

Seedlings in a seedbed



Seedlings ready tranplanted into

11. Shading:

The soil and young plants in the nursery must be protected from direct sunlight. You must have nursery shades for raising and hardening seedlings. Construct shade allowing in 20-25% light for raising seedlings using local materials (grass, dry banana leaves, palm leaves, elephant grass etc) or commercially available fibre glass. Construct shade allowing in 25-50% light for hardening seedlings in preparation for field transplanting using similar materials as of shades used to raise seedlings. Harden seedlings with 4-5 pairs of leaves. Over shading leads to etiolated growth and over exposure to sunlight retards growth and causes sun scorch. Both types of shades should be at least 8 feet high to allow movement within the shade during working.

12. Watering:

Coffee nurseries require regular watering. The frequency of watering is determined by the climatic conditions, whether the beds are mulched or not and the stages of development of the seedlings. During dry weather, beds/pots, which are not mulched, are watered at least ounce a day and at least ounce every two days if mulched. Watering is not necessary during wet days.

Plants grown in seedbeds covered with polythene sheet are watered at least once every two days. Young coffee is very sensitive to extreme soil moisture. If the soil dries after germination, then the seedlings die. If the soils become too wet, the seed will rot and die of 'damping off' disease. Water contaminated with toxic substances can harm the seedlings. Water plants using watering cans but where the nursery has access to tap water, a horse pipe fitted with a fine rose is preferred. Watering is better in the early hours of the evening because it provides for reduced evaporation, enough water percolation into the soil and gives sufficient time for the leaves to dry before the evening temperature fall too low.

13. Weed management:

When weeds germinate, the nursery space should be weeded at least once a month to keep off weeds. Weeds in beds or pots should be pulled out by hand. Roundup can be used to control weeds around the nursery space outside the shades but with care to avoid spill on the seedlings. Weeds in spaces within the shades can be removed with a hand hoe

14. Soil fertility management:

Apply 2-3g of single super phosphate (SSP) fertilizer per pot to improve root development and growth. Apply 10g of Sulphate of Amoniam Nitrate (ASN) fertilizer per pot when nitrogen deficiency symptoms (yellowing of leaves and retarded growth) develop. The fertilizer should be applied carefully to avoid touch and burn of the seedlings. Foliar fertilizer can be applied following recommendations provided on its package.

15. Disease and pest control:

Plants should be inspected regularly to identify outbreaks of diseases or pests. Common diseases include leaf rust and brown eyespot. 2-3 sprays of copper based fungicide with good levels of nitrogen gives a good control. Increasing space between pots will reduce the eyespot incidence. Common insect pests are leaf miners, scales, mealybugs and caterpillars. Spraying with a 50% Fenitrothion will control pests.

16. Field transplanting:

Transplant seedlings out in the field when they have developed 6-12 pairs of leaves. Water the bed at least an hour, to loosen the soil, before lifting the seedlings. The plants should be lifted carefully out of the soil. Any poor or off types seedlings such as plants those with narrow leaves, diseased plants or seedlings with damaged, twisted or forked or poorly developed roots are discarded.

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MANAGEMENT OF SEEDLING COFFEE NURSERY



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1.Introduction:

Seedling coffee nursery management is similar for Arabica and Robusta coffee. All the nursery activities are essential for improved nursery productivity and quality of the seedlings.

2. Commercial Coffee Varieties:

Current recommended Arabica coffee varieties are SL14 and KP423. SL14 is recommended for cultivation in areas between 1500-1800m above sea level where coffee leaf rust is not very serious problem. KP423 is recommended for areas lying between 1300-1500m were leaf rust is common but less Coffee Berry Disease. Current Robusta coffee varieties grown by famers include 1s/2, 1s/3, 1s/6, 223/23, 257/53 and 258/24. These varieties are also multiplied by vegetative propagation. Robusta coffee seed must be supplied as a mixture from all the six varieties. The seed is processed from fully ripe and healthy fruits and it is supplied as parchment, whether not dressed or dressed in ash.

3. Sources of Coffee Seed:

Arabica coffee seed is produced and obtainable at a cost from the Coffee Research Centre and Buginyanya Zonal Agricultural Research and Development Institute (BUGIZARDI). Robusta coffee seed is produced by private seed producers on recommendation by UCDA. UCDA distributes both Arabica and Robusta seed.

4. Seed storage:

Coffee seed looses viability quickly after preparation and therefore it should be sown immediately. Seed that has been stored for long takes long to germinate. Store seed in airtight polythene bags at 15-18oC to prolongs viability. Store the seed as parchment and not for longer than 3 months.

5. Locating nursery:

A coffee nursery should be easily accessible for regular supervision, close to a good supply of non-salty water, on a gentle slope to avoid water logging and protected from strong wind. A location with free draining, deep friable loam soils with high humus content are most suitable. Avoid salty, alkaline or clay soils and soils that either become water logged or cap. Altitudes above 1800m (6000 ft) are not suitable because the seedlings grow very slowly.

6. Seed-bed preparation:

Lay nursery seedbeds along contours. The seedbeds should be 1-1.5m wide to make it possible to reach the centre of the beds from either side without stepping on the bed. The length of the beds is normally 10m but it may depend on the gradient of the nursery site. Leave paths of 0.5-1m between beds. The soil of the beds should be loosened to a depth of at least 20cm and well levelled.

7. Seed cleaning:

It is advisable to remove parchment from the coffee beans before sowing. Remove the parchment by hand. Removal of the parchment improves germination rate and shortens germination period. Sort the clean beans (seed without parchment) to remove malformed, small and damaged seeds.

8. Seed sowing:

The seeds can be sown into a seedbed from where the seedlings are taken to plant in the field or sown into polythene pots. Seed may be pre-germinated before sowing. Seeds are pre-germinated by either soaking in water for 24 hours and sowing in damp sand or germinating between layers of damp hessian cloth or sacks. The germinated seeds with emerging root tips are then carefully transferred into a nursery bed. Pre-germination allows selection of quality seedlings and reduces the amount of watering and attention required in the first months of germination but needs a lot of care when transferring.

8.1 Sowing in seedbed.

Sowing should be in weed free beds or pots. The seeds are placed with the flat side down in holes or farrows of 1-1.5cm deep. The farrows should be in rows spaced at 2 to 3cm. Seed takes about three weeks to germinate.

8.2 Sowing In Polythene Pots.

Pre-germinated or none pre-germinated seed can be directly planted into polythene pots of size 4"wx7" filled with sieved light loam.
topsoil mixed with rotten farm manure. Add sand or gravel dust to the soil to improve drainage in very wet weather.

9. Mulching:

Newly sown beds/pots should be mulched with about one inch thick of chopped grass to retain water moisture, and to reduce the frequency of watering and weed growth. The mulch should be removed as soon as seedlings come through the mulch. If original mulch rot, a new lot of dried grass or thin leaves can be applied. Seedbeds should be protected from drying by covering with polythene sheet supported on cages.

10. Transplanting:

Transplant seedlings from seedbeds into polythene pots filled with humus rich forest soil when the first pair of leaves have uncurled. Late transplanting increases the chances of the main root twisting, bending or being damaged. The planted pots are then transferred to the nursery shade. The nursery shade ground should be free draining and weed free.