

Soil Erosion Solutions

Helping North Coast landholders
reduce soil erosion



Soil erosion projects completed
in the Northern Rivers, NSW 2005/06

Funded by Northern Rivers Catchment Management Authority



Project locations



Soil Erosion Solutions supports work to repair, reduce and prevent soil erosion on agricultural land in the northern rivers region.

How SES works

SES is funded by Northern Rivers Catchment Management Authority and delivered by NSW Department of Primary Industries (NSW DPI) and Landcare. Technical panels assess applications from landholders and NSW DPI and Landcare work with successful applicants to finalise technically sound project plans. Landholders do the onground works.



SES 1

At the end of the first year of Soil Erosion Solutions, 17 landholders had completed works on their properties. Eight field days were held, and four newsletters and seven erosion fact sheets produced, available on the web at www.agric.nsw.gov.au/reader/soil-erosion or as hardcopies by request.

Richmond/Tweed projects

In the Richmond/Tweed catchments two macadamia farmers reshaped their orchard floor drainage and established shade-tolerant groundcover, and other landholders have stabilised mass movement, tunnel erosion and active gullies.

Coffs/Bellinger projects

In the Coffs/Bellinger catchments steep lands were the focus, with landholders funded to safely remove bananas, remove noxious weeds, establish groundcover, revegetate gullies and stabilise roads.

Clarence projects

In the Clarence catchment the focus was on stabilising gullies and repairing cultivated land.

Nambucca/Macleay projects

In the Nambucca/Macleay catchments an active gully was stabilised, a former banana plantation was reshaped and replanted with pasture on the flatter terrain and trees on the steeper slopes, and an indigenous group rehabilitated a creekside former banana slope with native tree planting.

SES 2&3

The initial Soil Erosion Solutions program has been so successful in helping landholders control severe soil erosion that the Catchment Management Authority has now funded the NSW DPI to manage two further programs. SES2 is funding projects in the Richmond and SES3 will address gully erosion in the mid-upper Clarence and Casino areas, and steep land erosion in the Tweed and Byron local government areas.



Information and support

The Soil Erosion Solutions team will continue to help landholders with erosion project planning, and to run field days and training events to share knowledge about how to reduce soil erosion on farms. The team is currently compiling a technical manual for landholders to provide more detailed information on soil erosion management and rehabilitation. For more information about Soil Erosion Solutions contact Abigail Jenkins on 6626 1357 or abigail.jenkins@dpi.nsw.gov.au.



Gully stabilisation

Landholder	Frank Paice
Map reference	1
Land use	Cabinet timber
Soil Erosion Solutions Grant	\$10,000 (earthworks, concrete)
Landholder's in-kind contribution	\$10,321 (labour, rocks, plants)

The site

On the low side of a sweeping bend, concentrated run-off from a bitumen road contributed to severe gully erosion running into remnant rainforest. The gully was damaging the forest and cutting into a residential site close to sheds and driveways.



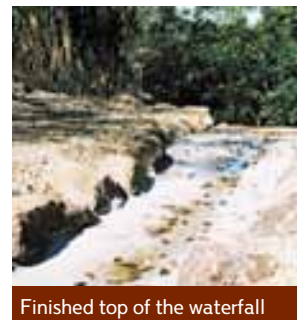
Cudgen property before works

The project

- > A waterfall structure made from large boulders was constructed to protect the gully head.
- > An upstream channel was constructed to reduce seepage, slow the water and direct the water over the new structure.
- > Trees and grasses were planted to stabilise other parts of the gully.

The benefits

- > The remnant rainforest area is now protected from scouring and slipping.
- > Water quality flowing into a downstream wetland has improved.
- > A nearby residential area is no longer threatened with erosion.
- > The stabilised gully will offer better habitat value for wildlife in and around the stream.



Finished top of the waterfall

Landholder's experience

What was the **best thing** about this project?

"The system for controlling the water running off the road works perfectly. The wide flat channel serves to slow the water before flowing over the waterfall structure; the water is then controlled downstream with the use of Australian native trees, grasses and Vetiver grass."

What was the **most difficult** aspect of the project?

"Once I had the contractors, who were building the structure, understand that water does NOT run uphill, the project went fairly smoothly. I had to be on the spot pretty much 100% of the time to ensure the satisfactory completion of the work."



