SEED TREATMENT CHEMICALS AND CALIBRATION CONCEPTS;
SEED TREATMENT HANDLING AND APPLICATION EQUIPMENT

By

Gibson Mutuli, Department Of Environmental And Biosystems Engineering UoN
Objectives

• Explore seed treatment, equipment, chemical and treatment process

Questions

• Why is seed treatment important?
• What chemicals are used in treating the seeds?
• What practices should be observed in seed treatment?
• Importance of seed and chemical metering
The application of seed treatment materials is a specialized operation and is usually the last step in seed processing.

The equipment used to apply chemicals to seed are classed as seed treaters and the design can be divided into Continuous Treating and Batch Treating.
Seed Treatment Chemicals

Common Seed Treatment Products:
- Fungicides
- Insecticides
- Nematicides
- Avicides
- Polymers
- Inoculants
- Colorants

Chemical Forms
- Powder (Dust)
- Slurry (Suspension)
- Liquid film coating
Seed Treating Equipment – Safety

- Treatment materials are applied as dusts, slurries, or liquids.

  **Respirator**

- Must be rated for chemical type in use
- Periodic fit test and employee physicals may be required for many applications
SeedTreatingEquipment – Safety

Goggles – Splash & Dust Protection
- Standard safety glasses are NOT adequate

Face Shield – Eye & Face Protection
- Typically used in addition to goggles

Protective Gloves – Chemicals
- Minimum 14 mil Thickness
- DO NOT USE disposable Latex gloves
Seed Treating Equipment – Safety

**Continuous Flow System:**
- Apply treatment at a predefined rate to the continuous flow of seed.
- High capacity.
- Low to medium application rates.
- Single treatment chemical layer.

**Batch System:**
- It delivers a predetermined batch size into a mixing chamber.
- Low capacity.
- High chemical application rates.
- Flexible – multiple chemical layers.
Seed Treating Equipment – Elements

A closed treating system, batch or continuous, consist of five process elements:

1. Storage and transfer
2. Delivery and metering of seed
3. Delivery and application of treatment
4. Mixing and blending
5. Dust containment
SeedTreating Equipment – Elements

Storage and transfer:

- Seed – Holding bin
- Chemical – Bulk container, transfer pump, and mixing tank
Seed Treating Equipment – Elements

Delivery and metering of seed:

- Weight
- Volume

- Gravity Operated Weigh Pans with Adjustable Counterweight Arm
- Computerized Inline or Belt Scales
- Volumetric Rotating Seed Wheel

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Seed Treating Equipment – Elements

Delivery and application of treatment:

- Chemical Metering Systems
- Weigh Arm Chemical Cups
- Volumetric Rotary Discs
- Variable Speed Metering Pumps
- "Loss in Weight" Batch Scales
Seed Treating Equipment – Elements

• Mixing and blending:

  • Primary Mixing: Direct application to seed
  • Secondary Mixing: Seed contact transfer, blending action effects
  • Drying and absorption: Ambient or artificial drying equipment
Seed Treating Equipment – Elements

Dust containment:

- Dust Evacuation Port
- Dust Evacuation System
- Fan/Blower Motor
- Dust Collection Bag
SEED TREATING EQUIPMENT – CALIBRATION

- **Weigh Arm Calibration Example**
- **Label Rate Range**: 10-12 Fluid Oz/Cwt
- **Converted Range**: 296-355.2 CC/Cwt.
- **Trip Count for 100 lbs = 20 Trips/Cwt**
- **Seed/trip**: \( \frac{100}{1 \text{Cwt}} \times \frac{1 \text{Cwt}}{20 \text{ Trip}} = \frac{5 \text{lb}}{\text{Trip}} \)
- **Cup Size**: \( \frac{296 \text{cc}}{1 \text{Cwt}} \times \frac{1 \text{Cwt}}{20 \text{ Trip}} = \frac{14.8 \text{cc}}{\text{Trip}} \)
- **Chemical Cup Size**: 15 CC/Cup
Seed Treating Equipment – On Farm
QUESTIONS

SEMI's UoN
Seed Enterprises Management Institute
University of Nairobi