



**Guide to the Use and Understanding of Seed
Treatments and Seed Treatment Stewardship
in South Africa.**

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Drawn up by the SANSOR Seed Applied Technology Standing Committee

Introduction:

This document was compiled to serve as a guide for the use and understanding of seed treatments and seed treatment stewardship in South Africa.

What is a seed treatment?

A seed treatment is the use of various formulations including physical, biological and chemical products applied through specific application methods to protect seed against yield and quality reducing diseases and pests during storage and seedling development.

Note: TREATED SEED IS NOT FOR CONSUMPTION, FEED OR PROCESSING.

The advantages of Seed Treatments:
Early/preventative protection of seeds and seedlings
Possibility of more than one product on the seed
Visual appearance of seed is improved
Target specific
Ease & convenience of application
Improves plant-ability through use of coatings
Less impact on environment
End-user exposure minimised

The use of high-quality seed:

Using high quality seed will ensure the establishment of strong seedlings and the best chance to reach a variety's full potential.

Seed Quality has multiple measurable components:

- Purity: Genetic (Varietal) or Physical (Presence of foreign material)
- Health: Symptoms and effects of pathogens
- Physical: Uniform size, damaged seed etc.
- Physiological: Germination, vigour, seed moisture etc.

After harvest and during storage seed continuously metabolize. The rate of deterioration is variable depending on the initial seed quality. The two most important factors influencing the quality and longevity of seed are:

1. Relative humidity (affects moisture content of seed)
2. Temperature

Quality Seed Treatment products:

Advantages of high-quality seed treatment products:

- Products are registered and thoroughly tested as seed treatments,
- Contains consistent levels of active ingredients within different batches of products,
- Different formulations ensure compatibility during preparation and minimum abrasion during and after treatment, and
- Ease of use.

Storage of Seed Treatment products:

(note: SABS 10206 standard guidelines)

- Instructions for correct storage of treated seed can be found on the seed treatment product label.
- Pesticides products must be stored in a secure demarcated area.
- Make sure area of storage is well ventilated.
- Must have a spill kit and hazardous waste bin at the storage facility and slurry preparation area.
- Material Safety Data Sheets (MSDS) must be available for all treatment products – This document contains all the necessary information and safety measures of the product.
- Ensure that the seed treatment product had not expired – first in, first out.
- Keep products away from direct sunlight at all times, in order to protect the composition of the product.

Best Management practices for preparing - and handling Seed Treatment products:

- Use the correct Personal Protective Equipment (PPE).
- Always refer either to the MSDS or product labels.
- In case of spillage and or contamination refer to MSDS and product label.
- Seed treatment should be done under controlled conditions.
- Seed treatment should be done by trained operators.
- Make sure emergency contact information is available. All personnel should be aware of basic emergency procedures – all seed treatment products have local emergency numbers available on the MSDS and the product label.
- Use non-expired products.
- Mix the seed treatment products according to the recommended rates as indicated on the product label for the specific seed type and seed amount.
- Test the treatment equipment to be used and ensure that the calibration of the treatment equipment is correct.
- Cleaning and maintenance of the treatment equipment must be done on a regular basis.
- React to spills immediately, dispose of contaminated material according to local regulations.
- Ensure good ventilation at area of seed treatment.
- Good personal hygiene practices are essential when using seed treatment products.
- Controlled disposal of empty containers.
- Control of wastewater.

Application management when mixing seed treatment products (slurry preparation):

Product compatibility:

- Read and follow the mixing instruction on the product label.
- Mix small amounts of the products to determine the physical compatibility of the various seed treatment products. Observe signs of incompatibility which include: settling, separation, gelling or curdling.
- Check germination and viability of a small sample of treated seed to ensure the seed treatment has not affected the germination. Compare these results with those of samples drawn tested of the same seed lot before the seed was treated.

Polymers – Why do we use it?

