# PROPAGATION AND LINER PRODUCTION AT JAMES NURSERY

MALCOLM JAMES

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James Nursery was begun in 1967 on a very small scale — approximately 16,000 liners per year. We now produce about 1 million liners a year, consisting of 22 cultivars of ornamentals. Of this number, 50% are *Photinia* × 'Fraseri'.

We operate with three full-time workers — Malcolm and Edward James, and Malcolm's son, Jonathan. Other family members work when needed. We hire six high school students for approximately 7 weeks in May and June, when time is of the utmost importance in order to have all our cuttings in by July 1, after which the rooting response is not as good.

We have been asked what is the most important part of liner production. The correct answer would be, "All of them." You must begin with a good stock plant, for you cannot produce a good liner from weak or diseased stock. On the other hand, if you have the best cuttings available but fail to furnish a good rooting medium or watering program, you will still have a failure.

Our physical layout consists of two shade-houses 196 ft. by 108 ft. by 8 ft. Within each section are 16 rows of PVC pipe with Flora-Mist nozzles on each row. We control each house by a 24-hr. clock, and each section within the house is controlled by a 5-min clock that operates a solenoid valve. Each section holds 32,000 liners. Each row of 16 nozzles is controlled by a hand-operated valve to be used in case of clogging or other problems in the line.

The houses are constructed by using 4 × 4's placed on 12-ft centers. Between each row of posts we build 2 beds 58 in. wide. This leaves 24 in. for a work aisle. We place 2 rows of PVC pipe 28 in. apart with a 20 in. riser every 36 in. Our houses are covered with a 47% shade cloth. Originally we used lath to cover but find it creates drip problems when it rains. The houses are constructed so that we can use pecan equipment for spraying. We get very thorough coverage by moving through the house only one time.

We grow all our own stock plants in order to insure that we start out with a good, strong, disease-free cutting. Each year we cut our stock plants back to within 2 in. of the previous year's cut. This helps maintain the production of

young, vigorous growth for propagation. We take our cuttings about 5 to 6 in. long and dip them in a fungicide. We then strip the lower leaves and dip the stems in a 0.1% IBA solution for photinia and 0.3% for junipers. The only wounding is from stripping the leaves. They are then ready for sticking directly into 3-in. pots. We use S-300 Lerio containers. Cuttings are stuck within 30 min. of the time they were cut.

We place all our pots directly on the ground. Each bed will hold 21 pots across. Since the workers cannot reach the entire distance across the bed, we place pots in the back half, fill with mix, which is misted every 5 min. overnight to secure a well-moistened medium. We then top with more mix, "firm" it so that the cuttings will stand without being blown over, and stick the cuttings in this back half. The whole procedure is repeated on the front half.

Our mix for photinia is 1 part peat to 1 part perlite with approximately 9 $ft^3$ coarse sand for each 2 $yds^3$ of mix. We use coarse sand to give us better drainage. We add 15 lbs of limestone and 10 lbs Pro-Start 16-6-6 fertilizer per $yd^3$.

We use a mix of 3 parts finely ground bark, 1 part sand with 15 lbs limestone, and 10 lbs Pro-Start 16-6-6 fertilizer per $yd^3$ for all our other cuttings.

Our mist is started before the cuttings are stuck to assure that the cuttings never dry out. The misting cycle usually begins at 9 am and stops at 7 pm. This will vary depending upon the weather. Even though we have an automatic system, it is important that someone check 2 or 3 times every day to insure that it is operating properly.

We stick junipers in January or February. Our dwarf yaupon (*Ilex vomitoria* 'Schillings Dwarf') are stuck in February using bottom heat supplied by a 30-gal water heater. The water is circulated through ½-inch PVC pipe by a small pump (1/25 hp). This house is 12 ft. wide by 48 ft. long with 4 rows of pipe, 16 nozzles per row.

After our cuttings have rooted, we apply fertilizer (Sta-Green Super Nursery 20-5-10) at 1 lb/100 $ft^2$. We follow a spray program of applying a fungicide and insecticide combination every 3 weeks. We keep a close tab on all plants, and if we note a disease or insect problem developing, we spray the entire nursery.

We get from 95 to 100% "take" on all our liners. Our spray program includes Benlate, Du-ter, the herbicides Roundup and Paraquat, and other pesticides that are recommended for specific problems.*

After our plants have grown to a desirable size, they are held in pine-shaded areas until sold. They are then shipped, packed in wax-coated boxes, by customer truck.

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*Benlate - benomyl, DuPont
Du-ter - triphenyltin hydroxide; Duphar, Thompson-Hayward
Roundup - glyphosate, Monsanto
Paraquat - paraquat, Chevron

## PROPAGATION AND CULTURE OF *PIERIS JAPONICA* CULTIVARS

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*Pieris japonica* is a broad-leaved evergreen shrub of neat, compact habit, valued in the landscape. It is native to eastern Asia and was introduced into culture around 1870. Most *Pieris japonica* cultivars are of slow to moderate growth rate, seldom exceeding 6 ft. in height and width after many years of growth. *Pieris japonica* offers attractive dark green leaves with a prolific display of flowers in early spring that range in color from white, pink, pink and white bicolor, to red. The young foliage is highly colored with some selections having a most brilliant red new growth. Leaves are alternate, from 1 to 3½ in., with a slightly toothed margin. Flower buds are formed in late summer and are held in terminal, drooping clusters 5 inches long. When open, the flowers resemble those of lily-of-the-valley.

**Propagation.** *Pieris japonica* can be successfully propagated from seed and by cuttings. Seed can be collected as soon as it is ripe. The seed is sown in flats of peat from late summer through early spring.

We propagate *Pieris japonica* from softwood and greenwood cuttings. The cuttings are collected in the early morning hours during July and August from plants growing in production blocks. The terminal growth of new wood is preferred. Cuttings are trimmed to 4 to 5 in. in length. Lower leaves are easily stripped by hand, leaving only the uppermost 3 to 6 leaves. We prefer to use a single wound but are not at all convinced that wounding is a necessity.