Funny farming for the future

Andrew and Megan Mosely

"Etiwanda" and "Manuka" Stations, Cobar NSW 2835

Introduction

Since 1997 our family has been undertaking management to restore native pastures aiming to rejuvenate water, mineral and carbon cycles through increases in ground cover using predominately deep rooted native perennial grasses. Over this period, we have been developing and expanding our knowledge on new ways of approaching problems that are common with most grazing enterprises. Family members have attended two Holistic Management (HM) courses, a Grazing for Profit (GFP) course and field days on pasture-cropping and no-kill cropping. Each of these has contributed knowledge toward our current management.

Background

"Etiwanda" and "Manuka" represent approximately, 26,000 ha property located 96 km south of Cobar. Soil types are predominately red soils and the vegetation communities are mostly Bimble box and White Cypress Pine with some areas of Mallee. Over past years we have run from 6000 to 12,000 dse based on a mixture of sheep, cattle and goats (Figure 1). Whilst it may seem 'funny' on the surface, we believe the combination of these three livestock types (cattle, sheep and goats) is integral to the restoration of our native pastures. When plants are ungrazed, they oxidise and die, whereas time-grazed plants appreciate the pruning and flourish with new growth. Continuously grazed perennials also die because they have insufficient time to replenish root reserves. We believe an ideal grazing mix for our environment (based on dse) is 70% White Dorper ewes, 20% Boer infused does and 10% Bos Indicus cross cows and their progeny. Each of these livestock types utilise different components of the pasture. We have found in our environment that White Dorper sheep are easy care as opposed to woolled breeds of sheep that are prone to flystrike, high VM and grass seed contamination due to widespread spear grass (*Stipa* & *Aristida* spp). The hoof action from cattle provides periodic disturbance to open up the hard capped soil surface and goats tend to utilize browse to help manage invasive native shrubs. In this way each of the three livestock types fill specific niche roles in managing and restoring native pastures. An important component of our enterprise is total grazing pressure control (TGP) as bush goats and kangaroo numbers can reach levels comparable to our livestock numbers. The use of fencing to control TGP is essential to our grazing enterprise.

We have adopted a flexible farming approach, where we combine estimates of grazing days and recovery periods adjusted for seasonal conditions.

Figure 1. Some of the 'Flerd' – a mixture of cattle, sheep and goats

We need to have a clear understanding of what is in-front of us and what is behind us in terms of available feed.

Our experience has identified three critical points for successful regeneration of perennial plants across our rangelands. These are

- The use of grazing charts to plan recovery periods
- Run animals in one mob for planned periods of time to maximise recovery periods
- Introduction of pasture cropping in conjunction with planned grazing

Planning recovery periods

In November 2007, Megan and I travelled to the USA to attend the Holistic Management International conference in Albuquerque, New Mexico. From this we learnt that planned recovery periods are critical to native pasture regeneration. We have adapted this knowledge to our environment. Essentially, on 'Etiwanda' and 'Manuka' stations, stocking rates are determined in relation to available pasture that is monitored using visual assessment. Available feed is estimated and how long it will last for is based on stock numbers and planning a drought reserve of at least 2 months. We usually work on a period of 8 months non growth including the drought reserve.

A fencing and sub-division plan has been undertaken for our properties and we believe this is one of the key elements to successful native grass regeneration we have seen. This simple element has allowed grasses to be rested from grazing so that above ground biomass and substantial root reserves below ground are achieved. This means when rain falls, no matter how little, plants can utilise this moisture. Our planned recovery periods are having an impact on perennial plant root growth and it is also likely to be responsible for the increasing soil organic carbon levels.

Recent scientific testing on "Etiwanda" has shown positive environmental gains from changes in grazing management (Tighe *et al.* 2009). The data indicates increasing groundcover percentages, increasing soil carbon levels (0.6 to 0.88%) in 3 years and decreasing soil bulk density, that is, the soil is becoming softer and will continue to do so with continued planning and care.

Figure 2. Thick and vigorous establishment of native perennial grasses in country managed for regeneration, March 2010 at 'Etiwanda', Cobar

Maximising recovery periods

Livestock are often viewed as having a negative impact on rangelands but we see them as a powerful tool for management. However, it is critical that an understanding of the role that time plays in regard to the health of perennial grasses. The length of the grazing period and the length of the recovery period are the two critical factors. In our environment at least 150 days of recovery are needed although this does vary depending on seasonal conditions. Long graze periods mean longer recovery periods (Figure 2). We use perennial grass leaf litter as an indicator of recovery following defoliation.

Utilising pasture cropping

Pasture cropping has been adopted as the preferred system on approximately 4,000 ha available for this purpose (Figure 3). Grain crops can be an important source of income however, as good cropping years are rare, opportunities for success are limited by low and uncertain winter/spring rainfall. Pasture cropping offers us cropping flexibility. However, using the system does mean a crop can be sown without damaging the native perennial grasses present. Pasture-cropping in conjunction with planned grazing have a number of positive environmental effects and have been shown in results conducted

Figure 3. Combined pasture-cropping and planned grazing is a powerful recovery tool. The restored grassland in the foreground yielded 380 DSED/ha from a three week graze period in March 2008. This photo was taken in mid-June 2008. The undisturbed invasive native shrub country in the background still has no ground cover.

on our property and others in the Cobar area (Alemseged, 2009). These are

- Disturbance is created with direct drill.
- Furrows from tynes and grooves from hooves capture rainfall.
- The crop create organic matter (roots, stubble and biomass)
- Once crop is harvested we have an understory of grasses ready to be grazed.
- The stubble creates a micro environment (shade and cover) for perennial grass seed to germinate and establish.

They also pay a great deal of attention to livestock welfare during mustering, yarding and transport. We attended a Bud Williams Low stress stock handling school in 2002 and used the concept of low stress stock handling in our enterprises. The low stress techniques have been taught to our two daughters who are 7 and 10 years old. They are successfully able to draft sheep with minimum fuss and stress on both sheep and operator. It is a critical piece of knowledge to successfully use flerds (flock and herds) as efficient tools for land restoration. The flerd is a powerful four legged organic soil builder that does not need the finite resource of diesel.

Conclusions

The property blueprint aims to document what we do, when we do it and why we do it and covers the following key elements:

- Carbon Sequestration policy-increasing biomass of perennial grasses and maintaining ground cover
- Grazing Plan policy – To increase groundcover and plant biodiversity
- Livestock Management policy – Dry period de-stocking program where male animals and older females are identified and scheduled for de-stocking if required and cut-off dates for destocking are set.

References

Alemseged, Y (2009) Evaluating opportunistic cropping for control of INS and restoration of native perennial grasslands in western NSW. Final report to Western Catchment Management Authority Project NAP01 07.

Tighe, M, Reid, N, Wilson, B & Briggs, SV (2009) Invasive native scrub and soil condition in semi-arid south-eastern Australia. Agriculture, Ecosystems and Environment 132, 212–222.