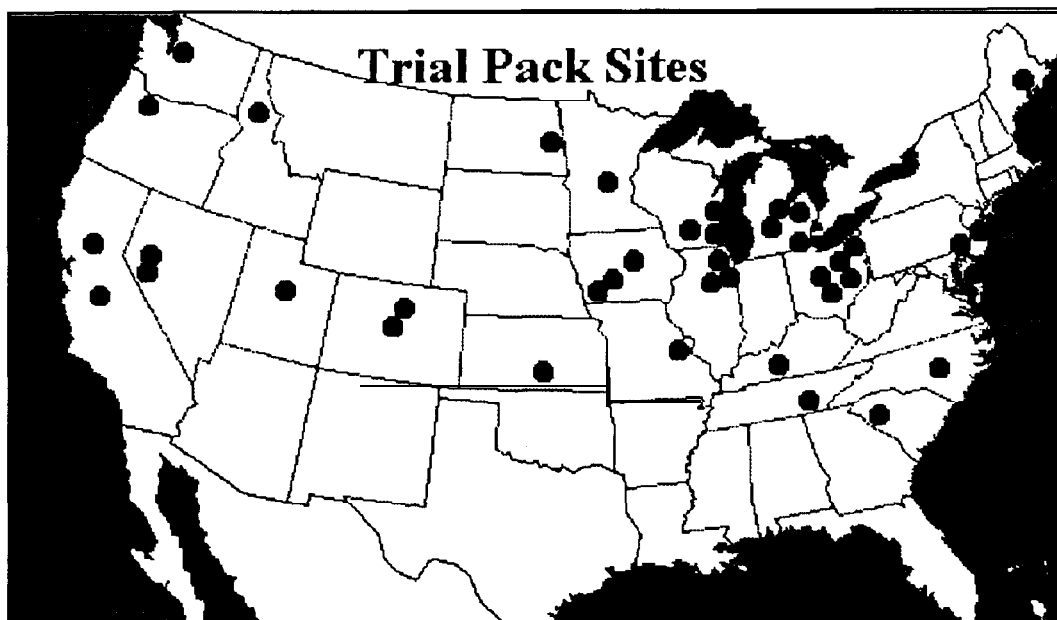


CULTIVAR EVALUATION: THE SCHMIDT TRIAL PACK PROGRAM

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ABSTRACT -- As the country lacks a national testing program for new tree introductions, J. Frank Schmidt & Son Co. has established one to cover trees introduced in its catalog. The nursery began the program in 1990 and now has a testing network of 44 cooperators, having distributed 56 tree varieties to them. Cooperators include commercial nurseries, arboreta, universities, and urban foresters. Cooperators evaluate the plants on a yearly basis and return information to Schmidt. Emphasis is placed on determining a "new" tree's regional adaptability at as early a date as possible. The program has shown that valuable information on adaptability of trees can begin to be gathered within three years of distribution.



Opportunities sometimes arise out of problems, and this is how the Schmidt Trial Pack came to life. We have now developed a successful national network of 44 evaluation sites for the purpose of testing new tree introductions. But the program's origin lies in the problem of limited knowledge about newly introduced plants, slow customer acceptance, and the lack of any national tree testing program.

When a "new" tree is introduced into the market, it faces several levels of possible rejection that must be overcome before it can be considered a commercially successful plant. First, growers must be convinced to purchase it. Second, the tree must perform well in the growers locality. Third, the grower must convince his customers (landscape architects, contractors, and city foresters) to purchase the tree. And fourth, these ultimate customers must be pleased with the way the tree performs so that they will order more. If all goes well, the result is a steady stream of orders coming in to the finished tree (caliper tree) grower, and in turn, a steady stream of orders to the primary (liner) grower. At each stage, continued orders hinge upon tree performance, and tree performance takes at least several years to demonstrate. All the while, the clock is ticking: the introducer is waiting for a return on investment. And if patented, the tree's 17 year patent life is diminishing. In practice, it often takes nearly 10 years before we really know how well a new introduction will be accepted in the industry.

The Trial Pack creates an opportunity to change this by gathering performance data at an earlier date in a planned way.

Cooperators in our Trial Pack program consist of commercial nurseries, arboreta, universities, and urban foresters. At each site, a person with a high degree of expertise evaluates the performance of the trees at that site. We rely heavily on the expertise of that person to rate our trees. The central issue is whether each plant is adaptable and performs well in that climate. As we gather these expert opinions, a clear picture begins to emerge of the tree's potential in different parts of the country.

