Pasture management — an extension view

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Abstract

Maintaining quality pastures in extremely dry seasons is very difficult. The Darling Downs of south-east Queensland has been subject to below average rainfall for several years and most pasture paddocks have been reduced to low yields of undesirable species. Land condition surveys done in 2006 and 2007 have shown only 10% of the 1.2 Mha of pasture land in the catchment was in good condition.

Land ownership on the Downs has changed over recent years, with widespread property subdivisions making property size too small for commercial production. Many of the new land owners have had very little experience in managing pastures or animals so Condamine Alliance, through 7 Landcare coordinators on the Downs, has opted to run educational programs for Darling Downs graziers. The aim is to reduce pasture land degradation and increase long-term productivity. Over 500 land holders have participated in specially tailored grazing workshops over the last 2 years.

Introduction

As a catchment management group, Condamine Alliance wants to see more permanent vegetation in the catchment to protect the environment, but without substantially affecting productivity. In practical terms, that means putting marginal cultivated land (that not suitable for permanent cropping) back to permanent pasture or trees.

The demand for change is here. Those farming this country say that profits from continuous cropping have been negative for many years; the soils do not have enough plant available water-holding capacity for the climatic conditions experienced.

The life styles of many in the eastern Darling Downs have changed. Rural production has generally become less profitable, and viable property size has increased, while land values have escalated to ‘real estate’ levels; many families now have one or more partners working off-farm to pay the bills.

Country under pasture requires less effort and time to manage than cropping land. However, it must still be managed well or excessive water runoff and subsequent soil erosion will cause soil degradation and reduced productivity. It has been difficult to establish pastures over the past few years because rainfall has been exceptionally low and erratic.

In terms of reducing water runoff, soil loss, deep drainage, greenhouse gas emissions and nutrient contamination into the water system and improving soil condition, a well managed pasture is as good as or better than a stand of trees.

The principles of managing pastures are well known. They are about maintaining healthy desirable pasture grasses to provide good ground cover, protect the soil surface, allow quick recovery after rain and compete with the less desirable plants — while making a profit.

Management

Managing pastures in a drought is anything but easy. The Condamine River catchment has had several years of well below average rainfall and higher than normal temperatures. Last year, some areas suffered the lowest annual rainfall ever recorded and that followed previous years of near record lows. Under these conditions, it is even more critical that managers make appropriate decisions about the number of stock that they keep.

Keeping animals in a drought is an expensive business:
Feed has to be bought in.
- When paddock feed is in short supply, normal stocking rates produce very high grazing pressures. Stocking rates have to be constantly monitored and changed as necessary.
- Heavy grazing reduces ground cover and water infiltration rates, increases water evaporation from the soil surface, increases water runoff and soil erosion and severely reduces the ability of grasses to recover when it rains again.
- Soil health is degraded because the levels of organic matter in the surface soils are reduced; this reduces soil micro-flora activity and lowers fertility.

There is also a tremendous physical and mental effort required by the manager and family to keep going. Relationships are bound to suffer. Hard decisions must be made, and everyone will have different reasons for their actions. Our plea is to consider what is happening to your most valuable asset, i.e. the land, when the grazing pressure becomes excessive.

Why aim for better pastures?

There are good reasons for keeping pastures in good condition. Graziers want to make money out of the business. They know the capability of their land and the markets to target with their cattle. Most people on the eastern Downs aim for the local trade or for ‘feed-on’ cattle. To produce animals meeting the specifications for these markets, the quality of feed on offer must be high at all times. Pastures can provide a satisfactory diet and have the following advantages:

- Permanent pastures are the cheapest source of forage.
- Rainfall use efficiency is higher when the pasture is in good condition. Tropical pasture grasses in good condition use nearly as much water in summer as do trees.
- Good ground cover reduces water runoff. With good cover, more rainfall enters the soil, there is less evaporation from the soil surface, and more water is available for plant growth.

Passing judgment on pasture paddocks

When looking over a pasture paddock or a property, it is important to realise that it is a snap-shot of the present situation. It does not consider preceding circumstances, e.g. drought, short-term over-stocking.

It is difficult to judge a person’s ‘pasture management’ skills by looking at a single paddock because it might be a saved (hospital) paddock or a ‘sacrifice’ paddock. Before passing judgment, the whole property should be inspected taking into account paddock layout, grazing systems and the property owner’s enterprise.

Pasture condition

The first requirement in managing pastures is to assess their condition. The elements to consider in the paddocks are: percentages of the desirable 4P plants, ground cover, prevalence of woody weeds, the degree of soil erosion or soakage present and the amount of feed on offer at particular times of the year.

Managers aim to maintain their land in condition A but this is not always possible because of unforeseen circumstances such as dry spells. However, the manager needs to understand what is happening at all times (where on the curve the paddock is) and what measures are needed to retrieve the situation if a deterioration in condition has occurred. Different management strategies are called for with pastures in the differing states as indicated in Figure 1.

