

Pasture sustainability and management in drought

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Introduction

In general, pastures are quite resilient, and have valuable defence mechanisms to enhance survival through adverse periods. This ability varies with species, and so optimum pasture management during drought will depend on the pasture type and species.

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 a paddock's value is essential in order to make decisions in the face of deepening drought.
- Surviving pastures need a period of recovery after a drought breaks. If pastures are compromised, they must be compensated, otherwise they may decline further, or take longer to recover, or, at worst, die.
- Many annuals are adapted for survival after droughts through high soil seed reserves, and because of favourable seed characteristics such as hard seedcoats.

Cost and management

- Perennials are generally more expensive to replace than annuals.
- Native perennials are generally more expensive to replace than introduced species. Replacing with native perennials may be 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; increased weed invasion because of introduced seed; and reduced competitiveness of the pasture.

Useful pasture management strategies

Plan to reduce the impact of drought

Sowing well-adapted pasture species and managing the pasture to enhance production and



persistence is a key factor. 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. Emphasis on well-adapted persistent perennial plants is a priority.

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. Recent 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 of 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 the 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 suitable access for feeding operations, even after it rains, e.g. well drained;
- that are not steep enough to cause excessive run-off after rain.

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.

Management guidelines

- Under drought conditions, desirable perennial grasses are at increasing 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 up paddocks. This is particularly important where paddocks have been utilised heavily the previous year.
- Care is required to ensure that ground cover is not reduced below 40%, as soil loss by either water or wind 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/drought

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Check for updates of this Primefact at:
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Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (January 2007). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of New South Wales Department of Primary Industries or the user's independent adviser.

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