



Common Name : Leafworm or Tobacco caterpillar
Local Name : Tambakhu khanari ali
Scientific Name : *Spodoptera litura* Boisd.
Family : Noctuidae
Order : Lepidoptera
Pest Category : Foliage feeder

Description of Insect Stages:

Egg: Each egg mass contains 300-350 eggs which are arranged in rows up to three layers and are covered by scales from the body of the females.

Larva: Caterpillars are pale green with dark markings initially which later turn dark brown with numerous transverse and longitudinal bands. They are gregarious at first but later spread over the plant and become brown to grey brown or black with irregular spots and lines.

Pupa: Pupae are dark brown in colour. Pupation occurs in soil.

Adult: The adult is stout with brownish forewings with paler lines along the veins, and pearly whitish hind wings.

Nature of Damage:

The larvae feed gregariously on the undersurface of the leaves and skeletonize them leaving only the midrib and

veins in severe cases. They also attack flowers, buds and squares causing considerable loss.

Symptoms:

Skeletonisation resulting in papery appearance of leaves with only veins left out is the typical damage. Leaves



Skeletonized foliage due to *Spodoptera*

defoliate and shedding of squares with feeding holes occur when larvae are in large numbers.

Life History:

Egg, larva and pupal periods are 3-4, 13-20 and 8-10 days respectively. Life cycle completed in 50-60 days.

Seasonal Dynamics:

The incidence occurs during the months of August, September and October coinciding with the grand growth period of the crop. The occasional nature of the occurrence of this insect on cotton rendered its seasonal incidence unrecorded.

Management of defoliators:

In case of semi-looper, significant loss in leaf area occurs only when young plants are attacked. The population is highly regulated by the parasitoids and the pathogens that affect naturally. In endemic areas of leaf roller, all the rolled leaves with larvae in them should be collected and destroyed during the early stage of attack by the pest. Spread to neighboring plants should be minimized to nil that the plant stand is maintained. To monitor *Spodoptera*, pheromone lures are available, however planting of few castor plants along the borders of the cotton fields serve as indicator plants for *Spodoptera*.

No action thresholds exist for foliage feeders but chemical treatments are needed if significant proportion of cotton plant stand is destroyed. Any one chemical option recommended for bollworm control should be used in case of threat to crop stand.



Larva of *Spodoptera*



Moth of *Spodoptera*



Gregarious feeding by *Spodoptera*

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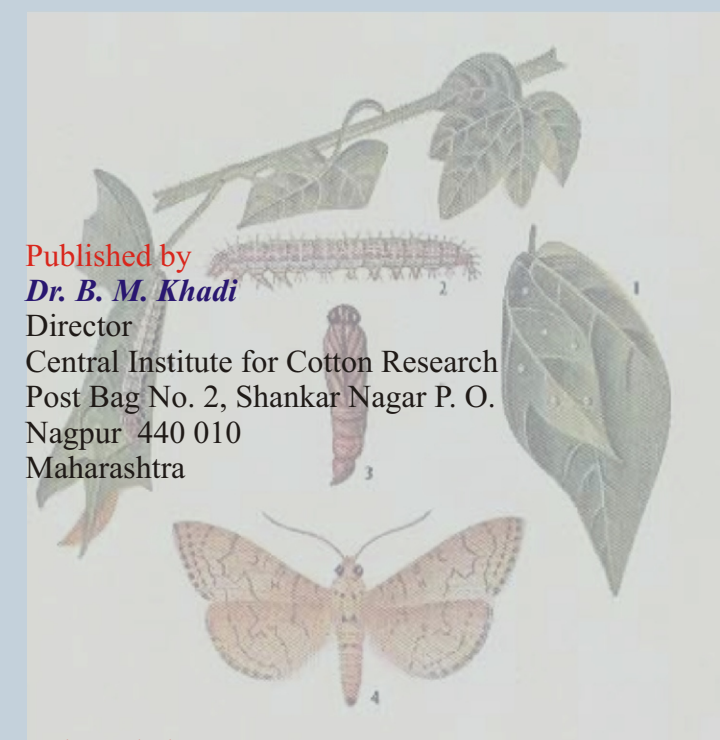
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**Know Your Cotton Insect Pests
DEFOLIATORS
(Semi-looper, Leaf roller & Leaf worm)**



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Common Name : Semi-looper
Local Name : Unt ali
Scientific Name : *Anomis flava* Fab.
Family : Noctuidae
Order : Lepidoptera
Pest Category : Foliage feeder

Description of Insect Stages:

Egg: Eggs are spherical, ribbed about 0.5 mm in diameter. They are deposited anywhere on the cotton plant.

Larva: Larva is a semi-looper having three pairs of prolegs on the 5th, 6th and 10th abdominal segments.



Late instar larva of semi-looper

Fully grown larvae are 25-30 mm long, pale yellowish green with five white lines running longitudinally on the dorsal surface, and with

six pairs of black and yellow spots on the back. The larvae are usually found on the lower leaf surface and are most likely to be observed on the upper third of the plant.



Pupa of semi-looper

Pupa: Pupae are obiect type, brownish and are formed by folding leaf margins on the plants. Pupae also occur in plant debris.

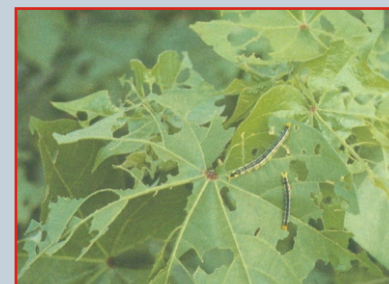


Moth of Anomis

Adult: Adult is reddish brown with forewings traversed by two dark zigzag bands, while the hind wings are pale brown.

