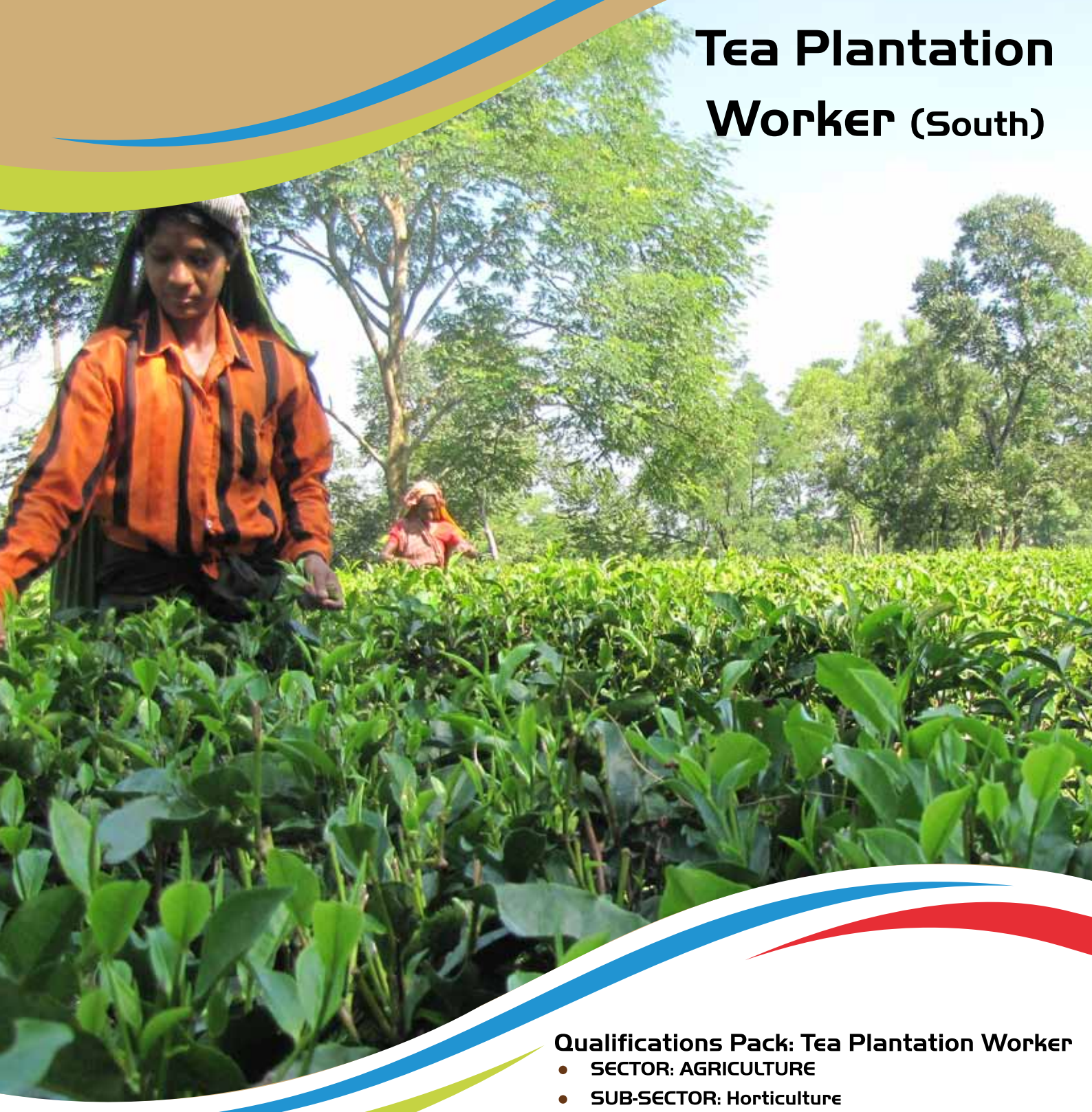
Participant Handbook

Tea Plantation Worker (South)



Qualifications Pack: Tea Plantation Worker

- SECTOR: AGRICULTURE
- SUB-SECTOR: Horticulture
- OCCUPATION: Plantation Crop Cultivation
- REFERENCE ID: AGR / Q 0204

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Welcome Note

Dear Participant,

Welcome to this training programme on “Tea Plantation Worker”.

You as a tea plantation worker will be responsible for carrying out the ground level activities involved in a tea plantation right from nursery preparation to harvesting and storage. The tea plantation worker works under the direct monitoring of the supervisor.

