

Relative susceptibility of wheat lines to the pink borer, *Sesamia inferens* Walker

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Wheat (*Triticum aestivum*) is the leading cereal crop of the world. It ranks first according to acreage of cultivation and production among the grain crops of the world (Walton, 1969; FAO, 1988). Among food grains in India, Wheat stands next to rice, both in area and production. The total area in 2008-09 under wheat in India is 24.0 million hectares and wheat production was 78.4 metric tons. Pink borer, *Sesamia inferens* Walker, a polyphagous insect pest, causes major damage by feeding inside the stem showing dead hearts at tillering stage and empty white heads at ripening stage and ultimately reducing the yield by more than 11% in India (Saxena *et.al.*, 1972 and Ahad *et.al.*, 1994, 1995). Chemical management may cause several problems in agroecosystem. To overcome adverse effects of chemical management, it is a need to draw an attention of Researchers to develop resistant varieties against insect pests. A number of resistant varieties of different crops against different insect pests have already been developed. The present study was under taken to find any tolerant or resistant wheat lines suitable for breeding programme against this pest on the basis of borer infestations.

I. METHODOLOGY

The field experiment was conducted at the Zonal Agriculture Research Station, Yavatmal, Maharashtra (India) during rabi season of 2009-2010 under irrigated conditions with 20 wheat lines viz; AKAW-3722, AKAW-4127, AKAW-4210-6, AKAW-4510, AKAW-4649, AKAW-4697, AKAW-4705, AKAW-4706, AKAW-4710, AKAW-4719, AKAW-4722, AKAW-4723, AKAW-4728, AKAW-4734, AKAW-4735, AKDW-4021, AKW-381, HD-2501, HI-977 and MACS-2826. The cultivated variety AKW-381 was used as a check. The experiment was laid out in the Randomized Block Design with three replications having net plot size of 5m*2m and plot to plot distance was 60cm. Wheat seeds were sown @ 10 lines plot⁻¹, the distance between row to row 20 cm and that plant to plant was 5 cm. The necessary agronomical practices were executed during the experiment period with no pesticidal application. Pink borer infestation rates were assessed by weekly counting of 'dead hearts' and/or 'white heads' in each plot. Observations were recorded from 15 days to three months after sowing of seed. The data on infestation and grain yield of tested wheat lines were analysed statistically. The corresponding data on percentage infestation were transformed before statistical analysis into arc-sine values.

II. RESULTS AND CONCLUSION

Infestation of *Sesamia inferens* Walker in form of white head varied significantly among the 20 tested wheat lines as shown in table. The lowest incidence i.e 7.63% of pink borer was observed in the line AKAW 4649 and the highest (41.09%) was in AKDW-4021. Among the tested wheat lines, three lines such as AKAW-4649, AKAW-4127 and HI-977 were statistically lying in least infestation group and the percentages of infestation group and percentages of infestation were 7.63 to 8.55 per cent, whereas AKDW-4021 was the most susceptible line recording up to 41.09 per cent of white head infestation. Three wheat lines such as AKAW-4735, AKAW-4510 and AKAW-4210-6 were of moderate infestation in the tune of 9.80 to 10.83 per cent.

Table: Responses of different wheat lines to pink borer infestation and grain yield.

S.N.	Variety	%white head	Yield (Kg plot ⁻¹)	Yield q ha ⁻¹
1	AKAW-3722	15.69 (23.33)	1.525	45.36
2	AKAW-4127	07.89 (16.31)	1.125	31.25
3	AKAW-4210-6	10.83 (19.21)	1.375	38.19
4	AKAW-4510	10.57 (18.97)	1.037	28.81
5	AKAW-4649	07.63 (16.04)	0.962	26.74
6	AKAW-4697	14.96 (22.75)	0.900	25.00
7	AKAW-4705	11.89 (20.17)	1.237	34.37
8	AKAW-4706	15.00 (22.79)	1.542	42.84
9	AKAW-4710	21.48 (27.61)	1.087	30.20
10	AKAW-4719	19.54 (26.23)	1.175	32.63
11	AKAW-4722	16.46 (23.94)	1.500	41.67
12	AKAW-4723	13.97 (21.95)	1.319	36.63
13	AKAW-4728	22.73 (28.47)	1.200	33.33
14	AKAW-4734	13.79 (21.80)	1.500	41.67

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15	AKAW-4735	09.80 (18.24)	1.188	32.99
16	AKDW-4021	41.09 (39.87)	1.175	32.63
17	AKW-381	13.53 (21.58)	1.425	39.58
18	HD-2501	24.00 (29.33)	1.275	35.41
19	HI-977	08.55 (17.00)	1.325	36.80
20	MACS-2826	13.08 (21.20)	0.981	27.26
	SE +-	1.31		1.44
	CD 5%	4.03		4.45

() * Arc-sine values

Significant difference in the grain yield of different wheat lines was observed. The highest grain yield (45.36 q/ha) was recorded in the line AKAW-3722 followed by AKAW-4706, AKAW-4722 and AKAW-4734 yielding in the range of 42.84 q/ha, 41.67 q/ha and 41.67 q/ha respectively. The check line AKW-381 recorded 39.58 q/ha grain yield. Lowest grain yield i.e 25.00 q/ha was recorded by the wheat line AKAW-4697.

Further the result indicated that the lowest susceptibility was found in the line AKAW-4649 followed by AKAW-4127 and HI-977. The wheat line HI-977 also registered grain yield in the range of moderate group. The yield of AKAW-3722 was higher than these varieties. Hence considering the responses of cultivars to infestation of *Sesamia inferens* Walker and grain yields the cultivars; HI-977, AKAW-4649 and AKAW-4127 can be considered to include in breeding programme for developing of tolerant varieties.

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