



Newsletter March 2020

1. Introduction

Welcome to this newsletter providing an update of the work of the Trust and other poplar and willow matters. As we write, extremely dry weather is covering many parts of the country and poplars and willows are playing an important role in offering a valuable feed source. However, we do need to increase awareness of this among farmers.



Our trees have done a great job protecting streams and riverbanks during recent floods in Otago and Southland. They are tough; this one stopped a metal container in its tracks in a flooded Mataura River! Photo credit: Robyn Edie, stuff.co.nz.

The versatility of poplars and willows means they have a great fit with encouragement to grow more trees on farms. Spaced plantings of poplars and willows allow for good pasture growth as well as enhanced animal welfare through provision of shade and shelter.

Regional Councils are working together to lift production to meet farmer demand for poplar and willow poles across the country. An increased focus on water quality is a big driver; poplars and willows show great soil retention capacity as well as their good filtering, so uptake of nutrients makes them a key tool in lifting water quality. Nursery capacity needs to be increased but the challenge is finding good sites and balancing funding. Despite that, it is encouraging to learn new investment is underway in some regions.

2. Another year of growing focus on tree planting

Climate Change

Tree planting is receiving a considerable boost as a result of 2019 climate change initiatives. While there is a big push for plantation forestry and planting of native trees, conservation trees such as poplars and willows will play a role in boosting trees on farms while still retaining pastoral farming. Setting targets for zero carbon by 2050 as well as for significant reductions in methane emissions will require higher payments by emitters under the NZ ETS, increasing incentives for tree planting. The earlier initiative to plant a billion trees by 2025, supported by financial assistance for tree planting along with ongoing grants made for tree nursery establishment and planting under the Provincial Growth Fund, complements these latest initiatives.

Poplar and willow planting for conservation purposes faces some challenges in meeting minimum planting areas to qualify for carbon credits, but government support for hill country erosion planting has financial

benefit. This is delivered by regional councils, resulting in lower costs of tree planting along with provision of good advice and/or assistance on appropriate species and planting methods. There is also growing interest in harvesting mature poplars and willows for timber. This is early days with some tree owners achieving reasonable returns but others not able to find a worthwhile market. Supply continuity, farm and tree location, and scale have a bearing on this.

Water

Government proposals on Action for Healthy Waterways were put out for submission and, when implemented, will further strengthen the demand for conservation responses such as planting and managing poplars and willows. The proposals put increased focus on nutrient and sediment reduction by making them, along with a few other attributes, new indicators of ecosystem health that will be monitored, and maintained or improved. As we wait for submissions to be processed, farmers are working towards their FEMPs, with most regions requiring a form of an environmental plan by 2025.

Regional councils and organisations such as Beef + Lamb New Zealand, along with commercial entities such as fertiliser companies, have been working with farmers to put farm environment plans in place for a number of years; the pace of this is accelerating. A number of farm/forestry professionals have been providing specialist advice including assessing the likely carbon credits to be gained from a mix of on-farm forestry. We were able to review one of these recently, which took account of extensive existing mixed tree plantings as well as providing for new planting including a big jump in poplar and willow planting as a measure to reduce the likelihood of extensive soil erosion. It was interesting to see the contribution to carbon credits from these trees was significant, even though space planted.

Best Trees

Erosion of pastoral land accounts for 44 per cent of New Zealand's soil loss (MfE, 2019). It has been accelerated by the loss of native vegetation but is primarily caused by significant weather events where heavy rain causes slips, slumps and stream-bank collapses, sending massive amounts of fertile soil and sediment into waterways, streams and rivers. Poplar and willow trees are the absolute best species to minimise erosion and repair damaged and eroded landscapes, while at the same time allowing for livestock grazing. In light of the growing focus on water quality and the role of poplars and willows in meeting the goal of more trees on farms (while still allowing for close to 100% grazing below), we repeat the chart included in last year's newsletter, which illustrates the superior rooting capability of poplar and willow trees.

