

## ● Uses and Management of Poplar Species

### Introduction

Poplars are versatile deciduous trees with several uses. Their extensive root systems help to stabilise soil on hill slopes and some cultivars are suitable for shelter belts. Poplar foliage has a similar nutritional value to lucerne hay with leaves and soft stems having a digestibility of 80%. Poplar is a recognised forestry species overseas where it is used for paper and fibre board manufacture, veneers, furniture and matches. With correct siting and management there is potential in New Zealand for poplar to produce medium density utility timber, although the poplar market in New Zealand is small and fragmented.

### Poplar Selection and Management

The main cultivars currently available in New Zealand are listed overleaf. Those with a relatively high basic wood density are the most likely to produce acceptable sawn timber, providing trees are correctly tended. Poplar growth rates are generally fast and most cultivars will have good form if selected for local site conditions. Poplars grow best on deep friable soils with good summer moisture. On shallow or droughty soils growth rates are slow and establishment of unrooted (pole) material is poor.

To grow saw logs, plant poplars on sheltered sites with deep moist soils and form prune to maintain a straight central stem. Establish poplars at around 200 stems per hectare (sph) to optimise timber volume. For agroforestry (grazing and timber production) a spacing of 100 sph is recommended.

For soil conservation purposes plantings are localised around erosion features and average 25-40 sph.

### Establishment

Woody poplar material readily forms roots without any sort of specialised propagation technique. Poplars can be planted out directly as 20 cm cuttings, 60–100 cm stakes, or as 2.5–3.0 metre long poles. All poplar planting should be done during dormancy, i.e. June to September.

For establishment of cuttings and stakes, exclude livestock from plantings and control weeds or moisture competition will cause heavy losses in the first season.

The preferred material for establishing shelterbelts is one year old 2–3 metres high sapling material, commonly called “rooted cuttings”. Rooted cuttings are also recommended for poplar establishment on marginal sites, and to promote early development of good form. Rooted cuttings are too light to plant in the presence of cattle but can withstand sheep grazing if protected by a Treegard® (plastic netting) sleeve and two rubbing stakes. (see **Sustainable Options LM25: Multipurpose Exotic Tree Species**).

On droughty sites, cut rooted stock back to a bud at 40 cm above ground level. Trees managed this way will withstand seasonal dryness during establishment. To establish poplars in the presence of livestock, plant 3 metre poles, using a pole driver (see **Sustainable Options LM21: Management and Uses of Willow Species**).



*'Kawa' poles two years after planting*

If cattle are present, such material must have a butt (large end) diameter of at least 80 mm and the pole should be straight. A pole protector is also required. If the planting is not going to be exposed to cattle for the first two seasons, a Treegard® sleeve can be used. This requires fixing in place with small (15 mm) staples top and bottom, and will eventually breakdown at around 6 or 7 years after planting when the tree has developed robust bark and a diameter of 20 cm or more.

If the planting is going to be exposed to cattle at the outset, use Dynex® (smooth plastic) sleeves. These sleeves discourage stock rubbing but poles may be broken if less than the minimum recommended butt diameter. Dynex® sleeves are designed to split off trees as they outgrow the sleeve. When this happens, bark under the sleeve is tender and has a limited period of susceptibility to stock damage. When trees show the first signs of outgrowing Dynex® sleeves, remove protectors and exclude stock from the planting for several weeks while bark hardens. This operation is best performed in late summer/early autumn.

Species	Cultivar (Clone No.)	Characteristics	Basic Density	Uses
<i>Populus alba x glandulosa</i>	Yeogi 1 (PN 895)	Resistant to rusts, leaf spot and possums. Good tolerance of drier and/or saline soils, limited tolerance to wet soils. Suckering habit. Male clone.	390 kg/m <sup>3</sup>	Soil conservation, forestry/agroforestry.
<i>Populus deltoides x maximowiczii</i>	Eridano (PN850)	Fast growth. Resistant to rusts and leaf spot. Highly unpalatable to possums but large leaves and brittle branches susceptible to wind damage. Male clone.	300 kg/m <sup>3</sup>	Soil conservation, forestry.
<i>Populus deltoides x trichocarpa</i>	Pakai (NZ5009)	Good possum resistance but slight susceptibility to frost in juvenile stage. Limited budwood can cause some variation in strike. Male clone.	350 kg/m <sup>3</sup>	Soil conservation, agroforestry.
<i>Populus deltoides x yunnanensis</i>	Kawa (NZ5006)	Faster growth and better form than parent <i>P.yunnanensis</i> . Moderately susceptible to wind and possums, disease resistant. Male clone.	370 kg/m <sup>3</sup>	Soil conservation, agroforestry, amenity.
<i>Populus x euramericana</i> (Import)	Tasman (PN559) Veronese (PNB70)	Both clones are moderately susceptible to leaf spot and are possum palatable. Tasman is resistant to rust, while Veronese is moderately susceptible. Tasman is a narrow crown, male clone that requires moist sites. Veronese is a female clone with a degree of drought tolerance.	330 kg/m <sup>3</sup>	Soil conservation, shelterbelts, agroforestry, amenity.
<i>Populus x euramericana</i> (NZ bred)	Argyle (NZ5095) Eastwood (NZ5021) Kaianga (NZ5024) Margarita (NZ 5014) Pakaraka (NZ5013) Weraiti (NZ5018)	Argyle and Eastwood form broad crowns and Argyle has early formation of heavy bark. All are possum palatable and have good disease resistance, except Margarita which has slight rust susceptibility in late summer. Kaianga is a male clone, all others are female.	330-340 kg/m <sup>3</sup>	Soil conservation, shelterbelts, agroforestry.
<i>Populus euramericana x yunnanensis</i>	Toa (NZ5007)	Resistant to rusts and leaf spot, low palatability to possums, fast growth rate. Female clone.	320 kg/m <sup>3</sup>	Soil conservation, shelterbelts.

## Tending

To produce saw logs, poplar trees must be pruned. Pole plantings also benefit from pruning to maintain good form.

Two years after planting, remove most of the growth on the top of the pole to leave a single strong leader. Subsequently prune at two yearly intervals to remove forking and maintain the central leader. With cuttings and stakes, or rooted trees that have been cut back to 40 cm at planting, begin form pruning in the first season (January). Prune off most shoots to leave a single,

straight leader. Thereafter remove forks (competing leaders) once a year until sufficient diameter has developed to allow side lift pruning. When poplar stem diameters reach 12 cm, side lift pruning will limit the knotty core in saw logs and reduce pasture shading, while also providing some forage for livestock. Poplar prunings are readily eaten by livestock and 1.4 kg of fresh poplar leaves per stock unit is sufficient for daily feed maintenance. All pruning operations are best carried out in early autumn and side lift pruning should not exceed more than half the total tree height.



For further information and advice, contact your local land management officer at Environment Bay of Plenty:

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