

## RESPONSE OF DIFFERENT PROMISING GENOTYPES OF SESAME TO MAJOR INSECT PESTS AND LEAF SPOT DISEASE

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### ABSTRACT

Twenty-four genotypes of a varied geographic and genetic diversity which are cultivated in India were tested against major insect pests and diseases of sesame (*Sesamum indicum* L.). The infestation of gall fly (*Asphondylia sesami* Felt) at 50 days after sowing ranged from 1.37 to 51.01 per cent. The infestation of capsule borer (*Antigastra catalaunalis* Duponchel) at harvest ranged from 26.02 to 76.70 per cent. The disease intensity of *Cercospora* leaf spot ranged from 53.33 to 96.67 per cent. None of the genotypes was found to be resistant or tolerant to *Cercospora* leaf spot disease. The genotypes OS-15 and OS-5 exhibited a better tolerance to gall fly and capsule borer. However, the highest yield was recorded for RT-238 (763 kg/ha) followed by AT-82 (726 kg/ha).

### INTRODUCTION

Sesame is one of the most important oilseed crops in India. The major constraints for sesame production are insect pests and diseases (Vasudeva, 1961). Sesame is infested by a number of insect pests like gall fly (*Asphondylia sesami* Felt) and leaf roller/capsule borer (*Antigastra catalaunalis* Duponchel), which predominantly affect it seriously in Kharif. The pests infest all stages of the crop, from seedling stage to harvest. Major losses in yield, estimated in about 10-70 per cent (Singh *et al.*, 1985; Jakhmola and Yadav, 1990), generally appear from flowering to capsule formation. The yield losses due to leaf spot disease have been estimated in about 20 per cent (Kumar and Mishra, 1992). The promising released varieties grown in India were evaluated for their reaction to the pests and diseases at Oilseeds Research Station, Jalgaon in Kharif 1998.

### MATERIALS AND METHODS

The present investigation was undertaken with 24 different genotypes of sesame obtained from co-ordinating unit of diverse agro-climatic situations in India. The 24 genotypes were sown in Kharif-1998 at Oilseeds Research Station, Jalgaon (India) in randomised block design with three replications. Three rows of 5 m length of each genotype were sown at 30x10 cm spacing. Observations were recorded on five randomly selected plants from each plot. The disease intensity of leaf spot (*Cercospora sesami*) was recorded a week before harvest.

The healthy and infested buds due to gall fly as well as healthy and infested capsules by capsule borer were considered for the estimation of per cent damage of five plants at 50 and 70 days after sowing, respectively. The per cent infestation was converted into arcsin transformation and the data was subjected to statistical analysis.

## RESULTS AND DISCUSSION

The data on mean per cent damage of sesame due to infestation of gall fly and capsule borer and infection of *Cercospora* leaf spot are presented in Table 1. The differences in per cent damage of sesame due to gall fly, capsule borer and *Cercospora* leaf spot were found significant. Infestation due to gall fly ranged from 1.37 to 51.01 per cent at 50 days after sowing. The lowest per cent damage was observed in the genotypes OS-15 and OS-5 with 1.37 per cent and 1.61 per cent, respectively.

Table1. Reaction of different sesame genotypes to major insect pests and *Cercospora* leaf spot

