

# Spring 2017

## In this edition

- Be rewarded for taking your fertiliser delivery sooner
- Soil & Seed continues to deliver rice yield increases
- Will your pasture pull its weight this Spring?
- Fruit growing business has winning formula

# BioAg COUNTRY



## BE REWARDED

*for taking your  
fertiliser delivery sooner*

There's another shipload of high quality Algerian RPR coming at the beginning of 2018.

So that we don't have to bury existing inventory under the new shipment when it arrives we are going to offer some incentives which will reward customers for taking delivery of BioAgPhos and blends prior to the coming Christmas shutdown.

The cutoff for delivery will be Friday 22nd December as our Geelong quarry facility will be closing for dispatch purposes from the 23rd.

The two deals on offer will be:

1. A discounted price for product collected and paid for prior to the end of December 2017, and
2. Take delivery of product by Christmas with payment to be completed by end of March 2017.

BioAgPhos, like lime, gypsum and most of BioAg's blends provides the benefit of being able to be stored outdoors on farm without the risk of spoiling. If spread early, they will

work their way into the soil by a variety of means without any loss of efficacy.

**Being non water soluble and resistant to lockup and leaching, the timing of application comes down to when it best suits you.**

Problems occur when the purchase decision is delayed until Autumn. Transport becomes difficult or impossible to engage, and freight prices can rise significantly as the competition for trucks increases.

Every year the demand for road transport for both water soluble cropping and pasture fertilisers exceeds the industry's capacity for virtually all of Autumn.

Lots of growers are happy to receive lime and gypsum at off-peak times of the year (times other than Autumn) knowing that trucks are available, freight rates are lower, and often there are price or payment deals designed to make the purchase decision an easy one.

Here at BioAg we want you to have BioAgPhos and our other blends on farm and

ready to work for you when you are ready to have it spread, either with your own spreader or via a contractor.

The other great benefit to having product on farm early is that if you do spread through a contractor, they are more likely to be available (and possibly at better prices) than if you spread during peak Autumn spreading season.

Early in the season carriers regularly have grain as a load to port, keeping your freight cost down, an arrangement that probably won't be available in Autumn.

So avoid the disappointment, the inevitable frustration, and the additional cost associated with trying to get supplied during the Autumn rush. Buy your BioAgPhos early and take delivery before Christmas. You will be much better off.

To obtain a deal, speak to your BioAg agronomist now to access the best deal that will work for you this coming Summer. By mid November pricing will be available and the smart ones will buy while stocks last.

# Soil & Seed continues to deliver rice yield increases

By Robert Gill (Area Manager, south-west NSW).  
With thanks to Peter Kaylock.

## Based on the strong results Soil & Seed achieved in trials conducted by Rice Research Australia, one western Murray Valley grower performed his own trial.

Peter Kaylock's interest in using Soil & Seed (S&S) on his drill sown rice started from a meeting with BioAg's Riverina Agronomy Manager Robert Gill and their discussion of the Rice Research Australia (RRAPL) results.

These trials, conducted independently by RRAPL during the 2015/16 season used S&S (3 L/Ha) boom sprayed onto rice bays pre plant. Nitrogen was pre-drilled in order to gain optimum establishment.

This resulted in 14% more yield than the control and represented a return to the grower of +\$600/Ha (1100% ROI on applied product).

Higher rates of S&S gave correspondingly higher returns. Analysis of data by Robert and the BioAg team confirmed that 4 L/Ha was the preferred rate for an optimum outcome when pre sowing drill sown rice.

In late October 2016, Peter performed his own large scale trial of S&S, drill sowing Koshihikari premium rice into Moulamein clay loams on his family property 'Narrawa'. Peter applied 4.0 L/Ha of Soil & Seed incorporated pre planting.

