



Ideal mulga grassland. Stocking rate is the most important factor in grazing management.

Management guidelines

The mulga lands are characterised by soils of naturally low fertility and poor structure, and a marginal and unreliable rainfall. This means there are few simple options for managing the pastures and, once pastures have been degraded, little money can be spent on rehabilitation.

Most property management has focused on infrastructure, such as buildings, fencing and water supplies, and pushing mulga for dry season feed.

The pasture management options are:

- setting stocking rates
- managing kangaroo and feral goat grazing pressure
- moving stock and spelling
- burning
- controlling woody weeds.

Setting stocking rates

Stocking rate is the most important factor in managing your grasslands; it has an over-riding effect on both pasture stability and animal production.

Light to moderate stocking is sustainable, and will keep land and pasture in good condition while allowing each animal to be more productive.

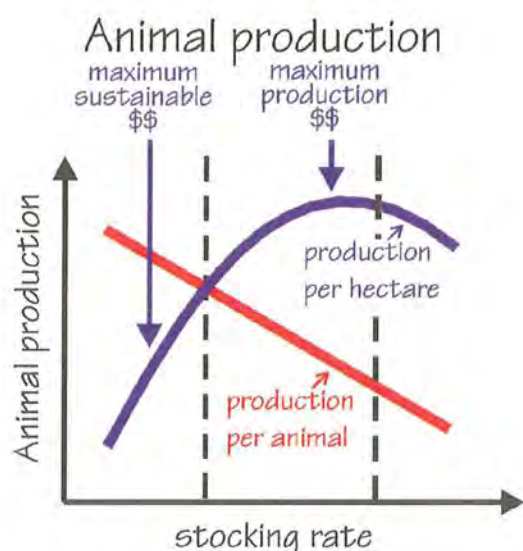
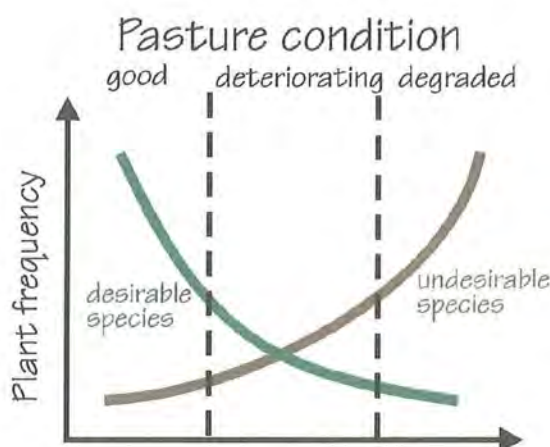
Stocking too heavily weakens the valuable perennial grasses, encourages short-lived grasses and woody weeds, exposes the soil to erosion, limits animal production and increases the need for dry season feeding.

Stocking rate describes how many domestic stock are being carried on a unit area (e.g. 0.3 sheep/ha). A more valuable term may be **grazing pressure** which describes the feed demand of your stock on the feed supply, or amount of herbage available. Thus the grazing pressure of 100 sheep would be much higher in a paddock of poor mulga pasture than in a similarly sized paddock of good mitchell grass.

Carrying capacity

The safe carrying capacity of your property describes the stocking rate that your land can carry without the pasture losing condition or productivity in the long term.

It indicates the *average* number of stock your land can carry *in its present state*. Most deterioration in the mulga lands can be attributed to carrying too many stock at critical times such as when the grass is trying to recover after a drought.



Sustainable economic returns come from stocking rates below those giving the maximum animal production per hectare.

When you set the size of your flock and herd, you must take into consideration all the other herbivores that you may be carrying.

If it is practical, you can vary your stock numbers each year according to the rainfall received, but the long-term average should not exceed the safe carrying capacity.

Is carrying capacity the same as stocking rate?

Safe carrying capacity differs from historical stocking rates in many ways.

Safe carrying capacity	Historical stocking rates
long-term	short-term
based on –	
land type	
land condition	often on stock condition
determined primarily by –	
land productivity	management decisions
directly lowered by –	
degradation of pasture	degradation often not considered
calculated from –	
safe levels of feed use	indirect links with feed use
all available information	often restricted information

How can I calculate my safe carrying capacity?

To calculate your safe carrying capacity, you need considerable information about the mix and condition of your vegetation. For further information, you should contact the Department of Primary Industries or the Department of Natural Resources at Charleville.



Carrying too many stock, especially under dry conditions, degrades pastures



Safe Carrying Capacity Calculator

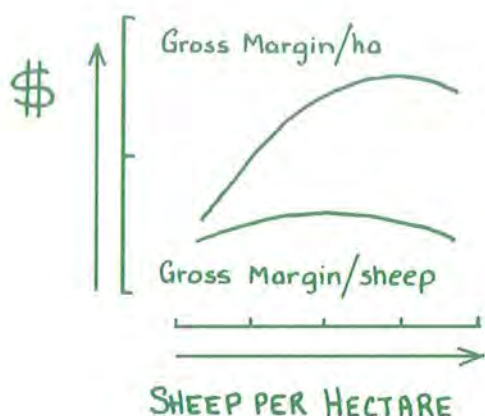
The Safe Carrying Capacity Calculator (SCCC) is a computer-based program to help graziers manage their land. It is part of the 'South-west Strategy'.

