

Aphid: *Aphis gossypii* (Aphididae; Hemiptera)

Host Plants: Cotton, okra, Brinjal, Chillies, Guava
Identification

Adult:

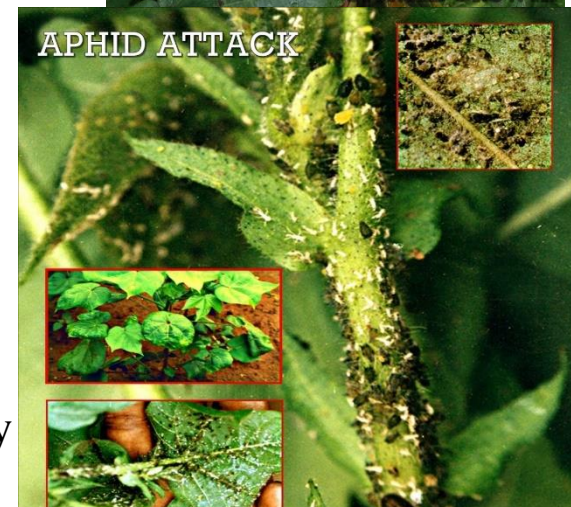
- Small 2 mm long, Yellow or Greenish brown in color
- Soft-bodied insects, winged or wingless
- Pair or small tubular structure projecting out from dorsal surface of the posterior region of the body known as cornicals.
- Viviparous or parthenogenetically reproduced
- Aphids found in colonies

Damage:

- ✓ Feed cell sap from tender and soft plant parts.
- ✓ Black sooty mold develops on honeydew secreted by aphids.
- ✓ Stunted growth, leaf curl up and wither.
- ✓ Gradual death of plants

Control

- ✓ Clean cultivation and removal of weeds
- ✓ Use of Cotton hairy varieties
- ✓ Use of predators LLB, and parasitoids like *A. mali*
- ✓ Thiamethoxam (Actara 25WG), 3.0 g/Kg seed or 24 g/acre)
- ✓ Imidacloprid (Confidor/Fencidor 70 WS, 5g/Kg seed) or spray 150 ml/ac



Adult



Egg



Nymph



Jassid : *Amarasca biguttula biguttula* (Cicadellidae; Hemiptera)

Host Plants: Cotton, potato, tomato, brinjal, okra, hollyhock, sunflower

Identification

- **Adult:** Greenish yellow, winged, two black spots on tips of forewing, 3mm in size, jump on disturbance
- **Egg:** Yellowish white, 25-30 Egg, 4-11 days hatching
- **Nymph** : greenish yellow and Wedge shaped, 5 instars

Damage:

Both nymphs and adults suck the sap and inject toxins

- Tender leaves turn yellow with reddish spots
- leaf margins curl downwards (cupshaped appearance)
- brick red colour “hopper burn”.
- Crop growth retarded.
- Boll formation reduced
- Lint quality deteriorated

Control:

- ✓ Clean cultivation and removal of weeds
- ✓ Use of Cotton hairy varieties
- ✓ Use of predators such as chrysoperla
- ✓ Thiamethoxam (Actara 25WG), 3.0 g/Kg seed or 24 g/acre)
- ✓ Imidacloprid (Confidor/Fencidor 70 WS, 5g/Kg seed) or spray 150ml/ac and acetmiprid SP 125g/ac



Whitefly *Bemisia tabaci* (Aleyrodidae; Homoptera)

Host Plants: Cotton, tomato, tobacco, sweet potato, cauliflower, okra etc

Identification

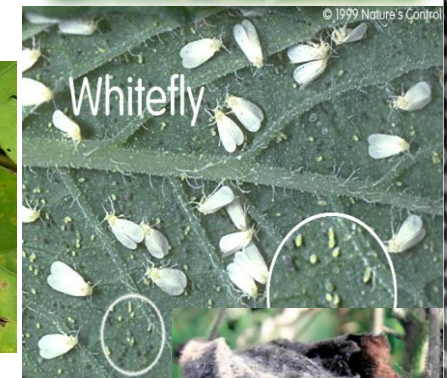
- **Adult:** Yellowish white, pure white wings, body yellow covered with white powder.
- **Egg:** Creamy white , 100-150 stalked Eggs , Hatching: 3-5 days
- **Nymph:** Pale yellow and wingless
- **Pseudopupa** formation is a distinctive character of white fly.

Damage: Nymphs and adults suck the sap from the under surface of leaves.

