

MORPHOMETRIC MEASUREMENT OF LADY BEETLE *Micraspis discolor* F (COLEOPTERA: COCCINELLIDAE)

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ABSTRACT

The experiment was conducted at the Department of Entomology, Hajee Mohammad Danesh Science and Technology University, Dinajpur. The length of the egg of *Micraspis discolor* was 1.2 ± 0.02 and the breadth was 0.5 ± 0.01 mm. The length of 1st, 2nd, 3rd and the 4th instar larvae were 1.6 ± 0.05 , 3.13 ± 0.08 , 4.10 ± 0.16 and 5.1 ± 0.08 mm respectively; while their breadths were 0.62 ± 0.02 , 0.70 ± 0.06 , 1.1 ± 0.10 and 1.3 ± 0.09 mm respectively. The average lengths of the male and female pupae were 3.1 ± 0.08 and 3.3 ± 0.09 mm respectively, and the breadths were 2.1 ± 0.05 and 2.5 ± 0.08 mm, respectively. The length and the breadth of the adult male were 4.1 ± 0.06 and 3.3 ± 0.08 mm and the female beetles were 3.7 ± 0.05 , 3.1 ± 0.06 mm respectively.

Key word: Morphometrics measurement, lady beetle, *Micraspis discolor* (Fab.)

INTRODUCTION

The coccinellids, commonly known as lady bird beetles have been known worldwide as a predator of a number of insects. They are distributed in many countries of Asia, including Bangladesh. Islam and Nasiruddin (1978) cited that *Verania discolor* (Fab.) had been recorded as *Micraspis discolor* (Fab.). Islam and Nasiruddin (1978) cited that *Verania discolor* (Fab.) had been recorded as *Micraspis discolor* (Fab.). Lady beetles are of great economic important as predaceous both in their larval and adult stages on various important crop pests such as aphids, coccids and other soft bodied insects (Hippa *et al*, 1978; Kring *et al*, 1985). The species *M. discolor* also feed on many insect pests such as aphids, brown plant hopper, corn borer, Lepidopteron insects, mealy bug, white flies etc (Rao *et al*, 1989; Mani, 1995). But review of morphological characteristics and measurement of *M. discolor* is limited. The present study was, therefore undertaken to know the morphological characteristics of *M. discolor*.

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MATERIALS AND METHODS

The experiment was conducted at the laboratory of the Department of Entomology, Hajee Mohammad Danesh Science and Technology University (HSTU), Dinajpur, during the period of January to April 2007 at $21.02^{\circ}\text{C} \pm 4.5^{\circ}\text{C}$ and 66.05 ± 0.95 % RH.

A culture of *Micrapis discolor* was established in the laboratory in order to supply necessary insects for the experiment. For this purpose, some males and females of *M. discolor* were collected by sweep net from the unsprayed horticulture field. These beetles were sexed and paired in petridishes (6.0 x 1.0 cm) for egg laying. The bottom of the petridishes was covered with blotting paper (Whitman filter paper no 1). Bean aphids were also collected daily with infested bean leaves, stems, twigs and inflorescences from the same unsprayed field and supplied as food. After hatching of eggs, the grubs were transferred to several medium sized petridishes (11 cm diameter) and reared on bean aphid till adult emerged.

Measurement on egg, larva, pupa and adult were taken based on 10 individual. For the measurement of length and breadth of the eggs oculo microscope (oculomicrometer) were used. The length and breadth of different larval instars, pupa and adult beetles were measured with the help of ordinary millimeter scale.

RESULTS AND DISCUSSION

Egg: The average length of the egg was 1.20 ± 0.02 mm with minimum size of 1.10 mm and maximum size of 1.25 mm. The average breadth of the eggs 0.50 ± 0.01 mm with a minimum and maximum size of 0.50 mm and 0.60 mm, respectively (Table 1).

Larva: Larvae were soft-bodied, elongated somewhat flattened and covered with minute spiny structure. There were three ocelli on either side of the head and the mandibles were sickle shaped. Three pairs of legs were long and slender. The larvae passed through 4 larval instars with three moults.