**Peter's trial bays produced 1.45 T/Ha more than the control bays, a result which he mapped on his header (see below).**

- +14% yield increase (+ \$600/Ha) in RRAPL rice trials
- 1.5 T/Ha additional yield (> \$600/Ha) in the 2016/17 season

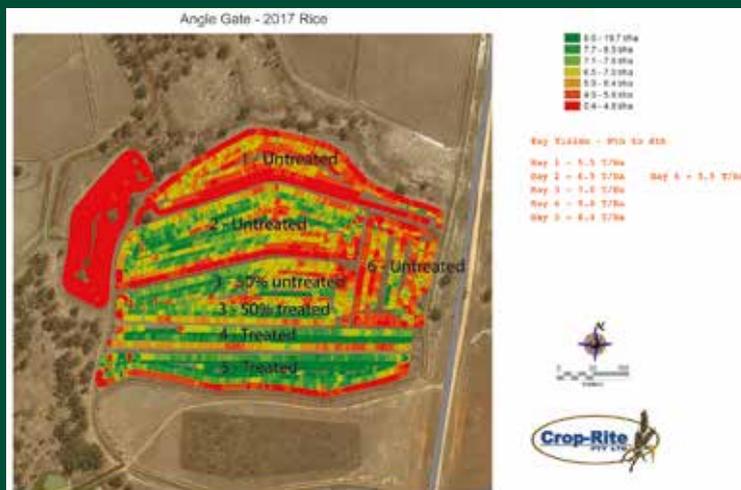
Peter understands the Soil & Seed treatment increases his soil capacity to both retain nutrients such as N, P and Zn in the profile. This improves their access to the current crop, as well as subsequent winter crops and ongoing rice.

**According to Peter, a key factor in growing premium 'Koschi' is to manage crop N mid-season. He does this with 300 Kg/Ha of urea applied pre-permanent water to control early vigour.**

**Peter says using Soil & Seed enhances emergence and adds to the value of applied N by increasing its effectiveness.**



**Nuffield Scholar Peter Kaylock checking his 2016/17 rice trial where he used BioAg Soil & Seed on Koshihikari rice.**



**Figure 1: Header map showing the yield response of Peter's rice trial. Control bays = 1, 2 and 50% of 3. Soil & Seed bays = 50% of bay 3 and 4-5. All bays received the same nutrient and irrigation program. NB: Bay 6 suffered poor establishment through excessive barley stubble. (Map courtesy of Crop-Rite, Swan Hill).**

This represented a gross return of over \$600/Ha to Peter (after accounting for the S&S application) and an ROI of 1100% based on the total cost of \$50/Ha.

Peter says crop emergence and strong vigour are key performance indicators when growing a premium rice cultivar such as Koshihikari in the WMV, and his drill-sown rice operation (120+ Ha) now warrants ongoing use of Soil & Seed.

Peter says sowing his drill-sown rice into winter crop residues allows rice seedlings to emerge using less water, flushing only once or twice if necessary.

Topdressing with up to 300 Kg/Ha of urea and putting permanent water on later allows a long mid-season drain, increasing biological and nutrient enhancement.

## About Peter's research into direct drilled rice

**The Kaylock family began experimenting with direct drilling of rice during the millennium drought. They soon realised the possible water savings of the system without loss of yield.**

D.D. Kaylock & Co. has been growing rice at Moulamein for over 60 years, and they have always been willing to research new technologies.

As a result of low irrigation water allocations during the extended drought, the Kaylock's started experimenting with direct drilled rice techniques in 2006.

On their soil types, Peter identified water savings of at least 2 ML/ha using direct drilling.

The continual irrigating and drying of the seedbed, as part of the process, simplified chemical usage and identified substantial input savings.

The drying process between irrigations eliminated broadleaf weeds such as dirty Dora and starfruit, and insect problems, particularly bloodworm and snails.

The use of the Kaylock's existing machinery to carry out chemical and fertiliser applications resulted in significant savings compared to hiring an aeroplane to carry out the same procedures.

Peter Kaylock is a 2013 Nuffield Scholar, who was supported by Rural Industries Research and Development Corporation and the Rice R&D Committee.

On his Nuffield Scholarship, Peter travelled to many rice growing countries looking at the direct drilling of rice crops, cover cropping, precision agriculture and innovative machinery.

