

**PESTS OF SORGHUM, PEARL MILLET AND FINGER MILLET****PESTS OF SORGHUM**

Major pests				
1.	Sorghum Shootfly	<i>Atherigona soccata</i>	Muscidae	Diptera
2.	Stem borer	<i>Chilo partellus</i>	Crambidae	Lepidoptera
3.	Pink stem borer	<i>Sesamia inferens</i>	Noctuidae	Lepidoptera
4.	Shoot bug	<i>Peregrinus maidis</i>	Delphacidae	Hemiptera
5.	Earhead bug	<i>Calocoris angustatus</i>	Miridae	Hemiptera
6.	Sorghum midge	<i>Contarinia sorghicola</i>	Cecidomyiidae	Diptera
7.	Plant lice (Aphids)	<i>Rhopalosiphum maidis</i> , <i>Melanaphis sacchari</i>	Aphididae	Hemiptera
Minor Pests				
8.	Earhead web worm	<i>Cryptoblabes gnidiella</i>	Pyraustidae	Lepidoptera
9.	Gram caterpillar	<i>Helicoverpa armigera</i>	Noctuidae	Lepidoptera
10.	Plant bug	<i>Dolycoris indicus</i>	Pentatomidae	Hemiptera
11.	Stink bug	<i>Nezara viridula</i>	Pentatomidae	Hemiptera
12.	Mirid bug	<i>Creontiades pallidifer</i>	Miridae	Hemiptera
13.	Slug caterpillar	<i>Thosea apierens</i>	Cochlididae	Lepidoptera
14.	Leaf roller	<i>Marasmia trapezalis</i>	Pyralidae	Lepidoptera
15.	Flea beetle	<i>Cryptocephalus schestedii</i> , <i>Monolepta signata</i>	Chrysomelidae	Coleoptera
16.	Red hairy caterpillar	<i>Amsacta albistriga</i> , <i>A. moorei</i>	Arctiidae	Lepidoptera
17.	Semilooper	<i>Eublemma silicula</i>	Noctuidae	Lepidoptera
18.	Weevils	<i>Myllocerus maculosus</i> <i>M. discolor</i> , <i>M. subfaciatus</i>	Curculionidae	Coleoptera
19.	Wingless grasshopper	<i>Colemania sphenaroides</i>	Acrididae	Orthoptera

## MAJOR PESTS of Sorghum

### 1. Shootfly: *Atherigona soccata* (Muscidae: Diptera)

**Host range:** Maize, ragi, bajra, rice, wheat and grasses

#### Damage symptoms

- The maggot on hatching migrates to the upper surface of leaf and enters between the leaf sheath and stem.
- After reaching the soil level, the maggot bores inside the stem and cuts the growing point resulting in “dead heart” symptom.



- The infested plant produces side tillers.
- The attack is more severe during summer than kharif season

**ETL:** 10% dead hearts or 1 egg / plant

#### Management

- Use resistant varieties like Co-1, CSH 15R, Maldandi and Hagari, M35-1, Swati, SPV 491, IS - 18551, 5566, 5285, 5613, ICSV 700, ICSV 705, Phule Yashoda, CSH 7, CSH 8
- Sow sorghum immediately at the onset of monsoon rains to minimise shootfly damage.
- Use higher seed rate (12.5 kg/ha) and remove the shoot fly damaged seedlings at the time of thinning or raise nursery and transplant only healthy seedlings.
- 400 ml or imidacloprid 48 FS 1.2 L or imidacloprid 70 WS 1.0 kg or thiomethoxam 30 FS 1.0 L
- Spray endosulfan 35 EC @18 ml, dimethoate 30 EC @ 12 ml and methyl demeton 25 EC @12 ml for an area of 120 m<sup>2</sup> nursery.

## 2. Stem borer: *Chilo partellus* (Crambidae: Lepidoptera)

**Host range:** Maize, sorghum, sugarcane, bajra, rice, *Sorghum halepense*, finger millet, etc.

### Damage symptoms

- It infests the crop a month after sowing and the damage persists up to emergence of ear heads.
- Central shoot withering leading to “**dead heart**” is the typical damage symptom.
- Bore holes are visible on the stem near the nodes.
- Young larva crawls and feeds on tender folded leaves causing typical “**shot hole**” symptom.

## 3. Pink stem borer: *Sesamia inferens* (Noctuidae: Lepidoptera)

**Host range:** Sorghum, maize, rice, wheat, sugarcane, bajra and ragi, barley, guinea grasses.

### Damage symptoms

- The pink larva bores into the stem and damages the central shoot resulting in dead heart.



