

SEED TREATMENT TECHNOLOGIES

FOR IMPROVED COMMON BEANS PRODUCTION



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● Introduction

Seeds saved by farmers may be infected with microbes that can induce diseases on the seedling and the crop. This can affect seed germination and may be transmitted from seed to seedling to plant.

Seed treatment prevents and controls seed-, soil-, and air-borne diseases. It improves germination, vigor, and productivity.

● What is seed treatment?

Seed treatment or dressing refers to the application of biological, physical, and chemical agents and techniques to seed to provide protection and improve the establishment of healthy crops.

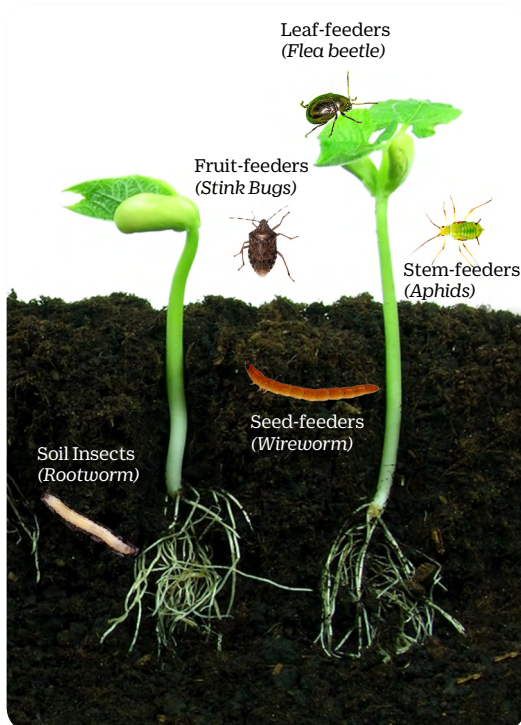
Seed treatment may involve use of fungicide, insecticide, or a combination of both, applied to the seeds to disinfect them from seed-borne or soil-borne pathogenic organisms and storage insects.

Seed treatment is like immunization – it provides a good insurance and protection of your seed and crop against diseases, seed-borne or soil-borne pathogenic organisms and storage insects.

● Benefits of Seed Treatment:

- ◆ Protects germinating seed and seedlings against soil and seed borne pest and diseases
- ◆ Improves germination process and increases germination percentage
- ◆ Enhances the seed viability and vigor
- ◆ Results in early and uniform establishment and growth of the crop or plants
- ◆ Stimulates root development leading to vigorous start, uniform growth and higher yields
- ◆ Enhances nodulation in legume crops
- ◆ Enhances the tolerance of plant for any unfavorable conditions.
- ◆ Is environmentally friendly. It decreases the number of spray applications of agrichemical products and lessening exposures to non-target species including humans and pollinators.
- ◆ It is a cost-effective technology for smallholder farmers with limited resources

● Bean Pest and Diseases controlled by seed treatment



Pests

- ◆ Bean Fly
- ◆ Whitefly
- ◆ Thrips
- ◆ Aphids
- ◆ Root worms
- ◆ Grabs
- ◆ Termites
- ◆ Nematodes
- ◆ Harmful bacteria and fungi

Deseases

- ◆ Bean Root Rots (Pythium, fusarium, Rhizoctonia, sclerotium)
- ◆ Anthracnose
- ◆ Angular leaf spot
- ◆ Bacterial blight
- ◆ Dumping off
- ◆ Fusarium wilt

● Types of seed treatment:

Chemical treatment

This involves application of a chemical (fungicide/insecticide) to seed prior to planting to provide effective protection against many seed and soil-borne plant pathogens. The chemical treatment guards against the various seed rots and seedling blights that occur during storage or after planting.

Some of the active ingredients in chemical seed dressing products include: Imidacloprid, Carbendazim, Carbofuran/carbosulfan, Thiram, Carboxin, Thiamethoxam, Metalaxyl-M and Difenoconazole

Examples of chemical seed dressing products for beans in Kenya include Apron Star 42WS, SeedPlus, Murtano Super, Cruiser 350FS, Marshal 35DS, Treaty among others.

Always wear protective equipment and follow appropriate safety procedures when using chemical seed treatment products.

Biological treatment

Biological seed treatment consists of active ingredients that can include microbes such as fungi and bacteria, as well as plant extracts and algae extracts. The biological agents improve health of the root zone by competing with pathogens that may colonise seeds and newly emerged roots thus protecting the germinating seed and seedling from infection. The microbes stimulate rapid root development and nutrient uptake by the growing crop.

