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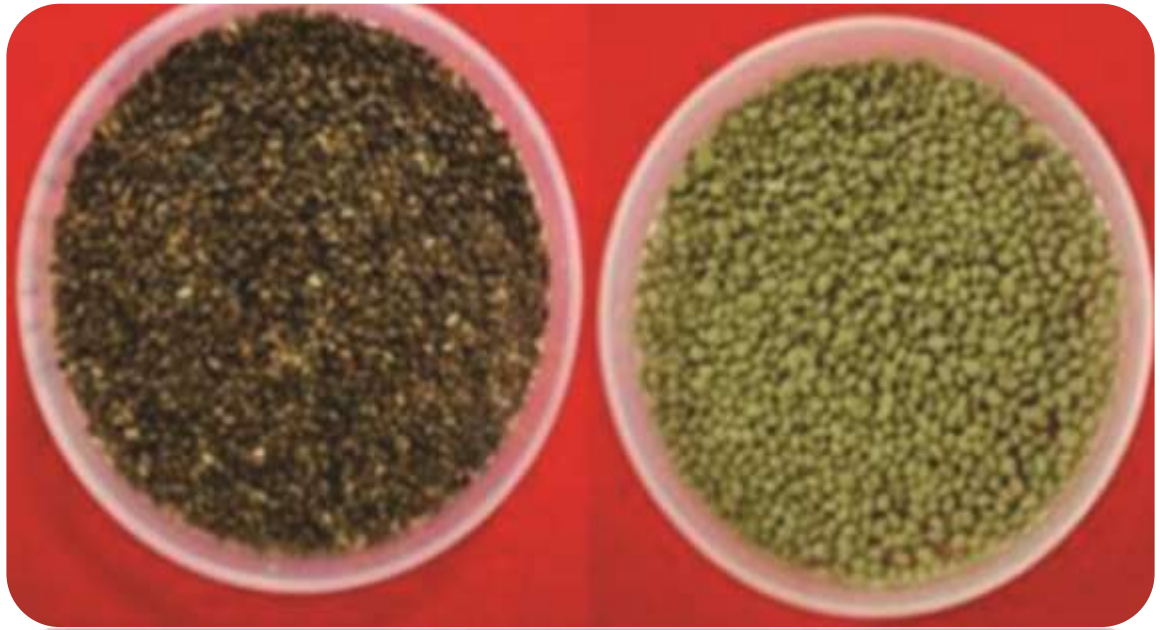
# Session123: Seed Treatment

# Introduction

Maintaining the quality of seed is dependent on many environmental factors, some of which are moisture, temperature, humidity, and storage conditions

Even though these factors are properly accounted, seed quality may still be reduced by certain seed borne diseases or destroyed by insects and other pests

Research has shown that treating seed with one or more pesticides is the most economical and efficient way to protect seed from these pests and improve seed quality

**Definition of treated seed:** The term "treated" means "to give an application of a pesticide or subject seed to a process designed to reduce, control or repel disease organisms, insects, or other pests which attack the seed or seedlings

Seed treatment in forages involves primarily the application of fungicides or insecticides, and bacterial inoculants in the case of nitrogen-fixing legumes

Seed coating involves the addition of either inoculants, fungicides or insecticides together with other substances to provide a protective barrier over the seed

Seed coating of alfalfa has been shown to improve Rhizobium survival and early nodulation of seedlings (Horikawa & Ohtsuka, 1995a)

# Seed treatment for forage crops

| | | |
|---|---|---|
| 1 | Deenanath grass | Soaking of mechanically defuzzed seeds in 0.25% potassium nitrate+200 ppmgibberellic acid (1:1) for 16 hrs |
| 2 | Stylosanthus | Scarification with conc.sulphuric acid@200ml/kg of seed for 4 minutes |
| 3 | Hedge Lucerne | Scarification with conc.sulphuric acid@ 200 ml/kg of seed for 4-5 minutes |
| 4 | Cenchrus sp | Soaking of acid scarified seeds in 50 ppm copper sulphate solution for 6 hrs |
| 5 | Fodder sorghum | Soaking of seeds in 0.5 percentage potassium nitrate solution for 2 hrs |

Deenanath grass

Stylosanthus

Hedge Lucerne

Cenchrus sp

# Types of Seed Treatment

**A. Pre sowing seed treatments:** It is the treatments given to the seeds before sowing to improve the germination and vigour potential and as well as to maintain the health of the seed

**Pre sowing seed treatments includes the following:**

I. **Chemical treatments to improve germination and vigour potential**

**II. Insecticidal and fungicidal treatment**

**III. Special treatments**

## I. Chemical treatments to improve germination and vigour potential:

Sorghum seeds could be soaked in NaCl2 (1 %) or KH2PO4 (1%) for 12 hours for improving the germination and vigour potential

Pulses seeds can be soaked in ZnSO4, MgSO4 and MnSO4 100ppm solution for 4 hours to improve the germination and vigour potential

# Types of Seed Treatment

**II. Insecticidal and Fungicidal treatments:** There are several benefits of the insecticidal and fungicidal treatments:

- ❖Prevents the spread of plant diseases
- ❖It protects the seed from seed rot and seedling blights.
- ❖It improves the seed germination
- ❖It provides protection from storage insects.
- ❖It controls the soil insects.