Finished works

Steep slope stabilisation

Landholder	Richard McMillan
Map reference	2
Land use	Grazing and native forest conservation
Soil Erosion Solutions Grant	\$3,720 (trees, fencing materials, herbicide and tree guards)
Landholder's in-kind contribution	\$14,590 (labour, tractor work)

The site

This grazing property in the upper reaches of the Tweed Catchment had tunnel erosion and minor slumping on a steep slope leading down to a creek. The root systems of the existing pasture were not deep enough to hold the subsoil. The slope is next to a 10ha area of high conservation value vegetation.



Richard McMillan in the original vegetation on the site



Tunnel hole at Upper Crystal Creek



Trees planted across slope

The project

- > Cattle were removed from the site.
- > Deep-rooted local provenance rainforest trees were planted to help hold the subsoil in place.
- > The trees are maintained with weed control, tree guards and mulch.

The benefits

- > The unstable slope has begun to stabilise.
- > The tree planting joins high conservation value vegetation on adjacent farms.
- > The site is now the first stage of a wildlife corridor linking Crystal Creek to Springbrook National Park (Qld).

Landholder's experience

What was the **best thing** about this project?

"Recreating some of the biodiversity on the property that was previously lost."

What was the **most difficult** aspect of the project?

"Planting and mulching the area was difficult due to the steepness of the slope and proved very time consuming. An ongoing problem is protecting the seedlings from marsupials (of many varieties)."

Stopping mass movement

Landholders	Ross and Samantha Muller
Map reference	3
Land use	Grazing and bushland
Soil Erosion Solutions Grant	\$8,947 (trees, fencing materials, earthworks, pipe, gravel, cattle troughs)
Landholder's in-kind contribution	\$8,954 (labour, trees, earthworks, gravel, herbicide)

The site

This farm is on the footslopes of the Border Ranges. Topsoil from almost a hectare of land had slumped, creating an unstable surface and exposing subsoil clays. Underground water had saturated and weakened a layer of subsoil. The topsoil, vegetation and saturated subsoil had then slid along a less permeable subsoil layer. The underground water needed to be intercepted above the slumped area, and diverted safely downhill.



Excavating: spring tapper digging



Slip before works

The benefits

- > Land slumping has halted.
- > Problem groundwater has now become a useful source of clean, high quality stockwater.
- > Bare land has been revegetated.

The project

- > The site was fenced off from cattle access.
- > The underground water was intercepted using a spring tapper and the water diverted to new cattle troughs.
- > The slip area was revegetated with deep-rooted native trees.
- > Rehabilitation of landslips requires technical expertise. In this case Department of Natural Resources staff designed the spring tapper and water diversion system.



The spring tapper before burial: tapper and geotextile

Landholders' experience

What was the **best thing** about this project?

"The funding enabled us to do it one go instead of trying to do bits and pieces over time. The reality is that if we didn't do it in one hit, then each time it rained any work completed would have been washed away with the slip. The other great part is that so many of our neighbours have been over to see 'what was going on' and this has allowed us to share what we have done with others. It's great to be able to give back too."

What was the **most difficult** aspect of the project?

"The rain - every time the excavator was due to begin works it rained (a lot). The ground here turns to mud and so it is impossible to access the slip site. I really thought it wasn't ever going to happen! Funny though, because we finally got a break in the weather, did the excavation works, and when we began planting we had a week of solid rain that the plants were delighted to receive - so for once we were grateful for it!"

Orchard floor improvement

Landholder	Rex Harris
Map reference	4
Land use	Macadamias
Soil Erosion Solutions Grant	\$9,342 (equipment hire, soil conditioners, smothergrass turf)
Landholder's in-kind contribution	\$11,598 (labour, tractor work)

The site

This young macadamia orchard had erosion and washouts between tree rows due to groundcover decline from lack of light. Runoff from the site was flowing into Skinners Creek.

The project

- > The orchard floor was reshaped to create a wide spoon drain down the centre of the interrow.
- > The interrow topsoil was placed under the trees.
- > Shade-tolerant sweet smothergrass was established by laying turf in strips across the new spoon drain, each strip acting as a sediment trap until vegetation could spread across the whole area.
- > Biological activity in the soil was stimulated by application of a vermi-compost extract and PBS (Phyto Biological Stimulant, made from kelp, fulvic acid, fish emulsion, molasses, selenium, boron and zinc) to improve soil structure by increasing the stability of soil aggregates.



