ACER GRISEUM AND ITS PROPAGATION

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Acer griseum, the paper bark maple, is a striking small tree with unique characteristics which lead to interest at all seasons of the year. In spring its newly developing trifoliate leaves are red-orange and when fully expanded they become green on their upper surfaces and conspicuously grey-green beneath. This greyish aspect is indicated by the specific name, *griseum*. In autumn its brilliant foliage is tinted from yellow through orange to deep red. Its outstanding feature, however, is dark reddish-orange bark whose outer layer peels away revealing orange bark beneath, which then darkens to resemble burnished bronze. During winter, when contrasted against snow, or when wetted by rain, the color of its bark is emphasized and *A. griseum* becomes truly magnificent.

This small tree has great popular appeal and many people are anxious to acquire it. However, owing to propagational difficulties, it has remained rare through the years and demand has exceeded supply.

Acer griseum was introduced to cultivation in the United States by the Arnold Arboretum. In 1907, Ernest H. Wilson, while collecting for the Arboretum in Western China, gathered seeds and shipped them to Boston. From these only one plant was raised and it later failed. He also collected a few seedlings which were successfully transported to the United States, and two of these are still alive. Our largest tree has developed from one of these. It has formed a round-headed specimen 26 feet tall and 31 feet broad with a trunk 7 feet in circumference when measured 18 inches above ground. The bark texture of the trunk on this older tree has undergone change — peeling no longer occurs and the bark now sheds in flakes.

PROPAGATION BY SEEDS

Each year during the past 12 years cut-tests of *Acer griseum* fruits were made and usually most have been void of seeds. However, in 1962, some trees had about 20% sound fruits and in 1968 the fruits proved to be about 80% filled. The 1968 testing was done in June when the seeds were partially developed, but by September when it came time to collect them, all had been taken by squirrels. The ground beneath the trees was littered with empty husks.

In 1958 we gathered a large number of seeds and processed them despite the fact that most were hollow. These were carried through various treatments and germination occurred over a period of several years. From this work enough information was acquired to conclude that the seeds showed double dormancy.

In recent years, *Acer griseum* seedling liners have been listed by Gulf Stream Nurseries, Inc., Wachapreague, Virginia,

so this autumn we wrote to Jacques Legendre to find out how his seeds had behaved. He replied that the particular seed lot came from F. W. Schumacher, Sandwich, Massachusetts. Some seeds germinated two years after being sown while others took three, and total germination led to a very fine crop. Since that time his efforts to obtain good seeds have been futile. The original supplier has been unable to provide sound seeds and those obtained from England and various other sources have had poor germination. Ernest H. Wilson commented that even in China the tree does not bear fertile seeds each year.

Alfred Rehder in his *Manual of Cultivated Trees and Shrubs* describes four maples in the subsection *trifoliata.* All are native to Eastern Asia; they are: *Acer nikoense, A. triflorum, A. griseum* and *A. mandshuricum.* All four species are characterized by fruits that are usally hollow, seeds that exhibit double dormancy, and rarity in cultivation.

Acer triflorum is also a striking trifoliate maple. Its tawny-colored bark peels and curls as does that of *A. griseum.* In autumn its foliage turns bright orange-red. Plant Buyer's Guide shows *A. griseum* to be available from 1 Canadian, 3 European, and 3 U. S. nurseries[1]. *A. triflorum,* however, is carried by only 1 European and 1 domestic company.

PROPAGATION BY CUTTINGS

Root pieces from all four trifoliate maples were collected and processed to test whether or not they could be propagated from root cuttings and also to see if they might produce juvenile shoots which would root readily. In all cases shoots failed to develop.

As propagators know, cuttings taken from young plants of subjects difficult to propagate will frequently root, while those taken from older plants might not. With this fact in mind, softwood cuttings were taken from an older plant of *Acer griseum.* They were divided into three lots consisting of ten cuttings each.

Lot #1 was treated with a powder formulation of IBA at the rate of 8 mg per gram of talc with thiram added. None of these cuttings rooted.

Lot #2 was treated with a 5-second dip, using a combination of IBA + NAA at 2500 ppm each.

Lot #3 was treated with a 5-second dip using IBA + NAA at 5000 ppm each.

The cuttings were made on June 14 and placed under mist in plastic flats containing a medium of half-sand and half-perlite. On August 25, cuttings in lots #2 and #3 were removed from their flats, evaluated, placed in flats of sandy soil and immediately returned to mist. In lot #2 nine cuttings had rooted — 6 root systems were excellent and 3 were fair. Six cuttings with excellent roots were present in lot #3, while four had not rooted.

