

Propagation of New Japanese Maples Cultivars

Richard P. Wolff

Red Maple Nurseries, 219 N. Middletown Road, Media, Pennsylvania 19063

How do we come by the selection of new and distinctively different cultivars of Japanese maples? More importantly, how do we test these new cultivars to be absolutely certain that they are winter hardy, heat or drought resistant before we name and introduce to commercial propagators. Let us take a close look at some of these answers.

THE SELECTION PROCESS

Our Nursery in Media, Pennsylvania has dozens of rare and unusual Japanese maples covering about one acre with another one-half acre of rare and unusual trees in our private arboretum. Most of these trees are 20 to 30 years old. As you may or may not know, Japanese maples have very small flowers ranging from 1/8 to 1/16 in. An abundance of flowers can be found on most trees in the spring and in years of stress. With active insect and honey bee activity (we keep honey bees for this purpose), all of these older trees are cross pollinated. In the fall, thousands of seeds fall to the ground and by the next spring, they become sturdy little volunteers with a great proliferation of leaf sizes, shapes and colors.

It has been a yearly enjoyment of my wife, Carolyn, and myself to study this carpet of thousands and thousands of tiny volunteers. We use little wire marker flags to put alongside the most unusual plants that exhibit spectacular leaf color and vigorous growth habit. This marking is done in early June with lifting and potting completed by the end of June.

Usually 300 to 500 trees are lifted and tagged using the following code: series 168, year 91, tree number 25. Tagging is done with aluminum tags and logged into a log book for future observation. Periodic evaluation and recording takes place. This process is extremely time consuming but equally important in tracking a potential new cultivar.

The weeding out process now takes place and over the next two years, we may retain only 5 to 10 trees out of the original 500. You may have observed that summer high temperatures of over 90 to 100°F coupled with a prolonged drought, have a marked tendency to cause most Japanese maples to lose their lovely spring color. Under the above conditions, they soon exhibit a marked tendency to green.

We here at Red Maple Nurseries have searched for a tree that would hold its red color regardless of heat or drought. Thus, the cultivar Moonfire was discovered, tested and released to the commercial market. We estimate that over 500 growers are growing 'Moonfire' here in USA, Holland, Canada and England.

'Moonfire' is a splendid color addition for Japanese maple growers. 'Moonfire' is, however, a slow grower and lacks the strong growth of 'Bloodgood'.

Our search for a more vigorous plant that would hold its red color regardless of heat or drought intensified. We built six aluminum frames under high shade and in the fall, scattered and planted many thousands of seed taken from a variety of our large red *Acer palmatum* trees.

In spring, these seeds germinated and a profusion of color resulted. We will now pay particular attention to the red leaf color under shade. How long would this

intense red color hold up? Would it fade out in high temperatures and drought conditions of 90 to 100°F?

After several years of testing and many great disappointments, finally a new little tree emerged that showed great promise. The color seemed to increase under high temperatures. Placed side by side with 'Bloodgood', the new cultivar showed no fading or greening. We have named this tree 'Emperor One'.

TECHNICAL ASPECTS OF PROPAGATION

Acer palmatum 'Emperor One' was a seedling selection found by my father, Donald G. Wolff. This tree has been under close observation and experimental testing for the last 30 years. Color is a high-intensity dark red with little or no color fade out in extremely high temperatures. This year's summer temperatures with many, many days ranging from 90 to 100°F and considerable drought, proved conclusively the value of this new fade proof Japanese maple. It is drought resistant and exhibits excellent growth characteristics which are superior to 'Bloodgood' that has been the standard of the trade for many years. This cultivar winter grafts very well and is being produced in quantity by summer cuttings. I am a firm believer that a new cultivar should be thoroughly tested 8 to 10 years before release. 'Emperor One' should be released this coming year.

Acer palmatum 'Hubb's Red Willow', named for Elwood Hubbs, an outstanding grower from Riverton, N.J. A delightful tree with long, red willow-like leaves which holds its color well into the season. Color retention is equal to that of 'Bloodgood'. 'Hubb's Red Willow' has a fastigate quality but can be easily pruned (in the winter) to present a fuller profile.

'Hubb's Red Willow' is relatively easy to propagate both by winter grafting and summer cuttings. It is drought resistant and quite winter hardy in the New England states and Great Lakes region. Being quite heat tolerant, it can be grown as far south as the Carolinas. This cultivar has been on test at our Snowdenville Nursery for 10 years.

Acer palmatum 'Green Mist' a seedling selection found in 1949 by my uncle, Prof. William H. Wolff, a professor of horticulture. Over 500 nurseries are growing 'Green Mist'. As the name implies, it has a beautiful light green color in spring with a pleasing green canopy somewhat resembling the cultivar Waterfall. The outstanding characteristic of 'Green Mist' is its beautiful fall coloration of bright chrome yellow leaves mixed with intense red leaves and some green leaves on the underside. Growth habit is sturdy, developing pendulous branching to the ground. This tree is winter hardy in the New England states and Great Lakes region. It is drought resistant and heat resistant and can be grown as far south as the Carolinas. 'Green Mist' can be rooted, but it is more desirable to graft the tree 6 to 10 in. high on the rootstock for better appearance.

