

Chapter 4

INSECT PESTS OF AGRICULTURAL CROPS

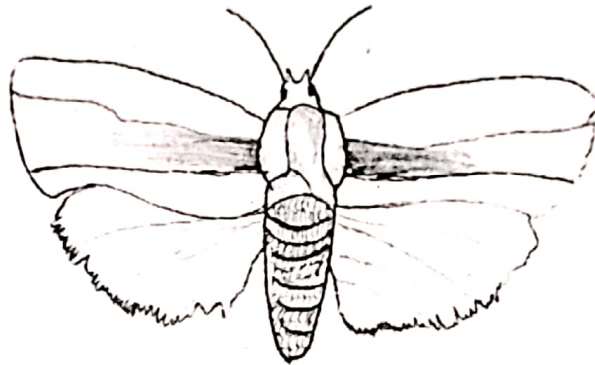
4.1 INSECT PESTS OF COTTON

4.1.1 SPOTTED BOLLWORM

T.N: *Earias insulana*

Earias vitella

(Noctuidae; Lepidoptera)



Earias vitella

Identification: The eggs are green. Larva of *Earias insulana* is greenish white with black marks on the body. Larvae of *E. vitella* are brownish. Adult moths have their forewings either completely green (*E. insulana*) or a longitudinal green band in the middle of straw colored wing (*E. vitella*).

Life cycle: Female lays 200-400 eggs on young leaves, squares and flower buds. The eggs hatch in one week. Larva becomes full grown in two weeks. Larva pupates on the plant or on the ground on fallen leaves etc. Pupal period is about three weeks. It has several generations in a year. In winter, the life cycle is greatly prolonged.

Damage: Firstly, the larva bore into the terminal portion of the young shoots which wither away and dry up. Then they bore the squares, flowers and buds and eat the internal contents. Due to its attack there is a lot of shedding of these parts. The attacked lint is also of poor quality.

Control: Pest can be controlled by following method

- Clean cultivation and destruction of alternate host plants.
- Early sowing of crop.
- Use of resistant varieties.
- Natural enemies of the pest (predators and parasitoids) should be promoted in the field.

- Application of cypermethrin EC 200-250 ml/acre, spinosad SC 80ml/acre and emamectin benzoate EC 75 ml/acre.

4.1.2 PINK BOLLWORM

T.N: *Pectinophora gossypiella*

(Gelechiidae; Lepidoptera)



Identification: Eggs are oval and white. Larva is of pink color. Adults are dark brown, with blackish spots on forewings.

Life cycle: Female lays 150-200 eggs singly on young leaves (between the veins and underside of the leaves), squares and young bolls. Eggs hatch in one week and the larva become full grown in two weeks. The pupation takes place on the ground in fallen leaves and remains for two weeks. There are 4-6 generations of this pest in a year.

Damage: Larva bore the squares, flowers and bolls and eats the internal contents. As a result the two adjoining seeds join and form "Double seed". The hibernating larvae lie in the double seed for many months and pass winter. If the larvae enter in the squares, such squares do not open properly and called "Rosette flowers". After attack on bolls, the larvae close its entrance. Due to its attack, there is a lot of shedding of these parts. The attacked lint is of lower quality.

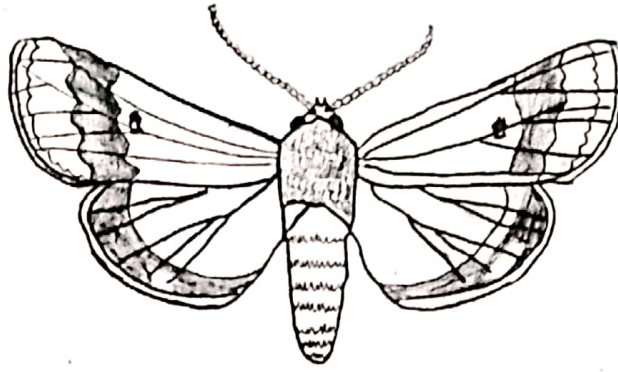
Control: Pest can be controlled by following method

- Clean cultivation and destruction of alternate host plants.
- After picking, grazing of sheep on the unwanted bolls in the field.
- Natural enemies of the pest (predators and parasitoids) should be promoted in the field.
- Application of triazophos EC 1000 ml/acre.

4.1.3 AMERICAN BOLLWORM

T.N: *Helicoverpa armigera*

(Noctuidae; Lepidoptera)



Identification: The moth is yellowish brown in color with a black kidney shaped mark on the underside of the fore wing. Its larvae are greenish with dark broken grey lines along the sides of the body.

Life cycle: The females of this moth lay eggs singly on tender plant parts. The eggs are round with shining greenish yellow color. After hatching the young larvae feed on the foliage for some time. Later on it bores into the bolls and feed on them, with its body hanging outside. When the larvae are full fed, they come out of the boll and pupate in the soil. The pupa is dark brown with the sharp spine at the posterior end. There are 8 generations of this pest in a year. If suitable vegetation is not available the caterpillars may feed on their fellow beings (cannibalism).

Damage: The caterpillars are polyphagous. They feed on the foliage and on the bolls of the cotton and thus reduce yield. The attacked bolls show a prominent hole. This hole is larger than the attack of other bolls worms. After the attack of this pest, dirty faeces accumulate on the boll surface. Its damage is not uniform, but in patches.

Control:

- Avoid the cultivation of okra, arhar, moong, castor and dhaincha in and around the cotton crop.
- Avoid growing of American cotton in the fields.
- Ichneumonid wasp, larval parasitoid of American bollworm should be promoted in the field.
- Spray profenofos EC 800 ml/acre.

4.1.4 ARMY WORM

T.N: *Spodoptera litura*

(Noctuidae; Lepidoptera)



Identification: The army worm is a pest of graminaceous crops all over the world. The adult moths of army worm are pale brown. Larvae are dull white and later turn green.

Life cycle: They live for one week and lay eggs singly in rows or in clusters on dry or fresh plants or on the soil. The eggs are round, light green, when freshly laid, and turn pale yellow and finally black. In the Punjab, they hatch in one week from March to May, and in 2-3 weeks in December-January. In the spring, the larval stage is completed in 2 weeks but in the winter it is prolonged to 2-3 months. In the pre-pupal stage, the insect spins a cocoon. The pre-pupal stage lasts one week during January to May. The pupal stage is completed in 2 weeks in May and in 6-8 weeks in the winter months. The survival of the pupae depends on the soil moisture.

Damage: The freshly emerged larvae feed on tender leaves in the central whorl of the plant. As they grow, they are able to feed on older leaves also and skeletonize them totally. The grown up caterpillars throw out fecal pellets, which are quite prominent. In the case of a severe attack whole leaves, including the midrib, are consumed and the field looks as if grazed by cattle. The pest may also eat away ears, including the awns and immature grains.

Control:

- Army worms can be controlled by spraying the crop with lufenuron EC 800 ml/acre.

4.1.5 COTTON APHID

T.N: *Aphis gossypii*

(Aphididae; Homoptera)