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**Plant & Food RESEARCH**

RANGAHAU AHUMĀRA KAI



# Your soil is valuable – plant trees to keep it!

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Soil performs four important functions: it is a medium for plant growth; it stores, supplies and purifies water; it is a modifier of the atmosphere; and it houses organisms that decompose organic matter and release mineral nutrients for plant growth.

Soil is a finite resource. We must conserve it for the future. Soils on pastoral hill slopes need tree protection.

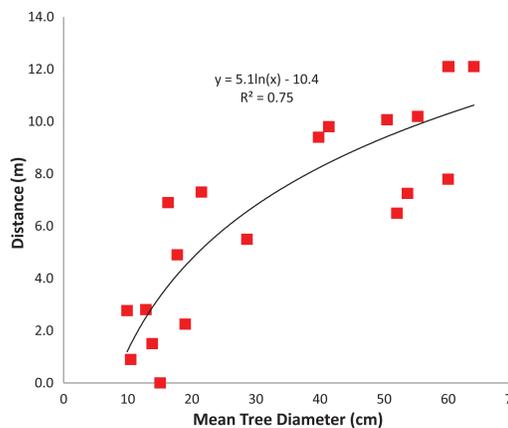
Once there were trees!



Is it worth planting a tree? Stock think so!



- The bigger the tree, the more soil it protects from slipping.
- A tree protects more soil when it is close to other trees.
- Plant trees close together, and increase the spacing as the trees grow.

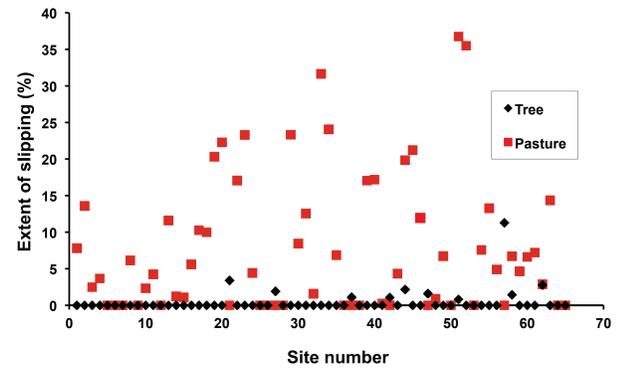


**Graph 1** Distance of nearest slip from tree in relation to tree size following a major storm in April 2011, Hawke's Bay.

- The bigger the tree, the greater the area of root protection
- The sooner the tree is planted, the quicker the soil becomes stabilised.
- The better the tree is managed, the less the reduction of grass production
- Pollarding, pruning and thinning are ways to manage trees in pasture.

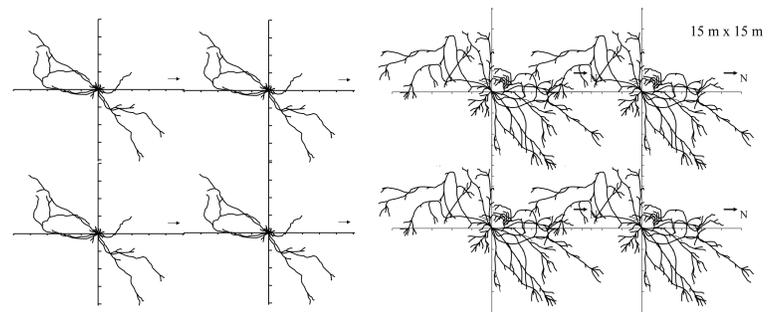


- Pollard, prune or thin trees for greater grass production.



**Graph 2** Extent of slipping on hill sites with pasture + trees (tree), and hill sites with pasture only (pasture), following a major February storm event in Manawatu. N = 65 for each group.

- Poplars and willows planted on slopes reduce soil slippage. Slopes with no trees are much more likely to slip in a storm.



**Graph 3** Root system of a 'Veronese' poplar growing on a hill slope at 5 years (L) and 9 years (R).

- Bigger trees have bigger root systems and protect more soil.
- The closer the trees, the greater the protection.
- The bigger the trees, the greater the spacing can be for the same degree of protection.
- As trees grow, increase spacing by removing trees.
- The sooner the trees are planted, the sooner they start stabilising the slope.



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