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# Screening of Elite Sesame Entries Against Leaf Hopper in the Southern Zone of Andhra Pradesh

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ABSTRACT: A field screening trial was laid out with 20 genotypes of sesame along with one susceptible check YLM-66 against the leafhopper in the Agriculture Research station, Utukur during *kharif* 2018 and 2019 in three different dates of sowing (I&II FN of July and I FN of August). Pooled data analysis of two years revealed that, highest leaf hopper and phyllody incidence were observed in first date of sowing only (I FN of July). Among the entries in first date of sowing, leaf hopper population ranged from 0.50 to 5.70 per plant, lowest leaf hopper per plant (0.50) was observed in entry UTS-59 followed by IC-205556 (0.90) and UTS-208 (1.60) and highest in Gowri (5.70). The per cent phyllody disease incidence ranged from 1.25 to 30.38, lowest phyllody incidence (1.25%) was recorded in UTS-59, followed by IC-205556 (4.90%) and UTS-208(5.80%) where as highest phyllody disease was recorded in Pragathi (30.38). The leaf hoppers were collected and sent for identification to Division of entomology, IARI, New Delhi and identified as *Orosius albicinctus*.

Keywords: Screening, sesame entries, leaf hopper, Southern zone.

#### INTRODUCTION

Sesame (*Sesamum indicum* L.) is one of the oldest oilseed crops and has been cultivated in Asia since ancient times. India ranks first in both area and production. In India among the oilseed crops, sesame occupies third place next to groundnut and rapeseed-mustard. Sesame is under constant threat to many diseases *viz.*, charcoal rot / stem rot / root rot, powdery mildew, leaf blight, wilt, leaf spot, stem blight, bacterial leaf spot and phyllody. Among all the diseases the economically important disease affecting sesame is phyllody, considered to be caused by a virus which was later confirmed as mycoplasma like organisms (MLO), and recently termed as phytoplasmas (Das and Mitra 1998) which takes a heavy toll resulting in significant yield losses.

Insect pests poses significant obstacles, leading to reduction in both quality and quantity of sesame yields. According to a study, 201 species across 55 genera of insect pests adversely impact sesame cultivation globally. Among these species Ciccadellidae has the highest representation, followed by Pentatomidae, Miridae, Noctuidae families of different insect orders Dilipsundar *et al.* (2019).

They are transmitted from one plant to another by *Kumar et al., Biological Forum – An International Journal* 

phloem feeding insects, leafhopper, plant hoppers and psyllids. In recent years incidence of phyllody is increasing in sesame fields of Southern Zone of Andhra Pradesh state. In view of the seriousness of the disease and scarcity of the related lack of resistant varieties against leafhopper and phyllody the present investigation have been undertaken with the objective Screening of elite sesame entries against leafhoppers and phyllody.

## MATERIALS AND METHODS

A screening trial was laid out with 20 genotypes of sesamum along with one susceptible check YLM-66 against the leafhopper in the Agriculture Research station, Utukur during *kharif* 2018 and 2019. The experimental location was situated at an altitude of 182.9 m above MSL on 78°80N latitude and 14°43E longitude in the Southern Agro Ecological Zone of Andhra Pradesh. The experiment was laid out in a Randomized Block Design with two replications. The experimental material consisted of 20 genotypes of sesamum (Gowri, TKG-22, Madhavi, Nirmala, YLM 66, YLM 17, Pragathi, YLM11, RT-371, IC-205556, TKG-501, SKL-4, VSP-1, VZM-3, VZM-2, UTS 208, UTS 204, UTS-59, UTS-182 and UTS-65) which are

14(1): 1857-1859(2022)

1857

from Agricultural Research Station, Utukur (YSR dist.), ANGRAU. All the entries were sown in three different dates i.e., I & II FN of July and I FN of August. Each genotype was sown in a single row of 5 m length, with a spacing of 30 cm between the rows and 10 cm within the row. Bulk susceptible entry YLM 66 was sown around the experiment to increase the load of leaf hopper in the experiment (Plate 1). The crop was raised following all the recommended agronomic practices and kept free from insecticidal sprays.

Leafhopper incidence across various genotypes was noted at various crop growth stages during the study period at weekly intervals from 23 DAS to 60 DAS for long-term sampling, five plants per genotype were randomly selected, and the incidence of leafhoppers was recorded at weekly interval. At each stage of the crop, number of leafhopper nymphs per each selected plant was recorded from three leaves from top, middle, and bottom of the plant. The data on per cent disease incidence of sesame phyllody by counting total number of plants and number of infested plants with in 5m length for both replications at weekly intervals from 23DAS to 60 DAS and among them peak infestation of leaf hopper in particular entry was considered for screening against leaf hopper.

Per cent phyllody Disease incidence =  $\frac{\text{No. of diseased plants}}{\times 100}$ 

Total No. of assessed plants

# **RESULTS AND DISCUSSION**

Twenty promising entries were procured from the Scientist (Breeding), ARS, Utukur and were screened against leaf hopper in three different dates of sowing in kharif, 2018 and 2019. Pooled data analysis of two years revealed that, highest leaf hopper and phyllody incidence were observed in first date of sowing only(I FN of July). In all the three dates of sowing peak infestation of leaf hopper was recorded at 42 days after sowing.