# Will your pasture pull its **WEIGHT** this Spring?

Strong, plentiful and healthy pasture in Spring is key for maximising your profit from this type of enterprise. Both new and established pastures benefit from the more favourable growing conditions (warmth and moisture), while it is up to us to ensure that soils are healthy and nutrient needs are addressed.

Nutrient deficiencies occur in Spring largely due to the conditions they have just experienced in Winter. Higher rainfall can increase the leaching and lock-up of any previously applied water-soluble nutrient, while colder temperatures can increase the mortality of beneficial microbes normally present in healthy soils.

Addressing soil health and nutrient needs now delivers numerous benefits to pastures:

- It improves the quality and quantity of grazed feed,
- It allows us to increase and maintain stocking rates,
- It improves the quality and quantity of conserved feed (silage and hay),
- It improves the digestibility and palatability of grazing, silage and hay feed, and
- It creates the circumstances that deliver feed during the coming Summer and Autumn, minimising the need to buy feed.

## Spring Pasture Fertiliser Strategy

Producing maximum growth and quality this Spring will require addressing any nutrient requirements and deficiencies (it will be the most deficient nutrient that dictates how much growth is achieved), and foliar urea is the ideal nutrient format at this stage of pasture development.

### Obtain advice specific to your actual pastures needs

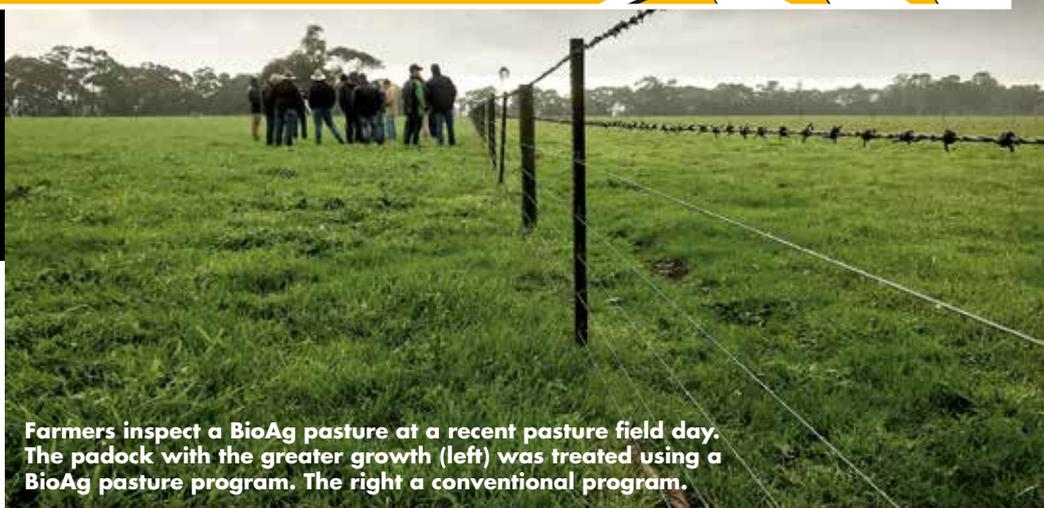
The best tool available to you here is a BioAg Area Manager/Agronomist. All of our team achieved formal qualifications prior to joining BioAg, and since that time have obtained Fercare accreditation Level C. They have all been through the sharp learning curve needed to be able to understand and recommend fertiliser programs and strategies that are in line with BioAg methodologies.

One of our key methodologies for improving your farming enterprise is improving the longer-term fertility of your farm. This is done by addressing the needs of the plant, as well as the needs of the soil (the primary mechanism for the storage and delivery of nutrient and moisture). A highly functioning soil delivers a stronger and healthier plant.

Every farm will have varying needs in terms of nutrient requirements. An important benefit of obtaining a BioAg Area Manager's advice is that they do not give the same prescription for every farm, and instead tailor programs and advice suited to your individual requirements.

### Tissue test rather than soil test

Various micronutrients are important to pasture growth at this time of year, both from a plant production and an animal health perspective.



Farmers inspect a BioAg pasture at a recent pasture field day. The padock with the greater growth (left) was treated using a BioAg pasture program. The right a conventional program.