- Minimize abrasion during treatment process, handling, storage and planting;
- Reduces loss of active ingredient and dust through better adhesion;
- Reduces dust and the impact on the environment;
- Enhance the visual appearance;
- Improve planting performance and accuracy; and
- It is advisable to always use binding agents/polymers, especially when using two or more treatment products.

Viscosity:

The viscosity of the seed treatment recipe may have an influence on the effectiveness of the treatment:

- Homogenous coverage of the seed.
- Stickiness may cause mechanical damage to seed treatment- and other equipment.
- Adding water decreases the viscosity of the seed treatment recipe (or slurry), especially when adding various seed treatment products together. Consider recipe optimization as different crops require different slurry volumes.
- Extreme temperatures can influence the viscosity of the seed treatment mixture.

Agitation:

- When mixing a seed treatment recipe there must be a constant agitation to keep the various seed treatment products equally distributed throughout the mixing tank. This is due to various physical properties of the seed treatment products.
- Prepare the seed treatment product mixture for a specific volume of seed to be processed for the day. Long term storage of a mixture can cause separation and/or sedimentation.

- Agitation speed could have an influence on the chemical composition of the seed treatment product – consult the product supplier.

Seed Treatment Equipment:

The choice of equipment is based on the following criteria:

- Kind of seed;
- Required seed output;
- Method of seed treatment;
- Facility layout and infrastructure;
- Budget; and
- Service Support

Why a Seed Treatment Equipment Maintenance Program?

Following a structured maintenance program for seed treatment equipment will help to -

- ensure optimal equipment performance,
- reduce the need for repairs,
- extend the life of equipment, and
- Have quality finished treatments/products.

Additional treatment of seed is not advisable due to the increase of risk in the following areas:

- May cause mechanical damage to the seed;
- Loss of previous treatment;
- Dust creation due to abrasion, exposure to operator;
- May affect germination, vigour and seed quality in general;
- Will lose seed certification status once bag is opened for re-treatment; and
- Could affect sales agreements with seed companies.

Packaging and labelling of treated seeds:

Possible precautionary information expected to be found on the tag/ label/ bag:

- Required information as specified by Act 36 of 1947.
- Stewardship, cautionary information and pictograms:
 - Do not use for food, feed or processing.
 - Wear gloves and masks etc. (appropriate Personal Protective Equipment).
 - Wash your hands after handling treated seed.

- Keep products and its empty containers away from children and animals.
- Do not contaminate water.
- Avoid contact with skin and respiratory tract by wearing suitable personal protective equipment.
- Bury or remove any seed spillages.
- When opening seed bags and during, filling or emptying of the planter, avoid unnecessary exposure to dust.
- Do not load dust from the bottom of the seed bag into the planter.
- When using a pneumatic planter, dust from treated seeds should be directed to the soil surface or into the soil through deflectors.
- To protect birds and mammals, treated seeds must be incorporated into the soil at proper sowing depth, particularly at row ends.
- Do not re-use empty seed bags for any other purposes.
- Refer to CropLife guidelines on how to discard of left over seed and used seed containers.

Material Safety Datasheet (MSDS) – The MSDS will usually contain the following information:

- Section 1: Identification of the substance/mixture and of the company/undertaking
- Section 2: Hazards identification
- Section 3: Composition/ information on ingredients
- Section 4: First aid measures
- Section 5: Firefighting measures
- Section 6: Accidental release measures
- Section 7: Handling and storage
- Section 8: Exposure controls/personal protection
- Section 9: Physical and chemical properties
- Section 10: Stability and reactivity
- Section 11: Toxicological information
- Section 12: Ecological information
- Section 13: Disposal considerations
- Section 14: Transport information
- Section 15: Regulatory information
- Section 16: Other information

Methods to measure seed treatment quality:

1. Visually
2. Heubach dust measure - consult supplier for standards
3. High Performance Liquid Chromatography (HPLC) active ingredient loading measure

Further Reading:

<https://seed-treatment-guide.com/resources/for-applicators/>