

**Autumn 2015**

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# BioAg COUNTRY

## Excellent results from second year of BioAg US trials

For the second year in a row, BioAg sent their yield enhancing liquid products to the US for independent, replicated field trials on row crops, and again have experienced success.

Positive yield increases above the district standard practice resulted from all treatment regimes, including regimes that featured reducing applied nitrogen by 15%.

Yield increases were on average 16.5% with yield increases of up to 42.5% obtained with a cotton treatment.

Replications where nitrogen inputs were reduced by 15% from the standard practice resulted in yield increases on average of 24.4%.

The 2014 results come on the back of those received in 2013 where yield increases of 27% in corn, 13.2% in cotton, and 36.3% in soybean were experienced.

Having completed two years of trials in the US, BioAg's average yield increase overall was 17%.

The 2013 trial results received peer review from Dr Bert Quin of Quin Environmentals

who said "...there is no doubt that the BioAg program increases yields...which carried over into significant financial returns".

The 2014 results strengthen what was already a good year for BioAg after one of its customers took out the Macquarie Valley Cotton Top Yield award for 2014.

Anton Barton, Managing Director of BioAg said "BioAg and its customers did not really need more trial results".

"We have had successful products since first releasing them in 1999 and we have customers that have been with us since that time", said Barton.

"The main aim of obtaining further trial results was to highlight to the broader market that BioAg manufactures and supplies products that are complementary to the traditional acid-based water-soluble fertilisers".

"These products are producing excellent results in improving the effectiveness of programs and reducing the risk of unwanted environmental pollution from overuse of soluble fertilisers", said Barton.

John Hill, Technical Sales Manager at BioAg

said "BioAg products hold great promise for Australian primary producers".

"These US trials were conducted in the heartland of modern agriculture, and to produce such large responses above the standard practice for that area is a real achievement", said Hill.

"BioAg technology not only has the potential to produce more with fewer inputs, but can also increase the sustainability of Australian farm-land", said Hill.

Founded in 1999, BioAg has manufactured and sold a growing range of inoculated reactive phosphate based fertilisers as well as a liquid range that improves the performance of fertiliser regimes, while improving the health and performance of soils and crops.

Based at Narrandera, NSW BioAg manufactures its liquid range in its state of the art facility on the outskirts of the town, while its solids range is manufactured in its quarry facility near Geelong, Vic.

BioAg exports to NZ and the UK and is currently talking with distributors in other international markets. **Results on back page**

## Market Outlook

By Anton Barton, Managing Director BioAg

**"The rule of thumb for farmers is that \$1 spent on fertiliser should result in \$10 of additional production".**

Farmers and graziers in general know and appreciate that the secret to converting rain into quality feed is an ample supply of nutrients, particularly calcium, phosphorus and sulphur in the soil. This nutrient pool supports the prolific growth of quality grasses, clovers and lucerne, all of which combine to enhance the carrying and finishing capacity of country.

We now have the prediction of a La Nina event in Eastern Australia and an indication

that this has already commenced given the wet summer many districts have experienced.

Many farmers have been reluctant to fertilise pastures over recent years due to persistent dry conditions and/or poor agricultural commodity prices.

With the decline of the Australian dollar over the past couple of years from above parity with the USD into the high to mid seventy cents range of late, **Continued page 2**

# THE NEXT MAJOR STEP IS *tiny*



## Phil Toy BioAg Area Manager, SA

Australian broadacre agriculture started tough. Land had to be cleared, soils were found to be largely poor in nutrients and structure, rainfall was often unreliable and services were limited or non-existent.

Then came advances in machinery and recognition of the value of added phosphorus.

It was a long time before the next important step was taken that would significantly improve farm profitability. This was not a single invention but a raft of improvements that, combined, would give the farm business a much-needed boost.

Such improvements included processes that take advantage of every available millimetre of rainfall, crop rotations that could reduce soil borne disease carry-over, and general guidance to assist farmers into the new age of dry land cropping.

The guidance and assistance derived from these improvements did not come from departments of agriculture and conventional government advisers alone but incorporated the knowledge and skills of farm input suppliers who by the late 1960s were employing qualified agronomists (as BioAg does today).

Of course sales drove many of the activities of these people but they had to demonstrate that they had something of value to offer, and were as savvy about farm business as they were about the products they supplied.

To illustrate, a crucial improvement was the introduction of early sowing which capitalised on the research highlighting its yield and economic advantages. It followed that fertiliser and herbicide company agronomists were keen to demonstrate that early and effective weed control and correction of nutrient deficiencies would enable earlier and more responsive crops, leading to bigger profits.

