

## SCREENING CHILLI GENOTYPES FOR RESISTANCE TO THRIPS, *Scirtothrips dorsalis* Hood AND MITE, *Polyphagotarsonemus latus* (Banks)

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**ABSTRACT:** Chilli (*Capsicum annum* L.) is one of the important spice crops of India and grown all over the globe. The crop is severely attacked by thrips, *Scirtothrips dorsalis* Hood and mites, *Polyphagotarsonemus latus* Banks which cause leaf curl symptom called "murda". Genotypes of chilli were evaluated during kharif seasons viz., 1997, 1998 and 1999 against thrips and mites to identify source for resistance. Of the 24 genotypes screened the per cent leaf curl index (LCI) against thrips ranged from 15.3 to 42.3 and mites 19.6 to 40.4. Pant C-1, LCA-304 and LCA-312 were found to be promising source of resistance against thrips and mites.

**Key Words :** Chilli, *Polyphagotarsonemus*, *Scirtothrips*

### INTRODUCTION

Chilli thrips, *Scirtothrips dorsalis* Hood and yellow mite, *Polyphagotarsonemus latus* (Banks) (*Hemitarsonemus latus*) are two serious pests of chilli (Ananthakrishnan, 1973, Amin 1979) both in the nursery and main field. Adults and nymphs of *S. dorsalis* suck the sap from tender leaves and growing shoot. Affected leaves curl either upward due to thrips or downward due to mite feeding resulting in damage called chilli leaf curl or "murda" disease. In addition *S. dorsalis* is also reported to be a vector of the tomato spotted wilt tospovirus (Amin *et al.*, 1981). The overall reduction in yield of dry chilli ranged from 40-70% due to incidence of thrips and mites (Jagadeesha *et al.*, 2000). Application of chemical pesticides has aggravated the problem of resurgence of chilli mite (David, 1991). Although, work on evaluation of chilli genotypes against thrips, *S. dorsalis* only has been reported by several workers (David and Natarajan, 1986, Tewari *et al.*, 1985 and Krishna Kumar *et al.*,

1996), screening accessions against both thrips and mites is meager. Hence, the present study was carried out to identify promising genotypes having resistance to thrips and mites.

### MATERIALS AND METHODS

Twenty four chilli genotypes were evaluated for resistance to thrips and mites, during *kharif* of 1997, 1998 and 1999. Seedlings were grown on a raised bed and plant protection measures were not applied both in the nursery and main field. Thirty five day old seedlings were transplanted and accessions were evaluated in a randomised block design with three replications. A six meters row with a spacing of 0.6 x 0.6 m was maintained (10 plants in each row) for each accession. "Byadagi kaddi" a local cultivar served as susceptible check.

Observations were recorded on five plants in each genotype for both the pests. The symptoms of damage due to thrips (upward

curling) and mites (downward curling) was assessed on 35<sup>th</sup> and 50<sup>th</sup> day after transplanting based on a visual rating scale of 0 to 9. The details are as follows.

Grade	Per cent leaf curl
0	0 to 10
1	11 to 20
2	21 to 30
3	31 to 40
4	41 to 50
5	51 to 60
6	61 to 70
7	71 to 80
8	81 to 90
9	91 to 100

The per cent leaf curl index (LCI) was worked out using the formula.

$$LCI = \frac{\text{Frequency} \times \text{Grade point} \times 100}{\text{No. plants} \times \text{maximum grade}}$$

Completely ripened fruits were hand picked and shade dried. Yield of dry chilli was recorded.

## RESULTS AND DISCUSSION

Results of the experiment conducted over years (Table-1) indicated variations in the reaction of genotypes to the incidence of thrips and mites. The LCI due to thrips ranged from 15.73 to 42.80 per cent. The lowest per cent LCI was recorded in *Pant-CI* (15.73%). Besides, *LCA-312* (16.7), *Hissar Vijay* (16.9) *LCA-301* (18.3) and *LCA-304* (19.9) were all found to be better in comparison to susceptible check *Byadagi Kaddi*

(40.8%) and all the other accessions tested, *PKM-1* and *TNSP* exhibited a higher LCI of 42.8 and 40.16 per cent, which was more than the susceptible check.

Likewise, PCI due to mites ranged from 19.6 to 40.4 per cent. The lowest per cent leaf curl index was recorded in *LCA-304* (19.6) followed by *GPC-69* (20.1), *LCA-312* (20.2), *Pant C-1* (20.9) and *CO-1* (21.0) compared to *Byadgi kaddi* (40.4%). *Pant C-1*, *LCA-304* and *LCA-312* exhibited, least leaf curl incidence to both the pests and hence, were found to be a promising resistance source. These results are in agreement with Prabhu and Jagadeesha (1999).

