

Fig Stem Borer, *Batocera rufomaculata* (Coleoptera : *Cerambycidae*) – Damage and its Management Strategies

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SUMMARY

Fig plants are prone to different pests like stem borer, fruit fly, mealy bug, coccid, leaf roller, fig moth, thrips and scales. Among these, stem borer (*Batocera rufomaculata*) is the serious pest attacking fig in India. Fig borer or red spotted long horned beetle, *Batocera rufomaculata* cause serious damage to fig plants if it is not controlled properly. This paper gives out the detail review of information about the fig stem borer, its biological cycle, pest identification, nature of damage and its control measures.

INTRODUCTION

Figs (*Ficus carica*) are regarded as a minor fruit crop in India. It is a well known nutritious and delicious fruit of the Indian subcontinent. They are mostly cultivating for commercial uses in the areas of Western states of Maharashtra, Gujarat, Uttar Pradesh (Lucknow and Saharanpur), Karnataka (Bellary, Chitradurga, and Srirangapatna) and Tamil Nadu (Coimbatore). Its limited and local cultivation makes it an underutilized fruit crop. The total area under fig cultivation is around 5600 hectares of land with a production of about 13,802 thousand tons, i.e. about 12.32 tons per hectare in India (FAO, 2020). Fig, like any other fruit crops suffers from many pests viz., fig stem borer, fruit fly, fig moth, leaf roller, jassids, thrips and root knot nematode. Amongst these, stem borer (*Batocera rufomaculata*) is a species of long-horn beetle (Coleoptera : *Cerambycidae*) is a serious pest which was found to occur internally in the stem of fig trees which has been reported to cause 50-70 per cent yield losses. The grub of this pest damage the plant stem, twigs and shoots by feeding and tunnelling and the affected trees progressively lose their vigour, their branches show signs of yellowing, wilting and death under severe condition (Husain *et al.*, 1940).

Distribution of Pest

This pest is distributed in most tropical and subtropical countries viz., South-East Asia, the Middle East, Iran, Turkey, Yemen, East Africa and Central America.

Alternate Host :

Fig, mango, rubber, jackfruit, papaya, apple, eucalyptus, mulberry, moringa, silk cotton and many more.

Identification of Pest:

Egg - Oval in shape, brownish white or dirty white in colour, 6.2 mm with narrowly rounded ends.

Grub - Full grown grubs are linear, fleshy, cream coloured segmented body, apodous with dark brown head and it is 90 x 20 mm in size.

Pupa - Exarate pupa, yellowish brown to dark brown in colour, pupate in the bored trunk.

Adult - Greyish brown beetle, 35-50 mm in size, are stout with two pink kidney shaped markings on dorsal side of thorax and lateral spine.



GRUB



Adult

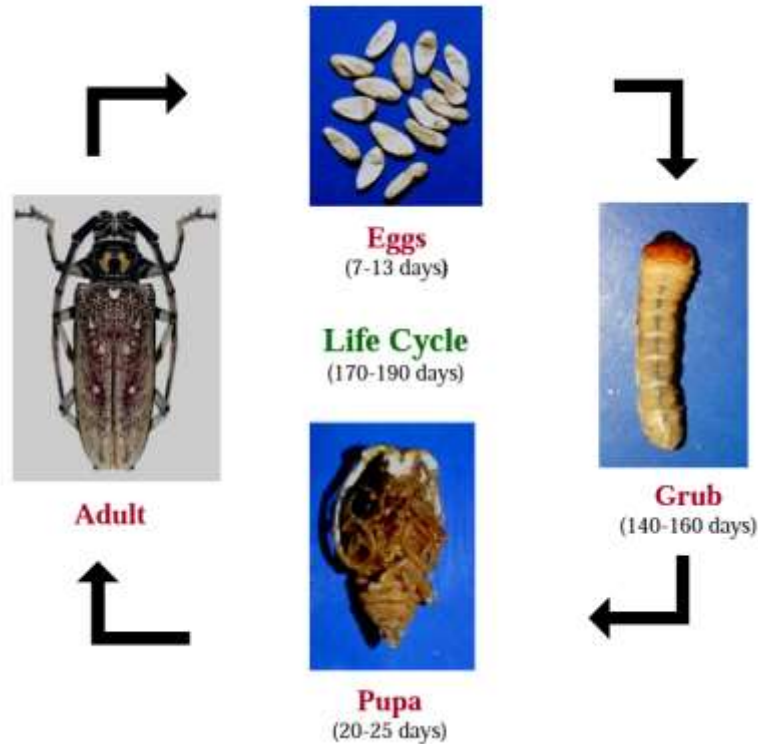
Biology and Life Cycle :

Egg: The female adults began to lay egg from June to August. The female cuts the tree bark and lays eggs singly into these cuts, laying a total of up to 200 eggs. Egg is a brownish-white cylinder, 6.2 mm, with narrowly rounded ends. The incubation period of eggs are about 7-13 days.