You will learn to work independently, make operational decisions pertaining to your area of work and demonstrate skills to use various tools in the tea plantation operations.

This training will enable you to learn the following skills:

- Knowledge and Understanding: Adequate operational knowledge and understanding to perform the required task.
- Performance Criteria: Gain the required skills through hands on training and perform the required operations within the specified standards.
- Professional Skills: Ability to make operational decisions pertaining to the area of work.
- Soft Skills: To observe professional mannerisms and conduct during interaction with others.

This training will also include field trips to tea gardens and nurseries. You will be expected to observe the procedure/ operations and services in the tea gardens visited. You may also get an opportunity to help in some of these procedures during the field trips.

We wish all the best for your future in the agriculture sector!

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Soil and Agro-climatic Requirement for Tea Plantation

After completing this module, you will be able to:

- state the type of soil and climatic conditions suitable for growing tea.

Climatic Factors and Soil Conditions for Tea Cultivation

Soil	Sandy loam well-drained fertile soil
Climate	Moderately hot and humid climate
Temperature	Between 13 ^{0}C and 30 ^{0}C
Humidity	More than 60%
Day Length	11 hours 15 minutes is critical day length
Soil pH	Acidic pH 4.5 to 5.5
Rainfall	Minimum 1500 mm, well distributed
Carbon (%)	1 to 2%

Prepare Nucleus Area/Multiplication Plot

After completing this session the trainees will be able to:

- Prepare nucleus area or multiplication plot for obtaining vegetative propagation (VP) cuttings.

Prepare Nucleus Area

- Site free from water logging and drought.
- Away from dense forest edges.
- Do not plant any shade trees.
- Do not pluck the mother bushes.
- Spacing between plant to plant and row to row

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	Planting (metres)	Plant to Plant	Row to Row
Single hedge	1.20 x 0.75 (or) 1.20 x 0.60	0.60 m to 0.75 m	1.2 m
Double hedge	1.35 x 0.75 x 0.75 (or) 1.05 x 0.75 x 0.60	0.75 m x 0.75 m (or) 0.75 m x 0.60 m	Between rows in a hedge 0.48 m and 0.65 m Between two hedges 1.05 m and 1.35 m

Mother Bushes

Caring of Nucleus Area

After completing this session the trainees will be able to:

- perform pruning, manuring and plant protection activities for mother bushes.

Pruning of Mother Plants

- Pruning/skiffing is done once or twice in a year depending on the number of cuttings required.

Pruning Time	Pruning Mark	Cutting Time
Light pruning: (60 cm to – 65 cm from the ground)	For early cuttings, 3 - 4 months after pruning.	Here the number of cuttings will be less.
Medium pruning: (55 cm to 60 cm from the ground)	For delayed cuttings, four to five months after pruning.	Here, the number of cuttings will be more.

Manuring of Nucleus Area

Nutrients can be classified into

Primary Nutrients (3)
- Nitrogen
- Phosphorus
- Potassium

Secondary Nutrients (3)
- Magnesium
- Calcium
- Sulphur

Micronutrients (7)
- Zinc
- Boron
- Copper
- Manganese
- Iron
- Molybdenum
- Chlorine

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- If these nutrients are not available in required quantity, the plants may exhibit deficiency symptoms.

Nutrient	Deficiency Symptoms
Nitrogen	Leaves turn pale yellow
Potash	Leaf margins dry
Magnesium	Inverted “V” shape chlorosis or yellowing on the leaves
Zinc	Shortening of internode; leaves turn sickle shaped; rosette appearance of the leaves

