

Bark Eating Caterpillars and Their Management

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ABSTRACT

Bark eating caterpillar (*Indarbela spp.*) is a polyphagous wood boring insect, attacking a variety of tree species in India. This pest is a serious in horticultural plantation of mango, guava, litchi, pomegranates, Jamun etc in several parts of India. and Asia pacific region. Because of its devastating nature, it is considered as national significance. *Inelarbela terraonis* (Moore) and *Inderbela quadrinota* (walker) have been recorded boring the bark and feeding inside older trees and the trees in orchards that are not well maintained are more prone to these pests. Peak activity period of this post is September to October. From the management point of view, clean orchards and avoiding overwintering of trees can help to minimise the attack of this pest. In case of severe infestation, the spot application of insecticides can be effectively protected the fruit trees and enhance the yield.

INTRODUCTION

The barkeating caterpillar is a polyphagous in nature and feed on mango, guava, litchi, citrus, Jamun, loquat, mulberry, pomegranate, ber, drumstick, amla, rose and a number of forest and ornamental trees. The pest occurs throughout

the Indian sub-continent including Bangladesh, Sri Lanka, Burma and Pakistan. *Indarbela quadrinotata* Walker is the most common species and found on mango tree in India.

Indarbila tetraonis Moore - a serious pest of guava, is also found attacking mango specially when guava trees are around. *Indarbela dea* Swinhoe and *Indarbela theivora* Hampson are other species are reported from India.

Identification

The freshly hatched caterpillars are dirty brown, while the full-grown caterpillars have pale brown bodies with dark brown heads. The adults are stout and pale brown moths with brown spots. Streaks are seen on forewings and whitish hindwings. Moths have rufous head and thorax.

Bionomics:

Eggs: With the start of the summer season, moths emerge and become active. The female moths lay light brown spherical eggs in clusters in the cracks and crevices of the bark. After 7 to 11 days the eggs hatch to form a small neonate.

Larvae: After the eggs hatch, the larvae move out in search of food in the concealed places shoots and bore in a tunnel downward in to the wood. The tunnel is used as shelter during the day hours. While at night, the larvae come out and start feeding on the outer bark. This period last for about 270-298 days.

Pupa: pupa is the rest phase for larvae to grow into an adult. The rest phase is conducted in the hole/ tunnels made during its larval stage; It takes 20-25 days for the pupation to form into an adult.

Adult: Adult is a Stout and yellowish-brown moth with wavy brown marking on the forewings. Males are smaller than the females and have a shorter lifespan. This phase can vary from 4-7 days. Depending upon weather condition

Nature of damage

- Caterpillar bore into the trunk or junction of branches.
- Caterpillar remains hidden in the tunnel during the day time and come out at night, feed on the bark.

Damage symptoms

- Visible irregular tunnels coated with thick, ribbon like silken webs filled with excreta and chewed wood particles on the shoots, branches, stems and main trunk especially near the forks.
- The larvae have the habit of making webs along the feeding galleries and above the hole where they bore deeper (15-25 cm deep) in the wood. The galleries and the webs above them have zig-zag shape and contain wooden frass and excreta, which are seen hanging loosely on the bark of the affected tree.
- Generally, a single caterpillar is found inside a tunnel, but heavy infestation may contain 16 holes on a tree.
- In case of severe infestation of trees may contain 15-30 larvae / tree.
- Severe infestation may result in the death of the attacked stem, but not of the main trunk. There may be interference with the translocation of cell sap and thus arresting the growth of the tree with the adversely affected in its fruiting capacity (Butani, 1977a).
- Older trees (> 20 years) are more susceptible to the attack than young ones. Particularly neglected orchards are more prone to this infestation. 42-46 percent part of plants are damaged by these pests (Mathur and Upadhiyay, 1979).

- Young trees may die due to the attack of this pests. Heavy infestations restarted the growth of tree and effect the fruit yield.
- Shelter holes may also be seen particularly at the joints of shoots and branches.
- The young shoots dry and die away giving a feeble look to the plants.
- The caterpillars start damaging bark of the trees, resulting die-back symptoms of the stems. Frass visible in affected area (Annon, 2016).
- During September-October inject 5 ml Dichlorvos 76EC in the hole using a syringe and plug the hole with mud.
- Use light trap (1 trap/ha) to attract the adult moths. Control, when eggs are hatching and caterpillars are small may be prove beneficial for the plant.
- Satyanaryana *etal.* (2017) Suggested injecting the insecticides (Rynaxypyr 25 SC @ 0.2 ml/L water or Lambda cyhalothrin 5 EC @ 1.0 ml / L water or Deltamethrin 2.8 EC @ 0.5 ml / L water or Indoxacarb 15.8 SC @ 0.3ml / L water) in the active holes inhabited by the caterpillars (Featuring the excreta, frass and gummy exudate). Best time for its control is September-October and again in January-February (Singh, 2004).

Management practices:

- Avoid growing susceptible varieties to bark eating caterpillars.
- Collect and burn, loose, damaged bark and affected branches.
- Keep the orchard clean and avoid overcrowding of trees.
- Treat all the alternate host plants in the vicinity.
- Kill the caterpillars by inserting an iron spike into the shelter holes (Srivastava, 1964).
- Clean the affected portion of the trunk and insert into the hole a swab of cotton wool soaked in a good fumigant like carbon bisulphide, petrol, Kerosine *etc* and plugging hole with mud.
- Khurana and Gupta (1979) suggested injecting the holes with 0.013% Dichlorvos (DDVP) or 0.05% Trichloroform immediately after treating the holes and seal the hole with mud. Such of the holes as may reopen, need be retreated.
- Carbofurm 3G may be placed at 5 gm/hole and plugged with mud.

CONCLUSION

The bark eating Caterpillar (*Indorbela spp.*) is a polyphagous pest attacking a variety of tree species in Bihar. This insect, which was considered as a serious pest status of mango, Guava; litchi; and Jamun trees. Being a wood borer, specialised conditions are required for its establishment. Among various factors, age of the tree is important, as this insect is capable of building up very fast in older trees compared to younger trees. The biological characteristics of this insect are such that, one established within a tree, it has better chance of survived due to its concealed habits. The orchards of mango, litchi, guava etc that neglected and not kept clean show higher percentage of pest incidence than the clean and well-kept orchards. Therefore, it can be controlled by the application of appropriate insecticides when its attack is noticed. Since the establishment of this insect generally occurs when the trees are still older and neglected, regular inspection of orchards is essential in order to detect the infestation in the very

beginning are itself. The chemical insecticides recommended for its control are Dichlorvos, Indoxacarb, Rynaxypyr, Chlorpyrifos, Deltamethrin and Lambda cyhalothrin. Spot application of any of the above chemical insecticides, using a rocker sprayer drenching the active holes, sleeve and the surrounding bark may be enough to control this pest. Since the larvae, while feeding on the bark surrounding the sleeve may be get contaminated and killed.

As the chemical insecticides are applied only on the bark, there is not much contaminated of the environment. Spot application of the chemical insecticides also minimises possible adverse effects on non-target organisms. This will also be economical, since the spray is required to be applied only on the affected patches.

Indarbela spp. has annual generations beginning from June to July. The larval stage lasts for about 10 months and pupation occurs from February onwards. Therefore, chemical insecticide applications may be carried out immediately after the rains preferably during the months of September-October, when the infestation is easily detectable. The treatment may be very effecting and economical in younger trees compared to older trees, where, there may be difficulty in insecticide application on account of the height of the trees.

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