- leaves turn yellow and fall off, development of sooty mould (photosynthesis interference)
- Injection of toxic saliva (physiological disorder).
- It also transmits the more than 50 viral diseases, (CLCV).

Control:

- ✓ Clean cultivation and removal of weeds
- ✓ Use of Cotton hairy varieties
- ✓ Use of predators such as chrysoperla & LLB
- ✓ Encarsia spp. Is good parasitoid.
- ✓ Thiamethoxam (Actara 25WG), 3.0 g/Kg seed or 24 g/acre)
- ✓ Imidacloprid (Confidor/Fencidor 70 WS, 5g/Kg seed or spray 250 ml/ac and acetamiprid SP 125 g/ac



Thrips *Thrips tabaci* (Thripidae; Thysonoptera)

Host: Banana, Rose, Citrus , Cotton, Soybean, Beans

Identification

- **Adult:** Slender, yellowish brown, Size 1mm, Males are apterous and while female have long, narrow wings with hair fringes.
- **Egg:** white kidney shaped, laid inside the plants tissues.
- **Nymph** Nymphs resemble the adults but are slightly smaller and wingless.



Fig. 91. *Thrips tabaci*—(Adult).



Damage: Both adults and nymphs cause damage to cotton plants.

- Attacked leaves become silvery white, wrinkle, and fall off.
- Crumpled cup shaped leaf
- Plant bear very few balls.
- Cotton production is reduced.



Control:

- ✓ Clean cultivation and removal of weeds
- ✓ Use of Cotton hairy varieties
- ✓ Use of predators such as predatory mites
- ✓ Imidacloprid (Confidor/Fencidor 70 WS, 5g/Kg seed or spray 250 ml/ac and acetamiprid SP 125 g/ac



Spotted Bollworm *Earias Insulana*, *Earias vitella* (Noctudae; Lepidoptera)

Host Cotton, bhendi, holly hock, *Hibiscus cannabinus*, *Abutilon indicum*

Identification

- **Adult:** Yellowish white, winged, 25 mm in size across wings.
- **Egg:** Colour: greenish/bluish N^o: 200-400 Eggs
- **Larvae:** 6 instars head colored
- **PUPA:** pupate on fallen leaves and plants.
- Active period: March-Nov

Damage:

- boring of terminal portion (dying/withering)
- boring of squares, flowers, and fruits,
- Feeding hole plugged by excreta
- Shedding of fruiting bodies,
- premature boll opening,
- lower ginning percentage

Control:

- Plough in or burn old crop debris.
- Use resistant varieties.
- Thiamethoxam (Actara 25WG), 3.0 g/Kg seed or 24 g/acre)
- Imidacloprid (Confidor/Fencidor 70 WS, 5g/Kg seed)



Tunneling of shoot by *Earias*



Square feeding by *Earias*



Earias feeding on flower



Feeding hole plugged by excreta



Boll feeding by *Earias*



Damage due to *Earias* feeding

Pink Bollworm *Pectinophora gossypiella* (Gelechiidae; Lepidoptera)

Host Cotton, bhendi, holly hock, *Hibiscus cannabinus*

Identification

- **Adult:** Dark brown, Winged fringes, 8-9 mm in size across wing
- **Egg:** Colour: creamy white , N°: 100-250 Eggs
- **Larvae:** 4 instars ,4th instar larve is pinkish.
- **PUPA:** pupate in bolls, ground debris, fallen leaves.
- Active period: March-Nov

Damage:

- Rosette flowers formation
- Double seeds formation



Control:

- Plough in or burn old crop debris.
- Use resistant varieties.
- Thiamethoxam (Actara 25WG), 3.0 g/Kg seed or 24 g/acre)
- Imidacloprid (Confidor/Fencidor 70 WS, 5g/Kg seed)



American Bollworm *Helicoverpa armigera* (Noctuidae; Lepidoptera)

Host: Cotton, Sorghum, soybean, peas, sunflower, safflower, chillies, groundnut, tobacco, Okra, maize, tomato.

