



CHALLENGE TO TRADITIONAL THINKING

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"Warrie" Sunny Corner

Abstract: Too often we blame the type, species and persistence of our pastures in our grazing industry as being the problem. I consider the systems and strategies that we use to manage them as being at fault. "Warrie" runs a self-replacing merino flock. With a tradition pasture management programme since the 1960's with the establishment of introduced perennial pastures and regular fertiliser application. When assessing the returns these pastures owed the business it was not proving to be economic in the long term. A total "rethink" about how "Warrie" is managed had to happen with a big change in the direction of expenditure. The focus became projects that delivered the highest return on investment first. Alongside this major changes were made to the management of pastures, the application of superphosphate and the stocking rates. With the farm management decisions made on critical factors such as rainfall, the traditional decision making methods of hope and crisis management have gone. The methods of getting production out of our land are limited. So by working with nature not against it and addressing our marketing along with quality control as our next major priorities, hopefully we will ensure our future on the land.

We have a family business that runs two grazing properties: "Warrie" which is a 2,800 ha holding located 44 km north east of Bathurst in the Central Tablelands and "Linton" a 5,400 ha farm located 38 km east of Barraba on the western edge the New England Tablelands. The family business has two other main enterprises off-farm: a 24 hour Shell service station in Bathurst and a small super market also in Bathurst.

I manage the farms and my brother manages the off-farm businesses as well as having significant executive input into the farms. Our mother and my wife also have significant input to the partnership.

Due to our enterprise diversity off-farm, we have specialised on-farm to a self-replacing merino flock, with the breeding activities most concentrated at "Warrie" and the wethers most grazed at "Linton". Enough ewes are joined at Linton to keep up with any shortfall in wethers from Warrie.

Up until last year we ran a self-replacing beef herd and had the remains of arguably the original cashmere goat flock in Australia. Our merino flock started with fine merino rams and over 3000 XB ewes in the mid 1980s when we decided to get out of prime lamb breeding. Obviously, our merino flock has come a long way since then. We have our own ram breeding nucleus crossing Fonthill and Nerstane blood sheep to have fertile, "good doing" sheep with wool that suits our environment. When compared to beef and goats, the combination of merino breeding and wethers has given us by far our best 20 year average return/ha. At "Warrie" we are planting Australian native trees for "clear wood"

production amongst tree regeneration corridors. This is a long-term project with the oldest plantings only four and a half years old.

Pasture history

"Warrie" has had an average of 2.9 t/ha of single and Mo super since the 1960s. Last application was four years ago with only 600 kg/ha spread over the last 20 years.

Pasture establishment methods include-super and subclover by air:

- super and perennial pasture mix by air;
- aerial spread of chemical, seed and fertiliser;
- chisel ploughed, seed and fertiliser broadcast;
- disc plough with shaker seedbox; and,
- boom sprayed and direct drilled.

The end result is subclover over the whole property, introduced perennial grasses (phalaris, cocksfoot and rye grass) growing well on heavier country, with natives and "weeds" scattered over the whole property as well. Average stocking rate is 7.3 DSE/ha (3 DSE/ac).

"Linton" was purchased in January 1994 and has had approximately 300-400 kg/ha of single super and subclover spread on 1755 ha (34% of the property) over the last 10 years. About 250 ha were sown conventionally to introduced pasture 7 years ago of which about 95% has reverted back to native pasture. The property is native pasture dominant.

The stocking rate was 2.8 DSE/ha during 1994/95, but now runs 3.3 DSE/ha and by March 1999, given an average rainfall, the stocking rate will be increased to 4.3 DSE/ha mainly due to fencing, pasture rest and supplementing of dry feed with urea and minerals.

In this paper I would like to discuss three main points that are critical to our pasture and grazing management:

- Pasture improvement;
- Superphosphate application; and,
- Stocking rate.

Pasture improvement

Contrary to common belief, pasture improvement by way of ploughing or spraying out competition and then sowing introduced species with fertiliser is rarely economic. For the exercise to be feasible, the pasture needs to sustain a high stocking rate permanently (5 DSE/ha above control), and is an extremely long-term project (19 year payback period, see Figure 2, page FF).

In our operation, we try to do the "highest return on investment" projects first. For example, spend \$30/ha on fencing for cell grazing to achieve the same result in the short-term as \$200/ha on establishing introduced pasture. Fencing is also better in the long-term because it provides a permanent system for improving and maintaining pasture as well as a tool for drought planning.

The last paddock we pasture improved was sown twice. First by air which failed on the dry aspects in a dry winter/spring. We then direct drilled the arable (steep by many standards) country costing in excess of \$300/ha for the whole paddock. Since pasture improvement, this paddock has not increased carrying capacity significantly, from 4 to 4.5 DSE/ha. With the introduction of cell grazing, the paddock's carrying capacity has increased to 6.3 DSE/ha (farm average 7.2 DSE/ha).

