

Pasture options in 2007

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Take Home Messages

Livestock in farming systems provide a level of risk management compared to a solely cropping enterprise. Average stocking rates on pastures are substantially lower than could potentially be achieved through the adoption of more appropriate pastures. The lack of suitable pastures is due to perceptions of poor economic returns as a result of difficulties with the establishment and persistence of pastures, and problems with the seasonal nature of pasture production leading to excessive production in the spring and lack of production in the autumn.

The BCG is trialling a range of pasture species, to identify those easy to establish, with productive potential and complementary timing of peak production.

Finding suitable pasture species that can grow in drier climates can be difficult. In 2006, the BCG sowed a series of small plot demonstrations aimed at investigating new pastures suitable to the Mallee & Wimmera. One of the outstanding performers in both these regions was the forage Brassica, Winfred.

Perennial pastures have the advantage of single establishment cost and with appropriate management some superiority over annual pastures in the prevention of erosion. However, successful establishment can be difficult, and correct management is essential.

Introduction

Livestock have been an integral component of cropping systems since the advent of agriculture in Australia. However, most livestock suffer from protein shortages during regular summer droughts when the annual pastures have dried off after the cool season flush of growth. Subsequently feed gaps arise at either side of the cropping season, both during the autumn (March – May) months and potentially prior to harvest in dry seasons (November).

To improve the current grazing systems it is important to understand where the needs are and how to improve production. In the 2005 BCG manual, it was stated that to improve grazing systems in the low rainfall wheat/sheep zone, the aim should be to increase pasture returns without negative effect on the cropping phase.

The BCG has carried out numerous trials investigating a range of annual pasture species. Although this year certainly has not been a good year for growing much at all, it does subject these species to the ultimate test ... drought. Over the past two years the BCG has evaluated over 28 annual pasture species for the Wimmera-Mallee region. These demonstration trials have been held at the BCG Main, Northern and Southern sites since 2005. These trials are not replicated and unfortunately have not been subjected to any form of grazing or grazing simulation. Comments made on the relative performance of these pasture species are based on observations only.

Annual Pastures

Over the past two years, 28 annual pasture species have been evaluated in small plot demonstration trials. Of particular interest were the Italian Ryegrass: Winterstar and Sungrazer. In 2005, these grasses performed exceptionally well, with prolific growth over the winter and spring months. One obvious concern about introducing another prolific ryegrass into the system is whether it can set viable seed.

Italian ryegrass (*Lolium multiflorum*) seed from 2005, was tested for viability and susceptibility to Group A herbicides, with a susceptible Wimmera ryegrass (*L. rigidum*) population used as a control. Both species were effectively controlled with 50ml/ha Verdict. Naturally occurring hybrids between these two species are known to occur within Australia (Kloot, 1983), and the possibility exists of the transfer of herbicide resistance from a resistant Wimmera ryegrass population into a previously susceptible Italian ryegrass population. More investigation is required to determine the likelihood of this happening prior to the widespread use of the Italian ryegrass varieties in the Wimmera/Mallee farming systems. Both diploid and tetraploid Italian ryegrass populations exist; the diploid form being more likely to cross pollinate with the Wimmera ryegrass populations.

In 2006, the forage Brassica variety Winfred was the stand out species with good growth in a tough year. Winfred is a cross between turnip and chou moellier (Kale). It has proved one of the better performing Brassica over many years. It is a very versatile plant and can be grazed from 9 - 10 weeks after sowing or it can be left until about 13 weeks if required before the first grazing. Winfred was originally developed as a high rainfall pasture variety, but the BCG trials indicate it also has potential in the lower rainfall environments.

The protein percentage of Winfred leaves ranges from 15-25%. Metabolisable energy content ranges from 11-14 MJME/kg DM. Forage Brassica's have been reported to produce up to 150-250g/head/day of livestock weight gain. Given reasonable moisture, Winfred will continually re-grow during the summer months and with correct management, and adequate rainfall, can be carried through to winter if required.

In low rainfall areas Winfred is recommended to be sown by late August / early September, to capture the spring rain. Sowing at this time sets the stand up to be ready for grazing by December, when other pastures are drying off and of lower quality. Alternatively, it can be sown during March (provided there is an early break to the season) for high quality winter feed.

Perennial Pastures

The livestock component of grain-grazing systems could be enhanced with deep-rooted perennial plants. The grazing value of native grasses, broad leaf forbs and forage shrubs is greatly under-utilised. In 2006, the BCG began work on a project "Perennial Profit in the Mallee and Wimmera" as a component of the larger Making Conservation Pay program. The project is funded by the National Landcare Program (NLP) and attempts to address the autumn feed gap between February and May, reduce the amount of bare soil over summer months, reduce groundwater recharge and find alternate land uses for areas of inherently low productivity.