Nature of Damage:

Outbreak of *Anomis flava* is often sporadic. The young larvae congregate in groups and move actively, feed on the leaf lamina making small punctures. The grown up larvae feed voraciously leaving only the midrib and veins.



Leaf feeding by semi-looper



Feeding holes due to semi-looper

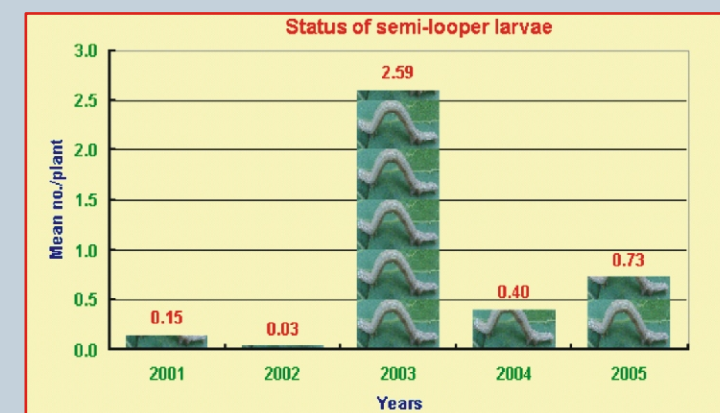
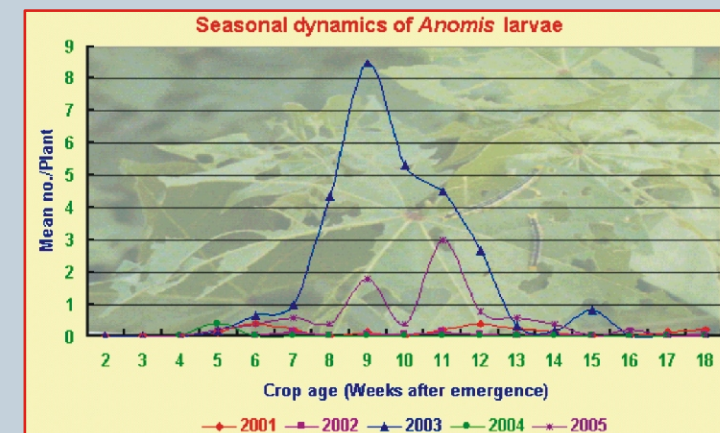
They feed by chewing the leaves from margin towards the leaf veins. The caterpillars feed on tender shoots, buds and bolls, but occasionally.

Symptoms:

Leaf area is eaten up from edges. Windows / holes on leaves are seen. Black faeces on leaf surface are common. Larvae found amidst the terminal part of the plant and with looping movements.

Life History:

Fecundity of the female is about 500-600 eggs. Upon hatching the smaller larvae drop to older leaves and start feeding from lower surface of the leaves. By mid growth stage larvae become gross leaf feeders consuming all the leaf tissues. Life cycle is completed within 28-42 days.



Seasonal Dynamics:

Incidence of looper is high during the heavy rainfall years. The seasonal means of the incidence during the last 5 years revealed the lowest population of 3-4 larvae for every hundred plants during 2002 and the maximum of 2-3 larvae/plant during 2003. Looper is essentially an insect restricted to first three months of crop growth with its grand peak between 60 and 75 days of crop age. Overlapping generations are common. Four to five generations occur per season on cotton.

Common Name : Leaf roller
Local Name : Pane Gundalnari ali
Scientific Name : *Sylepta derogata* Fab.
Family : Pyraustidae
Order : Lepidoptera
Pest Category : Foliage feeder

Description of Insect Stages:

Egg: Egg is round, smooth and pale white in colour.

Larva: The larva is glistening green in colour and semi-translucent with dark brown head. They become pinkish before pupation. Fully-grown larva measures up to 22-30 mm.

Pupa: Pupa is reddish brown in colour and typical in



Larva of leaf roller

having eight spines with hooked tip at their extremity.

Adult: Moth is medium sized with yellowish wings having series of brown wavy markings. They are delicate, 12.5 mm long and with a wing expanse of 25 mm. Head and thorax are dotted black.

Nature of Damage:

The larvae feed on the lower surface of leaves when they are young and as they grow, they feed on the edges of



Leaf roller infested plant

leaves and roll inwards up to the midrib into a trumpet shape fastened by means of silken thread and feed on leaf tissues. The larvae remain inside the roll and feed outside the marginal portion of the leaves. Severe infestation results in complete defoliation of the plant.

Symptoms:

Leaves are folded downwards individually or in groups, and larvae are seen in groups amidst faecal materials inside the folds. Leaves at the bottom of the crop canopy show symptoms at low infestation levels. Defoliation of the whole plant is seen under severe infestations. Infestation spreads to neighbouring plants and hence the symptoms of the pest are patchy. The plants under shades along the field borders are more vulnerable for the attack by the pest.

Life History:

Eggs are laid singly on the under surface of the leaves along the midribs and bigger veins. The moth lays as many as 200 eggs. The egg, larval and pupal periods occupy 2-3, 15-18 and 7-8 days, respectively. The larva moults six times before pupation. Pupation takes place mostly on the plants, inside the rolled leaves and sometimes on the shed leaves on the ground. The life cycle is completed in 23-53 days.

Seasonal Dynamics:

It is an important sporadic cotton pest. Damp and cloudy weather are conducive to the growth and rapid multiplication. In years of low temperature, high humidity and more number of cloudy and rainy days, the incidence of the pest is generally high. Infestations occur in shady and weedy conditions.