Identification

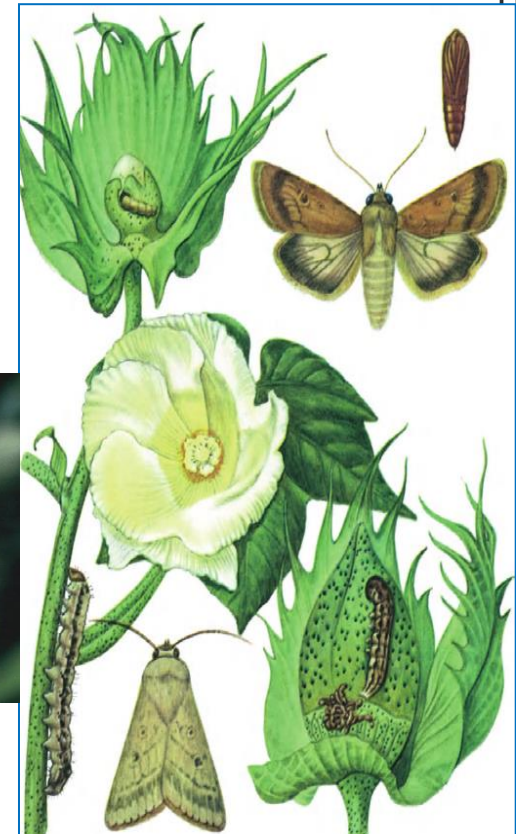
- **Adult:** Yellowish brown, black kidney shaped mark on underside of forewings
- **Egg:** White, Ribboned and dome shaped , 1000-1500 Eggs/female
- **Larvae:** Greenish with dark broken grey lines along the sides.
- **PUPA:** pupate in **soil**, dark brown.
- Active period: March-Nov

Damage

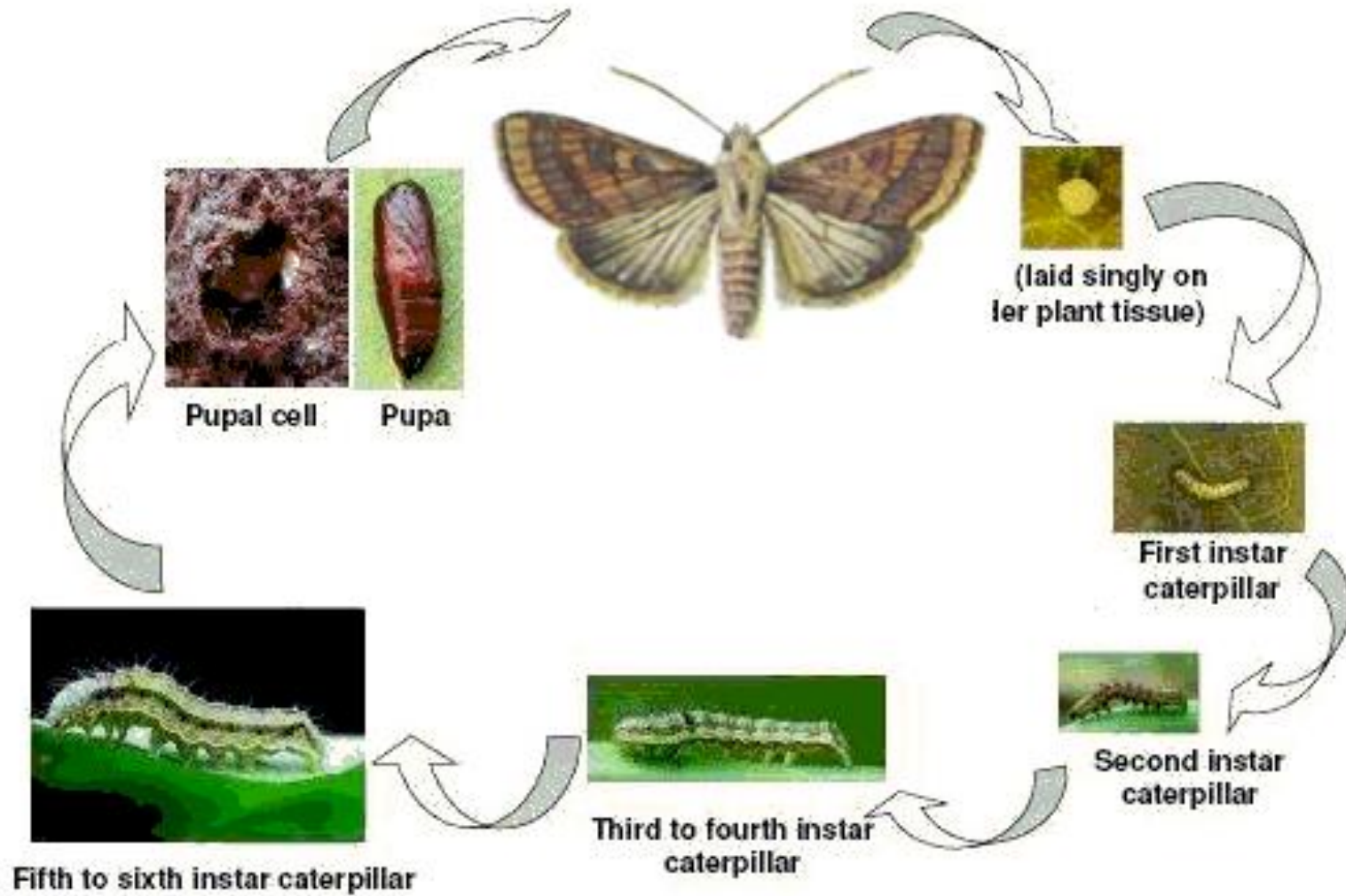
- Leaves, squares, flowers and small bolls.
- Prominent hole in the bolls
- They feed the internal content completely by thrusting their head inside leaving the rest of the body hanging outside.
- Dirty faeces around the attacked bolls
- Fruit and flowers shedding

