Soil erosion solutions

Helping North Coast landholders reduce soil erosion

Fact sheet 3: Monitoring erosion

The north coast's heavy rainstorms can cause dramatic erosion events, but most soil erosion happens gradually over time, so that day to day change is small and hard to notice. Monitoring soil erosion can help you realise just how much of your soil is eroding. If you make changes to farm management to reduce soil erosion, monitoring is how you will know if your erosion controls are working. This leaflet describes some basic monitoring activities that can give you longer term perspective on soil erosion.

Watch water flows

Most erosion on the north coast is due to heavy rainfall and fast water flows, so find out where water collects and flows on your land as these areas are most vulnerable to erosion. Once you know these areas, inspect them regularly so that you can fix any erosion as soon as it appears.

Walk over your land when it is raining to see where water collects and runs off.

Walk in the paddock

Walking through your paddocks can help you check how much groundcover you have. A minimum of 70% cover is recommended to protect soil from erosion, but on the north coast 90-100% cover is recommended.

- If you have 100% groundcover your feet will touch plants with step.
- If you touch plants 8 or 9 times in 10 steps this is a rough indicator of 80-90% groundcover.
- If you touch plants 7 times or less in 10 steps this is a rough indicator that you need more groundcover to protect your soil.

Take regular photographs

Take regular photographs once or twice a year of particular indicator sites such as gullies, channels, tree roots, fences etc. Date them and compare the new photographs with earlier versions. This will give you a better idea than visual observation of the extent and rate of erosion.

If you have aerial photographs available, you can determine the size of the erosion by calculating the eroded area or kilometres of gully length per square kilometre.

Test with bottle tops

Push a number of bottle tops into the surface of the soil in areas vulnerable to erosion. Beer bottle tops are adequate.

Bottle tops pushed into the soil at the start of a test, before erosio has taken place.

The bottle top protects the soil underneath so that when the surrounding soil erodes, the soil underneath the top will remain and form a pillar. Check the bottle tops regularly and place them away from stock traffic areas.

Use erosion pegs

Bang a metal peg such as the tent peg shown below into the ground and mark where the ground surface is. Use a marking pen or paint that will not come off in the wet. If the soil is eroding, a gap will develop between the mark on the peg and the soil surface. You can use a number of pegs in a grid across the paddock to check where most erosion is occurring. Make sure you place your pegs in an area that will not be disturbed by stock and / or machinery. You may have to fence off a small area.

The marker on the peg indicates the initial soil level.

Test with wood

Take a long piece of wood and lay it flat to the ground across the slope. The wood can be a plank, or solid piece of dead wood that does not leave any spaces between it and the ground. Inspect the wood regularly to see whether soil builds up on the upside of the wood and if so, how quickly.

Measure turbidity

Turbidity is caused by soil particles suspended in water. To measure the quantity of particles, collect runoff in a jar and measure the height of the soil that settles at the bottom of the jar.

Monitor soil health

A decline in soil health can be an indicator of soil erosion. Active erosion selectively removes the finer soil fractions of clay and organic matter that contain most of the nutrients and enhance water holding capacity. The gravely or sandy soil left behind is less fertile, it's capacity to sustain life is reduced.

You can monitor your soil with the Northern Rivers Soil Health Card, a set of ten straightforward visual tests using simple equipment, that will help you detect improvement or deterioration in your soil's condition over time.

The tests are:

- Groundcover
- Penetrometer
- Infiltrometer
- Diversity of soil life
- Root development
- Soil structure
- Slaking or aggregate stability
- Earthworm count
- Soil pH
- Leaf colour

If you find that your soil health is improving over time, there is a good chance soil erosion has stabilised. A decline in soil health over time could indicate an active erosion problem, especially where other signs of erosion are present (see *Factsheet 2:Indicators of erosion*) .

More information

NSW DPI's website has information on soil erosion at:
http://www.dpi.nsw.gov.au/agriculture/resources/soils/erosion

To discuss your specific soil erosion issues, contact NSW DPI soils advisory officer Abigail Jenkins, Wollongbar, on 6626 1357 or abigail.jenkins@dpi.nsw.gov.au.

Northern Rivers CMA CATCHMENT MANAGEMENT AUTHORITY

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