

# Pasture sustainability and management in drought

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Pasture Systems Unit

## Introduction

In general, pastures are quite resilient, and have valuable defence mechanisms to enhance survival through adverse periods. In most situations well adapted perennial pastures are preferred as they can reduce the risk of erosion and weed incursion by maintaining ground cover. They are also able to respond and grow quickly from an established base when it rains.

Many annuals are adapted for survival after droughts through high seed reserves in soil, and because of favourable characteristics such as hard seedcoats.

## Causes of stress on pastures

It is inappropriate to single out 'dry conditions' as the single cause of stress on pastures. The following factors can also contribute to the death of plants, especially perennials:

- inappropriate grazing management
- poor general pasture health due to previous disease or insect attack
- soil nutritional factors
- depth of soil and root depth.

In short, a well-managed pasture that is adapted to the soil, climate and livestock system is more likely to survive drought than is a pasture that is poorly matched to the environment, is inappropriately managed, and is already under stress as drought conditions set in.

## Factors that need to be considered

### Pasture characteristics

- In many situations, native species are more resilient than introduced species, and may survive drought conditions better
- Paddocks will vary in their value to the livestock enterprise both during and after the drought. An assessment of the paddock's value is essential in order to make decisions in the face of deepening drought.
- If surviving pastures are compromised, they must be allowed to recover otherwise they may decline further or, at worst die.

## Cost and management

- Perennials are generally more expensive to replace than annuals
- Replacing with native perennials will be expensive and impractical in many cases, because of lack of seed and agronomic guidelines on establishment
- Decisions on the management of pasture paddocks need to take into account the recovery period after the drought breaks
- Pasture re-establishment costs are high, and the pasture may be out of production for a significant period
- Additional costs often associated with drought are due to increased erosion risk because of grazing intensity and the death of pasture plants, and increased weed invasion because of reduced pasture competition or introduced seed.

## Useful pasture management strategies

### Plan to reduce the impact of drought

Sow well-adapted pasture species and manage the pasture to enhance production and persistence. This will improve pasture production

for each millimetre of rain, and will allow pastures to carry feed further into a drought and to recover faster when the drought is over. Place emphasis on well-adapted persistent perennial plants.

### Lock up the most valuable paddocks if pasture survival is threatened

As dry conditions worsen, assess each paddock for its value in terms of pasture composition, pasture condition, cost of resowing, and its ability to be a productive paddock when the drought breaks. Some (or many) paddocks will need to be locked up, while other paddocks will need to have their stocking rates reduced.

When assessing paddocks, the following benchmarks need to be considered:

- Pasture quantity. Research on perennial grass pastures on the Northern Tablelands indicates that the risk of pasture death greatly increases in dry conditions when the pasture is grazed below approximately 1000 kg DM/ha (kilograms of dry matter per hectare). This benchmark should possibly apply at all times, not only during dry times.
- Ground cover. Paddock lock-up is also determined by the minimum ground cover level required to prevent erosion in your environment. The appropriate ground cover level depends on the slope, the likely rainfall intensity and the soil type. Some examples of approximate minimum ground cover percentage are:
  - 70% on red soils in gently undulating country on the northern slopes of NSW
  - 40% in semi-arid rangelands in western NSW
  - 85-90% on the North Coast of NSW.

### Sacrifice paddocks

Consider using one or more paddocks, or fencing off parts of paddocks, for use as feeding-out areas. Suitable paddocks are those:

- where the pasture is degraded and due for resowing or cropping
- with a predominance of annual species and good soil seed reserves
- that have good shade and water supply and low risk of water pollution if runoff occurs
- that have suitable access for feeding operations, even after it rains, e.g. well drained.

Avoid using pasture paddocks as feeding-out areas if the paddocks have a significant cover of perennial pasture plants, and especially if the cover consists of native perennial grass species.

## Pastures in semi-arid rangelands

In the semi-arid rangelands and similar low-rainfall areas in western NSW, the pasture management guidelines for encouraging a high persistence of rangelands species must be considered.

### Rangeland management guidelines

- Under drought conditions, desirable perennial grasses are at increased risk if more than about 30% of growth is removed before the next growth opportunity
- The risk of loss also increases the longer the grasses are subjected to high use levels
- If under dry conditions the level of utilisation rises above 30%, paddocks need to be monitored closely so that timely decisions can be made on reducing stocking rates or closing paddocks. This is particularly important where paddocks have been utilised heavily in the previous year.
- Care is required to ensure that ground cover is not reduced below 40%, as soil loss by either wind or water erosion can increase rapidly when ground cover is below this level.

### Note on livestock health disorders

Pasture improvement may be associated with an increase in the incidence of certain livestock health disorders. Livestock and production losses from some disorders are possible. Management may need to be modified to minimise risk. Consult your veterinarian or adviser when planning pasture improvement.

### Further information

The NSW Department of Primary Industries website has a wealth of information available at [www.dpi.nsw.gov.au/agriculture](http://www.dpi.nsw.gov.au/agriculture).

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