



**FACULTY OF AGRICULTURAL SCIENCES & ALLIED INDUSTRIES**

## Lecture No 8

### PESTS OF PULSES - BLACK GRAM, GREEN GRAM, LABLAB AND COWPEA

Major pests				
1.	Bean aphid	<i>Aphis craccivora</i>	Aphididae	Hemiptera
2.	Thrips	<i>Ayyaria chaetophora</i> , <i>Caliothrips indicus</i> , <i>Megalurothrips distalis</i>	Thripidae	Thysanoptera
3.	Whitefly	<i>Bemisia tabaci</i>	Aleyrodidae	Hemiptera
4.	Green leafhopper	<i>Empoasca kerri</i> , <i>E. binotata</i> , <i>E. flavescens</i>	Cicadellidae	Hemiptera
5.	Pod bug	<i>Riptortus pedestris</i> <i>Clavigralla horrens</i> <i>Clavigralla gibbosa</i> <i>Anoplocnemis phasiana</i>	Coreidae	Hemiptera
6.	Lablab bugs / stink bug	<i>Coptosoma cribraria</i>	Coremelanidae	Hemiptera
7.	Leaf webber	<i>Eucosma critica</i>	Eucosmidae	Lepidoptera
8.	Lab-lab leaf miner	<i>Cyphosticha coerulea</i>	Gracillariidae	Lepidoptera
9.	Termites	<i>Odontotermes obesus</i>	Termitidae	Isoptera
Minor pests				
10.	Redgram scale	<i>Ceroplastodes cajani</i>	Coccidae	Hemiptera
11.	Redgram leaf roller	<i>Caloptilia soyella</i>	Gracillariidae	Lepidoptera
12.	Leaf folder	<i>Anticarsia irrotata</i>	Noctuidae	Lepidoptera
13.	Leaf eating caterpillar	<i>Azazia rubricans</i>	Noctuidae	Lepidoptera
14.	Sphingid caterpillar	<i>Acherontia styx</i>	Sphingidae	Lepidoptera
15.	Leaf cutter bee	<i>Megachile anthracena</i>	Megachilidae	Hymenoptera

## Major pests

### 1. Bean aphid:

*Aphis craccivora* (Aphididae: Hemiptera)

**Distribution and status** Cosmopolitan, India, Africa, Argentina, China, U.S.A., Europe, Australia

**Host range** Groundnut, red gram, peas, beans, safflower, lablab, niger

**Damage symptoms** Both nymphs and adults cause the damage by sucking the plant sap. Infested pods become deformed, withered and malformed. Severe infestation may result in complete drying of affected pods. They also act as vector of pea virus.

**Bionomics:** It is a greenish black coloured aphid. The total life cycle occupies an average of 3-8 days. It reproduces parthenogenetically and viviparously. The female may produce 8-30 young ones in a life span of 10-12 days. The nymphs transform into adult in 5-8 days after passing through four instars.

### Management

1. Grow resistant cowpea cultivars like P 1473, P 1476, MS 9369, Bendel Lobia 1
2. Use entomopathogenic fungus *Fusarium pallidoroseum* or *Beauveria bassiana* to cause epizootics in aphids in the cowpea field.
3. Spraying of infested crop with 500 methyl demeton 25 EC or dimethoate or 125 ml imidacloprid in 500 L water per ha effectively control aphids. As the strong point of this pest lies in its very quick multiplication, the insecticidal treatment has to be repeated as soon as aphid population is found to have built up again.

## 2. Thrips:

*Ayyaria chaetophora*, *Caliothrips indicus*, *Megalurothrips distalis* (Thripidae: Thysanoptera)

**Damage symptoms:** The leaves are mottled with characteristic silvering due to the attack of insect especially under dry spell on lab lab, black gram, green gram, cow pea. Later leaves dry and shed. Damaged plants do not develop pods. It also acts as a vector of many diseases. Bionomics Tiny yellow fringe winged adults.

