

## Soil conservation – is the renaissance coming?

New Zealand loses over 200 million tonnes of soil every year to the oceans, and erosion is severe to extreme on 10% of the country. As a consequence, over the last 40 years or so, New Zealand has invested a considerable amount in soil conservation measures to protect and maintain farming predominantly on hill country landscapes. Has this investment been worth it and how have these practices fared in the light of a number of recent devastating storm and flood events? What role has science played and do we have the answers to future-proof our hill country against damaging storm events?

Research on the economic impacts of soil erosion in New Zealand has focused on the on-site costs of soil loss in the form of production loss and storm damage. Subsidies and implementation of soil conservation measures have primarily been justified through maintenance or improvement of farm productivity levels. However, while soil conservation measures have contributed to on-going, on-farm production, international estimates of soil erosion-damage in recent decades have indicated off-farm damage may be greater than that on the farm.

Soil conservation as both a word and a practice has largely dropped from popular use in New Zealand. Modern practices formerly ascribed as "soil conservation" can be found in terms such as sustainable land management, integrated catchment management, and so on. However, many of the physical practices of soil conservation themselves are still employed on the ground, though it might be argued that in many areas these too have declined. What has happened, though, is that attention has been focused to some degree away from individual properties and back to catchments where it all began between the 1940s

and '60s. Taking a larger view of the nature of the problem and its range of solutions is now providing the renaissance of soil conservation. Some might argue it's been a bit slow in coming as evidenced by significant damage during several recent severe storms, the impacts of which might have been less drastic if the soil conservation "ball" had not been dropped in some regions.

However, it is clear that attention is now refocusing on research, policy, and action "on the ground" in terms of soil conservation. Research initiatives such as SLURI (Sustainable Land Use Research Initiative), ICM (Integrated Catchment Management) at Environment Waikato, SLUI (Sustainable Land Use Initiative) at Horizons Regional Council, and a general move to conduct land-use planning at farm and catchment scales across the country, all point to a renewed interest in dealing with what is a "protection at source" issue rather than a focus on downstream effects, which has been the primary focus of many RMA (Resource Management Act) issues over the last decade.

Research carried out in Taranaki in the '80s and early '90s has resulted in a landscape that has a range of land uses suited to maintaining productivity on those parts best suited for that purpose and retiring and planting those parts that were steep, unproductive and at risk of failure. The result is a mosaic of land uses and vegetation cover seen across individual farms and catchments. Another example is the East Coast Forestry Project where research into understanding erosion process



Storm damage at Ngatapa Valley, Gisborne, July 1985, after 200 mm of rain fell in 24 hours (Gisborne Herald)

dynamics and the value of blanket afforestation in treating severe erosion and reducing sediment load to rivers and coast helped elevate this to a national priority requiring a central government response.

So where to next? There is still a need to understand the intrinsic nature of many erosion processes and the generation, transfer and storage of sediment in our landscapes. There is a need to move towards integrated modelling tools that incorporate and represent the nature of the actual processes rather than rely heavily on off-the-shelf models developed for other places with different sets of processes from those found in New Zealand. There is also a need to improve the uptake between research and policy formulation and to bring back a national perspective to what has become a series of regional issues. Soil conservation is not dead – it has just been quietly hovering in the background. The renaissance is nigh!

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