1. IMPROVED PASTURE UTILISATION

Introduction

Because degradation of pastures and de-stocking will have occurred on most farms to some degree during the drought, the key to recovery will be to lift productivity back to pre-drought levels as quickly and cheaply as possible. The dilemma faced by most producers is 'Where do I start?' This can often be made worse by a very tight and even negative cashflow situation in the immediate aftermath of the drought due to reduced stock numbers.

There is a continual barrage of information, coming from every direction, which aims to help boost profitability. The challenge for farm managers is to prioritise this information and then implement strategies that are going to provide the highest returns.

So where do you start?

For most farmers implementing strategies for improvement, there is a compromise between improving productivity and maintaining income in the short-term.

The best way to approach this is to categorise all possible options into one of the three following categories:

- Changes that will improve the efficiency of use of current pastures.
- Changes that will increase the productivity of existing pastures.
- Changes that will improve pasture productivity by introducing more productive species or cultivars.

Implementing strategies for improvement in this order will ensure that those strategies that cost the least but provide good returns are implemented first. Graph 1.1 shows examples of issues that can be addressed in order of return and cost.

This section covers the changes that can be made to existing pastures to increase the dry matter produced. Before following these recommendations, make sure you have covered all the possible methods of increasing your current pasture utilisation and that you have sufficient working capital to implement these.

SECTION KEY MESSAGES

You should aim to utilise 50 per cent of pasture grown. Most producers utilise 20-40 per cent. How much of the pasture grown do you utilise?

Determine the optimal stocking rate for your property, and priority areas for action to improve pasture utilisation.

For most farmers implementing strategies for improvement, there is a compromise between improving long-term productivity and maintaining income in the short-term.

Graph 1.1: Determining priority areas

	PRIORITY	COST	EXAMPLE
1	Change which will improve the efficiency of use of current pastures	LOW COST	• Lambing and calving time • Shearing and lamb shearing time • Changing to a more productive bloodline (slow) • Manipulating flock and herd structure including turn-off times/weights
2	Increase the productivity of existing pastures	MODERATE COST	• Increase fertiliser application • Increase stock numbers
3	Improve pasture productivity by introducing more productive species or cultivars	HIGH COST	• Sowing new pastures • Applying lime • Introducing new species to existing pastures

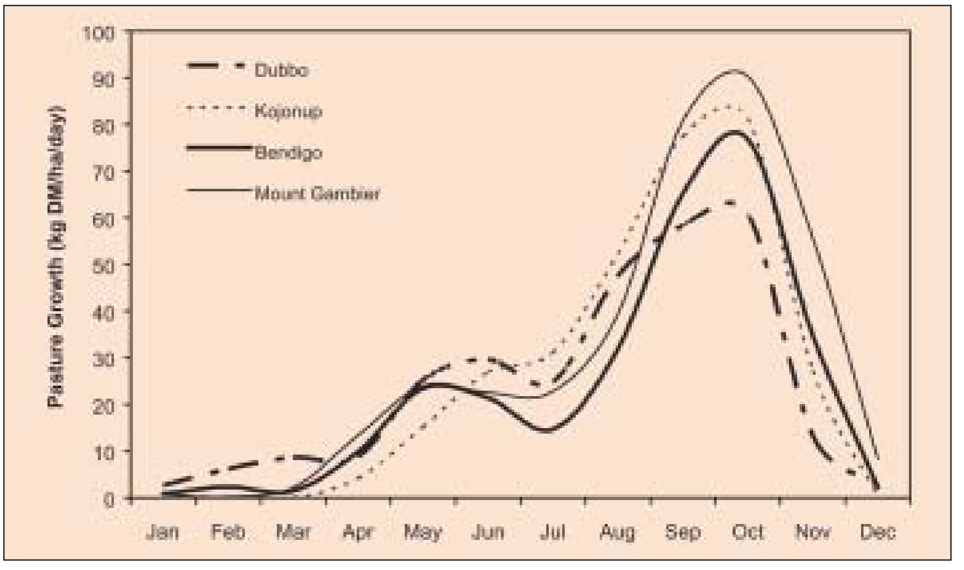
Utilising your existing pastures

Seasonal pasture growth and total DM production

Graph 1.2 shows how pasture growth varied throughout the year at four sample sites. There are several points to note from this graph:

- At all four sites the spring to early summer period produced the most feed.
- At all four sites the autumn break generally occurs from mid-April to late May. The timing and the length of the spring flush also varies between the sites.

