

STUDY OF ROSTRUM AND ANTENNA MALE FEMALE AND ALL INSTARS OF *CHRYSOCORIS STOLLI* WOLF (HETEROPTERA -PENTATOMIDAE -SCUTELLERANE)

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ARTICLE INFO

Article History:

XXXXXXXXXX

Key words:

Rostrum Antennae *Chrysocoris stolli* adults and instars

ABSTRACT

Insecta is the largest class of phylum arthropoda and members of this class are characterized by the presence of three pairs of legs; hence, called Hexapoda, Besides, these tracheate organism have usually one or two pairs of wings. Insects always have been associated with mankind in one way or the other as some of them are beneficial other are pests of crops and house hold articles. *Chrysocoris stolli* Wolf (Heteroptera- Pentatomidae- Scutellerinae) is a phytosuecivorous bug, which infests *Cassia occidentales*, *Croton sparisiflorum*, *Pennisetum typhoides*, (Bajra) and *Litchi chinensis* at Saharanpur in good number and by its desapping habit causes considerable loss to these plants of economic value.

Male and female *Chrysocoris stolli* can be identified with their dimorphic characters presented in table (1) rostrum and antennae. Instars of *Chrysocoris stolli* can be identified with their dimorphic characters presented in table (2) rostrum and antennae. All figers and table attached in this result.

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INTRODUCTION

Male and female *Chrysocoris stolli* can be identified with their dimorphic characters presented in (table-1). The antennae are dark brown with apical first and second segments and fourth segment light brown basally. First and second segments have larger and less dense punctuations while third and fourth antenna segments have small but dense punctuations giving brown, black appearance to the antenna (Fig-1). Comparative length of antenna segments is presented in table-1. Rostrum of male extends upto 5th and 6th abdominal sternite medially. The rostrum of male is brown with dark brown punctuations. It measures 6.2 to 6.8 mm in length with an average of 6.9 mm in male while in female it ranges from 6.9 to 7.3 mm in length with an average of 7.2 mm. Infemale rostrum generally extends upto 6th abdominal sternite. Comparative length of rostral segments is given in .verage width in between the eyes is calculated 1.2 mm and across the eyes 1.5 mm. Antennae is four segmented which has brown scape and pedicel and brown black first and second flagellar segments. Terminal lower half segment is brown and upper half brown black and it is clavate in shape (Fig-2A). However, pedicel and first flagellar segment are not clearly demarcate. Hence, this segment is hereby, given name as pedicel + flagellum first. This condition occurs in all the nymphal instars but in adults these segments are separate.



Chrysocoris stolli



Food Plant of *Chrysocoris Stolli*

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The comparative length of antennal segments are scape 0.1, pedicel + flagellum Ist 0.4 mm, second flagellar segment 0.6 mm, flagellum IIIrd segment 0.5 mm and total average length is 1.6 mm table-2. Attached all instars average with in the results.

MATERIALS AND METHODS

The present study deals with *Chrysocoris stollii*, a pest of *Cassia occidentalis*, Croton and Bajra and Litchi etc. Regarding this, the method of collection of bugs, biology, ecology, population dynamics, studies, rearing techniques and mounting methods are described here-A. Rearing of *Chrysocoris stollii*: For the study purpose, district Saharanpur was divided in 5 regions, in, Saharanpur proper, Nakur, Behat, Sarsawa and Nagal. Plants were selected randomly in these regions and bugs were picked up from *Cassia occidentalis* and *Croton sparisiflorum* and Bajra by hand picking method. In this experiment various shades of lights, viz;- red, blue, green, yellow and orange were taken into consideration by using zero watt bulbs for attraction of bugs. For this purpose a big cage of the size (60x40x30cm) was taken and it was divided into six compartments leaving a small gap (2½ x 2½ cm) in each septum toward lower side. In this way all these six chambers were internally connected to each other so that bugs may move freely in each one without any interference. Now, in each chamber zero watt bulb of various shades of light, viz;-red, green, blue, yellow and orange were provided except a central chamber which was kept dark. In this chamber bugs were released and the bulbs were switched on during the night and observations were recorded. It was noticed that not even a single bug moved to other lighted chambers from central dark one. To ascertain further, 10 bugs were released in each chamber except central

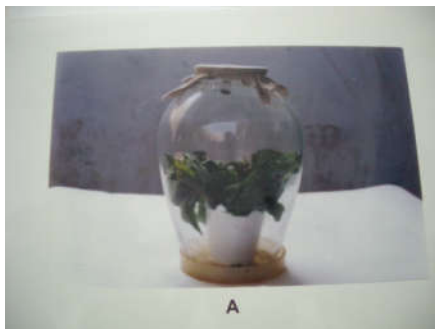
dark one and the bulbs were lighted. It was observed that the bugs migrated to darker chamber within half an hour. This indicates negative attitude of the bug towards light.