Among the key players in my home state of SA were, on the research side, Reg French of the SA Department of Agriculture, and Albert Rovira of CSIRO. On the commercial extension side, Malcolm Wyse who, among others, implemented farm-based demonstration trials and gave direct advice to farmers.

Reg French's work investigated ways of unlocking potential yields in the dry land farming system. He found that there was yield potential of 20kg of wheat for every millimetre of rainfall that occurred between April and October each year (with the capacity of taking into account a proportion of March rain).

Importantly, research like this might not have been so efficiently converted to early adoption by farmers without the knowledge and enthusiasm of commercial farm input providers.

During the 1980s and 1990s the role of this sector became well established and today BioAg is proud to be part of the Australian agricultural service industry, continually investigating and researching the possibilities, undertaking trials, and providing group and individual extension.

In the last 50 years there have been further improvements, covering plant breeding, new legume crops in the rotation, better herbicides, improved management of continuous cropping systems, a vastly improved offering of fertiliser formulations, new tillage and harvesting technologies, GPS, and so on.

## But where will the next significant step come from?

Many people believe it will come from biotechnologies, with attention to the types of microbes that can enrich soil, and their formulations and method of application.

Research and farm business experience combine to demonstrate that biological activity is more than a measurement of soil health. It is a critical contributor to agricultural profitability.

Microbes help break down vegetative matter, enable certain elements to be more available to plants, assist in the creation of improved soil structure and appear to have a role in protection against some root diseases. This will not be news to anyone with an interest in agriculture but what we now have is a rapidly growing number of production improvement cases across Australia resulting from microbial inputs.

One case can be found on David Carslake's, Balaklava property where independent trials were conducted on wheat.

BioAg nutrient products Soil & Seed and Balance & Grow (formulated for microbes and plants at different crop growth stages) were applied and successfully demonstrated additional net returns of more than \$95 per hectare.

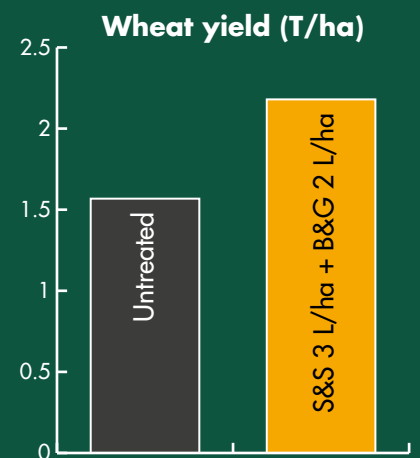
Apart from field trials such as these, there has been mounting evidence in scientific journals that micro-organisms in the right formulations can be applied to improve the availability of phosphorus and other nutrients.

Many farmers now put the biological properties of soil on the same level as the importance of physical and chemical properties.

This is understandable considering the inherent deficiencies of many SA soils, the alkaline nature of a lot of agricultural land and the associated locking up of elements, and the key role that can be played by microbes.

If we look at our history we see changes in the types of inorganic fertilisers used (including high analysis and liquid forms), the advent of reduced tillage and increased use of soil and tissue testing to fine-tune nutrient applications.

Now we can see a significant step taken through attention to microbial activity.



Treatment	Cost of treatment	Extra income	Net \$ return	Net ROI
3L Soil & Seed 2L Balance & Grow	\$30	\$127.49	\$97.49	3.25

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we have experienced around a 25% improvement in the terms of trade for commodities that are exported in USD.

What does this mean? Well lamb, sheep and beef prices are at very healthy levels and given the plethora of free trade agreements that the Australian Government has been and is entering into, export opportunities for agricultural commodities are looking increasingly healthy.

The rule of thumb for farmers is that \$1 spent

on fertiliser should result in \$10 of additional production.

When it comes to applying calcium, phosphorus and sulphur to pastures that are deficient in any or all of these nutrients, the returns this year are almost guaranteed.

If you have under performing pastures that have not been limed or fertilised recently call your BioAg agronomist to interrogate your soil test results, or conduct them if not done, so that an optimum prescription can be made for top dressing your farm this autumn.

We have a number of P, S and Calcium blends that meet the needs of most soil conditions.

If we need to do something different for you, providing sufficient tonnage is required, prescription blends can be prepared.

This autumn's fertiliser prices are not fully reflecting the replacement costs with the lower dollar so the quicker you act, the less expensive it will be.



# BioAg, Landmark Tamworth, and John Sylvester Information day 'Wombramurra Station' Nundle NSW



A perfect day and John Sylvester's property at Nundle "Wombramurra Station" provided the ideal backdrop for a farmer information day in February.

