

## Performance of sesamum (*Sesamum indicum* L.) genotype to varying plant densities

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### ABSTRACT

A field experiment was conducted at College of Agriculture Farm, Latur (Maharashtra) during *kharif* of 2004-2005 on sesamum (*Sesamum indicum* L.) to analyze the growth and yield of sesame in relation to spacing (30 x 10 cm, 30 x 15 cm, 45 x 10 cm, 45 x 15 cm, 60 x 10 cm, 60 x 15 cm) and genotype (JLT 7 (Tapi), Gujarat - 1, Local check). The results revealed that the 30 x 15 cm (710.84 kg ha<sup>-1</sup>) spacing produced higher grain yield and it was found significantly superior over rest of the spacing and genotype JLT 7 recorded highest grain yield (648.74 kg/ha) found significantly superior over Gujarat 1 and local check.

**Key words :** Sesamum, Spacing, Varieties.

### INTRODUCTION

*Sesamum indicum* L. popularly known as sesame is one of the most important oilseed crops produced in India. It is an important *kharif* crop mainly cultivated in Rajasthan, Maharashtra, Gujarat, M. P., Karnataka, U. P., West Bengal, Orissa and Punjab. India is the largest producer of sesamum in the world accounting to 30 per cent of the world out put. It is rich in oil content (46.52 per cent) and protein (26.25 per cent). Although large number of varieties have been released to suit different agro-climatic regions of India. It was observed that the average yield of sesamum crop was low. Yield variation in a crop are mostly brought about the genetic make up growing season and population density. To find out high yielding variety and number of plants per unit area becomes an important management practice in order to get maximum yield. No studies have been reported on the detailed genotypes in relation to spacing. The present paper deals with performance of sesamum genotypes to varying plant densities.

### MATERIALS AND METHODS

A field experiment was conducted during the *kharif* season of 2004-2005 at the Agriculture College Farm, Latur (Maharashtra) in split plot design replicated thrice with three genotypes (JLT 7, Gujarati, Local check) and spacing (30 x 10 cm, 30 x 15 cm, 45 x 10 cm, 45 x 15 cm, 60 x 10 cm, 60 x 15 cm). The soil of experimental field was clayey with low available nitrogen, medium in available 50 kg N and 25kg P<sub>2</sub>O<sub>5</sub> per ha. Out of which half N and complete dose of P<sub>2</sub>O<sub>5</sub> was given at the time of sowing. The remaining half dose of nitrogen was given

at 30 days after sowing, other operations were done as per crop recommendations. The growth and yield attributes, yield were recorded timely.

### RESULTS AND DISCUSSION

#### *Growth and yield attributes:*

The data (Table 1) indicated that the narrow spacing (30 x 10 cm) produced taller plants than other treatments of spacing indicating competition. Rao *et al.* (1985) reported that narrow spacing produced tallest sesamum plants. During advanced growth stages of crop sesamum genotype JLT - 7 recorded leading performance in height over Gujarat - 1 and local check. This might be due to the varietal differences in growth.

The wider spacing 45 x 15 cm produced the maximum number of braches per plant and was at par with the spacing 60 x 15 cm. Three spacings were found to be significantly effective in increasing branching pattern than the narrow row spacings, 30 x 10 cm, 30 x 15cm, 45 x 10 cm, and also 60 x 15 cm. These results were also in conformity with the results reported by Tilakraj *et al.* (1971) and Narayan and Narayanan (1987). Genotype JLT - 7 was found to be significantly superior in recording more number of branches per plant over Gujarat -1 and local check.