**Management:** Spray Malathion 50 EC 1.0 L or Carbaryl 50 WP 1.0 kg in 700 L water.

## 3. Whitefly:

*Bemisia tabaci* (Aleyrodidae: Hemiptera)

**Distribution and status:** Cosmopolitan. It is a vector of yellow mosaic disease.

**Host range:** Black gram, green gram, red gram, lobia, cotton, tobacco and cassava

**Damage symptoms:** The damage is caused by both nymphs and adults, which are found in large numbers. They suck plant sap and lower its vitality. Severe infestation results in premature defoliation, development of sooty mould or honey dew and shedding of flowers and pods.

**Bionomics:** Adult is a minute insect with yellow coloured body with white waxy bloom. Nymph is greenish yellow, oval in outline along with puparia on the under surface of leaves.

**Management** • Grow black gram resistant varieties like ML 337, ML 5, MH 85-61, ML 325

- Spray the infested crop with malathion 50 EC 1.0 L or phosalone 50 EC 750 ml or dimethoate 30 EC 750 ml in 700 - 1000 L water per hectare.

#### **4. Green leafhopper:**

*Empoasca kerri*, *E. binotata*, *E. flavescens* (Cicadellidae: Hemiptera)

**Host plants** Greengram, blackgram, cowpea

**Damage symptoms** The nymphs and adults feed on tender leaves and other parts of the plant by sucking the plant sap. In cases of severe attack, leaves become brittle and dry. Characteristics hopper burn i.e cupping of leaves appear. The plant may lose its vigour resulting in poor growth.

**Bionomics:** Elongate, active wedge shaped green insects found on the under surface of leaves. The female inserts its eggs inside the veins of leaves. The incubation period lasts for 4-8 days. There are five nymphal instars occupying 7-10 days.

**Management:** Spray the infested crop with methyl-o- demeton 750 ml in 700 - 1000 L water per hectare

#### **5. Pod bug:**

*Riptortus pedestris*, *Clavigralla gibbosa*, *Clavigralla horrens*, *Anoplocnemis phasiana* (Coreidae: Hemiptera)

**Host range:** Redgram and other pulses.

**Damage symptoms:** The nymphs and adults suck the juice of unripe seeds from the green pods. In case of severe infestation the tender parts get shrivelled and later dries up. The bugs are seen clustered around on the pods.

**Bionomics:**

*Riptortus pedestris* - The female bug lays an average of 115 eggs singly on pods at their base. The egg period is 3-4 days. The nymphs are brownish black and hemispherical which resembles brown ant. The nymphal stage undergoes 5 instars in 16 days.

*Clavigralla gibbosa* - It is bigger than *C. horrens* in size. It lays eggs in groups of 3-15 on pods or leaves. The fecundity is 60-400 eggs per female. The incubation period is 4 days. There are 5 nymphal instars. The nymphal duration varies from 7-31 days. The adult bug lives upto 150 days.

*C. horrens* - It is brown, flat, narrow - bodied bug with conspicuous lateral spines on the prothorax and enlarged hind femur.

**Management:** Spraying the infested crop with endosulfan 35 EC 2.0 L in 700 - 1000 L water per hectare.

**6. Lablab bugs / stink bug:**

*Coptosoma cribraria* (Coremelanidae: Hemiptera)

**Host range:** Bean, lentil etc.

**Damage symptoms** Both nymphs and adults cluster on the tender shoots and suck the sap. Heavily infested wines dry and shed away. Moderately infested plants remain weak and stunted in growth.

**Bionomics:** Oval shaped greenish bugs lay ivory white sculptured eggs in double rows in batches of 35-50 on the tender pods. Incubation period is about 7 days. Total life cycle is completed in about 49 days in South India.