BioAg and Landmark Tamworth representatives were on hand to talk about how BioAgPhos, its blends, and the BioAg liquid range help grazing and cropping production, while John Sylvester was able to give attendees insight in to how Superb TE, a BioAgPhos blend has helped in his own grazing situation.

Superb TE is a blend that was developed by BioAg specifically for situations like John Sylvester's where slow-release elemental sulphur is supplied along with quick-releasing sulphate from gypsum and added trace elements boron, zinc, copper and moly.

The analysis of the mix is: 9% P, 1.2% S and 29% Ca.

The day started with a tour of a paddock where Superb TE had been applied and it was evident that John was able to produce an abundance of good quality feed and very healthy Angus cattle.

The main observation from John was the high amount and quality of annual clover and medics that are in the pasture sward. John told of the paddocks being proliferated with 2 feet deep clover in early summer and still with a healthy level in mid February.

A key benefit of this clover production is the fixation of atmospheric nitrogen into the soil profile. As these annual clovers and medics die, the nitrogen fixing nodules decompose in the soil and release that sequestered nitrogen,

increasing the nitrogen bank in the soil that is available to maximise the production and ME of grasses that have continued to grow in sward.

The importance of self-producing nitrogen pastures can be summed up as follows.

A 30% clover mix in a pasture sward in the Nundle area will produce approximately 8-10 tonnes of dry matter production. Per tonne, the legumes will fix 30 kg/ha of N.

This means if you have 8 tonnes of dry matter the pasture will produce 240 kg/ha of N (8 tonne x 30 kg per tonne = 240 kg).

In cost terms, you have to apply approximately 500 kg/ha of urea (46% N) to get the same response in stored nitrogen (for every 100 kg you get 46 kg of N so  $5 \times 46 \text{ kg} = 230 \text{ kg}$  of N).

You can see it is cheaper to get your pasture to grow than to buy it.

Another important consideration is that the higher clover content will increase the protein content of the forage. This helps livestock put on muscle mass and store fat, meaning higher growth rates and quicker turn off times. This leads to better paddock spelling and soil health.

I know many will be thinking that clover means bloat and stock deaths.

Cameron Barton, Agronomist at Landmark Tamworth, said 'You can get up to a 6% mortality with 30% clover based pasture and the remainder of the herd will still produce more weight gain and muscle mass which more than compensates for the losses from the deaths.'

So you see there are a lot of benefits to having an annual clover and medic based pasture producing better quality and faster growing livestock, and resulting in a better gross margin per hectare.

Also in attendance on the day was Jarrod Doyle who owns the property "Coventry" at Nundle, and who was featured in The Land 1st May 2014.

Jarrod has used BioAgPhos and Soil & Seed as part of his program for the past 6 years, and was able to expand on the benefits he has experienced when using his BioAg Program in a pasture and cropping rotation.

Jarrod noted that in the cropping phase it was important to maintain soil nutrient levels (N, P, K and Ca) and monitor trace elements.

The aim of this is to have the soils ready for a productive and persistent perennial pasture phase with the aim of having a highly productive pasture lifespan of 8-10 years.

Key points from the day

- The value of long lasting slow release P and S for clover production in high rainfall acid soils for turning rain into meat.
- The importance of healthy pastures with a good clover and medic proportion.
- The success of Superb TE in cropping and grazing situations.
- The importance of soil tests to target specific limiting factors in a soil as a means to increase production.



# TRIAL UPDATE - Crookwell replicated trial comparing BioAgPhos, Superb, and SSP (2014)

In 2014 a trial commenced to compare the dry-matter yields of BioAgPhos, Superb and single superphosphate.

The trial compared annual applications of all three inputs, as well as biannual applications of BioAgPhos and Superb.

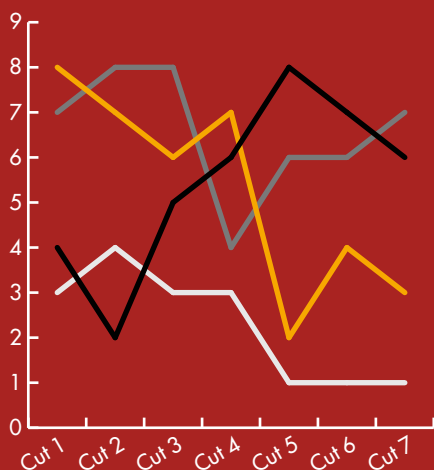
Since the trial commenced in April 2014, a total of seven cuts have been taken and dry-matter yields measured.

At this early stage, the annual application of Superb has produced the highest dry-matter yield.

The interesting point to note is how the dry-matter yield has trended with each cut.

