Table 1: Appropriate seed treatments for selected species.

Species	Local name	Recommended pre-treatment	Seeds per Kg.
Grevillea robusta	Silky oak / Kalivaliyo	Not necessary	83,000
Albizzia chinensis	Mugavu	Soak in cold water for 24hrs	15,000
Calliandra calothyrsus	Calliandra	Soak in cold water for 24hrs	9,000
Cordia africana	Mukebu	Soak in cold water for 24hrs	2,320
Melia azedrach	Lira	Soak in cold water for 24-72hrs	1,750
Markhamia lutea	Nsambya	Not necessary	30,000
Cordia millenii	Mukebu	Soak in cold water for 24hrs	3,000
Azadrachta indica	Neem tree	Not necessary	5,600
Tamarindus indica	Mukooge	Soak in cold water for 24hrs	1,800
Prunus africana	Ntaseesa	Not necessary	5,000
Milicia excelsa	Mvule	Not necessary	475,000
Cedrella odorata	Brazillian mahogany	Not necessary	39,000
Maesopsis eminii	Musizi	Soak in cold water for 12hrs; nicking seed	500
Pseudocedrela kotschyi	Buruli / Eputon	Immerse in hot water for 3mins, then cold water for 24hrs.	4,400
Casuarina equisetifolia	Casuarina / Kasalina whistling pine	Not necessary	750,000
Antiaris toxicaria	Kirundu / false mvule	Not necessary	1,900
Canarium schweinfurthii	Incense tree / Muwafu	Soak in cold water for 36hrs	573
Albizia coriaria	Mugavu / Musiisa Etekwa	Soak in cold water for 24hrs	15,000
Podocarpus usambarensis	Podo / Musenene	Cracking seed coat	1,100

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Methods of increasing tree seed germination



To ensure fast, uniform seed germination and growth.

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Introduction

To germinate and grow, seeds must absorb water. The seeds of many tree species have thick seed coats that slows water absorption and thus delay germination. The heat from natural fires can also crack seed coat; Insects and animals may also make holes in the seed coats without damaging the seed embryo. All this cause seeds to germinate unevenly when sown.

In a nursery, it is easiest to protect seedlings when they are of uniform age and size and this can be achieved by proper methods of seed preparation before sowing. Methods which create circumstances similar to nature are designed to penetrate the hard seed cover and allow water to be absorbed.

How to increase germination of tree seed

a) Soaking in cold water

Seeds are soaked for 6 – 48 hrs, in cool water until they swell. The volume of water should be five times the volume of seeds soaked. Soaking time depends on species, provenance, age and quality of seed. This method is best suited for seeds:-

- with a thin or soft seed cover,
- recently harvested,
- small size and
- in large quantities.

b) Using hot water

Pour boiling water over the seeds at a volume five times the volume of seeds. The seeds must be stirred gently during the 2-5 minutes soak.

> Note that hot water can kill the seed. It is important not to soak the seeds for too long. Pour off the hot water, replace with cold water for 12 hours. This method is appropriate for seeds with hard seed coats.

c) Using acid

Cover seeds with sulfuric acid for 10-60 minutes. The seeds should be completely submerged just below the surface of the acid. Acid can kill the seed so seed should not be soaked for too long. Gauge the length of the acid treatment by the appearance of the seed. The wax on the seed cover should be replaced by a dull appearance. A pitted appearance indicates damage. Remove the seeds before this occurs. Remove seeds from acid, rinse with water for 10 minutes and soak in cold water for 12 hours.

Do not pour water into the acid otherwise the violent reaction will occur. The acid can be used several times.

This treatment is appropriate for seeds with hard and thick seed coats. It can also be dangerous and expensive.

d) Nicking method

Cut or scrape a small opening in the seed coat. A knife, nail clipper, metal file, sand paper or sanding block can be used for this operation.

To avoid damaging the seed embryo, cut or scrape the seed coat only opposite the micropyle (small ring where the seed was formerly attached to the fruit of the mother tree). Nicked seed soaked in cold water for 12 hours. This method can be applied to most tree species except those with very small seed.

e) No treatment

Some seeds germinate quickly without any treatment. So application of the above methods may not be necessary or may make the seeds difficult to handle or decrease viability. No treatment is needed for tiny and light seed e.g. *Alnus, Casuarina spp.* and *Grevillea robusta.*



Khaya anthotheca *seeds do not need any treatment*

Conclusion:

The importance of the methods for fastening seed germination is that they enable production of seedlings of uniform age and size. Most of the methods described in the brochure are simple and can be carried out by most small scale farmers.