As part of this three year project, 200ha will be sown to perennial species in large scale demonstrations. This is broken down into 20 sites throughout the Wimmera Mallee region. Each site is roughly 10ha in size. The species include lucerne, fescue, phalaris, cocksfoot and saltbush. After the initial establishment year (year 1) the sites will be subject to grazing, to identify the best management strategy.

In 2006, nine sites were sown to perennials of which only five established. The tough conditions experienced this year never favoured good establishment of pastures. The difficulty of taking rye- and brome-grass out of pastures places greater emphasis on pre-sowing control. The false break, despite good germination of shallow seeded weeds, was not enough to germinate the seeds at greater depth. Later germinated weeds posed a major burden at some sites and were sprayed out in late September early October to prevent weed seed bank escalating.

From the perennials sown, Atlas phalaris appears to have the most potential. Phalaris was sown at 2kg/ha on a property at Morten Plains. Emergence was relatively slow and uneven and by the end of November the phalaris stand varied in density from 30-60plants/m², with plants remaining green while most other annuals senesced. For better pasture utilisation and availability a phalaris/lucerne mix would be ideal, providing weeds are controlled early and sowing conditions favour early establishment. This mix was attempted to be grown at a number of sites, however, these sites did not receive adequate rainfall to germinate the seeds and subsequently failed.

A species audit was compiled by the CSIRO Sustainable Ecosystems (Pengelly, 2006). The audit identified a large number of potential suitable perennial species that should be evaluated in the Wimmera Mallee region. Twenty species were short-listed as those having the greatest potential for the region. The key selection criterion included annual rainfall and soil type in the region from which the species originated, potential rooting depth, grazing potential and feed value. Two new breeding lines of lucerne *Medicago sativa* spp. *Caerulea* and *M. sativa* spp. *Falcate* were audited. These two species originate from semi-arid regions of Kazakhstan and are subjected to heavy grazing pressure. These species typically exhibit strong seedling germination and regeneration in permanent pastures. Both species should be well adapted to semi-arid environments and strongly alkaline soils typical of the Wimmera Mallee region. These will be field tested in 2007.

Saltbush (*Atriplex nummularia*) is by far the most important non-grass/non-legume forage shrub species being evaluated for delivering multi-purpose healthy grazing systems in the semi-arid environments. Saltbush will withstand high levels of salinity but will not tolerate waterlogged conditions. Saltbush must be heavily grazed to maintain a productive stand. Under-grazing allows the saltbush to grow too tall and woody for maximum fodder production. Due to the high intake of salt, livestock require access to plenty of fresh water. Saltbush does not contain enough energy to maintain livestock condition and energy supplements are usually required. Alternatively, salt-tolerant perennial pastures may be sown between the rows of salt bush. One successful variety is Tall Wheat Grass however, strict management is required to prevent the grass spreading from the target site.

Saltbush plantations should not be kept as a reserve drought fodder option. If a high energy, salt tolerant perennial pasture is sown between the rows of saltbush, these unproductive areas can soon become profitable and very useful for filling feed gaps.

Pasture Mixes

The combination of grasses and legume pastures make for a better balanced feed which reduces red-gut in lambs and bloat in cattle. Better pasture utilisation can be achieved by increasing stocking rates when feed production is greatest and providing a better nutritional balance of metabolisable energy, protein and fibre.

Pasture mixes of medics and clovers with grasses such as Italian Ryegrass (Double Crop and Winter Star) and Oats (Targa) were also evaluated for their suitability in the region. Oats are the cheapest mix but may outcompete undersown medics and clovers in dry years. Obviously, for the pasture mixes to be successful, these mixes need to be more profitable than the oat/vetch mixes currently used. Forage Brassica can successfully be grown with oats and is worthy of consideration. The Italian ryes balanced well with the medic and clovers however, their potential to cross-pollinate with resistant ryegrass is still a concern.

For long term pasture phases, perennials (lucerne) can be under-sown with a cereal crop with annual grass direct drilled in to a lucerne stand the following year. This will allow the lucerne time to establish without leaving the paddock out for a year and provide a well balanced pasture mix.

Commercial Practice

Identifying pasture species which will promote the adoption of improve pastures in farming systems in the Wimmera Mallee is a difficult task. There are a large number of potential species available but the 2006 season provided evidence that it is difficult, if not impossible, to establish any of these species during drought years. From this point of view, the forage Brassica, Winfred, is a good option, with the potential to tolerate multiple grazes if sown early and, as a broadleaf species, allows for pre-emergence and in-crop ryegrass control. Further trials are necessary to validate these initial observations.

Acknowledgements

This work has been supported by the 'Perennial Profit in the Mallee-Wimmera' project funded by the National Landcare Program and Mallee CMA.

References

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