

Camellia Propagation and Production

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INTRODUCTION

Camellias are relatively easy to propagate and to grow. At Overlook Nurseries camellia cultivars of *C. japonica*, *C. sasanqua*, *C. xhiemalis*, and selected hybrids are propagated and grown in containers. The rate of growth of camellias compared to hollies and azaleas is slower, but the majestic beauty and grandeur of its flowers more than compensate for their slower growth rate.

PROPAGATION

Camellias are propagated by seeds, cuttings, and graftage. Camellia cultivars are heterozygous and do not breed true from seed. If seedlings are not worthy of selection for production for resale they are used for rootstock in grafting. Cuttings are the most common form of propagation and guarantees cultivars remain true. Grafting is used on camellia cultivars that are difficult to root by cuttings and/or have a poor root system.

Collection of Cuttings. Cutting wood for propagation is collected from a maintained stock block during September and October. We do not take any cuttings from containerized plants we plan to sell in the fall. Ideally terminal cuttings are recommended since they produce plants which branch more freely and grow faster than leafbud cuttings. A semihardwood cutting approximately 8 to 10 cm (3 to 4 in.) in length, firm with the wood green to light brown is desired. Cuttings collected from the stock block are gathered and prepared within a period of 1 h. Clippers are disinfected with Consan when collecting and preparing cuttings to help reduce potential disease problems.

Cutting Preparation. Cuttings are prepared under a covered shed on top of a polycoated table to reduce transmission of diseases. All cuttings are first soaked in a fungicide dip of Captan. The lower leaves are removed leaving at least three leaves on the top of the cutting. The remaining leaves are not reduced in size to avoid entry of pathogens and the terminal bud is pinched off. The cuttings are grouped into bundles of 25 and the ends are trimmed off.

Rooting Compounds. The bundled cuttings are dipped into a 10,000 ppm solution of IBA for 3 sec. The cuttings are then stuck in 6-cm (2 1/4-in.) rose pots one cutting per pot. Cuttings are stuck at a depth of 3 cm (1 in.). It is important not to stick cuttings too deep.

Medium. A medium of fine pine bark [1-cm (3/8-in.) screen size] with a trace of washed sand is used and provides good drainage and better control of water requirements. Amendments incorporated into the medium include the slow-release fertilizer — Nutricote 20N-7P₂O₅-10K₂O/Type 360 at 3.6 kg m⁻³ (6 lb yd⁻³), 7.1 kg m⁻³ (12 lb yd⁻³) of pelletized dolomitic lime, and 1.2 kg m⁻³ (2 lbs yd⁻³) of Gro & Sho Micro-ment (minor element package, Tri-State Plant Food, Dothan, Alabama).

Propagation Structures. Cuttings are rooted in greenhouses with 55% shade on raised benches under intermittent mist. Cuttings are misted for 30 sec at 20-min intervals between 3 h after sunrise and 3 h prior to sunset. This mist frequency is maintained for 2 weeks, and then reduced as the weather cools. All propagating houses are covered with polyethylene for winter protection and propane gas heaters are used in severe conditions.

Rooting. Most camellia cultivars are easy to root with a few exceptions. It is not unusual for us to have better than 90% rooting. Most cultivars take 3 to 5 months to develop adventitious roots — so patience is paramount.

Maintenance. After the cuttings are rooted, they are trimmed frequently with gasoline trimmers to increase lateral breaks. No herbicides are used, only hand weeding.

Problems. The major problem we experience in growing camellias is dieback which is caused by the fungus *Glomerella cingulata*. It is more prevalent in humid areas. We spray for dieback as needed and on the days we are pruning, the fungicides Cleary's 3336 or Dithane are applied. Some camellia cultivars are more susceptible to dieback than others and don't respond to treatment. Our most critical time for camellia dieback is the spring after liners have been transplanted to 3.8-liter (1-gal) containers. We do not transplant liners into larger containers than 3.8-liter (1-gal) because of dieback problems. Camellias are also susceptible to tea scale which produces unsightly white webs underneath the leaves and sometimes discoloration. Eradication and control is achieved with Oilicide and Supracide. Spider mites cause browning of camellias leaves. Control is maintained with Kelthane and Pentac.

