

2002/W04



## Producer Research Support

### Sheep for Control of Herbicide Resistant Weeds

Facey Group



The planting of biserrula appears to be useful in its first year of sowing to control annual ryegrass in the pasture phase. However, whether it can compete with other species and be maintained to give future benefits remains to be seen.

#### The project

A pasture phase is an important part of crop rotations to improve soil fertility and to control crop weeds. In Western Australia sheep are often used for this phase, however they graze pastures selectively and as they prefer the desirable species in the pasture, this often results in inefficient weed control. In an effort to address this problem, a trial was conducted where a highly productive legume that has a low acceptability for grazing by sheep was planted. Sheep grazing this pasture should eat more of the crop weed, reducing their seed set and subsequent germination in the crop phase. In this study, it was expected that the seed set of annual ryegrass would be lower in a grazed pasture of Casbah biserrula than one with Dalkeith sub clover.

#### Objectives

1. develop the use of biserrula as a grazing tolerant plant to assist the control of annual ryegrass in a pasture phase;
2. determine the effect of different weed population densities in a pasture on weed seed-set under grazing;
3. investigate the productivity (meat and wool production) of sheep grazing on different pasture mixes; and
4. determine the optimum stocking rate for biserrula when ryegrass removal from the pasture is a key objective. Currently, the stocking rate for biserrula is 4 sheep/ha. This trial hopes to achieve at least 12 sheep/ha.

#### What was done

The trial site had been cropped with lupins in 1999 and with wheat in 2000 and 2001. The stubble residue from the 2001 wheat crop was burned prior to seeding. The rainfall for the study period was well below average, which meant pasture establishment and growth was effected

A 7.2ha area with relatively even soil types was divided into five plots. They were sown with biserrula, Dalkeith subteranum clover, biserrula and ryegrass (Wimmera), and subteranum clover plus ryegrass. Pasture availability and composition was measured before the plots were stocked with wethers, and during the trial. The year old wethers were weighed and conditioned scored at the beginning of the trial and then monitored monthly.

#### Key points

- It was not proven that biserrula clover would suppress/control annual ryegrass in the cropping paddocks because of the unpalatability of the clover, but it has good potential to be effective.
- A very dry second year ruined pastures and made clear results impossible.

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## What happened?

Although seasonal conditions clearly have a major impact, it is possible that Dalkeith sub clover can be a useful companion legume for reducing the ryegrass component of a pasture. Sub clovers have a prostrate growth habit that reduces their accessibility to sheep and this generally makes them tolerant of grazing. Some sub clover cultivars (particularly Dinninup) became dominant when sown into volunteer barley grass and broadleaf weed pastures when grazed by sheep. Other sub clover varieties had less effect on pasture composition and a high proportion of grasses and broadleaf weeds were maintained.

## Facey Group Selective Grazing Trial 2004

Analysis showed that biserrula did not comprise a high percentage of the pasture that was sown on the site two years prior. This may be due to a combination of chemical contamination in the previous year reducing viable seed numbers, wind erosion of top soil, and/or conditions favouring the germination of competing pasture species. The hard seededness of biserrula may have impaired its ability to compete with faster germinating and faster growing species such as grass and broadleaf species. This also may be the reason why so little biserrula was in the pasture, especially in the open grazed area. The open grazed area was subjected to less grazing during the year, therefore there was a higher biomass (tDM/ha) of pasture than in the specifically grazed plots. The composition of ryegrass and biserrula in the pasture was not consistent with the rates at which it was sown two years previously, although the sites sown at the high rate of ryegrass (HR, 10 kg/ha) tended to have a higher biomass.

The dynamic nature of pasture composition, both within and between season variations, makes it difficult to make firm conclusions. If the type and quantity of species previously sown in the plots was reflected in these results, a better indication of the benefits of selective grazing may have been found. These results do raise the question that even if biserrula is effective at lowering ryegrass content in its first year after sowing, whether an adequate stand of biserrula can compete with other species and be maintained to give future benefits, still remains to be seen and warrants further research.

2002 was one of the driest years on record for the area. A late start to the season affected pasture growth and, combined with an early finish, condensed the period of monitoring. 174mm of rain fell in the growing season (April to October).

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### **Sheep for Control of Herbicide Resistant Weeds**

October 2005 / PIRD OUTCOMES

## **Discussion**

The group did not achieve its objectives due to environmental effects outside its control. Year one showed some increase in growth rates with different pasture species. The wethers responded to the biserrula, as it remained greener for longer due to being a deeper rooted plant. The hypothesis that ryegrass could be manipulated by grazing in a biserrula pasture compared with a subclover pasture was not supported. The difference in the pattern of feed availability between the two pasture types that was generated, was in response to the dry seasonal conditions.

In year two (2003) the plots were affected by either a chemical carry over from heavy rates of glyphosphate (Roundup Xtra) applied at 2lt/ha to kill summer weeds, or from the breakdown of these weeds. This resulted in poor germination of the planted biserrula and sub clover and so the trial was carried into 2004.

## **Next steps**

While it was not proven that biserrulla clover would suppress/control annual ryegrass in the cropping paddocks because of the unpalatability of the clover, it has good potential to be effective. Trials of biserrulla will continue.