RESULTS

Male and female *Chrysocoris stollii* can be identified with their dimorphic characters presented in table-1. Antennal length of male bug ranges from 8.3 mm to 8.9 mm with an average of 8.8 mm while in female it ranges from 8.9 to 9.2 mm with an average of 9.0 mm table – 2. The antennae are dark brown with apical first and second segments and fourth segment light brown basally. First and second segments have larger and less dense punctuations while third and fourth antennal segments have small but dense punctuations giving brown, black appearance to the antenna (Fig-2). Comparative length of antennal segments is presented in table-1. Rostrum of male extends upto 5th and 6th abdominal sternite medially. The rostrum of male is brown with dark brown punctuations. It measures 6.2 to 6.8 mm in length with an average of 6.9 mm in male while in female it ranges from 6.9 to 7.3 mm in length with an average of 7.2 mm (Table-1). In female rostrum generally extends upto 6th abdominal sternite. Comparative length of rostral segments is given in table-1. Pronotum is metallic greenish yellow with black spots. Its length in male range from 3.3 to 3.6 mm with an average of 3.4 mm while in female it measures 3.4 to 3.7 mm in length, average being 3.5 mm. The width of male pronotum is 1.5 to 1.63 mm with an average of 1.62 mm. Pronotum of female ranges from 1.66 to 1.73 mm in width, average being 1.69 mm. Mesothorax bears dense punctuations in male and less dense in female.

First instar Antennae is four segmented which has brown scape and pedicel and brown black first and second flagellar segments. Terminal lower half segment is brown and upper half brown black and it is clavate in shape (Fig-2). However, pedicel and first flagellar segment are not clearly demarcate. Hence, this segment is hereby, given name as pedicel + flagellum first. This condition occurs in all the nymphal instars but in adults these segments are separate. The comparative length of antennal segments are scape 0.1, pedicel + flagellum Ist 0.4 mm, second flagellar segment 0.6 mm, flagellum IIIrd segment 0.5 mm and total average length is 1.6 mm .

Second instar antenna bears scape, pedicel, flagellum, flagellum IInd and flagellum IIIrd. The terminal segment is clavate (Fig-2B). Total length of antenna is 2.4 mm and comparative length of its segments are - scape 0.2 mm, pedicel + flagellum first 0.4 mm, flagellum second 0.6 mm, and flagellum third 1.2 mm (Table-1). Like first instar, pronotum, mesonotum and metanotum are distinctly marked. Wing buds are not prominently marked. Three dorsal abdominal scent glands are now more prominent with dark punctuation at the base of first abdominal scent gland and semicircular punctuations at second and third abdominal scent glands. Rostrum is brown, four segmented with dark brown second, third and fourth rostral segments. Tip of fourth rostral segment is black with sensory hairs (Fig-2b). In first rostral segment, maxillary and mandibular styletes can be differentiated and they unite at the base of first rostral segment. In further rostral segments they lie in the middle of rostrum in the rostral groove. Rostrum measures 2.3 mm in length and comparative length of its segments are, first



Hurricane glass lantern chimney use of rearing *C.stollii*



Wooden wire gauze cage use for rearing *C.stollii*

segments 0.2 mm, second 0.5 mm, third 0.3mm, and fourth 1.3 mm table-20. Legs are moderately sized with hairy setae on distal tibia as well as on tarsi (Fig-3).

Third instar Antenna is like preceding instars (Fig-2C). It measure 4.2 mm in length and comparative length of its segments are-scape, 1.0 mm, pedicel and first flagellum 0.8 mm, flagellum II 1.1 and flagellum III 1.3 mm table-19. Small wingbuds start appearing. Abdominal scent glands are like preceding instars except bigger in size. Rostrum is brown and four segmented. The fourth half segment is brown and lower half is brown black having a tuft of sensory setae on its tip (Fig-2C). Rostrum measures 3.9 mm in length and comparative length of its segments are first 0.5 mm, second 0.7 mm, third 0.6 mm and fourth 0.9 mm.

