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Varietal Evaluation of Different Genotypes of Linseed for Yield Performance in Aurangabad District of Bihar

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Authors' contributions

This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.

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Short Research Article

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ABSTRACT

Linseed is locally known as Tissi, common Flax and Alsi. It belongs to family Linaceae. It is a rabi oil seed crop. It has medicinal and industrial importance. It is rich source of essential fatty acid (alfa-linolenic acid) known as Omega-3 fatty acid, antioxidants and fibre. The present study was carried out in KVK Aurangabad district of Bihar during the year 2017-2018 on the varietal evaluation of different genotypes of linseed for yield performance. The experiment was laid out at the five farmers field. Four linseed varieties (T_1-Ruchi, T_2-Sabour Tissi, T_3-BRLS-102 and T_4-Shekhar) were

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evaluated and screened for their agronomic performance, Net return, B:C ratio and correlation amongst yield and its contributing traits were calculated. Among the four genotypes, the no. of seeds per plant was found to be maximum BRLS-102 (8.35) in followed by Shekhar (8.25) and Sabour Tissi-1 (7.46) which is at par with Ruchi (6.0). The average yield performance of BRLS-102, Sabour Tissi-1, Shekhar and Ruchi was (10.61q/h), (10.08 q/h), (9.58q/h) and (9.10 q/h) respectively. Among the four genotypes of linseed, the net return and B:C ratio has also found to be maximum with BRLS-102 (24,150), (2.32) followed by Sabour Tissi-1 (22,030), (2.20): Shekhar (20,030), (2.09) and which is at par with the genotype Ruchi (18,110)(1.99).
The new genotypes (BRLS-102) & Sabour Tissi-1 possess the potential to become future varieties for cultivation in Aurangabad district of Bihar.

Keywords: Linseed; yield; Ruchi; Sabour Tissi; BRLS; Shekhar.

1. INTRODUCTION

Linseed (*Linum usitatissimum* L.) is one of the oldest fiber and rabi oilseed crops cultivated since centuries. Linseed is also known as flax, tissi or alsi. It belongs to family Linaceae. Linseed is originated from the Mediterranean centre and Canada is number one producer of the linseed in the world [1]. In India, the average yield of the crop is very low due to its growing under improper agronomic management practices and lack of knowledge among the farming community in selecting the appropriate variety to suit the particular agro-climatic condition. Among the various factors affecting the yield, genetic and environmental factors along with interaction between them play a very important role in deciding the yield of any crop [2].

India ranks first in terms of area under linseed cultivation and third in production in the world. In India, linseed is cultivated in 4.68 lakh hectares and the total linseed production in 1.63 lakh tones (Anonymous 2012). Linseed is considered the most important industrial oilseed crop of India [3]. It is grown either for oil extracted from seed or for fibre from stem. Seed contains oil ranging 34-45%, which contains 9-10% of saturated fatty acid and 20% mono unsaturated fatty acid and more than 70% alfa-linolenic fatty acid. Every part of linseed plant is utilized commercially either directly or after processing most of oil is used in the industry for manufacture of paints, varnishes, inks, soap and a very small fraction of its users for the edible purpose.

In many reasons, farmers fail to undertake timely sowing which results to sorter growth period available to late shown linseed coupled with high temperature and hot winds during reproductive growth period, which leads to forced maturity and ultimately poor grain yield. The screening of suitable linseed variety is very important tool in selecting a suitable variety for yield enhancement. The main objective of this study was to assess the suitable genotype of linseed for yield performance.

2. MATERIALS AND METHODS

The present study was conducted during rabi season of 2017-2018 on the varietal evaluation of different genotypes of linseed for yield performance in Aurangabad district of Bihar. The experiment was laid out at the five farmer's field as well as KVK farm, Aurangabad, Bihar. The experimental material comprised of four linseed varieties (T1-Ruchi, T2-Sabour Tissi-1, T3-BRLS-102 and T4-Shekhar) were evaluated. The seeds were shown by drill method, keeping plant to plant and row to row spacing of 20 and 30 cm respectively. The observations were recorded by labelling normal looking of five plants at random in each replication for all the genotypes.

