Grazing livestock
A sustainable and productive approach

This fact sheet provides landholders with information which will help them determine a suitable and sustainable grazing system.

The majority of agricultural land within the Hills and Fleurieu region is used for grazing livestock.

Traditionally cattle, sheep and horses have occupied most of the land. However, other animals such as alpacas, deer and goats are becoming popular with a growing number of landholders.

In all cases, good land management practices are required to prevent animals baring out ground which can result in soil erosion, weed infestations (Figure 1) and pollution of watercourses. Inappropriate management may also contribute to dryland salinity and soil acidity. All land managers should be aware that they have a legal responsibility to ensure that land is not degraded.

Core land management issues which need to be addressed for any grazing strategy are:

- Soil health – soils should have adequate nutrient levels, be free draining and not affected by compaction or acidity.
- Pasture management – pastures should consist of appropriate plant species with few weeds.
- Grazing strategies – stocking rates and grazing pressure should always encourage good pasture growth for production. At least 70% cover should be maintained at all times to avoid any land degradation.
- Property planning – all properties benefit from a carefully developed plan which considers the number of paddocks required, fencing to land classes, the need for shelter belts, protection of watercourses (Figure 2) and the provision of water for stock.

Paddock numbers

When developing a grazing strategy, it is important to be able to 'rest' paddocks and allow plants to recover. If a property has only one paddock, pasture plants are unlikely to get a rest, and livestock will tend to eat the more palatable species, leaving weeds to gain the upper hand over time. This type of grazing is known as continuous grazing.

Figure 1: Overgrazing bares the ground which, in turn, encourages weeds

Figure 2: Exclusion of livestock is an important part of protecting watercourses

Ideally 4 to 6 paddocks on a small property will enable animals to be grouped together for rotational grazing purposes. This will allow pastures to be rested for short periods. This approach is suitable for all classes of livestock.

It is important when managing a property located in a high rainfall and hilly region that the land classes are recognised (i.e. characteristics of land, such as slope, rockiness, waterlogging, soil type and others). Any new paddocks should be created by fencing to land class.

For example, low lying waterlogged paddocks should be fenced as a separate paddock so that livestock can be excluded during the wetter months (ie winter) to avoid pugging of soil (Figure 3). As paddocks dry out, grazing can resume.

Figure 3: Avoid grazing waterlogged paddocks

Dry sheep equivalents (DSE)

When discussing stocking rates the term dry sheep equivalents (DSE) is generally used. This is a standard unit frequently used to compare the feed requirements of different classes of livestock or to assess the carrying capacity of a given area of land (Table 1).

The standard DSE unit is the amount of feed required by a two year old, 45kg Merino sheep (wether or non lactating, non pregnant ewe) to maintain its weight. Using this as the standard allows comparisons to be made between different classes of livestock. For example, an adult dry cow or steer has a DSE value of 8.0 to 10.0 and would therefore require the same amount of feed as 8.0 or 10.0 dry sheep. If 10 hectares of good pasture were available in a region with a stocking rate of approximately 10 DSE, either 8.0 or 10.0 cattle could be carried, or 80 to 100 dry sheep (see example, Diagram 1).

Table 1: Dry sheep equivalents

Classes of livestock	Value of DSE
Sheep	
Dry sheep: wethers, ewes, hoggets (45kg)	1.0
Merino ewe: spring lambing (July to September)	1.5
Merino ewe: autumn lambing (April, May, June)	1.8
Ram	2.0
Dairy cattle	
Cows: milking or double suckling (350kg to 500kg)	14.0 to 16.0
Yearling steer or heifer	6.0 to 7.0
Weaner (3 to 6 months)	3.0 to 4.0
Beef cattle	
Dry cow or steer (350kg to 450kg)	8.0.to 10.0
Yearling steer: fattening (250kg to 400kg)	8.0 to 10.0
Yearling steer: store (250kg to 350kg)	5.0 to 7.0
Fattening cattle: 20 to 32 months (350kg to 550kg)	9.0 to 12.0
Cow with calf at foot (up to 8 months)	12.0 to 14.0
Bull (800kg)	14.0
Alpacas (65kg)	
Dry adult	0.9
Deer	
Fallow dry female or castrate	1.5
Fallow breeding female with fawn	2.2
Red dry female or castrate	2.1
Red breeding female with young	3.0
Red stag	4.5
Goats	
Dry Angora	1.0
Breeding Angora	1.5
Dry milk or meat goat	1.5
Milk or meat goat lactating	3.0

Regional stocking rate estimates are available to assist landholders determine the total number of stock which can be carried on any particular property. These values (Table 2) are dependent on the annual rainfall, soil type, temperature, wind, topography and pasture quality (Figure 4).