The number of capsules progressively increased with increasing spacing. The wider spacing *i.e.* 45 x 15 cm recorded more mean number of capsules per plant and was at par with 60 x 15 cm. These two spacings were found to be significantly effective in increasing capsules than the narrow row spacings 30 x 10 cm, 30 x 15cm, 45 x 10 cm and 60 x 10cm. Similar results were also reported

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**Table 1: Growth and yield attributing characters of sesamum as influenced by different genotype and spacing**

Treatments	Plant height (cm)	No. of branches per plant	No. of capsules per plant	No. of grains per plant	Grain weight per plant	Test wt.
<b>Spacing (cm)</b>						
30 x 10	105.17	2.25	31.25	664	1.92	3.02
30 x 15	101.97	2.49	34.21	1215	3.72	3.08
45 x 10	99.44	2.31	31.58	967	3.47	3.35
45 x 15	98.36	2.76	37.12	1446	4.95	3.55
60 x 10	86.53	2.53	34.49	943	3.39	3.28
60 x 15	82.54	2.73	36.09	1430	4.68	3.44
S.E. $\pm$	2.59	0.06	0.84	157	0.33	0.24
C.D. (P=0.05)	7.48	0.18	2.52	456	0.98	N.S.
<b>Genotypes</b>						
JLT -7	109.26	2.95	40.63	1156	4.36	3.56
Gujarat - 1	81.62	2.64	33.50	1117	3.70	3.30
Local check	95.85	1.93	25.23	1059	3.10	3.00
S.E. $\pm$	1.91	0.03	0.60	80	0.20	0.13
C.D.(P=0.05)	5.59	0.10	1.80	234	0.58	0.38
<b>Interactions (S x G)</b>						
S.E. $\pm$	4.69	0.08	1.41	197	0.49	0.32
C.D. (P=0.05)	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
General mean	95.63	2.51	33.75	1111	3.72	3.28

NS- Non significant

by Tilakraj *et al.* (1971) and Rao *et al.* (1985). Genotype JLT - 7 was found to be significantly superior in recording more number of capsules per plant over Gujarat - 1 and local check at all the stages of crop growth.

The yield contributing character *viz.*, grain weight per plant and number of grains per plant were more in the treatment 45 x 15 cm spacing and this spacing was at par with 60 x 15cm, because number of capsules were more in these treatments than the other treatments tried 30 x 10cm, 30 x 15 cm 45 x 10 cm, 60 x 10cm. The genotype JLT- 7 recorded significantly higher grain weight per plant than the Gujarat -1 and local check. Lowest grain weight per plant and number of grains per plant were recorded by the variety local check.

The test weight per plant was not influenced significantly by spacings. Numerically genotype JLT- 7 recorded significantly more test weight than Gujrat -1 and Local check.

#### **Seed yield and oil content:**

The data presented in Table 2 show that the narrow row spacing 30 x 15 cm was found significantly superior over the spacings of 45x10 cm, 45 x 15 cm and 60 x 10 cm in recording higher grain yield under wider spacing through number of branches and number of capsules per plant. Under wider spacing it could not compensate the yield loss because of less population observed in wider

spacing. These results are in agreement with the results reported by Rao *et al.* (1985) and Patel *et al.* (1988) Sesamum genotype JLT - 7 produced significantly higher grain yield than Gujarat-1 and local Check.

**Table 2 : Seed yield and oil content of sesamum as influenced by different genotype and spacing**

Treatments	Seed yield kg / ha	Oil%
<b>Spacing (cm)</b>		
30 x 10	580.56	47.56
30 x 15	710.84	48.39
45 x 10	530.57	47.88
45 x 15	659.24	48.97
60 x 10	430.02	47.69
60 x 15	483.32	48.71
S.E. $\pm$	16.46	1.89
C.D. (P-0.05)	47.99	N.S.
<b>Genotypes</b>		
JLT -7	648.74	49.99
Gujarat - 1	566.64	47.97
Local check	481.87	46.61
S.E. $\pm$	10.42	0.37
C.D. (P-0.05)	30.37	1.08
<b>Interactions (S x G)</b>		
S.E. $\pm$	25.53	0.91
C.D.(P-0.05)	N.S.	N.S.
General mean	565.75	48.19

NS - Non significant

The oil percentage in grain was not influenced significantly by different spacing. The genotype JLT- 1 produced the highest oil percentage and found significantly superior over Gujarat- 1 and local check. Gujarat - 1 produced significantly more oil percentage than local check. The significantly lowest oil percentage was recorded by local check. Hence, from the above results it can be concluded that the sesamum genotype JLT - 7 can be grown at 30 x 15 cm spacing for higher grain yield under rainfed condition.

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Received : August, 2008; Accepted : December, 2008