



## Effect of varieties/ hybrids of cotton on the parasitization efficiency of *Trichogramma chilonis* Ishii

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**ABSTRACT:** Six cultivars, namely, LD 327, LH 1556, Ganga Kaveri-151, Ankur 651, Dhaval-2 and LHH 144 were evaluated for testing efficacy of *Trichogramma chilonis* Ishii. *T. chilonis* was released 13 times during July to September at weekly interval @ 1,50,000 per ha. Four sprays of compatible insecticides were given during this period. The lowest bollworm incidence among intact fruiting bodies was recorded in LD327 (1.40%) which was on par with Ankur 651 (2.06%) and LHH144 (2.10%) but significantly lower than other cultivars. There was no significant difference in mean bollworm incidence among green bolls, parasitization, and seed cotton yield in various cultivars.

**KEY WORDS:** Bollworms complex, cotton, hybrids, parasitization, *Trichogramma chilonis*, varieties

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The host plants of arthropod-pests may affect parasitoids directly or indirectly through multiple interactions (Bottrell *et al.*, 1998). *Trichogramma chilonis* Ishii is an important egg parasitoid of cotton bollworms and is being widely used for the management of cotton bollworms in the Punjab (Brar *et al.*, 2003). Singh *et al.* (2001) tested the efficacy of *T. chilonis* (Bathinda strain) on different varieties of cotton under laboratory conditions and reported that parasitization was higher on cultivar LD327 and was on par with F846, while LH1556 was least preferred variety. The present studies were undertaken to find out the parasitization efficacy of egg parasitoid *T. chilonis* on different varieties/ hybrids of cotton under field conditions.

The experiment on the effect of different varieties/ hybrids of cotton on the parasitization efficacy of *T. chilonis* was carried out at

Entomological Research Farm, PAU, Ludhiana, during 2002. Six cultivars, namely, LD327, LH1556 and LHH144 (recommended) and Ganga Kaveri-151, Ankur 651 and Dhaval-2 were evaluated. The experiment was conducted in a randomized block design with three replications and a plot size of 100m<sup>2</sup>. Intra-plot distance was maintained as 5m. The egg parasitoid, *T. chilonis* was released 13 times at weekly interval during July to September @ 1, 50,000/ ha. The crop was sprayed twice based on the ETL against sucking pests (2 nymphs/ leaf for jassid) and two times against bollworms (5% fruiting bodies damage) on July 1, August 2, 22 and September 10 with insecticides. Confidor 200SL (imidacloprid) @ 100ml/ ha was sprayed at first and second spray for controlling sucking pests and deltamethrin 2.8EC @ 400ml/ ha and quinalphos 25EC @ 2.0 l/ ha were sprayed for the control of bollworms in 3<sup>rd</sup> and 4<sup>th</sup> spray.

The parasitoid was released 3-4 days after spray. At least 25 eggs of *Helicoverpa armigera* were collected at weekly interval from each plot to find out egg parasitization. The incidence of the bollworms among the intact fruiting bodies and green bolls was recorded from five plants selected at random from each plot at weekly interval. The yield of seed cotton was recorded on whole plot basis. The data were analyzed statistically after arcsine transformation.

### A. Bollworm incidence

The lowest bollworm incidence among intact fruiting bodies was observed in LD327 (1.40 %), which was on par with Ankur 651 (2.06 %) and LHH144 (2.10 %) but significantly lower than other cultivars (Table 1). The mean maximum bollworm incidence (2.84 %) was recorded in Dhaval 2, which was significantly higher than cultivar LD327. There was no significant difference in mean bollworm incidence among green bolls in various cultivars.

### B. Parasitization

The mean parasitization of *H. armigera* eggs by *T. chilonis* did not vary significantly among

cultivars but the parasitization varied from 17.8 per cent in LD327 to 20.8 per cent in Ganga Kaveri 151 (Table 1).

### C. Yield

The incidence of the bollworms especially *H. armigera* was low during 2002 hence the yield was higher. There was no significant difference in seed cotton yield among different cultivars (Table 1). The highest yield (22.42 q/ha) was given by LHH144 followed by LD327 (22.25q/ha) and LH1556 (20.35 q/ha).

On the basis of parasitization, the bollworm damage and yield, all the varieties/hybrids were found on par. Earlier, Singh *et al.* (2001) reported that under laboratory conditions, the parasitization was significantly different in different varieties of cotton under single choice test, but under multiple choice test all the varieties were on par. Asifulla *et al.* (1998) reported that parasitization of eggs of bollworms (*H. armigera*, *Earias* spp. and *Pectinophora gossypiella*) by *T. chilonis* was higher on glabrous varieties DCH 32 (23.8%) and BCS 23-48-7 (17.8%) compared with Abadhitha (3.5%), NHH44 (6.3%), AK-235 (9.8%) and Jayadhar

**Table 1. Effect of varieties / hybrids on incidence of cotton bollworms and parasitisation of *H. armigera* eggs by *T. chilonis***

Variety/ hybrid	Mean bollworm incidence (%)		**Parasitization of <i>H. armigera</i> eggs (%)	Yield (q/ha)
	Fruiting bodies	Green bolls		
LD327	1.40(6.72)	2.35(8.74)	17.80(24.93)	22.25
LH1556	2.23(8.57)	2.93(9.84)	19.40(26.05)	20.35
LHH 144	2.10(8.31)	3.47(10.72)	18.60(25.56)	22.42
DHAVAL 2	2.84(9.66)	3.06(9.92)	19.20(25.96)	18.73
ANKUR 651	2.06(8.21)	3.21(10.31)	18.60(25.54)	20.18
GANGA KAVERI 151	2.22(8.57)	3.29(10.43)	20.80(27.11)	18.20
CD(p=0.05)	(1.62)	(NS)	(NS)	NS

Figures in the parentheses are arcsine percentage.

(11.3%). Spraying fenvalerate after or before release of *T. chilonis* showed parasitization ranging from 0.7 to 32.5 per cent in Abadhitha and DCH 32, respectively. Mohite and Uthamasamy (1998) studied the parasitization of *H. armigera* eggs by *T. chilonis* on wild species of *Gossypium*. The parasitization was lowest on *G. raimondii* (25.3%) and highest (57.3%) on *G. harknessii* and it was negatively correlated with trichome density.

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