Entries	% infestation of gall fly at 50 DAS	% infestation of capsule borer at 70 DAS	% plant infestation of capsules borers at harvest	% intensity of <i>Cercospora</i> leaf spot at a week before harvest	Grain yield (kg/ha)
NT-14-91	24.52 (29.65)	6.04 (14.16)*	73.07 (59.31)*	53.33 (47.00)*	492
VS-9708	24.35 (29.54)	8.45 (16.70)	41.48 (40.10)	62.66 (51.81)	519
JLSC-87	21.92 (27.82)	7.51 (15.89)	51.44 (45.84)	66.67 (55.77)	414
AT-82	9.10 (17.56)	7.91 (16.33)	62.36 (52.33)	83.33 (66.64)	726
AT-83	48.45 (44.11)	7.70 (16.11)	76.70 (61.79)	83.33 (66.15)	403
PKDS-1	26.90 (31.24)	8.25 (16.69)	48.34 (44.02)	61.67 (51.84)	373
PKDS-4	30.02 (33.24)	5.77 (13.93)	57.26 (49.35)	76.67 (61.22)	95
JTS-113	33.62 (35.46)	10.72 (21.02)	55.29 (48.02)	90.00 (71.56)	339
RT-305	7.69 (15.97)	5.37 (13.22)	57.21 (49.14)	86.67 (68.85)	459
RT-325	42.59 (40.75)	13.31 (21.33)	49.14 (44.52)	80.00 (63.93)	264
RT-326	20.79 (27.14)	6.59 (14.81)	51.46 (45.83)	78.67 (61.71)	608
OS. Sel. 24	51.01 (45.59)	10.23 (18.45)	63.03 (52.75)	93.33 (78.71)	527
OS. Sel. 253	34.51 (35.95)	5.56 (13.61)	56.28 (48.71)	93.33 (77.71)	322
JTS-104	46.80 (43.15)	5.09 (12.98)	40.00 (39.11)	76.67 (61.22)	304
JCS-9426	15.42 (23.08)	3.47 (10.71)	49.51 (44.72)	70.00 (57.00)	165
JTS-8	7.06 (15.35)	9.51 (17.90)	38.27 (38.21)	86.67 (68.85)	691
OS-5	1.61 (5.16)	4.18 (11.83)	26.02 (30.64)	96.67 (83.85)	496
OS-15	1.37 (4.73)	3.96 (11.42)	24.58 (29.67)	90.00 (71.56)	328
RT-281	11.02 (19.71)	5.21 (13.11)	40.98 (39.81)	80.00 (63.93)	615
RT-283	13.45 (21.50)	7.35 (15.72)	47.50 (43.57)	86.67 (68.85)	590
RT.238	5.02 (12.86)	5.33 (13.29)	33.92 (35.63)	83.33 (66.64)	763
TC-25(NC)	11.66 (20.07)	5.17 (13.11)	39.82 (39.10)	86.67 (72.78)	583
JLT-26(ZC)	25.83(30.52)	10.52(18.78)	51.31 (45.78)	73.33 (59.00)	708
JLT-7(ZC)	21.91(27.90)	10.58(18.87)	56.07 (48.48)	70.00 (57.00)	672
S. E. ±	2.34	1.33	4.08	4.40	
C.D. at 5%	6.86	3.90	11.92	12.93	
C V%	12.47	12.29	12.85	11.73	

DAS= Days after sowing

NC= National Check

ZC= Zonal Check

\* Mean of three replications

\* Figures in brackets are arcsin transformed values.

The average infestation of capsule borer at 70 days after sowing ranged from 3.47 to 13.31 per cent. The genotypes JCS-9426 (3.47%), OS-15 (3.96%), OS-5 (4.18%), JTS-104 (5.09%), TC-25 (5.17%), RT-281 (5.21%) and RT-238 (5.33%) presented significantly lower per cent damage than the other genotypes.

At harvest, the genotypes OS-15, OS-5, RT-238, JTS-8, TC-25, JTS-104, RT-281 and VS-9708 were found to have the lowest infestation of capsule borer.

The differences in disease intensity of *Cercospora* leaf spot among the genotypes were statistically significant. The intensity of *Cercospora* leaf spot ranged from 53.33 to 96.67 per cent. Minimum disease intensity was recorded on NT-14-91 (53 per cent) and the maximum was found on OS-5 (96.67 per cent).

The genotypes RT-238, AT-82, JLT-26, JTS-8, RT-238, RT-281, JLT-7, TG-25 and RT-283 recorded higher grain yield as compared to the rest of the genotypes.

Among the different sesame genotypes with a comparatively better tolerance to pest and disease, the genotypes RT-238 and RT-281 may be used in further breeding programmes for the development of multiple resistant genotypes.

## REFERENCES

Jakhmola, S.S. and S.S. Yadav. 1990. Evaluation of some insecticides and number of spray application against *Antigastra catalaunalis* Dup. Indian J. Ent., 52:535-536.

Kumar, P. and U.S. Mishra. 1992. Diseases of *Sesamum indicum* in Rohilkhand: intensity and yield loss. Indian Phytopathol., 45:121-122.

Singh, H., V.K. Kalra and H.R. Rohila. 1985. Assessment of losses in sesame caused by shoot webber and capsule borer in Haryana, India. Oil Crops Newsl., 2:23-25.

Vasudeva, R.S. 1961. Diseases of sesamum (In Sesamum Ed. Joshi, A.B.). pp. 92-109.