Eroded channel next to macadamia tree showing exposed tree roots

The benefits

- > Sediment loss to Skinners Creek has been reduced.
- > The shade-tolerant groundcover will improve soil biological activity and soil health.
- > Improved soil structure will reduce the soil's erodibility.



Shade-tolerant smothergrass turf strips laid between the orchard rows

Landholder's experience

What was the **best thing** about this project?

"...the excellent end result in both water management and protection of soil."

What was the **most difficult** aspect of the project?

"The worry of losing soft soil that had been placed under the trunk line during the 950mm of rain received during December 2005 to March 2006."



After the works: good grass cover between the orchard rows

Improved orchard drainage and groundcover

Landholders	Frank and Terry Adcock
Map reference	5
Land use	Macadamias
Soil Erosion Solutions Grant	\$1,675 (earthworks, haybales)
Landholder's in-kind contribution	\$1,700 (planning, smothergrass, labour)

The site

This is a young 4ha orchard, with good grass cover and little erosion, but some sections are relatively steep and the landholders are aware of the increasing erosion risk as their orchard matures.

The project

- > Where possible runoff was diverted towards the centre of the property to assist with filling the farm dam.
- > Spoon drains were formed in selected interrows.
- > The disturbed soil was sown with winter rye grass and sorghum to provide fast groundcover.
- > Hay bales were placed within the spoon drains to slow water flow, encourage infiltration and trap sediment. The bales will be replaced by earth swales after groundcover establishes in the new drain.
- > Pots of shade-tolerant smothergrass were planted out.



Orchard slope before works

The benefits

- > Potential erosion has been prevented.
- > Improved orchard drainage fills the farm dam and increases rainfall infiltration.
- > Groundcover will survive as the orchard matures.



Newly constructed drain with sediment trap

Landholders' experience

What was the **best thing** about this project?

"This project has allowed us to put in place appropriate controls, while our trees are still young, to minimise orchard floor erosion. The main benefits are being able to retain the good quality organic topsoil and more effectively manage water flow during heavy rain. A secondary benefit is being able to store some of this water in the subsoil, which would normally be lost."

What was the **most difficult** aspect of the project?

"Managing the effects of wet weather was the most difficult aspect of the project. A number of delays in the start date occurred prior to the commencement of earthworks. Each time we planned to do the earthworks rain caused a delay. On completion of the earthworks we had another visit in the form of 200mm over 48 hours. This highlighted the importance of planning and putting in place appropriate controls to minimise erosion during this phase until the soil could be stabilised."



Repair of cultivated land

Landholder	Rodney Ellem
Map reference	6
Land use	Cultivation, grazing
Soil Erosion Solutions Grant	\$9,954 (grader hire, tip truck, loading, excavator, fencing materials, tree guards, kikuyu and amarillo peanut seed)
Landholder's in-kind contribution	\$1,700 (labour, operating tip truck, loader and excavator, star pickets)

The site

Soil erosion was an inevitable result of the intensive farming on this mixed dairy and cropping farm. Cultivated areas had lost topsoil, and dairy laneways were eroding. An active gully in a watercourse leading to the farm's main dam was filling the dam with sediment. The lack of trees was exacerbating the instability of the soil.

The project

- > Topsoil deposited downslope in the cultivated paddocks was carted upslope to repair eroded areas.
- > Laneway surfaces were reshaped with strategic cross drains to shed water to the sides rather than down the laneway.
- > The dam was de-silted to provide material for constructing banks etc.
- > Contour banks were extended from the high water zone of the dam to intercept paddock runoff and direct it via grassed waterways to the dam.
- > Contour banks in other areas were designed to discharge runoff to permanently grassed areas.
- > The area above the high water level of the dam was planted with trees and grasses.
- > A gully was repaired with rocks and tree planting to stabilise eroding areas.
- > All stock was excluded until the sites were stabilised with dense groundcover.



Laneways accessed by livestock prior to the works

The benefits

- > Fertile topsoil has been returned to cropping paddocks.
- > Laneways are no longer eroding.
- > Silting of the dam has reduced.
- > Runoff water ends up where it is needed, either in the dam, or watering grassed areas.
- > The farm has more trees and vegetation to hold the soil and provide stock shelter.



