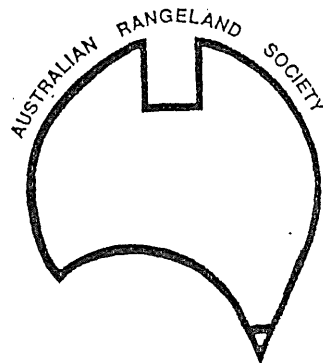


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PUTTING THE 'T' INTO PROPERTY PLANS

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ABSTRACT

A reasonable knowledge now exists about Australian rangeland species, soils and climate. The herbaceous layer is the key to pastoral production, pasture condition and potential land degradation. The herb plants, including grasses, provide ground cover, fuel for fires and organic matter to the soil microfauna, wild animals and domestic stock. Prudent management of herbaceous plants is a vital objective for property managers when formulating long- and short-term property plans. Grazing research and limited property data show, that instead of consistently maintaining stock numbers at levels that historically have caused land degradation, a reduction by 10- 20% in numbers should maintain long term profits via better pastures and better individual animal production. Well presented extension material and financial information should convince pastoralists of the value of integrating better pasture management with reduced numbers in property plans. Key points to be included are:

1. Strategic short-term spelling after good growing-season rains.
2. Complete spelling of some paddocks after a drought.
3. Preference by kangaroos for grass.
4. Plant morphology changes with season of growth.
5. Increased management flexibility when fodder reserves exist.
6. Some predictability of rainfall extremes in areas where the Southern Oscillation Index affects regional rainfall.

WHAT'S NEW?

Australia has effectively ended its frontier era and image. This year has produced the Decade of Land Care, the demise of many large corporate empires funded by excessive borrowing and a realisation by most Australians that we need to take stock and consolidate our position. Unacceptably high pesticide residues in our meat exports, health scares on live sheep exports and numerous mortgage foreclosures by banks have added emphasis to the need to plan and to have management flexibility to stay viable in the pastoral business. The little Aussie battler without a realistic plan risks alienation from lending institutions and rural lobby groups. Banks are now much more strict in their demands for realistic budgets and credible biological scenarios, from clients seeking loans.

The thing which has changed at the grass roots property management level is the need for adequately developed plans, - about finance, animals, pastures and management. I will address the one which is most commonly overlooked or overrated, the grazing plants.

After the soil, pasture is the next most important property asset. The health of key plant species must rate highly in any worthwhile property plan. Top-class animals, fences and watering facilities count for little without adequate pasture.

P Perennial grazing plants are the key to production and stability.

L Look after all your assets - soil, plant, animal and equipment.

- A Assess your carrying capacity at the end of each growing season.
- N Nut out a long term property plan with care and outside advice.
- S Spell paddocks strategically in response to rain and your plan.

PLANT GROWTH FACTORS WHICH WE CAN INCORPORATE IN A PROPERTY PLAN

1. Strategic short-term pasture spelling after good grass growing rains

In Australia's tropical and subtropical rangelands, grasses generally seed freely about six weeks after summer rain. Four to five weeks after rain, grass seedheads are well elongated and stock generally ignore them, preferring leaf to stem. Hence the period of spelling only needs to be short if the objective is seedset by valuable perennial grasses. Such seed is probably necessary once every two to three years for grasses such as buffel (*Cenchrus ciliaris*) and mulga mitchell (*Thyridolepis mitchelliana*) if soil seed reserves are to be adequately maintained (1). Short strategic spells should also work for annuals and most true rangeland plants which do not have a photoperiodic control over flowering, for example, many saltbushes (2) and shrubs (3).

2. Complete spelling of some paddocks after drought or fire

Natural 'disasters' such as drought and bush fire place extra pressure on pastures in the short term. This should not be inherently damaging in the long-term but does require prudent post-disaster management. During a drought, 'open all the gates' is a common policy but I suggest that often it may be better to concentrate the remaining animals on a few paddocks at a time, preferably those in good condition and which have been recently spelled. In this way the animals are better monitored and any pasture damage is confined. The stocked paddocks can be changed if storm rains bring enough feed to other parts of the holding.

Debate continues on whether heavy grazing does more damage during or immediately after a drought. No good data is available but I believe that immediately after is usually the crucial time because the time of year when the drought breaks greatly influences which species germinate or grow well and flower. These parameters are all important in determining population structures and animal grazing preferences. By contrast, during a drought, browse forms a big part of the rangeland animal's diet, annual herbs are virtually absent and key perennial grasses and herbs lose relatively few important growing points under grazing which should be far less selective.