Some of the biological agents for seed dressing include *Trichoderma* spp., *Rhizobium* spp., *Bacillus subtilis*, *Pseudomonas fluorescens*, *Azospirillum* spp., Neem and sea weed extracts

Examples of biological seed dressing products in Kenya include: TriCoat, Mazao Flourish, Trianum, Biofix and LEGUMEFIX.

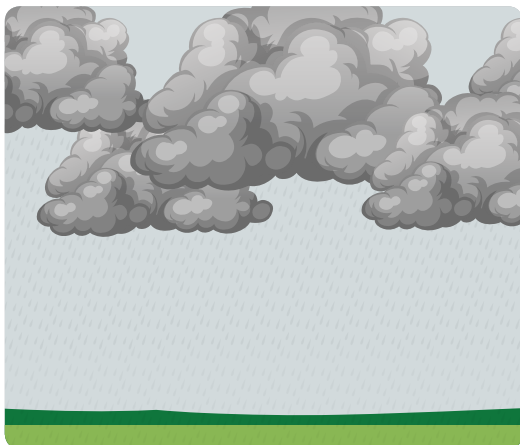
Biological seed treatment products are environmentally friendly and easy to apply. These however required proper storage to keep viability of the biological agents.

● How to do seed treatment

Seed treatment materials are usually applied to seed in various forms: dust; slurry (a mixture of wettable powder in water) and liquids. Slurry application is the most common method especially for smallholder farmers. Read and follow instruction for the specific application procedure for each seed treatment product.

Always wear protective equipment and follow appropriate safety procedures during seed treatment.

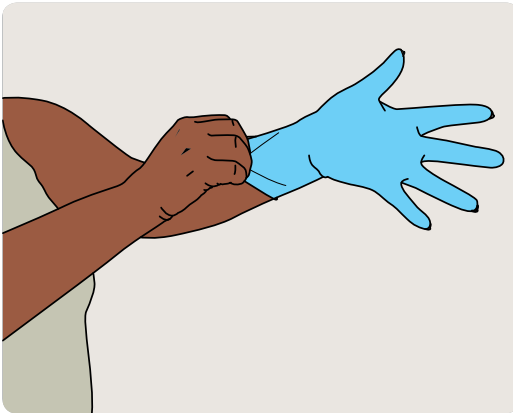
● Procedure for chemical seed treatment



1

Plan to treat your seeds at the start of the rains when soil is moist and ready to plant.

Tibu mbegu zako mvua inapoanza na udongo ungali na maji tayari kwa upanzi



2

Put on your gloves to protect yourself from the chemicals while mixing

Vaa glovu ili kujikinga na dawa unapochanganya



3

Measure the desired amount of seed using a tin (gorogoro), bucket or a weighing balance. You can treat both own saved seed or certified seed.

Pima kiwango cha mbegu unachohitaji kupandagana na kiwango cha dawa utakayotumia. Unaweza tibu mbegu za nyumbani au mbegu za gredi



4

Dissolve recommended amount of fungicide/insecticide per kg seed in water inside a plastic bag or bucket to make a slurry.

Weka dawa kwenye ndoo kisha ongeze maji kidogo. Changaya dawa na maji ili iwe chepechepe.



5

Put the seed in a bucket or a plastic bag. Do not use anything used for cooking or etching water.

Weka mbegu kwenye ndoo au karatais ya plastiki. Usitumie chombo cha kupikia au kuteka maji.



6

Stir and mix well with a stick or hand protected by the glove. Alternatively seal the bucket and shake vigorously to coat seed uniformly with fungicide slurry.

Koroga na changanya vizuri ukitumia kijiti au mkono uliovaliwa glovu. Unaweza pia funika ndoo kisha tikisa ili kuchanganya dawa na mbegu. Tibu mbegu sawasawa



7

Pour out the seed on a sack under a shade for product to stick on seed. Keep the sack away from rain or direct sunlight

Mwaga mbegu juu ya gunia chini ya kivuli ili dawa ikaukie kwenye mbegu. Weka mbali na mvua au jua kali.



8

Spread out the seed on a sack so that they are not on top of each other. Let them dry completely or until they have a powdery coating.

Tandaza mbegu vizuri zisiwe juu ya zingine. Wacha zikauke kabiisa hadi ziwe na funiko ya unga.



9

Plant the seeds exactly as normal into moist soil

Panda mbegu kama kawaida kenye mchanga uliyo na unyevu.

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