Vegetable Research and Extension

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Summary:

Tea plants are propagated on a commercial scale worldwide by cuttings. This guide provides a step-by-step process to propagate tea plants by cuttings for commercial nursery growers and home gardeners in Western Washington or similar climatic regions.

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Tea Plant Propagation Protocol

Tea (*Camellia sinensis* var. *sinensis* and var. *assamica*) plants are propagated on a commercial scale worldwide by cuttings. Vegetative propagation overcomes heterozygosity and quality variability that occurs with seed propagation. Tea plants are considered a difficult-to-root species. External factors such as light and temperature, and internal factors such as nutrition, age, plant hormonal balance, and physiological maturity of the plant material, all impact rooting success. This guide provides a step-by-step process to propagate tea plants by cuttings for commercial nursery growers and home gardeners of Western Washington or similar climatic regions.

This propagation method uses a mist chamber. A simple mist chamber design can be constructed on a greenhouse bench as described at the end of the propagation directions (Fig. 1). Potting media and pots need to be prepared in advance, see instructions below the step-by-step propagation directions. Product information is provided as examples and is not intended to endorse these products. Similar products that function the same can be used.

Selection of mother plants:
First, mother plants should be selected for cuttings. The selected mother plants should have healthy and robust branches free from disease and insect damage, and good yield potential. This will ensure that the tea plants that grow from the cuttings will be healthy and have the same genetic characteristics as the mother plant.

The selected mother plants should not be harvested for tea leaves and require different management practices from

plants that are harvested for tea leaves. Mother plants should be pruned approximately six months before the collection of cuttings to ensure juvenile shoots are present for cutting, as they have high rooting ability. The fertilizer requirement of mother plants is almost twice that of plants of the same age that are harvested for tea leaves.

Step-by-step process for tea cutting collection and handling:

- A cutting is a small shoot or branch cut from the mother plant and can develop into a new plant.
- Harvest tea shoots from mother plants selected and managed for propagation.
- Harvest the tea shoots early in the morning or in the evening using pruning shears.
- The tea shoot should be recently matured (about five to seven months old) with slightly reddened bark and have healthy leaves and active axillary buds (Fig. 2). This stage is mostly observed in late October in the western Washington environment.
- Place the harvested shoots in water until processing for propagation (Fig. 3).
- Process the shoots as soon as possible in the shade or a cool area.
- Single-node, two-node or three-node cuttings can be made from the harvested shoots. Single-node tea cuttings maximize the number of cuttings from stock plants while producing plants of equal size to two- and three-node cuttings the following summer.
- Cuts should be made about 0.5-1 cm above the first node for one-node cuttings, and about 3-4 cm below the second node (for two-node cuttings) or third node (for three-node cuttings) (Fig. 4).
- For one-node cuttings, do not remove the leaf. Carefully remove the second leaf for two-node cuttings, and the third leaf for three-node cuttings. Be very careful not to damage the axillary buds.
- Score the cuttings using a knife, to remove 1 -2 inches of bark on one or both sides of the cutting's base (Fig. 5). Stem scoring encourages adventitious root formation by activating cell division between the bark and wood. Scoring also facilitates better absorption of water and rooting hormones by cuttings.
- After scoring, dip the bottom end of the cutting into rooting hormone (Dip'n Grow, Clackamas, OR) for 5-10 seconds and stick into a treepot filled with propagation media such that the node with leaves rests on the soil line.
- Place the treepots with cuttings into the mist chamber (Fig. 6) and set the chamber to mist @ 20 seconds every 30 minutes.
- Maintain 50-80% shade in the chamber for 4-6 months, checking the cuttings frequently for uneven misting and any other problems.
- After 4-5 months, roots will start developing.
- Slowly transition to outside chamber conditions. Reduce the misting rate to 20 seconds every 1.5 hours. Fold the plastic up from the sides of the chamber so that the plastic and shade cloth remain on the top for about 1-2 months.
- Take the cuttings out of the chamber and place them on the greenhouse bench, apply manual watering as needed. Apply slow-release fertilizer (Osmocote Plus, The Scotts Company, Marysville, OH) as directed in the label (E.g., for Osmocote Plus, 1 scoopful per 2 gal. pot every six months).
- New plants will be ready for transplanting about 1-1.5 years after cuttings were collected.
- Plants grown under controlled environmental conditions need time to adjust and acclimatize to the conditions of their final location. Harden-off the cuttings for about 1 month before transplanting: First place the plants outside for an hour or two each day. Gradually increase this duration until the plants can withstand the outdoor conditions without showing any signs of stress.

Potting media and pots:

- Prepare the propagation media beforehand: mix together peatmoss, vermiculite and perlite in a 5:3:2 ratio by volume. This media composition results in the pH range of 4.5-5, which is ideal for tea plants.
- Fill treepots (MT38BT, Stuewe and Sons, Tree Seedling Nursery Containers, Tangent, Oregon) with propagation media and water well.

Building a mist chamber:

- A mist chamber can be constructed using PVC pipe. Specific size can vary but an example is 14 ft long x 5 ft wide x 3 ft tall. Add water lines to the top of the chamber and misting nozzles (ASIN B091KRSR1Z, Sunhe Yhk), and a misting timer (model #549, Mist Timer II, Drips Inc., Concho, AZ).
- Cover the PVC frame with clear greenhouse plastic (6 mil), on top and all sides, leaving the bottom uncovered for aeration.
- Place shade cloth over the top of the structure to maintain 50-80% shade in the chamber (E.g., 50% black shade cloth; Farm plastic supply, Addison, IL)
- Place a heating mat (Jump start seedling heat mat, 20 x 48, 107 Watts, Johnny's Selected Seeds, Fairfield, ME) on the floor of the chamber and set greenhouse temperature at 68-72 ^{o}F.