Erosion works nearly completed on side of effluent dam

Landholder's experience

What was the **best thing** about this project?

"The erosion repair has been a long term goal. This grant has gone a long way to making our plans a reality by purchasing materials to complete the job."

What was the **most difficult** aspect of the project?

"Completing the works in the allocated 6 months while running the dairy proved difficult. Breakdowns and adverse weather didn't help."



Starting fence construction near the dam

Steep land stabilisation

Landholder	Simar Kaur Singh
Map reference	7
Land use	Bananas, blueberries
Soil Erosion Solutions Grant	\$2,400 (earthworks, native plants, stakes, tree guards, fertiliser)
Landholder's in-kind contribution	\$4,450 (labour, concrete, chemicals)

The site

This farmer had taken a large area of bananas out of production and replaced some areas with other produce including blueberries, but a very steep area not suitable for the new crops was degrading rapidly.

The project

- > Access tracks were stabilised with earthworks and concrete.
- > Weeds were sprayed, with regular followup control.
- > Washed-out gullies were reshaped.
- > Native trees and shrubs were planted on 2ha.
- > Soil control works will continue into the next phase of the land repair program.

The benefits

- > Degraded roads are now accessible.
- > Downstream lowland rainforest habitats are now protected from sediment runoff.
- > Steep non-productive areas of the farm are regenerating with native vegetation.
- > The trees and shrubs provide native wildlife habitat.
- > The property has more aesthetic value.

Landholder's experience

What was the **best thing** about this project?

"The specific advice the Landcare officer gave me helped my work on the erosion to get a better result."

What was the **most difficult** aspect of the project?

"The weeds just keep coming back and I constantly struggle to get on top of them."



Before the work bananas had to be killed to prepare for new vegetation

Stabilising banana tracks

Landholders	Jinderpal Rai and Mohinder Singh
Map reference	8
Land use	Bananas, avocados, blueberries
Soil Erosion Solutions Grant	\$9,000 (excavator hire, gravel, native plants)
Landholder's in-kind contribution	\$10,300 (labour, tractor, excavator hire, gravel, cement, grass seed)

The site

The owner had difficulty maintaining vehicle access on the steep slopes of this working banana plantation. The alignment and condition of the access tracks for this banana plantation were creating gullies and making vehicle access increasingly difficult. A new blueberry orchard was also losing soil from bare ground between the rows.



Gully through banana plantation



Eroding banana track

Landholders' experience

What was the **best thing** about this project?
 "I can't believe how easy it is to spray my weeds!"

What was the **most difficult** aspect of the project?
 "It was hard work getting all that concrete up the hill."

The project

- > Erosion banks were installed to divert water off the tracks and reduce the velocity of the water moving downhill.
- > Tracks were reshaped using gravel, pipes, concrete and rock.
- > All areas disturbed by the erosion control works, including track surfaces, were seeded with grass.
- > The blueberry orchard floor was stabilised with a cover crop of grass.

The benefits

- > Soil and nutrient losses have reduced.
- > Access to the bananas for maintenance and harvest has improved.
- > The improved access has improved the condition of the fruit travelling to the packing shed.
- > The farm is operating more sustainably.



After the works : repaired banana track

From bananas to bushland

Landholders	Gerard McKosker & Johanna Kok
Map reference	9
Land use	Abandoned banana plantation
Soil Erosion Solutions Grant	\$10,000 (earthworks)
Landholder's in-kind contribution	\$25,300 (earthworks, revegetation costs and labour)

The site

This 10 ha property on the steep slopes of the Korora basin is prone to highly erosive intense rainfall events. It was no longer viable as a working banana farm because of its small size, steepness, access difficulties and weed infestation. There were three large gullies within the property, and many of the farm's access tracks had collapsed, so the farm was losing soil rapidly. The main access road was also eroding badly.



Gully before works

The project

- > The main access road and network of old banana tracks were redesigned to prevent further erosion and improve safe access to the property.
- > Robust pasture grasses were hand-seeded on the tracks and steep slopes to provide permanent groundcover.
- > Weeds were removed by hand from the three very steep gullies and replaced with extensive plantings of native vegetation to stabilise the eroding soil.