Control:

- Clean cultivation.
- Avoid alternate host plants
- Use resistant varieties.
- Ichneumonid wasps (Biological control)
- Chemicals: profenofos (800ml/ac), emamectin 75ml/ac etc



American bollworm



Army worm : *Spodoptera litura* (Nuctuidae; Lepidoptera)

Host Plants: Grasses, cereals, vegetables, fruits, legumes, and weeds

Identification

- **Adult:** pale brown, a prominent white dot near the center of the front wings, they are active at night, the wing-spread is about 1-1.5 inches
- **Egg:** 150 eggs, Lay singly in rows, Eggs round, greenish when freshly laid, Pale yellow-finally black
- **Larva:** dull white, pale green and later on greenish brown
- **Pupa:** Pre-pupal stage lasts 1 week (jan-may), Pupal stage comp. 2 weeks in may. 6-8 weeks in winter



Damage:

1. Freshly emerged larvae feed on tender leaves. As they grow, they feed on older leaves.
2. Skeletonize the plants
3. Prominent fecal pellets

Control:

- Clean cultivation.
- Avoid alternate host plants
- Use resistant varieties.
- Apanteles parasitic wasps (Biological control)
- Chemicals: lufenoron 800 ml/ac



Maize Borer: *Chilo partellus* (pyralidae, Lepidoptera)

IDENTIFICATION:-

Adult:- They are yellowish grey in color.

Larvae:- The larvae are dirty grayish white with black head. Four brownish longitudinal stripes on the back.

Eggs:- 10-80 eggs on upper and under side of leaf. Flat, oval, creamy white, 0.8 mm in length

Pupa:- upto 15mm in length, slender and shiny, light yellow-brown to dark red-brown in color.

DAMAGE:- Young larvae firstly feed on the leaves, make a few holes and then bore their way downwards through the central whorl and shows "Dead Hearts". Young seedlings are more often destroyed by the attack of this pest.

CONTROL:-

- Destroy the host plants. Eg. Sorghum, pearl millet, rice, sugarcane.
- Removal and destruction of infested plants, dead hearts & the crop residues.
- Use parasitic wasps *COTESIA FLAVIPES* and *XANTHOPIMPLA STEMMATOR*
- Use of Carbofuran G 8-10kg/acre.



White-backed plant hopper: *Sogatella furcifera* (Delphacidae: Homoptera)

Host plants: rice, wheat, maize

Identification:

Egg: eggs are Cylindrical in shape and laid in groups.

Nymph: grayish white and becomes dark grey at maturity.

Adult: wedge shaped straw colored.

There is a prominent white band between the junctures of the

Life cycle:-

Life cycle completes in 3 weeks

Female lays 100-150 eggs and lives for 2 weeks.

Damage:

The nymphs and adults suck cell sap at the base of the rice plant and the leaf surface.

The tillers dry up and turn brown as a result of excessive removal of plant sap

Rice crop fails to produce complete grains [seedless glumes] and

this condition is known as red disease.

Hoppers secrete honeydew which serves as a medium for mould growth

Control :

Growing no more than two crops per year

Using early maturing varieties may help control this plant-hopper

Spacing of 20*15 should be followed. s

The field should be drained for 3 or 4 days when heavy infestations occur.

Release egg parasitoid *Anagrus* sp and effective predators is

Cyrtorhinus lividipennis

Spray carbaryl D 5kg/acre or imidacloprid SL 250ml/acre.