Graph 1.2: Average pasture growth rates



Source: HSA AgInsights - How to graze high profit pastures 2001

What does this mean to the woolgrower? The bottleneck through which all livestock productive units must pass is the one that exists when surplus spring/summer feed runs out and minimum livestock condition score targets are reached before the next spring flush occurs. For most areas this will be from autumn until the end of winter.

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The objective is to maximise the number of livestock carried at the least cost per livestock unit. This means that any management strategy that maximises livestock units for the least cost will improve whole-farm performance and profitability.

This can be done by either:

- Growing more grass during this bottleneck period and running more livestock at the same level of efficiency, or
- Growing the same amount of grass and improving its utilisation by running more livestock more efficiently, or
- A combination of both.

Table 1.1 shows how the total amount of pasture grown during a year can vary and the variation in the cost of growing the pasture. It excludes the cost of running livestock but includes all the costs of producing pasture, including the overheads of the farming business. It also assumes that the average farm has improved perennial pastures with some annual grasses in the sward on a moderate soil fertility base.

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It becomes increasingly difficult to improve pasture utilisation in more volatile environments due to the lag in graziers responding to feed surpluses or deficits. For this reason, the cost of consumed pasture at Dubbo versus Mount Gambier is markedly different although they have identical costs of growing pasture. Producers at Dubbo tend to under-utilise pasture growth, where at Mount Gambier, due to pasture growth security, it is much easier to consume and better utilise pasture grown, and wastage, in the form of pasture decay can be minimised.

Table 1.1: Annual pasture production and its costs

	DUBBO	BENDIGO	MOUNT GAMBIER	KOJONUP
Average Season DM Production	10,040	8,690	9,600	8,370
Range (poor - good)	4,570 - 12,530	5,770 - 10,840	8,380 - 11,890	7,280 - 10,390
Average Cost per kg Pasture grown (cents/kg DM)	1.0	1.1	1.0	1.2
District Average Stocking Rates (DSE/ha)	7.5	5.5	10.0	8.0

Source: Grassgro modelling

Improving pasture utilisation

Determining optimal stocking rates

Stocking rate is a major determinant of profitability. While it is easy to manage a farm at a low stocking rate, for most it will be unprofitable. One of the major challenges following drought is to avoid managing the farm business as though another drought-affected season is just around the corner. During winter in southern temperate Australia, pasture growth is predominantly limited by temperature. To compound this, livestock condition score is usually at its lowest, unless there has been a good autumn break. With these variables constantly affecting livestock performance, how do you determine the optimal stocking rate to maximise long-term profitability?

One of the major challenges following drought is to avoid managing the farm business as though another drought-affected season is just around the corner.

Any decision regarding stocking rate must be made with the long-term in mind. Stocking rate is one of the critical drivers of flock profitability so it is vital to spend time thinking about the issue as well as some effort in determining the optimum.

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There are two approaches: the theoretical and the practical. Both should be used.

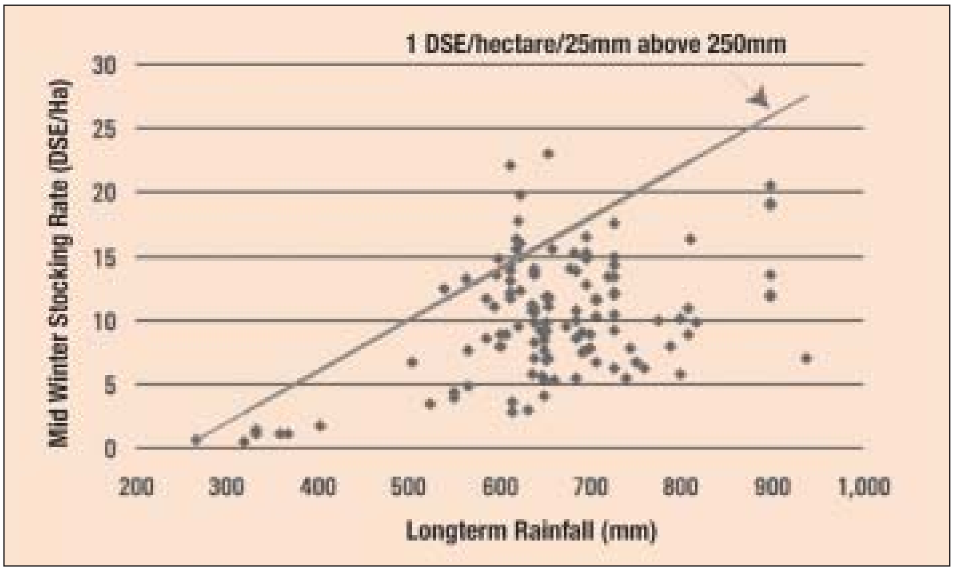
Theoretical

In general we would expect:

- The higher the average annual rainfall the higher the potential annual pasture production, and
- The higher the annual pasture production the higher the stocking rate that could be run.

