

POSTER PRESENTATIONS:

Grafting of *Cedrus atlantica* onto *Pinus strobus*®

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INTRODUCTION

The family Pinaceae is made up of 11 genera of which eight are temperate and three are tropical to subtropical. (Griffiths, 1994) In the Eastern portions of North America the genera, *Pinus*, *Psuedotsuga*, *Tsuga*, *Abies*, *Picea*, and *Cedrus* are most often encountered. For many of these genera grafting is a common method of propagation, particularly of exotic or unique forms. The rooting of members of the Pinaceae is limited and often occurs on not only a species-specific basis but also is restricted by taxa influences as well.



Figure 1. *Cedrus atlantica* graft onto *Pinus strobes*, note the new growth.

For the genus *Pinus* grafting requires an understanding of the variations in the pine grouping. It is generally understood that five-needled pines should only be grafted to other five-needled pines. The same goes for two-needled pines and three-needled pines which are often placed on five-needled understock. The so called one-needled pines are not really one needled and the actual count is often five-needles bunched together so tightly that they look like one needle. Unpublished research by this author showed that these apparent truths in general are valid but there is some degree of variation from the actual facts. It is true that grafts of like-needled forms to other like-needled forms is a standard and usually is funda-

mentally correct. However, I found two-needled pines can be grafted to five-needled pines and the resulting grafts grow and appear normal. The reverse combination of five-needled pines to two-needled pines does not work and results in severe graft incompatibility.

The reasons for this are a bit ambiguous but an educated speculation suggests that constituents of the root systems that are transported upward could play an important part in this graft incompatibility syndrome. Alternatively scions of five-needled pines might require some other growth factor that the root systems of a two-needled pine cannot supply. It appears that the root system of a five-needled pine can supply all that is necessary for a two-needled pine but the converse is not true.

Since five-needled pines have the capability to support two- and three-needled pines perhaps the chemical make-up of a common five-needled pine understock, *P. strobus*, could serve as an acceptable understock for others in the Pinaceae. The work here is to touch on this possibility.

One-year-old potted *P. strobus* were selected as the understock. *Cedrus atlantica* was selected as the scion due to the fact that most *C. atlantica* are grafted onto *C. deodara* and a hardier root stock would be an asset.

Barnes (2005) experimented with a similar combination of *C. libani* onto *P. abies*. As of this writing the grafts initially took and grew well but succumbed during the winter.

A repeat series of experiments has yet to take place so that the exact cause of death of the grafts is inconclusive.

The *P. strobus*/*C. atlantica* grafts were created following the protocol as outlined by Barnes (2005). Of the 25 plant grafted, only one did not take. As of this writing all of the *Cedrus* grafts are alive and growing well (Fig. 1).

The apparent vigor of this graft combination as evidenced by the photographs vastly exceeds the vigor of the *Cedrus*/*Picea* grafts. It is hoped that the *Pinus*/*Cedrus* grafts will transplant well and overwinter without difficulty.

LITERATURE CITED

- Barnes, H.W. 2005. The Grafting of *Cedrus libani* 'Pendula' onto *Picea abies*. Comb. Proc. Intl. Plant Prop. Soc. 55:441–442.
- Griffiths, M. 1994. Index of garden plants. Timber Press. Portland, Oregon.