The benefits

- > Gullies are no longer actively eroding.
- > The owners can access their land safely.
- > It is now easier to control weeds and maintain native groundcover on the slopes.
- > There is less sediment and nutrients flowing into Pine Brush Creek and Solitary Islands Marine Park.



Onsite field day showing trees planted

Landholders' experience

What was the **best thing** about this project?
 "Native plants have replaced weeds."

What was the **most difficult** aspect of the project?
 "Ongoing maintenance, but it is becoming less of a job as natives become established."



Gerard McKosker amongst the newly planted trees

Moving out of bananas

Landholders	Jeff Herdegen and Vanessa Crompton
Map reference	10
Land use	Bananas
Soil Erosion Solutions Grant	\$7,300 (surveying, clearing bananas, earthworks, grass seed, trees)
Landholder's in-kind contribution	\$7,740 (surveying, clearing bananas, earthworks, revegetation, building retaining walls)

The site

This banana farm was being taken out of production. The steep slopes were heavily eroded, with most topsoil long gone, making it increasingly difficult to revegetate. The bananas needed to be removed safely and the soil stabilised quickly to prevent further erosion and runoff into the creek.

The project

- > The site was surveyed to define the slope contours.
- > The bananas were cleared with ongoing management of weeds.
- > Contour banks were built to slow the flow of runoff water.
- > A dam was built to trap runoff sediment.
- > Rills and gullies were stabilised with rock fill.
- > Trees were planted in belts on the contour for long term stability.
- > Fencing was upgraded.



Steep slope planted out with natives

The benefits

- > An unmanaged and rapidly degrading banana farm is now a stable, manageable home site.
- > Soil is no longer actively eroding.
- > Less sediment is entering waterways.

Landholders' experience

What was the **best thing** about this project?

"Working with people who offered good advice and were very obliging to deal with."

What was the **most difficult** aspect of the project?

"Trying to co-ordinate things in the timeframe provided."



Bananas cleared

Rehabilitation of grazing land

Landholder	Phillip Treloar
Map reference	11
Land use	Grazing
Soil Erosion Solutions Grant	\$2,330 (purchase trees, tree guards, grass seed, fertiliser)
Landholder's in-kind contribution	\$4,000 (weeding, planting, fencing)

The site

Steep slopes used for grazing cattle had become dominated by shallow-rooted lantana and crofton weed, neither of which provided enough groundcover to protect the soil. The soil was eroding around the weeds, especially in rocky areas. The landholder wanted to change the vegetation by eliminating weeds and re-establishing robust pasture plants. The property is part of a group where landholders work together to rehabilitate their land.



After weed spraying

The benefit

- > A degraded area of farmland will move back into grazing production
- > Natural regeneration and sown pastures have reduced erosion.



Stocking rates need to be managed to keep dense groundcover throughout a paddock

The project

- > Weeds were reduced with an initial application of broad spectrum herbicide.
- > Rocky outcrops were fenced temporarily and partly replanted to encourage natural regeneration.
- > Areas to be sown to ryegrass, kikuyu and Japanese millet were fertilised to promote growth.
- > Ongoing weed invasions are controlled with selective herbicide to prevent weeds re-establishing.
- > There will be further sowings of perennial pastures.

Landholder's experience

What was the **best thing** about this project?

"Getting to know what you need to do to hold the soil in place and what options there are."

What was the **most difficult** aspect of the project?

"Trying to work out how to go about it, choosing the best methods and knowing what products to buy."



Reafforesting former banana land

Landholder	Bollanolla Farm, owned by the Indigenous Land Corporation, on behalf of the Buchannon family
Map reference	12
Land use	Grazing
Soil Erosion Solutions Grant	\$5,000 (trees, tree guards, herbicide, fencing materials)
Landholder's in-kind contribution	\$5,266 Buchannon Family (labour) ILC (fencing materials, trees, fertiliser,)
Other contribution	\$1705 Nyambaga Goori Green Team (labour)

The site

The site is a weed-dominated former banana plantation sloping down to a stream that flows into Deep Creek. On the other side of the stream is an area of remnant native forest in good condition.

The project

- > 1 hectare was planted out to native forest.
- > Weeds were controlled.
- > Road access was upgraded.
- > A large area was fenced to better regulate stock on the property.
- > To complete this project, the Buchannon family was assisted by the Indigenous Land Corporation and the Nyambaga Goori Green Team as well as Soil Erosion Solutions.