**Management** Spray the infested crop with endosulfan 35 EC 2.0 L in 700 L water per hectare.

## 7. Leaf webber:

*Eucosma critica* (Eucosmidae: Lepidoptera)

**Distribution and status:** Widely distributed in India. Host range: Red gram and other pulses.

**Damage symptoms** The damage is caused by the larvae, which bores into the tender shoots of folded leaves and feed from within. Since the terminal leaves get spun together growing tip is damaged. The growth of the main shoot is affected.

**Bionomics:** The small and dark brown moth lays eggs singly or in rows on leaves, petioles (or) stems. The grooves or depressions are preferred for egg laying. Around 80-100 eggs are laid by one female. The incubation period lasts for 3-4 days. Larval period is about 14-21 days and pupal period 4-6 days. Pupation occurs within the folded buds, flowers or pods in a silken cocoon.

**Management:** Spray the infested crop with endosulfan 35 EC 2.0 L in 700 L water per ha.

## 8. Lab-lab leaf miner:

*Cyphosticha coerulea* (Gracillariidae: Lepidoptera)

**Distribution and status:** Throughout India

**Host plants:** Blackgram, greengram, cowpea.

**Damage symptoms:** Tiny larvae bore into the epidermis of the leaf and forms blisters through mining.

**Management:** Spray the infested crop with endosulfan 35 EC 2.0 L or methyldemeton 750 ml in 700 litre water per ha.

## 9. Termites:

*Odontotermes obesus* (Termitidae: Isoptera)

**Host plants** – wheat, barley, sugarcane, pea, sorghum, pearl millet, maize, groundnut.

**Damage symptoms:** Termite damage starts soon after sowing and continues till the growing stage. The leaves of damaged plants droop down which later wither and dry. Such plants are easily uprooted.

**Bionomics:** 7-10 days after aerial flight the female lays the first batch of eggs numbering 100-130. These eggs hatch in 40-42 days. The female termite then swells to become queen and lays upto 30,000 eggs per day. The members of this group are social insects and are composed of workers, soldiers, king and queen.

### **Management:**

1. Where the pest is of regular occurrence the soil should be mixed with endosulfan 4D or quinolphos 1.5 D or chlorpyrifos 5 D BHC or 10 D @ 35 kg/ha at the time of sowing.



2. If the incidence of pest is noticed in standing crop dilute 2.5 L of endosulphan 35 EC or chlorpyrifos 20EC in 5 L of water and mix it with 50 kg of soil and broadcast even in 1 ha followed by light irrigation.

## **Minor pests**

### **10. Redgram scale:**

*Ceroplastodes cajani* (Coccidae: Hemiptera)

Tender branches are covered with scales attended by ants. Adults are round waxy scales.

### **11. Redgram leaf roller:**

*Caloptilia soyella* (Gracillariidae: Lepidoptera)

Leaves rolled up apically become white and dries up. Adult moth is very small. Larva is creamy yellow or green with sparse hairs on the body.

### **12. Leaf folder:**

*Anticarsia irrotata* (Noctuidae: Lepidoptera)

Larva folds the leaves together. Adult is yellowish brown moth with oblique black lines on the wings. Larva is green coloured.

### **13. Leaf eating caterpillar:**

*Azasia rubricans* (Noctuidae: Lepidoptera)

The larva causes severe defoliation. Larva is slender green with ashy white band between each segment. A few narrow lines along the back and bright yellowish brown stripes along the sides may or may not be present. It has looping movement in spite of the presence of all prolegs. Adult moth resembles a dry leaf.

#### **14. Sphingid caterpillar:**

*Acherontia styx* (Sphingidae: Lepidoptera)

The larva feeds on leaves and cause severe defoliation. Adult is large, wings grey with waxy markings. Abdomen crimson coloured with black stripes. Larva is a stout green caterpillar with yellowish oblique stripes with curved anal horn.

#### **15. Leaf cutter bee:**

*Megachile anthracena* (Megachilidae: Hymenoptera)

Red gram leaves showing semi circular or circular cut out. Adults cut small bits of leaves for making larval chambers. Medium sized brown coloured bees.