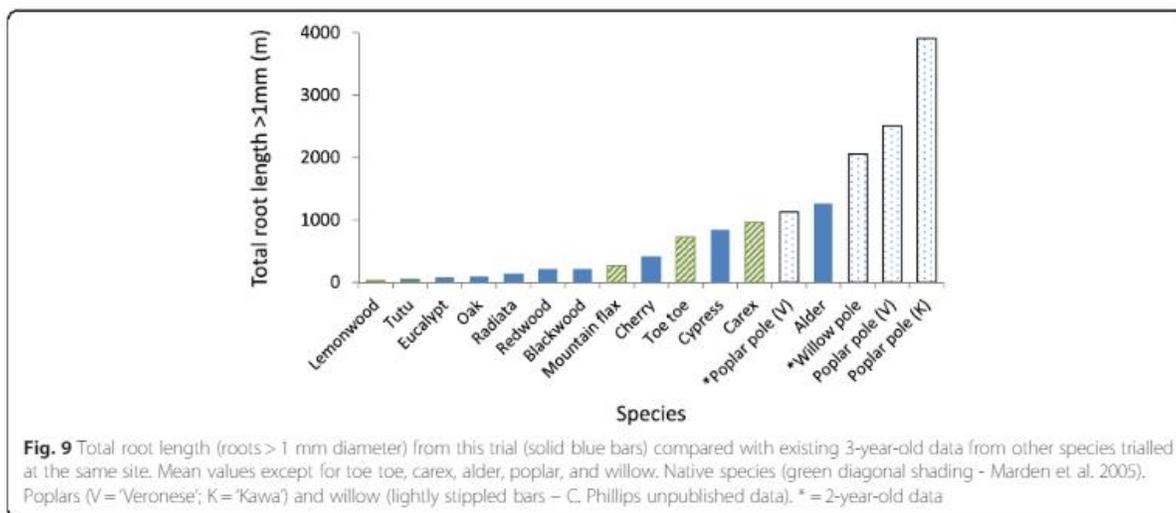


Chart taken from Phillips and Lambie, Landcare Research, "Observations of "coarse" root development in young trees of nine exotic species from a New Zealand plot trial"

3. Research updates

The Trust's research team at Plant & Food Research in Palmerston North released its latest research report in December 2019. Summaries are provided below.

Effect of Giant Willow Aphid on growth of young Tangoio tree willows

Two trials were established on two farms in Tararua District to evaluate the effect of sap-sucking behaviour of *Tuberolachnus salignus*, giant willow aphid (GWA), on Tangoio tree willow growth. We found willow trees receiving aphicide protection showed no significant increase in height or collar diameter compared with untreated trees. The most significant factor affecting willow growth was not GWA but the site where the trees were planted. We concluded that feeding by GWA did not reduce above ground tree growth in the first three years of establishment.

Influence of soil type on root development of 1 to 3-yr-old *Populus deltoides* x *nigra* grown from poles

Soil type is influential in establishment of poplars grown from poles.

Root development was greatest in pumice soil, and least in sandy-loam soil.

Soil bulk density increased with soil depth in clay-loam and sandy-loam soils and root development decreased.

Reduced root extension into surrounding soil reduces the volume of soil from which water can be absorbed.

Pole survival is likely to differ in different soil types, particularly in years with dry summers.

Poplar Field Trials

Three new *Populus maximowiczii* x *trichocarpa* field trials were planted in Northland, Marlborough, and Southland, and re-planted in Wairarapa. Existing *P. maximowiczii* x *trichocarpa* field trials were measured for survival and growth. Poles of novel *Salix matsudana* x *lasiandra* tree willow clones were provided to regional and district councils for field trial evaluation in the Waikato, Lower Hutt, and Marlborough regions. Existing trial plantings were measured for survival and growth.

Milling poplar on the farm for fencing and yards construction

Farm milled poplar provides valuable wood products for both on-farm and off-farm use, including treated posts, battens and timber. On-farm, the timber was used for railings and gates in cattle and sheep yards. Off-farm timber was used for truck decking and decking around homes. A financial analysis of costs associated with milling poplar trees on farm and converting the wood into usable fence materials for constructing stock yards demonstrated considerable savings can be made by using poplars from on the farm compared with purchasing equivalent commercial pine products (posts, battens, strainers etc.). Farm milled poplar posts were 68%, battens were 27% and railings 52% of retail costs of treated pine equivalents.

