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Seed propagation of *Allanblackia spp.*

Extension Guide

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Introduction

Allanblackia seeds do not germinate easily. The use of growth promoters to break dormancy has been explored, but does not promote seed germination. The storage of fruit for 6 weeks before seed extraction and/or removal of the whole testa do however enhance germination. Incubation of coatless seed (seeds with testa removed) in black or transparent plastic bags also enhances germination, and this method is widely used in West and Central Africa.

Fruit collection and handling of seeds

- Select healthy mother trees with desirable characteristics, e.g., large fruit size, many fruits, good tree form, etc.
- Collect mature fruits after they have dropped to the ground (Fig. 1). Visit trees regularly during the period of fruit fall to avoid animals eating the seeds in the fruits that fall on the ground.
- Use aerated containers such as mesh bags or crates to transport fruits to the nursery.
- On arrival at the nursery, store fruits under shade (about 40%) for at least 6 weeks to allow the seeds to mature within the fruits (Fig. 2).
- Extract seeds from the fruits. Do a simple seed quality test by placing seeds in a bucket of water. Seed that float are normally not viable and should be discarded.

Fig. 1a: Seeds in fruits on trees are not matured enough for seed germination

Fig. 1b: Collection of mature fruit fallen from the tree. Good for seed germination

Seed pre-treatment and sowing

- Seeds can be sown with or without the seed coat
- However, to hasten germination, remove the whole seed coat using a knife, immediately after seed has been extracted from the fruit (Fig. 3).
- Seed germination can be carried out in polythene bags or on seed beds. Both procedures are described below.
- If fungal growth is a problem, seed can be treated with fungicide before sowing.

Fig. 2: Fruits stored for post-harvest maturation of seeds

Fig. 3: Removal of the seed coat before sowing

Germination on seed beds

- Prepare seedbeds and fill with river sand, decomposed sawdust or a mixture of sand and decomposed sawdust (1:1). Apply mulch and water beds 24 hours before sowing seeds (Fig.4a)
- Place seeds horizontally (proximal and distal ends horizontally) at a depth of 1 to 2 cm and at intervals of 2 to 4 cm apart. Cover with sand/sawdust and press down firmly to ensure good contact with the seeds
- Water the beds thoroughly every day daily or every other day in the absence of rain till seed germination is completed.
- Remove seedlings from seed bed when they are a minimum of 1.5 cm high. It may take 4 -12 weeks after sowing to reach this stage
- In East Africa, where night temperatures are low, seed beds can be covered with black polythene sheet to help maintain warm temperature

Germination in polythene bags

- Seeds for polythene bag germination should not touch the ground and must always be processed in clean containers.
- Washing of seeds must be done with clean water. Where treated piped water is not available, the water must be boiled and allowed to cool before use.
- Place about twenty five to fifty seeds in a polythene bag (black or transparent plastic) (Fig. 4).
- Spray with water to moisten the seed, making sure water does not settle at the bottom of the bag. The quantity of water applied is critical to success of this method. The seeds will die if too much or too little water is applied.
- Hang the bags under shade where the ambient temperature is between 26 and 29°C
- Check for germination after four weeks and every week thereafter
- Remove germinated seeds from bags and pot them when shoot and root length are at least 1.5 cm
- Remove any rotten and/or fungi infested seed from bags when checking for germination

Fig. 4a: A seed germination bed under shade. Polythene bags containing germinating seeds are also shown, hanging under the shade net

Fig. 4b: Polythene bags containing germinating seeds, under a nursery roof

Fig. 4c: Seed germinating in transparent polythene bags

Preparation of media

- Prepare a potting mixture of which about 20% is soil collected from underneath a matured *Allanblackia* tree.
- Fill potting bag (10 x 15cm) with the potting mixture, water well and allow to settle for 24 hours before planting seedlings in them. (Fig.5)
- Remove seedlings carefully from seed beds using a hand trowel, small stick or dibble, or take carefully from the polythene bag
- Before potting, a seed should have developed both shoot and root (Fig. 6) or at least a shoot (Fig. 7). Seeds with only roots are not suitable for potting (Fig. 8).
- Make a hole in the middle of the pot, place the seed in it with the root (or roots) pointing downward and add soil to cover the seed completely (Fig.9).
- Water the seedlings adequately

Following these steps should lead to good quality root and shoot development.

Fig. 5: Filling pots with potting mixture; a mixture of forest soils and soil from under Allanblackia tree (4:1)

Fig. 6: Seed with both shoot and root developed are best for potting. True roots develop at the base of the shoot while seed root at the distal end of the seed

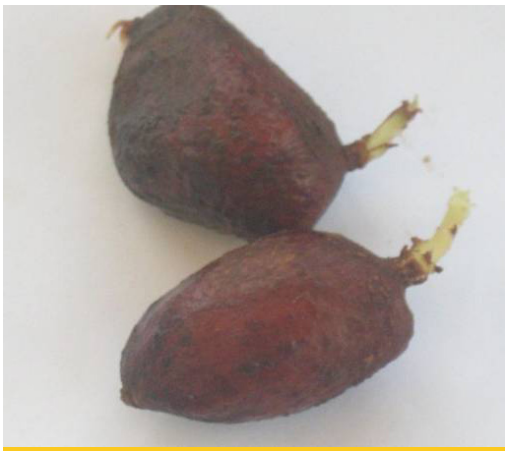

Fig. 7: Seed with only the shoot developed are not good for potting

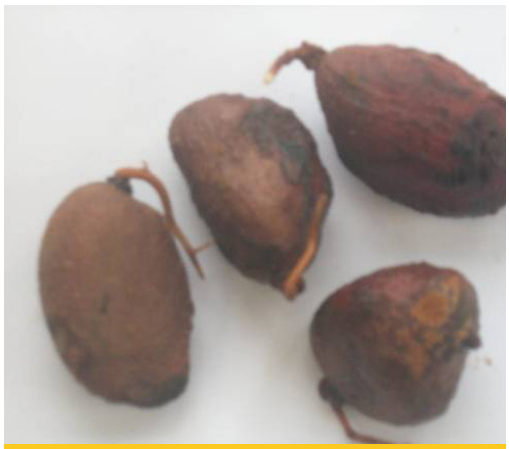

Fig. 8: Seed with only root are not good for potting

Fig. 9a: Seeds completely covered with soil after potting leads to healthy seedlings with well developed roots

Fig. 9b: Seeds completely covered with soil after potting (a) leads to healthy seedlings with well developed roots

Some don’ts during potting

Figure 10 depicts how seedling growth could be adversely impaired affected if potting is not done properly.

Fig. 10a: Leaving part of the seed exposed is bad practice

Fig. 10b: When proximal end is exposed, the true root struggles to reach into the soil and leads to impaired root and shoot development

Fig. 10c: If proximal end of the seed is exposed. Growth of true roots may be impaired and only seed root may grow.

Fig. 10d: Exhausted seedling that has not developed a true root

After care and hardening-off

Newly transplanted seedlings are sensitive to direct sunlight. They need to be provided with shade (about 60% shading is ideal) for the first two months. Hardening-off is then needed to acclimatize the seedlings to ambient environmental conditions at planting sites. This could be achieved by gradually reducing watering intensity and shading.

Fig. 12a: Potted seedlings under shade

Fig 12b: Shade removed and seedlings ready for field planting

References for further information

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