

Grazing

Keep the ground covered in the Lockyer

Maintaining ground cover is critical

Grazing is the major landuse in the Lockyer Valley with an estimated 50 000 to 60 000 head of cattle and an unknown but significant number of horses. It is usually undertaken on a mix of native and improved pastures on the undulating and flood-plain lands outside of the horticultural areas.

Of all the land uses in the Lockyer Valley, grazing is one of the most significant causes of erosion. A survey by I Beitz in 2007 (reference) indicates that cattle grazing contributed to erosion in over 80% of the sites assessed.

The level of groundcover has a significant impact on the amount of sediment and runoff reaching waterways. A study at Mt Mort (reference) in the neighbouring Bremer catchment shows that erosion rates of up to 22 tonnes per hectare in a single 54mm storm are possible.

| % ground cover | 87 | 69 | 6 |
|----------------------------------|------|-----|----|
| Runoff (mm of rain) | 1.5 | 14 | 38 |
| Soil loss (t/ha) | 0.03 | 0.3 | 22 |
| Sediment lost with run-off (g/L) | 1.5 | 1.9 | 63 |

Table: Effect of groundcover on runoff and erosion at Mt Mort, south-west Ipswich in a 54 mm rainstorm

To minimise erosion caused by grazing it is recommended that groundcover should be maintained at a minimum of 70%.

This groundcover needs to be maintained at a minimum height (e.g. not less than 10 cm) to reduce the movement of dry vegetative matter and animal droppings in overland flow events.

The impact of grazing on the soil resource extends beyond sediment generated from overgrazing. Stock also produce tracks that can initiate gully erosion, while the continuous



Pasture health equals stock health: If pastures are not grazed too low then they are able to respond quickly to rains, provide good groundcover and ensure stock condition will be maintained.

grazing of creek banks can leave them prone to scour. The results from the study at Mt Mort show that grazing can have a strong influence on the rate of water runoff. With good groundcover, there can be a higher rate of rainfall infiltration into the soil and less runoff which can assist in reducing flood peak levels in downstream areas.



Cover your ground: a high level of ground cover reduces soil erosion and increases water infiltration in rainfall events.



Gullies and Scour: Stock can produce tracks that can result in scouring and gully erosion on creek banks

Note: further information on pasture management is available through the Department of Primary Industries.

Managing your pastures

General guidelines for managing your grazing pastures for productive stock and for minimising soil erosion.

1. Check pasture condition

It is important to assess pasture condition regularly. Desirable pasture species should be 70% of total grass community. Some of these include:

- Green Panic (*Panicum maximum var. trichoglume*),
- Gatton Panic (*Panicum maximum*),
- Rhodes Grass (*Chloris gayana*),
- Queensland Blue Grass (*Dichanthium sericeum*),
- Black Spear Grass (*Heteropogon contortus*),
- Forest Bluegrass (*Bothriochloa bladhii ssp. glabra*),
- Kangaroo Grass (*Themeda triandra*).

Pastures dominated by species such as Pitted Blue Grass (*Bothriochloa decipiens*), Red Natal Grass (*Melinis repens*), African Lovegrass (*Eragrostis curvula*), or Rats Tail (*Sporobolus crebra*), are in poor condition and should be managed appropriately to increase the presence of more desirable species. An indication of overgrazing is the presence of soft roly-polly (*Salsola kali*) or cotton-bush (*Maireana sp.*) within the pasture.

2. Rest Pasture

Have a program of resting paddocks periodically so that desirable species can recover and reseed.

3. Determine your pasture supply

The Lockyer Valley is a subtropical environment and the growing season for grasses is October through to March. Therefore in the approach to the cooler months and in lower rainfall periods, a calculation needs to be made as to how many head of stock the land can sustainably carry.

As a general rule, once you have determined the amount of dry matter present, you can budget about one third of that dry matter as being available for stock to consume. On average a beast will consume the equivalent of 2.5% of their weight per day.