These performance ratings give us a base for our marketing efforts. And by having recognized experts in different areas of the country familiar with these cultivars in the early stages of introduction, we may benefit from any exposure that results from their contacts. In short, the trees are tested, and the word spreads.

The mechanics of the program are relatively simple. Trial Pack trees are labelled and bundled, then every spring two trees of each variety are shipped to each participant. Each trial pack is identical, and no attempt is made to customize them. As a wholesale nursery, our shipping is geared to sending trees by the thousands by semi-truck load. The Trial Pack program works because the year's varieties are bundled together into a single

shipping entity.

I have endeavored to keep evaluation forms simple out of respect for the busy schedules of the cooperators. No measurements are asked. What I am really after is a collection of expert opinions. The evaluation form contains room for evaluator comments on each tree, and this has become some of the most valuable information I have gathered. Many insights have come from reading these comments.

The Trial Pack Program began in 1990 and has continued yearly. Now in its fifth year, we have distributed a total of 56 varieties to cooperators:

1990

Acer grandidentatum 'Schmidt', Rocky Mountain Glow™
Acer truncatum x *plat.* 'Keithsform', Norwegian **Sunset™**
Acer truncatum x *plat.* 'Warrenred', Pacific Sunset
Amelanchier x *grandiflora* 'Autumn Brilliance'
Betula 'Rocky Mountain Splendor'
Fraxinus americana 'Skyline'
Fraxinus pennsylvanica 'Urbanite'
Gleditsia triacanthos 'True Shade'
Malus 'Sinai Fire,
Malus 'Liset'
Prunus x *cistena* 'Schmidtscis', Big Cis Plum
Ulmus 'Homestead'
Ulmus 'Pioneer'
Zelkova serrata 'Halka'

1991

Acer negundo 'Sensation'
Acer nigrum 'Greencolumn'
Acer freemanii 'Jeffersred', **Autumn Blaze™**
Acer saccharinum 'Skinneri'
Acer saccharum 'Commemoration'
Acer saccharum 'Legacy'
Acer saccharum 'Sweet Shadow'
Malus 'Doubloons'
Malus 'Louisa'
Malus 'Parrsi', Pink Princess Crab
Prunus 'Tai Haku'
Prunus 'Snow Goose'
Quercus robur 'Fastigiata', **Skyrocket™** Oak

1992

Amelanchier grandiflora 'Princess Diana'
Fraxinus pennsylvanica 'Aerial'
Malus 'Adirondack'
Malus 'Schmidt Cutleaf', **Golden Raindrops™**
Malus 'Purple Prince'
Quercus acutissima, Sawtooth Oak
Taxodium distichum, Bald Cypress
Prunus x *yedoensis* 'Shidare Yoshino'

1993

Acer platanoides 'Princeton Gold'
Acer platanoides 'Fairview'
Fraxinus pennsylvanica 'Whapeton', **Dakota Centennial™** Ash
Malus 'Huber', Royal **Fountain™** Crabapple
Prunus x hilleri 'Spire'
Prunus serrulata 'Royal Burgundy'
Prunus 'Whitcomb'
Robina pseudoacacia 'Frisia'
Phellodendron amurense 'Macho'
Pyrus betulifolia 'Paradise', **Dancer™** Pear

1994

Acer negundo 'Flamingo'
Acer platanoides 'Ezstre' **Easy Street™**
Acer x freemani 'DTR 102" Autumn Fantasy Maple
Acer x freemani 'Marmo'
Acer rubrum 'Autumn Spire'
Acer rubrum 'Karpick'
Acer rubrum 'Columnare'
Fraxinus pennsylvanica 'Cimmzan', **Cimmaron™** Ash
Gymnocladus dioicus 'Espresso'
Pyrus calleryana 'Trinity'
Prunus 'Pink Cloud'

The plantings of 1990 and 1991 have had sufficient time to generate reliable data. Certain trees are beginning to stand out as outstanding. The winter of 1993-94 proved to be a "test winter" for hardiness. Several sites recorded minimum temperatures between **-25°F** and **-30°F**. Winter damage data was collected this spring. Of the 1990 and 1991 distributions, the following trees have generated the most positive evaluations:

Acer x freemanii Autumn Blaze

This appears to be the most widely adaptable cultivar distributed. Positive evaluations from across the country shows a remarkable tolerance for varying climates. It is noted for fast growth, reasonably good form, and excellent fall color that develops quite reliably. No winter damage reported.