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[1]Since the publication of Plant Buyer's Guide, **Acer griseum** has appeared in the catalogues of two wholesale nursery firms.

Rooted cuttings of *A. griseum,* like those of many other plants, present a first-winter survival problem. They go into dormancy from which they never recover. Rooted cuttings of some such subjects will survive if induced to make new growth after they have rooted. This is done by providing supplemenary lighting. In the case of *A. griseum* new growth has never appeared on cuttings during the rooting period and the use of lights after they have rooted has failed to stimulate growth. In many instances, first-winter loss can be avoided if the cuttings are not disturbed after rooting.

On November 27, the flats of undisturbed *Acer griseum* cuttings were transferred to our cold storage unit which is maintained at about 34°F. On February 9 they were returned to a warm greenhouse and by mid-March, cuttings that succeeded came into growth. Fifty percent of lot #2 recovered from dormancy and grew, while in lot #3, 60% started growth.

This slide shows rooted *A. griseum* cuttings which were taken from a six-year-old plant. Fourteen cuttings were divided into two lots. Lot #1 was treated with IBA + NAA at the rate of 2500 ppm each and lot #2 at 5000 ppm each. All are well-rooted, have been given a light feeding, and are ready to be transferred to cold storage as described above. However, a batch consisting of 86 cuttings were taken from young plants the same day and treated in a similar manner, have rooted at the rate of only 46%.

We conclude with the thought that if meristem culture or cell culture techniques become feasible for woody plants, *A. griseum* might be a good subject for consideration.

MODERATOR FLEMER: Thank you very much, Al, and while we're on the subject of *Acer griseum,* Case Hoogendoorn has been doing some rooting of this plant and has a few samples to show us.

CASE HOOGENDOORN: Last summer we made our first attempts in rooting *Acer griseum.* These cuttings were made June 23, treated with No. 3 Hormodin and set in flats of sand under fog in the greenhouse; they were potted on August 6. You'll notice the cuttings have a real good root system. We had about an 80% stand and they were all heavily rooted.

Ed. Note—The cuttings were taken from the tops of 1-year-old seedlings thus the use of juvenile wood is probably the main reason for the exceptional rooting obtained in this instance.

JOE CESARINI: We root mostly Japanese maples but we had a few of the *Acer griseum;* we root them right in the pot. We try to keep the temperature in the greenhouse at 31°F where the maples are. Has anyone tried grafting these on other maple understocks?

ROY NORDINE: I have grafted all of the 4 or 5 species of the trifoliate maples and have even grafted them on themselves and I found that they just won't graft. I also tried all different types of grafts and they just won't take.

AL FORDHAM: I have corresponded with the people at Boskoop. They have done quite a bit of work on these and have found that in some cases the combinations will succeed for two or three years but, in all instances, they finally die.

MODERATOR FLEMER: Our last paper this morning will be on *Hamamelis* propagation by Joerg Leiss.

HAMAMELIS PROPAGATION

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Hamamelis or Witch-Hazels, as a group of plants, are probably known to most of you but are propagated and sold by only a few. I think that the unusual characteristics, such as the flowering period, fall and winter to early spring, warrant a much larger quantity to be propagated than there is now. The yellow, orange, and ruby, lacy flowers brighten an otherwise bleak winter scene, when no shrub shows any sign of life.

SEEDING

The six species, *Hamamelis japonica, H. mollis, H. vernalis, H. virginiana, H. macrophylla* and *H.* x *intermedia,* can be grown from seed which ripens in September-October in a two-seeded pod. It is best collected while the capsule is still soft (early September) as the seed, when ripe, is expelled as in *Buxus* and would be very hard to find on the ground. It scatters as far as 6 feet. We have found that seeds will not germinate the spring following if picked greener (August). If pure varieties are to be grown, seed has to be collected from pure stands, with the exception of *H.* x *intermedia,* which is a natural hybrid and varies.

We harvest our seed requirements during the early part of September. Squirrels and chipmunks are often there to pick their share at the same time. A bushel of seedpods yields about 2 pounds of clean seed. A pound of seeds has between 7,000 and 10,000 seeds for *H. virginiana,* which is our source of understock. After collecting. the unopened pods are placed in flats in the greenhouse, covered with a piece of glass. With light and heat the seed pods pop open very soon; the closed box prevents scattering. We then stratify the seed for one full year and sow the seed the following fall. Seed beds are mulched and shaded when germination occurs by the following spring. Seedlings are left for 1 year in the seed bed.

Our seed beds are treated with a nemacide-fungicide material (Vorlex) at 7 gal/A previous to seeding. We have experienced better germination and growth since we treat the soil. However, to obtain grafting-size plants we transplant for one more year, again on Vorlex-treated land. Understocks