

FUNDAMENTALS OF SOIL MANAGEMENT

Core principle 1: Groundcover

PRINCIPLE 1: GROUNDCOVER PROTECTS SOIL AND IS YOUR BEST DEFENCE AGAINST EROSION

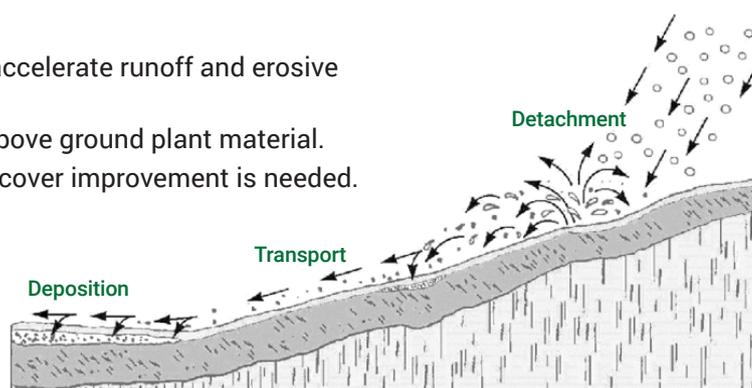
Groundcover significantly reduces erosion risk and extent:

- Without groundcover 85% of rainfall from one rain event runs off into streams and creeks instead of soaking into soil.
- Living plants protect the soil from raindrop impact.
- Foliage and grass cover increase water infiltration and rainfall-use efficiency.
- Grass roots improve soil structure by increasing porosity and adding organic material that bind soil particles together.
- Organic matter from decaying plants feed beneficial soil microbes, producing gums that glue soil particles together, reducing erodibility.

Watch out for...

- Bare ground that could provide pathways to accelerate runoff and erosive processes.
- Groundcover levels - monitor percentage of above ground plant material.
- Runoff and erosion – this means that groundcover improvement is needed.

Rain drop impacts on bare soil dislodges soil particles from aggregates and transports them away via runoff (Source: Brady and Weil (2002))



LOSS OF GROUNDCOVER PROGRESSION BEGINS AS BARE PATCHES, SCALDS, RILLS THEN GULLIES.



Preventative measures

Goal	Actions	Benefits
Maintain healthy plant/grass cover	<ul style="list-style-type: none"> Choose deep-rooted perennial grasses on flat country e.g. signal, rhodes, green panic (light/shade), kangaroo grass (native). Stoloniferous or running grasses are better for sloping land and erosion prone areas than tufted species e.g. kikuyu & pangola, smothergrass (in low light conditions). 	<ul style="list-style-type: none"> More drought resilient. Recover faster after rain. Resilient to wind erosion in droughts. These grasses maintain better groundcover in dry periods.
Encourage plant roots	<ul style="list-style-type: none"> Allow grasses to periodically grow higher. Diversify pasture/ groundcover species. Choose grasses with fibrous roots systems over tap-rooted plants. 	<ul style="list-style-type: none"> Higher above ground vegetation = larger below ground root systems. Roots increase soil organic matter = increased water retention. Root material feeds soil organisms = more nutrients available and improved plant growth. Active soil microbes, improves soil structure = enhanced water infiltration making soil less erodible. Well structured soil allows water to percolate rapidly.
Weed control	<ul style="list-style-type: none"> Reduce weeds by increasing competition from healthy pastures. Reduce over-grazing. Targeted spraying of certain species and limit the impact on non-target species. 	<ul style="list-style-type: none"> Maintaining ground cover while controlling target species. Using weeds with tap roots increases water infiltration. Using grass/pastures to out compete some paddock weeds (annuals), reduces cost of spraying.
Minimise compaction	<ul style="list-style-type: none"> Avoid working or stocking on wet soils and weak soils. 	<ul style="list-style-type: none"> Pore spaces provide channels for roots and water to move through.
Fence areas to land types according to erodibility and risk	<ul style="list-style-type: none"> Fence according to soil types or slope. Work within the capacity of the landscape. Fence off consistently poorer covered areas & convert to timbre production or nature reserve. 	<ul style="list-style-type: none"> Management minimises erosion in vulnerable areas. Increased ground cover.

MONITORING FOR SUCCESS

Measure ground cover over time. Take pictures consistently and to measure groundcover percentage.

[Visit Australian Government & National Landcare Program guide to estimating groundcover percentage here](#)

INFILTRATION TEST

Estimate infiltration rate (mm/hr) the speed water enters the soil

[Watch the video from NQ Dry Tropics here](#)

LANDHOLDER TESTIMONIAL

“Good groundcover reduces flow which in turn minimises erosion, and also has a positive effect on biodiversity. Nobody wants to pay rates on bare ground. Being mindful of the potential to create erosion is a necessity in day to day management. Creating a problem may be as simple as putting a blade down in the wrong spot. Being proactive and not reactive gives greater choices with management options. The extension work BMRG provided was appreciated; they were great to work with. Don't be afraid to seek out expert advice. Knowledge of the process of erosion and how to contain it was readily available and explained in a straight forward manner. As a result of this we now have a more holistic view of the processes influencing erosion” – *Craig and Michele Hodges, Boobyjan, QLD.*

