

Post harvest Seed Storage/handling

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Seed Storage

Definition of Seed Storage:

Seeds are considered to be in storage from the moment seed reach to physiological maturity until they germinate or thrown away because they are dead.

Importance of Seed Storage

- Helps preserve viability from harvest to sales;
- Protects producers investment, profit and reputation

Storage means.....

Seed storage occur at following stages

- Storage in plant Physiological maturity to harvest
- Harvest, until processed and stored in warehouse
- In storages (warehouse)
- In transit
- In retail stores
- On the user's farm

Principles of seed storage

Involves following elements:

- Dry and Cool Seed storage area;
- Effective storage pest control;
- Proper sanitation in seed stores;
- Before storage seed to be dried to safe moisture limits;
- Storing of high quality seed only i.e well cleaned, treated as well as of high germination/vigour and good pre storage history
- Determine seed storage needs in view of length of storage time and prevailing climate of the area during storage.

Factors affecting seed longevity in storage

- Kind and variety of seed
- Initial seed quality
- RH and temperature during storage

Thumb rule for seed storage

- a. One % decrease in moisture content nearly doubles storage potential of seed
 - b. 10 degree F decrease in temperature nearly doubles the storage life
- Good (Ideal) storage : $RH \text{ (in \%)} + \text{Temp (in F)} = 100$.
- Fluctuating environment conditions
- Storage in extreme condition like cold, hot, and over dried
- Seed health (seed affected by bacteria, virus and fungus as well as insects and mites)

Factors affecting seed longevity in storage

- Type of godown
- Rodents and birds infestation
- Seed treatment and fumigation
- Period of storage in transit

Storage requirement

Depends on length of storage required & can be classified as under:

Storage of commercial seed: (0-9 months storage): Successful storage structure for the above type should have following things

- Seed placed in storage should be free from inert matter to prevent pest and diseases
- Seed should be un-damaged
- Seed must be dried up to the standard specified for the crop species;
- Storage structure should be so constructed, that seed will not gain the moisture during short storage period
- Provision of adequate pest control

Storage requirement

Storage of carryover seed (1- 1.5 yrs): In this case storage requirements consists of

- Insulation of storage house with ventilation facility
- Keep the seeds dry
- Store the seeds in moisture proof container provided the seed is dried enough

Storage of FS seed: (1- several yrs) :

- Seed stored in cool and dry environment.
- Well dried seed is packed in Moisture proof container and that container stored in less than 15 degree C temperature.

Storage of germ-plasm:(stored for very long period)

- Storage environment should Less than 5 degree C temp and 20- 25% Rh
- Seed dried to the proper moisture level.

Origin of Storage problem

Most storage problem arise from:

1. Low quality seed placed in storage;
2. Seed being carried over for too long;
3. Kind of seed stored is naturally short lived..Onion, Brinjal....
4. Seed stored in poor ventilated, hot or damp warehouse..

Role of moisture and temperature on seed viability and storability

<u>Seed moisture %</u>	<u>Effect on seed</u>
35-80	Moisture content of developing seed. Seed not mature enough to harvest
18-40	Physiologically mature seed, High respiratory rate, susceptible to field deterioration, heating occurs if seed is bulked without proper ventilation.
13-18	Respiratory rate still high, mold and insects can be damaging and seed resistant to mechanical damage
10-13	Seed store well for 6-8 months in open storage in temperate climates.
8-10	Seed sufficiently dry for 1-3 years open storage in temperate climates. Very little insect activity.
4-8	Safe moisture for sealed storage
0-4	Extreme desiccation. Can be damaging to seed.
33-60	Seed germinates when they imbibe water to these levels.

Role of moisture and temperature on seed viability and storability

- Temperature plays important role in the life of seed, though not as important as moisture;
- Temp below 50F is effective in maintaining seed quality, even though RH may be relatively high;
- Where as both seed moisture & temp are important factors in seed storage, moisture content has greater direct influence on seed longevity. Very dry seed will store well at temp. upto 90F

Good Storage Practices – All food grains

Before Storage

1. Check for leakage in rain water or sufficiency of drainage facilities;
2. Cleanliness of the facility and environment around processing plant;
3. Pesticide treatment;
4. Security and fire fighting arrangements
5. Repairs of equipments

After receipt of seed/grain

1. Inspect for variety, soundness and quality;
2. Inspect for infestation – type and extent
3. Check whether seed/grain has excess moisture, whether it had been heated up in earlier storage and has any musty or rancid odour;
4. Any grain rendered wet/damaged

During storage

1. Maintaining cleanliness inside the processing plant/warehouse;
2. Ensuring aeration wherever necessary;
3. Monitor increase in seed moisture/insect infestation through regular checking and taking necessary control measures.

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