

## How We Graft Japanese Maples®

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### INTRODUCTION

My name is Larry Walsh and I have worked at Prides Comer Farms in Lebanon, Connecticut for exactly 12 years as of this week. I have been involved in running our grafting program at Prides Comer Farms since 2003. In 2003 we grafted a total of 8,800 plants with a total of 13 taxa of plants, eight of them being *Acer* taxa. In 2011 we grafted over 15 taxa of *Acer* and a total of more than 30 different plants for a combined total of 31,000+ actual grafts. The most popular plants we do by grafting are *A. palmatum* 'Bloodgood', *A. palmatum* var. *dissectum* 'Tamukeyama', *Pinus strobus* 'Soft Touch', and *Cornus kousa* 'Wolf Eyes'. We also graft some selections of *Hamamelis*, *Magnolia*, and *Larix* that are much harder to do and we limit these to just a few thousand or so every year.

### THE GRAFTING PROCESS

**Starting the Process.** We buy in our understock for grafting in the spring and fall. The *P. strobus* will come in during May in a 51 cell plug and is then typically transplanted into a larger pot size in June. Our *Acer* and *C. kousa* understocks arrive as bare-root understocks in October and November after they are graded and dug from field-grown beds. These are potted up immediately after arrival within a week or so. Evergreen Nursery supplies our *P. strobus* and Heritage Seedlings supplies our *Acer* and other taxa such as *Magnolia*. Akerboom Nurseries supplies our *C. kousa* and some other species such as *Hamamelis*. We try to stick with an understock that is at least  $\frac{3}{16}$ -in. to  $\frac{1}{4}$ -in. caliper on all taxa we purchase. Anything less in caliper size will be too small to graft onto for the coming grafting year.

**Potting the Understock.** We use the same soil mix that we use for our container trees and shrubs in the nursery that we would do by grafting. Our container soil mix consists of 72 pine bark : 17 peat moss : 5.5 sand : 5.5 coarse perlite (by volume). We also add some Micromax®, RootShield®, lime, and some Harrell's 15N-6P-12K at half the normal rate that we normally use during the propagation season during the summer months. We predominantly use three different pot sizes:

- 1) A smaller 3.25 in. by 3.5 in. pot for small caliper plants.
- 2) A 3.5 in. by 5 in. pot for bareroot material, like  $\frac{1}{4}$ -in. caliper *Acer* understocks that we get in.
- 3) We also use a quart pot that we like to use for our biggest bare-root plants like *C. kousa* and *M. kobus* that will root quickly and give us a well rooted plant by the end of the springtime or early summer. This quart pot is also 5 in. in depth. Some taxa just cannot fit into the smaller pot sizes, and we don't struggle with potting them and cutting off too much of their root systems.

**The Grafting House.** We started to use a Jaderloon greenhouse structure for our grafting program in 2003. We only used one half of a bay with only two benches in 2003 and now we have expanded to two full bays with up to eight full benches

being used with an additional four that can be utilized for grafting. We are now able to break the house into two sections by rolling down a poly wall in the center of the house to seal off the back half from the front half benches. We can keep the back half very cool and the plants dormant from November to January or right up until they are grafted during the January and February time period. This area is kept at 60–65 °F or less during the daytime and above 32 °F during the nighttime. We can use the roll-up sides on the greenhouse during warm days to keep it cooler and oil heaters to keep it from freezing at night. We use bottom heat in the 2 weeks prior to grafting a taxon to activate and awaken the root systems to stimulate some white root activity on them before they are brought to the front benches for grafting. Trying to keep the other benches as dormant as possible also, without the plants waking up too much before they are grafted. Not an easy thing to do when you are turning on the heaters to warm up the front bays of the Jaderloon structure.

**Grafting Techniques.** The techniques and tools that we utilize to make us more successful with the three major groups we graft, *Acer*, *Pinus*, and *Cornus*, will next be presented.

- We use a folding grafting knife by Victorinex.
- Medical tape is used for the grafters to protect their fingers.
- Buddy tape, rubber bands, and grafting wax are used for our side veneer grafts.
- A crockpot to maintain the wax at a constant temperature, along with small 1- to 2-in. paint brushes for applying the wax.
- Peat moss on top of the soil layer inside the tents on *P. strobus* grafts to keep the humidity high.
- A 12 in. measuring stick to maintain the proper height and keep them uniform for all *A. palmatum* var. *dissectum* selections.
- A side veneer graft is used for all *A. palmatum* selections at 10–12 in. for all *dissectum* selections and 2–3 in. for all our non-*A. palmatum* var. *dissectum* cultivars.
- *Pinus* and *Cornus* will be grafted at 2–3 in. except for *Cornus* which can be grafted at 6 in. on very straight understock to create a taller plant much faster.
- All plants are then placed inside a tenting system after they are grafted.

**Inside the Tents.** We use a couple different sizes and types for our tenting system. These include:

- A 3-mil 55% white poly for our *Pinus* to keep it cooler, keep a higher humidity, and more constant at night.
- A clear 3-mil poly for most tents.
- A new tent with clear 6-mil poly for a more permanent structure with roll-up sides that we will have for many years to come.

The tents are kept closed for the first 2 weeks to maintain high humidity levels and promote good healing of the grafted unions. Maintain a temperature of 80–90 °F during the daytime and at least 55–60 °F at nighttime for the air and a constant temperature of 68–72 °F for the soil temperature. Watering in the tents is usually started after the initial 2-week period. Only putting some water on the benches to maintain high humidity levels in the mornings and then again in the

afternoon before we leave. Do not let plants dry out; this will dramatically reduce percentage take on almost all grafts. Drying creates a wicking effect on the grafting union. Venting to control the temperatures begins, as the grafts leaf out. Venting can reduce pressure from leaf diseases and maintains good airflow throughout the tent. Keeping it in the 80 °F range will make a huge difference on quality. The bottom heat also increases humidity levels so needs to be watched and backed off a bit at times. Using temperature and humidity digital meters will increase your awareness for each bench. We also use different sized watering nozzles for the different sized plants on the benches to help maintain the right soil moisture.

**Future Grafting Plans.** Goals for coming years include:

- Having all tents with roll-up sides with 6-mil clear poly for longer lasting and more permanent structures.
- Using a stir plate to keep the grafting wax at a constant temperature throughout the day so as not to “burn” the graft union and to apply the right amount to seal the wound.
- Growing our own understock from small plugs in the springtime to have for grafting the following winter.
- Using Jiffy® pots to get a more expansive and well-rooted understock and reducing the need to use plastic pots and trays.
- Lastly and the most importantly to continue and improve upon our grafting lean flow system that we implemented this year and promoting it to all our new grafting personnel during the coming winter.