Copper, zinc, boron and molybdenum are all important micronutrients for pastures, and as they usually only appear in soils as trace elements, leaf tissue testing delivers a more accurate status of these elements than soil testing.

### Address nutrient requirements and deficiencies according to your pastures' composition

The grass/legume ratio of your pasture will be an important factor in determining what to apply.

If your pasture contains more grasses than legumes, then foliar UAN (or possibly urea) would be an appropriate source of N.

In legume based pastures however, too much applied N can hinder legume reproduction so UAN or urea is not recommended at this time.

Legume based pastures	Grass based pastures
Balance & Grow (2 l/ha)	Foliar UAN (15-20 l/ha) (or urea)
CalNitSol (5 l/ha)	Balance & Grow (2 l/ha)
	CalNitSol (5 l/ha)

One benefit of this program is that these products are all compatible, so can be tank mixed together for one easier foliar application.

### CalNitSol

Both calcium and nitrogen are important for stimulating and supporting the enormous growth potential for pastures in Spring.

Those who have used BioAg pasture programs might notice that **CalNitSol** is a new addition.

In the past, BioAg has often prescribed calcium nitrate as part of Spring pasture programs as the preferred source of Ca and N. The down side of calcium nitrate is that it had to be dissolved on-farm prior to being applied as a foliar.

To make the Spring foliar program easier for pastoralists, BioAg have released **CalNitSol**, which is a source of Ca and N in liquid form. **CalNitSol** contains 10.3% N and 12.7% Ca on a w/v basis.

### Balance & Grow

Balance & Grow has been a standard for Spring

pasture management for many years, mainly due to the broad range of benefits it delivers.

Think of Balance & Grow as something akin to a multi-vitamin benefitting a range of key areas such as vegetative growth, root development and beneficial soil microbial activity.

Balance & Grow stimulates and supports pasture growth by delivering a broad range of nutrients and trace elements such as:

- Calcium
- Phosphate
- Nitrogen
- Sulphur
- Carbon
- Magnesium
- Copper
- Zinc
- Manganese
- Boron
- Molybdenum

Plant health is just as important as plant growth, and delivers benefits right through to animal health and yield.

In addition to foliar nutrients, Balance & Grow delivers a range of metabolites that the plant requires and is struggling to produce itself at this time of year, including glucose, essential amino acids, auxins and cytokinins.

There are numerous factors to consider when choosing your Spring pasture fertilisation program from plant production and growth, to plant quality, animal health and stocking rates.

Many of the choices made throughout the year, will have ramifications on the production during subsequent months.

Choosing advice that takes into account the pastures immediate needs but also future requirements makes sure you are set up to maximise profits at the end of the year.

As we always say at BioAg, if we don't do a good job, we won't be invited back next year.

## Annual Pasture Strategy

BioAg has combined all of its pasture best practices into one easy document **Increase Grazing Pasture Production: BioAg Pastures for Sheep and Beef**. Here you will find advice on achieving maximum growth and feed quality for each of the key periods throughout the year. Contact your BioAg Area Manager to obtain a free copy.

# Fruit Growing Business has Winning Formula

## Fruit Grower of the Year (2014) – Waitrose & Tesco

By Dan Hill (Area Manager – Southern & Western Victoria.

“Hill Farm” (Boxford), located near Colchester in the United Kingdom, started growing and marketing stone and pome fruit in 1938.

Since then it has grown to 380 hectares, which includes 108 hectares of apples, 40 hectares of berries and asparagus, 92 hectares of Summer cropping, and has recently added 3.5 hectares of glasshouses to increase berry production.

What has driven the business’s success is not only their work ethic, but also their desire to interrogate all facets of the business and identify areas for improvement. In the past decade they have identified and implemented new trellis systems, an integrated pest management strategy and an anaerobic digester for power generation.

In more recent years they have turned their attention to improving soil health and structure, with the idea that this would then flow onto improved tree health and nutrient use efficiency, and potentially enhanced disease resistance.

