

## Cashew Leaf Miner: Biology, Nature of Damage and its Management

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### Introduction

Cashew is one of the most important commercial crops in India. The production and productivity of cashew is influenced by many factors; among them insect pests is one of the major constraints. Around 180 species of insect and non-insect pests was in India resulting in substantial yield losses (Sundararaju, 1993). Out of these, considering the extent of damage inflicted and yield loss due to pest infestation, tea mosquito bug (*Helopeltis antonii* Signoret) and stem and root borer (*Plocaederus ferrugineus* L.) are considered as primary pests of cashew in India (Abraham, 1958) and serious pest in the cashew growing areas (Jaya Prabhavathi *et al.*, 2016). Leaf miner, *Acrocercops syngramma* Meyrick (Gracillariidae: Lepidoptera) is one of the important pests of cashew causing serious damage to the tender foliage during post monsoon period all over the country (Pillai, 1980; Sundararaju, 1984). It is very commonly noticed on nursery seedlings and young grafts. In older trees, new flushes get infested severely by this pest during the flushing period and the pest infestation is noticed during flowering season as well. Occurrence of this species on cashew is recorded in different parts of India, Indonesia and Thailand (CABI, 2021). Different host crop plants for cashew leaf miner are mango (*Mangifera indica* L.) and jamun (*Syzygium cumini* L.).

### Identification Characters

- The larvae after hatching from the eggs, start mining the epidermal layer on the upper surface of the tender cashew leaves.
- As a result of feeding, the affected areas form blistered patches of greyish white in colour.
- As the infested leaves mature the damage is manifested as big holes.

- Nursery seedlings and young plantations are more prone to the infestation of this pest than the older ones.

## Biology

### Egg

Eggs are tiny, transparent and glue like, laid on upper side of tender leaves which hatch in 5-7 days.

### Larva

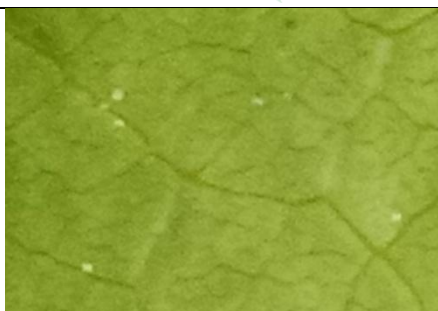
Freshly hatched larvae are pale white in colour and the head is brownish yellow. At maturity, it changes into cherry red colour. The larvae are almost cylindrical, tapering posteriorly. The larvae remain active most of the time under 'blister'. The caterpillars make their own way out of the mined areas and fall to the ground for pupation. The length of fully grown larvae is 5-9 mm. The total larval period ranged between 10 to 15 days.

### Pupa

Pupation takes place mostly in the soil and in some times in the leaf-folds in a thin membranous cocoon. While pupating, they secrete a membranous protective covering. The pupal period lasts 7 to 9 days.

### Adult

The adult is a silver grey moth with red eyes which lays eggs on the upper epidermis of tender leaves. Life cycle is 20 to 25 days.



**Eggs tiny glued on cashew leaf**



**Yellow and reddish cylindrical larva feeding inside the blisters**



**Pupae of cashew leaf miner**



**Adults-Cashew Leaf Miner**

### **Crop Damage and Characteristic Symptoms**

Young caterpillars soon after hatching, start mining the epidermal layer on the upper surface of the tender cashew leaves, leaving tortuous markings and feed below the epidermal layer of the tender leaves. Mined areas become swell up causing extensive leaf blisters, which later dry up resulting in distortion, browning and curling of the leaves. As a result, the affected areas form blistered patches of greyish white colour. As the attacked leaf ages, holes develop due to drying out of the damaged portion. The leaf miner injury results in the permanent damage to the young leaves which are shrivelled, dried and shed prematurely. Generally 1-5 larvae are seen in a single leaf, but up to 45 larvae have been observed in single leaf during peak infestation period (Vanitha, 2020).

The mining injury by caterpillars occurs both on tender leaves as well as shoots. Young plants are observed to be prone to attack by this pest. During peak infestation period, 3 to 8 blisters and nine caterpillars are observed on a single leaf in Cuddalore District of Tamil Nadu. Up to eight and 15 caterpillars have been observed on a single leaf by Rai (1984) and Athalye and Patil (1999) respectively.



