	99.2	3.22	45.8	36.04	26796	2.83

Integrated nutrient management in garlic

The application of 2.5 t vermi compost + 100 kg N + 50 kg P₂O₅ + 50 kg K₂O/ha significantly increased the yield of garlic as compared with no use of balanced application of fertilizer. There was 36.49 per cent increase in bulb yield of garlic than control (farmer's practice). The significant response of balanced dose of fertilizer i.e. 2.5 t vermi compost + 100 kg N + 50 kg P₂O₅ + 50 kg K₂O/ha on yield of garlic was due to the fact that balance use of fertilizer with organic manures increased the size of bulb and number of cloves per bulb

ultimately yield of garlic. Balanced nutrition is important in promoting rapid vegetative growth like plant height, number of leaves/plant and chlorophyll content of leaves, thereby increasing the sink size in terms of bulb size. Thus, vigorous growth in garlic means production of more leaves, which helped in the synthesis of more photosynthates and thus resulting in increased accumulation of carbohydrates and other metabolites, which ultimately determined the size and weight of bulbs. The favourable effect of balanced nutrition on garlic crop was also reported by Yadav (2003).

Table 4: Integrated nutrient management in garlic (averages of 10 farmers)

Practices	No. of farmers	Treatments	Plant height (cm)	Cloves / Bulb	Dry weight / Bulb (g)	Bulb Yield (q/ha)	Net return (Rs/ha)	B:C Ratio
Integrated nutrient management in garlic	10	No use of balanced fertilizer	46.2	18.4	17.2	59.14	101850	3.21
		2.5 t vermi compost + 100 kg N + 50 kg P ₂ O ₅ + 50 kg K ₂ O/ha	57.0	20.0	18.4	80.72	149800	3.88

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