J.Biol.Control, 4 (1), 57-58, 1990

Effect of Leaf Pubescence in Cotton, *Gossypium hirsutum* on the Parasitism of Whitefly, *Bemisia tabaci* (Gennadius)

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Two aphelinid parasites viz., *Eretmocerus mundus* Mercet and *Encarsia shafeei* Hayat are important parasitoids causing 85 to 90% mortality of cotton whitefly, *Bemisia tabaci* (Gennadius) (Natarajan *et al.*, 1986.) The abundance and activity of natural enemies depend on the physical and chemical traits of the host plant upon which the host insect or prey is located (Vinson, 1976). In cotton, cultivars with glabrous leaf support more natural enemies than those with hairy leaves (Schuster and Calderon, 1986). The effect of cotton genotypes on the activity of two parasites of *B. tabaci* is reported.

Eight cotton genotypes (*Gossypium hirsutum* L.)with differential pubescence were raised in a randomised block design with three replications during 1986-87 and 87-88 seasons. The plot size was 10m^2. The populations of whitefly nymphs and parasites were assessed on 30 leaves collected from the middle canopy (where the nymphal population is high) of 10 plants @ 3 per plant (Natarajan *et al.*, 1986). Hair density of the leaf lamina and the honeydew on leaves were assessed and correlated with the population of the parasites and pest.

Parasitism on whitefly significantly varied among the genotypes. The glabrous types supported more parasitic activity, though the whitely nymphs were less compared to the hairy, and dense hairy types. In the hairy and dense hairy a reverse trend was observed (Table 1).

The dense hairy genotypes Kapatia, B 1007 and SRT-1 supported 12.1 to 18.7% and 9.2 to 11.2% parasitism in the first and second year respectively as compared to 27.9 to 28.3% and 34.6 to 37.9% in highly glabrous genotypes. The glabrous variety, Supriya and the hairy variety LRA 5166 harboured more number of

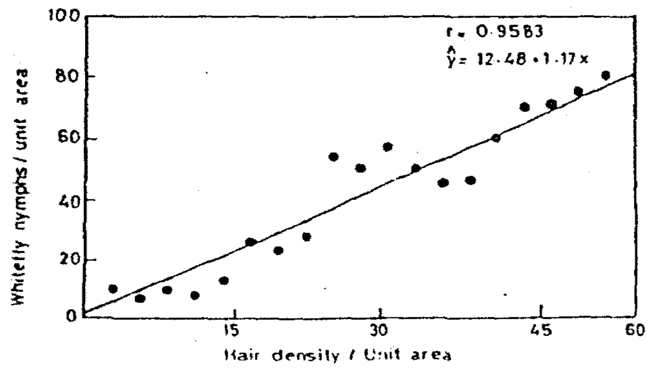

Fig. 1a Hair density and whitefly nymphs

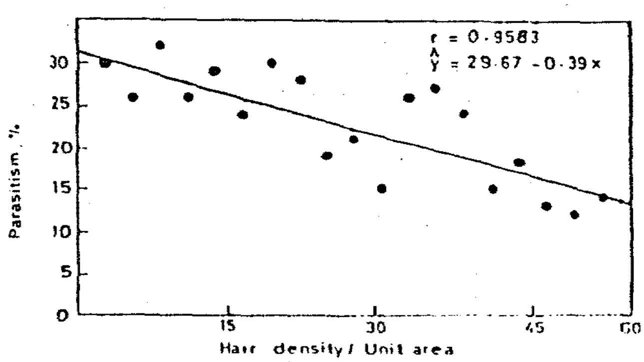

Fig. 1b Hair density and parasitism

Table 1. Effect of Cotton genotypes on whitefly parasitism

Genotypes	Leaf character	Hair No/cm^2	Parasitism % (1987)	Nymphs/cm^2 (1987)	Parasitism (%) (1988)	Nymphs/cm^2 (1988)	Honeydew droplet/cm^2
LK 861	Highly glabrous	1.4^{a}	27.9^{a}	8.0^{a}	37.9^{a}	6.0^{a}	1.3^{a}
Kanchana	"	3.7^{a}	28.3^{a}	10.0^{a}	34.6^{ab}	5.7^{a}	1.3^{a}
Supriya	Glabrous	8.3^{b}	24.1^{ab}	23.3^{b}	25.8^{bc}	14.0^{b}	2.0^{a}
LRA 5166	Hairy	21.3^{c}	25.5^{ab}	45.3^{cd}	19.1^{cd}	38.0^{cd}	18.3^{b}
MCU 5	"	27.6^{c}	NT	NT	18.9^{cd}	31.7^{c}	12.0^{b}
SRT 1	Dense Hairy	37.2^{d}	18.7^{bc}	53.4^{d}	11.2^{d}	44.3^{de}	28.3^{c}
B 1007	"	47.3^{e}	15.3^{cd}	67.0^{e}	9.2^{d}	57.5^{e}	31.2^{c}
Kapatia	"	53.8^{e}	12.1^{d}	73.5^{e}	NT	NT	NT

In a column means followed by the same letter do not differ significantly (P=0.05)
NT: Not tested

parasites than the dense hairy genotypes (Kapatia and B 1007), but the whitefly population was more abundant than that of the glabrous cultivar.

With an increase in hair density, there was a reduction in parasitism though the whitefly population tended to increase (Fig 1). Sippel *et al.* (1983) also observed high parasitism on glabrous okra leaf cotton than on pilose cotton cultivars. Treacy *et al.* (1984) observed a maximum parasitism of 68% on *Heliothis* eggs by *Trichogramma* sp. on glabrous cotton as compared to 6% only in dense hairy ones. The low parasitisms on hairy varieties might be due to the poor host searching ability and the adverse effects of hairs on parasites (Schuster and Calderon, 1986). Further, the hairs retain the honeydew secreted by host insects for a prolonged period which would impede the parasite mobility and activity.

ACKNOWLEDGEMENT

Thanks are due to Dr. M.Hayat, Aligarh Muslim University, India for identifying the parasites.

Key Words : Cotton, leaf pubescense, whitefly, parasitism

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