Fourth instar Antenna (Fig-2D) measures 6.2 mm in length and comparative length of its segments are-scape 1.3 mm, pedicel + flagellum I, 1.4 mm, second flagellum segment 1.5 mm and third flagellum segment 2.0 mm. Rostrum is brown black four segmented (Fig-2D). The fourth lower half rostral segment is dark black and a tuft of sensory setae on its tip is present. Rostrum measures 5.2 mm in length and comparative length of its segments are-first 0.7 mm, second 1.0 mm, third 1.5 mm and fourth 2.0 mm

black brown and last segment also black brown with upper half light brown equipped with sensory setae. Antenna measures 7.1 mm in length and comparative length of its segments are-scape 1.3 mm, pedicel+ flagellum first 1.4 mm, second flagellum 1.9 mm and third segment is 2.5 mm.

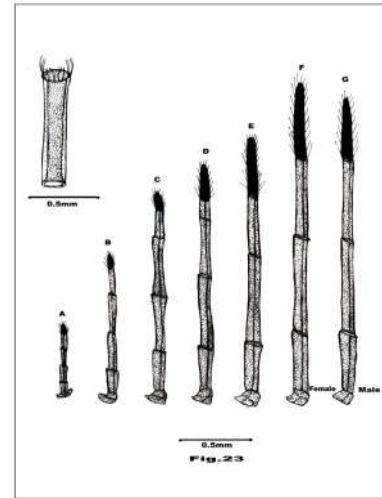


Fig. 1,2,3,4,5 A,B,C,D,E Rostrum of male and female *C.stolli* and all nymphs

Table 1 Average comparative length of antennal segment of various instars and adults *C.stolli* (in mm).

Particulars	Scape	Pedical + Flagellum I	Flagellum II	Flagellum III	Total Length	
Ist Instar	0.1	0.4	0.6	0.5	1.6	
IInd Instar	0.2	0.4	0.6	1.2	2.4	
IIIrd Instar	1.0	0.8	1.1	1.3	4.2	
IVth Instar	1.3	1.4	1.5	2.0	6.2	
Vth Instar	1.3	1.4	1.9	2.5	7.1	
Male	1.4	PD	F.L ₁	F.L ₂	F.L ₃	Total length
Female	1.4	0.2	1.7	2.5	3.0	8.8
		0.2	1.7	2.7	3.0	9.0

Average has been taken of 100 observations

Table 2 Comparative length (in mm) of Various Rostral Segments of Various instars and adults of *C.stolli*.

Particular	I	II	III	IV	Total length
Ist instar	0.2	0.5	0.3	0.2	1.2
IInd instar	0.2	0.5	0.3	1.3	2.3
IIIrd instar	0.5	0.7	0.6	1.9	3.9
IVth instar	0.7	1.0	1.5	2.0	5.2
Vth instar	0.7	1.2	1.5	2.5	5.9
Male	1.0	1.3	1.8	2.8	6.9
Female	1.0	1.5	1.9	2.8	7.2

Average has been taken for 100 observations

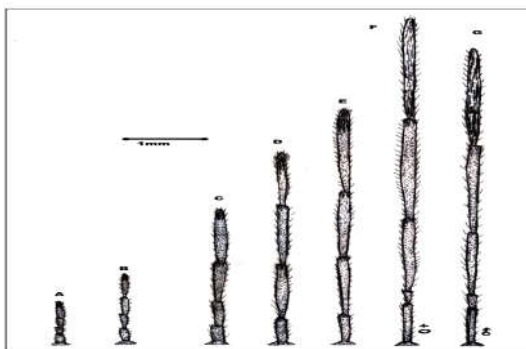


Fig. 1,2,3,4,5 A,B,C,D,E Antenna of male and female *C.stolli* and all nymphs

Fifth instar Antenna (Fig-2E) has brown black scape, dark black pedicel +first flagellum and second flageller segments is

Total length of antenna is 7.1 mm Rostrum is four segmented reaching upto anterior part of third abdominal segment (Fig-2E). It measures 5.9 mm length and comparative length of its segments are-first 0.7 mm, second 1.2 mm, third segment 1.5 mm and fourth segment 2.5 mm.

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How to cite this article:

Sehgal P .K (2017) 'Study Of Rostrum And Antenna Male Female And All Instars Of Chrysocoris Stollii Wolf (Heteroptera - Pentatomidae -Scutellerane)', *International Journal of Current Advanced Research*, 06(05), pp. 3985-3988.
DOI: <http://dx.doi.org/10.24327/ijcar.2017.3988.0412>
