

IDENTIFICATION OF IMPORTANT INSECTS AND OTHER PESTS OF FRUIT CROPS

Exercise

Identification of important insects and other pests of fruit crops.

Objectives

- To identify important insects and other pests of fruit crops

Delivery schedule: 01 period

Student expectations / learning objectives

- To know the important pest of fruit crops
- To identify the pest of fruit crops
- To learn how these pests could cause damage to the fruit crops.

Handouts / material / equipment's & tools required: Paper sheet and pen to note down description of different insect pests, insect collecting net, insect collection bottles, insect specimens.

Pre-learning required: Pre-requisite knowledge of insects pests of fruit crops.

Introduction

Insects are found in all types of environment and they occupy little more than two thirds of the known species of animals in the world. Many of them feed on all kinds of plants including crop plants, forest trees, medicinal plants and weeds. They also infest the food and other stored products in godowns, bins, storage structures and packages causing huge amount of loss to the stored food and also deterioration of food quality. Insects cause injury to plants and stored products either directly or indirectly in their attempts to secure food. Insect damages can be grouped into three classes, they are (i) insect that cause less damage i.e., less than 5 % are not considered as pests. (ii) The insects which cause damage between 5 - 10% are called minor pests and (iii) those insects that cause damage above 10% are considered as major pests. Insects that cause injury to plants and stored products are grouped into two major groups namely chewing insects and sucking insects. The former group chews off plant parts and swallow them thereby causing damage to the crops for examples caterpillar. Sucking insects pierce through the epidermis and suck the sap for examples, fruit sucking moth etc. Many of the sucking insects serve as vectors of plant diseases for examples white fly which transmit yellow mosaic viruses in papaya and also inject their salivary secretions containing toxins that cause severe damage to the crop.

Points to be remembered

- All the insects are not causing damage to the plants, those insects are called beneficial insects like honey bee.

- Do you know that some insects are also being reared for commercial productions of silk? i.e., silk worm from the pupa stage called cocoon.

- Some insects feed over the other damage causing insects which are also called beneficial insects or predators.

- The insect pests attack the fruit crop at various parts of the plants like roots, leaves, stem, flower, fruit and seed. But all insect does not attack all the parts.

- The insect pest attack the crops at different stages of their life cycle for examples the stages of Butter fly are egg, larva, pupa and adult. Some insects cause damage when they are in larval stage, some infest the crops in adult stage.

- Some insects are poisonous to human being also, care should be taken while handling such insects, like wasps, bugs etc.

Before considering the insect pest damage, one should have an idea about the types of insects in the orchards, their stage of damage to the crops.

List of important insects and pests of fruit crops

Fruit sucking moth (*Otheris materna*)

The larva of *O. fullonica* is orange blue in colour and having yellow spots on velvety dark speckled on the body. The adult is a stout moth, which has orange coloured wing. Whereas in case of the other species like *Otheris materna* there will be three black spots on the fore wing and in *O. ancilla* the adult will have a white colour band in the middle fore wing. The adult will pierce the fruit and suck the juice resulting in rotting at the feeding site.

Citrus or lemon butterfly (*Papilio demoleus*)

The early stage larva of this insects will resembles or looks like a bird dropping and when it is grown up (larva) will be cylindrical, stout, green and brown lateral band near the fore head. The adult is dark brown in colour with yellow to creamy white numerous irregular spots on the wings. The main thing to be remembered is that the larva are called as caterpillars which is the most destructive stage and its prefers on light green tender leaves, having the quality of feeding voraciously and leaving only the mid-ribs, severe infestation the entire tree gets defoliated.

Tea mosquito bug (*Helopeltis antonii*)

The adult bug is reddish-brown, about 6-8 mm long with a black head, red thorax, black and white abdomen. Female bug lays eggs on the tender tissues of new shoots, and soft tissues of inflorescence branches. Both nymphs and adults of this bug suck sap from the tender flushes, young shoots, inflorescence, panicles, growing young nuts and cashew apples. Occurrence of dark brown patches on green tender stem of young shoots and inflorescence rachis. Feeding on tender leaves causes crinkling and curling and affected shoots show long black lesions.

For teachers...

- Make students to understand the different stages of insect life cycle.

- Practically, show the students, different types of insects which attack the fruit plants.

- Ask the students to collect some commonly available insects in the areas for examples moths, butterfly of fruit crop.