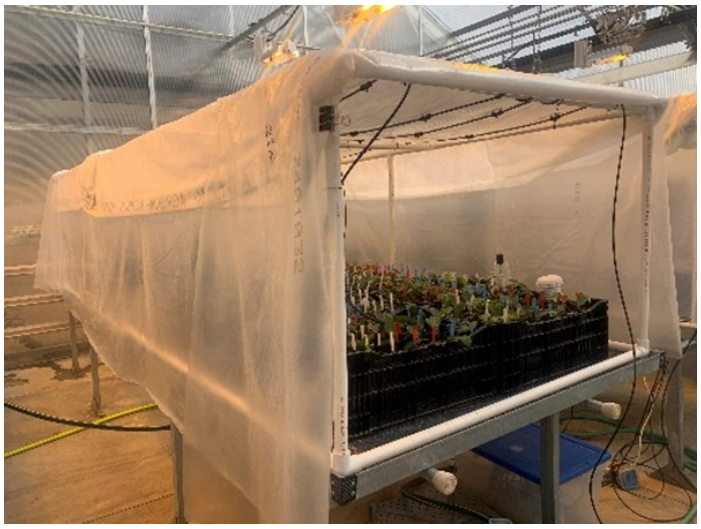

Fig. 1. A sample mist chamber (14 ft long x 5 ft wide x 3 ft tall).

Fig. 2. Recently matured tea shoots for propagation, showing slightly reddened bark.

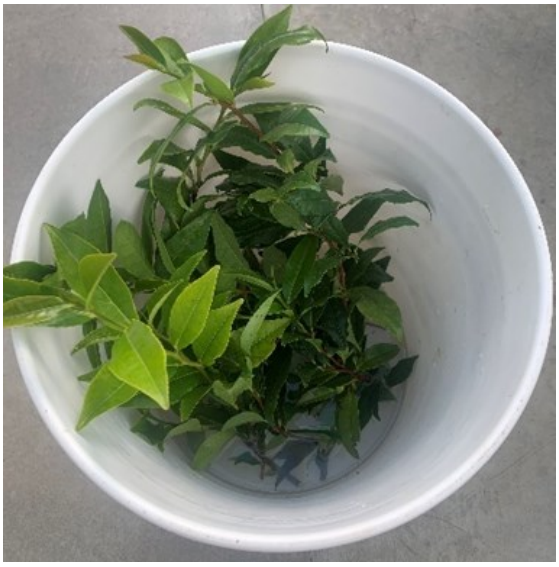

Fig. 3. Tea shoots placed in water before processing.

Fig. 4. Single-node, two-node, and three-node tea cuttings.

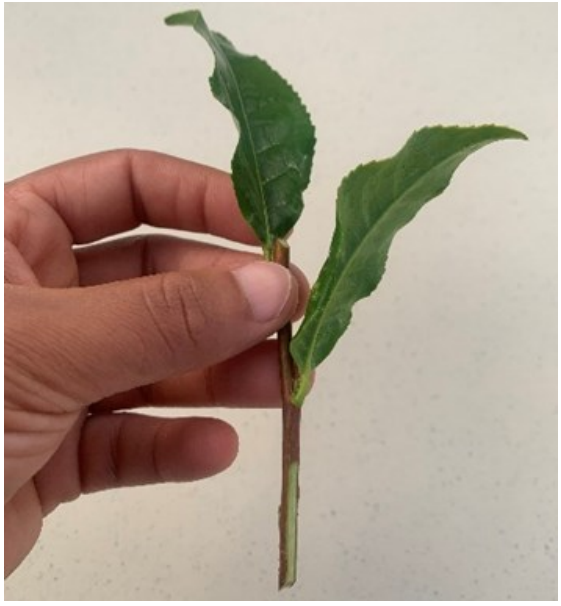

Fig. 5. Scoring of tea cuttings.

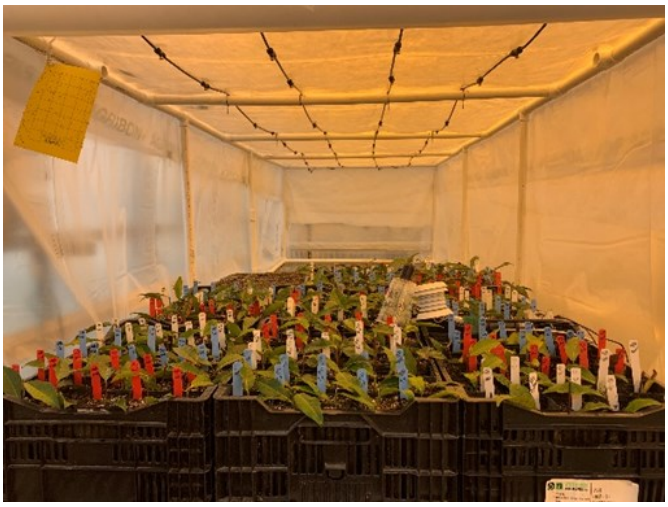

Fig. 6. Tea cuttings in the mist chamber.