Among the entries in first date of sowing, leaf hopper population ranged from 0.50 to 5.70 per plant, lowest leaf hopper per plant (0.50) was observed in entry UTS-59 followed by IC-205556 (0.90) and UTS-208 (1.60) and highest in Gowri (5.70). The per cent phyllody disease incidence ranged from 1.25 to 30.38, lowest phyllody incidence (1.25%) was recorded in UTS-59, followed by IC-205556 (4.90%) and UTS-208(5.80%) where as highest phyllody disease was recorded in Pragathi (30.38) (Table 1). The leaf hoppers were collected and sent for identification to Division of entomology, IARI, New Delhi and identified as *Orosius albicinctus* (Plate 2).

The results of the present investigation were in close agreement with Mahadevaprasad *et al.* (2017), who

reported that screened 25 genotypes against sesame phyllody in IVT entries the disease incidence ranged from 82.10 to 28.49 per cent, while in AVT entries it ranged from 13.95 to 30.53 per cent.

The results of the current study aligns with the findings of Palanna *et al.* (2015) a study conducted on seven varieties of sesame (E-8, DS-1, GT-1, TMV-3, DS-9, Navile-1, and a local variety) evaluated for phyllody disease, GT-1 and DS-9 exhibited the lowest incidence at 10.67 per cent, followed by DS-1 at 11.34 per cent, and E-8 at 14.00 per cent. Navile-1 recorded an incidence of 16.00 per cent compared to 29.34 per cent in the local variety.

Vamshi *et al.* (2018) observed that, of the 20 genotypes screened for disease incidence percentage none of the genotypes showed symptoms by 30 DAS, instead it was only after 45 DAS the symptoms started exhibiting themselves.



Experimental view Screening of elite sesame entries against leaf hoppers and incidence of phyllody during Kharif, 2019 at ARS, Utukur, Kadapa



**Orosius albicinctus** 

Sr. No.	Entry	D1(I FN of July)		D2(II FN of July)		D3(IFN ofAugust)	
		LH/plt (No.)	Phyllody (%)	LH/plt (No.)	Phyllody (%)	LH/plt (No.)	Phyllody (%)
1.	Gowri	5.70(2.39)	25.63(29.00)	4.50(2.12)	23.50(28.99)	3.55(1.88)	19.13(25.93)
2.	TKG-22	2.40(1.55)	18.00(23.20)	2.40(1.55)	15.50(23.17)	1.90(1.38)	11.13(19.48)
3.	Madhavi	4.50(2.12)	27.75(27.40)	4.10(2.02)	21.25(27.44)	3.35(1.83)	18.50(25.47)
4.	Nirmala	4.20(2.05)	22.50(27.10)	4.10(2.02)	20.75(26.55)	3.30(1.81)	20.13(26.65)
5.	YLM-66	3.50(1.87)	19.00(24.90)	3.30(1.81)	17.75(24.73)	3.08(1.75)	17.75(24.91)
6.	YLM-17	3.60(1.90)	19.33(26.00)	3.80(1.95)	19.25(29.16)	3.25(1.80)	19.75(26.38)
7.	Pragathi	5.50(2.34)	30.38(31.30)	4.40(2.10)	26.98(28.78)	4.10(2.02)	22.55(28.35)
8.	YLM-11	3.75(1.94)	21.58(26.70)	3.25(1.80)	20.13(26.29)	3.05(1.75)	20.00(26.56)
9.	RT-371	3.80(1.95)	21.58(25.90)	3.80(1.95)	19.13(25.93)	3.10(1.76)	20.63(27.01)
10.	IC-205556	0.90(0.95)	4.90(9.50)	0.55(0.73)	2.70(9.46)	0.30(0.39)	1.40(6.79)
11.	TKG-501	2.20(1.48)	10.12(15.50)	2.30(1.51)	7.15(15.50)	1.70(1.30)	4.65(12.45)
12.	SKL-4	2.10(1.45)	10.03(14.60)	2.10(1.45)	6.35(14.59)	1.50(1.22)	4.25(11.89)
13.	VSP-1	3.50(1.87)	15.00(21.90)	3.10(1.76)	13.88(21.86)	2.95(1.72)	15.25(22.97)
14.	VZM-3	3.60(1.90)	16.05(23.40)	3.55(1.88)	15.75(23.38)	2.90(1.70)	20.75(27.09)
15.	VZM-2	4.66(2.16)	28.8(30.20)	4.45(2.11)	25.33(30.21)	4.25(2.06)	23.25(28.81)
16.	208	1.60(1.25)	5.80(12.00)	1.20(1.09)	4.30(11.96)	0.70(0.83)	2.55(9.19)
17.	204	3.60(1.90)	21.00(26.00)	3.10(1.76)	19.25(26.02)	2.85(1.69)	12.80(20.96)
18.	59	0.50(0.67)	1.25(4.00)	0.28(0.53)	0.90(3.86)	0.10 (0.22)	0.00(0.0)
19.	182	2.30(1.51)	8.88(14.00)	2.00(1.41)	6.25(14.47)	1.10(1.04)	3.65(11.01)
20.	65	2.60(1.61)	8.80(15.00)	2.20(1.48)	6.90(15.23)	1.15(1.07)	3.80(11.24)
SEm <u>+</u>		0.09	0.94	0.06	1.19	0.13	0.50
CD@5%		0.28	2.77	0.18	3.53	0.38	1.48
CV		6.59	4.90	4.44	6.25	9.98	2.79

 Table 1: Pooled data on reaction of sesame entries against leaf hopper and phyllody conducted during Kharif, 2018 & 2019.

### CONCLUSIONS

The entries UTS-59, IC-205556, UTS-208 have recorded lowest leaf hopper population per plant and phyllody disease incidence. These three entries can be promoted for further studies like identification of physical and biochemical parameters contributing resistance against leaf hopper and phyllody and also they can be used in breeding programme to develop phyllody resistant varieties.

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