Cabbage butterfly: *Pieris brassicae* (Pieridae: Lepidoptera)

Host plants: Major pest of cabbage and other cruciferous plants

Identification

Adult: Yellowish white (female with 2 black spots on upper side of forewings while in males on lower side of forewings. Apical margin of forewing is blackish.

Eggs: Pale white or yellowish in color 200-400 eggs laid singly or in batches on leaf undersides.

Larva/grub: Creamy white or yellowish, brown head

Life history:

Life cycle: About 1.5 months, Generations: 2-3

Adult: 1 month

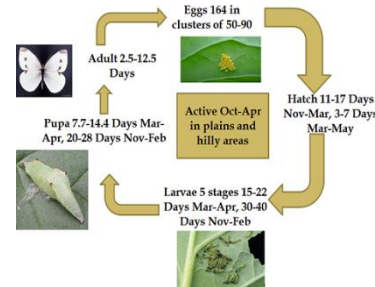
Larvae: 2-3 weeks

Damage:

1. Caterpillars feed gregariously on plant leaves and heads.
2. Attacked plant bears abnormal plant head and ultimately a lower market price.

Control:

- Destruction of crop stubbles.
- Cypermethrin/abamectin/ Spinosad



Red pumpkin beetle: *Aulacophora foveicollis* (Chrysomelidae: Coleoptera)

Host plants: Major pest of cucurbits such as pumpkin (cucurbita pepo) Tinda (Citrullus vulgaris), ghia tori (Luffa aegyptica), cucumber and melon.

Identification

Eggs: Oval; yellow (300 eggs singly or in batches) in moist soil near plant base. Hatching in 6-15 days

Larva/grub: Creamy white or yellowish; bore into the root, underground stem and sometime fruit touching the soil. 13-25 days

Pupa: Creamy white; pupate in thick walled earthen chambers in soil; 7-17 days

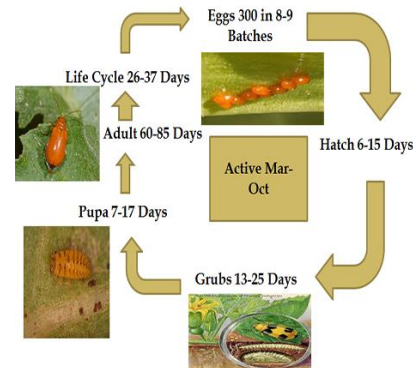
Adult: brilliant orange Red ; ventral surface black
Overwinters as adult in crop stubbles or soil

Damage:

1. Adult feed on leaves
2. Larvae feed by boring into the root or underground stem and fruits

Control:

- Deltamethrin 250 ml/A
- Dichlorvos (thunder/DDVP 50EC) 500 ml/ac



Hadda beetle: *Henosepilachna chrysomelina* (Coccinellidae: Coleoptera)

Host plants: Plants of solanaceous family (brinjal, tomato and potato) cucurbitaceous

Identification:

Eggs: Singly laid eggs (in clusters of 20-30), Yellowish cigar shaped eggs on underside leaf upper sides. (about 400 eggs) (3 days)

Grub: Yellowish; spiny; feed on lower epidermis; (7-17 days)

Adult: deep red, Forewing with 7-14 black prominent spots on dorsal side; tip is pointed; hibernate as adult, (60-70 days)

Damage:

1. Both adult and Larvae feed on upper and lower leaf sides making them sieved-like
2. Ultimately drying and falling of leaves.

Control:

- Destruction of crop stubbles/damaged leaves/eggs.
- Biological control by *Pediobius foveolatus*; *P. epilachnae* (larval/pupal parasitoid wasp)
- Spray of Cypermethrin+curacron (Polytrin-C 440 EC) 500ml/ac
lambda-cyhalothrin and abamectin



Brinjal Fruit-borer: *Leucinodes orbonalis* (Pyralidae: Lepidoptera)

Host plant: feed on solanaceous plants/green pods of peas

Identification:

Egg: creamy white eggs 80-120; singly or batches on underside of leaves, stem, flower bud, (3-6 days)

Larvae: creamy white when young; light pink when grown; hibernate as larvae; larvae bore into tender shoot near growing points, flower buds, or fruits (4-6 fruits by one larvae); (9-28 days)

Pupae: pupation in tough silken cocoons among fallen leaves; (6-17 days)