### Management

- Release egg parasitoids: *Telenomus* sp., *Trichogramma chilonis*; Larval parasitoids: *Apanteles flavipes*, *Bracon hebetor*; Pupal parasitoid: *Tetrastichus ayyari*
- Spray endosulfan 35 EC @ 1 L/ha or chlorpyrifos 20 EC 1.0 L / ha or apply carbofuran 3 G @ 25 kg/ ha or cartap hydrochloride 4 G @18.75 kg/ha at every 20 days interval after germination of the crop.

## 4. Shoot bug: *Peregrinus maidis* (Delphacidae, Hemiptera)

**Host range:** Sorghum, maize, rice, millets

### Damage symptoms

- Adults and nymphs suck sap from plants. The attacked plants become unhealthy stunted and yellow.
- The leaves wither from top downwards. Panicle formation is inhibited and the plants die if attack is severe.
- Honeydew secreted by the bug causes growth of sooty mould on leaves.
- The midribs of the leaves turn red due to egg-laying and may dry up subsequently.



### Management

- Conserve egg parasitoids viz., *Paranagrus optabilis*, *Octetrastichus indicus* and Predators - *Coccinella septumpunctatum*, *Menochilus sexmaculatus*, *Geocoris tricolor*
- Spray dimethoate or methyl demeton 500 ml in 500 L of water

### 5. Earhead bug: *Calocoris angustatus* (Miridae: Hemiptera)

**Host range:** Pearl Millet, maize, tenai, sugarcane and grasses

#### Damage symptoms

- The adults and nymphs damage the ear heads by feeding on them.
- They suck the juice from the grains when they are in the milky stage.
- The sucked out grains, shrink and turn black in color and become ill filled (or) chaffy.
- Older grain shows distinct feeding punctures that reduce grain quality.



**ETL:** 10 Nos/ear head

### Management

- Dust with carbaryl 10% at 12 kg/ha (or) quinalphos 1.5% 12 kg/ha synchronising during milky stage
- Grow resistant cultivars like IS1760, IS 17645, CSM 388, Chencholam, BBR - 1(ICS V239)



## 6. Sorghum midge: *Contarinia sorghicola* (Cecidomyiidae:Diptera)

**Hosts:** Sorghum cultivated and wild species.

### Damage symptoms

- A maggot feeds on the developing grains and pupates there.
- White pupal cases protruding out from the grains and chaffy grains with holes are the damage symptoms.

### Management



- Grow resistant cultivars like DJ 6541, AF 28, ICSV 197, ICSV 745, ICSV 88032
- Conserve larval parasitoids - *Apanteles* sp., *Eupelones popa*; Larval and pupal parasitoid - *Tetrastichus* spp.; Predators – *Orius albidipennis*; *Tapinoma indicum*
- Give first application at nearly 90% earhead emergence and repeat after 4 or 5 days. The insecticides recommended are spray endosulfan 35 EC 1.0 L (or) malathion 50 EC 1.0 L (or) carbaryl 50 WP 2 kg/ha or endosulfan 4 D or malathion 5 D or carbaryl 10 D or quinalphos 1.5 D at 25 kg/ha .

## 7. Plant lice (Aphids): *Rhopalosiphum maidis*, *Melanaphis sacchari* (Aphididae:

### Hemiptera)

**Host range:** Sorghum, maize, ragi

### Damage symptoms

Colonies of aphids are seen in central leaf whorl, stems, or in panicles. The young and adults suck the plant juice. This frequently causes yellowish mottling of the leaves and marginal leaf necrosis. The aphid produces an abundance of honeydew on which molds grow. In panicles, honeydew may hinder harvesting. The aphid also transmits maize dwarf mosaic virus



## Management

Spray the base of attacked plants with a contact (or) systemic insecticide like dimethoate 30 EC or methyl demeton 25 EC 500 ml in 500 L of water

## Integrated Pest Management in Sorghum

### A. Cultural methods

1. Complete the sowing of sorghum in a short time to avoid continuous flowering, which favours grain midge and earhead bug multiplication.
2. Sow Sorghum: lablab/cowpea (4:1) as an intercrop to minimize stem borer
3. Use increased seed rate upto 12.5 kg per hectare and remove the shoot fly damaged seedlings at the time of thinning in case of direct sowing or raise nursery and transplant only healthy seedlings.

### B. Mechanical method

1. Set up light traps till mid night to monitor, attract and kill adults of stemborer, grain midge and earhead caterpillars.
2. Set up the TNAU low cost fishmeal traps @ 12/ha till the crop is 30 days old.

### C. Biological methods

1. Take up two applications of NPV at 10 days interval at 250 LE/ha along with crude sugar 2.5 kg + cotton seed kernel powder 250 g on the ear heads to reduce the larval population of *Helicoverpa* sp.

### D. Chemical methods

1. Use seeds pelleted with insecticides.
2. Arpocarb fishmeal formulation is more effective in attracting the shoot fly adults especially the females.

