The Journal of Rural and Agricultural Research Vol. 20 No. 1, 99-100 (2020)
Received October 2019; Acceptance March 2020

Field evaluation of different mustard varieties under rainfed conditions of Agra

ROHIT
All India Coordinated Research Project for Dryland Agriculture, R.B.S. College, Bichpuri, Agra

Abstract

Brassica crops are the important source of edible oil in India, but traditional low yielding varieties should be replaced with the improved varieties to meet edible oil requirement of the country domestically. A field study was conducted during rabi *2014-15 to 2018-19 to test the yield response of new varieties of mustard at NICRA village Nagla Dulhe Khan, Agra. Nine varieties of mustard viz. Bio 902, Urvashi, Laxmi, Rohini, NRCDR-2, NRCBH-101, RH-406, RH-749 and DRMRIJ-31 (Giriraj) along with check (Kanti) were sown during first fortnight of November. Pooled data shows that higher seed yield (2187 kg/ha), higher net returns(76561 Rs/ha) and higher B:C ratio (5.62) were recorded with Giriraj as compared to other varieties.*

Key words: Mustard, Seed yield, Net returns, B:C ratio, Rainfed

Introduction

Mustard (Brassica spp.) is one of the most important oil crops of the world. Oil of plant origin constitute important component of human diet, ranking third after cereals & animal products and are nutritionally superior to animal oil (Alam et al., 2015). About 13.2 percent oil of the annual world edible oil supply comes from this crop (FAO, 2007). Amongst important annual oilseed crops grown in the country, rapeseed and mustard occupy the second place in terms of average production after groundnut and contribute about 25% to the oilseed production of the country. The country has been facing the problem of shortage of oils coupled with continuous increase in their prices. Improved varieties have been evolved, which can yield better with the use of high inputs of fertilizers and irrigation with other agronomic management practices. Generally, mustard is grown under rainfed conditions on receding soil moisture during *rabi* season. There is wide fluctuation in production owing to the vagaries of monsoon. Mustard is generally grown on marginal lands with poor fertility status. Hence, they also suffer from nutrients stress. Despite the high quality of oil and also its wide adaptability for varied agro-climatic conditions, the area, production and yield of mustard in India have been fluctuating due to various biotic and abiotic stresses coupled with India's domestic price support programme. Since the resistance to different diseases are not present in cultivated varieties of Brassica so, efforts are made to select less susceptible varieties. The seed yield of mustard can be increased by identifying and introducing of high yielding varieties having tolerance to different diseases. The replacement of traditional low yielding varieties with the improved varieties is very necessary to meet edible oil requirement of the country domestically. In the present study improved varieties of mustard were evaluated at NICRA village Nagla Dulhe Khan, Agra to compare their yield potential with the objective to check their suitability under the existing climatic conditions of Agra district.

Materials and Methods

A field study was conducted to test the yield response of different Brassica varieties during *rabi* 2014-15 to 2018-19 at NICRA village Nagla Dulhe Khan, Agra. The area is characterized by semi-arid type of climate with hot and dry early summers from April- June followed by hot and humid period during July- September and cold winters during December-January. Winter experiences frequent frosty spells especially during December and January and minimum temperature records as low as 0.2^0C. The annual rainfall of the area is 665.0mm, most of which is received during July to September. Nine varieties of mustard viz. Bio 902, Urvashi, Laxmi, Rohini, NRCDR-2, NRCBH-101, RH-406, RH-749 and DRMRIJ-31 (Giriraj) along with check (Kanti) were sown during first fortnight of November in all the

Table 1: Seed yield & Economics of different mustard varieties under rainfed conditions

Variety	Yield (kg/ha)					Mean Yield (kg/ha)	Yield increased in % (Mean)	Net income (Rs/ha)(Mean)	B:C ratio (Mean)
	2014-15	2015-16	2016-17	2017-18	2018-19				
Kanti	1740	1680	910	890	850	1214	-	33870	3.44
Bio-902	2095	2170	1560	-	-	1942	59.97	61672	5.35
Urvashi	1965	2057	1470	890	923	1218	0.33	43638	3.95
Laxmi	-	1747	1385	-	-	1566	29.00	47405	4.31
Rohini		1800	1440	840	800	1220	0.49	37295	3.69
NRCDR-2	-	-	1947	965	1755	1556	28.17	48598	4.37
NRCBH-101	1899	1520	915	1060	1930	1465	20.68	47058	4.11
RH-749	-	-	2052	2075	2225	2117	74.38	66095	4.98
RH-406	-	-	1902	2051	2115	2023	66.64	63096	4.77
DRMRIJ-31 (Giriraj)	-	-	2142	2114	2305	2187	80.15	76561	5.62

seasons. Soil of experimental area was loamy sand in nature. The soil was low in available N & P and moderate to low in available K. The crop was raised as per recommended agronomic practices for cultivation of mustard. A basal dose of 112.5 kg urea and 187.5 kg SSP per hectare were applied at the time of sowing and remaining 112.5 kg urea per hectare at first irrigation. The crop was sown in rows at 30 cm apart.

Results and Discussion

The findings of the present study as well as relevant discussion have been presented below :

The farmers' of NICRA village were using varieties that were not fit for rainfed areas. They were not aware about improved cultivars. Most of them are using desi or local varieties having lesser yield. Hence, it was needed to demonstrate advance cultivars for rainfed conditions which have better yield and agronomic characters. For this purpose the demonstration of improved varieties recommended for the domain region of different crops were conducted at NICRA village following the recommended package of practices for *rabi* crops.

The pooled average of five years indicate that variety DRMRIJ-31 (Giriraj) gave higher yield (2187 kg/ha) as compared to local check and other varieties. Similarly, higher net returns (76561 Rs/ha) was obtained from DRMRIJ-31 as compared to local check (Kanti). B:C ratio was also registered higher with DRMRIJ-31 (5.62) as compared to check (3.44). The differences in the yield of the tested varieties were due to best performance of varieties under the existing agro-climatic condition and genetic potential of varieties (Yousaf *et al*., 2013). Sharma *et al* (2016) suggested that in oil seed crops per unit area productivity could be increased by adopting recommended practices along with high yielding varieties under rainfed conditions. Vijay *et al* (2014) suggested that major constraint of low productivity of crops is non adopting of improved technologies by the farmers.

References

Alam, M.J.; Ahmed, K.S.; Mollah, M.R.A.; Tareq, M.Z. and Alam, J. (2015). Effect of planting dates on the Yield of Mustard Seed. Int. J. Applied Sci. Biotech., 3(4): 651-654.

FAO (2007). FAO Production Year Book, Rome, Italy, 61, p.64

Sharma, V.; Kumar, V.; Sharma, S.C.; Singh, S. and Khokhar, A. (2016). Popularization of improved production technologies in oil seed crops through front line demonstrations under rainfed conditions in Punjab. Indian J. Ecol.,43(1):58-64.

Vijay, K.; Sharma, V., and Sharma, S.C. (2014). Impact of improved technologies on productivity enhancement of sesame(*Sesamum indicum*). J. Dryland Agric.Res.Dev.,29(2):41-44.

Yousuf, M.M.; Hussain, M.; Hussain, N.; Shah, M.J.; Ahmed, B. and Ghazali, H.M.Z.U. (2013). Yield performance of different genotypes of mustard under agro- climatic conditions of Bahawalpur, Pakistan. Internat. J. Sci. Res., 4(1): 1353-1356.