Table 2: Estimated stocking rates in the Hills and Fleurieu

Annual rainfall (mm)	DSE per hectare	
	Poor pasture	High quality pasture
500	4.0	8.0
700	6.0	14.0
900	8.0	20.0

Figure 4: High quality pasture means more stock can be carried on a property

Diagram 1: Example of estimating the stocking rate (DSE) for a property

Example: Firstly, determine how much land is available for grazing. Eliminate non grazing areas such as house, sheds etc. Take account of restricted seasonal grazing due to waterlogging.

Total property size: 12 hectares (30 acres)

Available grazing land:

Area 1: (grazing all year) = 6ha

Area 2: (restricted for 3 months in winter) = 2ha

Area 3: (only available for 6 months) = 4 ha

Assume the regional stocking rate for the region is 10DSE/ha and the pasture is of good quality.

Maximum stocking rate for the property:

Area 1:	6ha × 12/12 × 10DSE	= 60 DSE
Area 2:	2ha × 9/12 × 10DSE	= 15 DSE
Area 3:	4ha × 6/12 × 10DSE	= 20 DSE
Total for the property:		= 95 DSE

(i.e. 95 dry sheep can be run on this property without degrading the land)

If running steers; divide 95 by the DSE for steers (9)

i.e. 95/9 = 10.5 steers.

If running lambing ewes; divide 95 by the DSE for this class (1.5)

i.e. 95/1.5 = 63 ewes.

Note: All calculations of this nature are approximate. Land managers will need to monitor pasture and livestock condition regularly to avoid any land degradation or loss of livestock condition.

Rotational Grazing

This approach to grazing relies on landholders being able to put livestock together in a single mob and move them through a series of paddocks allowing paddock rest periods of 3 to 6 weeks. Cell grazing and strip grazing are forms of rotational grazing. Implementing a system of rotational grazing is beneficial in a number of ways:

- Pasture plants get a rest and can recover quickly to maximise production.
- Selective grazing can be reduced for better weed control and pasture usage.
- Maintaining 70% ground cover is easier.
- Soil is less likely to be damaged through pugging, stock camps and tracking.
- Livestock carrying capacity can be maximised.
- Pasture persistence can be improved.

A rotational grazing system can operate on a small property with only 2 paddocks and on larger properties with 30 paddocks or more. To increase paddock numbers, temporary electric fencing can be used to divide up large permanent paddocks.

For this grazing system to be successful, an understanding of grazing pressure is necessary. Knowledge of estimated regional stocking rates will help determine the maximum stock numbers for any property.

However, grazing pressure is the number of stock on a grazing area at any one time, and is often expressed as dry sheep equivalents (DSE) per hectare. If managed correctly, short periods of intense grazing with large numbers of animals on a small area of land is the most beneficial way to utilise pasture (Figure 5). This is the key to better pasture management.

Figure 5: Dairy farms have high grazing pressures

To increase the grazing pressure while keeping the stocking rate constant, consider the example at the bottom of the page.

When determining the grazing period for each paddock, it is important to continually assess pastures and animals. The pasture should be monitored to estimate the amount of pasture remaining when livestock are moved. This will provide an understanding of how much under, or over, grazing has occurred. Grazing perennial based pastures no lower than 5cms during rapid growth is a useful guide. When pastures have rested and reached approximately 12cms they can be grazed again.

If any paddocks are grazed for more than a month, then selective grazing is likely to occur and pastures species will decline (Figure 6). One week grazing followed by 3 weeks rest is suitable for Spring growth. At other times two weeks grazing followed by six weeks rest is appropriate. However, always monitor pasture levels to avoid overgrazing.

As well as adopting a good grazing management strategy, it is important that soil fertility and weed control is tackled as part of a sustainable land management approach.

Diagram 2: Example of increasing grazing pressure at a constant stocking rate

A property of 4 hectares has a stocking rate of 10 DSE per hectare, which means a total of 4 adult steers (or 40 dry sheep) can be maintained over the year. If the whole property has only one paddock, the grazing pressure is 1 adult steer per hectare (or 10 sheep per hectare). To double the grazing pressure the property could be divided in half, creating two paddocks, each 2 hectares, allowing one to be grazed by 4 steers, while the other is rested. To increase the grazing pressure 4 fold, and have three paddocks rested, four paddocks should be created.

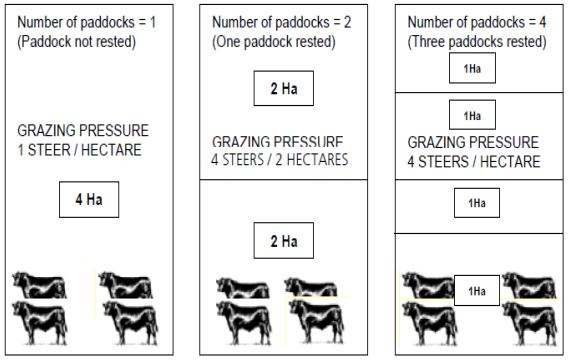

Figure 6: A poor grazing strategy has contributed to this capeweed infestation (left side of fence)

Drought lots

In the dry seasons of Summer and early Autumn, paddocks should still be grazed on a rotational basis, however supplementary feeding will generally be necessary to maintain livestock condition.

