BEHAVIORAL STUDIES OF THE MOBILE FORMS OF *SYNCLERA UNIVOCALIS* ON JUJUBE, *ZIZYPHUS MAURITIANA*

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One- or two-day-old larvae of *Synclera univocalis* Wlk. (Pyralidae: Lepidoptera) were found mostly (83%) on young leaves of jujube (*Zizyphus mauritiana* Lamk. var. *Umran*) trees; in 67% of the cases the interveinal area of the tender leaves was folded. As the larvae grew older, the sides of the leaf were folded and the larvae fed within them. The leaf was turned inward by 71% of the larvae, while the rest turned the leaf outward. In 99% of the cases only one larva was found per leaf; very rarely were larvae of two different species of webbers found on the same leaf. The occurrence of the larvae was greatest at a tree height of 1.5-2 m. The distribution of the pest in the orchard was random. The percentage of adults on leaves was significantly higher than on webs, branches, the ground, or hovering. The maximum number of adults counted was at 13.00 hours.

**KEY WORDS:** *Synclera univocalis*, behavior; *Zizyphus mauritiana*; jujube leaf-webber.

*Synclera univocalis* Wlk. constitutes 90% of the total jujube leaf-webber population in the Punjab and has gained pest status (5). The larvae fold the margin of the leaves with the help of silken threads and feed within. The advanced stages of the larvae may consume all of the green part of the leaves, leaving behind only a papery epidermis which leaves the tree with a very unhealthy appearance. Findings of *Synclera univocalis* Wlk. or its synonyms (*Glyphodes univocalis* Wik., *Spilomela retinalis* Led., and *Zebronia cottalis* Wlk.) have been reported from India, Sri Lanka, Burma, Aden, Palestine, Syria and South Africa (1-6).

The following behavioral observations of *Synclera univocalis* Wlk. (Pyralidae: Lepidoptera) were recorded in the jujube (*Zizyphus mauritiana* Lamk. var. *Umran*) orchard of Punjab Agricultural University, Ludhiana, during 1978-79.

**Larval Behavior**

During August 1979, 100 leaves per tree were cut with scissors from five trees and observed (25 leaves from each of the four sides of a tree); this procedure was repeated twice. Counts of larvae on 100 young and 100 old leaves revealed that one- or two-day-old larvae were found mostly (83%) on the new growth. Leaves with the interveinal area folded were observed to see whether this was due to feeding by the larvae or other causes; the folded leaves containing larvae were counted. In most of the cases (67%) the interveinal area of the young leaves was folded by the larvae.

As the larvae grew older, the sides of the leaf were folded and the larvae fed inside them. The leaf was turned inward by 71% of the larvae, and outward by 29%. The web was constructed with the help of thread-like secretions by the caterpillar. There were 67.8 single-leaf

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Part of the M.Sc. thesis of the senior author. Received Aug. 21, 1981; received in final form March 25, 1982.

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webs and 13.4 double-leaf webs per 100 leaves. With the exception of 1% with two larvae/leaf, only one larva/leaf was found; the infestation rate of a single larva/leaf was 33.6 larvae/100 leaves in this observation. Very rarely, the larvae of two different species of jujube webbers were found on the same leaf.

The slight jerk while plucking leaves by hand* resulted in the drop of 64% of the larvae from young leaves and 59% from old leaves (difference not significant).

Larval occurrence at different heights on the tree is presented in Fig. 1. The larval population was significantly lower at 0-0.5 m as compared with other heights (Duncan's Multiple Range Test). It appears from this that the female adults preferred to lay eggs on parts of the tree above 0.5 m.

Twenty-five leaves were checked on each side of the tree canopy to ascertain the jujube webber's preference, if any, for a particular direction. The study was done in March 1976, on 108 trees. The occurrence of the webbers was 13.6, 17.6, 18.5 and 17.1% on east, west, north and south sides of the tree canopy, respectively (differences not significant).

Twenty trees were selected at random: four each on the north, south, east and west sides of the orchard, and four in the center. One hundred leaves per tree (25 from each side) were taken during July and August, 1979, and the occurrence of the jujube orchard by *S. univocalis* was random, with no statistical differences among the sides or center of the orchard. Infestation in August was significantly higher than in July.

**Adult Behavior**

Five locations as resting sites of the adults were considered in the field, *i.e.*, webs, leaves,

![Figure 1](image)

*Fig. 1. Occurrence of *Synclera univocalis* larvae at different heights on jujube trees.*

* No larvae drop if the leaves are carefully cut off with scissors (see above).