4. Keep sufficient groundcover

70% groundcover or better is needed to reduce soil erosion rates and increase water infiltration rates. Pastures should be kept to a minimum of 10 cm high to enable rapid recovery from grazing and response from rain events.

70% ground cover

Strictly speaking, ground cover is anything that breaks the fall of rain up to 30cm above the ground. It can include grass tussocks, leaf litter, dung, sticks or rocks. The most effective ground cover is attached organic matter, such as grass tussocks, which cannot easily be removed by wind or water. 70% cover means that 70% of the ground is protected by grass or other material and the remaining 30% is exposed.



70% ground cover.

Pasture Landscapes of the Lockyer

Alluvial Soils – originally lightly timbered with forest red gum (*Eucalyptus tereticornis*) and Moreton Bay ash (*Corymbia tessellaris*).

Common pasture species are Queensland Blue Grass (*Dichanthium sericeum*), Forest Blue Grass (*Bothriochloa bladhii*), and Kangaroo Grass (*Themeda triandra*).

Naturalised grasses include Rhodes Grass (*Chloris gayana*), Green Panic (*Panicum maximum var. trichoglume*) and Paspalum (*Paspalum dilatatum*).

Scrub soils – originally heavily timbered with softwood scrub species and often associated with brigalow (*Acacia harpophylla*). Because of the dense nature of the vegetation there is not a strong grass layer.

Once cleared, the grass species composition on these soils is similar to that found on alluvial soils.

Forest soils – support predominantly spotted gum (*Corymbia citriodora*) and ironbark communities (*Eucalyptus crebra*, *E. fibrosa ssp. fibrosa*, *E. melanophloia*).

Native grasses are Black Spear Grass (*Heteropogon contortus*), Three-awned Spear Grass (*Aristida spp.*), Rats Tail Grass (*Sporobolus crebra*). Exotic grasses such as Red Natal Grass (*Melinis repens*) and African Lovegrass (*Eragrostis curvula*), are also common.



Keep tussocks in the pasture

Case study 1

| Property Owner: | Location: | Property Size: | Landuse: |
|-------------------------|-----------------------------------|----------------|----------|
| Bob and Narelle Hampson | Marburg Range, 60km west Brisbane | 24ha | Grazing |



As Low as it gets: Even in the drought, Marburg landholder Bob Hampson turns stock off a paddock when there are still a few seed heads to be seen and tussocks of desirable species are ankle high.

Bob and Narelle Hampson have owned a twenty-four hectare block on the Marburg Range sixty kilometres west of Brisbane for the past seven years. Cattle are grazed rotationally using four paddocks. Normally the block has the capacity to carry nine or ten head of cattle, but with a run of dry years stock numbers were reduced to four cows and five yearlings by August 2007.

The recent drought found the Hampson's paddock looking less than lush, but there was still plenty of leaf on desirable pasture species even though it was one of the driest years on record for the Marburg Range. Further grazing would have put at risk long term sustainable pasture production, allowed weeds to grow and

harmed groundcover that protects the soil. To address these concerns, it was decided to reduce the number of stock.

When an unseasonal 75 millimetres of rain fell in late August, the decision to sell was reversed. That rainfall resulted in the recovery of green panic in the twelve hectare hardwood plantation on the property.

The Property

On the western side of the block is a 12 hectare hardwood forestry plantation of Chinchilla white gum (*Eucalyptus argophloia*) and spotted gum (*Corymbia citriodora ssp variegata*). Trees were originally planted in 2001 at 1,000 trees per hectare – one for

every ten square metres. By 2007, this number had reduced to about 450 trees per hectare. Despite competition between the trees and the pasture, a considerable amount of grazing has been possible. Bob estimates that the plantation which occupies nearly 50% of the holding, provides more than 50% of the grazing.

The dominant pasture species in the plantation is the shade tolerant green panic (*Panicum maximum var. trichoglume*).

Although the cattle are managed for profit as far as possible, their primary purpose is for controlling grass growth and fire control.

