

# Content

1. Identification and management of seed borne insect pests
2. Seed Quality Assurance and Seed Enterprise Quality Management



# Seed Enterprise Management Institute (SEMI) Course

SEED QUALITY ASSURANCE AND SEED ENTERPRISE  
QUALITY MANAGEMENT

Identification and management of seed borne  
insect pests

Prof. Florence Olubayo. MBS



# 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 indirect 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

# 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 & barley.

**SITOTROGA CEREALELLA**  
(Angoumois Grain Moth)



# 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



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



# **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



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

# PULSE BRUCHIDS (BEETLES)

- THE BEAN BRUCHID (*Acanthoscelides obtectus* (say)).
- Grey to brown oval beetles (3 – 4.5mm long)
- Able to fly from infested grain the 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)



151



# **THE COWPEA BRUCHIDS**

## ***(Callosobruchus spp)***

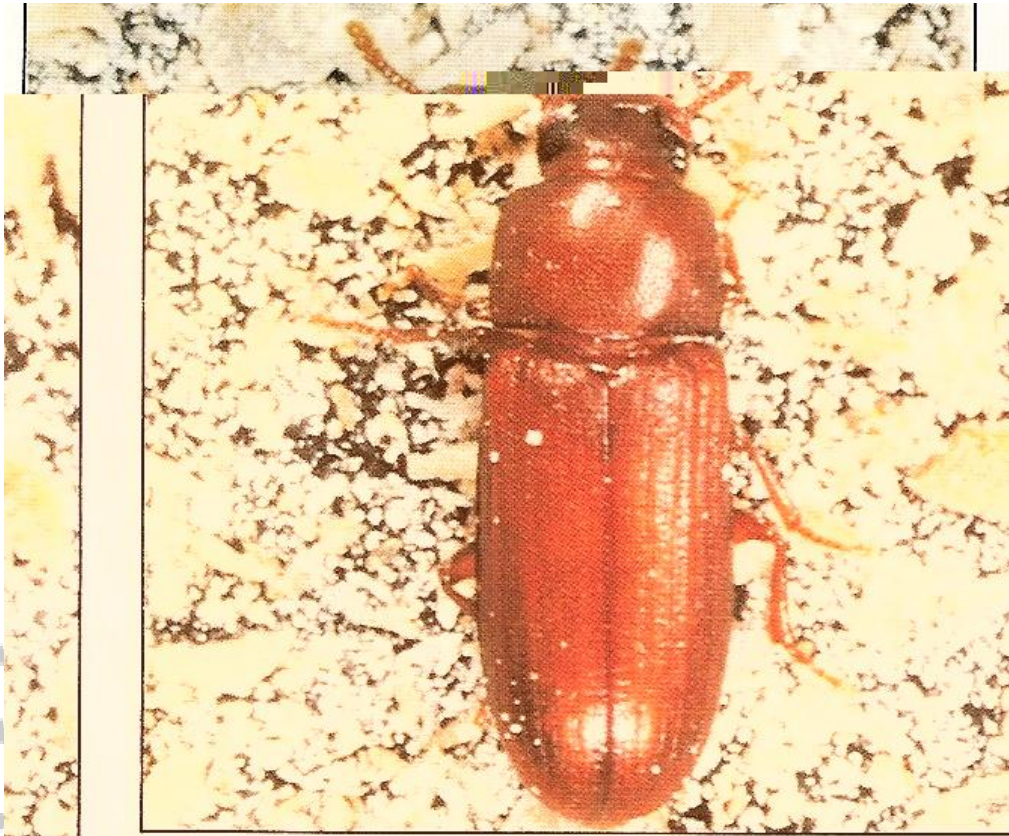
- Light to dark brown beetles (2.0-3.5mm long)
- Able to fly from infested grain in stores to the field
- Infests maturing legumes (cowpea, pigeon peas, chick peas and grains) in the field
- Infestation can also occur at store level
- Small dark 'windows' and holes on the grain indicate infestation by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

