

Strange names make selling a plant difficult and I have a story to tell you that points that out. Some time back we obtained one plant of a small sedum from Bailey's Nursery. We did not and they did not know the name of the plant. We propagated it, sold it as 'Bailey's', and sold 20,000 to 30,000 per year. Someone came along and told us what it was. It came from Germany and had a name nobody knew and no one could pronounce in our catalogue. For the next few years we sold only a few thousand plants with the new name. We then changed it back to the original name and again sold 20,000 to 30,000 plants.

ACER × FREEMANII—A SOURCE FOR NEW SHADE TREE SELECTIONS

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Two commonly planted maples in the U.S. Midwestern landscape are the red maple, *Acer rubrum*, and the silver maple, *A. saccharinum*. Many selections have been made from each species (1). A large number of red maple selections exhibit consistent, attractive fall coloration and predictable growth form. Most silver maple selections feature a narrow growth form and deeply dissected leaves. Despite selection efforts, both maples encounter problems in certain Chicago landscape situations.

Red maple grows best in locations with good quality soil and adequate moisture. When transplanted into highly disturbed soils typical of new construction sites in the Chicago area, red maple usually performs poorly. These soils are alkaline, with pH levels often above 7.4, and they also possess a high bulk density because of their clay content. Planted in these conditions, red maple is slow to establish and often succumbs to stress-related problems. Plants which survive long enough to become established often exhibit alkaline soil-induced chlorosis.

Silver maple is more tolerant of adverse soil conditions associated with recent construction. Unfortunately, it can be an unkempt and weedy tree, with weak branches prone to ice-breakage. Large numbers of seeds and seedlings are often produced, requiring additional maintenance. Aesthetically it lacks the colorful flowers, fruits, autumn foliage, and bark of the red maple.

The attributes and problems characteristic of each of these species should be a guide for future plant selection. Hybrids of the red and silver maple could combine the desirable aesthetic features

of the red maple with the broader environmental adaptability and fast growth rate of the silver maple. Hybrids might exhibit, for example:

- 1) greater tolerance of alkaline soils than that of red maple
- 2) greater drought tolerance than that of red maple
- 3) stronger branch attachment and wood than that of silver maple
- 4) better fall color than that of silver maple
- 5) faster rate of growth than red maple and slower rate of growth than silver maple
- 6) no seed production on staminate (male) plants
- 7) a commercially feasible propagation method through cuttings or tissue culture, thus avoiding the potential problem of delayed graft failure.

A hybrid between these two species has been taxonomically recognized and is called Freeman maple, *Acer* × *freemanii* (5). The hybrid is named after Oliver M. Freeman, a plant breeder with the United States Department of Agriculture in Washington, D.C., who successfully crossed the species in 1933 (3).

Spontaneous hybrid plants have been identified by researchers and horticulturists in several areas of the United States. William Ellis, while conducting research for his Ph.D. dissertation in 1963, cited 29 specimens of apparent hybrid material collected from New Brunswick, Canada, to southwestern Wisconsin, and southward to southern Indiana near the Ohio River (2). The native ranges of both parent species overlap appreciably east of the Mississippi River. Based on Ellis' work, the southern limit of the hybrid is southern Indiana. Dr. George Ware, Dendrologist, Morton Arboretum, Lisle, Illinois, thinks the southern limit of the hybrid is the result of different flowering periods of the two parents in the southern portion of their range (personal communication).

Because the Freeman maple is of hybrid origin, the potential for variation among individual trees is great. Since the hybrid trees and the two parent species could grow together in the same area, the opportunity for backcrossing is also increased. This is known as introgression, and can lead to a hybrid population with considerable variation (4).

IDENTIFYING HYBRID TREES

Dr. Edward Hasselkus, Professor of Horticulture, University of Wisconsin—Madison, notes the following characteristics in hybrid trees he has observed: the form is taller than broad; the leaves are five-lobed; the bark on young trees is light gray; and the rate of growth is slower than silver maple but several times faster than red maple (personal communication). Fall coloration can vary greatly

on individual trees, ranging from an attractive crimson to a poor yellow-green.

