



# **Seed Enterprise Management Institute (SEMI) Course**

## **SEED QUALITY ASSURANCE, MANAGEMENT AND CONTROL PROCESSES**

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Identification and management of seed borne insect  
pests

Seed Enterprises Management Institute

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# Introduction

- Factors such as storage duration, prevailing environmental conditions and crop varieties influence insect populations development and losses incurred.
- Inadequate storage methods lead to losses in stored grain sometimes of unacceptable magnitude in SSA.
- These pests inflict both direct and direct damage to the grain, and the most important ones start in the field.

# Damage caused

## **Direct damage**

- Kernel damage,
- Contamination,
- Grain dust,
- Damage to wooden structures and other containers

## **Indirect damage**

- Dry grain heating and moisture migration in storage
- Lowered germination of seed grains
- Distribution of molds and other organisms through the grain mass
- Insect fragments in cereal products

# PEST IDENTIFICATION

## CEREAL PESTS

### THE GRAIN MOTH(*Sitotroga cerealella* (ol.))

- Small straw coloured moth (wing span 10-18mm)
- Able to fly from infested grain in store to the field
- Infests maturing cereals in the field
- Infestation can also occur at store levels.
- Damage:- small circular 'windows' and holes on the grain
- Causes severe damage to cereals stored mainly in unthreshed form
- Grain attacked: maize, sorghum, wheat, paddy

***SITOTROGA CEREALELLA***  
(Angoumois Grain Moth)



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# MAIZE AND RICE WEEVILS (*Sitophilus* spp.)

- Dark brown weevils (2.5-4.5mm long)
- Able to fly from infested grain in store to the field.
- Infests maturing cereals in the field
- Infestation can also occur at store level
- Damage: Small circular holes on the surface of the grain
- Causes severe damage to grain stored in both threshed and unthreshed form
- Grain attacked:- maize, millet, sorghum, wheat, barley and rice



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**SITOPHILUS** spp.  
(Maize and Rice Weevils)

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# LARGER GRAIN BORER (*Prostephanus truncatus*(H.)

- A dark brown cylindrical beetle (3-4.5mm long)
- Able to fly from infested grain in store to the field
- Infests maize in the field before harvest
- Infestation can also occur at store level
- The beetle eats tunnels and holes in the husks, grain and cob.
- Very serious pest that also eats into the wooden store structures
- Also feeds on dried cassava in addition to cereals





***PROSTEPHANUS TRUNCATUS***  
(Larger Grain Borer)

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# PEST IDENTIFICATION

## LEGUME PESTS

### PULSE BRUCHIDS (BEETLES)

- THE BEAN BRUCHID (*Acanthoscelides obtectus* (say)).
- Grey to brown oval beetles (3 – 4.5mm long)
- Able to fly from infested grain in the store to the field
- Infestation can also occur at store level
- Damage:- small dark ‘windows’ and holes on the grain
- Causes serious damage to stored beans

***ACANTHOSCELIDES OBTECTUS***

(Bean Beetle)



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# THE COWPEA BRUCHIDS (*Callosobruchus* spp)

