

Natural Enemies of Tur Pod Bug, *Clavigralla gibbosa* Spinola Infesting Pigeonpea in Madhya Pradesh

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ABSTRACT

A predator, *Antilochus coqueberti* Fb. (Pyrrhocoridae), a red parasitic mite, *Bochartia* sp. (Erythraeidae) and an egg parasite, *Gryon antestiae* (Dodd) (Scelionidae) were recorded on *Clavigralla gibbosa*. Among these natural enemies, only the egg parasite, *G. antestiae* was active throughout the oviposition period of its host and attacked 62.00 ± 10.77 per cent of the eggs.

Key words: *Clavigralla gibbosa*, natural enemies, *Antilochus coqueberti*, *Bochartia* sp., *Gryon antestiae*

The tur pod bug, *Clavigralla gibbosa* Spin. (Hemiptera; Coreidae) has been reported to be a regular and serious pest of pigeonpea in Madhya Pradesh (Gangrade, 1961; Bindra and Jakhmola, 1976; Odak *et al.*, 1976). The role of natural enemies in the regulation of pest numbers is of considerable importance. Hence studies on the natural enemies of *C. gibbosa* from pigeonpea agroecosystem were undertaken and the results are presented in this paper.

MATERIALS AND METHODS

Collections of eggs, nymphs and adults of *C. gibbosa* were made from October 1985 to April 1986 from the pigeonpea fields and reared to adults in the laboratory to study the occurrence of parasites and predators as well as extent of parasitisation. For these studies, 100 eggs, 50 nymphs and 50 adults were collected from 10 plants selected at random from an area of 0.4 ha at weekly intervals.

Predators were collected from the field and biological studies were made in the laboratory. Life cycle of parasites was studied in the laboratory. A twig of pigeonpea containing flowers was kept in a small vial with water and it was kept in a chimney to provide shelter and food for the adult parasites.

RESULTS AND DISCUSSION

In the present investigations, a predator, *Antilochus coqueberti* Fb. (Pyrrhocoridae : Hemiptera), a parasitic red mite, *Bochartia* sp. (Erythraeidae : Acarina) and an egg parasite *Gryon (Hadronotus) antestiae* (Dodd) (Scelionidae : Hymenoptera) were recorded on *C. gibbosa*.

In the last week of March 1986, adults of *Antilochus coqueberti* Fb. were observed preying upon the nymphs and adults of *C. gibbosa*. The predators usually pierced the intersegmental membrane in the lateral side of thorax of the prey with their strong proboscis. The prey remained

quiet and did not feel the insertion of the proboscis. The predator sucked out the body contents of the prey causing mortality in 7-9 min. The predator preferred adults of *C. gibbosa* over the nymphs. Gangrade (1961) also mentioned about a red coloured bug feeding on the adults of the tur pod bug in the field in Madhya Pradesh, but he did not identify the predator.

In the last week of January 1986, a parasitic red mite, *Bochartia* sp. was observed feeding on nymphs and adults of *C. gibbosa*. The parasitisation was upto 18 per cent with an average of 5.25 ± 7.39 per cent. The parasitisation in the months of February, March and April was 2.25 ± 1.92 , 3.25 ± 3.41 and 1.50 ± 1.50 per cent, respectively. The mites were mostly found attached on the cervix and legs of the host. Though one to two mites per host were common, in one instance as many as six were observed attached on to the antennae, head, middle femur, mesothorax and last abdominal segment of the prey. First and second instar nymphs of the host died within two to three days of attack. However, the later instars remained alive and death was occasionally noticed. Thus, they seem to be a weak natural enemy of the bug. Rawat and Kapoor (1969) also reported nymphs and adults of red mite,

Bochartia sp. as an ectoparasite of nymphs and adults of *C. gibbosa* infesting pigeonpea in Madhya Pradesh.

An egg parasite, *G. antestiae* was first noted in the month of October 1985 when the parasitisation ranged between 15 to 21 per cent with a mean of 18.0 ± 2.44 per cent. The parasitisation of eggs increased gradually from 13.5 ± 3.64 per cent during November 1985 to 62.00 ± 10.77 per cent during April 1986 (Table 1).

Gangrade (1961) and Bindra (1965) reported *Hadronotus antestiae* Dodd (Scelionidae : Hymenoptera) as an egg parasite of *C. gibbosa* from Jabalpur. Bindra (1965) also found parasitisation throughout the period of oviposition of the host, with maximum parasitisation of 56 per cent in January. Rawat and Kapoor (1968) reported egg parasitisation by *G. antestiae* from February to April, with maximum parasitisation of 39.8 per cent in February. Parasitised eggs turned dark greyish-black colour in contrast to reddish brown of healthy eggs.

When the host eggs of different age were provided for egg laying to adult parasites in different months, it was found that it preferred to oviposit on one to four-day old eggs with maximum preference (65%) to three-day old eggs in the month of January.

Table 1. Per cent egg parasitisation of *Clavigralla gibbosa* by *Gryon* (*Hadronotus*) *antestiae*

Month	Range	Mean
October 1985	15-21	18.00 ± 2.44
November 85	9-19	13.50 ± 3.64
December 85	5-27	15.75 ± 9.41
January 1986	6-46	19.25 ± 15.86
February 86	18-33	24.75 ± 5.40
March 86	22-71	46.75 ± 18.45
April 86	44-72	62.00 ± 10.77

Table 2. Measurements of adult *Gryon antestiae*

Length	Male (mm)	Female (mm)
Body	1.409 ± 0.013	1.472 ± 0.011
Abdomen	0.425 ± 0.01	0.488 ± 0.018
Antenna	0.851 ± 0.013	0.772 ± 0.027

Four-day old eggs were found to be least preferred. The preference of egg laying on the eggs of host was somewhat different in the months of February, March and April when one-day old eggs were most preferred and three and four-day old eggs were rejected outright by the adult parasite.

The duration from egg to adult emergence was maximum in January (24.5 ± 0.05 days) and minimum in April (10.25 ± 3.34 days). The adult parasites survived for 4.5 ± 0.05 days in December and 1.5 ± 0.5 days in April. The longer egg and larval periods and adult longevity during December-January and shorter periods during April-May be attributed to the low and high temperatures in the two periods, respectively. The measurements of male and female adults are presented in Table 2.

The adult parasites were black. The abdomen of the female adult was light brownish-yellow with pointed tip, whereas it was dark black and rounded with a median caudal filament in male. Hind legs were long with swollen femora, measuring 1.2 mm in length. There were three tarsomeres with paired claws. Antennae were geniculate, with 11 segmented flagellum. The larva was white in colour with light brown head. Pupa was exarate and remained within the host egg-shell by keeping its ventral side upward. The adult parasite came out after cutting a hole in the depressed portion of egg.

The parasite remained active throughout the oviposition period of its

host and attacked upto 62.0 per cent eggs. Further, one generation of the parasite took only 10.25 to 24.5 days as against 23.00 to 51.00 days for its host. Thus, the parasite may find use in the management of the pest. All the previous workers (Gangrade, 1961; Bindra, 1965; Rawat and Kapoor, 1968) reported this egg parasite as an effective, efficient and promising one against *C. gibbosa*.

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