10.0 GENERAL INFORMATION

OBJECTIVES

To produce high quality seedlings that will be available when preparations for field planting have been completed.

Poorly managed nurseries will result in a reduced out-turn of plantable seedlings.

Well-managed nurseries provide a reliable supply of quality seedlings for field planting.

SEED

Pregerminated seeds must be purchased from a reputable supplier.

Seeds are packed in plastic bags (200 seeds/bag) and these bags are packed inside strong insulated boxes (approximately 15 bags/box).

The boxes are filled and lined with foam chips to prevent overheating and bruising.

A 'batch' normally contains 10,000 seeds.

Seeds must be kept cool, moist and out of direct sunlight until they are planted.

Seeds should be planted as soon as possible after delivery, and must not be stored for longer than five days.

POLYBAGS

The size of polybags to be used depends on the duration that seedlings are to be held in the nursery (refer to Section 22.0).

Main Nursery Polybags

Black, UV-stabilized polybags with four rows of holes punched alternately 5 cm apart from the bottom of the polybag are used. Gussetted bags are recommended (500-gauge).

Quality is of utmost importance – cheap, inferior quality polybags will not last for the 10- to 14-month period until transplanting. The cost of replacing faulty polybags will far exceed the higher initial cost of purchasing premium quality bags.

To check quality, hold the polybag up to bright sunlight and check for weak, translucent or 'light' patches in the material. Cut the seam of 10 bags from each 'batch' and open the bag out. Grasp the bag firmly with both hands and stretch the plastic. If it breaks or stretches unevenly, the quality is inferior. Also check the seams for weakness by pulling them or by filling ten bags with soil and dropping them from a height of 2 m onto a hard surface.

Poor quality polybags will break, and resulting in increased seedling losses.

Before changing suppliers, test a small number of the new bags in the nursery for one complete seedling generation. Main nursery polybags must be able to withstand 18 months' exposure in the nursery without becoming brittle or splitting.

Generally, 95% of the nursery should be planted in standard 40 cm x 45 cm bags, with the remaining 5% in larger 50 cm x 60 cm bags to provide plants for 'supplies'.

Advanced Planting Material (APM) polybags are 60 cm x 75 cm (refer to Section 22.0).

SOIL

Only quality topsoil should be used for nurseries.

The required properties for a nursery soil are as follows:

a) Free-draining, friable loam with a sand content ≤ 60%. Do not use sand or clay to fill polybags.
b) Free from contaminants (solvents, old refuse, chemicals and disease inoculum).

Soil must first be sifted to remove debris, stones, sticks and large clods (>1cm in diameter).

Peat must not be used to fill nursery polybags.

Do not use soil with large amounts of un-decomposed organic matter.

Do not use soil that has been affected by high temperatures (e.g. burning).

Summary of nursery soil properties

Property	Range
pH in water	>4.5
Sand content (%)	30–60
Clay content (%)	25–45
Organic carbon (%)	2–3
Total N (%)	0.15–0.20
Total P Bray I (mg/kg)	>25
Exchangeable K (cmol/kg)	>0.2
Exchangeable Mg (cmol/kg)	>0.4

STORAGE

Construct a strong, lockable store for parts, tools and equipment.

Additional security patrols may be necessary to prevent pilfering, interference with pumps and equipment, or theft of seedlings.

It is advisable to have a separate lockable store for chemicals and fertilizers (near a water supply).

An adequate nursery storeroom for pesticides, fertilizers and spare parts. However, the seedlings are too close and should be re-spaced to prevent etiolation.

To prevent contamination or incorrect chemical selection/mixing, herbicides (weed killers) must be clearly marked and stored separately from pesticides (insecticides, fungicides) and foliar fertilizers.

CHEMICALS

Always follow the recommendations given on the product label.

Fresh water, and hydrated lime (in case of spillage), must be available for workers to wash their hands and faces after applying chemicals.

Workers applying chemicals must wear adequate safety equipment and observe estate and product safety guidelines.

Herbicides are mixed in containers clearly marked **'HERBICIDES ONLY'** with red paint.

Pesticides are mixed in containers clearly marked **'PESTICIDES ONLY'** with blue paint.

Foliar fertilizers are mixed in containers clearly marked **'FOLIAR FERTILIZERS ONLY'** with blue paint.

IRRIGATION

If the irrigation water contains large amounts of sediment, install intermediate settling ponds and suitable filtration equipment.

Keep an adequate supply of parts on hand for immediate repairs and maintenance.

Monitor outlet pressures and report any significant reductions in pressures.

Also refer to Section 24.0.

EQUIPMENT

Check pumps and outlet pressures daily.

Lubrication and maintenance schedules should be kept up to date. Advise the Nursery Manager immediately of any problems.

The Nursery Manager should check irrigation efficiency as follows:

1. Select 10 polybags at random from each ‘batch’.
2. Using his finger, probe the soil at different levels through the polybag holes to ascertain that the irrigation is wetting *all* the soil in the polybag.
3. He should also check for waterlogging.

If the irrigation is conducted on a 24-hour cycle, make sure that the night Nursery Supervisor has the means to make contact or seek assistance at all hours.

The Nursery Manager should also check that standards have been maintained for irrigation done during the night.

Always confirm that the equipment is installed, handled and repaired carefully. This will minimize damage, contamination or delays in watering.

ENVIRONMENT

Refer to each section for specific notes on environmental considerations.

SAFETY

All pesticides, fertilizers and fuel products should be kept in approved, lockable stores.

Do not allow unauthorized personnel into the nursery.

Refer to each section for specific safety precautions.

NOTES

- All seedlings > 6 months are root-pruned once a month, to prevent root growth into the ground.
- Always use seed purchased from a reliable source. **Cheap seed or seedlings from an unproven source invariably lead to costly field problems that are often impossible to correct until replanting.**
- *Never* compromise standards in the nursery stage as it will reduce profits later.
- Plant only healthy, quality seedlings in the field as this will reduce time to maturity and improve profits.