BioAg Trial

Growing Winter Feed Pasture Trial – 2016

Australia	2016
Location	Year
BioAg	Pasture
Conducted by	Crop
Small plot replicated	
Trial Type	

Aim

To evaluate a range of products with a view to optimising winter pasture production and producing extra feed to support grazing over winter.

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Introduction

Of all the factors that influence winter pasture growth, low temperatures generally have the greatest impact, and can lead to winter feed-gaps.

Developing a strategy that manages feed supply and stock demand is critical. An option is to produce more feed than required for stock during the period of late summer to early autumn. This provides a 'bank' of feed for use over the winter period when growth is reduced. This process of promoting the production of excess feed prior to winter is referred to as a feed-wedge.

In the winter of 2016, BioAg agronomists ran a series of trials investigating the optimisation of winter pasture growth and developing a winter-feed wedge.

The trials were conducted in Tasmania, Victoria, South Australia, and New South Wales over predominately improved pastures (mainly rye-grass and phalaris base).

Dry matter (DM) responses along with quality (protein and metabolisable energy) were measured.

Method

Trial Design

The analysis was done using small plot replicated trials with applications of BioAg *Balance & Grow*, Gibberellic Acid (GA), and Nitrogen (N) applied as UAN tested against a nil treatment. These products were applied separately, as well as in various combinations, with the idea of evaluating what combination provided the most value in terms of dry matter production and overall feed quality.

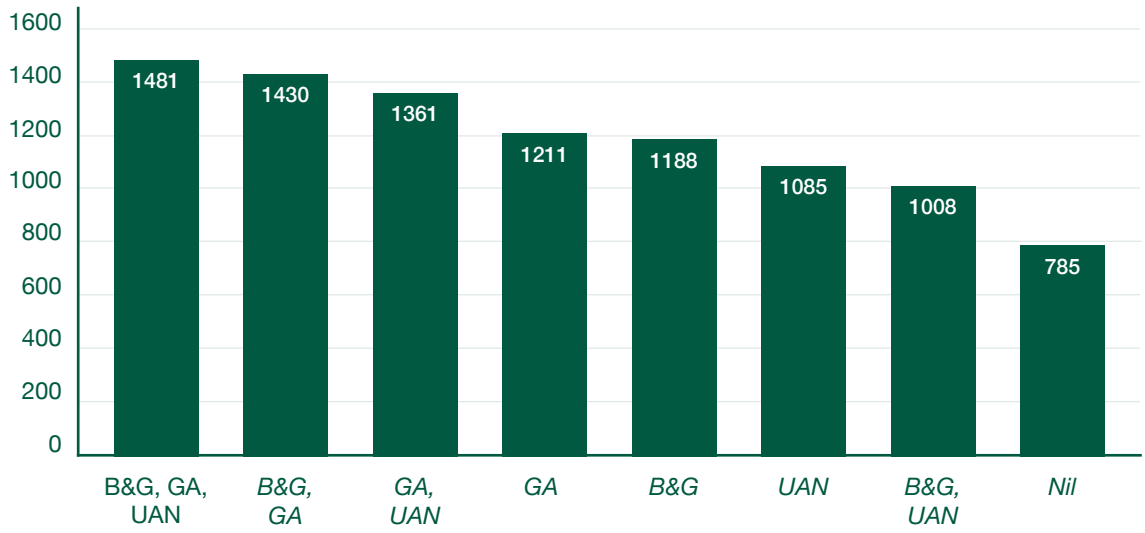
Results

Comparing the results from each trial site, the most effective combination for producing dry matter was *Balance & Grow* with GA and UAN. This gave an extra 22kg dry matter growth per day over the treatment period (average of 32 days over the June/July months).

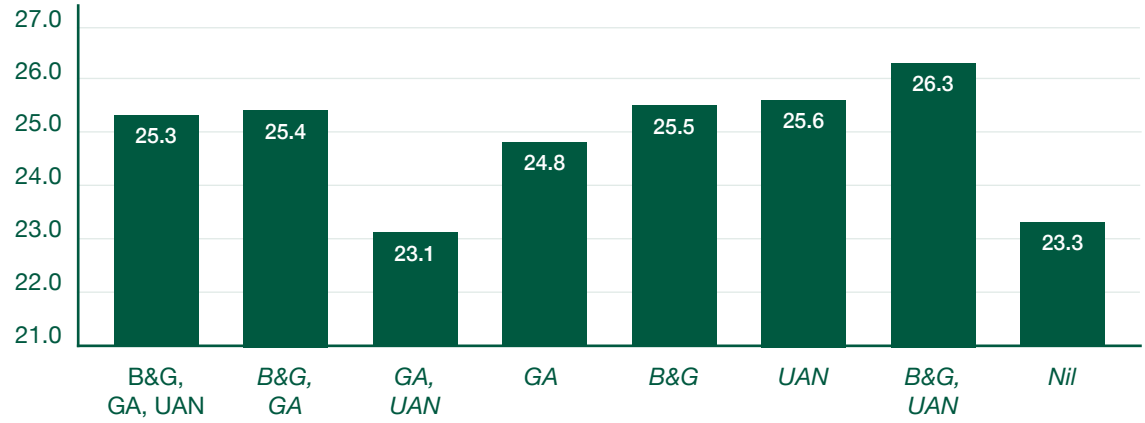
The best individual treatment (over all plots in all states) was a *Balance & Grow* with GA treatment in Northern NSW, which grew over 2t/ha of extra dry matter over that of the nil treatment.