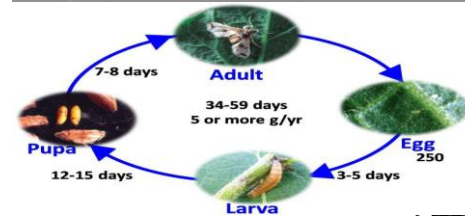
Adult: white with black spots on the dorsum of thorax and abdomen; wings white with a pinkish or bluish tinge; FW has black/brown spots, small hair along apical and anal margin, (2-5 days)

Damage:

Terminal shoot is attacked and killed and Bore into the fruits

Control:

- Deep ploughing after harvesting
- Collection and Destruction of affected shoots and fruits
- Crop sanitation and Crop rotation
- Biological control: Bracon spp.
- Betacyfluthrin (25EC), Lufenuron (50 EC) and Cypermethrin 200-250 ml/A



Citrus Caterpillar: *Papilio demoleus* (Papilionidae, Lepidoptera)

Host plant: all varieties of cultivated and wild citrus Spp.

Identifications:

Egg: round, pale yellow; 75-120 eggs/female; laid singly or in groups on tender shoots & fresh leaves on the underside; (3-4 days)

Larvae: young larvae are dark brown having white band on the body with spines; full grown larvae are green; (8-16 days)

Pupae: Pupae are pale green; mature larva spin griddle around its body and pupate on twig, dry stick or raised structure; hibernate in pupal stage. (8 days)

Adult: head and thorax black, wing dully black with yellow markings

Damage:

1. Feed on fresh leaves and terminal shoots
2. Destroy nursery plants
3. Heavily attacked plants bear no fruits

Control:

1. Hand picking and destruction of larvae
2. Trap crop as fennel
3. Use of entomopathogenous fungus and *Bacillus thuringiensis*
4. *Trichogramma chilonis* and the Scelionid *telenomus* spp. of parasitoids
5. Spray of



Citrus leaf-miner: *Phyllocnistis citrella* (Gracilaridae, Lepidoptera)

Host plant: citrus, pomelo, willow and cinnamon. Active throughout the year

Identification:

Egg: minute, flattened, transparent eggs; laid singly on tender shoots/young leaves on the lower surface near midrib. (2-10 days)

Larvae: legless; pale yellow with light brown well developed mandible; mine into leaf tissues and remain inside. (8-16 days)

Pupae: brownish; larvae spin cocoon; (5-25 days)

Adult: Tiny moth, FW have brown stripes and prominent black spot along tips; HW pure white; both are fringed with hairs

Damage:

Larvae make zigzag galleries in young leaves

Attacked leaves twist

Brownish patches are formed on older leaves

In larger tree, photosynthesis is severely affected, reduction in yield

Control:

1. Sex pheromone (7Z, 11Z)-7, 11-hexadecadienal) to attract males of CLM
2. Petroleum oil 2.5-5 ml/L of water reduced the no of mines.
3. Imidacloprid 40ml/100L of water
4. Fenvalerate 50 ml /100L of water



Citrus psylla: *Diaphorina citri* (Psyllidae: Hemiptera)

Host plant: all varieties of cultivated and wild citrus. Active throughout the year

Identification:

Egg: stalked, almond-shaped, orange; 500 eggs/female; laid singly or in groups on tender leaves & shoots; egg stalk embedded in plant tissues; arranged in straight line; (4-6 days)

Nymph: flat, louse-like, orange yellow; congregate on young leaves; (10-11 days)

Adult: Brown with its head lighter brown and pointed; wings are membranous, semi-transparent with brown bands; (live for 12-26 days in summer & 190 days in winter)

Damage:

Suck cell sap which leads young leaves curling and shoots stop growing

Leaves, leaf buds and flower buds may wilt and die

Premature fruit shedding and leave shedding

Sooty mold develop and interfere with photosynthesis

Citrus greening virus transmission

Control:

1. Resistant cultivars and Clean cultivation
2. Use of natural enemies such as *Coccinella septempunctata* and *Chrysoperla carnea* larvae feed on nymphs.
3. Spray of Imidacloprid 40 ml and Fenvalerate 250 ml



Mango leafhopper: *Amritodus atkinsoni* (Cicadellidae, Homoptera)

Host Plants: A destructive pest of **Mango plant**, widely distribute in mango orchards

Identification:

Adult: Pale brown, wedge shaped, broad head, yellow & black markings on the body.

Eggs: 200 , laid singly on panicle tissues, unopened flowers, and young foliage (1 week).