PROPAGATION BY GRAFTING

Propagation of 'Red Willow', 'Emperor One' and 'Green Mist' by winter grafting is easily accomplished using the same rootstock for the three cultivars and dozens of other cultivars we produce. Rootstocks are seed grown *A. palmatum* (small seed) or referred to as "littleleaf". We have gone to a 4 to 5 in. deep square plastic pot for larger and stronger understock. Our findings show that you can get the grafted tree off to a superior start by using a larger rootstock. Rootstocks are of extreme

importance for the economics of production with fewer losses on the bench and earlier line-out time.

It seems there are as many potting mixes as there are growers. Basically, we use 1/3 fine ground pine bark, 1/3 good garden loam pH 6.5, and 1/3 mix consisting of sand and perlite to which is added some dolomitic limestone to adjust the pH.

Rootstocks are lifted and potted ideally in March which gives the entire spring and summer for growing and adjusting to the pot. Rootstocks should be placed in partial shade (30%) and attention should be given to proper watering and fertilizing. A balanced liquid fertilizer such as Peters 20-20-20 is used. We fertilize four times a year being careful to discontinue all fertilizing after August 15th. This prevents the trees from pushing new growth too late in the season and prevents winter damage or possible death.

Rootstocks should be dormant by mid-November when they are brought into the propagating house which has a constant temperature of 60°F maintained both day and night. By January 1st, the trees are breaking dormancy and new white roots have formed on the root system. This should signal that it is time to graft. All tools and the entire grafting area must be frequently sterilized using a disinfectant, sanitizer and fungicide, such as Physan 20. A grafter's hands must be kept clean to prevent pathogens from entering the graft union. This is a common error by new and inexperienced grafters. Consider your grafting room as a hospital operating room with maximum sanitary conditions and plenty of good, diffused lighting. Grafting knives must be razor sharp. They are sharpened by using a good stone and leather strap for final sharpening. We use a goodyear rubber strip to bind the scion to the rootstock. We find a side approach graft is the best. A tip on binding—not too tight—not too loose, but firm and keep the rubber strip flat while binding. We use a small cut-down paper clip to aid in locking up the binding strip by pulling it through and under the last binding. Grafted stocks can be dipped in wax at 140°F or the union plunged under perlite or even sand as some European grafters do. New foliage will appear in 30 days and now attention must be given to watering. We remove all grafts from the greenhouse by the first of June—putting them in about 40% shade and later in full sun. Light liquid fertilizing (using Peters 20-20-20) is given when taken out of the propagating house and again in June and July. No fertilizer should be given after August 15th as mentioned in growing understocks.

By mid-November, we bring the trees into an underground storage cell such as a root cellar. Winter protection requirements include adequate ventilation and watering as needed; light is not necessary. Weekly inspections for fungus and mice are necessary. We use Ropel for mice and Captan for fungus—other good fungicidal drenches are equally as good. Plants are removed by late April or early May. Trees are either planted out as field liners or preferably grown on for one year (in the original grafting pot) and lined out the following year. Early frost can be dangerous so use constant vigilance for temperature changes.

PROPAGATION BY CUTTINGS

Our experience with rooting cuttings goes back some 30 years. We had many failures before analysis of failures produced success. Cutting wood is always taken from a well hydrated tree. You are wasting your time to take wood from a dehydrated tree. We gather our large cutting wood very early in the morning (5:00 a.m. to 10:00 a.m.) and place it in a large styrofoam container in layers of ice.

Cutting wood collection in eastern Pennsylvania starts on June 10th. Our potting mix is pine bark, peat moss, perlite mix or commercial pro-mix and the pots should be filled in advance and watered with a surfactant such as Aqua Gro to be certain they are wet.

Hormone liquid dip treatment using one of several commercial root inducing substances containing indolebutyric acid and naphthaleneacetic acid, such as in Dip-N-Grow. Our dip treatment consists of one part hormone to six parts of water. It is important to have a tiny amount of surfactant in the dip to assure good coverage of the cutting when dipping for 3 to 5 sec. Flats of cuttings go immediately to the cutting propagation room where a temperature of 70 to 85°F is maintained with good air circulation. A high pressure fog system is good, but you must avoid too much water going into the pot. Try to maintain 95 to 100% humidity in your rooting room.

Humidity is reduced when the cuttings are well rooted and moved to the outside. Rooted cuttings must be in 50% shade for the balance of the summer. As with new grafts, they are moved into our underground winter storage cell and treated identically as the new grafts with the same precautions. Rooted cuttings are fertilized with a dilute solution of Peters 20-20-20 three times after coming from the rooting house but no fertilizer later than August 15th as with the grafted trees. In May of the second year cuttings are lined out, fertilized and cultivated. Ronstar, Surflan and Devrinol can be used as pre-emergence weed killers but consult and read the label for concentrations.

PROPAGATION BY SEED

Seed is picked in early October or before the nocturnal gales blow it away. It is usually planted in specially prepared seed beds and covered 1/4 in. with bed mix and 1-1/2 in. with white pine needles to firm it in. Beds are in 70% shade. Before sowing seed, it is dipped in ropel to prevent mice, birds and squirrels from eating it. The seed bed mix is 50% fine pine bark, 25% good loam, 13% sand and 12% perlite. We pick only *A. palmatum* "Littleleaf" (small seeded) for rootstock. After 2 years in the seed bed the rootstock is ready for potting as previously outlined.