

## RESEARCH BRIEF 16

# Effect of fertilization on growth of poplars established from poles on farmland

A single deposit of fertiliser, either N (80g urea), P (180g superphosphate) or both was supplied at 30 cm upslope of the pole and at 15 cm depth to 'Veronese' poplar trees on sloping pastoral land two months after the trees were planted as poles. The site was SW of Gisborne at Waingake, and the soil type was an ash soil. Soil N was measured at 210 - 232 kg/ha and Olsen P at 7-13, away from the application sites. Above ground growth over four growing seasons was compared with control trees not given fertiliser. Root development was compared from soil cores taken near the fertiliser deposits and away from them.

There was no evidence in any of the four years from height, collar diameter, top of sleeve diameter or fine root growth that the N and P fertiliser deposits acting singly or together enhanced survival or growth (Table 1, Figure 1). There was some evidence of enhanced leaf levels of the applied nutrients, though within the range of variability of other leaf nutrients (Table 2).



**New shoots on poplar poles at the trial site two months after planting.**



### Key message:

- Addition of fertiliser did not enhance tree growth. The application of additional fertiliser at the time of pole planting is not necessary or warranted.

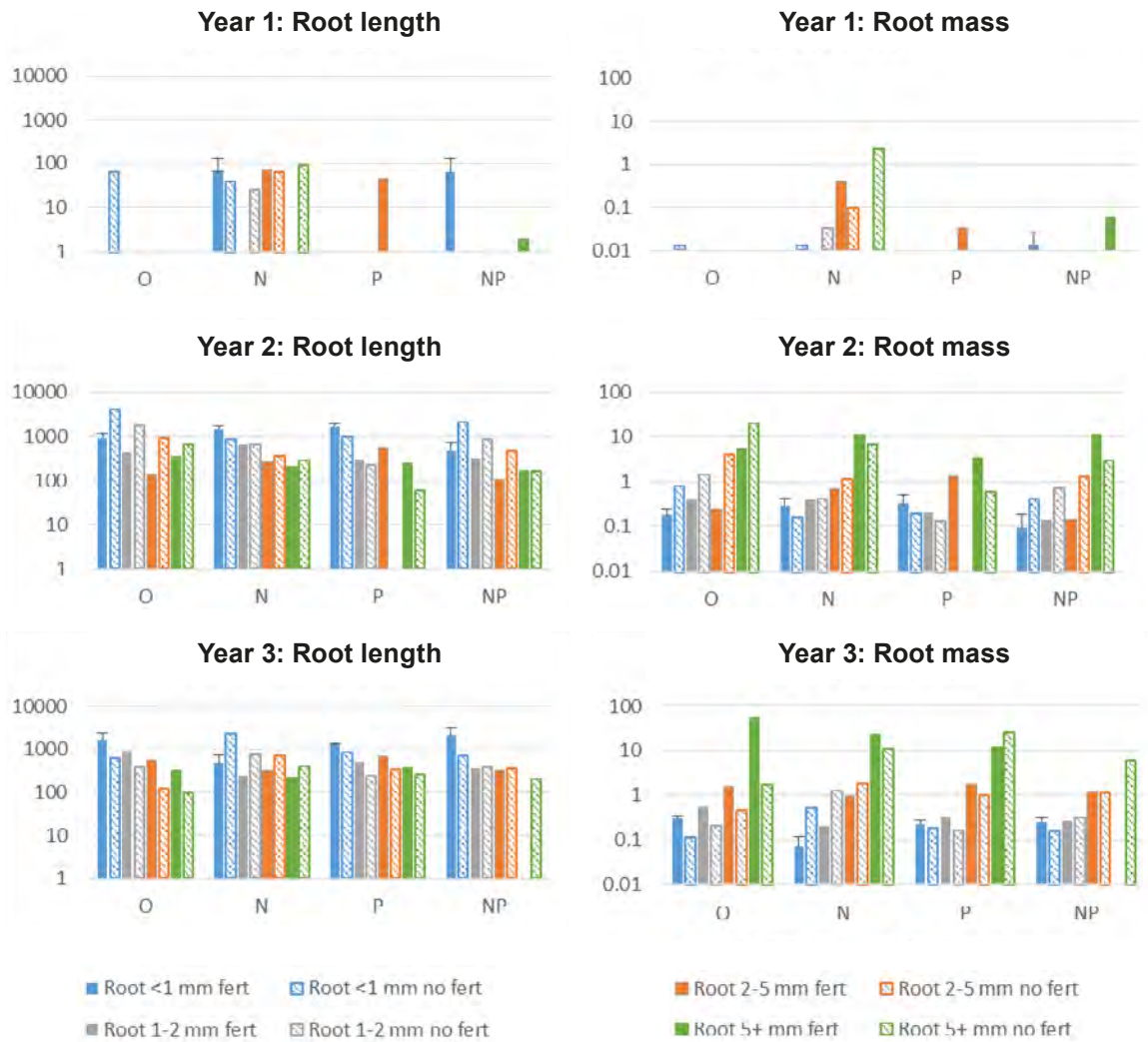


Figure 1. Mean length and mass distribution of roots between different diameter classes, positions (fert, no fert) and fertiliser treatments for the different years. 1 bar on the root <1 mm fert bars indicate standard error SE, N = 3 or 4 (in general SE was about 50% of mean value).

Nutrient	Control	N application	P application	N + P application
Nitrogen %	2.1	2.9	2.2	2.4
Phosphorus %	0.18	0.19	0.23	0.24
Calcium %	1.87	1.67	1.74	1.67
Magnesium %	0.28	0.20	0.25	0.25
Sulphur %	0.27	0.31	0.34	0.27
Potassium %	1.2	1.5	1.6	1.6
Sodium %	0.105	0.09	0.126	0.084

Table 1. Leaf nutrient levels for trees given the various fertilizer treatments. Mature leaves were collected in February, 2018 (4th growing season) at full canopy.





Field site year 3.

A series of videos on poplar planting and management can be viewed by visiting **poplarandwillow.org.nz** or by using or clicking on the links here.



[bit.ly/poplars-willows-videos](https://bit.ly/poplars-willows-videos)

### For more information

This is one in a series of research briefs about Poplars and Willows that can be found at [poplarandwillow.org.nz](https://poplarandwillow.org.nz)  
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