The site before works

The benefits

- > A disturbed and degraded site has returned to more natural ecology.
- > The 1 hectare block of revegetated forest will provide a wildlife corridor between nearby forest areas and extend native animal habitat.



Remnant native forest

NEWEE CREEK

Rehabilitation of former banana land

Landholder	Heath Addison
Map reference	13
Land use	Pasture, bush regeneration
Soil Erosion Solutions Grant	\$8,298 (earthworks, trees, fencing materials)
Landholder's in-kind contribution	\$8,000 (labour)

The site

Part of this property had formerly been used as a banana plantation. The old tracks and gullied drainage lines were eroding and overrun with lantana.

The project

- > Slopes were reshaped to restore natural topography and drainage lines, and divert water flows away from erosion hot spots.
- > Old banana tracks were removed.
- > Three hectares of gullies and all slopes steeper than 15% were planted with native trees and shrubs.
- > Pasture was established on 2.5 ha of flatter land.



Heath Addison on the newly reworked banana plantation slope

The benefits

- > Eroding soil has stabilised.
- > Revegetation has improved soil health and fauna and flora biodiversity.
- > Weeds have been controlled.
- > The property now has manageable pasture areas.
- > Reduced sediment loss has improved water quality in the creek.



Groundcover established on the reworked slope

Landholder's experience

What was the **best thing** about this project?

"We would not have managed the financial aspect of restoration and prevention that this grant has allowed. Thank you."

What was the **most difficult** aspect of the project?

"The most difficult aspect is watching the noxious weeds sprouting right throughout the site. We have planted pasture; however the amount of weeds returning is a new problem that will require a lot of work for us in the future."



New fencing allows better management of the new pasture and tree plantings

Gully stabilisation

Landholder	Kempsey Rural Lands Protection Board
Map reference	14
Land use	Travelling stock reserve
Soil Erosion Solutions Grant	\$9,000 (design, earthworks)
Landholder's in-kind contribution	\$9,000 (earthworks, fencing, revegetation)

The site

The Greenhill travelling stock reserve is part of a system of lands set aside to enable the movement of livestock around the state. The reserve had a large eroding gully system dumping sediment into Fife and McKenzies creeks, and drainage from an adjacent road and cattle traffic were also contributing to the erosion.



In front of original gully, from left, Peter James, Kempsey RLPB and David Howley, NSW Soil Conservation Service

The benefits

- > A degraded area of the reserve is now stabilised and fenced off.
- > Stock can now access the rest of the reserve without further degrading the site.
- > There is less sediment pollution of downstream aquatic ecosystems.



Drop structure in construction

Landholder's experience

What was the **best thing** about this project?

"Having the problem recognised as a priority and then receiving the funding to do the project before the situation worsened with the impending storm season. The opportunity to hold a field on site was very beneficial."

What was the **most difficult** aspect of the project?

"Timing the work in with the inclement weather which caused some major delays."

The project

- > The area was fenced to exclude stock.
- > A rock drop structure was installed to reinforce a critical area in the gully and dissipate energy from the falling water.
- > Diversion banks were constructed to direct all water flow over the new structure.
- > The road's table drains were regraded to direct runoff water into the gully at suitable locations.
- > Road culverts were replaced with a larger pipe to minimise water flowing across the road to table drains.
- > The gully's side walls were battered for revegetation.



The finished rock chute

EROSION FACTS

Worldwide...

Each year, wind and water clear
75 billion tons of soil from the land,
most of which comes from **agricultural land**.



1cm of soil lost to sheet erosion
= 100 cubic metres
of soil per hectare.

30% of the world's
farmland has
become unusable
in the last 40 years
due to erosion.



Locally...

In New South Wales soil forms at
0.04 to 0.4 tonnes
per hectare per year.