Outlined below are different characteristics useful in identifying hybrid trees (Table 1). Because the Freeman maple is so

Table 1. Comparison of different identification characteristics among red, freeman, and silver maples.

| RED MAPLE | FREEMAN MAPLE | SILVER MAPLE |
|---|--|---|
| BARK-young tree light gray long persistent | light gray short to long persistent | light gray short persistent |
| BARK-mature tree black or dark brown small plates | black to brown exfoliating on the trunks of some older trees | dark brown exfoliating on the trunks and larger branches of older trees |
| BRANCHING—young trees ascending | ascending | ascending to horizontal |
| BRANCHING—mature trees horizontal | ascending | becoming decur- rent and pendulous |
| FORM: conical to oval, occasion- ally columnar | narrow to broad-oval | broad-oval to globose |
| LEAVES— # of lobes usually 3, sometimes 5 with basal pair much smaller than middle lobe | 5, the middle lobe occa- sionally 3-lobed | 5, the middle lobe usually 3-lobed |
| LEAVES—sinuses straight or slightly convex irregularly toothed to base of sinus | sides concave, rarely straight, irregularly toothed, may or may not be toothed to base of sinus | concave, entire, no serration in sinuses |
| FRUIT—samara size small, ¾ in. long | intermediate | large, 1⅓ to 2⅓ in. |
| FRUIT—length of pedicel long, 2 to 3 in. | intermediate | short, 1½ in. or less |
| FALL COLORATION yellow to brilliant red | variable yellow to crimson, sometimes mixed with yellow and green | yellow-green |
| ODOR OF SCRATCHED TWIG no odor | intermediate; odor absent on some; present on others, usually not as strong as silver maple | strong pungent odor |
| SUSCEPTIBILITY TO POTATO LEAF HOPPER (stunting of mid-summer terminal growth: data from Lisle, Illinois) | | |
| Susceptible | intermediate | not susceptible |

variable, it is difficult to give precise measurements for the identifying characteristics, but most are generally intermediate between that of red and silver maple.

CULTIVARS

The usefulness of Freeman maple selections has already been recognized by some nurserymen. Several cultivars are currently being grown by nurseries, although only a few of these are formally recognized as being hybrids. According to Hasselkus, several cultivars currently being grown as selections of red or silver maple are really hybrids.

Outlined below are cultivars currently being included under Freeman maple and those selections Hasselkus (personal communication) also attributes to this hybrid. Along with the cultivar name, a brief description is included describing the plant's origin and growth characteristics. Note that the characteristics are similar to those described earlier for the Freeman maple.

1) *Acer × freemanii* cultivars:

'Autumn Blaze'. Original tree believed to be from Ohio. Selected by Glenn Jeffers, Fostoria, OH. Upright-narrow form, with rate of growth medium to fast. Leaves 5-lobed, more closely resembling silver than red maple. Fall color in Madison, WI orange-red. Rated by Hasselkus as the best fall color of available *A. × freemanii* selections. Flowers believed to be staminate.

'Autumn Fantasy'. Original tree from central Illinois. Selected by Willett Wandell of Discov-tree Research and Development, Inc., Oquawka, IL. Upright-oval form, with leaves 5-lobed, more closely resembling silver than red maple. Fall color in central Illinois an attractive crimson. Not known if flowers are staminate or pistillate.

'Celebration'. Original tree from Lake County, OH. Selected by Lake County Nursery, Perry, OH. Upright-oval form, noted for its uniform, compact branching habit. Mature tree 45 ft. high by 20 to 25 ft. wide. Leaves similar to silver maple. Fall color in Madison, WI typically yellowish-green. Flowers staminate.

'Marmo'. The original tree is located at the Morton Arboretum, Lisle, IL and was released by the Morton Arboretum. Although the exact history is not known, it is believed the Arboretum received the tree from a Wisconsin nursery in the late 1920's. The original 60-year specimen has an upright-narrow oval form and is 70 ft. high by 35 to 40 ft. wide. Leaves are 5-lobed, sinuses toothed $\frac{2}{3}$ the depth of the sinuses, and more closely resembles silver than red maple. Fall color in Lisle, IL, crimson mixed with yellow and/or green. Flowers are staminate.

2) *Acer rubrum* cultivars (all believed to be of hybrid origin):

'Armstrong'. This plant has been generally believed by the

nursery industry to be a hybrid. Selected by Newton Armstrong, Windsor, OH in 1947 and promoted by E. H. Scanlon and Associates, Olmsted Falls, OH. The original tree is from Ohio. A strongly fastigiata form with 5-lobed leaves that resemble silver maple more than red maple. Fall color in Lisle, IL is typically poor, being yellow-green with some green tinged with red. Flowers mostly pistillate, but also bears staminate flowers.