So, with the link between these two points, it seems reasonable to expect that the higher the average annual rainfall, the higher the stocking rate. In the Holmes Sackett & Associates benchmarking for wool flocks in 2001/02 this was the case (see AgInsights 2002). This report suggests that the target long term stocking rate in the medium to high rainfall zones should be 1 DSE/ha/25 mm of average annual rainfall above 250 mm. This line can be seen on Graph 1.3.

Graph 1.3: Mid winter stocking rates versus long term rainfall (2001/02)



Source: HSA Benchmarking Analysis

The majority of producers stock their properties at far less than their potential.

A striking feature of Graph 1.3 is that over 90 per cent of the actual stocking rates being run on properties are below the target line, with many well below it. This came as no surprise. The situation was much the same when data from other sources, such as the Southwest Victoria Monitor Farm Project, were plotted out.

Why then are so many livestock enterprises below the target line, and so far below the line?

The pessimists have a long list of reasons, including:

"Oh the break of the season always comes late here. We can never grow much grass."

"The soil on our place is some of the worst in Australia. Nothing much will grow."

"Things are different in New South Wales. It always rains more in Victoria."

By contrast the optimists are challenged by the gap between their current level of achievement and the target stocking rate. They ask:

"What can I do to get closer to the target?"

"Maybe I could even exceed the target, at least in a few paddocks."

"If I reach the target, this means these (good) things can happen."

The Grasslands Productivity Program, which ran in Victoria, New South Wales, South Australia and Tasmania between 1993 and 1997, provided the optimists with an opportunity to test what had to be done to narrow the gap between their current stocking rate and the calculated target stocking rate for their place. On each of more than 100 properties, two adjacent paddocks were selected. On one, soil and pasture limitations were overcome (the productivity paddock) while on the other, the existing farm practices were used (the control paddock). The aim was to keep the stock in the productivity paddock at the same weight as those in the control paddock.

The stocking rate carried in the third year on the productivity paddocks fitted the calculated target based on annual rainfall quite well. However, in striving to get an even better fit, it was found that the most accurate prediction was achieved when the length of the growing season, soil Olsen P (0-10 centimetres) and paddock size (above or below 20 hectares) were taken into account. The key points from this analysis were:

- The length of the growing season was by far the most important factor predicting potential stocking rate. The rule developed for potential stocking rate (DSE/ha) was 3.4 times the length of the growing season. (Note that the hectare calculation excludes areas such as timber, rocky areas etc).
- Increasing the soil Olsen P by 1 mg/kg increased the stocking rate by 0.18 DSE/ha. That is, where the Olsen P was 20 mg/kg the stocking rate was 1.8 DSE/ha higher than where it was 10 mg/kg.
- The stocking rate was 2-3 DSE/ha lower where the paddocks were more than 20 hectares, compared with those that were less than 20 hectares.

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The length of the growing season was defined as the time from the opening seasonal rain, when sub clover germinates, to when there was less than 500 kg DM/ha of green pasture in mid to late spring. As there are no long-term records, this figure had to be estimated.

The outcome of this analysis was that the target stocking rate was defined as 3 DSE/ha/month of growing season. These results led to the formation of the AWI Triple P Program, now being implemented in Victoria and NSW.

How much dry matter do you use?

Efficient livestock production is about converting pasture into a saleable product. Growing pasture is by far the cheapest way to feed livestock, but if you include all the costs associated with growing the pasture, each kilogram of dry matter has a considerable cost.

Obviously, the more the dry matter that is utilised, the more efficient the enterprise, up to a point. Trying to utilise every kilogram of dry matter produced is obviously unrealistic because a significant proportion of pasture will always be wasted by trampling and decay. Extremely high unrealistic stocking rates will result in a significant amount of supplementary feeding and the whole process would be uneconomic for broadacre grazing farms.