Acer saccharinum 'Skinneri'

Also widely adapted across the country, although not as universally as Autumn Blaze. This is a silver maple cultivar with a refined branch structure (compared to other silver maples) and cut-leaf foliage. No winter damage reported.

Acer saccharum 'Commemoration' and *Acer saccharum* 'Legacy'

These two sugar maples are considered together because of their similarity. They appear to be selected from seed of the same provenance. These two showed the widest range of adaptability of the sugar maples tested, and performed particularly well at the warmer test sites. Both appear solidly hardy to **-20°F** and show

some tip die back at some sites by **-25°F**. One site reported 'Legacy' killed at **-28°F**.

Acer nigrum 'Greencolumn'

Not as widely adapted as 'Commemoration' and 'Legacy'. It is a "black maple", considered by many as a sugar maple subspecies. The cultivar was selected from native trees in central Iowa. The tree performs very well here and in adjacent states, appearing to be superior to sugar maple cultivars. However, its ratings are much less positive outside of its native range.

Acer truncatum x *plat.* Norwegian **Sunset™**

Acer truncatum x *plat.* Pacific **Sunset™**

These two sister seedlings from the same hybrid lot both have shown widespread adaptability. Performance has been good to excellent across the country except fair to good in Iowa, central Illinois and Indiana. Norwegian **Sunset™** has shown better form but later fall color and occasional tip die back from early freezes. Both are noted for excellent summer foliage and good fall color outside of the states noted above. No winter damage reported from sites reaching **-28°F** last winter.

Amelanchier x *grandiflora* 'Autumn Brilliance'

'Autumn Brilliance' has been well accepted and has received positive evaluations from most sites from coast to coast. It consistently does well and most regard it as among the best of the *Amelanchier* cultivars.

Fraxinus americana 'Skyline'

Fraxinus pennsylvanica 'Urbanite'

Both of these ash cultivars have performed well in trials. Skyline is noted for its compact oval form, while Urbanite is appreciated for its heat resistant, glossy, dark green foliage. Both have shown good winter hardiness. One site lost 'Urbanite' at **-24°F**, however at another site it experienced no damage at **-28°F**.

Malus 'Sinai Fire'

Malus 'Doubloons'

Both of these crabapple cultivars have done well at most evaluation sites, being most appreciated in regions where crabapples are favored. 'Sinai Fire' is a semi-weeping form with white flowers and the glossiest green foliage among the crabapples. Its fruit is a brilliant orange-red. Scab resistance has been good. Fireblight has shown up on it in a couple sites and may limit its desirability in fireblight prone areas. 'Doubloons' is a double white flowering tree with a compact head. Scab resistance has been good at most sites and no mildew has been reported. No winter damage has been reported on either tree.

Prunus x *cistena* **Big Cis™**

This little tree (14' mature height) has done very well on a

regional basis. It has been most appreciated in the northeast, the upper midwest, and Colorado. However, tip die back occurred at several sites by -24°F and death was reported at -29°F .

Prunus incisa x speciosa 'Snow Goose'

This cherry appears more widely adapted than others, growing vigorously from the northeast through the central states. It features single white flowers and clean, green foliage that appears to resist leafspot diseases. Tip die back is reported at temperatures below -20°F , but trees survived at -29°F .

Ulmus 'Homestead'

Ulmus 'Pioneer'

Both hybrid elm cultivars have been evaluated highly at the majority of sites, especially in the northeast, central states, and upper midwest. They are both appreciated for fast growth. Some preference goes to 'Homestead' for superior form. Both trees survived -29°F last winter with only minor tip die back.

As the Schmidt Trial Pack program enters its fifth year, it is clear the program is fulfilling its intended role and filling a need. The information now being gathered is helping the nursery inform customers more accurately of the regional performance of newly introduced cultivars. It provides information for more accurate production and marketing decisions. It has enabled its cooperators to easily keep up to date with the latest in "new" tree introductions. And as this information becomes distributed through forums like METRIA, the characteristics and adaptability of these trees are becoming more widely known.