GAU Res. J. 1985. 11 (1) : 24.26

Biology of Okra Leaf Miner, *Trachys herilla* Obenb. (Coleoptera : Buprestidae)

G. G. Radadia and C. B. Patel

Department of Entomology, GAU, Navsari Campus, Navsari

ABSTRACT

The biology of okra leaf miner, *Trachys herilla* Obenb, showed that eggs were dull white and elliptical with an incubation period of 3.69 ± 0.55 days. Full grown larva was pale yellow and 7.25 ± 0.76 mm long. It passed through three instars in 4.61 ± 0.69 days. *Bracon* sp. a larval parasite was recorded. Pupa was yellowish with a brownish tinge and was 8.51 ± 0.11 mm long and 2.21 ± 0.11 mm broad. Pupal period lasted for 4.39 ± 0.49 days. Adult was metallic black with yellowish white pubescence on elytra. Adult female measured 3.07 ± 0.10 mm in length and 1.81 ± 0.05 mm in breadth while adult male measured 2.75 ± 0.13 mm in length and 1.56 ± 0.07 mm in breadth. Fecundity was 199.61 ± 140.73 eggs during longevity of 148.57 ± 69.70 days. Male longevity was 63.78 ± 58.26 days.

(Received on 21st April, 1984)

INTRODUCTION

The okra leaf miner, *Trachys herilla* Obenb, has been reported as a pest of okra by very few workers in India. The first record of *Trachys* spp. in India damaging okra was from Gujarat by Patel and Patel (1966). Occurrence of *Trachys herilla* Obenb. on okra plant was reported by Kadyan and Verma (1973) at Hissar (Haryana). Except for some preliminary studies on the bionomics done by Rawat and Jakhmola (1969) and Sandhu and Bhalla (1975), there is a paucity of information on biology of this pest. Hence a detailed study was undertaken on biology of this pest under laboratory conditions at Navsari.

MATERIALS AND METHODS

Various cultivated and wild plants were observed periodically for the presence of the insect to find out alternate host plants of *Trachys herilla* Obenb. The damage done by the insect was observed and measured to describe its nature and extent.

Biology was studied at N. M. College of Agriculture, Navsari during 1980-81. Infested leaves having different stages of *Trachys herilla* Obenb. were brought to the laboratory for further rearing. Emerging adults were used for further studies. A pair of male and female was confined to a lamp glass chimney covering an okra plant grown in a ploythene bag. Laboratory rearing of the insect was also done on such plants. Observations were reported for egg stage, larval and pupal periods, site of pupation nature of damage, adult longevity, fecundity, natural enemies and alternate host plants.

RESULTS AND DISCUSSION

Host Plants :

A survey was carried out from June to September 1980 in search of alternate hosts during which the insect was found feeding on okra and *'Kanski'* (*Abutilon indicum*). Larval damage varied from 1.33 to 13.50 per cent (Average 6.17 per cent) on okra and up to 4.25 per cent (Average 1.97 per cent) on *Kanski*.

Nature and extent of damage :

Adults and larvae both damage okra leaves.Soon after emergence from the pupa in the mine, the beetle pushes itself out of the mine and feeds externally on tender leaf margins, making irregular notches. On hatching the larva enters into leaf tissue, by cutting a portion of chorion attached to leaf surface and starts mining the leaf. Initial excrets is pushed into the empty egg shell. The larva feeds upon the mesophyll and makes a blister like patch. Sometimes, it makes a zigzag gallery in the beginning and thereafter a blister like patch. Larval mine is translucent and whitish through which larva as well as a black strip of excretal pellets can be seen.

A single larva damaged the leaf area from 117 sq.mm. to 316 sq.mm with an average of 208.34 ± 49.12 sq.mm (n=61) during its larval period. Number of larvae on infested plants (n=141) varied from 1 to 22 with a mean of 2.94 where as, on infested leaves (n=257) it varied from 1 to 9 averaging 1.61.

Life history and description of different stages :

Oviposition and fecundity :

The mean preoviposition, oviposition and postoviposition periods were 4.96 ± 1.15, 139.09 ± 105.40, 4.52 ± 5.02 days respectively. Fecundity varied from 11 to 538 eggs with an average of 199.61 ± 140.73 eggs. The egg laying was maximum in the first two months of oviposition period. These findings do not tally with those of Rawat and Jakhmola (1969) who reported oviposition period ranging from 13.3 ± 4.48 to 17.5 ± 0.50 days with fecundity as 11.3 ± 5.79 eggs.

Egg :

Small, elliptical dull white when freshly laid, measured (n=70) 1.23 ± 0.09 mm and 1.00 ± 0.08 mm in length and breadth, respectively and laid singly and almost equally on both the leaf surface. Findings of Rawat and Jakhmola (1969) that lower leaf surface was preferred for oviposition to the upper one were not confirmed. A day or two later, eggs turned blackish due to developing embryo seen through the chorion. Incubation period (n=188) averaged 3.69 ± 0.55 days with 72.87 per cent hatch. These observations agree with those of Rawat and Jakhmola (1969) and Sandhu and Bhalla (1975).

Larva :

Dorsoventrally flattened with 12 laterally swollen segments, pale yellow when newly hatched but deep yellow when full grown. Larva passed through 3 instars in 4.69 ± 0.69 days (n=109). Length and breadth for the first, second and third instar were 2.12 ± 0.28 mm and 0.46 ± 0.05 mm, 4.31 ± 0.52 mm and 0.80 ± 0.06 mm and 7.25 ± 0.76 and 1.23 ± 0.13 mm, respectively.

Pre pupa :

Deep yellow and the period ranged from 8.25 to 10.50 hrs. with a mean of 9.89 ± 0.57 hrs.

Pupa:

Pupation in leaf mine. Pupa yellowish with a brownish tinge when newly formed but turned reddish brown and than dark brown towards eclosion. Last larval skin remained attached to annal end of pupa. Pupa averaged (n=56) 3.51 ± 0.11 mm and 2.22 ± 0.11 mm in length and breadth and occupied (n=337) a mean of 3.29 ± 0.49 days.

Adult :

Metallic black with yellowish pubescence in elytra. Female averaged (n= 60) 3.07 ± 0.1 mm and 1.81=0.05 mm while male averaged 2.75= ± 0.13 mm and 1.56 ± 0.07 mm in length and breadth, respectively. Longevity of male and female were 148.57 ± 69.70 days and 63.78 days, respectively.

Sex ratio :

It was 1 : 1.19 for female to male.

Parasitism :

Bracon sp. was recorded as a larval parasite. Per cent parasitism during June, July, August and September was 0.0, 3.39, 22.92 and 42.61, respectively.

ACKNOWLEDGEMENT

The authors are grateful to the Director, Common Wealth Institute of Entomology, London, for identification of this insect and its parasite.

REFERENCES

Kadyan, A. S. and Verma, A. N. (1973). A new Buprestid pest of okra in Haryana. *Indian J. Ent.* **35** (1): 71-72.

Patel, H. K. and Patel, V. C. (1966). Additional records of new insect pests in Gujarat State. *Indian J. Ent.*, **28** (2): 270-71.

Rawat, R. R. and Jakhmola, S. S. (1969). Bionomics of the okra leaf miner, *Trachys* sp. (Buprestidae: Coleoptera). *Indian J. Agric. Sci.* **39** (6): 589-593.

Sandhu, G. S. and Bhalla, J. S. (1975). Leafminer beetle on okra. *Science and Culture*. **41** (1): 28-29.