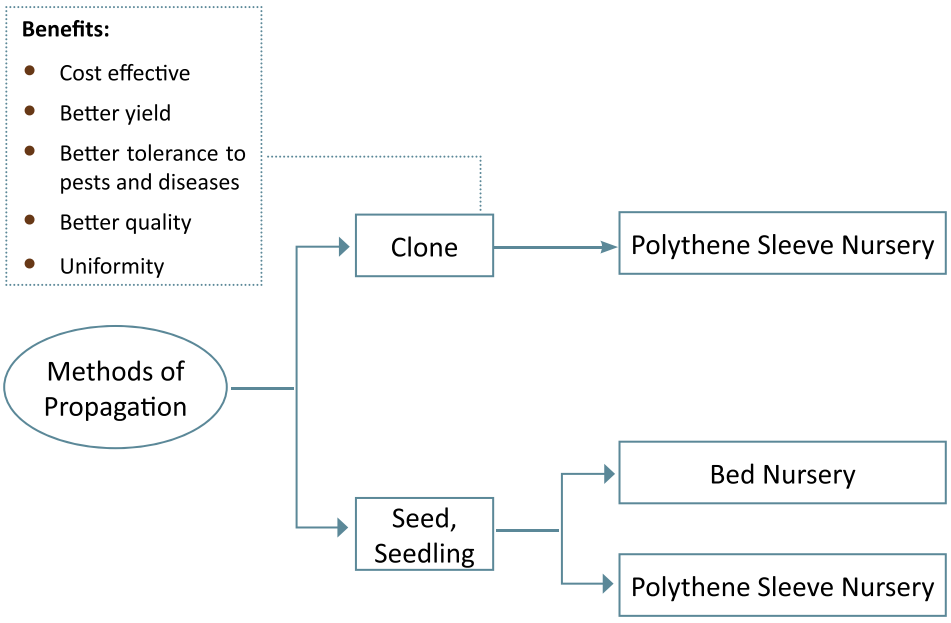
Types of Nursery

After completing this session the trainees will be able to:

- state the methods of propagation.
- state the types of nursery practices in tea.

Methods of Propagation

- **Soil**
  - Sandy loam fertile soil of good tilth.
  - Undisturbed jungle soil is good for this purpose.
  - The pH of the soil should be between 4.5 and 5.5, and preferably between 4.8 and 5.0.
  - Eelworm count should not be more than 6 per 10 gms of soil. If it is more, the soil should be treated with Furadon 3G @1 gm per sleeve in two doses at monthly intervals or heat treat the soil.
  - Never use subsoil for nursery.
  - Prepare soil bed/polythene sleeves, before planting cuttings.



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Polythene Sleeve Nursery

Soil Preparation and Sleeve Filling for Nursery

After completing this session the trainees will be able to:

- prepare soil mixture for polythene sleeve nursery;
- prepare polythene bags for planting cuttings.

Method of Filling Polythene Sleeves

- Soil: Sandy loam soil of good tilth.

Sieve soil using No.4 mesh → Sprinkle water and leave it overnight → Test for moisture content → Open one end of the sleeve and gradually fill with soil → After filling 1/3rd compact gently with fist or wooden club → See that the soil does not drop when the sleeve is lifted. → Fill the sleeve with constant gentle compaction. → See that there are no wrinkles or space in the sleeve → After filling, stack them in beds.

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Preparation of Cuttings

After completing this session the trainees will be able to:

- prepare cuttings for raising plants.

Procedure to Prepare Cuttings

Cut primary shoots

↓

Sprinkle water

↓

Discard 3-4 top leaves and lower woody part

↓

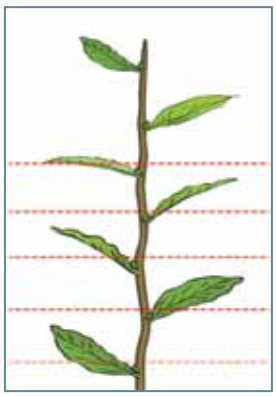
Make cuttings

↓

Put cuttings in clean water

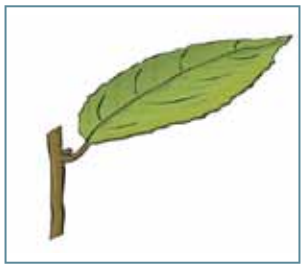
↓

Treat it with 0.1% Zinc Sulphate solution



Primary Shoot

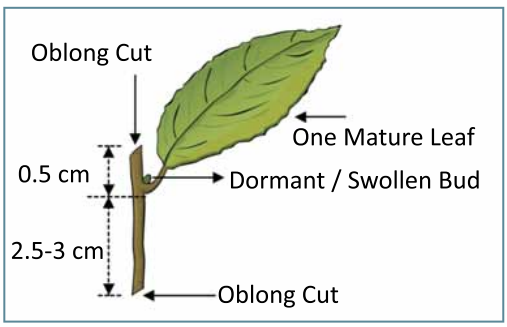
Cuttings in Clean Water



Cutting

Precautions to Be Observed

- Do not touch the freshly cut surface with fingers.
- Always use very sharp implements for making cuttings.
- Do not make cuttings from shoots infested with pests.



Planting Cuttings

After completing this session the trainees will be able to:

- plant cuttings in polythene sleeve/ soil bed;
- state the post planting care of nursery raising.

