

## Accelerated Japanese Maple Understock Production<sup>®</sup>

Jennifer Wells and Jerry Lavallee

Imperial Nurseries, Inc., 90 Salmon Brook Street, Granby, Connecticut. 06035 U.S.A.

### WHY THIS PROGRAM IS IMPORTANT TO US

Due to production increases and understock availability, we needed to develop a program to supplement our outside suppliers in order to maintain a consistent quality of *Acer palmatum* understock in the desired quantities. Our goal for this program is to grow consistently disease-free understock in quantities that can meet our production numbers. In the past we had grown understock in open beds. Seeds germinated over a 2-year period, then were lifted and potted when they reached a usable size. However, very few reached a desirable height for tall grafting. They would grow 3 to 4 inches the 1st year, then start branching the 2nd year. This method of production was abandoned due to this issue and to production decreases. Our new method allows us to produce understock where at least 80% of them are usable for tall grafts.

Three years ago, we started experimenting with a plug-style production of understock of Japanese maple. The 1st year, the crop failed miserably due to over-misting for too long a period of time, washout (the plants were in uncovered hoop houses), and lack of detection of leafhoppers. Leafhoppers can and did kill this crop of young Japanese maple seedlings in just a few days. The 2nd year, we used less mist, a covered greenhouse (with vented sides), and sticky cards to detect the leafhoppers. We achieved our initial goal of growing understock to a size that we could use for low grafting. We have continued to tweak the sowing time to maximize the number of warm sunny days the plants have before they are potted and shut down for the winter. By doing this, we can now grow approximately 80% to a height that can be used for our taller weeping grafts, within a 1-year period.

### UNDERSTOCK PRODUCTION

**Preparation of Seed.** *Acer palmatum* small seed is ordered in fall. We prefer dewinged seed because it is less apt to develop fungus as it is stratified. Seed is received in late December and stored dry at 40 °F in a cooler until 8 weeks prior to sowing. At 8 weeks prior to sowing, we start stratification. Each layer of paper is moistened as it is put on, any residual water is poured off. Seed is spread on paper in a single layer. Having three layers of paper between the seed and perlite helps keep the two from mixing during the removal of seed. After the flat is prepared, it is put in a plastic bag, taped shut, labeled, and put back in the cooler. Flats are checked biweekly for moisture content. When the radical starts to emerge from the seed, they are ready to be sown.

**Sowing the Seed.** We aim to begin sowing the 1st week of April, provided the radicles have started to emerge. Seeds are sown in a peat, bark, perlite, styrofoam combination that we make in-house. A 72-cell, SpinOut<sup>®</sup> treated tray is used, the cells being 1½ inches × 3 inches. Seeds are hand sown by placing a single seed in each cell and gently pressing down on it with a finger to create a dimple. Perlite is then spread evenly on top of trays. Trays are lightly watered to keep the perlite from blowing off in transit to the greenhouse and then thoroughly watered-in after

being put down. Trays are placed in an unheated, covered greenhouse. There is no plastic or fabric under the trays. We find that the seedlings rooting through the trays into the ground results in accelerated growth.

**Care of Seedlings.** Trays are misted often enough to keep the perlite moist so as a crust does not form. Usually misting 2 to 3 times per day is adequate. During warm, sunny days, doors are opened for ventilation. In less than 1 week, the seeds germinate. Some germination will occur after seedlings are weaned off mist. Sticky cards are placed among the seedlings to help us find detrimental insects quickly, specifically the leafhopper. You must be diligent about checking cards and spraying for this insect when the first leafhopper is seen. We bait for mice on a regular basis.

Plants are first fertigated after the second set of leaves appears (in approximately 4 weeks) with a liquid 9N–45P–15K. Each week thereafter, seedlings are fertigated with 20N–20P–20K (476 ppm N), occasionally alternating with a 15N–5P–15K calcium-magnesium (we use Excel – 346 ppm N). When temperatures are consistently too high to keep the house adequately cool with only doors opened, we split the plastic so as that the sides are vented but the top and bottom are still covered. We do this for two reasons. The first reason is to prevent washouts from heavy rain. Secondly, by keeping rain off the plants, we can fertilize more often. In late July, the plastic is removed and a 30% shade is put over the house. This year, we had a very cloudy and rainy summer in Connecticut. We chose not to remove plastic until August and did not put the shade over the crop.

Plants that have grown to the desired height are potted into Tree Band pots in mid August to early September. We have learned to have two height grades. This makes it easier to meet the different irrigation needs. The first big year of production we fertilized immediately after potting with Excel and placed trays under 30% shade in an open hoop-house. Due to a later potting date this year, we chose not to fertilize or shade. However, our mix does have a starter charge in it already. Plants root to the bottoms of the Tree Band pots by early September. Plants can be overwintered with minimal or no heat. However, we have noticed that there is very little winter dieback when plants are kept in minimally heated houses, about 34 °F.

### **Chronology of Growth.**

- Week 1 (April 1): Some sprouting.
- Week 2 (April 7): Most sprouting complete.
- Week 4 (May 1): Seedlings have second set of leaves.
- Week 13 (June 25): Seedlings are 5 to 6½ inches tall.
- Week 15 (July 9): Seedlings 11 to 12 inches tall.
- Week 18 (July 28): Seedlings 18 inches tall.
- Week 22 (August 27): Seedlings 28 inches tall.

### **GRAFTING**

Approximately 25% of the current year's seedlings are of grafting caliper that same winter at a height of 12-15 inches. Rooting is sufficient to support the grafting the first winter so can use these if we run short of older understock. Those that are not of adequate caliper for that first winter of grafting, are ready for grafting that following summer.