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Evaluation of Linseed (*Linum Usitatissimum*) Genotypes for Rainfed Condition At Bilaspur Plain Region of Chhattisgarh



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Abstract

Linseed (*Linum usitatissimum* L.) is an important oilseed and fiber crop in India. A study was conducted for the screening of high yielding linseed entries for Bilaspur district of Chhattisgarh under Initial Varietal Trial (IVT-Rainfed). The experiment was conducted at the research farm of TCB College of Agriculture and Research station, Sarkanda Bilaspur, CG, Indra Gandhi Krishi Vishwavidyalaya Raipur, CG in RBD with three replications consists of 19 entries along with three checks viz. T-397, Sharda, and Padmini tested in plot size of ten sq/m with the nutrient application of 40 kg/ha Nitrogen & 20 kg/ha Phosphorous respectively. The findings revealed that among different genotypes for characters viz. seed yield check variety T-397 recorded highest yield of 11.67 q/ha proves its superiority over all other test entries including two checks Sharda, and Padmini, however test entries NL-261 (11.11q/ha) PCL-55(10.83q/ha) & PKDL-154 (10.00 q/ha) were at par with T-397 (11.67 q/ha) comes under the same significant group. Among the top entries entry viz. NL-261 observed early flowering, maturity, plant height and 1000 seed weight compared to T-397. Since on the basis of ancillary characters entry such as NL-261 should be promoted to advance varietal trial for the next generation for rainfed conditions.

Keywords : Oilseed, Linseed, Evaluation, T-397

Introduction

Linseed (*Linum usitatissimum* L.) is an important oilseed and fibre crop in India. Its oil is edible along with several medicinal properties. Its seed has 36 percent protein out of which 85 percent is digestible. The oil content of the seed generally varies from 33-45 per cent. Its oil cake is used to feed milch and fattening animals for milk and meat production. Its oil has myriad uses apart from human consumption viz., Oil paint, varnishes, printing ink, oil cloth, soap, patent leather and waterproof fabrics due to its fast volatility feature (Singh *et al*, 2007). It is next to rapeseed-mustard in area as well as in production. The state production data for the year 2011-12 indicates that it was grown on 35.25 thousand hectares with the production of 13.59 thousand tons with 386 kg/hectare productivity. The national data for the same year indicates that it was grown on an area of 322.6 thousand hectare with the total production of 152.5 thousand metric tons with the national average productivity of 473 kg/hectare. In the state of Chhattisgarh, district Durg recorded first place in area and production followed by Bilaspur indicates its importance in the region. Its main constraints for the low productivity are narrow genetic base and lack of disease and pest resistant varieties, marginal cultivation on low fertile land is another issue. Its oil is edible along with several medicinal properties. To overcome the afore discussed constraints it is important to screen the genotypes promising for the desired characters. Estimates of suitable genetic parameters such as range, coefficient of variation, mean are pre-requisite for screening of germplasm lines for making effective selections for higher yield and ancillary characters were made.

Materials and Methods

Geographically Bilaspur situated at the Plains of Chhattisgarh, in the humid sub tropical climatic zone. This study was conducted on a

Asian Resonance

loamy soil and sowing was done in the month of November 2013. Nineteen linseed genotypes were tested under the trial Initial Varietal Trial rainfed (IVT-R). The experiment was conducted at the research farm of TCB College of Agriculture and Research station, Sarkanda Bilaspur, CG in RBD with three replications consists of 19 entries along with three checks viz. T-397, Sharda, and Padmini. Each entries and checks were grown in single row of 5m length and spaced 25cm apart. Distances between plants in rows were maintained at 15 cm by thinning. One genotype was tested in plot size 5.00 metre long with 2.00 metre width (8 rows with 25 cm gap) with the nutrient application of 40 kg/ha Nitrogen & 20 kg/ha Phosphorous respectively. The observations were recorded on ten randomly selected plants from each entry for plant height (cm), days to 50% flowering, days to maturity, 1000-seed weight (g) and seed yield per plant (g). The statistical method used for analysis of variance for the replicated data was MSTATC for the RBD analysis and the interpretation of data done followed by (Sharma JR, 1998) (Panse & Sukhatme, 1985). The significant values for the significant differences were calculated on the basis of difference brought from the calculated value and the table value obtained from the F table. Further CD and CV values are recorded to rank the genotypes on its performance basis.