Pasture Management

The Hampsons' aim is to maintain a pasture strong in tussocks grasses. This is consistent with a recent grazing study by CSIRO in the upper Brisbane Valley, which recommends maintaining 60 to 70% tussock grasses in the pasture. "I do not want a stoloniferous pasture, such as couch," says Bob.

None of the pastures on the property have been sown except in a small area of old tunnel erosion.

Bob is improving the composition of the pastures through judicious management. His efforts are being rewarded through the palatable and productive Queensland Blue Grass (*Dichanthium sericium*) becoming much more prominent.

Like many graziers Bob uses his eye to determine pasture condition.

The pasture in late August 2007 was considered low by the Hampsons' standard but it compared favourably to other paddocks of the Lockyer and other western Brisbane River catchment areas at that time.


Bob's rationale for not grazing pasture too low is to ensure that the pasture will respond rapidly to rain, minimise the chance of weeds taking hold, and to provide habitat for both vertebrate and invertebrate animals.

Management is also specifically aimed at ensuring there is no need to buy expensive feed. In better seasons if the pasture 'comes away', Bob slashes along fence lines as a means of fire protection and he also gathers up the hay for mulching the garden.

Management response to changing climatic patterns

Case study 2

| Property Owner: | Location: | Property Size: | Landuse: |
|----------------------|-----------|----------------|--------------------------|
| Bruce and June Young | Minden | 50ha | Grazing Charolais cattle |



Location Location: rotating stock to different locations allows pasture recovery and the ability for beneficial pasture species to reseed.

It has been a run of dry years for nearly two decades, and it seems that it is getting drier according to the records for the Belhaven property of Bruce and June Young at Minden.

In fact very few effective rainfall events have occurred over recent years. At Belhaven in 2005 there were only three significant rainfall events, in 2006 there were four, and in 2007 up to August only a total of two.

In response to this change in climate, Bruce and June are reducing their Charolais cattle herd by 40% from twenty-five to fifteen head and if prospects for the condition of pasture requires adjustment, this number will be reduced further.

Pasture Management

The experience of having to handfeed in the winter of 2007 has galvanised them on this point. The Young's management aim is to have a body of palatable pasture at least knee high at the end of the warmer wet months to go into winter and spring and not to graze below ankle high. "We use a rotational grazing system to optimise pasture utilisation, to help in fire management and to allow paddocks to seed and build up a seed bank on the ground," explains Bruce. "There also needs to be sufficient pasture for one of the paddocks to be allowed to go to seed each year."

But the plans were challenged by changing circumstances. In 2007, pasture growth into winter was not high and stock were off-loaded, but not enough according to Bruce.

The pasture got as low as it has ever been on Belhaven whilst the Young's have operated the property. For the first time in fifteen years stock received supplementary feeding.

Obviously, Bruce and June would prefer to avoid this situation in the future. Bruce explained, "Our farm plan does not focus on the short term 'annual return' but rather the long term improvement of the property by protecting the environment and the building of a sustainable asset."

Like hundred of properties in the Lockyer catchment, Belhaven, when purchased by the Young's, was in need of rest and recovery; a task the Young's have actively taken on.

Their farm plan purposely leaves out making a profit; a higher priority is building up the farm and enjoying the rural life.

The Property

Just prior to the Young's purchase of Belhaven in 1992, two thousand goats where held on the fifty hectares. Initially, after clearing in 1920, the hilltop property was used for dairying and crop cultivation resulting in very significant topsoil loss. Soil was either washed off the property or built up against fence lines – evidence of this still exists today. The result of both overgrazing and soil erosion is that only very poor pasture or weeds remained at the time of purchase. Couch, evidence of overgrazing, dominated the pasture.

Now there has been a significant increase in more palatable tussock grasses such as Green Panic, Gatton panic, Rhodes Grass and other tussocky native grasses. Also present are some legumes such as Siratro.

The dry year of 2007 was a set back in the program of restoring Belhaven. It was found necessary to reduce stock numbers in order to continue the improvement of the property.