Grafting. Grafting is used in the case of hard-to-propagate cultivars and ones that do not have good root systems. We graft in December and January and use rootstocks that we know are strong growing cultivars. For the purposes of grafting, plants that stay too wet do not callus well and usually disease problems occur at the graft union. Plants must be dried to be suitable for successful grafting. Hand select rootstock with a straight base. Prior to grafting, the rootstock is sprayed with Cleary's 3336 and Captan. Rootstocks are cut off 8 to 10 cm (3 to 4 in.) above the soil line. A vertical incision [no longer than 3 cm (1 in.)] is then made using a sharp grafting knife. The caliper of the rootstock should be 1 to 1.3 cm (3/8 to 1/2 in.) in diameter. Scion wood to be gathered needs to be 15 cm (6 in.) in length. Lower leaves are stripped away leaving at least three leaves at the top of the rootstock. Leaves are not reduced in size. After a Captan dip, scionwood is stored in plastic bags at 4C (40F) until used. They will store well for a number of weeks. Two incisions are to be made on the scionwood at the base. The first incision is 1.3 cm (1/2 in.) in length angling the incision toward the center of the scion. The second incision is just like the first, but on the opposite side. If done properly a wedge or a V-shape should be produced. The scion is then placed into the rootstock incision forming a cleft graft. Two scions are inserted matching the vascular cambium areas on the outside edges of the rootstock. The graft is not wrapped nor do they require any sealing. After grafting, the plants are sprayed again with Cleary's 3336 and Captan. The last step involves a Physan-dipped wax-coated paper cup [9 cm (3.5 in.) wide and 17 cm (6.5 in.) in length] used to cover the grafted area. A small quantity of sand is placed outside, around the base of the cup, to secure it. This provides the graft union area with a controlled disease

free greenhouse environment and high humidity. Within 3 to 4 weeks, callusing and graft union formation should occur. We like to keep the cup on the graft until a flush of growth is produced from the scionwood. When signs of new growth appear the cups are tilted (but not removed) to allow for air circulation and to aid in hardening off the graft. The cup will remain an additional week before removal. Producing a plant of suitable size for resale using the grafting technique will take from 2 to 2.5 years from the time of taking scionwood. But, the results are well worth the wait.

PRODUCTION

Medium. The container medium we use is 100% pine bark [2- to 5-cm (3/4- to 2-in.) screen size] which provides needed air to the roots and good drainage. With this medium we have totally eliminated root rot caused by *Phytophthora cinnamomi*. Camellias like a lot of irrigation water, but not to the point of drowning the root system. A soil mix with little to no air space is not recommended as it will cause root rot. Peat moss likewise is not recommended as it fills in the air spaces in the soil mix and reduces root aeration.

Growing Structures. Newly potted containerized plants are placed pot to pot in greenhouses under 55% shade on top of ground covers. Camellias usually can not tolerate full sun in the summer and are subject to scalding. All greenhouses are covered with polyethylene for winter protection and propane gas heaters are used in severe conditions. Older plants are spaced as needed.

Transplanting. All potting is done by hand under sheds. No potting machines are used as better control can be achieved with hand potting. We concentrate on potting all plants straight and not too deep as the roots need air. Our schedule for transplanting is shifting liners into 3.8-liter (1-gallon) containers after 1 year. We will grow the 3.8-liter (1-gal) containers for 2 years before transplanting into 11-liter (3-gal) containers. We do not sell 3.8-liter (1-gal) container plants and use them only for transplanting. We wait 2 years to transplant from a 3.8-liter (1-gal) to 11-liter (3-gal) container, as we want a well established plant with a good root system to improve its chances of surviving and thriving. A majority of the 11-liter (3-gal) container plants will be salable after 1 year and the others after a flush of growth the following spring. The 11-liter (3-gal) container plants are transplanted into 27-liter (7-gal) and 57-liter (15-gal) containers. The 27-liter (7-gal) containerized plants will be salable after one season and the 57-liter (15-gal) container plants after 2 years.

Fertilization. A medium rate of Nutricote 20N-7P₂O₅-10K₂O/Type 360 at 7.7 kg m⁻³ (13 lb yd⁻³), 7.1 kg m⁻³ (12 lbs yd⁻³) of pelletized dolomitic limestone, 1.2 kg m⁻³ (2 lb yd⁻³) of Gro & Sho Micro-ment (minor element package, Tri-State Plant Food, Dothan, Alabama), and 2.9 kg m⁻³ (4.8 lbs yd⁻³) of Talstar (fire ant control) are incorporated into the soil mix of all containers upon transplanting. A pH of 6.0 is desired. After transplanting all plants are topdressed in the spring with a medium rate of Gro & Sho 18N-6P₂O₅-10K₂O, then in the summer with a medium rate of Woodace 18N-5P₂O₅-10K₂O, and fertilized again in the fall with a low rate of Gro & Sho 18N-6P₂O₅-10K₂O.

Maintenance. Camellias are trimmed frequently (3 to 4 times a season) with gasoline trimmers and shears producing flushes of growth. Herbicides are used for weed control.

Problems. The problems remain the same as discussed under propagation. Dieback is the primary fungal problem, and scale and spider mites are the principal pests. All are chemically treated on an-as-needed basis.