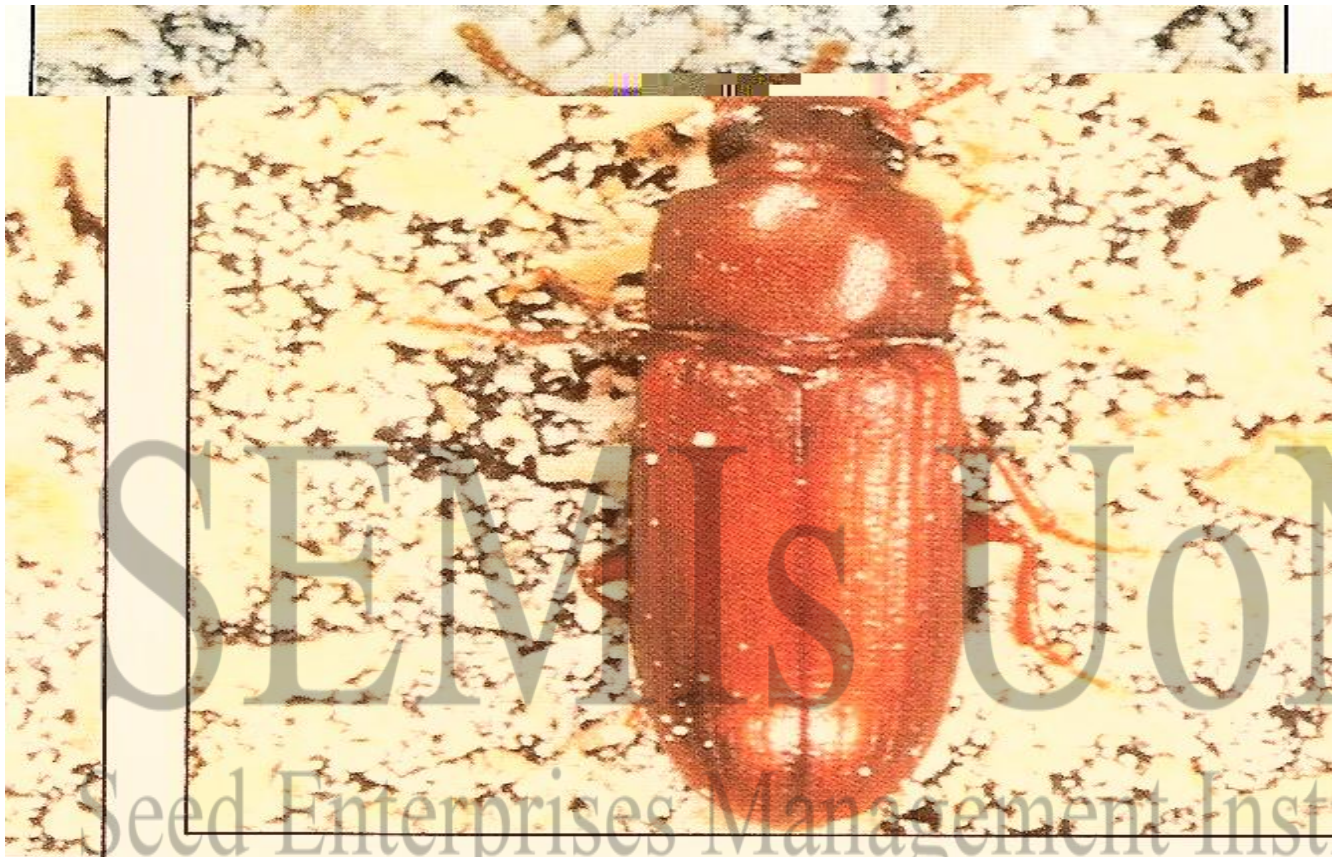
- Light to dark brown beetles (2.0-3.5mm long)
- Able to fly from infested grain in stores to the field
- Infests maturing legumes (cowpea, pigeon peas, chick peas and grains) in the field
- Infestation can also occur at store level
- Small dark ‘windows’ and holes on the grain indicate infestation by the bruchids
- Causes serious damage to stored pulses!