The next paddock on the "pasture improvement" list was the heifer weight control plot. This paddock had an average stocking rate history of 7.3 DSE/ha and an above average potential (estimate to be 10-12 DSE/ha). However, it was badly flogged through the 1990's, and the pasture was invaded by narrow leaved Patterson's curse (*Vipus buglos*) and other annuals. The resulting carrying capacity was 5 DSE/ha.

Instead of conventional pasture improvement this paddock was subjected to cell grazing management tactics. Eighteen months of cell grazing has seen phalaris and native perennials return to health and prominence. Stocking rate has improved to slightly above average, and we have sold the seed drill. We have just spent \$30/ha on this paddock (65 ha) on fencing and water to split it into three pad-

docks. Three-wire electric fencing was used, the dam fenced off and siphoned into a trough. The dam is spring fed, so unless the trough leaks and drains the dam temporarily, this is a good water quality and drought proof water supply. A reliable water supply system is the first consideration in a cell grazing plan.

Superphosphate application

With an average Gross Margin of \$9.40/DSE for the last 5 years over both properties we have considered "super" to be uneconomic. Drought, low cattle prices and low wool prices have contributed to an overall poor economic performance. We sold the cattle and goats which were the worst performing enterprises. Now wool prices have dropped again and I cannot see the economics of super in our situation in the near future.

"Warrie" is considered to have been made with superphosphate. It more than doubled the stocking rate and I believe it was economic in those days. Application of 2.9 t/ha of single and Mo. superphosphate over a 40 year period and diminishing rate of response has occurred, along with acidity and increased tie-up of phosphorus in the soil. Lime is nearly impossible to spread over the bulk of our country, and has a very slow return on your capital.

Simply, the economics of super are like this: if the increased expense is not exceeded by the increased income, then super application is not economic. At "Warrie" 125 kg/ha of single super at a cost of \$30.60/ha (\$12.50/ac) is estimated to increase carrying capacity from 7.3 DSE/ha (3 DSE/ac) to 9.8 DSE/ha (4 DSE/ac), an extra return of \$23.50/ha (\$9.40/ac). Clearly, this is not economic with low commodity prices. A gross margin of \$12.50/DSE is required to break even, then the feasibility of cashflowing the extra stocking rate and liming *etc.* needs to be factored in.

The heaviest carrying country on "Warrie" (20% approx) carries 12 DSE/ha (5 DSE/ac). Assuming with the addition of 125 kg/ha of super the carrying capacity could be increased to 16 DSE/ha (6.5 DSE/ac) at a cost of \$30.60/ha and return \$37.60/ha, the exercise becomes more economic. It is to be remembered that 16 DSE/ha has to be maintained, and in years like this it will cost too much in hand feeding and land degradation for me to sleep easily! Also to get phosphorus up to required levels could mean the application of 200-400 kg/ha of super initially.

The stocking rate is too low for us to get an economic response to super at Linton. A urea and mineral supplement is used to help sheep utilise dry feed. The "dry lick" contains 5% of dicalcium phosphorus which relates to approximately 200 g/ha of phosphorus per year back on the soil in an organic form. We consider the "dry lick" a balanced supplement to animal and land with the main aim being to

utilise the feed we already grow the supplement costs approx \$2/DSE/year including labour.

So we see the economics of fertiliser as being sensitive to stocking rate and gross margin. As our country does not readily lend its self to liming, super will be used on the good country in good commodity years trying to maximize any tax advantages.

Stocking rate

Every grazing system needs a plan that equates carrying capacity to stocking rate. Carrying capacity is based on the amount of feed grown. Stocking rate is based on the amount of animals grazed. If carrying capacity and stocking rate are not in balance the property is either over-stocked or under-stocked.

Carrying capacity is affected mostly by rainfall, fertility, pastures and management whereas stocking rate is affected mostly by management.

Pastures and fertility on a whole farm basis build up or decline gradually. Management can be controlled. Rainfall cannot be controlled. Thus, when rainfall is above or below average, stocking rate has to be adjusted accordingly through management. Too often this adjustment is left to hope and crisis.

Apart from our experience and "good old judgment skills", we use two methods to help us get the correct "balance":

- (1) Total stock carried for the year compared to total rainfall for the year expressed as DSE days/ha/100mm rainfall. This figure has an average or benchmark which is monitored against the actual each month. If fertility and pastures improve the benchmark is revised upwards.
- (2) By fitting normal feed curve for the year to peak DSE's for the year.