## 2012 – THE INTRODUCTION OF SOIL & SEED

As part of the methodology for improving soil and plant health, Soil & Seed was introduced in 2012 and a thorough evaluation was completed across four of their properties (Beeston, Plough Lane, Old Barnfield and Topcroft).

An average of 12 L/ha of Soil & Seed was applied via fertigation over the growing season (May to September) in conjunction with the standard liquid fertiliser (N8%: P3%: K5%).

At the end of the each season, soil samples were collected from both the treated and untreated areas and were analysed under ADAS Standard Soil Analysis Procedures. From a soil nutritional perspective the average changes in plant available nutrients over the trial were as follows;

### Changes in plant available nutrients

	Untreated	Treated	Changes
Phosphorus (mg/L)	32	56	+ 75%
Potassium (mg/L)	127	141	+ 11%
Magnesium (mg/L)	59	103	+ 75%
Calcium (mg/L)	1107	1464	+ 32%

### Changes in microbial response

These sites were also analysed for their microbial response to the application of Soil & Seed. The total microbial content has been consistently higher on the treated plots. Most of this increase is due to proliferation of the fungal microorganisms, although there has been an increase in bacterial levels as well.

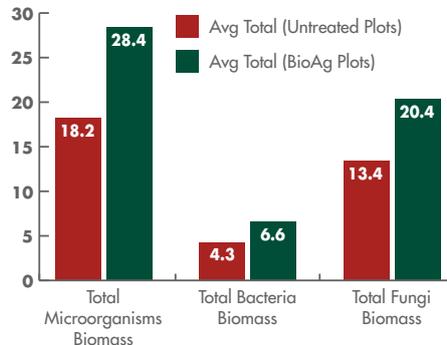
## Changes in soil structure

Apart from the improvements in plant available nutrients and the subsequent nutrient use efficiency, a visual affect in soil structure was observed.

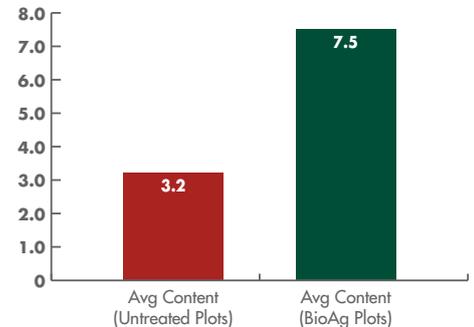
As can be seen in the following photos, the area treated with Soil & Seed had improved soil structure, particle aggregation and porosity.



### Microbial response to S&S vs Control (mg/kg)



### Mycorrhizal Fungi Content (mg/kg)



## Improved nutrient and moisture uptake

Out of all fungi found in soils, it is the Mycorrhizal fungi that are of particular interest for plant productivity.

**Mycorrhizal fungi are well known for their ability to solubilise both phosphorus and zinc from soil reserves as well as sequester carbon.**

Mycorrhizal fungi enhance plant performance through the formation of a mutually beneficial relationship with the root systems of plants. The plant gains the benefits of the fungi mycelium’s higher absorptive capacity for both water and nutrients and in return, the fungi is fed carbohydrates (sucrose and glucose) through root exudates, produced by the plant through photosynthesis.

The graph (above) shows the improvements in Mycorrhizal fungi content between the treated and untreated areas over the duration of the product evaluation.

It is well recognised that biological activity is important to facilitate the release of phosphorus from soil reserves.

This phosphorus solubilisation is a direct result of the compounds that the microbes exude, and an indirect result of the influence of the microbes on the exudates produced by the plant.

The above results highlight the positive response from the application of Soil & Seed on both enhanced biological activity of the soils and the subsequent improvement in plant available phosphorus.

The data from the past 3 years suggests that Soil & Seed is performing well, with analysis showing treated soils consistently outperforming untreated soils.

Treated soils are providing plants with a greater beneficial microbial population, allowing for greater access to and absorption of essential nutrients and water. These factors benefit the plants within the treated plots and should increase future health and productive potential compared to those situated in the untreated counterparts.



Better soils. Better crops. Better stock.™

**For more information, phone 02 6958 9911 or visit [www.bioag.com.au](http://www.bioag.com.au)**