# Callosobruchus spp.



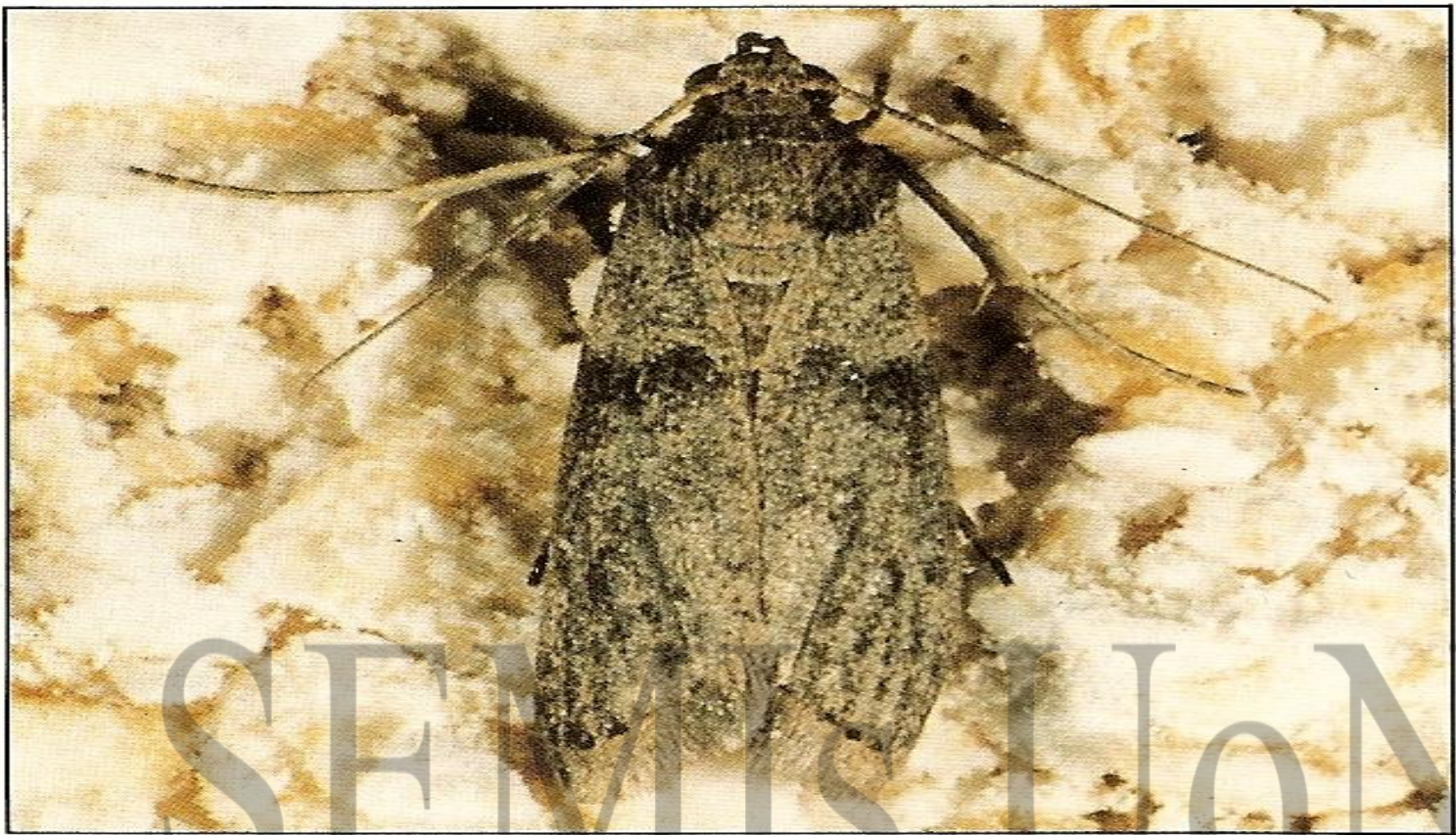
# GENERAL FEEDERS – SECONDARY PESTS

- THE FLOUR BEETLE (*Tribolium* spp)
- Reddish brown flat beetles (2.5 – 4.5mm long)
- Infests stored (broken) grain and milled products
- Causes high level of grain contamination
- Presence of reddish brown beetles, cast skins and faecal pellets on damaged grain and milled products indicates infestation by these beetles.
- Serious secondary pests of all stored grain and milled grain products



***TRIBOLIUM CASTANEUM***  
(Rust-Red Flour Beetle)

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***EPHESTIA* spp.**

(Tropical Warehouse Moths)

Several species of *Ephestia* may be encountered in tropical stores. They attack a wide range of products particularly damaged or processed cereals, dried fruit, nuts, cocoa and even tobacco. Only the larvae feed. They also leave trails of silk which can form a thick webbing over and in the stored food. Reconditioning food to remove webbing can be very costly.

(Wing span 11-28 mm)



# Some Management Practices

Post-harvest Insect pest control should begin before the crop is mature and must definitely begin before it is harvested and put in drying structures.

Proper program for insect control include:

- Select plant varieties with good husk cover and inherent resistance to field and storage pests

- Repair the store and thoroughly clean before the new crop is mature.
- Clear the surroundings of the store of any waste that can harbor insect pests
- Harvest early to avoid field infestation
- Dry the grain as fast as possible and shell it when dry
- Shell carefully to avoid damage to the kernels
- Treat the dry grain with an appropriate insecticide

- Carry out regular inspections of the stored grain to detect any infestation and take control measures as necessary
- Carry out principles of good store management, including maintenance, stock rotation and hygiene.

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