

**SCREENING OF Bt COTTON GENOTYPES AGAINST COTTON THRIPS,
THRIPS****TABACI (LINDEMAN) UNDER FIELD CONDITION**

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ABSTRACT

The experiment on screening of new Bt genotypes for their reaction to Thrips, *Thrips tabaci* (Lindeman) was conducted during the Kharif season of 2010 and 2011 at Agricultural Research Station, Sriganganagar. A total of 43 genotypes including one hybrid check, one Bt check and one variety check were selected for present study. The interactions of cotton genotypes were grouped based on the mean and standard deviation. Out of 43 Bt cotton genotypes including one hybrid check, one Bt check and one variety check 15 genotype namely KSCH-213, KSCH-211, JKCH-8935, VBCH-1548, JKCH-1947, MRC-7081, VBCH-1545, NCS-2223, ANKUR-2227, PRCH-709, MRC-7017 (Bt check), ZCH-1102, PCH-556, MRC-7017 and MRC-7017 Gold, in which thrips population ranged from 19.29 to 26.79 thrips/3 leaves, were found at par to each other and significantly superior among the genotypes screened including Bt and Non Bt checks.

Key words : Screening, Bt cotton, *Thrips tabaci*, Resistance.

INTRODUCTION

Cotton, the most important commercial crop of India, is subjected to the ravages of a number of insect pests. India ranks first in the global scenario with about 33 per cent of the world's cotton area but with regard to production it ranks second to China with 35.30 million bales of cotton lint with an average productivity of 491 kg per ha (Anonymous, 2003). In India cotton harbours about 162 insect pest species and the monetary value of yield losses due to insect pests has been estimated to be Rs 2,87,000 million annually (Dhawan *et al*, 2008). The extent of losses caused by sucking pests, bollworms and both sucking pests and bollworms have been worked out to be 12, 44, and 52 per cent, respectively, (Dhawan *et al*, 1988). Sucking pests have become quite serious from seedling to harvesting stage. Among the sap feeders, Thrips, *T. tabaci* is the regular and key pest in major cotton growing areas of Rajasthan. Even though the Bt cotton hybrids are resistant to bollworms, most of them are succumbent to the sucking pests scourge. Identification and use of tolerant or resistant cultivar may be of great relevance during these days as they are eco friendly and cost effective. The present investigation was carried out with the objective of identifying resistant sources of Bt cotton against *Thrips tabaci*.

MATERIALS AND METHODS

The experiment on screening of new Bt genotypes for their reaction to Thrips, *Thrips tabaci* was conducted during Kharif season 2010 and 2011 at Agricultural Research Station, Sri Ganganagar. A total of 43 genotypes including one hybrid check, one Bt check and one variety check were selected for present study. These genotypes were procured from All India Cotton Improvement Project, Sri Ganganagar. The whole experiment was conducted under irrigated conditions. For comparative performance of different Bt genotypes, season long observations were recorded on the thrips population. The data have been presented at the respective day of observation for each recorded parameter and average of all observations as seasonal mean. The average seasonal means were considered for pooled analysis of two years. Observations on thrips populations were recorded on three randomly selected plants. Population counts of thrip were made on the lower surface of three leaves (one each from upper, middle and lower plant canopy) of each of the three randomly selected plants per plot. All observations were done weekly starting from early July until harvesting of crops. Later the population was averaged to present as number per three leaves. All the Bt cotton genotypes were raised under unprotected conditions. All agronomical practices were followed from time to time for maintaining healthy crops as per the recommendation of package and practices of Zone I b.

RESULTS AND DISCUSSION

Out of 43 genotypes screened for two years, 15 genotype namely KSCH-213, KSCH-211, JKCH-8935, VBCH-1548, JKCH-1947, MRC-7081, VBCH-1545, NCS-2223, ANKUR-2227, PRCH-709, MRC-7017 (Bt check), ZCH-1102, PCH-556, MRC-7017 and MRC-7017 Gold, in which thrips population ranged from 19.29 to 26.79 thrips/3 leaves, were found at par to each other and significantly superior among the genotypes screened including Bt and Non Bt checks. However, the present results contradict with findings of Radhika *et al.* (2004) and Abro *et al.* (2004), who reported that the incidence of sucking pests was higher in Bt hybrids than their Non Bt counterparts. In genotype MRC 7017 Gold, minimum population of thrips was recorded in present investigation, which does not conform with the work carried out at Sriganganagar, where maximum population of thrips was noticed in this genotype (Anonymous 2005).

REFERENCES

Abro G H, Syed T S, Tunio G M and Khuhro M A (2004). Performance of transgenic Bt cotton against insect pest infestation. *Biotechnology* 3 (1) : 75-81.

Anonymous (2003) Directorate of Economics and Statistics, Department of Agriculture and Cooperation, New Delhi, India.

Anonymous (2005). Evaluation of Bt cotton hybrids in the North Zone. All India Coordinated Cotton Improvement Project. Annual Progress Report 2004-05.

Dhawan A K, Simwat G S and Sidhu A S (1988). Field evaluation of Monocrotophos for the control of sucking pests on cotton. *Pesticides* 22(6), 25-28.

Dhawan A K, Shera P S, Jindal V and Aggarwal N (2008). Changing scenario of cotton insect pests and their management strategies. PP 81-99. In: Cotton in Punjab. Dept. Plant Breeding, Genetics and Biotechnology, Punjab Agril. Univ., Ludhiana. pp. 109.