## PESTS OF PEARL MILLET

Major pests				
1	Shoot fly	<i>Atherigona approximata</i>	Muscidae	Diptera
2	Stem borer	<i>Chilo partellus</i>	Crambidae	Lepidoptera
3	Pink stemborer	<i>Sesamia inferens</i>	Noctuidae	Lepidoptera
4	Grain midge	<i>Geromyia penniseti</i>	Cecidomyiidae	Diptera
5	Stink bug	<i>Nezara viridula</i>	Pentatomidae	Hemiptera
Minor pests				
6	Leaf beetle	<i>Lema downsei</i>	Galerucidae	Coleoptera
7	Black hairy caterpillar	<i>Estigmene lactinea</i>	Arctiidae	Lepidoptera
8	Wingless grasshopper	<i>Neorthacris simulans</i>	Acrididae	Orthoptera
9	Semilooper	<i>Antoba (Eublemma) silicula</i>	Noctuidae	Lepidoptera

### MAJOR PESTS

#### 1. Shoot fly: *Atherigona approximata*, Muscidae: Diptera

##### Damage symptoms

- A serious pest on pearl millet all over India in Tamil Nadu during cold weather season; it attacks the crop both in seedlings and boot leaf stage.
- It causes dead hearts in young plants and chaffy grains in the mature crop.

#### 2. Stem borer: *Chilo partellus* (Crambidae: Lepidoptera)

##### Damage symptoms

- It infests the crop a month after sowing and upto emergence of earhead. Central shoot withering leading to “dead heart” is the typical damage symptom.
- Bore holes visible on the stem near the nodes.
- Young larva crawls and feeds on tender folded leaves causing typical “shot hole” symptom.

### 3. Pink stem borer: *Sesamia inferens* (Noctuidae: Lepidoptera)

**Host range:** Sorghum, maize, rice, wheat, sugarcane, bajra and ragi, barley, guinea grasses

#### Damage symptoms

Pink larva enters into the stem causing dead heart symptom.

### 4. Grain midge: *Geromyia penniseti* (Cecidomyiidae: Diptera)

#### Damage symptoms

- Maggot feeds on developing grains causing grainless glumes with white pupal case attached to the tip of the spikelet.

#### Management

- Dust any one of the insecticides – malathion 5D 25 kg, carbaryl 10 D 25 kg, endosulfan 4 D 10 kg/ha.

### 5. Stink bug: *Nezara viridula* (Pentatomidae: Hemiptera)

#### Damage symptoms

- Grains become chaffy or spotted black and get shrivelled. A stinking smell emanates from the bug.

## PESTS OF FINGER MILLET

Major pests				
1.	Pink stem borer	<i>Sesamia inferens</i>	Noctuidae	Lepidoptera
2.	White borer	<i>Saluria inficita</i>	Phycitidae	Lepidoptera
3.	Root aphid	<i>Tetraneura nigriabdominalisi</i>	Aphididae	Hemiptera
4.	Cut worm	<i>Spodoptera exigua</i>	Noctuidae	Lepidoptera
5.	Stink bug	<i>Holotrichia consanguinea</i>	Melolonthidae	Coleoptera
Minor pests				
6.	Flea beetle	<i>Chaetocnema pusaensis</i>	Alticidae	Coleoptera
7.	Earhead caterpillars	<i>Sitotroga cerealella</i>	Gelechiidae	Lepidoptera



## MAJOR PESTS

### 1. Pink stem borer: *Sesamia inferens* (Noctuidae: Lepidoptera)

#### Damage symptoms

- Pink larva enters into the stem and causes dead heart symptom.

#### Management

- Spray cartap hydrochloride 4G @ 25kg/ha, fipronil 0.3G 15kg chlorpyrifos 10G 10kg, in whorls .

### 2. White borer: *Saluria inficita* (Phycitidae: Lepidoptera)

#### Damage symptoms

A potential pest on finger millet in South India. Larva bores into the stem at the base of the tiller close to the soil level and causes dead heart.

### 3. Root aphid: *Tetraneura nigriabdominalisi* (Aphididae: Hemiptera)

#### Damage symptoms

Aphid remains at the base of the plant and suck the sap. The infested plants turn pale yellow and become stunted. Wilting and drying of plants in patches is the typical symptom. Black ants attend them for honeydew and their presence confirm the root aphid attack. It occurs on many grasses too.

#### Management

Spraying the base of attacked plants with a contact or systemic insecticide controls the aphid



1. Cut worm: *Spodoptera exigua* (Noctuidae: Lepidoptera)



**Damage symptoms:** Defoliation.

**Host range:** onion, brinjal, cotton, cowpea, chillies, daincha.

2. *Holotrichia consanguinea* (Melolonthidae: Coleoptera)

**Damage symptoms**

Grubs feed on roots and results in the death of the grown-up plants.

LEARNIZY