The mean yield obtained ranged from 2.51 to 8.8 q/ha and the lowest yield was recorded in genotype *SIC-10-166*, where as the highest yield in *KDSC 510-10*. Susceptible check *Byadgi kaddi* recorded 5.0 q/ha.

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**Table 1 Screening Chilli genotypes for resistance to thrips, *S. dorsalis* and mite, *P. latus***

Sl. No.	Genotypes	% LCI for thrips				% LCI for mites				Yield (Q/ha)			
		1997	1998	1999	Mean	1997	1998	1999	Mean	1997	1998	1999	Mean
1.	Pant C-1	7.2	12.8	27.28	15.73	9.9	15.3	37.5	20.9	7.75	5.92	2.1	5.23
2	LCA 304	12.9	19.3	27.65	19.9	13.6	9.8	35.5	19.6	13.5	2.66	2.37	6.1
3	LCA 312	13.7	15.3	21.15	16.7	15.3	13.9	31.5	20.2	12.8	5.7	2.45	6.9
4	LCA 301	-	9.8	31.0	18.3	17.7	15.3	34.5	22.5	10.1	5.58	2.05	5.9
5	B-1-1	19.8	51.9	33.5	35.06	21.4	15.6	52.0	23.8	11.1	0.79	1.75	4.54
6	H.Vijay	20.8	29.9	32.0	16.9	23.2	19.3	29.5	24.0	4.1	4.60	2.80	3.1
7	CO-1	23.5	15.3	38.0	22.4	21.8	9.8	31.5	21.0	12.8	8.52	3.35	8.2
8	GPC-69	24.6	17.4	21.5	22.1	27.2	9.8	23.5	20.1	4.6	4.52	4.00	4.36
9	S-32	25.6	23.2	35.0	31.2	24.0	11.1	59.0	31.3	14.5	1.02	1.20	5.57
10	P.Jwala	27.8	25.8	32.0	31.2	29.6	11.1	43.5	28.0	4.60	2.71	1.50	2.93
11	LCA-206	28.6	39.8	18.5	28.5	21.4	36.3	23.5	27.0	14.4	6.76	3.20	8.12
12	SIC-10-166	30.1	36.7	53.5	28.9	15.2	15.2	58.5	29.6	4.40	0.59	0.55	2.51
13	LHM20	31.1	21.1	36.0	28.9	21.7	1.0	46.5	27.4	9.1	7.40	2.00	6.1
14	G4	31.1	17.4	36.5	28.3	27.9	34.4	54.5	38.9	7.00	5.43	1.60	4.6
15	DS-1	32.1	26.3	32.5	30.3	25.9	16.3	59.0	33.73	5.50	2.44	1.40	3.8
16	KDSC-510-10	34.0	19.3	24.5	25.9	33.8	27.2	27.0	29.3	11.5	4.74	2.95	8.88
17	PKM-1	34.8	43.2	50.5	42.8	37.4	14.1	29.5	26.9	9.2	2.72	1.95	4.6
18	B.KADDI	34.9	45.5	40.5	40.8	32.4	36.8	52.0	40.4	11.30	2.54	1.36	1.0
19	CO3	35.9	15.3	28.5	26.5	24.8	9.8	51.0	21.53	8.70	8.25	2.05	6.2
20	DH-9-66	36.8	32.5	29.5	32.9	29.1	18.3	50.0	32.4	13.1	0.74	1.95	5.3
21	GPC82	38.4	50.1	26.5	38.3	35.1	11.1	30.5	35.5	9.60	7.31	2.65	6.5
22	TNSP	38.4	50.1	32.0	40.16	32.6	12.8	42.5	29.3	10.4	1.00	1.90	4.3
23	JCA 283	39.4	22.7	33.0	31.7	25.5	33.8	30.5	29.9	8.40	1.30	0.20	3.5
24	SIC-11-79	40.2	19.3	23.0	27.5	37.1	19.3	51.5	35.9	14.2	4.8	0.20	6.4
	CV (%)	5.72	6.01	17.98	-	5.89	10.69	21.1	-	11.8	5.73	12.85	-
	SEM	1.00	1.1	3.92	-	0.92	1.37	5.85	-	0.75	1.35	0.47	-
	CD @ 5%	2.83	3.4	7.84	-	2.6	3.9	11.7	-	3.1	3.83	0.96	-

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