Managing Erosion

Repairing slip damage

What is the cost of lost pastures?

The immediate cost of storm damage is the inability to manage the property through the loss of fences, dams, and tracks as well as a large area of bare ground, consisting of slip scars and debris.

A severe storm can cause about 5% bare ground over a whole farm. This does not sound like much, but some areas may appear to be devastated while others experience minor damage. A 400-hectare farm with 5% slipping in a severe storm equals 20 hectares of land without production in the short term, and reduced production longer term.

How long does it take for slips to recover?

There are two types of bare ground on hill country after a storm: slip scars and slip debris. Slip scars are usually hard and steep and will grass over slowly. How fast pasture re-establishes depends on moisture, fertility, and weathering of the surface. Slip debris tends to grass over quickly, but initially may include weeds, such as thistles.

Pasture growth on slip scars only reaches 70 to 80% of original production after 30 years. Most of this recovery takes place within the first ten years. Research has shown recovery times can be shortened by 20 years with the right management.

What is the risk of a storm happening?

Hawke's Bay hill country farmers can generally expect storms causing erosion every five years and storms causing severe erosion every 10 years. Intensifying hill country farming increases the risk of damage from such storms. However, when the soils are fertile and good management is used, there is some potential to recover pasture production.

What can be done to improve recovery?

Slips often remove topsoil and some subsoil, leaving a poor surface for pasture growth. Hardy pasture species, fertiliser and careful management are needed for pasture re-establishment.

Trials on Wairarapa hill country have shown that the recovery rate of pasture on slips can be improved by over-sowing and top-dressing. Pasture production on these areas was 2.5 times greater after five years than on untreated slips. Slower-establishing pasture species were more productive than faster-establishing species.

Excluding livestock helps pastures re-establish. Paddocks rested from grazing for three seasons, as well as given seed and fertiliser treatment, eventually produced almost as much pasture as the surrounding land without slips.

HAWKE'S BAY REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI

What is the best way to treat damaged paddocks?

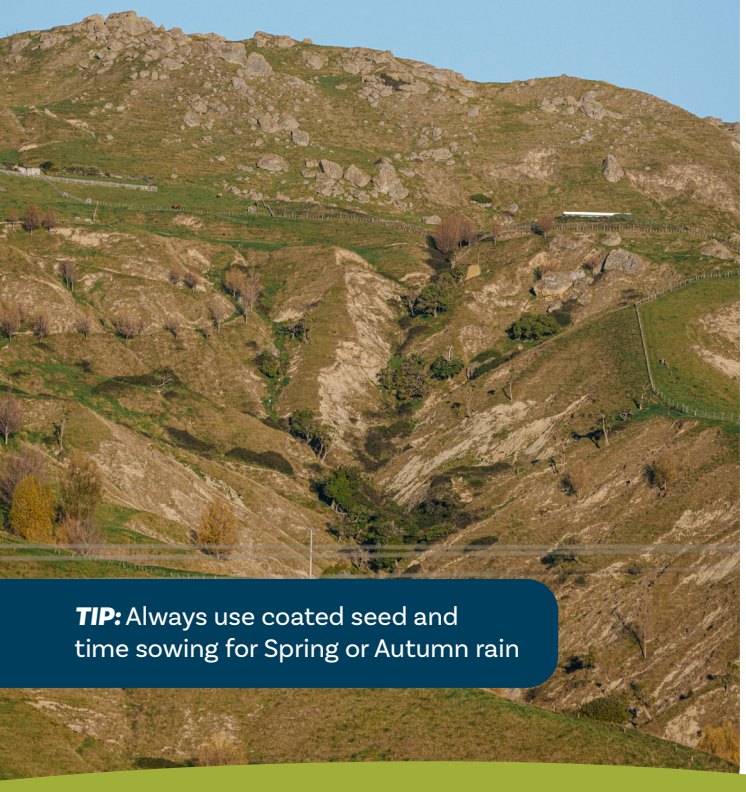
- Top-dress annually with at least maintenance rates of superphosphate but not nitrogen
- Over-sow with a pasture seed mix, including White Clover, *Lotus pedunculatus* and Cocksfoot

A more successful, but more expensive option is:

- Top dress and oversow as above
- Exclude livestock for at least one growing season from October to May
- Stabilise surrounding terrain with soil conservation plantings such as poles

Application rates used in the trial work were:

- Sulphur fortified superphosphate at 200kg/ha a year for three years
- Cocksfoot (Grasslands Wana and Kara) at 6kg/ha
- Tahora White Clover at 3kg/ha
- *Lotus pedunculatus* (Grasslands Maku) at 2kg/ha



TIP: Always use coated seed and time sowing for Spring or Autumn rain

Is it economic to over-sow slips?

The following scenarios demonstrate the potential benefits of different management practices, based on a 400-hectare property with 20ha of the bare ground.

Option 1: **Normal pasture grazing.**

After five years production on slipped areas will be about 2.5 tonnes of dry matter per hectare per year. Production will gradually improve each year for 20 to 30 years to a maximum of about 6.5 tonnes of dry matter per hectare.

Option 2: **The slipped areas are over-sown and top-dressed annually.**

After 5 years, production on the slips is 6.25 tonnes of dry matter per hectare per year or an extra 75 tonnes per year over 20 hectares. Production is already 20 years ahead of Option 1.

