Seed Propagation Protocol Form

BOTANIC GARDENS CONSERVATION INTERNATIONAL

SEED PROPAGATION PROTOCOL

This form collates the information about the best method for seed propagation and growing up of the target species.

Authorship *(people that contributed propagation information)*: Tanzania Forest Service Agency

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Logo/s of the affiliated organisation(s):

This propagation protocol is subject to change and updates when new information on the propagation of the species becomes available. If there any comments or changes you would like to make, please send the information to africa@bgci.org

GENERAL INFORMATION

Taxon name	*Scientific name of the propagated species*	***Albizia schimperiana***	**Name/s of propagator/**	*Name(s) of the person or people that carried out the propagation*	
Family	*Plant family of the propagated species*	**Mimosoideae**	**Organisation**	*Organisation(s) where the propagation was carried out*	
Origin of seeds	*Site(s) and country where seeds were collected*	• Morogoro Region, Tanzania • Arusha Region, Tanzania	**Site and country**	*Site(s) and country where the propagation took place*	Morogoro Region, Tanzania • Arusha Region, Tanzania

SEED DESCRIPTION & PROCESSING

Description of the seeds and the processing of the seeds before seed sowing.

Time of year for seed collection	*List month/s of the year when seed collection is best*	July–October
Fruit/seed transport	*Describe how fruit/seeds have been stored during transport from the field to the nursery*	• Harvest mature dry pods directly from tree. • Store in cloth or paper bags (avoid plastic). • Keep in cool, dry, shaded conditions. • Transport within a few days to avoid moisture absorption
Processing of fruits/seeds	*Describe how the fruits/seeds are processed in situ or in the nursery (seed extraction methods, seed cleaning, handling of fruits/seeds...)*	For small quantity • Spread pods on tarpaulin under shade. • Air-dry for 2–4 days. • Manually thresh or lightly beat pods to release seeds.

		• Winnow to remove chaff and debris. • Select clean, well-formed seeds. For bulk quantities • A modified agricultural thresher known as flailing thresher and an air-screen machine to clean or winnow the seeds by removing lighter debris About 5kg of dry pods yield 1 kg of clean seeds
Method to assess seed viability	*Describe method used to estimate seed viability (e.g. floating test, cut test, tetrazolium test, X-ray test)*	1. **Cut test** • Cut seeds longitudinally. • Viable seeds have firm, white/cream embryos. • Empty or darkened seeds are non-viable. 2. **Floating test:** • Place seeds in clean water. • Viable seeds often sink; empty seeds float. *(Note: Less reliable due to winged structure.)*
% Estimated seed viability	*(Number of viable seeds) x 100 / (Total number of seed for which viability was estimated)*	Typical viability: **70–90%** if fresh and well handled. Example: 85 viable out of 100 tested = **85% viability**
Type of seed	*Choose one of these options: Orthodox, Intermediate, Recalcitrant or Unknown*	**Orthodox** • Seeds tolerate drying. • Can be stored at low moisture and low temperature.
Seed size	*Include a measuring unit (e.g. mm, cm…)*	• Length**:** 6–8 mm • Width: 4–6 mm
Number of seeds per gram	*Count a reasonable number of seeds and weigh them. Then, divide the number of seeds by their weight (e.g. 100 seeds / 5 g = 20 seeds/g)*	Due to lightweight winged structure: Approximately 10000 seeds per kilogram
Seed storage	*If seeds have been stored before germination, mention storage facilities (seed bank, fridge, freezer), and describe conditions (humidity, temperature), type of container, and storage time length.*	• Facility: Refrigerator or seed bank • Temperature: 4–10°C • Humidity: Below 50% RH • Container: Airtight container with silica gel • Storage duration: 1–2 years under good conditions

\+ ***Add photographs of the fruit and seeds. Make sure to include a detailed description of the photo, such as the growth stage, date, activity or process.***

SEED PROPAGATION PROTOCOL

GERMINATION

Description of procedures, materials for seed germination and the germination success.