Conservation tree survival and growth when planted as poles on pastoral hill country

The objectives of this project were to gather substantial data on poplar and willow pole survival rates to better understand the causes of pole mortality, and to gather some growth data on older plantings of poplar and willow to inform decision making. The most significant factor in pole survival is soil moisture during the spring-summer immediately following the planting of the pole. In 2013, the sample regions experienced an extreme drought that extended into summer. Survival of poles was just over 50% in 2013. In contrast, rainfall during spring 2011 and summer 2012 was above normal and survival of poles in 2012 was 96.5% in Wairarapa. Likewise, 2018–19 had good seasonal rain and pole survival was 94% in Wairarapa. Other lesser factors affecting pole survival are associated with planting management (insufficient soaking before planting, poor siting, planting to a shallow depth, not re-ramming in clay-dominated soils, exposure to cattle); nursery management (undersized poles, diseased poles, poor storage); feral animals (deer, possums).

In summary, planting poplars and willows as poles can be considered a success story, greatly enhanced by the production and supply of high-quality material, and improved monitoring of planting by Regional Council land management staff.

4. Telling the Story – Promoting the Planting of Poplars and Willows

Media

We sent out a press release highlighting the value of poplars and willows in a drought situation providing advice to farmer growers who have not adopted this practice in the past. See www.poplarandwillow.org.nz/news/2020/poplars-and-willows-offer-a-valuable-feed-source-during-dry-conditions

Website

- Our website contains a wealth of information related to poplars and willows. A key area for promoting uptake is the section titled “Farmer Guides”. Look for the excellent three minute how-to videos relating to pole selection, management and planting on www.poplarandwillow.org.nz/library/filter/videos
- A new posting provides advice on achieving eligibility for the ETS. www.poplarandwillow.org.nz/library/guide-to-erosion-control-spaced-plantings-being-eligible-to-enter-the-emissions-trading-scheme-ets
- We are partnering with the NZ Farm Forestry Association in an extension of their website, funded by MPI, to provide much more comprehensive information on the selection and planting of a wide range of tree species, including poplar and willow.

Social media

Follow our Facebook page for regular updates on people utilising poplars and willows. We welcome comments and photos and knowledge sharing for what’s happening at ground zero. www.facebook.com/hillcountryheroes/
We have 350 connections on our LinkedIn account. By liking and sharing posts, and creating a few ourselves, we are putting our existence in front of decision makers and influencers in the rural and agricultural space.

Corporate Brochure

Our corporate brochure is a great resource
www.poplarandwillow.org.nz/documents/nzpwt-corporate-document.pdf

Demonstration site

If you are driving on SH1 south of Taihape in the central North Island, keep an eye out for our poplar demonstration plot north of Utiku (where the Ravensdown store is). This is a partnership between the NZ Poplar & Willow Research Trust, Beef + Lamb NZ and Horizons Regional Council (with help also from Ravensdown). The plot was planted in August 2017 with 16 poplar clones, a mixture of current commercial clones and novel clones. The clones were planted as poles at spacings of 10 m x 7 m, allowing 10 replicates of each clone, with one exception where seven replicates were planted because of a space restriction. The commercial clones in the demonstration plot are Veronese, Fraser, Toa, Otahua, Weraiti, Crowsnest, Mapiu, Pecam, Kawa, Shinsei, Rotorangi, Kaimai and the novel clones are two of *Populus maximowiczii* x *trichocarpa*, and two of *P. trichocarpa* x *nigra*.



Field days

The Trust partnered with the Waikato Regional Council and others in hosting a field day for farmers, rural professionals and landowners on pole planting and mitigating the loss of sediment. Topics covered included soil erosion and water quality, poplar and willow pole planting for soil stabilisation, and funding options for addressing hill country erosion.

Central District Field Days

We are going to be at Central Districts Field Days this year, 19-21 March, in the Horizons Regional Council tent. Come and see our range of displays and talk poplars and willows.

Poplar & Willow Ambassadors

Are you just as passionate as us around these fantastic soil conservation trees? Do you know someone else who should be recognised as an ambassador? We are looking for regional advocates to promote the story as erosion, carbon foot printing and water quality maintain the forefront of the agricultural focus, spreading material advice and support alongside councils and trustees. Nominate them at the CD Field Days this month, or touch base with Steph Sloan on 0212244030 for more information.

5. Partnerships

Funding and in-kind support

Regional Councils

In-kind support

DairyNZ

Beef + Lamb New Zealand

Ravensdown

Educational support

Massey University

Research Support

Plant & Food Research

AgResearch

Landcare Research

Scion

We welcome offers of support from other agribusiness organisations, especially those servicing pastoral farmers.

6. Contact us

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