Option 3: **Livestock are excluded for at least one growing season.**

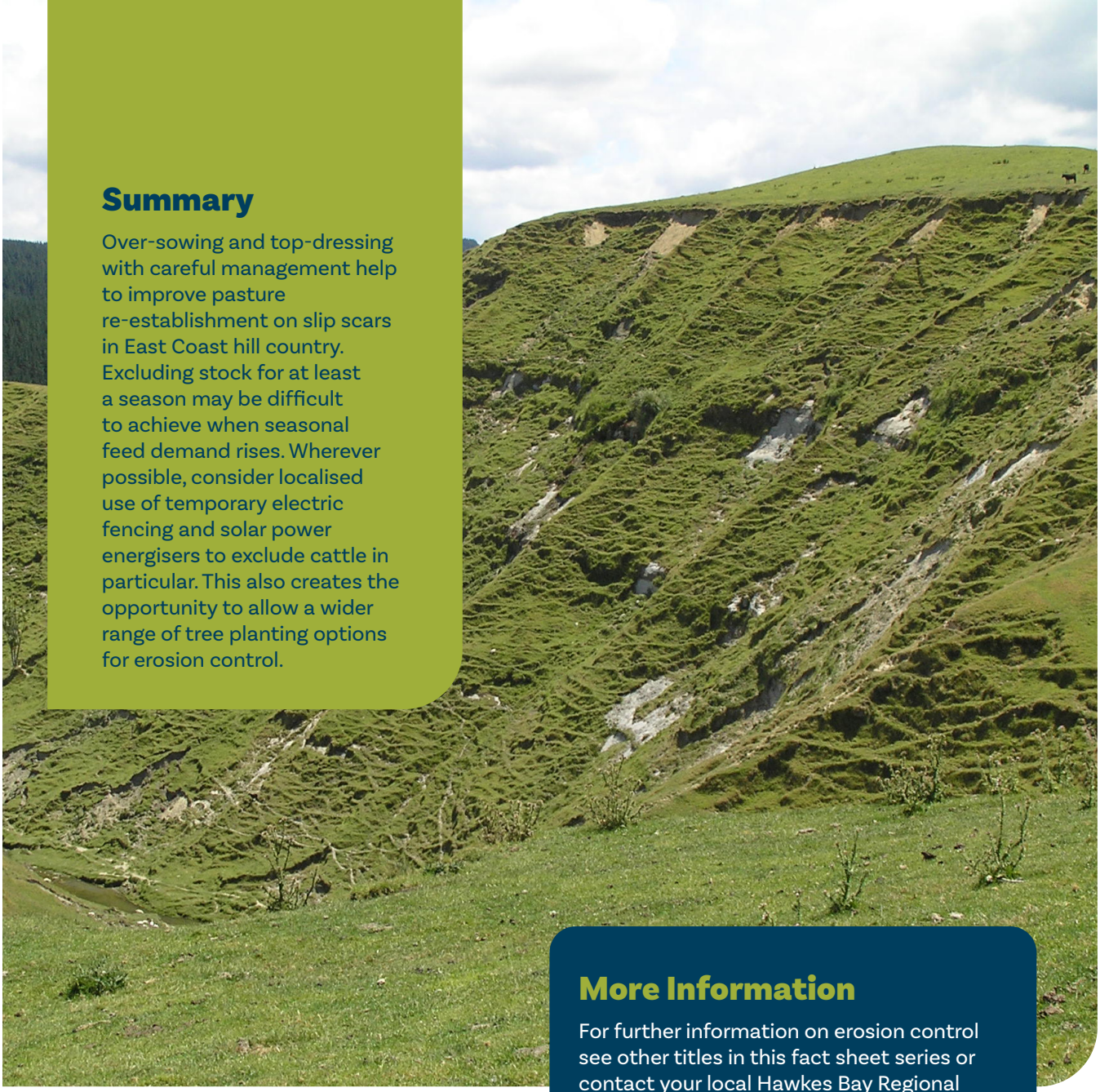
Slips are over-sown and top-dressed annually. After 5 years, production is 8.5 tonnes of dry matter per hectare per year or an extra 120 tonnes of dry matter per year over the whole 20 hectares. Production has exceeded the normal maximum for slip scars and is about the same as on non-eroded ground.

Summary of dry matter production on slip scars after treatment

Treatment	Production ha/yr after 5 years	Production over 20ha/ yr after 5 years	Extra feed ha/year after 5 years
None	2.5 T	50 T	-
Fert+Seed	6.25 T	125 T	4.25 T
Fert+Seed +Rest	8.5 T	170 T	6.0 T

Visit hbrc.govt.nz, search: #poles

HAWKE'S BAY REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI



Summary

Over-sowing and top-dressing with careful management help to improve pasture re-establishment on slip scars in East Coast hill country. Excluding stock for at least a season may be difficult to achieve when seasonal feed demand rises. Wherever possible, consider localised use of temporary electric fencing and solar power energisers to exclude cattle in particular. This also creates the opportunity to allow a wider range of tree planting options for erosion control.

Where can I find more information?

Contact your stock and station agent or seed merchant for supply of pasture species and information. This fact sheet was based on two research papers:

Lambert M.G, Costall D.A, Foote A.G and Trustrum N.A, 1991, Revegetation of erosion scars in Wairarapa hill country. Proceedings of the New Zealand Grassland Association 55:777-181.

Douglas G.B, Trustrum, N.A and Brown I.C, 1986, Effect of soil slip erosion on Wairoa hill pasture production and composition. N.Z. Journal of Agricultural Research 29: 183-192.

More Information

For further information on erosion control see other titles in this fact sheet series or contact your local Hawkes Bay Regional Council Catchment Advisor team.

Wairoa office
Byran McCavana - 027 210 7397

Napier office
Alice Anderson - 027 200 4278

Waipawa office
Paul Train - 027 533 2539

Toll Free – 0800 108 838

Provide the operator with the location of your property for quick access to the appropriate staff member.