Procedures	**Seed treatment**	*Describe treatment applied to the seed before sowing (e.g. mechanical scarification, chemical scarification, soaking, stratification, smoke treatment…). If applied, include the duration of the treatment.*	Seeds have hard seed coat dormancy. Recommended treatment: **Hot Water Treatment (Most common):** • Pour boiling water over seeds. • Soak as water cools for 12–24 hours**.** **Mechanical Scarification:** • Nick seed coat slightly with knife or sandpaper.
	Seed sowing media	*Media composition: include percentages/ratio for the different components*	Recommended mixture: Tree Seed Production Station-Morogoro • Top Black Forest soil – 63% (5) • Well decomposed Manure – 25% (2) • Rice husk – 12% (1) **Ratio is 5:2:1** Well-drained and sterilized if possible.
	Container	*Describe size and material of the container in which seeds are sown*	Seed trays (plastic) and Black polyethylene bags of height 8–10 cm and diameter 101.4 mm or 4”
	Seed spacing	*Describe the recommended spacing between the seeds when sown. Include a measuring unit (e.g. mm, cm…)*	3–5 cm between seeds in tray
	Seed depth	*Describe how deep the seeds are sown. Include a measuring unit (e.g. mm, cm…)*	Sown at 1–2 cm depth
	Watering technique	*Describe watering tool, technique and frequency during sowing and germination*	• Fine rose watering can • Light watering once daily • Avoid waterlogging
	Germination facilities	*Describe the facilities where the germination of seeds took place (e.g. close case, outdoor shaded area, heated bench, covered/bagged container...)*	• Nursery shade house (50% shade net) • Raised germination bench
	Environmental conditions	*Describe the environmental conditions where germination took place (temperature, humidity, and photoperiod)*	• Temperature: 20–30°C • Relative humidity: 60–80% • Light: Partial shade
Success	**Time of year for seed germination**	*List month/s of the year when seed germination is best*	1. **Northern & Eastern Zone** • October – December

			• March – May **2. Central Zone** • November – April • May – October **3. Southern & Western Zone** • November – April
	Duration until germination	*Average number of days/months/years until seeds germinated*	10-35 days
	% Germination success	*(Number of seeds germinated) x 100 / (Total number of seeds sowed)*	Germination is good and fairly uniform, attaining 40% after 20 days and 70 after 30 days from sowing
Materials		*List the materials needed for seed germination to help with the planning of this activity. E.g. trays, sieves, dibbers, labels, ruler…*	• Seed trays • Sand and forest soil • Compost • Hot water container • Watering can • Labels and marker • Ruler • Shade net

+ ***Add photographs of the germination process. Make sure to include a detailed description of the photo, such as the growth stage, date, activity or process.***

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SEED PROPAGATION PROTOCOL

FIRST POTTING

Description of procedures and materials for the cultivation of the plants and the success of the growing of the plants.

Procedures	**Growing Media**	*Media composition: include percentages/ratio for the different components*	Recommended mixture: Tree Seed Production Station-Morogoro • Top Black Forest soil – 63% (5) • Well decomposed Manure – 25% (2) • Rice husk – 12% (1) **Ratio is 5:2:1**
	Container	*Describe size and material of the container in which plants are potted*	Black polyethylene bags of height 8–10 cm and diameter 101.4 mm or 4”
	Fertiliser	*If used, include: type (organic or inorganic); nutrient composition and its ratio; and application (added to soil, dissolved on water, foliar application)*	After transplanting: Type: • Organic compost (preferred) OR • NPK 15:15:15 Application: • Mixed in potting media OR • Liquid fertilizer every 2–3 weeks
	Watering technique	*Describe watering tool, technique and frequency while growing the plants*	• Watering can or hose with fine nozzle • 2–3 times per week • Reduce watering during hardening
	Plant growing facilities	*Describe the facilities where the plant growing took place (e.g. glasshouse, outdoors, shaded area...)*	• Shade nursery during early stage • Gradual exposure to full sunlight
	Environmental conditions	*Describe the environmental conditions where the plant growing took place (temperature, humidity, light levels)*	• Temperature: 20–30°C • Moderate humidity • Increasing sunlight after 4–6 weeks
Success	**Number of days until first potting**	*Average number of days since the start of seeds sowing until first potting*	60-90 days
	Duration until established plants	*Average number of days/month/years for which the plant growth was monitored until the establishment of plants*	5-6 months in nursery before field planting
	% Plants established	*(Number of plants established) x 100 / (Total number of plants potted)*	Typical: 80–95%

	Health observations	*Record any signs of pest or disease, nutrient deficiency, damage… and the stage when they were observed (e.g. during germination, growing of seedlings, growing of plants….)*	• Damping-off (germination stage) • Leaf-eating caterpillars • Occasional aphids • Nitrogen deficiency (yellowing leaves) Good drainage and sanitation reduce problems.
Materials		*List material needed for potting to help with the planning of this activity. E.g. pots, dibbers, labels…*	• Poly pots (12 × 20 cm) • Potting mix • Dibber • Labels • Watering can

+ ***Add photographs of the pricking out, potting, and the growing of plants. Make sure to include a detailed description of the photo, such as the growth stage, date, activity or process.***