Both these combinations (*Balance & Grow*/ GA/ UAN and *Balance & Grow*/ GA) produced statistically significant growth compared to the nil treatment. All treatments gave a positive result over the nil treatment.

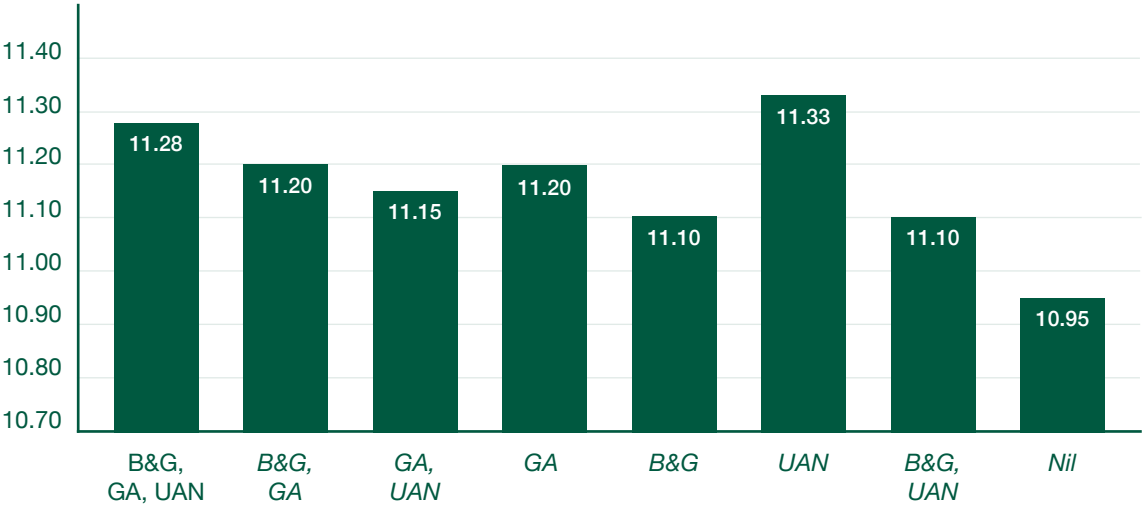
Graph 1: Average Dry Matter Yield (kg/ha)



Graph 2: Average Protein (kg/ha)



Graph 3: Average Metabolisable Energy (kg/ha)

