



In-Tray Procedure for Rooting Tea Cuttings

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Tea (*Camellia sinensis*) can be propagated by seeds and by cuttings. Tea plants grown from seed may have characteristics that vary from their parents' (see Figure 1). For information on how to propagate tea by seeds, see "Germinating Tea Seeds (*Camellia sinensis*)" (SCM-17). Tea plants propagated by cuttings will be genetically identical to the mother plant, thereby maintaining quality and yield characteristics (Figure 2). This paper will discuss the propagation of tea by cuttings produced in a tray. For in-ground cutting production, see "In-Ground Procedure for Rooting Tea Cuttings" (SCM-23).

Mother Plants

Cuttings can be harvested from mother plants that have been selected and prepared for propagation. It is important to check that there are no seedlings growing among the mother plants, to ensure that only the desired variety will be propagated. To obtain high-quality cuttings, mother plants can be fertilized and irrigated like production plantings. Prior to harvesting cutting material, let the shoots grow out until the shoot tip goes dormant (*banji* stage) (Figure 3) and the shoot becomes hardened. The lateral buds might begin to swell, but the cutting should be made before any buds have fully sprouted.

How to Make the Cuttings

Care should be taken when harvesting the shoots to make sure that they do not dry out. Harvest the shoots with a pair of sharp, clean pruning shears and place the shoots into a bucket with water to prevent desiccation. After harvesting the shoots, all further cutting-preparation work should be done in the shade.



Figure 1. Tea plants grown from seeds. Note the variations in leaf color, shape, and size and in shoot size and growth habit.

The standard means of vegetative propagation of tea clones is a single-node cutting. Success rates can vary depending on the cultivar, season, rooting medium, and moisture and temperature of the rooting environment. It is of critical importance that the leaf remain healthy during root formation. Therefore, it is necessary to select cutting material with healthy leaves. Discard material with any signs of fungal disease (Figure 4); fungal diseases and certain other pests can thrive in the humid conditions under which cuttings are held. To make single-leaf cuttings, as shown in Figure 5, make slanted cuts using a sharp, clean pair of shears, and leave about 1.5 inch of woody stem below the node. Again, drop the cuttings into a container of water until they are ready to be planted. Discard the material near the tip of the shoot if the stem is still very pliable there. When you are ready to plant,



Figure 2. Plants grown from cuttings. Note the uniformity within each row.



Figure 3. The apical shoot is dormant and the wood has begun to harden.

dip the bottom cut end of the cutting into a commercial rooting powder or liquid containing 0.3 to 0.8% indolebutyric acid. Stick the cutting into the rooting medium. Be sure to push the cutting down into the medium so that the bud is just above the soil line (Figure 6). Leaves should not overlap.

Soil or Media

The medium used is also critical for successfully rooting tea cuttings. Tea cuttings can be rooted in soil or various potting media. The medium should have good drainage and be low in humus. Tea cuttings root best when the medium's pH is below 5.0. Materials such as perlite and vermiculite or mixtures of these are suitable. For information on rooting cuttings in soil, see "In-Ground Procedure for Rooting Tea Cuttings" SCM-23.



Figure 4. Discard material with signs of disease. It is critical to the success of the cutting to have a healthy leaf during root formation.



Figure 5. Making single-node leaf cuttings from a shoot. The pliable topmost section is removed, and slanted cuts are created using a sharp, clean pair of shears.

Rooting Environment

Sunlight

Tea cuttings are rooted under partially shaded conditions. Cuttings made outdoors will need 80 to 90 percent shade under Hawai'i conditions. This can be achieved by placing the cuttings under Saran shade fabric. Tea cuttings made in a greenhouse may be shaded less than this, depending on the amount of light transmitted into the greenhouse and the amount of heat that builds up.



Figure 6. Find the bud (red circles) and push cutting into planting medium until bud is just above the soil line.



Figure 7. A rooted cutting ready to be transplanted to a container.

Moisture

Though they need to be rooted in well-drained media, cuttings must never be allowed to dry out. Growers have successfully propagated tea cuttings using watering systems using precisely timed mistbox systems such as the one used by the USDA-ARS Tropical Plant Genetic Resource Management Unit, consisting of a misting room



Figure 8. Plants from cuttings ready to be transplanted to the field.

with fine overhead misting (20 seconds every 30 minutes around the clock). Electric mats provide bottom heat at 80° F. This is just one example of a watering regime that can help the tea cuttings to root; others have had success by simply watering by hand once or twice a day.

Growing Out the Plant

Rooting should occur within 3 to 4 months (Figure 7). The rooted cuttings can be transplanted into a 5-inch pot or other suitable container. Again, it is important that the medium be well drained. We have used a 1:1 (v/v) perlite and vermiculite mixture. The Tropical Plant Genetic Resource Management Unit have used a 1:1:1 mixture of perlite, vermiculite, and peat. These plants can be initially held at 50% shade and then gradually moved to full sun. They can be fertilized with a complete, slow-release fertilizer. From the time the cuttings are started to when the plant is ready to be planted into the ground (Figure 8) is typically about 1 year.

References

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