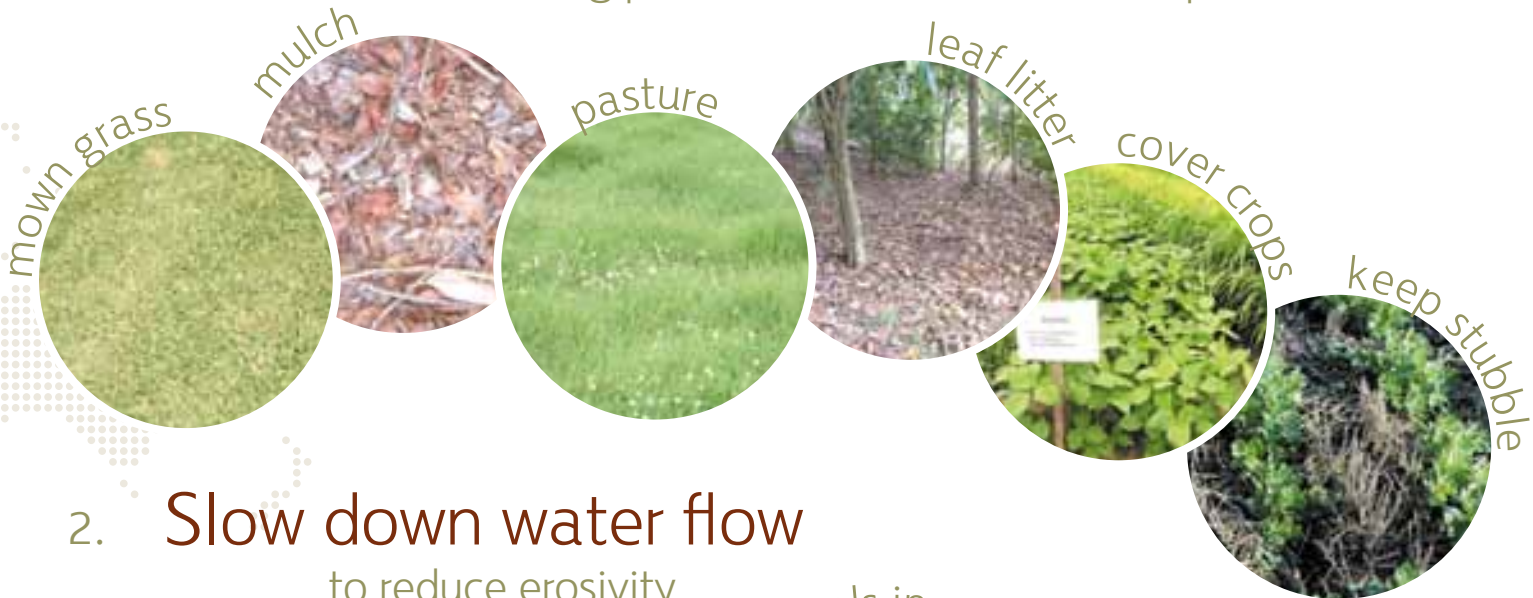
On the North Coast,
erosion rates of more than
50 tonnes per hectare per year
have been recorded.



EROSION MANAGEMENT

There are two basic strategies to control soil erosion on the North Coast.

1. Maintain **95% groundcover**, with living plants and mulches, for example...



2. **Slow down water flow** to reduce erosivity and increase infiltration



EROSION FACT SHEETS

The following fact sheets are available from the Department of Primary Industries by calling 02 6626 1294 or online at www.northern.cma.nsw.gov.au/publications

1. Types of erosion
2. Indicators of erosion
3. Monitoring erosion
4. Groundcover
5. Gully erosion
6. Roads and tracks
7. Planning your erosion project

Soil Erosion Solutions

erode *v.tr & intr.* wear away, destroy or be destroyed gradually [based on Latin *rodere* 'to gnaw']

Do you have soil erosion on your property?



Splash

erosion: raindrops hit bare soil and the impact breaks up soil aggregates mobilising particles and forming a surface crust.



Sheet

erosion: raindrop impact and shallow surface flow removes soil in thin layers. Soil loss is gradual and often goes unnoticed.



Gully

erosion: expands as concentrated flows of water undercut and collapse the head and side walls of watercourses.



Rills

erosion: shallow gullies less than 30cm deep, common in agricultural land and freshly cultivated soil.



Tunnel

erosion: water moves into the soil through cracks, burrows or tree root cavities and creates a tunnel as dispersive clays wash away.



Landslips

steep slopes, intense rainfall and gravity can weaken the soil so that it collapses in large amounts. Early signs of potential landslips are cracks and scars running across the slope.

Soil Erosion Solutions

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