

2003/W01



## Producer Research Support

### Ryegrass Management

Ballidu Woolpro Group



#### The project

The Ballidu Woolpro Group conducted experiments and farm scale demonstrations in the Wongan Hills/Ballidu region to determine:

1. whether Safeguard rye grass would increase the rye grass dry matter production by 300 kilograms per hectare; and
2. whether the effects of ARGIT in Western Australia could be reduced by 90 percent over five years – this being equivalent to over five million dollars in the sheep industry annually.

#### Objectives

1. determine whether the livestock carrying capacity of pastures in the eastern wheat belt of Western Australia, including those on mildly saline soil, could be increased by replacing native rye grass with Safeguard rye grass;
2. compare the toxicity of Safeguard and native rye grass by comparing the prevalence of bacterial galls (in galls per kilogram) in the two different swards. Greater than 600 galls per kilogram is considered a high risk. If appropriate, the corynetoxin concentrations in the two swards will also be determined and compared;
3. determine the extent to which resistance to the nematode persists in areas planted to Safeguard. This will be achieved by measuring the prevalence of nematode galls in the Safeguard relative to their prevalence in native rye grass.
4. compare the dry matter production and sheep grazing days provided by Safeguard and native rye grass, and observe whether Safeguard is grazed in preference to native rye grass;
5. determine the extent to which susceptibility to herbicides persists in areas planted to Safeguard. This will be achieved by testing seed for herbicide resistance. In the first year susceptibility should be almost 100 percent. Reduction in this susceptibility in subsequent years will provide a measure of the persistence of this trait; and
6. measure the establishment of twist fungus, and its affect on the causative organisms of ARGIT, in both Safeguard and native rye grass pastures. This will be achieved by visually assessing the number of rye grass tillers colonised by twist fungus and relating this to the prevalence of nematode and bacterial galls.

The Ballidu Woolpro Group conducted experiments and farm scale demonstrations to determine whether the livestock carrying capacity of pastures in the eastern wheat belt of Western Australia, including those on mildly saline soil, could be increased by replacing native rye grass with Safeguard rye grass.

In 2004 there were no measurable differences in dry matter production between Safeguard rye grass and Italian/Wimmera rye grass.

#### Contact details

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## What was done

Three separate experimental sites were created; one replicating plantings of Safeguard, livestock grazing and twist fungus in a non-saline environment (Site 1), the second involving a single planting of Safeguard in a saline environment (Site 2), and the third was a Sustainable Grazing from Saline Land (SGSL) site (Site 3).

### Site 1

With the support of AGWA a five hectare site was identified, planned and developed. Safeguard was dry sown and germination of native rye grass encouraged. The site contained two one hectare plots of Safeguard and two one hectare plots of native rye grass, with three application rates of twist fungus (nil, commercial rate and very heavy rate). The plots were fenced to allow grazing by sheep.

Group members participated in a grazing management course. Throughout the project they became competent measuring feed on offer (FOO) and pasture growth rates.

Measurements and observations throughout the project included:

- sequential feed on offer;
- pasture growth rates;
- dry matter production of pasture;
- sheep grazing days;
- dates of head emergence for Safeguard and native rye grass;
- dates of flowering for Safeguard and native rye grass;
- twist fungus establishment and prevalence;
- prevalence of nematode and bacterial galls; and
- collection and testing of seed for herbicide resistance.

The Western Australian Department of Agriculture educated group members about how to conduct measurements and observations, oven dried the dry matter, and conducted assessments for the twist fungus, nematode and bacterial galls.

Field walks were conducted each year, with other interest parties invited to participate. Field walks were often held in conjunction with sampling and monitoring days.

A first year assessment proved that producers had not gained adequate information to encourage farm scale demonstrations to be planted. By the end of the second year, the role of twist fungus in the control of the organisms that cause ARGV was evaluated and demonstrated, both by itself and in conjunction with Safeguard.

### Site 2

A single five hectare planting of Safeguard was incorporated into another project site that was evaluating plant species suitable for saline areas. Members measured dry matter production and persistence of the different plant species, and prevalence of nematode and bacterial galls were measured in the Safeguard and adjacent areas of native rye grass.

Field walks and open days were conducted for other farmers.

### Site 3

The group decided to plant an extra site not originally included in the project. This SGSL site was investigating the germination and establishment of plant solutions in a saline affected landscape. Safeguard was planted and its germination measured. The prevalence of nematode and bacterial galls at the site was also measured.

## Producer Research Support

MLA Producer Research Support offers support funding of up to \$15,000 over three years for groups of producers keen to be active in on-farm research and demonstration trials.

These activities include:

- Producer Initiated Research and Development
- More Beef from Pastures demonstration trials
- Prime Time Wean More Lambs demonstration trials
- Sustainable and productive grazing grants.

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## What happened?

The dry matter production data showed that in 2004 there was no difference between the Safeguard and Italian rye grass at Sites 1 and 2. The data for sheep grazing days suggests that Safeguard may have provided a greater grazing capacity than the Italian rye grass, but the figures were not statistically different and a difference in grazing capacity was not supported by the dry matter results.

At two of the sites, there was no clear trend in levels of causal organisms between treatments. The herbicide resistance testing was inconclusive.

At another site the Safeguard had inhibited nematode gall formation. It appears that the genes for nematode resistance are present in almost 100 percent of plants. The large difference in nematode galls between the Safeguard and the Wimmera areas indicates that Safeguard successfully inhibited nematode gall formation. This needs to be followed up with more measurements of nematode and bacterial galls in subsequent years.

The project group met monthly over a six month period to monitor and measure progress, and share information.

## Discussion

The project group learned new methods for monitoring plant growth and production, and for recording information. The team also identified that Safeguard doesn't necessarily produce more dry matter than native rye grass. In a dry environment, Safeguard and native rye grass crossed and achieved a resistant state.

Team members gained an in depth understanding of the process of ARGV and twist fungus effects on rye grass and discovered strategies to diminish risk and utilize rye grass in the sheep system.

Producers understand how waterways and plant libraries assist the transference of twist fungus. They also learned about new species of grasses and pasture combinations and treatments, and that it's easy to make a mistake obtaining the right species of seed to plant. Once a mistake was made in the grass species, another grass option was included in the measurement systems.

Effective planning and experimental design was determined to be of paramount importance, as was the support of experienced researchers.

Producers are predicting that they will be able to use rye grass production when they have found a solution to ARGV. Producers are annually testing for ARGV in susceptible paddocks, and one producer is planning to put in a paddock scale area of Safeguard to integrate it into a pasture area for 2005.

## Next steps

The project team identified that this project raised more questions than it answered and have identified how much more work is required to obtain more robust outcomes. Six of the original project members are interested in running trial sites in 2005.

Future trials would exclude sheep weighing because it is too inaccurate, and focus on dry matter measurement. Both correct seeding and accurate measurement of seeding rates are also important.

## MLA also recommends EDGEnetwork

EDGEnetwork offers practical field-based workshops to improve productivity and profitability for the long-term.

Workshops cover breeding, nutrition, grazing management, marketing and selling.

Call MLA on 1800 993 343 or  
[www.edgenetwork.com.au](http://www.edgenetwork.com.au)

## Towards Sustainable Grazing

The Towards Sustainable Grazing package is the culmination of MLA's highly successful Sustainable Grazing Systems (SGS) project.

There are three parts to the package:

1. The professional producer's guide - [www.mla.com.au](http://www.mla.com.au) or call 1800 675 717;
2. EDGEnetwork workshops; and
3. SGS Tips & Tools - downloadable PDFs from [www.mla.com.au](http://www.mla.com.au)

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