The control and the SSP treatments have shown a gradual decline in dry-matter yield as time passes since application.

## Dry-matter yield trends (May 2014-February 2015)



- Superb @ 135kg/ha - annual
- SSP @ 125kg/ha - annual
- Nil
- Superb @ 275kg/ha - biannual

Both BioAgPhos and Superb have maintained good dry-matter yields throughout the ten months of the trial so far, for both the annual and biannual applications.

This backs up the known slow-release benefits of reactive phosphate rock fertilisers.

Year two of the trial will give a better indication as to how the biannual applications perform. We will keep you updated as this trial continues into 2015.

Another trial has since been set up near Wangaratta in January 2015. This too is a small plot randomized and replicated trial and results will be shared as the trial progresses.

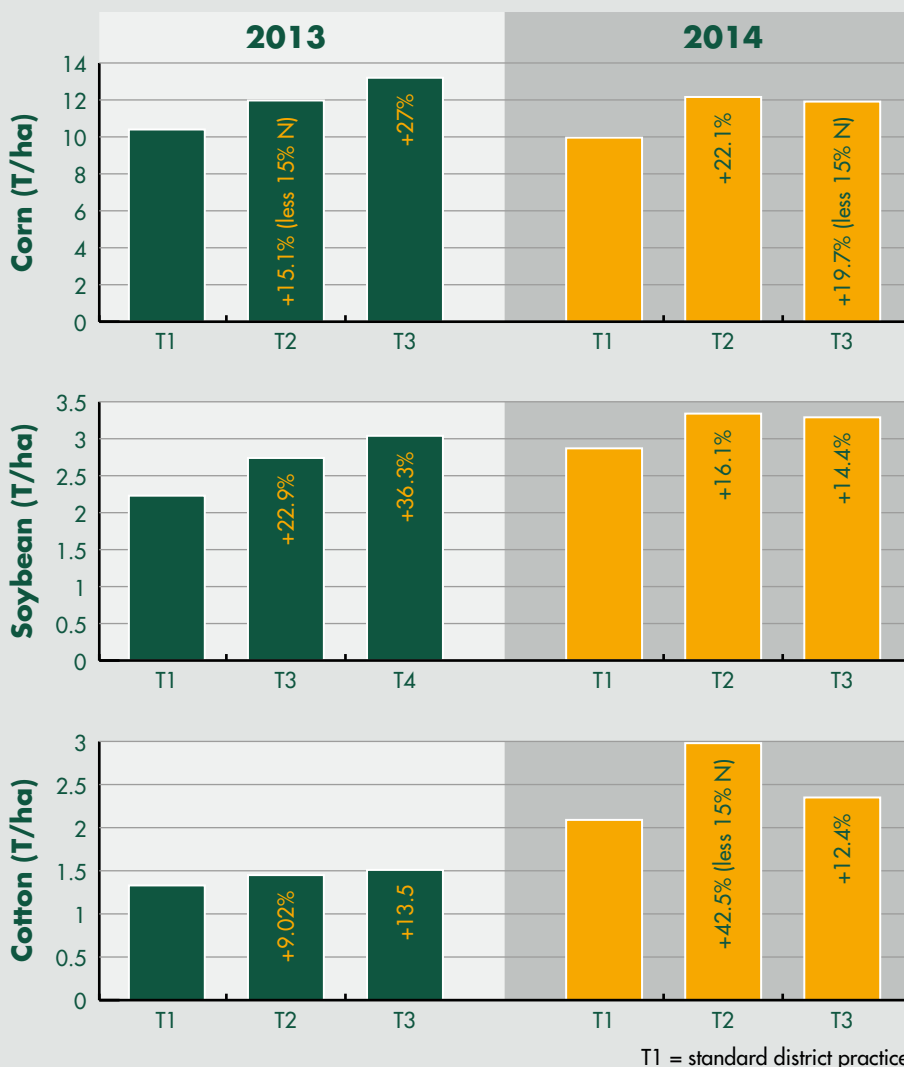
**Location:** Crookwell, NSW Australia. **Trial format:** Small plot, randomised and replicated. **Crop:** Improved pasture (ryegrass, phalaris and clover). **Manager:** McGeechans Farm Supplies. **Commenced:** April 2014. **Contact:** David Phelps - BioAg Area Manager, Southern NSW (Pastures). **Products:** BioAgPhos (BAP), Superb, Single superphosphate (SSP).

## US trial results

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### Trial results two-year summary

Crop	Average yield increase (2-years trial data combined)
Corn	+17%
Cotton	+15.1%
Soybean	+19%
Average	+17%



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