Woomargama Station - using the right plants in the right place for the right purpose.

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As manager of Woomargama Station, Chris views the property as a long term investment in Australian agriculture and sees his role as understanding and satisfying the demands and objectives of all stakeholders including the land, the owners, management, staff and the local and wider community. Chris is an active member of the Holbrook Landcare group, the AWI wool production advisory group, participated in the Australian Rural Leadership Program and was selected by Holbrook Rotary for a Group Study exchange to Japan. He has an Associate Diploma of Farm Management and a Diploma in Financial Markets.

Introduction

Woomargama Station is located 10 km south of Holbrook in southern NSW. Historically the long-term average rainfall is a fairly reliable 750 mm. However, in the last eight years, the average rainfall has been only 600 mm and in the last three years has only averaged 470 mm.

This long term drought has had severe consequences on the pastures, stocking rates and management of the property. My current challenge is to learn from these years.

- Is this a trial run for the climate of the future?
- What changes can I make to my farming system to better cope with a more variable climate?
- How can I make every rainfall event count, regardless of when it falls?

I believe the answer lies in an integrated, productive and permanent pasture system and sound, evidence-based decision making.

Background

Woomargama Station is owned by the Darling family and is a substantial investment in agricultural real estate. This is recognised in our management, as we focus clearly on increasing the productivity and health and ultimately value of the land.

Woomargama Station is 2,700 ha and covers what is known as the Woomargama valley. The soils and landscape on the property are highly variable and include alluvial and heavy clay flats and gently rising slopes, which run up to steep shale at the top of the valley. The soils of the region are naturally acidic (4.0 - 4.5 in $CaCl_2$) and have a low inherent fertility (7 –9 mg/kg Colwell P).

Approximately one third of the property is arable and maintains well fertilised, improved species. Over half of the property is steep, with relatively infertile shallow soils, which maintain various amounts of native pasture and natural timber. Around ten percent of the property has been planted with interconnecting tree plantations, particularly along creek lines, gullies and in fragile areas.

The property runs two livestock enterprises. A fine wool Merino flock of 10,000 sheep and a beef cattle herd of 1,000 cattle. Both groups reproduce in the spring, to match feed requirements with pasture growth. Specialist seedstock producers are used to provide the genetics required to achieve our management aims and specific target markets.

We drive the enterprises as hard as we can, with the aim of generating the funds required to further develop the property, from production, aesthetic and sustainability perspectives.

Matching pastures and management to soil and landscape.

The highly variable landscape and variation in soil types across Woomargama presents both challenges and opportunities. In the late 1980's a whole-farm plan was prepared and this has been the blue print for much of the property development. Most of the property has now been subdivided into land classifications and each paddock is managed to it's best potential.

In the early 1990's our grazing system centred predominately on spring growth and set stocking. With low stocking rates and poor utilisation we usually had plenty of residual spring feed to get us through the summer and autumn, and we supplemented this with hay until the following spring. We would curse summer rain, as it destroyed the dry standing feed.

During the mid 1990's our stocking rates increased significantly and as we changed from autumn to spring lambing and calving, we consumed much more of our spring feed as it was growing. This matching of pasture availability to lactation is highly desirable and our gross margins improved; however our summer and autumn periods became much tougher, particularly for the weaners.

With a real reluctance towards supplementary feeding, and an understanding of how much damage it does to cost of production, it became desirable to design a pasture system that grew grass all year round. Our immediate initiative was to sow hundreds of hectares to a wide range of species with varying growth patterns, including phalaris, cocksfoot, lucerne, chicory, plantain, winter and summer fescues, perennial ryes, white clovers and the list goes on.

To help achieve a better pasture base, a major liming program has been undertaken. Initially lime was applied to the soil surface and an acid-tolerant species was direct drilled, with the aim of sowing phalaris into future once the lime has moved down into the soil profile. This process worked very well and over 200 ha was done annually, typically doubling the carrying capacity immediately, providing funds for future development.

The improved pastures were fertilised at a rate of 1.0 kg of phosphorus per DSE per ha per annum, with the aim of building the P levels to greater than 30 mg/kg Colwell P. Once this target P level was achieved, a maintenance rate of 0.8 kg of P per DSE is applied. Carrying capacity ranges from 14 to 20 DSE per hectare in this area, with typical superphosphate rates of 130 to 180 kg per hectare.

Historically, the improved pastures carried 80 % of the stock, in a set stocked grazing regime, on 35 % of the property. These pastures required constant renovation. Our native areas were also set stocked, mainly with dry stock, at 2 to 4 DSE/ha. The pastures were managed poorly, the stock did not do particularly well and the area contributed little.

Despite a move to rotational grazing many years ago and the practice of destocking into sacrifice paddocks in tough times, during the course of the drought hundreds of hectares of cocksfoot, fescues, chicory, plantain and perennial rye withered and died. The only true survivors here are the native grasses, phalaris and mature lucerne.