Radhika P, Sudhakar K, Basha Mohiddin S and Prasada Rao G M V (2004). Relative incidence of pest complex on Bt and Non Bt cotton hybrids under protected and unprotected conditions. In: Proceedings of National symposium on “Strategies for Sustainable Cotton Production- A Global vision- 3, Crop Protection” November 23-25, USA, Dharwad: 136-138.

Table-1. Screening of different Bt cotton genotypes against *Thrips Tabaci* During Kharif 2010 and 2011 (pooled data of two years)

S. N.	Genotypes	Thrips/3 leaves		
		Year 2010	Year 2011	Mean
1	SRCH-666 BG II	37.66* (6.13)**	33.79* (5.81)**	35.73# (5.97)**
2	SRCH-999 BG II	36.14 (6.01)	40.41 (6.35)	38.27 (6.18)
3	SRCH-888 BG II	25.80 (5.08)	32.28 (5.68)	29.04 (5.38)
4	Super- R111 BG II	29.77 (5.46)	30.83 (5.55)	30.30 (5.50)
5	ZCH-904 Rajath BG II	27.76 (5.27)	34.34 (5.84)	31.05 (5.55)
6	ZCH-1101 BG II	28.90 (5.37)	31.41 (5.60)	30.16 (5.49)
7	ZCH-1102 BG II	26.47 (5.14)	26.06 (5.10)	26.26 (5.12)
8	GBCH-95 BG II	23.85 (4.88)	29.73 (5.45)	26.79 (5.17)
9	GBCH-85 BG II	32.99 (5.74)	37.34 (6.11)	35.17 (5.93)
10	GK-220 BG II	33.30 (5.77)	37.26 (6.10)	35.28 (5.94)
11	Ankur-2227 BG II	25.94 (5.09)	24.28 (4.92)	25.11 (5.01)

12	Ankur-2575 BG II	31.99 (5.66)	35.45 (5.95)	33.72 (5.80)
13	Ankur-3244 BG II	25.70 (5.07)	29.53 (5.43)	27.62 (5.25)
14	W. Kasturi-11 BG II	29.57 (5.44)	26.95 (5.18)	28.26 (5.31)
15	W. Kasturi-33 BG II	27.52 (5.24)	31.82 (5.64)	29.67 (5.44)
16	RCH-773 BG II	29.95 (5.47)	31.68 (5.62)	30.81 (5.55)
17	RCH-776 BG II	32.66 (5.71)	40.73 (6.38)	36.69 (6.04)
18	RCH-791 BG II	33.33 (5.77)	36.29 (6.02)	34.81 (5.90)
19	DPC-3083 BG II	30.85 (5.55)	30.45 (5.52)	30.65 (5.54)
20	DPC-3081 BG II	28.71 (5.36)	33.00 (5.74)	30.86 (5.55)
21	DPC-3091 BG II	32.04 (5.66)	35.11 (5.92)	33.57 (5.79)
22	DPC-3101 BG II	36.58 (6.05)	32.34 (5.68)	34.46 (5.87)
23	Tulasi-224 BG II	23.95 (4.88)	27.69 (5.24)	25.82 (5.06)
24	JKCH -8935 BG II	22.74 (4.73)	22.10 (4.70)	22.42 (4.72)
25	JKCH-1947 BG II	19.59 (4.42)	25.93 (5.09)	22.76 (4.75)
26	JK Tarzan BG II	27.88 (5.27)	32.87 (5.73)	30.37 (5.50)
27	NCS-6666 BG II	26.52 (5.14)	30.30 (5.50)	28.41 (5.32)
28	NCS-2223 BG II	22.11 (4.69)	26.71 (5.16)	24.41 (4.93)
29	KSCH-211 BG II	20.80 (4.55)	23.77 (4.87)	22.29 (4.71)
30	KSCH-213 BG II	17.95 (4.24)	20.63 (4.54)	19.29 (4.39)
31	PCH-556 BG II	24.76 (4.95)	28.21 (5.29)	26.48 (5.12)
32	PCH-5678 BG II	24.85 (4.97)	29.45 (5.41)	27.15 (5.19)
33	PRCH-709 BG II	24.78 (4.94)	26.67 (5.16)	25.72 (5.05)
34	PRCH-7776 BG II	29.49 (5.42)	33.73 (5.80)	31.61 (5.61)
35	MRC-7081 BG II	21.46 (4.60)	24.41 (4.91)	22.94 (4.75)
36	MRC-7017 Gold BG II	26.94 (5.16)	26.64 (5.15)	26.79 (5.16)
37	MRC-7091 BG II	26.83 (5.16)	29.47 (5.41)	28.15 (5.29)
38	MRC 7017 + BG II	24.81 (4.96)	28.31 (5.31)	26.56 (5.13)
39	VBCH-1548 BG II	21.21 (4.59)	24.19 (4.91)	22.70 (4.75)
40	VBCH-1545 BG II	22.75 (4.74)	25.92 (5.07)	24.34 (4.91)
41	RS 2013(V. Check)	32.79 (5.72)	36.11 (6.00)	34.45 (5.86)
42	RSHH 238 (Hy. Check)	24.90 (4.99)	29.79 (5.43)	27.34 (5.21)

43	MRC 7017 (Bt Check)	26.70 (5.16)	25.44 (5.04)	26.07 (5.10)
SEM		0.27	0.28	0.27
CD(5%)		0.77	0.78	0.77
CV%		7.31	7.11	7.21

* Average of two replications.

** Figures in parentheses are square root values.

Pooled mean of two years