Production potential is lost as pasture condition declines, while the physical costs of recovery increase. Those costs can include weed control, reseeding, lost production from spelling the paddock for prolonged periods, lost feed reserves when fuel has to be accumulated for a fire to control woody growth, and lost production (dry matter) from reduced rainfall use efficiency when a pasture is in a degraded condition.

Dry matter production from pastures judged to be in the various condition classes (A, B, C or D) on cypress pine/bull oak country (light sandy soil) south of Dalby was measured. Gross returns were calculated for each land condition class based on the following assumptions:

- the paddock conditions would continue for 20 years;
- prices remained at current levels;
- stocking rates were based on dry matter herbage yields; and
- annual liveweight gains were according to the producer’s estimates.
Gross returns ranged from $995/ha for the 20-year period from the paddock in land condition A to $122/ha from the paddock in land condition D.

These figures suggest that it is more profitable for the producer to suffer some immediate financial pain by rejuvenating a paddock than to allow the condition to continue to deteriorate. Stocking rate is a critical factor and should be adjusted down early; it is much less strain on the manager and paddock to err on the conservative side and have too much grass than too little. The stock will grow faster at lower stocking rates and be of better quality and more saleable. The manager may be in a position to buy and pay lower prices for replacements when others have to sell.

‘Look after your soil and it will look after your grass. Your grass will look after your animals and the animals will look after you and your assets’. This is a grazier’s quote and expresses a valuable philosophy.

**Protection and production from pastures**

Managing pastures to protect the resource aims at:

- Ensuring good ground cover — 30% is said to be the absolute minimum, but my personal view is to aim for 70% cover.
- Ensuring the ground cover is stable. Anchored plants give much better protection to soil than stubble or leaves lying on the ground, and improve water infiltration.
- Siting watering points so that animal tracks do not lead/channel water and start erosion.
- Ensuring that plants are sufficiently strong after grazing to withstand severe conditions of rain or wind. The strength is in the mature stems and root system needed to support and hold the plant in place.

In terms of production, the following principles are crucial:

- Ensure that the majority of the grasses in the paddock are the right ones, i.e., the 4P species — perennial, productive, palatable and persistent.
• Ensure that the grasses can respond when good conditions do arrive. Quick recovery and growth cannot occur if the grasses are unhealthy or the soil has been left bare from overgrazing which seals the surface soil, depletes the surface organic matter and reduces soil biota activity.
• Chronically overgrazed pasture plants will not have enough root reserves and growing points to allow reasonable growth when spring and summer rain arrives. Short grasses have shallow root systems and few growing points.
• Weeds are the first to grow if the remaining grasses are suffering. They are usually quick-growing, larger, unpalatable annuals that will dominate the slower perennials. This situation will worsen over time if the same management continues, ending with a totally unproductive paddock covered in unpalatable weeds such as small-leaved cotton bush (*Maireana microphylla*). Weeds are a symptom of mismanagement, not a cause.
• The preferred, more palatable species need time and specific management strategies to increase their presence, depending on how badly degraded the paddocks are. This costs money through lost production and the rehabilitation costs.

Pasture monitoring

Managers must try to estimate how much available forage there is in the paddock. Total yield in paddocks can be estimated by using photo-standards that show dry matter yields of various pasture species on different land types.

A more reliable, but more labour-intensive, way is to cut, dry and weigh samples from paddocks and work out standing dry matter as kg/ha. From this, estimate how much is available to the animals, with allowances for wastage and plant reserves to ensure good re-growth.

The critical times of the year for assessing pastures for full year utilisation are the end of the pasture growing season (early April) and the beginning of the next one (mid-October).

As a rule of thumb, allow for 40% utilisation, 30% wastage and 30% for plant reserves. Remember that the lower stems are the heaviest. Some scientists suggest that the minimum herbage to leave to ensure healthy tufts for quick re-growth is 800–1000 kg dry matter per ha (7–10 cm high).

Another suggestion for utilising pastures is to graze them only during the growing season (November–April), selling the stock when the quality gets too low for reasonable weight gains. That would mean becoming a cattle trader, buying store cattle and trying to make money out of their weight gains during the pasture growing season. It could be a reasonable option if the soil types are good enough to achieve weight gains.

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Further reading

*GrassCheck — Grazier Rangeland Assessment for Self Sustainability. Department of Natural Resources Queensland, DNRQ97002.*


*Pasture Plants of Southern Inland Queensland. 1995. (QDPI: Brisbane).*


*Stock take. Balancing supply and demand. (QDPI: Brisbane).*

*The Grasses of Southern Inland Queensland. J.C. Tothill & J.B. Hacker (eds).*

*Towards Sustainable Grazing — The Professional Producers Guide. (Meat & Livestock Australia: Sydney).*