**Formulation of fungicides /insecticides:** Fungicides / insecticides are available in the form of dusts, wettable powders and liquids

**Dusts:** It is usually applied @ 200-250g/quintal of seed. Main disadvantage is dusty condition will prevail during the seed treatment and after handling

**Slurry:** This type of fungicide is applied to the seed along with soap like water suspension which can be mixed with seed by using special slurry treater

**Liquids:** The use of liquid solution is known as the "quick wet ' method. Here a volatile fungicide is applied to the seed and it thoroughly mixed with them

# Types of Seed Treatment

**III. Special treatments:**

**a. Seed hardening treatment:** is done to achieve initial drought and cold tolerance ability

Chemicals used : $CaCl_2$, KCl, $KH_2PO_4$ etc.

The most important factors to be considered while seed hardening are

- Seed : solution ratio (1:1)
- The duration of soaking and
- Method of drying

**b. Seed fortification:** Main aim is to supply nutrients to seeds. The main aim is to achieve the high vigour to overcome unfavourable soil reactions. Eg: seed fortification with $MnSO_4$ @ 0.5 to 1 %. will improve oxidation - reduction potential of seeds, which ultimately leads to higher germination

**c. Moist sand conditioning**

**d. Seed pelleting:** Here the nutrients are coated on the seeds

**e. Osmotic priming**

# Types of Seed Treatment

**B. Pre storage treatments:** Pre storage treatments of harvest-fresh seed are primarily aimed **towards protection against deteriorate senescence during storage**

Seed storage which is again threatened by insect and pathogen attack, can also be taken care of by prescribed pre storage seed treatments

- Halogenations
- Antioxidant treatment
- Seed sanitation

**C. Mid storage treatments:** This type seed treatments are capable of reducing the age induced damages and restoring the seed vigour to a certain extent besides, the seed viability and productivity of stored seed

**Hydration – Dehydration:** It is the process of soaking the low and medium vigour seeds in water with or without added chemicals usually for short durations to raise the seed moisture content to 25 – 30% and drying back the seeds to safe limits for dry storage

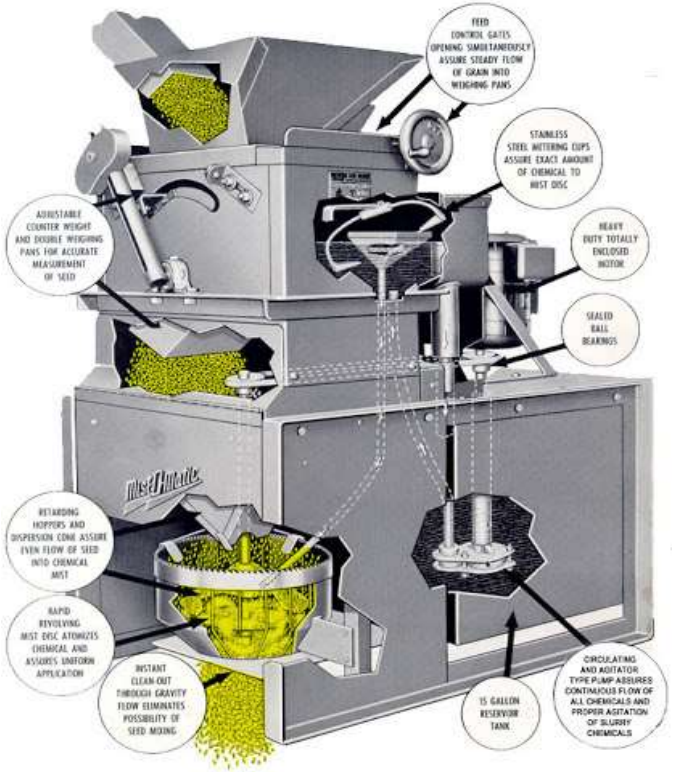
**The hydration – dehydration treatments** should be given only to stored seeds, effective in low and medium vigour non- leguminous seeds, direct soaking of leguminous seeds should be avoided and would not make a seed germinable, which has already lost viability

# SEED TREATING EQUIPMENT

**1. Dust Treater** ***(Gustafson XL Dry Powder Seed Treater)***

**2. Slurry Seed Treater**

**3. DIRECT TREATERS:** most recent development and include the Panogen and Mist-O-Matic treater

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