**Leaf miner damage in older leaves**



**Leaf miner damage in new flushes**



**Tortuous mining on cashew leaf**



**Leaf blisters on cashew leaf**



**Epidermal tissues eaten by the larva**



**Pale yellow colour larva inside the blister**



Mining injury on shoot-early stage



Mining injury around shoot

### Favourable Season

The incidence is most common in New flushes during July to December reaching the peak during September – October in Cuddalore districts of Tamil Nadu, but incidence can be seen upto January at low level.

### Management

Under severe incidence in nursery and young plants as well as in the main field, spraying is required. Spraying of chlorpyrifos @ 2 ml/lit. of water or profenophos @ 2 ml/lit. of water are found effective in managing this pest. During spraying, wetting agent @ 1 ml/lit. of water should be added.

### Conclusion

In general, leafminers are the most severe polyphytophagus insect pests of vegetable and ornamental plants in the world (Spencer, 1973). If tender leaves are infested in some cashew plantations which are persistently injured, seriously reducing leaf photosynthesis in cashew plants. Blisters caused by leafminers during the feeding and lost the epidermal layers which results in destruction of leaf mesophyll (Leibee, 1984). It can greatly depress the level of photosynthesis in the plant. Saeed *et al.*, 2003, recorded that with leaf miners severe infestation, yield can also be affected. But cashew leaf miner is found serious pests especially during post monsoon period all over the country and very commonly noticed on nursery and young cashew plantations. Spraying may not be required in older trees. However, severe infestation in young seedlings requires spraying.

### References

Abraham, E. V. 1958. Pests of cashew (*Anacardium occidentale* L). *Indian Journal of Agric. Science (India)* 28(4): 531-543

Athalye, S. S. and Patil, R. S. 1999. Bionomics, seasonal incidence and chemical control of cashew leaf miner. *Journal of Maharashtra Agricultural Universities*, **23**(1): 29-23.

CABI, 2021. *Acrocercops syngamma* (Cashew leaf miner). Accessed at [www.cabi.org/isc/datasheet/7029](http://www.cabi.org/isc/datasheet/7029) on August, 2021.

Eradasappa, E., Mog, B., Savadi, S. and Mangalassery, S. 2020. Training manual on Cashew Production and Post Harvest Technologies. ICAR-Directorate of Cashew Research, Puttur, Karnataka, India. 143p.

Jaya Prabhavathi, S., D. Keisar Lourdusamy, S. Vincent and M. S. Aneesa Rani. 2016. Efficacy of Curative Treatments Using Insecticides Against Cashew Stem and Root Borer, *Plocaederus ferrugeni* L. (Coleoptera: Cerambycidae). Serials Publications, ISSN: 0254-8755. *International Journal of Tropical Agriculture*, **34** (1): 13-16.

Leibee, G. L. 1984. "Influence of temperature on development and fecundity of *Liriomyza trifolii* (Burgess) (Diptera: Agromyzidae) in celery". *Environ. Entomol.*, **13**: 497-501.

Pillai, G. B., Dubey, O. P. and Vijaya Singh. 1976. Pests of cashew and their control in India- a review of current status. *J. Plantation Crops*, **4** (2): 37-50.

Rai, P. S. 1984. Hand book on cashew pests. N. K. Sharma of Research Co. Publications. 124p.

Saeed, M., F. Naz, S. Ahmed and M. Aaqeel. 2003. Studies on level of infestation of pea leaf miner, *Chromatomyia horticola* Goureaux (Agromyzidae: Diptera) on pea crop in selected areas of NWFP, Pakistan. *Pak. Entomologist*, **25**(2): 227-230.

Spencer, K. A. 1973. "Agromyzidae (Diptera) of economic importance. Series Entomologica". The Hague. 9: 1-418

Sundararaju, D. 1984. Studies on cashew pests and their natural enemies in Goa. *J. Plantation Crops*, **12**: 38-46.

Sundararaju D.1993. Studies on the parasitoids of tea mosquito bug, *Helopeltis antonii* Sign. (Heteroptera: Miridae) on cashew with special reference to *Telenomus* sp. (Hymenoptera: Scelionidae). *J. Biol. Control.*, **7**(1):6-8.

Vanitha, K., Bhat, P. S. and Raviprasad, T. N. 2015. Pest status of leaf miner, *Acrocercops syngamma* M. on common varieties of cashew in puttur region of Karnataka. *Pest Management in Horticultural Ecosystems*, **21**(1): 55-59



Vanitha, K. 2020. Cashew Leaf Miner: Biology, Damage and Management Measures. *Agriculture and Food: e-Newsletter*, 2(5): 353-355.

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