Using failures as stepping stones to success

We have discovered that we really only had three permanent pastures; phalaris and subs, native grasses and a little bit of lucerne. We have also discovered how important permanent is and how costly non-permanent is. It is interesting that while we were focused on sowing the latest cultivar, we were completely distracted from utilising what we now understand to be one of our great resources, our native grasses.

I decided to learn how to manage this resource better. Our first step, as always, was to seek good advice, primarily from Meredith Mitchell (DPI, Rutherglen) and Jim Virgona (CSU, Wagga). We identified the main beneficial grasses as wallaby grass (*Austrodanthonia spp.*), weeping grass (*Microlaena stipoides*) and red grass

(*Bothriochloa macra*), applied 80 kg/ha of superphosphate and initially stocked the area with 4,000 wethers, under a rotational grazing system.

The main role of the phosphorus is to stimulate clover growth, which provides nitrogen, which feeds both the native and annual grasses. This improves the quantity and quality of the pasture. The aim was to do this to a moderate level so that the perennial native species were not dominated or out-competed by annual species.

However despite this, we found that the prolonged periods of low protein and low digestibility was very hard on the sheep and regardless of the amount of food on offer, a tail continually developed and the wool quality suffered. We tried all sorts of supplementary remedies for this, including licks, blocks and lupins. These all proved expensive and unsatisfactory.

Eventually we came up with the very simple solution of integrating both improved and native country in the same rotation, again with the aim of lifting the average quality of the feed intake. This concept is now the focus of an EverGraze Proof site. The trial is formalising the principals of improving the management of both the improved and native pastures, by integrating their management and expanding a high gross margin enterprise traditionally run on improved pastures, into the native pasture areas.

Integrated system

We now have three grazing blocks, one for the ewes, another for wethers and a third for cows. Each block includes 15 to 20 existing paddocks, some with improved species and others with natives. Managing improved and native pastures in the same system works extremely well. For much of the year it is a continuous rotation; however, in the spring we graze the phalaris particularly heavily, while the native pastures enjoy a rest. During the summer when the phalaris is in senescence, the summer-active natives earn their keep. Our rotations are very flexible, as we focus very much on what is happening in the paddocks rather than adhering to strict rules.

We now are managing to the best of our ability, a suite of drought-tolerant, productive and permanent perennial grass pastures that respond to rainfall all year round.

The future

Following the failure of many of our improve species, our ideal of right plant, right place and for the right purpose has not changed. Nor has our aim of making good use of every rainfall event. In fact, in an uncertain climatic future, these ideals will be even more important. What is changing is the value we place on permanence and the way we value and manage our native pastures. Phalaris and sub clover pastures will

always be the backbone of our system, providing the bulk of our high quality feed. Our native pastures will play a much more important role than in the past. Integrating the improved and native pastures is highly complementary and provides a response to rainfall all year round.

The lucerne is very valuable in getting the lambs through summer. Unfortunately only 3 % of the property is well suited to lucerne and we have failed to find a companion species that survives for longer than 12 months. From an environmental perspective this is a worry. Sub clover may be the best alternative, with fodder crops direct drilled into the stand every few years, to make use of the nitrogen.

We have had some outstanding perennial ryegrass pastures, particularly based on Kangaroo Valley and Victorian cultivars in our early days and on Banquet more recently. They have played an important role in fattening steers, providing high quality feed for lambs and filling the silage pits. However, they are short lived here and therefore very expensive. In the future they will only be sown into small areas of our best country, for specific purposes, after having carefully done our sums.

We have also had success with summer and winter fodder crops, such as millet and oats and again, in the future they will be sown into small areas, for specific purposes, having carefully done the sums.

In the past we have enjoyed cheap superphosphate and also enjoyed the response we receive from applying it. If current prices persist, we will have to learn to live with less. Rotational grazing and a more targeted application based on an expanded soil testing regime will help with this.

We seem to be living in uncertain times. The discipline of making sound, rational, evidence-based decisions will continue to be an extremely important attribute.

Learning from EverGraze

Since 2005, I have been involved with the National Advisory Committee of the EverGraze project. This has meant exposure to all sorts of ideas and grazing systems, from the sand plains of south west of WA to the subtropical pastures of northern NSW.

The mantra of EverGraze is *"right plant, right place, right purpose"*. Along with selecting a high gross margin enterprise well suited to the environment, this ideal is the primary tool for achieving increased profit and improving natural resource management, at the same time.

Apart from being a challenging and rewarding experience, my role in EverGraze has created for me the awareness that striving for demanding production targets and demanding environmental targets are equally important in the design of long term, profitable farming systems.

Summary

Growing grass is what we do best at Woomargama. Our future lies in maintaining a productive and resilient pasture system, harvesting it in the most efficient manner possible, with the best genetics available, enabling us to supply high quality product, to specific target markets, for a price well above our cost of production.

Our ultimate aim is to recognise a continual increase in the value of the land, through increasing productivity, focusing upon aesthetics and rebuilding environmental capital. My role is to provide leadership in this task and make good decisions.