Avoiding any land degradation during this period is important. Seventy percent ground cover of no less than 3cms in height must be maintained at all times. Where paddock feed is insufficient, bare ground can quickly appear. In these circumstances, landholders may have to consider selling surplus stock or confining animals to a sacrifice paddock known as a 'drought lot'.

This paddock should be well fenced and provide animals with adequate room, water, feed, and shelter from wind and sun (Figure 7). In addition, manure management will need to be considered in line with EPA (Environmental Protection Agency) requirements. The site chosen for a sacrificial paddock should have a low erosion risk (flat land), be at least 50 metres from any watercourse (wet or dry) and have a slope of no more than 8%. A sacrificial paddock should not be used for more than two years in five. Monitoring the condition of all stock is important when hand feeding. Feed ration tables are available for all classes of livestock to assist landholders maintain stock in appropriate condition.

Figure 7: Drought lot with built shelter

Water requirements for stock

Water supplies may limit the number of animals carried on small properties. Dams and bores will usually provide enough water for livestock under normal conditions.

However, in times of severe drought, bore water can be limited and the amount of evaporation from dams can vary from 1 to 2 metres per annum.

Ideally, a reticulated watering system should be used. Water is pumped out of dams to a header tank and gravity fed to water troughs strategically placed in paddocks. This allows dams to be fenced off from livestock which contaminate water (Figure 8).

Figure 8: Exclude stock from dams to prevent water contamination

Knowledge of livestock water requirements (Table 3) will enable landholders to calculate their overall requirements and establish an efficient water conservation policy in a drying climate.

Type of stock	Annual requirements (litres)	Daily requirements (litres)
Ewes on dry feed	3,600	10
Ewes on irrigation	2,700	7
Lambs on dry feed	900	2
Lambs on irrigation	450	1
Dairy cows in milk	22,500	62
Dairy cows dry	17,000	47
Beef cattle	17,000	47
Calves	8,200	22
Horses - working	20,000	55
Horses - grazing	13,500	37
Alpacas - grazing	2,000	5

Table 3: Annual daily livestock water requirements. Source: Reproduced from 'So You Thought Owning a Small Property Was Easy?' (Fontana and Williamson).

Livestock considerations

(a) Sheep and cattle

- Cattle will respond to internal electric fencing, while ringlock and barbed wire is ideal as a boundary fence.
- Sheep can be trained to respond to electric fences after shearing.
- Avoid grazing cattle in wet boggy areas during winter, since pugging can be severe in these circumstances.
- Sheep, in particular, can be susceptible to phalaris staggers, so careful management is required – especially during the opening rains in autumn.

(b) Horses

- Barbed wire fences should be avoided with horses. Internal electric fences are ideal to create extra paddocks for strategic grazing (Figure 9). Boundary fences of ringlock and plain wire are suitable.
- Horses are particularly susceptible to perennial ryegrass (Lolium perenne) staggers and annual ryegrass (Lolium spp) toxicity, so careful selection of pasture cultivars is essential.
- Avoid putting adult horses into small 'one acre' paddocks where they will continually graze; bare ground will quickly result.

Figure 9: Electric fences are ideal for horses

(c) Alpacas

Avoid barbed wire. Ringlock and plain wire is acceptable. The effectiveness of electric fencing is limited.

Alpacas are particularly susceptible to perennial ryegrass and phalaris (Phalaris aquatica) staggers. Cocksfoot (Dactylis glomerata) is highly recommended as a perennial pasture grass.

Pastures with high levels of legumes can cause thick fibres which lowers the quality of the fleece.

• Dung tends to be concentrated in heaps. If close to a watercourse this can cause pollution.

(d) Deer

Fences must be at least 2 metres high and of a ringlock design. Electric fences are generally not used as antlers are insulated from electricity

These animals will do extensive damage to native vegetation, so ensure they are securely fenced

Graze normal pastures.

(e) Goats

Good, solid fences are required to secure goats. Ringlock or mesh to four feet with 2 barbed (and or electric wire) should be adequate for a boundary fence. A low strand of barbed wire will help to prevent goats pushing under fences. Sheep fencing can be used for internal fencing

While goats will consume a number of course weeds such as blackberry and thistles, they respond well to a good quality pasture and will make excellent weight gains under these circumstances.

Definitions

Pugging - refers to situations where livestock intensively trample wet soil; reducing the air spaces in the soil.

Livestock - refers to cattle, horses, alpacas, deer and goats. For the purposes of this factsheet, poultry are excluded.

DSE - Dry Sheep Equivalents

Further information

Further information is available through Landscapes Hills and Fleurieu

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