Result & Discussion

The data pertaining for yield and ancillary characters are given in Table- 1. Analysis of variance

of replicated yield data indicates that F value for genotypes is non significant reveals the fact the no significant differences exist among all the genotypes studied. However (critical difference) CD value and coefficient of variation valve CV % are calculated to rank the top yielders on their performance basis. Among the nineteen entries, three of them are checks viz. T-397 (11.67 q/ha), SHARDA (7.67 q/ha) and PADMINI (6.20 q/ha), with the comparison from CD value at 5 % level of significance (1.68) indicates that T-397 Check entry (11.67 q/ha) is the top yielder followed by entry NL-261 (11.11 q/ha) and PCL-55 (10.83 q/ha) as the third top yielder. The CD value indicates that all the top three yields corresponds to one significant groups and are superior over all the genotypes and the two checks Sharda and Padmini. On the basis of yield comparison it can be concluded that NL-261 and PCL-55 are at par with check T-397 but NL-261 entry is superior for the characters such as days to 50% flowering (48 days), days to maturity (99 days), plant height in cms. (52.10) and thousand grain weight in gms. (6.38) over the check T-397 for early flowering and maturity characters. Higher plant height of NL-261 imparts more fibre output compared to check T-397. The main yield correlated character such as thousand grain weight also proves its superiority over the check T-397. On the basis of ancillary characters entry such as NL-261 should be promoted to advance varietal trial for the next generation for rainfed conditions.

Table 1. Performance of 19 linseed Genotypes on IVT-Rainfed Trial.

S.No.	Name of Entry	Days to 50% flower.	Days to maturity	Plant Height (cms)	Yield/Rep/Plot(Kg.)			1000 Grain weight(gms)	Yield (q/ha)	Ran-king
					RI	RII	RIII			
1	T-397(C)	52	102	48.00	0.850	0.600	0.650	5.83	11.67	1
2	RL 12014	55	101	38.00	0.430	0.490	0.600	6.33	08.44	
3	LMS 2012-42	53	096	47.40	0.600	0.480	0.500	7.45	08.78	
4	RLC-145	52	096	41.40	0.500	0.500	0.500	4.72	08.33	
5	SLS-95	54	104	45.20	0.470	0.500	0.480	8.04	08.06	
6	LCK-1307	56	109	58.40	0.570	0.400	0.600	8.49	08.72	
7	NDL-2011-31	58	108	51.20	0.400	0.400	0.470	5.61	07.06	
8	PCL-55	56	105	44.49	0.600	0.710	0.640	4.93	10.83	3
9	NL-261	48	099	52.10	0.630	0.640	0.730	6.38	11.11	2
10	SHARDA (C)	48	099	41.00	0.500	0.400	0.480	7.10	07.67	
11	LMS-2012-31	52	101	38.20	0.490	0.530	0.490	5.11	08.39	
12	RLC-146	48	099	47.30	0.610	0.500	0.600	5.24	09.50	
13	SLS-97	53	101	40.50	0.430	0.470	0.480	7.51	07.67	
14	NDL-2006-12	56	105	51.80	0.510	0.520	0.480	4.67	08.38	
15	PKDL-153	48	098	47.10	0.530	0.500	0.490	7.83	06.33	
16	OL-08-2-7	55	101	61.00	0.620	0.580	0.490	6.82	07.04	
17	PADMINI (C)	54	104	34.00	0.530	0.500	0.460	6.39	06.20	
18	BAU-2012-1	73	126	50.12	0.600	0.490	0.600	6.10	07.04	
19	PKDL-154	52	098	39.40	0.630	0.570	0.600	6.05	07.50	
								C.D. at 5 % level = 1.68		
								C.V. (%) = 12.45		

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Conclusion

Genotypes tested under the initial varietal trial for rainfed conditions indicate that entry NL-261 proved its superiority over all the checks for ancillary characters however its seed yield shows that it is at par with check T-397 which is the top yielder under the trial. But on the basis of ancillary characters entry NL-261 should be promoted for Advance varietal trial for Rainfed conditions for the next rabi season.

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