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Short communication

EVALUATION OF EXOTIC GERMPLASM LINES OF SESAME

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Sesame (*Sesamum indicum* L.) is an important and ancient oil crop cultivated extensively from tropical to temperate zones in the world. Asia accounts for 2/3rd of the sesame global production. India, China and Republic of Korea are the major producers, though the crop is grown in several other countries also. India, with an area of 2.03 m ha under this crop, is a major producer accounting for 38 per cent of the world's sesame area and 25 per cent of its production (0.62 m. tonnes). However, the average per hectare yield is rather low (304 kg/ha) compared to other sesame growing countries of the world. One of the reasons for low productivity must be lack of high yielding varieties having wider adaptability. Most of the released varieties are the selections from local landraces and hence adapted only to the environments from which they were derived. Introductions and introgression of desirable genes from diverse germplasm sources is very essential for any improvement in the present yield level. With this in view, collection, evaluation and utilization of diverse germplasm have been initiated at Directorate of Oilseeds Research, Hyderabad and the diversity of some of the exotic collections is presented in this paper.

Eighty exotic accessions of sesame received from NBPGR Regional Station, Akola, were evaluated for seed yield and other characters. The material was raised during summer 1996 in single row of four metre length, spaced at 45 cm between the rows and 15 cm within plants, using an augmented randomised block design, with five cultivated varieties (Rajeswari, CO 1, JLT 26, Phule till 1 and TC 25) as checks replicated four times. Observations were recorded on five randomly selected plants in each accession for plant height, number of branches, number of capsules per plant, days to 50% flowering, seed yield per plant and oil content. The mean values were taken for statistical analysis

and the index score method of Anderson (1957) was used to analyse the variation pattern.

The plant height of germplasm lines ranged from 73.36 to 123.04 cm with the mean of 97.38 cm. Out of 80 germplasm lines, 25 were tall, 46 medium and 9 dwarf (Table 1). The mean number of branches per plant ranged from 2.30 to 12.23. The number of capsules per plant ranged from 27.89 to 297.04 with the mean of 72.49. Majority of the lines (56) had intermediate values (51 to 100) and ten lines recorded more than 100 capsules per plant. Variability for days to flowering was very low with a range of 28.60 to 35.60 days.

Table 1. Score index for morphological characters in sesame

Character	Range	Values at different indices		
		Low	medium	High
Plant height (cm)	73.36 - 123.04	100 (25)	80 - 100 (46)	80 (9)
No. of branches/plant	2.30 - 12.23	4 (15)	4 - 8 (60)	8 (5)
No. of capsules/plant	27.89 - 297.04	50 (14)	50 - 100 (56)	100 (10)
Days to flowering	28.60 - 35.60	35 (5)	30 - 35 (66)	30 (9)
Seed yield/plant (g)	3.90 - 19.94	5 (4)	5 - 10 (56)	10 (20)
Oil content (%)	42.00 - 53.33	45 (6)	45 - 50 (59)	50 (15)

Values in parenthesis indicate the number of accessions in that group.

Seed yield per plant ranged from 3.90 to 19.94 g, the maximum being recorded by EC - 303311. Twenty lines showed more than 10 g of seed yield per plant. Oil contents ranged from 42.00 to 53.33 per cent with 15 lines having more than 50 per cent of oil. These lines were also screened for resistance to major pests and diseases under field conditions. Because of dry weather conditions and high temperatures during the crop growth, the pest incidence was very low.

Based on the index score values, 20 promising lines were selected (Table 2) which could be utilized in the hybridization programme to develop high yielding varieties and hybrids.

Table 2. Performance of promising exotic collections of sesame

	Accession number	Plant height (cm)	No. of branches/ plant	No. of capsules/ plant	Days to flowering	Seed yield/ plant (g)	Oil content (%)
1.	EC - 303311	122.64	5.30	134.91	31.40	19.94	51.98
2.	EC - 303437	108.24	8.10	112.51	31.40	18.96	45.85
3.	EC - 303434	103.04	7.30	88.31	32.40	16.98	44.99
4.	EC - 303429	112.84	6.50	113.71	32.40	15.76	46.28
5.	EC - 303433	118.04	4.50	93.11	30.40	13.78	42.79
6.	EC - 303432	104.24	6.30	104.91	29.40	13.50	46.25
7.	EC - 303440	119.24	5.50	113.91	31.40	13.24	46.73
8.	EC - 303304	109.04	3.50	103.31	32.40	13.20	50.82
9.	EC - 303418	123.04	5.70	112.31	31.40	12.74	44.35
10.	EC - 303306	100.04	3.90	84.21	31.40	12.64	52.37
11.	EC - 52095/10	110.44	3.90	84.51	30.40	12.34	49.63
12.	EC - 334994	103.76	5.30	84.09	33.60	11.84	45.05
13.	EC - 310437	82.04	3.50	75.31	30.04	11.68	53.33
14.	EC - 335001	93.56	4.10	66.89	31.60	11.24	46.30
15.	EC - 331884	105.96	5.30	83.69	30.60	10.72	50.02
16.	EC - 15042	114.04	12.23	297.04	31.40	10.64	48.54
17.	EC - 335008	93.46	3.85	74.04	32.60	10.56	46.19
18.	EC - 310454	104.04	3.90	73.11	30.40	10.54	52.27
19.	EC - 310455	93.04	2.30	60.71	29.40	10.12	46.23
20.	EC - 303436	110.79	5.90	86.21	30.40	10.06	45.23
	C.V (%)	3.41	14.43	12.09	1.92	10.58	2.62

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