

Seedling Production of *Acer griseum*

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INTRODUCTION

Acer griseum, the Chinese paper bark maple, originates from Sichuan and surrounding provinces in Central China and is very hardy.

It was introduced to the West by Ernest Wilson on one of his plant collecting expeditions for Veitch's Nursery in the U.K.

It is a small- to medium-sized tree, up to 12 m in height with a rounded habit, and it is now endangered in the wild.

The most remarkable feature of this *Acer* is the exfoliating bark. As the mature outer bark layer peels off, it exposes the bright copperish coloured underbark. Another outstanding feature is the brilliant red and orange autumn foliage colour. Spring and summer foliage is a dark green. Since its introduction from China it has gained a reputation as one of the most splendid of maples, but because of the difficulties in propagation, its availability has been limited.

Acer griseum is remarkably uniform in its seedling progeny with a limited number of selected forms. Production of seedlings has been the propagation method favoured traditionally by commercial growers.

SEED CHARACTERISTICS

Acer griseum is renowned for its ability to produce large quantities of parthenocarpic seed. A high percentage of these hard, downy nutlets are well formed but hollow and, therefore, lacking viable embryos.

It has been observed that seed viability depends on the number of male flowers and the presence of single fruits showing the scars of male flowers. This often indicates the presence of viable seed. Cutting open a small sample of seed in early autumn will indicate the percentage of potentially viable seed.

The grouping of trees in close proximity in a seed orchard is no guarantee of improved viability. Seemingly isolated trees can yield good seed crops. Once viable seed trees have been found it is important to document germination success rates over a number of years.

Viability as low as 1% to 3% is common, however there are trees which consistently yield regular crops of 70% germination.

STRATIFICATION

Seed is collected in the autumn when the wings have started to change from green to brown. It is cleaned and stored in a cool building before stratification. At no time is the seed allowed to dry, which can trigger seed dormancy which forms in the final stages of seed ripening. Should the seed become dry it is advisable to presoak in water for 24 h.

The seed is stratified in moist sawdust in plastic bins with drainage holes. The bins are well watered and allowed to drain for 24 h before being fully enclosed in plastic covers. This stops the sawdust drying out and the natural wood tannins inhibit mould and fungal infection. Monthly checks are made of media moisture

levels, seed condition, and replenishment of rodent poison baits. The bins are stored in a concrete building, which remains cool and dark all year round.

SOWING AND SEEDLING MANAGEMENT

After 12 months the seed is sieved from the sawdust. It is then treated with a mixture of acrylic paint, Thiram, and Mesurol. This serves as a pest and fungal repellent and for visual assessment while sowing.

Appletons Tree Nursery practises a fixed seedbed production system with the majority of seed being sown in the autumn. The seed bed is thoroughly ripped using a Howard Paraplow and 10 cm of composted pine bark is added to the growing area. The raised seed bed is formed by a Rotohoe with a modified bed-forming attachment. Raised seed beds of 15 cm in height aid drainage, encourage earlier germination and more accurate undercutting.

Acer griseum is a crop which responds well to higher levels of soil nutrition. This is achieved by a combination of coated, slow-release fertiliser, side dressing of balanced NPK granular fertiliser, and foliar feed.

Seed is broadcast by hand at an ideal seedling density of 200 plants per metre. Previous crop records, and the results of the cut test performed at harvesting, are used as a guide to the seed sowing density needed to achieve this. The seed is covered with sawdust and a tunnel of 40% shade cloth for shade and wind protection.

Seed is subjected to a 5-month winter-frost period which helps overcome the chilling requirement prior to germination. Germination occurs in September and careful attention must be paid to pest and disease control. The shade is removed on a cloudy day once the plants are 10 cm in height, so as to allow hardening off.

A reciprocating undercutter is used to cut the tap root of the plant to produce a compact fibrous root system. It is vital that the plant is not stressed, breaking the active growth cycle. Soil moisture at or near field capacity reduces soil movement and plant stress. Irrigation is advisable during periods of desiccating winds.

Using good cultural growing practices it is possible to achieve seedlings averaging 75 cm in height in one growth season.