Nymph: Yellowish brown with red eyes. (1-3 weeks)

No. of. Generations: 2

Damage:

- Throughout the year (Maxi. population in May, June)
- Maximum damage caused in February-March (to inflorescence and young sprouts).
- Sucking sap of young foliage and sprouts, and tender leaves and twigs.
- Browning, Withering , deformation and yellowing of plant leaves, florets and twigs
- Pre-mature fruit dropping and poor quality fruits
- Honeydew secretions promote the growth sooty mould.

Control:

- Clean cultivation
- Biological control by releasing lacewings, coccinallid beetles etc.
- Spray of Acetamiprid, Imidacloprid, Bifenthrin, Lamda cyhalothrin



Mango mealybug: *Drosicha stebbingi* (Monophlebidae, Homoptera)

Host plants: Mango, Mulberry, Peaches, guava, fig, rose etc. A destructive pest of Mango plant/widely distribute in mango orchards in Pakistan.

Identification

Adult: Females are wingless, oval, flattened body covered with a white mealy powder. Males are dipterous with black forewings and hindwings modified as halteres and with crimson red body.

Nymphs: like females but smaller in size

Eggs: 200 eggs/female, Pink colored minute egg (masses in soil), which later on turns pale near maturity. (1-2 weeks)

Damage:

- Active period: Jan. to June (Maxi. Population in Jan. to April)
- Egg hatching in 2nd fortnight of December and nymphs crawl up on the tree trunk in January and cluster around twigs, shoots, leaves, inflorescence, young fruits etc.
- De-saping of young foliage and sprouts, and tender leaves and twigs.
- Retarded plant growth and pre-mature fruit falling
- Honeydew secretions promote the growth sooty mould.

Control:

- Regular ploughing of soil under tree trunks from May to November.
- Collection and destruction of egg masses
- Mealybug sticky traps on tree trunks
- Predatory beetles can be used as biological control.
- Chemical control (Imidacloprid, Deltamethrin, Lamda-cyhalothrin)



Fruit fly: *Bactocera dorsalis* (Tephritidae, Diptera)

Host plants: All sort of fruits and cucurbits. A destructive pest of Mango and guava orchards.

Identification

Adult: Brownish body, Stout abdomen, larger than housefly, Transparent wings, blackish yellow patterns on thorax, yellow legs (4-5 days)

Eggs: Whitish elongated eggs laid inside the mature green fruits (2-3 days).

Maggots: Apodous, creamy yellowish. (1-2 weeks)

Pupa: Yellowish brown in color (in 5-10 cm upper soil layer) (2-3 weeks)

Damage:

- Active period: March to November
(Pupal hibernation: November to February)
- Maximum damage caused in August to November
- Egg-laying in fruits by puncturing with ovipositors
- Attacked fruit skin got rotten, giving strong smell and contain several maggots later on. Fruit quality deterioration

Control:

- Ploughing of soil under tree trunk and heavy irrigations
- Regular removal and destruction of rottened and fallen fruits
- Pheromone traps (methyl eugenol)
- Braconid wasps are good biological control tools.
- Spray of Acetamiprid, Imidacloprid, Bifenthrin, Lambda-cyhalothrin



Mango fruit fly: *Ceratitis cosyra* (Tephritidae, Diptera)

Host plants: Mango, guava, ber, peach etc. A destructive pest of Mango orchards

Identification

Adult: Brownish yellow with shiny black spots on thorax, (4-5 days)

Eggs: Whitish yellow elongated eggs laid inside the mature green fruits (2-3 days).

Larvae: Apodous, creamy white maggots. (1-2 weeks)

Pupa: Yellowish brown in color (in 5-10 cm upper soil layer) (2-3 weeks)

No. of generations: 2

Damage:

- Active period: March to November
(Pupal hibernation: November to February)
- Maximum damage caused in August to November
- Egg-laying in fruits by puncturing with ovipositors
- Attacked fruit skin got rotten, giving strong smell and contain several maggots later on.
- Fruit quality deterioration

Control:

- Ploughing of soil under tree trunk and heavy irrigations
- Regular removal and destruction of rotten and fallen fruits
- Pheromone traps (methyl eugenol)
- Spray of Acetamiprid, Imidacloprid, Bifenthrin, Lambda-cyhalothrin



Red flour beetle(Susri) (*Tribolium castaneum* ; Tenebrionidae, Coleoptera)

Identification

Adult: Reddish brown with 11 segmented antennae (body length 4-5 mm)

Larva/grub: Yellowish white with light brown head (10 mm long)



Damage:

Adult and Larvae feed on broken kernels and grain dust (flour particles)

- Active period: March to November
- Overwintering as adult
- Infestation in wheat flour and other stored grain products produces disagreeable odor and flavor through production of benzoquinones from pest's abdominal glands
- Flour greyish and mouldy.
- High rate of dispersal (flying adults) and reproduction under optimum temperature and conditions

Rice weevil (*Sitophilus oryzae*; Curculionidae, Coleoptera)

The **rice weevil** is a serious stored product **pest** which attacks wheat, rice, and maize.

