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Pest of Cocoa - Coffee Stem Borer

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INTRODUCTION

Coffee Stem Borer is the larva or grub of the moth *Zeuzera coffeae*. It is present in many countries from Papua New Guinea (PNG) to India. The larva is known to feed on more than 60 kinds of tree and shrub. It is a serious pest of cocoa throughout PNG. The larva cause damage to cocoa by boring into branches and tree trunk to feed on the wood.

DESCRIPTION

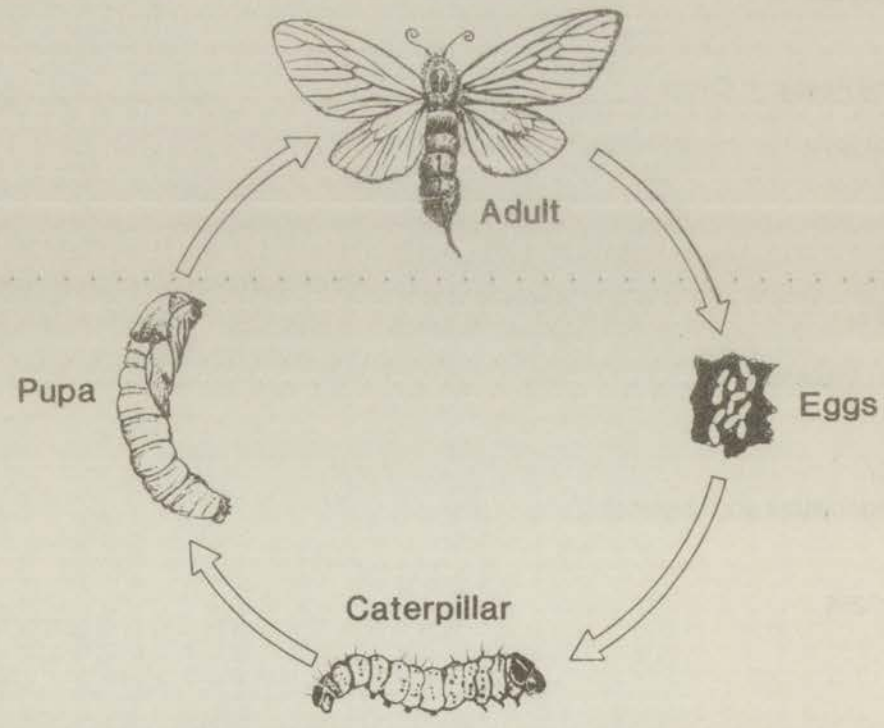
The adult moth is about 2 cm long and has a wing span of about 5 cm. The body and wings are white or transparent. There are many small dark blue spots on the forewings and so it is sometimes called a leopard moth.

The larva grows to about 4 cm long and 0.5cm wide. Its body is reddish-brown with yellow and black markings at both the head and rear regions. It has 3 pairs of short, thin legs on the thorax near the head and 5 pairs of short, round, fleshy legs on the abdomen.

The pupa is also reddish brown. It is about 3 cm long and 0.5cm wide.

BIOLOGY

The adult female lays a string of pale yellow eggs on the branches and trunk of the cocoa or shade trees. The eggs hatch after about 10 days. The small larvae then bore into stems to feed. A larva feeds by boring along the centre of the stem. The tunnels produced may be up to 1 cm wide and as long as 60 cm. One or more side tunnels (exit holes) are made to the bark surface from the central tunnel. A sticky reddish-yellow frass (chewed up wood and excreta) is pushed out of the exit hole onto the bark. The bark around the exit holes often has a dark, watersoaked appearance. If the branch dies or becomes too dry, the larva will move to another branch and make a new tunnel in it. After feeding for about 4 months, the larva burrows near to the bark surface, usually at the top end of the gallery. It seals off the tunnel with frass to form a small chamber, and then pupates. Moths fly on the day of emergence from the pupa.



Life Cycle of the Coffee Stem Borer

Important host plants of the larva include albizia, cinnamon, citrus, cocoa, coffee, crotalaria, guava, lantana, pigeon pea, terminalia and rubber.

A number of natural enemies of the Coffee Stem Borer are known and these often maintain the pest at low population levels in cocoa.

ECONOMIC IMPORTANCE

The pest causes economic damage on cocoa trees aged between about 6 months and 3 years. Seedlings up to 1 year old are stunted or killed by the attack. On 1 to 3 year old trees, infected branches may grow poorly, die back from the tip or snap off. If the grub bores down through the jorquette into the trunk then all of the tree above this damage may die.

The pest also attacks the thin, outer branches of mature cocoa. This, is however, is usually of no importance as large trees can withstand much defoliation before the crop is affected.

The level of pest infestation is usually dependant on natural enemies and climate. It may range from just a few to several hundred infected trees per hectare.

CONTROL

Control of Coffee Stem Borer is usually only necessary in young cocoa and in mature cocoa interplanted with young cocoa. Every damaged branch should be treated as a single larva can cause economic damage. A damaged branch is easily detected by the presence of reddish-yellow frass on the bark at an exit hole. There may be several exit holes with frass on a branch indicating the presence of one or more borers. There are two recommended ways to control Coffee Stem Borer - (1) pruning and (2) chemical control.

1.Pruning

The damaged branch is cut at about 30 cm below the lowest exit hole and burned in order to kill the larvae and pupae. If the trunk is damaged, then the tree must be stumped at about 20 cm above the ground in order to obtain a suitable jorquette height in the new growth.

2.Chemical Control

A systemic insecticide is applied as a "channel point" to the bark above each exit hole. First, remove the frass over the hole using a stiff brush (not a wire brush). Then use a 5 cm wide paint brush to apply the insecticide onto the damaged branch. The insecticide should cover a length on the branch of about 15 cm above each borer hole.

Chemical can also be sprayed onto the branch using a knapsack pressure sprayer with a fine pencil type spray jet. About 3-5 ml of insecticide should be applied to each hole. Do not use the type of nozzle that are commonly used for spraying insecticides, fungicides or herbicides. These nozzles produce a fine spray with a wide angle so that much chemical misses the bark and the pest is not killed.

Use a 1.5% solution of dichlorvos (Nuvan). To obtain 1 litre of spray solution, mix together.

30 ml Nuvan 50
5 ml 'washing up' detergent
1 litre water

PRECAUTIONS

1.Borer damage on the trunk and main branches is best controlled using the chemical method as stumping or pruning the main branches is very destructive.

2.Only use recommended chemicals - others may be too poisonous or ineffective in killing the borers. Some chemicals are too persistant and so kill beneficial insects such as pollinators and natural enemies of pests. - this may cause more pest problems in the future. Read the labels carefully. Only mix enough chemical for use for that day as diluted chemical soon loses its strength.

3.Do not smoke or eat when using insecticides. Never use the pesticides containers for other purposes. Store chemicals in a safe place out of the reach of children and animals and away from food. Do not throw away unwanted chemicals near a drinking water supply. Wash with soap and water immediately if you spill any insecticide on your skin, and when you have finished using chemicals for the day. If you feel sick after using the chemical see a doctor.

Full details on the safe handling and use of pesticides are given in Entomology Bulletin No. 9 in Harvest, Volume 6, No. 3, pp. 149-152; and Rural Development Series Handbook No. 18.

FURTHER INFORMATION

For further information about control of Coffee Stem Borer contact your nearest DAL entomologist or didiman.

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