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Impact of High Yielding Variety of Mustard (NDR-8501) and Balance Dose of Chemical Fertilizer on Cost of Production and Net Income of Farmer

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Abstract Mustard is one of the most important oilseed crop in India which plays a major role in income generation of small and marginal farmer of Ghazipur district. The present study was carried out in randomly selected village in Ghazipur district of Uttar Pradesh during 2012–2016 farmers scientist collaborations at farmers field using improved variety NDR-8501 along with balanced application of fertilizers N:P:K:S @ 120:40:40:30 kg/ha. On economic analysis of data its found that net return and B:C ratio is maximum during 2016-17, 54795 Rs/ha and 2.97 respectably and minimum during 2013-14 Rs 36568 Rs/ha and 2.50 respectably. Results indicates this crop are the more profitable from other crops because cost of cultivation is low in comparison to other crop and gets more net income from others. Study concludes that in future farmers has to provides all the package of practices properly and timely to insure better yield with good quality with appropriate cost of cultivations.

Keywords NDR-8501, Cost benefit ratio (B:C), Income.

Introduction

Mustard is one of the most important oilseed crop in India. Which plays a major role in income generation of small and marginal farmer of Ghazipur district. The oil obtained main cooking medium in our country, which cannot be easily replaced by any other oil. The seed and oil are used as a condiment in the preparation of pickles and for curries and vegetables ae well as its cake is used in preparation of balance ration to the animals as a source of fat and protein. The leaves of young plants are used a green vegetable use of mustard oil for industrial purposes is rather limited. This crop requires relatively cool temperatures for satisfactory growth. In India, grown in the *rabi* sea-

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Table 1. Productivity of mustard crop of demonstration and farmers practice.

Year	Thematic area	Technology demonstrated	Variety/ crop	No. of demo	Area (ha)	Yield (q/ha) Demo High	Demo Low	Average	Check	% Increase in yield
2012-13	Soil fertility manage-	HYV NDR-8501+ (N:P:K::S 120:	NDR-8501	15	5.00	22.5	16.8	20.4	12.40	64.52
2013-14	ment	40:40:30) kg/ha		16	5.00	20.25	16.75	19.03	12.24	55.39
2014-15				15	5.00	21.50	10.8	19.38	12.4	56.29
2015-16				20	5.00	32.00	12.90	23.60	14.93	58.07
2016-17				20	5.00	20.6	19.2	19.85	14.41	37.75

son from September to October, successfully grown in light to loam soils, light soil area also good for this. A fine seed bed is required to ensure good germination. Nitrogen application in this crop in to three equal splits increase the seed, and biological yield (Verma et al. 2015). Water and fertilizers are scare and costly commodities and its application is a must to achieve higher benefits under limited condition. Oil seed crops require more of sulfur for their oil and protein synthesis, indicated considerable increase in the yield and its quality (Verma et al. 2015). Sowing the crop at adequate time is an important noncash input for boosting crop productivity.

Materials and Methods

The present study was carried out in randomly selected village in Ghazipur district during 2012-2016 in *rabi* season with farmers scientist collaborations at farmers field.Farmer of each category i.e. from small, medium and large size has been selected randomly. Suggest NDR-8501 variety for good response with the seed rate 4–6.00 kg/ha along with timely and balanced application of fertilizers N:P:K:S @ 120:40:40:30 kg/ha. The crop was taken on the farmers field during first fort night of October. All agronomical practice other than the interventions applied in demonstrated plot. As a control those plots were kept were farmers doing there old practice i.e. old variety, broadcasting methods, imbalance use of fertilizers no weeding and use of plant protection practices. To manage the assessed problem improved and recommended technologies were followed as intervention during the course of frontline demonstration program. The yield data were collected from the selected farmers field analyzed.

$$\text{Percent increase in yield} = \frac{\text{Demonstration yield} - \text{Farmers yield} * 100}{\text{Farmers yield}}$$

Results and Discussion

Data presented in Table 1 reveal that gap in package of practices not being adopted considered as critical inputs. There were partial gap over existing in regards of seed rate, fertilizer dose and plant protection measure were as complete measured in quality of seed, seed treatment, line sowing and weed control. Balai et al. (2012) also reported technological gap between improved practice and existing practice in mustard yield obtain during subsequent five years are presented in Table 2 indicate could be increased by 37.75 to 64.52% with use of technical interventions over existing farmer practice. Result also revealed that highest yield recorded during year that is 23.60 q/ha and lowest yield recorded during year 2013-14 that is 19.03 compare to check plot yield. Highest yield gap observed during 2015-16 is 8.67 q/ha while lowest gap noted during 2016-17 is 5.44 q/ha, its indicate during subsequent year as farmers improved there practices there demo yield increases and also improve there

Table 2. Economic analysis of mustard demonstration and check/farmers practice.

Different year economics for crop mustard	Economics of demonstration (Rs/ha)				Economics of check (Rs/ha)			
	Gross cost	Gross return	Net return	BCR (R/C)	Gross cost	Gross return	Net return	BCR (R/C)
2012-13	22049	65280	43231	2.96	17672	39680	22008	2.24
2013-14	24328	60896	36568	2.50	19991	39168	19177	1.96
2014-15	24808	67830	43022	2.73	20460	43400	22940	2.12
2015-16	27805	82600	54795	2.97	22450	49665	27215	2.21
2016-17	27902	75430	47528	2.70	23350	54758	31408	2.34

farm indicate that their check yield also increases. This type of findings also observed by Balai et al. (2012) in district Rajsamand of Rajasthan. During economic analysis its found that net and B:C ratio is maximum during 2016-17, 54795 Rs/ha and 2.97 respectably and during 2013-14 Rs 36568 Rs/ha and 2.50 respectably. Its also observed that in check plot ratio increases during subsequent years indicate best technological dissemination farmers about improved variety of mustard. These results also confirm by front line demonstration of mustard crop by Dayanand et al. (2012).

Conclusion

Rapeseed mustard crop offers immense scope for further yield far as India is concerned. This stems from the fact that the existing yield at the national is much less than the demonstrated yield level possible with the existing technologies also due to the fact that further yield enhancement possibilities exist in the form of unexplored and scantily researched areas in crop production and crop improvement in *Brassica* in the country. This crop are the more profitable from other crops because cost cultivation is low in comparison to other crop and gets more net income from others. Fertilizers and irrigation application patiently time to time resulted high yield and more income compared to other crops. Selection of variety on area basis has produced more responsiveness in heavy yield and better quality. Finally, the study concludes that in farmers has to provides all the package of practices properly and timely to insure better with good quality with appropriate cost of cultivations.

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