

RESEARCH BRIEF 01

Poplars and Willows as soil conservation trees in new zealand

A study of farmers' experiences of trees on their farms

Summary

- This study investigated farmers' perspectives and experiences of poplar and willow trees planted on their farms for erosion reduction. Questionnaires were posted to 100 farmers in the Manawatu-Wanganui area affected by the June 2015 storm event, and to 29 farmers in the Hawke's Bay region (Wairoa district) affected by the April 2011 storm event. Forty-three farmers, including three in face-to-face interviews, completed a questionnaire, 36 in Manawatu-Wanganui and 7 in Hawke's Bay. All the farmers had planted poplar and/or willow poles on their farms.
- Most farmers had a high percentage of hill country on their farm. Over half the farmers interviewed have 60% or more of their farm area with a slope greater than 15%.
- Farmers generally had a positive attitude towards poplar and willow trees. Approximately 80% of the farmers are planting poplars and willows for erosion control. Farmers scored the effectiveness of the trees in reducing erosion at an average of 3.7 out of 5. Most farmers reported any disruptive influence of poplars and willows on the management of the farm as negligible.
- Farmers' knowledge of tree management (terms tested were pole, pruning, coppicing, pollarding, double leader) was good, but they were less aware of the range of poplar and willow clones available.
- Pasture productivity is not reduced by the presence of the trees, according to farmers. This contrasts with published findings that unmanaged older trees can have a marked reduction on pasture productivity.



Poplars and willows preventing gully erosion

- The farmers who received a subsidy generally planted more poles.
- Farmers identified their regional council as a big influence in encouraging them to plant trees. More than half the farmer population being interviewed mentioned advice by the regional council. They were aware of other possibilities of trees as stock fodder, firewood or shade.
- Farmers chose poplar and willow trees because they don't interrupt grazing, they grow fast, they are effective in reducing soil erosion, they are cheap and easy to plant, and they are great drought fodder.

Managing Erosion

The average farm size of farms was 410 ha. Three quarters (27/36) of the Manawatu-Wanganui farms were ≤500 ha, of which half were ≤250 ha. The Hawke's Bay farm sizes were bigger, with 5 of the 7 farms >500 ha.

Table 1 shows the type of erosion farmers experienced on their farms, how often it occurred on farms, and when it was managed by planting poplar or willow trees.



Hill slope erosion following a storm in Wairoa District

Erosion type and management by poplar and willow trees in Manawatu-Wanganui region				
Erosion type	Shallow landslide	Gully	Slump	Stream bank
Present on farms	33	29	30	13
Percentage of total farms	94%	81%	84%	38%
Managed by poplar or willows	30	24	19	10
Percentage of present erosion type managed by trees	91%	83%	63%	76%

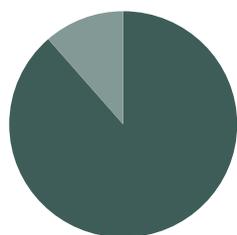
Erosion type and management by poplar and willow trees in Hawke's Bay region				
Erosion type	Shallow landslide	Gully	Slump	Stream bank
Present on farms	6	6	6	5
Percentage of total farms	86%	86%	86%	86%
Managed by poplar or willows	4	4	4	3
Percentage of present erosion type managed by trees	67%	58%	67%	43%

Table 1. Erosion type and management by poplar and willow trees – farmer survey results.

The farmers who received a subsidy generally planted more trees. This influenced both the number of poles planted and the frequency of planting (Figure 1). Farmers in face-to-face interviews said they would like to plant more poles but often a lack of time or money were limiting factors.

Of the 43 farmers who responded, 33 of them had trees that experienced a rainstorm event, 10 had not. Six out of seven farmers from the Wairoa district had their trees tested in a storm event.

Manawatu -Wanganui



- every 1-2 years
- every 2-3 years
- every 3-5 years
- less frequently

Hawke's Bay



- every 1-2 years
- every 2-3 years
- every 3-5 years
- less frequently

Manawatu -Wanganui



- less than 50
- 50-100
- 100-200
- more than 200

Hawke's Bay



- less than 50
- 50-100
- 100-200
- more than 200

Figure 1. Frequency of planting poplar and willow poles (L), and number of poles planted at any one time (R) by farmers replying to the questionnaire.

Influence of the trees on the management of farms

In both regions, the farmers frequently indicated a positive effect of trees on stock health, notably from shade.

The influence of trees on stock mustering in the Manawatu-Wanganui was largely indicated as neutral, whereas the majority of farmers in the Hawke's Bay indicated a negative effect.

The influence of trees on stock management in both regions was on average considered neutral. Only one farmer identified 'keeping cattle out of the paddock'.

The effect of buying trees on farm income was on average considered neutral in both regions.

The majority of farmers in both regions considered that the trees did not alter the stock-carrying capacity.

Other uses of the trees mentioned were shade, shelter and wood.

Of the Manawatu-Wanganui farmers, 28% were thinking of removing or replacing trees or had done so, compared with 60% in Hawke's Bay. Reasons given from both regions were that the trees were getting too big, they were too densely planted, or the farmers used the trees for firewood.

Other erosion control practices

Other management practices for erosion control to poplar and willow trees that were frequently mentioned in the questionnaires were planting of other trees such as native trees, pine trees, mānuka/kānuka trees, eucalyptus and shrubs. Seventeen of the 43 farmers did mention a plantation, e.g. pine, and this was the most frequent alternative measure reported in both regions. Other practices that were identified were fencing, shelterbelts, silt traps, detention dams in gullies, sediment control, drains, retirement/natural regeneration and adjustment of cultivation methods.



Different poplar varieties planted up a watercourse

For more information

This is one in a series of research briefs about Poplars and Willows that can be found at poplarandwillow.org.nz
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