Grub: Full grown grubs are 85-95 mm long, stout, yellowish-ivory in colour with well defined segmentation. The larvae tunnel through the sapwood and because of their size, they make large tunnel which interfere with sap flow and affect foliage and fruit production. The grub period is about 140 – 160 days.

Pupa: Pupae are 50-55 mm long and yellowish brown to dark brown in colour. Pupation occurs in the tunnel itself which lasts about 20-25 days.

Adult: The adult beetle emerges by a short tunnel running to the exterior and ending in a circular exit-hole. Total life cycle of the pest is 170-190 days and longevity of adult is 60-100 days. (Magar *et al.*, 2022)



<https://cish.icar.gov.in/hindi/Technologies/ManagementofStemborer.pdf>

Nature of Damage and Symptoms:

Stem borers are more likely to attack older trees that have previously been damaged by any diseases or the environment. After emerging from the egg, the neonate larva first feeds on sapwood or bark. The grub bore tunnels through the sapwood that are about 2-3 cm broad, feed the vascular tissues and interrupt the nutrient and water translocation from base to tip and affecting tree's foliage and productivity. Tunnels can be found deep inside the tree's trunk or on the tree's periphery. The tunnel steadily rises in size as the grub gets bigger. Although the damage is not immediately apparent, it is possible to observe yellowing of leaves and terminal shoots in the early stage. Frass comes out from bored holes in plants and occasionally sap oozes out of the holes. If not treated in a timely manner, wilting of the branches occur or even the entire tree may die. Severe infestation reduces the yield significantly by affecting the entire shoots. The severe infestation causes a burnt appearance to the trees.

Management Practices :

The most important measure of control is to keep the trees in the healthiest condition as possible. Care should be taken to avoid bruising the bark or the breaking limbs during pruning. When a branch has become infested, it should be removed and burned, as the borers will complete their development even in perfectly dead and dry wood and later infest other trees. Remove the affected branches of the tree using a sharp knife and apply protective paint at the cut ends. The pruned fig woods should always be destroyed, and never allowed to remain long in or near the orchard as it act as host for borers. If a tree is severely affected, it is better to remove the tree otherwise it acts as a source of infestation for the healthier plants also. For avoid pest infestations, we need to keep the orchard healthy by following good horticultural practices.



Integrated Pest Management

a) Mechanical method:

- Use light trap @ 5 traps/ha., for collection and killing adults of stem borer from April-July.
- Remove the loose bark on the stem.
- Stem borer infested branches must be cut and destroyed along with grubs. Mechanically remove the grubs from the infected trunk holes by using iron wire / hook.
- Clean the hole and insert cotton wool soaked in emulsion of chlorpyrifos 20 EC or kerosene or petrol in each hole and plug them with mud or dung.

b) Cultural method

- Maintain proper spacing for plants in the orchard.
- Prune and destroy affected plant parts before onset of monsoon
- The orchard should be tilled or hoed three times during June, July and August 15cm deep in soil. The eggs remain in the soil during its life cycle are exposed and are killed somehow after hoeing. (Magar *et al.*, 2022)

c) Chemical method

- Swab Coal tar + Kerosene @ 1:2 or Chlorpyrifos 20 EC @ 4 ml/ litre (basal portion of the trunk - 3 feet height) after scraping the loose bark to prevent oviposition by adult beetles twice a year.
- Apply carbofuran 3G 5 g per hole and plug with mud.
- Can swab the trunk with 10% NSKE twice a year.

d) Biological method

- Use of green muscardine fungi, *Metarhizium anisopliae* or *Beauveria bassiana*.
- Remove alternative host like mango, moringa, silk cotton in the nearer area.

REFERENCES

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