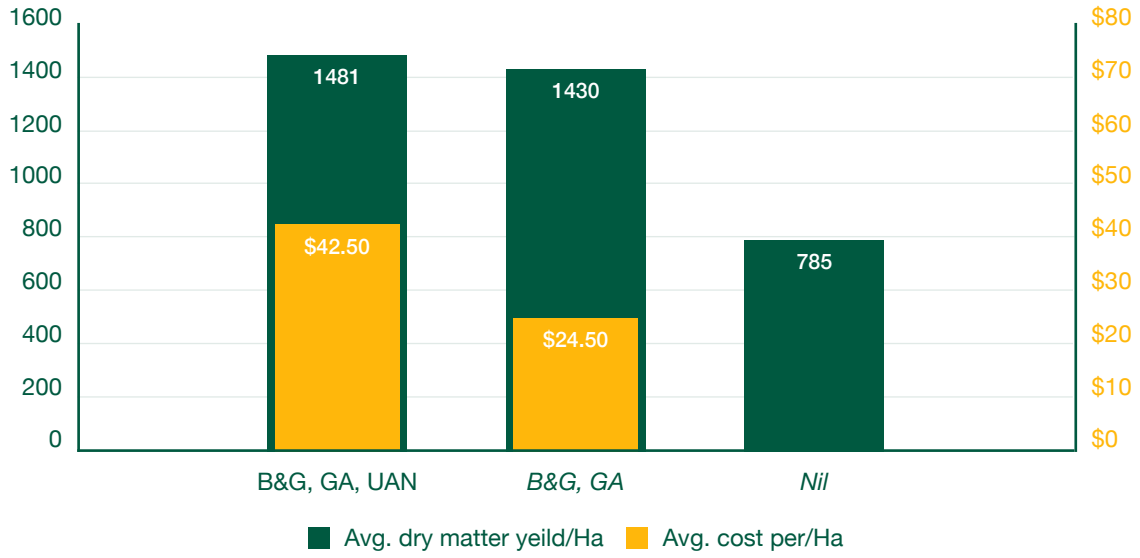


Cost Per Hectare

The 3-way mix of *Balance & Grow*, GA and UAN gave the greater yield, but was also the most costly on a per hectare basis ($42.50) for 22kg/DM per day of growth. For the period of the trial this equated to 6.1cents per kg of Dry Matter.

The *Balance & Grow* and GA treatment provided a very similar production result but at a much lower cost, at only $24.50 per hectare (an additional 20kg/DM per day over the period of the trial). The cost of the additional dry matter was only 3.8 cents per kg. The combination of GA with *Balance & Grow* proved to be the most economical method for producing large volume of additional feed.

Graph 4: Average Dry Matter Yield (kg/ha) and Cost Per Hectare



Conclusion

These pasture trials have shown that BioAg's *Balance & Grow* is very cost effective and beneficial to most pasture production scenarios.

Utilising it along with GA has been shown to produce almost as much dry matter as when including a nitrogen source in the mix, but at around half the cost.

Additional points of interest from the feed evaluation were:

- The combination of *Balance & Grow*, GA and UAN produced the highest level of total amino acids and essential amino acids (the are called essential as only plants can synthesize them, livestock can not)
- GA tends to dilute or antagonise sulphur within the plant, and as a result methionine levels are lower (methionine contains sulphur). Of note methionine levels are maintained, where *Balance & Grow* is combined with the GA.
- The percentage of both lysine and methionine of the essential amino acids, are important for milk/protein production. The trials indicated that UAN and *Balance & Grow* needed to be included with the GA spray to maintain methionine levels above a desired percentage.

Additional Background – About BioAg

BioAg is an Australian manufacturer of liquid biostimulants and natural phosphate fertilisers. BioAg's liquid biostimulant are a range of proprietary microbial cultures, specifically formulated to support different plant growth stages by improving plant and soil performance.

Each culture / product contains a:

- Balanced food supply of carbohydrates, amino acids, enzymes, vitamins, essential nutrients and growth promoters, that feed both plants and beneficial micro-organisms
- Large and diverse population of beneficial micro-organisms, including fungi, bacteria, yeast and protozoa.

Each product has been developed to:

- Stimulate soil biology and plant processes
- Feed soil biology to ensure it is active and able to interact with the plant
- Improve the balance of beneficial microorganisms in soils, and
- Provides microbial food and microorganisms into soils that are low in microbial activity or diversity due to factors such as, stress (cold, heat or water logging), lack of plant activity (fallow) and/or due to a lack of plant diversity (monoculture).

Applying the appropriate product at the requisite growth stage will support and enhance:

- Structured vegetative growth and enhance root development
- Nutrient cycling and improved plant availability of nutrients
    - Chelation of nutrients, via amino bonds
    - Conversion of in-organic nutrients into a microbial form (becomes part of the biomass)
    - Helps to unlock nutrients previously bound in soil complexes
    - Improves the flow of nutrients through the plant
- Water retention and uptake, and
- Plant vigour and tolerance to abiotic stresses.

The benefits of biostimulants can be depleted with time. In addition, as plants develop reach their next growth stage the nutritional needs of the plant also change. Applying the appropriate biostimulant, soil inoculant or foliar application, at the right time is a key attribute of any program.

BioAg's three core biostimulant products are:

1. *Soil & Seed* is a broad-spectrum microbial inoculant that assists; nutrient accessibility, nutrient solubilisation, nutrient cycling, enhanced seed germination, root development, disease and drought resistance and residue breakdown.

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2. *Balance & Grow* is a broad-spectrum source of foods and stimulants for balanced plant functions, plant health, and vegetative growth including; calcium and phosphate, vitamins, minerals, proteins, enzymes, amino acids and carbohydrates.
3. *Fruit & Balance* is formulated to increase flowering, fruit set and soil microbial activity. It delivers a rich source of plant-available phosphate when the plant is under peak load, stimulating strong fruiting and enhancing yield potential. Fruit & Balance contains a rich source of vitamins, minerals, proteins, enzymes, amino acids, carbohydrates, and growth promoters.

Each product is also available as an organic variant.

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