

Improved pasture establishment benefits production with pasture grasses

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Abstract. *Establishing pasture species is challenging due to problems associated with insects, diseases and stresses on plants associated with the soil and environment. International experience has shown that the use of a seed treatment product like Gaucho* can provide graziers with a tool to improve plant establishment, and manage some of the insects that negatively impact on plant growth. Bayer CropScience has undertaken extensive research in Australia that demonstrates how Gaucho seed treatment can be used to improve productivity gained from ryegrass, fescue and phalaris pastures.*

Introduction

Gaucho* Insecticide Seed Treatment is active on a wide range of sucking and biting pests and is registered for the control of red-legged earth mite and blue oat mite in pastures. It is an ideal component of any integrated pest management strategy in pasture. Imidacloprid, the active ingredient is absorbed and translocated throughout the seedling. This allows beneficial species to attack pests with little or no effect from the seed treatment insecticide. Current foliar insecticide options impact negatively both on the beneficial species present and the pest populations being targeted.

Gaucho, in environmental stress situations, can be more than an insecticide. As an additional benefit, Gaucho may offer Stress Shield™ effects, assisting plants to overcome environmental stress during establishment. Global research has found that some members of the chloronicotinyl chemistry group can produce positive growth responses in the absence of obvious pest pressure. The responses that can be seen include an increase in the growth rate or an increase in the green colour of the plants compared to untreated. Research found that imidacloprid (eg. Gaucho) is the only member of the chloronicotinyl chemical group to positively influence abiotic plant stresses such as stress from extended dry periods (Thielert 2006).

Methods

Since 2003, 22 large scale paddock (1 ha plots) and nine small plot (minimum 60 m²) trials have been carried out across southern Australia to qualify and quantify the benefits that Gaucho can offer in the production of pasture grasses, particularly ryegrass (*Lolium* spp.), tall fescue (*Festuca arundinacea*) and phalaris (*Phalaris aquatica*). Gaucho treated seed was compared to bare seed with the same seed source being used in each trial to maintain genetic equivalence. In 2006, 11 large scale paddock (1 ha plots) and small plot (minimum 60 m²) annual ryegrass (*Lolium multiflorum*) trials were conducted across a range of pasture production systems covering irrigation and dry-land on a range of soil types. All pastures were grown utilising current farm practices and grazing management used by the co-operator at the time. Plant counts (plants/m row and m²) were carried out to determine establishment differences. Grass production prior to each grazing was determined using a Grassmaster II pasture probe. Gaucho was applied with professional seed treating equipment (ie. Norogard, Romney and Cimbria) to ensure even and accurate seed to seed application.

Results and discussion

In 2006, large scale trials (10 sites) across Victoria on

annual ryegrass seed showed that Gaucho increased ryegrass establishment by an average of 29 per cent, and increased biomass prior to first grazing by an average of 30 per cent, compared to untreated ryegrass seed (Figure 1). The emergence and biomass increases were consistent across the trial plots with little site variation within or between plots. Red legged earth mite pressure was either not obvious or was at a level that was determined to not be of economic level to control. Plant establishment varied from +2 per cent to +74 per cent. The variation in results was directly related to the level of biotic (pest) and abiotic (environmental) stress that the pasture was exposed to. The Gaucho treatment showed improved plant establishment as soil condition (ie. tilth) improved and environmental stresses (ie. extended dry periods) increased.

Productivity from the trials showed the same trends as with plant emergence. Biomass production varied between +3% and +115% across the trials. The variation

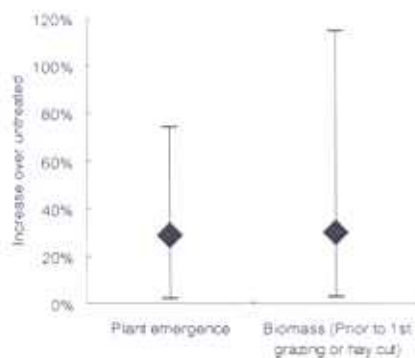


Figure 1. Increase (%) in plant emergence and biomass of ryegrass seed treated with Gaucho compared with untreated seed. Establishment data are average and range of 10 trials and biomass of 11 trials conducted in 2006.

was linked to environmental factors like extended dry periods and soil tilth. The trial recording a 3 per cent increase in production had no biotic or abiotic stresses during establishment and received adequate rainfall through the growing season. The two trials resulting in 100 per cent or more increase in production were broadcast-planted in wet cloddy clay soils and received extended dry periods through the growing season. Results from the other trials ranged between these extremes.

Examination of plants in the Gaucho treatment and bare areas showed that the foliage and root system of the plants within the Gaucho treatment were larger and

better developed than the untreated. Further work at Irrewillipe in Victoria in 2006 has shown that the growth benefits continued across each grazing (Figure 2). This has been directly linked to the rate of regrowth of plants due to a larger root system. Trial results with fescue and phalaris in 2007 and 2008 have shown that Gaucho can improve establishment and biomass production with hard to establish species similar to the results seen in 2006 with annual ryegrass.

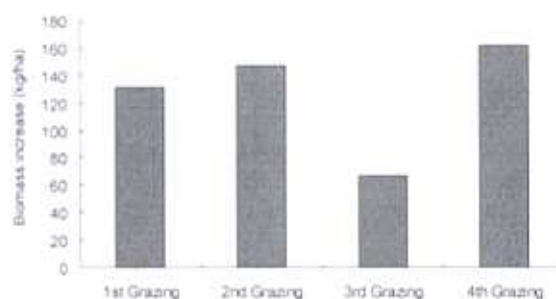


Figure 2. Increase in biomass production (kg/ha) over four sequential grazings of Gaucho treated seed compared to untreated seed. Grazings were 3 weeks apart over the period June–August.

From these trials results it can be concluded that the seed treatment Gaucho can assist in the establishment of pasture grasses and improve productivity in Australia's tough growing conditions.

References

- Thielert W (2006) A unique product: the story of the imidacloprid stress shield. *Pflanzenschutz Nachrichten Bayer* 59, 73–86.