# Callosobruchus spp.



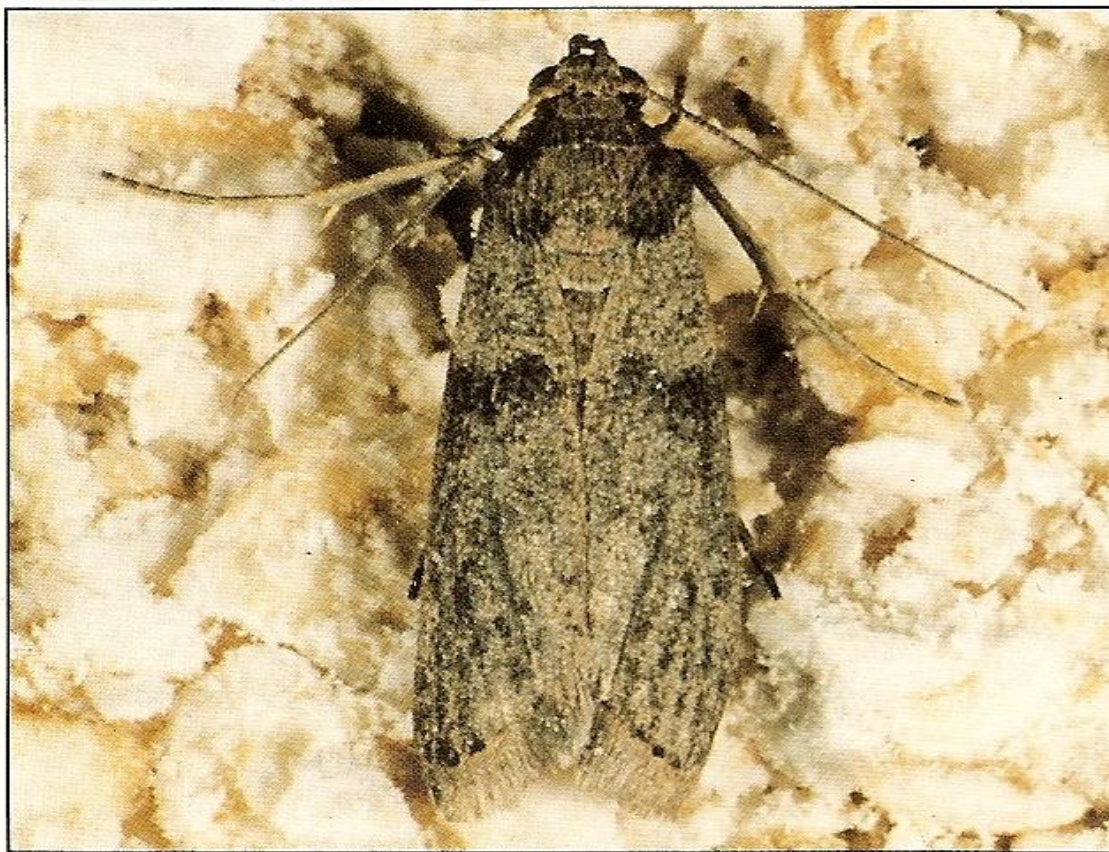
# THE FLOUR BEETLE (*Tribolium* spp)

- Reddish brown flat beetles (2.5 – 4.5mm long)
- Infests stored (broken) grain and milled products
- Causes high level of gram 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)





***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.



# Seed Enterprise Management Institute (SEMI) Course

SEED QUALITY ASSURANCE AND SEED ENTERPRISE  
QUALITY MANAGEMENT

Prof. Florence Olubayo



# Introduction

- **Proper maintenance of varieties with improved traits such as high nutritional value, high yielding capacity, and tolerance to biotic and abiotic stresses is necessary in passing the benefits of the bred traits to the grower ..**
- **Maintenance of seed quality is essential to ensure that the seeds remain viable and produce vigorous plants .**
- **Continuous seed testing using the appropriate and approved procedures is key for quality seed.**



# Introduction contd:



- **This module is designed to provide the participants with an understanding of procedures in seed certification, laws and regulations governing the seed industry and the standard seed enterprise quality management procedures.**
- **You will be exposed to hands-on training sessions on internationally accepted methods of seed testing .**
- We believe the training will be able to enhance management of small seed enterprises that will produce quality seed for enhanced agricultural productivity in Sub-Saharan Africa.

# Objectives:

- The overall objective is to enhance participants' practical knowledge and skills on seed testing, quality assurance and certification procedures.
- The specific objectives are :
  - To create awareness on the components and functions of seed value chains
  - To enhance knowledge of the national and international laws and regulations governing the seed industry.
  - To strengthen the understanding of the standard operating procedures in the seed quality management system.
  - To impart skills on seed fields inspection for maintenance of genetic purity.
  - To enhance skills of seed testing methods for evaluation of physical and physiological quality.
  - To improve the knowledge on phytosanitary quality through the identification of weeds, insects and pathogens.



# Course Outline:



- Basic Concepts of Seed Quality Assurance
- Seed Health and Quality testing
- Seed Legislation and Certification
- Seed Enterprise Quality Management

SEMIIS



**We look forward to an  
exciting week ahead.  
Asanteni Sana!!**