

The Grafting of *Cedrus libani* 'Pendula' onto *Picea abies*®

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INTRODUCTION

Grafting is an age-old practice and dates back to the writings of Plato and perhaps beyond. People have worked on the grafting of plants for a long time, and some techniques have certainly stood the test of time. One common thing is the occurrence of intraspecific grafts.

It is not unusual to find *Citrus sinensis* grafted onto *C. ×paradisi* or *C. reticulata*. Nor is it difficult to find any number of different rose species being grafted onto *Rosa multiflora*. This close matching of the different species can take place due to the high degree of kinship that being in the same genus provides. There is no sure guarantee of success because plant taxonomy can develop into highly distinct subgroups within a genus that inhibits or makes some graft combinations unsuitable, such as grafts between members of *Acer* that belong to the subgroup *platanoides* and those that belong to *macrantha* series. Sometimes it can be even more extreme with *Acer rubrum* cultivars often exhibiting severe graft incompatibility even when grafted onto *A. rubrum* seedlings. The same trend holds for species within the genus *Quercus* as well.

On the contrary it is not hard to find interspecific grafts that are successful, although the catalog of cross-genus grafts is not nearly as large as cross-species grafts and is for the most part limited to specific plant families such as the Rosaceae, the Rutaceae, the Solanaceae, and the Cupressaceae. Grafts of *Amelanchier* species onto *Crataegus* or *Sorbus* are not unusual and succeed for long periods of time. *Citrus sinensis* can be successfully grafted onto *Poncirus trifoliata*, and *Chamaecyparis* can be grafted to *Juniperus* or *Thuja*. Tomatoes (*Lycopersicon esculentum*) can be grafted onto potatoes (*Solanum tuberosum*). Again, the degree of kinship plays an important role in just how successful these combinations can be, and some taxonomic classifications cannot necessarily indicate this because not all members of a family will readily graft onto others, such as *Pinus strobus* not being suitably grafted onto *P. thunbergii*, although it should be noted that the reverse graft *P. thunbergii* onto *P. strobus* can be achieved (personal observation).

It is not generally thought that anything but *Picea* species can be grafted onto other *Picea* species, with *P. abies* being the universal rootstock for most *Picea* combinations. Although it should be noted that the grafting of some *Picea* such as *P. pungens* Glauca Group to *P. abies* is not always an easy accomplishment. Even with that given due consideration, cursory examination of cones, flower formation, and seeds of *Picea* and related genera such as *Abies*, *Pseudotsuga*, and *Cedrus* suggests that those combinations might work as well.

Since *P. abies* was readily at hand and *C. libani* 'Pendula' was also available, a small experiment was undertaken to see if this theory might work.

MATERIALS AND METHODS

Picea abies seedlings in 10-cm pots were obtained in late summer. Plants were 30 cm high and about 3–5 mm in stem diameter. They were allowed to go into winter

normally and kept in a poly-covered house until January, when they were brought into a warm greenhouse and allowed to form new white roots.

Since this was a limited experiment, a small quantity of *C. libani* 'Pendula' scions was collected on a day above freezing and kept in a cooler at 4 °C. Scions were held for about 3 weeks prior to grafting.

A standard side graft was used and tied with rubber strips, which were in turn covered with Parafilm™ M, lab grade. (Modern Biology, Inc.). *Cedrus* scions were about 15 cm long with some degree of 2-year wood when possible. The *C. libani* 'Pendula' grafts were placed sideways in poly boxes (30 cm height × 33 cm width × 85 cm length) with a layer of perlite in the bottom to provide humidity. The boxes were sealed with the accompanying lids and placed on bottom heat pipes set at 10 °C. Grafts were left in place for about 4 weeks, after which time bright sunny conditions forced their removal due to solar heating affects.

RESULTS

Interestingly, some 50% of the *C. libani* 'Pendula' grafts were alive and pushed new growth in spite of the heating affects of bright sunny days in late February. By September those that made it past June were still alive and looking normal.

Does this mean that *P. abies* can be an alternative rootstock for *C. libani* 'Pendula' while normally *C. deodora* is the preferred choice? At the time of this report the grafts are still alive but delayed graft incompatibility still might set in. However, the fact remains that some 6 months later there has been no decline. A natural course through winter might be indicative of future progress. Since this is encouraging it is thought that a much larger test is in order to further test this graft combination.