After a drought, those paddocks which were grazed most heavily during the drought are the ones to be spelled immediately. So this decision is predetermined by the overall property plan which was in force before the drought began. Where fire destroys pastures, the length of spell needs to be as long as is needed to allow the key perennial species to set seed and maybe also to establish seedlings in the case of fire sensitive shrubs, for example, some saltbushes (4).

3. Preference for grass by kangaroos

Kangaroos are regularly blamed for eating out spelled pastures (5) and most research shows that red and grey kangaroos prefer grass (for example, 6). If you want to spell grasses you need to control the roos. There is no point in admitting defeat without trying - patch up fences, allow shooters into that area, check regularly for signs of kangaroo activity at watering points and in timber belts. They will get the message to stay away from clearly 'unhealthy' areas. The length of time for control measures is, again, often quite short to allow seeding or crown expansion after good rain.

If you are trying to encourage shrubs and saltbushes then encouraging kangaroos into that paddock may be a good move as they prefer grasses. Shrubs seedlings are very susceptible to vigorous grass competition (7).

4. Plant morphology changes with season of growth

Many grasses and herbs alter their growth habit and turn more erect as they come into head. If seeding is desirable then spelling at the early heading stage can encourage seed set. Conversely heavy grazing of wiregrasses (*Aristida* spp) and rough speargrass (*Stipa scabra*) as they are about to head should reduce the number of seeds set. Unfortunately some more desirable grasses like woollybutt (*Eragrostis eriopoda*) and neverfail (*Eragrostis setifolia*) may suffer in certain communities (8). Some grasses such as mulga mitchell, mulga oats (*Monachather paradoxa*) and greybeard grass (*Amphipogon caricinus*) grow quite prostrate in wet winters even when they are flowering (9). Thus you can graze fairly heavily in winter and not seriously reduce the seeding potential of such grasses. Other species always flower at the same time of year in any region, and can be spelled then to encourage them, for example, around Christmas in south west Queensland for kangaroo grass (*Themeda triandra*).

FEED RESERVES ALLOW FLEXIBILITY

Several publications from Queensland emphasise the value of assessing fodder reserves at the end of each summer (10, 11) because on average about 90% of total dry matter is grown during summer. On the basis of the assessment, average carrying capacity until the next useful summer rains is calculated. If lightening off is indicated, this can be planned but need not occur immediately. However, the longer you postpone action the greater will be the number of animals to be finally removed if no further grass growing rains fall. You can gamble on winter rain or delay selling until after the end of the financial year but must recognise the dangers in any such delay. Importantly, a deliberate assessment has been done (Ron Hacker pers. comm.) and a manager is aware of impending imbalances between feed supply and stock numbers. I can't recall seeing an enterprise suffer badly by reducing numbers early in a drought but I know of disasters which occurred when people hung on to stock too long.

If feed reserves are more than adequate, then woody weed control using fire could be considered in affected paddocks or some other use of the feed planned, for example, prolonged spelling of an area burnt recently by fire or damaged by severe flooding. Animal management may be modified, for example, lower culling rates or buy in cheap wethers or stores.

LONG RANGE WEATHER FORECASTING

Many climatologists now believe that it is possible to predict some extreme regional weather patterns in eastern Australia, based on the ENSO (El Nino-Southern Oscillation) effect (12). While the usefulness of this data is still being assessed, I believe every little bit helps. If a grazier thought that a dry summer was coming and the long range weather forecast also indicated a 70% probability of widespread drought next summer, I believe that grazier would feel much happier to sell without worrying about whether it was the right decision. Peace of mind is very much part of running a successful business. You have more time to concentrate on the big current issues if your subconscious mind is not wrestling with perceived past errors of judgement.

SUMMARY

There are many ways in which plant biology can be incorporated into property planning, despite the overriding effects of climate variability. Pastoralists need to be committed to learning how their vegetation can be modified and which plants are the 'goodies' and which the 'baddies'. Land

Care Groups are a positive step in this direction and so too are pasture guides. Any rehabilitation strategies must be planned and implemented as part of a whole property management plan. If ignored or left till last, the cost of reclaiming degraded land will eventually be much greater and probably bequeathed to our children.

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