

Populus wilsonii and Populus lasiocarpa —Root Grafting Trials

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BACKGROUND

Populus wilsonii is native to southwestern China. To be more precise, the Chinese record it growing on the Southern slopes of the Qin Ling Mountains, Shannxi Province and down into the Sichuan Province. The Chinese do not appear to use it in either their planting or hybridising programs and it remains rare in cultivation. The extent of wild populations is unknown to the author. *Hillier's Manual of Trees and Shrubs* describes it as a highly ornamental, medium-sized species and it is from Hillier's Nursery that New Zealand's only recorded accession originated.

Also noted in literature is the belief that all *P. wilsonii* in Western cultivation are a single female clone due to them being uncommonly uniform in habit. *P. lasiocarpa* also comes from southwestern China and is best known as the Chinese necklace poplar. Hillier's describes this tree as a magnificent, medium-sized tree with leaves sometimes up to 30 cm long and 23 cm wide which are bright green with conspicuous red veins and stalks.

THE PROBLEM

Populus wilsonii and *P. lasiocarpa* seem to break all the propagation rules relating to the *Populus* genus. Whereas most poplars can be grown easily from either hardwood or root cuttings, these two cannot. The following cases of successful propagation by cutting are in contradiction to the common belief about these trees. Douglas Cook imported a grafted tree of *P. wilsonii* from Hillier's for Eastwoodhill Arboretum (Gisborne). Cuttings were given to Bob Berry who succeeded in growing at least one tree by cutting for his arboretum at Hackfalls. The original tree at Eastwoodhill died so Bob gave some cuttings back to Eastwoodhill curator Gary Clapperton who then grew one tree. At time of writing, the Eastwoodhill tree is doing well but Bob Berry's tree has succumbed. Gary Clapperton used the recommended method of lying his cuttings down in vermiculite to allow the auxins to increase on one side of the cutting, then standing it up to plant. I could say here that cutting propagation is keeping *P. wilsonii* in cultivation, with the help and expert propagation skills of the two tree enthusiasts mentioned above but the population is not increasing. My source of cutting material and introduction to *P. wilsonii* was a tree in Palmerston North that was grafted from the Eastwoodhill tree onto *P. yunnanensis* rootstock. This was after attempts of both cutting and tissue culture failed at the DSIR Aokoutere near Palmerston North. Their tree is now very healthy. *Populus lasiocarpa* is more common in New Zealand as we have trees which produce viable seed. Cuttings are known to be difficult or impossible, according to which source of information is believed.

THE PROPOSED SOLUTION

During the winter of 1993, I obtained some cuttings of *P. wilsonii* and already had three trees of *P. lasiocarpa* growing so the scene was set for a grafting trial. Scions of both poplars were grafted onto roots and also field grafted to trees. Table 1 lists the scion and rootstock combinations used.

Table 1. Effect of rootstock on growth of *P. wilsonii* and *P. lasiocarpa*.

Scion	Roostock	Grafted (no.)	Comments
<i>Populus wilsonii</i>	<i>P. tremula</i>	6	2 dead
" "	<i>P. szechuanica</i>	7	2 fresh, 5 sitting
" "	<i>P. angustifolia</i>	8	most look doubtful
" "	<i>P. lasiocarpa</i>	9	2 leafing, 7 fresh
" "	<i>P. maximowiczii</i>	3	1 leafing, 2 fresh
" "	<i>P. x eridano</i>	4	all sitting
" "	<i>P. yunnanensis</i>	3	1 dead, 2 sitting
" "	<i>P. trichocarpa</i>	7	1 leafing, 6 sitting
<i>P. lasiocarpa</i>	<i>P. tremula</i>	5	5 sitting
" "	<i>P. szechuanica</i>	6	5 leafing, 1 sitting
" "	<i>P. yunnanensis</i>	5	4 leafing, 1 sitting
" "	<i>P. lasiocarpa</i>	16	3 very fresh, 13 sitting
" "	<i>P. maximowiczii</i>	4	2 leafing, 2 very fresh

EARLY CONCLUSIONS

After 7 weeks, of the 42 *P. wilsonii* grafts three have died, eight look doubtful, 17 are the same as when grafted and the rest are either freshening up or coming into leaf (Table 1). *Populus lasiocarpa* grafts are responding in approximately the same ratio. At this time several other things are obvious. (1) Three *P. lasiocarpa* rootstocks are suckering below the grafts which makes grafting of this species not important. (2) *Populus maximowiczii* and *P. tremula* are also suckering. The latter, especially, has a reputation for this making it a most unsuitable rootstock. (3) Grafts on *P. maximowiczii* rootstocks appear the most advanced. Our trees of this species are in full leaf already while many others are just starting to leaf, so this is probably the cause.

I cannot say that I have *P. wilsonii* trees just yet but remain very hopeful that this tree can become more common through my efforts. Regarding *P. lasiocarpa*, I may just use this as understock—either way I can't lose.

LITERATURE CITED

- Anon.** 1988. Hillier's manual of trees and shrubs. David and Charles, Newton Abbot.
Krussman, G. 1986. Manual of cultivated broad-leaved trees and shrubs. Batford