- Proper instructions may be given how to collect the insect, avoid touching some poisonous insects

Fruit fly (*Bactrocera dorsalis*)

The adult flies are light brown in colour with transparent wings. Adult flies are very conspicuous. These are about 7 mm long, with hyaline wings, thorax ferrugineous without yellow middle stripe, legs yellow, abdomen conical in shape and dark brown in colour. The adult will lay the egg in the tender stage of the fruit like mango, guava etc., as the fruit matured the egg will hatch out and will feed the fruit from inside.

Stem borer (*Batocera rufomaculata*)

The adult is grayish in colour. The beetle also has two pink dots and a lateral spine. The grub is the most destructive stage which tunnels in the sapwood on the trunk or branches, bore into the sap wood and making irregular tunnels and feeding the vascular tissues. This causes drying of terminal shoot in early stage and fress comes out from several points and sometimes sap oozes out of the holes, finally causes wilting of branches or entire tree.

Mealy bugs (*Drosicha mangiferae*)

The adult male mealy bug has a wing, long antenna and without mouth parts. The female adult is wingless, with a flat body and short, waxy filaments along the margins. The mealy bugs causes damage through sucking of saps there by leads to drying of the shoots and inflorescence.

Banana rhizome weevil (*Cosmopolites sordidus*)

The adult is a dark brown colour weevil and a newly emerged weevil looks red brown in colour. The grubs (young ones) bore into the rhizome and cause death of the plant. It symptoms can be identified by the presence of dark coloured tunnels in the rhizomes. It causes the death of unopened pipe and withering of outer leaves.

Banana aphid (*Pentalonia nigronervosa*)

The younger ones are called Nymphs and they are dark in colour. The adult is brownish in colour and has black veined wings. It is a sap feeder and transmits bunchy top of banana virus.

White flies (*Bemisia tabaci*)

The adult is white in colour and tiny in size and look like a scale-like adults. Nymphs and adults suck the sap from under surface of the around the leaves veins, which causes yellowing of leaves. Plants will become extremely weak and may be unable to carry out photosynthesis. Leaves may dry out and growth will be stunted

Citrus leaf miner (*Phyllocnistic citrella*)



Fruit fly



Fruit sucking moth (Female)



Fruit sucking moth (male)



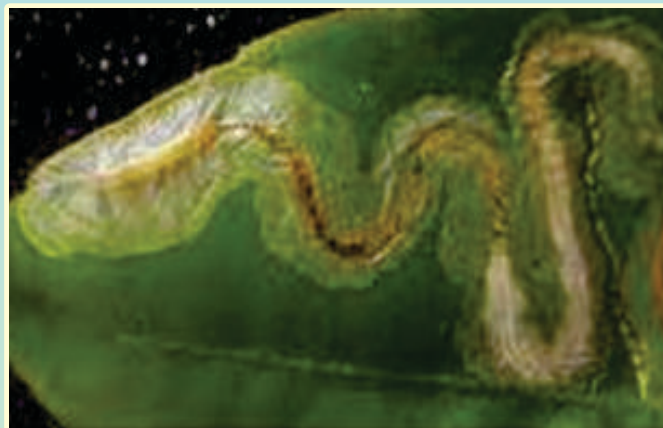
Lemon butterfly



Banana rhizome weevil



Mango mealy bug



Citrus leaf miner

The eggs are minute, flattened in shape and present on the lower side of the midrib of leaves. The larvae are minute, yellowish or reddish in colour and apodous in nature. Settled down on the edge of the folded leaves. The adult is a minute moth with a black spot at the tip of the fore wing. The caterpillars (larva) will attack the tender leaves and feed on the epidermis which will be looking like silvery appearance on the lower surface of leaves. It also get leaves distorted crinkled in severe attack plant causes the leaf defoliation

Students Activities

1. Try to collect some of the insects and identify them
2. Make a list insect's pest that causes damage to the fruit crops available in your locality
3. Make attempt to train yourself to differentiate different type of insects pest

Study Material

- Awasthi, V. B. (2011). Agricultural Insect Pests and Their Control Scientific Publishers, New Delhi.
- Atwal, A. S. and Dhaliwal, G. S. (2008) Agricultural Pests of South East Asia and their Management Kalyani Publishers, Delhi
- Regupathy, A., Chandramohan, N., Palanisamy, S and Gunathilagaraj (2003). A Guide on crop pests, Sheeba Printers, Coimbatore, Tamil Nadu, India