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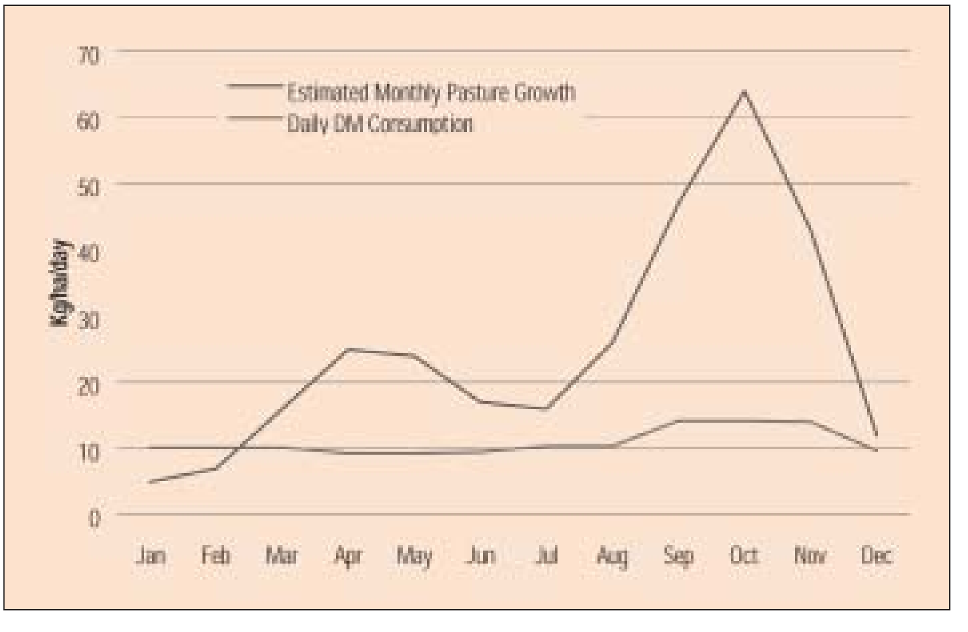
On the other hand, under-utilising pasture is also unprofitable. Most of the costs of growing pasture, such as weed control and pasture establishment, as well as land ownership costs of rates, repairs and maintenance, and insurance, are not related to how much pasture is utilised, that is, they are fixed costs that have to be paid regardless. To bear these costs and then fail to utilise the pasture results in significant inefficiencies.

Graph 1.4: Pasture growth versus consumption by month



Sample figures for a self-replacing Merino flock are used in Graph 1.4. These will obviously vary between farms and between paddocks depending mainly on the species present, rainfall and soil fertility.

The graph shows the trends for dry matter production and utilisation by month. The consumption in spring is underestimated because average dry matter consumption for the year was used, whereas the actual dry matter ranges from 0.4 kilograms to 1.6kg/DSE/day.

Once you do have access to monthly pasture growth rates it is worthwhile calculating how much grows each season. In most districts, approximately 50 per cent of the total annual dry matter is produced in spring which only accounts for 25 per cent of the year.

Utilisation targets

It should be possible to utilise around 50 per cent of pasture grown without putting excess pressure on livestock or creating unacceptable risks of erosion or pasture degradation. Most grazing farms operate at 20-40 per cent of utilisation.

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If utilisation rates are currently low, there are a number of options to lift them:

- Put out less fertiliser or reduce the pasture improvement program to reduce the amount of pasture grown. This may seem contrary to wide spread recommendations, but if you are not utilising what you currently grow, why spend money to produce even more. *This is a particularly good strategy following drought, because cashflow is constrained so savings can be achieved with a reduced fertiliser cost without compromising short-term productivity.*

- Increased spring utilisation. This is the easiest approach to take, because it often has the least risk and remember that approximately 50 per cent of pasture is grown at this time of the year. Methods to increase grazing utilisation include lambing in late winter/spring, fodder conservation or putting extra liveweight on lambs, steers or any other finishing stock. Buying additional stock over the spring period is also an option.

- Increased year round utilisation, which usually involves increasing stocking rates through the autumn/winter times of low feed availability. This will also increase spring pasture consumption.

Once you are confident utilising a high proportion of the pasture you grow, the next challenge is to cost-effectively maximise pasture production.

Once utilisation rates are up near 50 per cent, you can then go about working out the best way to grow more pasture, whether by applying fertiliser or sourcing new, more productive species. Once you are confident utilising a high proportion of the pasture you grow, the next challenge is to cost-effectively maximise pasture production.

Practical Measures

There are a number of simple observations that can be made to refine pasture utilisation.

These are aimed at accurately identifying the optimum that applies to an individual property. They reflect all the variables on a property including the extent of pasture improvement, the flock and herd structure, soil fertility and rainfall. Generally these observations are best made at a time of the year when feed is most limiting. In most districts this will be either autumn or winter.