The areas of the different land systems (see photos in previous chapter) are calculated from aerial photographs of your paddock or property, while the present condition of the pasture in each land system is assessed on the ground. Pasture condition includes ground cover from grasses, the level of infestation with woody shrubs and the canopy cover from tall trees or shrubs. Allowances can also be included for the browse value of mulga, or frequency of flooding of frontage country.

Results from the GRASP program in the SCC estimate herbage production in the paddock in an average year from our knowledge of the soil type and local climate, and as modified by the present condition of the pasture. The number of stock (dry sheep equivalents) able to be carried on the property or paddock is calculated by allowing a safe level of utilisation (15–20%) of this herbage production.

This level of utilisation already takes into account the loss of feed to other herbivores (roos, goats, rabbits, grasshoppers.)

You can compare the 'safe carrying capacity' with your present or past stocking rates.



Lightening off stocking rate does not penalise the gross margin per sheep.

Short-term profits may sometimes be higher with heavy stocking, but they cannot be maintained without damaging the resource.



Can you remember when your turkey bush became so dominant?



How else can I check my stocking rate?

Until the Safe Carrying Capacity team have assessed your paddocks in greater detail, you can check against the stocking rates which have been recommended by groups of local graziers for different types of country.

These recommendations are naturally fairly broad; you can refine them with more localised experience or by monitoring your pastures to see if they are improving or deteriorating with time.

Recommended broad stocking rates	
Land zone	SR (dse/ha)
Soft mulga	0.2–0.3
Hard mulga	0.1–0.3
Dissected residuals	<0.1
Mitchell grass	0.5–0.8
Alluvial plains	0.7

A grazer who runs a low stocking rate may make slightly less money than one who buys stock in good years and sells in bad years, but he will have a steadier income and fewer risks or ulcers.

Why monitor pastures?

Monitoring is a fundamental part of setting appropriate stocking rates to manage native pastures for sustainable use. Although you may be stocking near your safe carrying capacity, it may take several years before the condition of your pastures improves.

Memories are short and selective. Can you recall exactly what each of your paddocks was like five or ten years ago?

Your variable rainfall will cause year-to-year fluctuations in species and yield but, if the condition of your pasture is poor in three out of five years, you had better take notice when calculating stocking rates.

Can I alter my stock numbers from year to year?

The Safe Carrying Capacity project calculates the average safe carrying capacity of the paddock or property, but it is up to you if you want to alter your flock size each year according to the past seasons. Sometimes this is practical, sometimes not.

How do I calculate a stocking rate for next year?

One way to set a conservative stocking rate for the next year is to estimate how much feed is available at the end of summer (see the section on monitoring), and then assume that you will get next-to-no rain over the next 12 months. Thus the feed present at the end of this summer has to be enough to carry stock safely

through this winter and the next summer. If it does rain, that's a bonus that can be 'cashed in' next year.

Stock numbers should be adjusted so as to eat (utilise), over the next year, only 20% of the feed standing in March or April.

One dry sheep equivalent (DSE) will eat 400 kg of dry matter a year. If the standing feed in the paddock in March is 800 kg/ha of dry matter, and you allow only 20% to be used, there will be 160 kg of feed available—enough for one sheep (DSE) per 2.5 hectares. One adult equivalent (AE) of cattle is usually equal to 8 DSE in southern Queensland; one goat is also 1 dse.

While sheep, cattle and domestic goats for meat are somewhat interchangeable, they can complement each other by eating different plants and different parts of the plant—if there is enough feed to allow this.

How important is distribution of water points?

Your effective stocking rate has to take into account the distribution of water points in large paddocks (as well as the kangaroos and goats you are carrying).

In summer, sheep will range only about 3 km from water—cattle 5 km—and they may have to return twice a day. Long bore drains have allowed stock to spread well along the drain, but back areas of the paddocks are often under-used and may actually be in a better condition.

When artesian bores are capped, the new water points should be sited to allow even grazing over all of the paddock.

Where should my water points be placed?

Water points should be sited in relation to fencing, prevailing winds and the types of country that stock prefer to graze.

The PADDOCK module of CSIRO's computer decision support program HERDECON can allow you to enter these factors on a paddock plan, and to test re-arranging water points to achieve the most even grazing over the whole paddock.



Stock graze along open bore drains but may not use the back of the paddock.



Capped bores conserve water. Piping and troughs allow better distribution of water points.

