RAMA UNIVERSITY

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FACULTY OF AGRICULTURAL SCIENCES & ALLIED INDUSTRIES

Lecture 6

II. PESTS OF PEARL MILLET

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

Bionomics: Adult is greyish white fly. The egg-stage of the fly lasts 37-48 hours, larval stage 7-9 days and pupal stage 6 days.

Management:

As given under Sorghum

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. Parts of stem may show internally tunneling caterpillars.

Management: As given under sorghum

3. **Pink stemborer:**

Sesamia inferens (Noctuidae: Lepidoptera)

Distribution and status India, Pakistan, Malaysia, Taiwan, Burma, Bangladesh, Sri Lanka, South East Asia, China, Korea, Japan and Indonesia.

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.

Bionomics The adult moth is a straw coloured moth with white wings. The larva is pinkish brown with dark head. The life cycle is completed in 45-75 days. There are 4-6 generations per year.

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.

Bionomics: Adult is a light pink fragile fly.

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.

Bionomics Adult is green in colour. Nymph is brownish red with multi colour spots.

Management of ear head pests: Apply any one of the insecticides at 25 kg/ha - carbaryl 10 D, malathion 5 D, or spray carbaryl 50 WP 750 g (or) endosulan 35 EC 750 ml/ha at 50% flowering stage.

MINOR PESTS

6. **Leaf beetle:**

Lema downsei (Galerucidae: Coleoptera)

Damage symptoms Grubs and adults scrape the chlorophyll. It results in withering and drying of leaves leading to burnt up appearance.

Bionomics Grub is whitish with a small black head and a swollen humped body and has the habit of carrying its fecal matter dorsally. Adult is a straw coloured beetle.

7. **Black hairy caterpillar:**

Estigmene lactinea (Arctiidae: Lepidoptera)

Damage symptoms: Larva feeds on leaves voraciously and causes severe defoliation.

Bionomics Adult is a large white moth with crimson markings on head, body and wings. Larva is thick with black head and hairs.

8. **Wingless grasshopper:**

Neorthacris simulans (Acrididae: Orthoptera)

Damage symptoms: Both nymphs and adults feed on leaves and cause defoliation.

Bionomics: Greenish brown in colour with red stripe on the sides without wings.

9. **Semilooper:**

Antoba (=Eublemma) *silicula* (Noctuidae: Lepidoptera)

Distribution: India

Hosts: Sorghum, pearl millet, finger millet

Damage symptoms: Extensive webbing of grains and presence of broken grains on the ear head.

Bionomics: The adult moth is small with reddish buff coloured wings having wavy lines. Eggs are laid on spikelet and grain. The egg period is 4 days. Larva is a pale yellow semilooper. Larval period lasts for 12-13 days. It pupates within the gallery for about 12 days. ETL: caterpillars 2 Nos./ear head.

III. PESTS OF FINGER MILLET

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

Bionomics The adult is a straw coloured moth with white wings. The larva is pinkish brown with dark head. The life cycle is completed in 45-75 days. There are 4-6 generations per year.

Management Spray cartap hydrochloride 4G @ 25kg/ha, fipronil 0.3G 15kg chlorpyriphos 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.

Bionomics Adult is a small moth with dark brown forewings with a white band along the anterior margin and white hind wings. Larva is creamy white with yellow head.

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.

Bionomics The aphids are pinkish and globular. It reproduces viviparously. They have 4 nymphal instars with a total nymphal duration of 7-9 days. Adult lives for 5-11 days and produces 10-35 off springs.

Management: Spraying the base of attacked plants with a contact or systemic insecticides controls the aphid.

4. **Cut worm:**

Spodoptera exigua (Noctuidae: Lepidoptera)

Damage symptoms: Defoliation. Host range: onion, brinjal, cotton, cowpea, chillies, daincha.

Bionomics Moth is brown coloured with white hind wings. It lays eggs in groups. Larva is nocturnal in habit. It is brownish green with wavy lines on the dorsal surface and yellow stripes laterally. The larval period is 10-16 days. It pupates in earthern cocoons in soil for 7-11 days.

5. ***Holotrichia consanguinea*** (Melolonthidae: Coleoptera)

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

Bionomics: Grub is fleshy, 'C' shaped, whitish yellow in colour found close to the base of the clump. Adult is dark brown.

MINOR PESTS

6. **Flea beetle:**

Chaetocnema pusaensis (Alticidae: Coleoptera)

Damage symptoms Adult beetles cause small holes in the leaves of young plants.

Bionomics Adult is a dark blue beetle with enlarged hind femur.

7. **Earhead caterpillars:**

Sitotroga cerealella (Gelechiidae: Lepidoptera) It.is a major stored product pest. Under field conditions larvae feed on the developing grains.

Management of finger millet pests

1. Spray any one of the following insecticides mixed in 10 lit. of water using a high volume of sprayer if dusting is not done to protect the seedling in the nursery - methyl demeton 25 EC 20 ml and dimethoate 30 EC 20 ml.

2. Spray any of the following insecticides per ha for the control of stemborer, leaf feeder - endosulfan 35 EC 1000 ml and carbaryl 50 WP 1 kg.

3. Spray carbaryl 50 WP 1 kg/ha at milky stage to check ear head bug and ear head caterpillars.

4. Mix dimethoate 30EC 3 ml in one litre of water and drench the rhizosphere of the infested and surrounding plants with solution to check the root aphid.