



## Research Article

# Evaluation on the Role of Different Production Factor on the Yield of Rapeseed

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### Abstract

Rapeseed and mustard are third most important edible oilseeds of the world after soybean and palm oil. Among the factor the choice of fertilizer is also one of the major factors as rape seed is very much effective in up taking the nutrient from the soil. With the objective of finding the judicious use of the combination of chemical fertilizer and other organic fertilizer, experiment was conducted in Oilseed Research program, NARC. The experiment was carried out in randomized complete block design with seven treatments replicated thrice. The plot size was 15 m<sup>2</sup> with plant sown continuously in rows spaced 30 cm apart. Highest yield (396 kg/ha) was observed in treatment no. 7 (125% RDF) Lack of knowledge in the field of the optimum fertilizers use is hindrance in the soil health as well a crop productivity. Best combination of fertilizer and their optimum used can enrich the soil health as well as reduce the input cost and increase the yield.

## Introduction

Rapeseed and mustard are third most important edible oilseeds of the world after soybean and palm oil. The rapeseed and mustard seed contain 40-45% oil, 24% protein. Rapeseed and mustard oil is nutritionally far superior to any other vegetable oils, because of sufficiently low level of saturated fatty acids (7%), moderate level of poly unsaturated fatty acids linoleic (omega-6) and linolenic (omega-3) which is highly balanced (12:10) and higher amount of monounsaturated fatty acids like oleic and erucic acid (70%). Rapeseed and mustard oil are safe for healthy

people as well as for people with weak heart and those suffering from other chronic diseases. During FY 2019/20 area under rapeseed was 196121 ha with production 214055 mt and productivity of 1.091mt/ha, area of mustard was 10076 ha with production 9454 mt and productivity 0.938 mt /ha; and area under sarsoon was 21182 ha with production 19753 mt and productivity of 0.933 /ha, (MoALD, 2021).

There are many factors that influences in the yield of the crop. Among the factor the choice of fertilizer is also one of the major factors as rape seed is very much effective in up

taking the nutrient from the soil. The judicious use of the combination of chemical fertilizer and other organic fertilizer can be economic and ecofriendly step to obtain the best result. Positive reports of application of biofertilizer in combination of chemical fertilizer on yield are shown in mustard, (Sujena and Lakshminara, 2001) which are mainly attributed to enhancement of the uptake of the NO<sub>3</sub>, NH<sub>4</sub>, K and Fe. Lack of attention in the selection of the nutrient fertilizer has created direct effect in the yield of rapeseed. Hence the necessity of the best combination of the fertilizer plays a pivotal role in the yield and yield attributing factor.

In context to Nepal, Rapeseed has been important crops as a leafy vegetable and for the oil and even has ritual values. In addition, rapeseed is considered important as playing a significant role in meeting vitamins, minerals, fiber and protein requirements as well as assist as a steady source of income generation for farmers (Torrefiel ,2006; Gonzales et al., 2015). As it has been like a stipend crop in Asia countries and is growing as cash crop. So, farmers are intent to increase the yield of this crops so as to increase the income from the crops (Gonzales et al., 2015). With he objectives of increasing the yield of the crops, Fertilizers are indispensable to attain commercial vegetable production and most common cultural practices in the globe. Masarirambi et al., 2010 reported that the commercial and subsistence farming has been and is still bank on the use of inorganic fertilizers. Among inorganic fertilizers, nitrogenous fertilizers are the most commonly used by the farmers. In addition to supply nutrients, it also able to improve the physical, chemical and biological properties of the soil which could considerably boost the growth, development and yield of plants (Allen & Morgan, 1972).

## Method and Methodology

An experiment on evaluation of contribution of different production factors in the rapeseed yield was conducted at ORP, Nawalpur, Sarlahi. The experiment was carried out in randomized complete block design with seven treatments replicated thrice. The plot size was 15 m<sup>2</sup> with plant sown continuously in rows spaced 30 cm apart. The agronomic practice for cultivation was carried out as per ORP guidelines. Observed data was recorded for the parameters plant height (cm), siliqua /plant and yield (kg/ha). These recorded data were analyzed using statistical software Genstat discovery. The 7 treatment are shown in Table 1.

## Result

In the result, 125% of Recommended dose of fertilizer ( 75:50:25 NPK/ha) was found to produce high plant height ( 99.5 cm) among other which was followed by RDF+ sulphur ( 20 kg/ha) ( 64.5cm)and RDF+5 tonnes of poultry manure(44.3 cm). Other treatments were not able to produce the plant more than 25 cm. IN case of Siliqua per plant, treatments were found to be non-significant. However high number of Siliqua was found in RDF \_ 5 tons of Poultry manure (21.5) followed by RDF +sulphur -20kg/ha (20.5) followed by RDF+10 tons of FYM/ha ( 17.1). Other treatments were not able to produce siliqua more than 17. The Grain yield was found to be significant among the treatments. Highest yield ( 396 kg/ha) was observed in treatment no. 7 ( 125% RDF ) followed by RDF+ Sulphur- 20 kg/ha ( 386 kg/ha) followed by farmer practice (353 kg/ha). Other treatments were not able to produce the yield above 300 kg/ha. The result is shown in Table 2.

**Table 1:** Yield parameter for contribution of production factors in the yield of rapeseed at ORP, Nawalpur

En	Treatment
1	Farmers Practice (2kg DAP + 7-8 doka dung /kattha)
2	Chemical fertilizer only (60:40:20 NPK kg /ha)
3	RDF + 10 tons FYM /ha
4	RDF + 5 tonnes of poultry manure
5	RDF +5 tons press mud /ha
6	RDF + sulphur 20 Kg/ha)
7	125% RDF (75:50:25 kg NPK/ha)

Table 2: Yield parameter for contribution of production factors in the yield of rapeseed at ORP, Nawalpur

En	Treatment	Pht (Cm)	Siliqua / Plant	GY(Kg/ha)
1	Farmers Practice (2kg DAP + 7-8 doka dung /kattha)	19.4	9.7	353
2	Chemical fertilizer only (60:40:20 NPK kg /ha)	20.6	11.1	199
3	RDF + 10 tons FYM /ha	18.7	17.1	270
4	RDF + 5 tonnes of poultry manure	44.3	21.5	384
5	RDF +5 tons press mud /ha	18.7	13	271
6	RDF + sulphur 20 Kg/ha)	64.5	20.5	386
7	125% RDF (75:50:25 kg NPK/ha)	99.5	16.1	396
	Gm	40.8	15.6	323
	F test ( 0.05)	NS	NS	*
	LSD	62	18.5	102.2
	CV%	11.2	6.02	9.05

## Conclusion

Yield and yield attributing parameters are very much important in case of rapeseed as it is directly linked with the income of producers. Lack of knowledge in the field of the optimum fertilizers use is hindrance in the soil health as well as crop productivity. Best combination of fertilizer and their optimum used can enrich the soil health as well as reduce the input cost and increase the yield. Recommended dose (60:40:20 NPK kg /ha) and RDF+ Sulphur-20 kg/ha can be effective for increasing the yield of the rapeseed.

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## Authors' Contribution

All authors contributed equally at all stages of research, manuscript preparation, and finalization of the manuscript. Final form of manuscript was approved by all authors.

## Conflict of Interest

The authors declare that there is no conflict of interest with present publication.

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