First instar: The general color of the 1st instar larva is grayish brown. The head, thorax and abdominal segments cannot be seen without microscope at this stage. The length and breadth of newly hatched larva varied from 1.5 to 2.00 mm and 0.55 to 0.75 mm respectively and the average length in this stage was 1.60 ± 0.05 mm whereas breadth was 0.62 ± 0.02 mm.

Second instar: At this instar, the larva increases in size. All other parts of the body as well as its habit and general appearance were found more or less same as in the previous instar. The length and breadth of the larva were 2.80 to 3.60 mm and 0.50 to 1.00 mm, respectively and the average length and breadth were 3.13 ± 0.08 mm and 0.70 ± 0.06 mm, respectively (Table 1).

Third instar: At this instar, morphologically they are similar as of the 2nd instar but differ in shape and size of the body. Third instar larvae were more elongated and more active than previous instar. The length and breadth of the larva varied from 3.50 to 5.20 mm and 0.85 to 2.00 mm, respectively and the average length and breadth were 4.10 ± 0.16 mm and 1.10 ± 0.10 mm, respectively (Table 1).

Table1: Measurement of different life stages of *M. discolor*

Life stages	Length (mm)			Breadth (mm)		
	Minimum	Maximum	Mean \pm SE	Minimum	Maximum	Mean \pm SE
Eggs	1.10	1.25	1.20 ± 0.02	0.50	0.60	0.50 ± 0.01
Larva						
1 st instar	1.50	2.00	1.60 ± 0.05	0.55	0.75	0.62 ± 0.02
2 nd instar	2.80	3.60	3.13 ± 0.08	0.50	1.00	0.70 ± 0.06
3 rd instar	3.50	5.20	4.10 ± 0.16	0.85	2.00	1.10 ± 0.10
4 th instar	4.60	5.50	5.10 ± 0.08	1.00	2.10	1.30 ± 0.09
Pupa						
Male	2.80	3.60	3.10 ± 0.08	1.80	2.30	2.10 ± 0.05
Female	2.80	3.75	3.30 ± 0.09	1.90	2.75	2.50 ± 0.08
Adult						
Male	3.45	3.90	3.7 ± 0.05	2.85	3.40	3.10 ± 0.06
Female	3.85	4.40	4.1 ± 0.06	2.75	3.60	3.30 ± 0.08

Fourth instar: Final instar larvae were black colored and have white band on the basal side of thorax and abdomen. The body was elongated, slightly broader towards the posterior region. The larvae attained a greater size in this stage. The length and breadth of the larva were 4.60 to 5.5 mm and 1.00 to 2.10 mm and the average length and breadth were 5.10 ± 0.08 mm and 1.30 ± 0.09 mm, respectively (Table 1).

Pupa: The pupa was non-feeding stage. Usually pupa was found reddish in color. The female pupa was longer than the male. The average body length of the male pupa was 3.1 ± 0.08 mm having 2.1 ± 0.05 mm in breadth; While the female pupa were 3.3 ± 0.09 mm in length with 2.5 ± 0.08 mm in breadth. But the average length and breadth of male and female pupa were 3.2 ± 0.09 and 2.3 ± 0.07 respectively (Table 1). Hannan (1997) found that the average length and

breadth of pupa of *M. discolor* were 3.11 mm and 2.22 mm, which is closed to the present result.

Adult: The adult beetle was red in color. Its head was small and partly concealed by pronotum, which was black in adult beetles and possessed chewing type of mouth parts.

The body length of the male were measured 3.45 to 3.90 mm with an average of 3.7 ± 0.05 mm and the female were measured 3.85 to 4.40 mm with an average 4.1 ± 0.06 mm. The breadth of the body of the male were measured 2.85 to 3.40 mm with an average of 3.1 ± 0.06 mm and the female were measured 2.75 to 3.60 mm with an average of 3.30 ± 0.08 mm (Table 1). Samal and Misra (1985) measured that the body of *M. discolor* was 3.2 to 3.8 mm in length and 2.8 to 3.2 mm in breadth and males were usually slightly smaller than the females. Hannan (1997) observed that the average length and breadth of *M. discolor* were 3.84 and 3.15 mm, respectively. These results are an agreement with the findings of the present experiment.

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