

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.

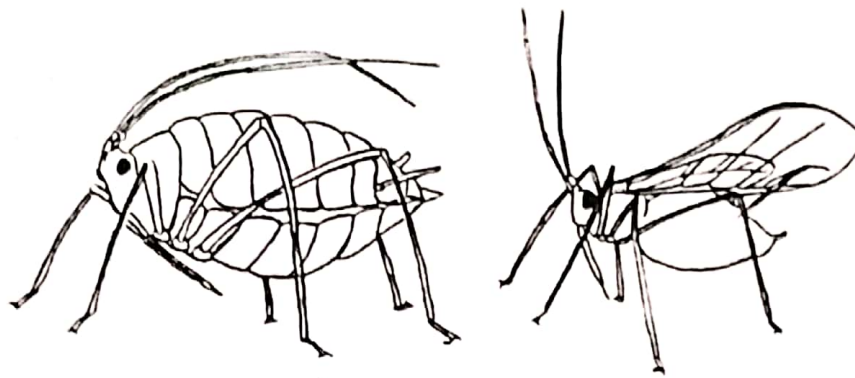
Control:

- 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)



Identification: Adult aphids are small and greenish-brown in color and exist both in winged and wingless forms. They are found in colonies on the soft and tender plant parts.

Life cycle: The winged and wingless females multiply viviparously as well as parthenogenetically. The female aphid may give birth to 8-22 nymphs in a day. The nymph moults four times to become adult. The life cycle completes in two weeks.

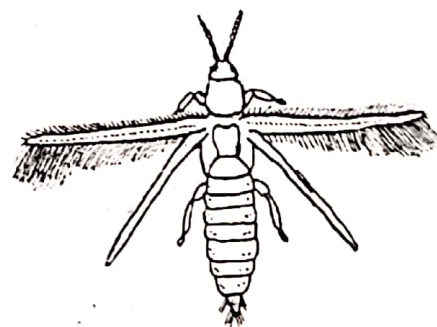
Damage: The aphids found in colonies on the soft and tender parts of the plants and suck the cell sap. In case of severe infestation, the plants become weak, stunted, leaves curl up and wither. The damage is more on younger plants than the older ones. Aphid secretes honey dew which encourages sooty mould growth on the leaves.

Control:

- The coccinellid beetle *Coccinella septempunctata* L. and *Aphelinus mali* H. are the common predator and parasitoid of this pest.
- When honey dew appears on 50% plants, spray bifenthrin EC 150 ml/acre or imidacloprid SL 80 ml/acre.

4.1.6 COTTON THRIPS

T.N: *Thrips tabaci*
(Thripidae; Thysanoptera)



Identification: The adults are slender, yellowish brown and measure about 1 mm in length. The males are apterous whereas the females have long, narrow wings with long hairs along the hind margins. The nymphs resemble the adults but are slightly smaller and wingless.

Life cycle: This pest is active throughout the year. Its female lay 50-60 kidney shaped eggs singly on the foliage. After hatching the nymphs start feeding on the lower surface of the leaves and have 3 instars. There are several generations of this pest in a year.

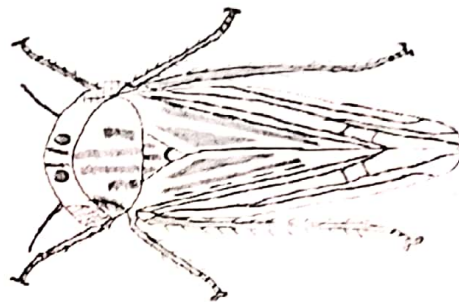
Damage: Both adults and nymphs cause damage to cotton plants. The attacked leaves become silvery white, wrinkled and fall off and the plants bear very few bolls. Hence the cotton production is reduced.

Control:

- Spray imidacloprid SL 75 ml/acre.
- spinosad SC 40 ml/acre.

4.1.7 COTTON JASSID

T.N: *Amrasca biguttula biguttula*
(Cicadellidae; Homoptera)



Identification: Eggs are yellowish white. Both adult and nymph are of greenish-yellow color with a black spot on the tip of each forewing. They jump on disturbing.

Life cycle: Females lay about 30 eggs on the lower side of leaves. They hatch in about two weeks. Nymphs live for three weeks and have 5 instars. There have 7 generations in a year.

Damage: Nymphs and adults both suck the cell sap from the leaves. After the attack, the leaves firstly show yellow and then reddish spots. The attacked leaves turns downwards, dry and fall. Due to loss of leaves the plants become weak and their fruits fall.

Control:

- Clean cultivation and destruction of alternate host plants.
- Hairy varieties of cotton should be grown.
- Green lace wing is a good predator of cotton jassid.
- Spray of acetamiprid SP 125 ml/acre

4.1.8 COTTON WHITEFLY

T.N: *Bemisia tabaci*

(Aleyrodidae; Homoptera)



Identification: Eggs are creamy white. Nymphs are pale yellow and adults with pure white wings.

Life cycle: Females lay 100-150 stalked eggs on the lower side of leaves. They hatch in two weeks in summer. Nymphs remain for two weeks with 3 instars and then the false pupae are formed which give rise to adult in one week. There are 11 generations in a year.

Damage: Nymphs and adults suck cell sap from the leaves which show yellowish spots, dry and fall off. Attacked plants become stunted. This pest also throws large quantities of honey dew on the plants on which the black molds grow and interferes with photosynthesis.

Control:

- Destruction of alternate host plants and weed hosts.
- Avoid over irrigation in cotton field.
- Green lace wings and coccinellid beetles are good predators of cotton whitefly.
- *Encarsia* spp. is an important whitefly parasitoid.
- Spray of acetamiprid SP 125 ml/acre or imidacloprid SL 250 ml/acre.

4.2 INSECT PESTS OF SUGARCANE