The experimental crop was well grown and thinning was done to maintain the recommended spacing between the plants. The chemical fertilizers and irrigation were applied as per recommended dose of oilseeds. All the recommended cultural practices were carried out at appropriate time. The data were recorded as per the following parameters -1. Plant height (cm), 2. Number of branches per plant (no.), 3. Numbers of pods per plant (no.), 4. Number of seeds per plants (no.), 5. Average grain yield per hectare (q/ha), 6. Cost of cultivation (Rs./ha), 7. Gross return (Rs./ha), 8. Net return (Rs./ha) and 9. B:C ratio.

3. RESULTS AND DISCUSSION

The obtained data as shown in Table 1 indicated that plant height was found the maximum in Ruchi (56.95 cm) which was followed by BRLS-

Table 1. Effect of different observation of various genotypes of linseed on yield and economics

	Plant height (cm)	Number of branches/ plant (no.)	Number of pods/plant (no.)	Number of seeds/pod (no.)	Average yield (q/ha)	Cost of cultivation (Rs/ha)	Gross return (Rs/ha)	Net return (Rs/ha)	B:C ratio
T1 Ruchi	56.95	5.65	18.0	6.0	9.10	18,290	36,400	18,110	1.99
T2 Sabour Tissi-1	45.30	9.20	53.30	7.46	10.08	18,290	40,320	22,030	2.20
T3 BRLS-102	46.0	6.30	48.25	8.35	10.61	18,290	42,440	24,150	2.32
T4 Shekhar	43.5	5.00	27.07	8.25	9.58	18,290	38,320	20,030	2.09

102 (46.0 cm). A number of branches per plant was obtained maximum in Sabour Tissi-1 (9.20) as compared to other varieties which were followed by BPLS-102(6.30). A number of pod per plant was found in Sabour Tissi-1 (53.30) which was followed by BRLS-102 (48.25). A number of seeds per pod were found the maximum in BRLS-102 (8.35) followed by Shekhar (8.25). The average yield of linseed was obtained maximum in BRLS-102 (10.61 q/ha) followed by Sabour Tissi-1 (10.08 q/ha) and minimum yield was obtained in Ruchi (9.10 q/ha) followed by Shekhar (9.58 q/ha). Cost of cultivation was similar in all four varieties but the gross return was maximum in BRLS-102 (42,440 Rs/ha) followed by Sabour Tissi-1 (40,320 Rs/ha). Net Return and B:C ratio was maximum in BRLS-102 (24,150) and (2.32) respectively and closely followed by Sabour Tissi-1. Net return (22,030) and B:C ratio (2.20).

The main objective in the in the breeding process of linseed is to increase the genetic potential of the main agronomic characteristics, especially of seeds yield and oil yield (Filipovic et al., 2014; Ikanović et al. 2018; [4,5,6]. The cultivar of NS Primus has achieved good yield seeds and good components of seed quality in the year for growth and development of plants. The complex functioning of the external environment caused the increased evapotranspiration, so that at the of June and early July, moisture reserves in the soil were at the margin of harder access to water, so as to be lowered to and below the level of permanent wrangling at the July. The average seed yield was 1.30 t ha-1, while of the oil yield and protein yield in seed was 531.44 kg ha-1 and 291.85 kg ha-1. Based on the obtained results, it is evident that we have a high-yield linseed cultivar at our disposal, table and adaptable for growing conditions in Serbia [4,5].

4. CONCLUSION

On the basis of evaluation of different technological option, it is concluded that farmer can get good production and income by adopting BRLS-102 followed by Sabour Tissi-1. BRLS-102 can be the potential to become the recommended varieties for the linseed cultivation at Aurangabad district of Bihar.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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