'Armstrong Two'. This cultivar originated from a planting of 'Armstrong' in Windsor, OH and was selected by E. H. Scanlon and Associates, Olmsted Falls, OH. Described in Scanlon catalog as selected from a planting of 'Armstrong' for superior autumn leaf color. The form is narrower and more tightly ascending branches than 'Armstrong'.

'Morgan' (Canadian Name) = 'Indian Summer' (U.S. name). As described in catalog of Sheridan Nursery, Oakville, Ontario, Canada. Selected by the Morgan Arboretum, MacDonald College, Quebec. This cultivar is noted for its consistent, brilliant scarlet fall color, even on young plants. Flowers are pistillate.

'Scarlet Sentinel'. The original tree is located near Interstate 90, in Ashtabula, OH. It was found by George Schichtel of Schichtel Nursery, Orchard Park, NY and released by J. Frank Schmidt, Boring, OR in 1972. Form is upright-oval. Leaves are 5-lobed, more closely resembling silver than red maple. Fall color in Madison, WI typically poor, yellow-green. Flowers are pistillate.

3) *Acer saccharinum* cultivars (believed to be of hybrid origin):

'Lee's Red'. Selected in southern Ontario, Canada and as described in the catalog of Sheridan Nursery, Oakville, Ontario, of note for its brilliant red fall color. Foliage not as deeply divided as that of silver maple.

The Freeman maple selections being tested in several Midwestern locations are performing well. They are proving to be more tolerant of adverse soil conditions than red maple and are also more ornamental than silver maple. Selection efforts need to continue with this group of plants. A tree that produces consistent fall coloration equal to most red maple cultivars needs yet to be developed.

LITERATURE CITED

1. Dirr, M. A. 1983. *Manual of Woody Landscape Plants: Their Identification, Ornamental Characteristics, Culture, Propagation and Uses*. 3rd ed. Stipes Publ. Co.: Champaign, IL.
2. Ellis, W. H. 1963. Revision of section *Rubra* of *Acer* in Eastern North America, excluding *Acer saccharinum* L. University of Tennessee Ph.D. in Botany. University Microfilms Inc.: Ann Arbor, MI.
3. Freeman, O. M. 1941. A red maple, silver maple hybrid. *Jour. Hered.* 32:11-14.

4. Kelly, J. W. 1973. Introgressive hybridization between red and silver maples. University Microfilms International: London, England. 105pp. Master's Thesis, State University College of Arts and Science.
5. Murray, E. 1969. *Acer* × *freemanii*. *Kalmia*. 1:2–3.
6. Wright, J. W. 1953. Summary of tree-breeding experiments by the Northeastern Forest Experiment Station 1947–1950. U.S.D.A. Forest Service Station Paper No. 56. pp. 8–15.

PETER DEL TREDICI: *Acer saccharinum* has two times the number of chromosomes as *A. rubrum*. Do the hybrids therefore favor the *A. saccharum* parent?

KRIS BACHTELL: Not necessarily from what we have seen. They are quite variable as to which parent is favored.

IT'S A PLANT INTRODUCTION PROGRAMME (P.I.P.) PLANT

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Botanic gardens are cultural, scientific, and educational institutions based on the world of plants. Historically, old world botanic gardens were private or university associated places reserved for scholars and the cognoscente of the day. Fortunately, especially among North American botanic gardens and arboreta, this is no longer the case. Indeed, in most instances, it is quite the opposite. We encourage visitors and public membership through advertising and educational promotion—sometimes to the point where we must remind ourselves that while we may be a “tourist attraction”, this is not our primary role. Our plant collections are both living museums and research laboratories where we demonstrate and document the diversity of the plant kingdom. In doing this, we are constantly trialing and evaluating new plants to determine their potential. Unfortunately, many plants which prove to have merit fail to go beyond the boundaries of the botanic garden or arboretum. Most of us at some time or another will have encountered a plant we thought had a great future in horticulture; yet, for some reason, it fell into the position where the trade failed to grow it because of lack of demand and garden designers could not recommend it because it was not available. Both groups regretted the situation but were not able to do much about it: a horticultural “Catch 22.”

To help remedy this situation in eastern Canada, Royal Botanical Gardens, in co-operation with the Growers Group of Landscape Ontario initiated the Plant Introduction Programme