The observations include:

- Minimum condition score. As a guide, wethers should not fall below condition score 1.5 - 2.0 at their lowest point in an average year with little or no supplementary feeding. For ewes the minimum is 2.0 - 2.5 but will depend on when ewes lamb in relation to the time of least feed availability. Autumn lambing ewes will have a minimum condition score of 2.5 in autumn/early winter whereas spring lambing ewes can be down to 2.0 in autumn. Cows should not fall below condition score 2.5 at any time of the year. In any herd or mob there will always be individuals that fall below these indicators.
- Pasture composition in an autumn pasture based on perennials. Following a good break, a perennial pasture in late autumn should consist of:

Perennial grasses eg. phalaris, cocksfoot, perennial natives	30-40 %
Sub clover	5-40 %
Dead material	0 %
Bare ground	5-10 %
Poa Annua (winter grain)	negligible
Volunteer legumes	negligible

Below the optimum stocking rates, the proportion of dead material will be greater and volunteer legumes will be lower.

With over-stocking, the proportion of bare ground, Poa Annua and volunteer legumes will increase.

- Pasture residue at the autumn break. Once again, this is an approximation and will depend on how good the previous spring was. For an average break, the expected residues for winter rainfall areas are shown in Table 1.2.

Table 1.2: Autumn pasture residue (kg/ha)

		Previous Spring	
Stocking Rate	Poor	Average	Good
Low	>1,000	>1,500	>2,500
Optimum	500-1,000	1,000-1,500	1,500-2,000
High	<500*	<1,000	<1,500

* Note: this level of ground cover is likely to be inadequate to prevent soil loss.

Source: HSA AgInsights - How to Graze High Profit Pastures

Case Study - Improving pasture utilisation

A property of 500 hectares in a 550mm rainfall area mostly carries 12 DSE/ha for a total of 6,000 DSE. Going into the drought, the flock was reduced by 2,000 DSE with the sale of the two older age group of ewes and wether hoggets. This left a flock of approximately 2,200 ewes and 1,200 mixed sex weaners.

To return the flock to pre – drought profitability, the aim is to return stocking numbers to pre-drought numbers without purchases.

A rebuilding strategy when stocking rate is low coming out of the drought is:

1 Reduce expenditure on fertiliser in year one.

2 Retain as many progency from the 2003 lambing as possible.

3 Do not automatically dispose of ewes culled during classing.

To return the flock to pre-drought profitability, the aim is to return stocking numbers to 6,000 DSE without purchases. Purchases are not part of the preferred strategy due to high prices and disease risk.

The 2,200 ewes, the oldest of which are four years, should produce sufficient lambs in 2003 to replace the 2,000 DSE sold down at the start of the drought. However, that would mean no surplus sheep sales, which would adversely affect what already is expected to be a tight cashflow.

The strategy adopted to best manage the situation was to:

a) Save expenditure on fertiliser because the property will be understocked in 2003. Fertiliser expenditure, including spreading costs, amounted to $13,750 (55t super @ $250 /t spread). This was a difficult decision, because fertiliser application had been considered an essential cost every year in order to maintain pasture productivity. However the thought of spending money to grow additional pasture that was going to be wasted due to the low stocking rate was not justifiable.

b) Retain all progeny from 2003 lambing and not sell any ewes. This would not be a problem as the oldest ewes are only four years old.

c) Class 2002 drop ewe hoggets as per normal with approximately 25 per cent (150) of the ewes to be classed out. Instead of selling the cull ewes as one and a half year olds in spring 2003, the ewes are to be identified, retained and joined with the option of lambing them down or selling them. There was considerable concern about lambing down what were considered cull ewes - 'if they are not good enough to keep, they are certainly not good enough to breed from, they will only breed more culls.'

The point that convinced the business owners to keep the ewes and join them back to merinos was that the progeny can be judged on their own merits - those that are inferior are classed out of the flock, while those that are satisfactory can be retained in the flock. The rams that they will be joined to will be of good quality and, no doubt, some of the culls are only inferior due to environmental factors such as being late lambs or one of a twin which obviously would not be genetic and therefore passed on to the next generation.

The combined effect of the above strategies is:

Costs saved	
Fertiliser	$13,250
Extra Income	
Extra Wool	$3,750
Extra lambs	$4,500
Less direct costs	-$1,200
TOTAL	**$20,800**

Net gain in year 1 = $20,800

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