Because we plan never to hand feed (substitute energy) in drought it is important to act before crisis hits! Reducing stocking rate early by 10 or 20% can save a 30 or 40% de-stock at the point when hoping hasn't worked. This point is what I call crisis and most properties reach it at about the same time; everything is wrong! The livestock markets are at rock bottom prices, fodder is at premium prices, water is drying up, the pastures are being flogged and the government won't give us enough money to get through yet another record breaking drought.

We spend time trying to avoid crisis. From the graph above we can see that now we always plan to have stocking rate down by autumn at Warrie which is our most unreliable part of the season. In 1997 as well as working with nature on the feed curve, stocking rate was reduced due to a rising DSE days/ha/100mm, being 15% above the benchmark in August and up to 35% above in November where it

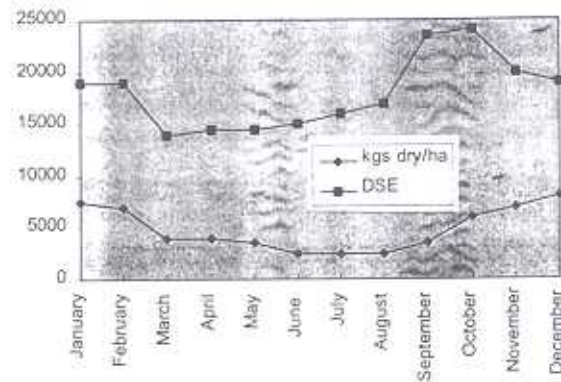


Figure 1: Feed/DSE curve for "Warrie" (Note: (1) February - Send wether lambs to "Linton"; (2) March -Joining; (3) August - Lambing; (4) October- Weaning; (5) November - Shearing; and (6) December- Cull sales).

has remained until April 1998. Bearing in mind water use efficiency is better in drought, 35% above the benchmark is acceptable and to keep at this level, required a stocking rate reduction of 10% in August, 15% in November and 15% in February. As a result feed has been adequate to April 1998 and assuming we get average May/June rainfall, no further reduction will be required for winter.

A *re-stocking* plan is needed as well. In a breeding situation like on Warrie, it is reasonably easy just to keep oldest age group of breeders for another year and or cull a few less. In a dry stock situation you can also keep the oldest age group another year to ease the cashflow implications of buying stock, or indeed if you sold early enough you should be buying on much the same market you sold. The temptation is to feel the market has left you behind and buy back too quickly. Let the country recover and think also of taking on some agistment as those who are still flogging their country will still need agistment well after drought officially breaks.

Conclusion

Too many blame the pastures in our ailing grazing industry. I consider many of the systems used to manage them are more at fault.

In July 1995, I did the "Grazing For Profit" school with Hassall & Associates in Dubbo for a week. It was after the 1994 drought had broken, we had hand fed and agisted the bulk of our stock through the drought at great expense to see the cattle price fall by approximately half from its peak. We had just paid the deposit on a brand-new hay baler (our previous hay fed the cattle only two months into the drought). After the school we forfeited the deposit on the new baler and sold the old one at best. Luckily we sold half of the cattle before the real drop in cattle prices, and the rest at low prices in autumn/winter 1997.

I had seen "cell grazing" in the U.S.A. and

South Africa in 1984, but considered our country too steep and difficult to fence and was sceptical about the intense nature of it. We did however start to rotate the stock in the existing set up without any particular plan which didn't work properly. "Cell grazing" or "Planned grazing" should be done properly or not at all!

The seven days of the school were comprised of:

- 4 days on people issues;
- 2 days on economics and finance; and,
- 1 day on cell grazing.

Immediately after the school I was still sceptical about fencing hilly to steep country with cheap electric fences, and running sheep and cattle together in huge mobs.

The school helped my attitude, *eg.* to work on issues that you can influence, like management, rather than dwelling on the lack of rain or government policies of which we have little influence.

The school encourages people to look outside

the normal guidelines for new ways to solve problems. We were encouraged to prioritise issues and the number of days given to each of the above issues at the school seems to fit my situation.

Given: (1) the above priorities (2) the steadily declining terms of trade for our grazing commodities; (3) that our class of country represents a non-arable mix of light to medium quality tablelands grazing; (4) more profitable enterprises are taking the good arable land; (5) that our current weak link is financial (too much debt); and (6) that bare earth grazing (high in-put) does not rest easily with us, we have concluded that pasture improvement the conventional way and fertiliser application without clear evidence of their economics and feasibility, year by year are luxuries we cannot afford any more.

The methods of getting production out of our land and the systems used to manage our production are becoming more environment and consumer focused. So by working with nature rather than against it and addressing marketing along with quality control as our next major priorities, hopefully we will ensure our future on the land.