Procedure for Planting Cuttings

Water sleeves thoroughly before planting

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Make holes in the sleeve using dibber

↓

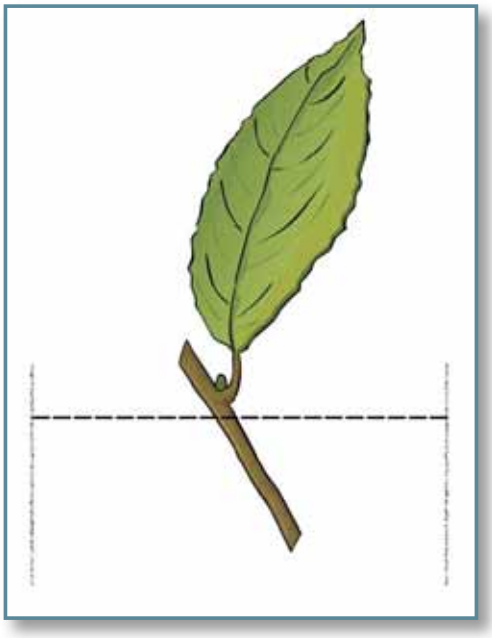
Hold the cutting and carefully insert it into the hole

↓

Press soil around the cutting

↓

Cover the nursery bed immediately after planting



Planting Cutting

Planting Cutting in Sleeve

Planting Cutting in Bed

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Precautions to Be Observed

- Always work under shade.
- Leaves of the planted cuttings should be in an erect or semi-erect position.
- Ensure that no air pocket is formed while planting the cuttings.
- Avoid rainy days for planting cuttings.

Post Planting Care

- Keep the nursery covered and check frequently for moisture content.
- If the moisture in the soil is low, water the bed.
- Also do a frequent check for pests and diseases when the auxiliary buds begin to grow, and treat them accordingly.

Callusing and Rooting

- Callusing – 4 to 6 weeks
- Rooting – 10 to 12 weeks
- Examine for callusing and rooting.
- After rooting about 80 % cuttings, open the tent gradually in stages.
- Commence manuring only after rooting.

Propagation through Seed

After completing this session the trainees will be able to:

- state the procedure to sow seeds in nursery beds/sleeves.

Planting of Seeds in the Beds/Sleeves

- Sow the pre-germinated seeds at a depth of 2.5 cm with the eye (micropyle) pointing downwards.
- Cover the beds/sleeves with a thin layer of mulch.
- Arrange for watering from time to time but avoid excess watering.
- 1 kg tea seeds = approximately 350 to 400 seeds.
- Freshly collected seeds should be used for better germination percentage.

Tea Seeds

Germinated Tea Seeds

Germination Bed

Germination Bed Covered with Mulch

Floating Test for Seeds to Be Used in the Nursery for Germination

- Dip the seeds in water overnight.
- Reject the floating seeds.
- Use the seeds which are sunk in water for germination.

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Care of Nursery Plants

After completing this session the trainees will be able to:

- state the practices of nursery care.

Manuring of Nursery Plants

There is a procedure involved in preparing the tea soluble nursery mixture. It also has to be given at regular intervals and in specific dosage. It is as follows:

- To prepare the tea soluble nursery mixture, we need:
    i. Ammophos (20:20) – 60 parts
    ii. Potassium Sulphate (or) – 24 parts
    iii. Muriate of Potash – 20 parts
    iv. Magnesium Sulphate – 16 parts
- Dissolve 30 gms of the mixture in 10 lts of water.
- Apply with rose can for 450 plants.
- Application at weekly interval.

Pests and Disease Control in Nursery

In order to protect tea from various pests and diseases like Thrips, Aphids, Caterpillars, Root mealy bugs amongst others, suitable insecticides should be used.

Shading and Hardening

After completing this session the trainees will be able to:

- state the procedure of shading and hardening of the seedlings or cuttings.

Shading of Nursery Plants

Types of Shades

Overhead Shade

- Roof-like structure made of coir net or nylon net, high enough so that a person can walk in the nursery
- Top may be flat
- All sides are to be covered.

Polythene Tent under Overhead Shade

- Polythene sheet is erected about 45 cm over the cuttings on a semi-circular bamboo frame/GI wires/rod
- Sealed on the sides of the bed by covering with soil

Hardening of the Nursery Plants

- Remove the shade gradually to acclimatize the nursery plants to the outside weather.
- Avoid too early or too sudden exposure to outside climate

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