Identification

Adult: Reddish brown to black with a developed rostrum (snout structured mouth) , elytra with 4 brownish orange spots (body length 2.5 –3.5 mm)

Grubs: Dirty white legless with brown head found inside rice grains (10 mm long)

Eggs: 300-400 oval shaped eggs



Damage:

- **Active period:** March to October-November. Overwintering as larva inside grains.
- Both adult and larvae feed on the kernels by tunnel formation and destroy more feed less.
- Female oviposit inside grains (egg-site) where grubs begin to feed on germ material, leaving only intact grain shells.
- Single weevil grub may consume one third of a grain during its development.

Khapra beetle (*Trogoderma granarium* ; Dermestidae, Coleoptera)

The **Khapra beetle** was originated in South Asia and is one of the world's most destructive pests of stored grain products and seeds.

Identification

Adult: Dark brown beetles with 11 segmented clubbed-shape antennae (body length 1.5-3.5 mm) covered with fine hairs.

Grubs: Dark reddish brown (4-6 mm long) and are covered in dense, reddish-brown hair with a long spicisetae hair tuft on 9th abdominal segment.

Eggs: The eggs are initially a milky white but later are translucent reddish



Damage:

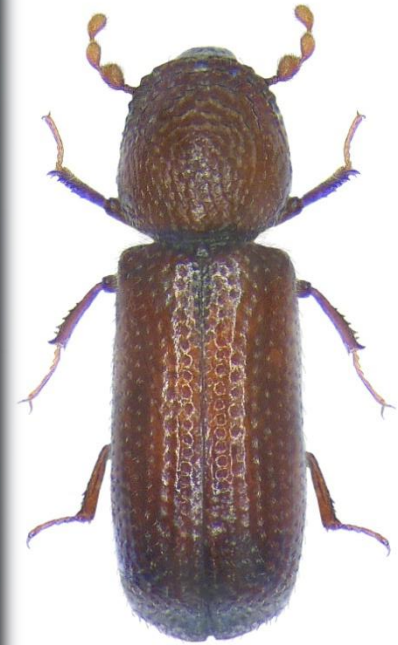
- Active period: March to November. Overwintering as larva
- Mostly larvae feed on the grains. The pest is limited to upper 50 cm of the grain heaps.
- Development is more high in warm and humid conditions inside the grain godowns.
- The pest is resistant to low humidity, temperature conditions, insecticides etc.
- It sensitive to oxygen supply inside the grain heap. Therefore it is a surface feeder and not infest beyond a certain depth.

Lesser grain borer(*Rhyzopertha dominica*; Bostrichidae, Coleoptera)

Identification

Adult: Dark brown beetles (body length up to 5 mm)

Grubs: Creamy white cylindrical (2.5 – 3.5 mm long), found inside grains with brown head



Damage:

- Active period: March to November
- Overwintering as grub
- Both adults and larvae bore into the grains and feed on grain contents including germ-plasm.
- Infestation of Lesser grain borer develops more frequently on milled rice and flour than highly polished rice.

Dhara beetle (*Callosobruchus chinensis/maculatus*; Bruchidae, Coleoptera)

Identification

Adult: Reddish brown body with usually brownish elytra and pectinate antennae (body length up to 3-4 mm)

Larva/grub: Pale yellowish (2-3 mm long), usually lie inside the grains



Damage:

- Active period: March to November
- Overwintering as larva
- Major pest of chick pea and other pulses and lentils.
- Grubs bore and feed on the internal seed cotyledons and excavate a growth chamber inside the grain.

- Proper drying of grains before storage
- Cleaning of storage godowns and containers
- Plug all the cracks and crevices in the stores
- Disinfections of stores by spraying 0.05% malathion
- Disinfections of gunny bags by dipping them in 0.02% Fenvalerate
- Grain treatment with 0.05% malathion or Fenvalerate
- Fumigation of food grains and store with carbon tetrachloride or aluminum phosphide