

Studies on the Parasitoids of Tea Mosquito Bug, *Helopeltis antonii* Sign. (Heteroptera : Miridae) on cashew with special Reference to *Telenomus* sp. (Hymenoptera : Scelionidae)*

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ABSTRACT

Surveys were undertaken to record the natural enemies of the tea mosquito bug, *Helopeltis antonii* Sign. the key pest of cashew in South India. Three species of Hymenopteran endoparasitoids, viz., *Telenomus* sp. *laricis* group (Hym. Scelionidae), *Chaetostricha* sp. (Trichogrammatidae) and *Erythmelus helopeltidis* Gahan (Fam : Mymaridae) were recorded on the eggs. *Bochartia* sp. (Acarina : Erythraeidae) was recorded as an ectoparasite on nymphs and adults. Seasonal occurrence of *Telenomus* sp. and *Chaetostricha* sp. was studied at two locations for two years (June 1990 to May 1992). *Telenomus* sp. was observed almost throughout the year with a range of 1.8 to 45.5 per cent parasitism, whereas *Chaetostricha* sp. was noted mostly during cropping season (November-May) with relatively low level of parasitization of 0.7 to 4.3 per cent. None of the weather factors (temperature, relative humidity and total rainfall) showed any significant influence on the parasitic activity of *Telenomus* sp.

KEY WORDS : *Helopeltis antonii*, cashew, parasitoids, *Telenomus* sp., *Chaetostricha* sp., *Erythmelus helopeltidis* *Bochartia* sp.

The tea mosquito bug, *Helopeltis antonii* Sign. (Heteroptera : Miridae) is the key pest of cashew in South India, causing an yield loss of 30-50% in different states. At present, chemical control measures are recommended for management of the pest (Anonymous, 1989). Since, there is potential restriction in USA and EEC countries in importation of cashew kernels containing pesticide residues, developing integrated pest control with main emphasis on biological control and thereby reducing reliance on chemical control may benefit the cashew growers of this country. In the present investigation, a survey was carried out to search for natural enemies of *H. antonii*. The activity of the local parasitoids especially *Telenomus* was also studied.

MATERIALS AND METHODS

Surveys were made at Mane, Panemangalore, Konaje and Puttur of Dakshina Kan-

nada district. The plant parts (shoot, petiole, midrib and inflorescence rachis) containing eggs of *H. antonii* were collected and counted under zoom stereomicroscope and treated in carbendazim 0.1% solution for 10 minutes. After treatment, samples were dried to remove the dampness of carbendazim solution and placed in a plastic container (250 ml capacity) fitted with a glass tube (75 x 7.5 mm) to record the emergence of parasitoids. The container (except the glass tube) was completely wrapped with a black paper. The nymphal and adult populations were observed for abnormal size with swollen whitish abdomen as described in the earlier report to record the parasitoids (Giesberger, 1983).

Seasonal activity of the egg parasitoids particularly *Telenomus* sp. which was dominant in the preliminary survey was studied in two different locations viz., Panemangalore and Konaje for two years

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Table 1. Seasonal activity of *Telenomus* sp. during 1990-92

Months	% Parasitism at *	
	Panemangalore	Konaje
June 1990 & 91	7.7 (30)	45.5 (11)
July "	7.2 (130)	36.4 (110)
August "	7.9 (95)	13.5 (39)
September "	8.3 (61)	39.1 (35)
October "	32.2 (93)	8.3 (13)
November "	8.1 (138)	12.5 (96)
December "	17.0 (238)	11.6 (112)
January 1991 & 92	13.9 (183)	6.8 (144)
February "	4.5 (294)	13.6 (266)
March "	1.8 (256)	8.8 (227)
April "	3.7 (41)	13.8 (63)
May "	8.1 (83)	22.9 (163)

* Figures in parentheses represent the number of eggs observed

from June 1990 to May 1992. The plant parts containing the eggs were collected at monthly interval and observed for emergence of parasitoids as described earlier. The percentage of parasitism was calculated on monthly basis and to know the influence of weather factors on parasitization, correlations were worked out.

RESULTS AND DISCUSSION

A total of 3,747 eggs were observed in four different locations and the results indicated the existence of two species of egg parasitoids, *Telenomus* sp. (*laricis* group) (Hymenoptera : Scelionidae) and *Chaetostricha* sp. (*laricis* group) (Hymenoptera : Scelionidae) and *Chaetostricha* sp.

(Hymenoptera : Trichogrammatidae). Of these two species, *Telenomus* sp. was most frequently collected. The genus *Chaetostricha* has been recorded for the first time from the eggs of *H.antonii*. *Telenomus* sp. has been reported in India on *H.cinchonae* Mann. (Simmonds, 1970) and on *H.theobromae* Miller from Malaysia (Ibrahim, 1989). Besides, these two parasitoids, a mymarid, *Erythmelus helopeltidis* Gahan recorded earlier by Devasahayam and Nair (1986) was also collected directly from the field. Two specimens of a new ectoparasitic mite, *Bocharitia* sp. (Acarina : Erythraeidae) were collected out of 585 nymphs and adults.

The studies on seasonal activity of *Telenomus* sp. and *Chaetostricha* sp. at two locations (Panemangalore and Konaje) indicated that *Telenomus* sp. occurred almost throughout the year (Table 1) and acted as a constant mortality factor in the population of *H.antonii* and the extent of parasitization during cropping period (flushing, flowering, fruiting and post harvest flushing from November to May) was in the range of 1.8 to 17.0 and 6.8 to 22.9 per cent at first and second locations respectively. At both the locations, there was no significant influence of weather factors on the level of parasitization by *Telenomus* sp. (Table.2) whereas, the occurrence of *Chaetostricha* sp. was comparatively low and mostly restricted to the cropping period, and extent of parasitization was in the range of 0.7 to 4.3 per cent. Since, *Telenomus* sp. appears to be dominant and

Table 2. Relationship between weather factors and parasitization by *Telenomus* sp. during 1990-92

Locations	Mean Maximum Temp. °C	Mean Min. Temp. °C	Mean Forenoon RH %	Mean Afternoon RH %	Total rainfall (mm)
Panemangalore	-0.060 N.S	-0.009 N.S	0.194 N.S	0.035 N.S	-0.104 N.S
Konaje	-0.384 N.S	0.252 N.S	0.193 N.S	0.387 N.S	0.354 N.S

N.S = Not Significant

occurs almost throughout the year, there is further scope of enhancing its parasitization in the cropping season by suitable augmentation techniques.

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