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In this edition

- Making the Best Use of Balance & Grow® and Fruit & Balance®
- Soil & Seed® achieves a 17.6% yield benefit in independent wheat trials
- Trials Progress in Sri Lanka and India
- Potatoes: Improving Tuber Quality in South-West Victoria
- Post-Harvest Fertilisation

BioAg COUNTRY



Making the Best Use of Balance & Grow® and Fruit & Balance®

BioAg products have been specially developed to improve the fertility of the soil. They are manufactured from a range of natural and organic ingredients. The BioAg system focuses on microbial activity and the availability of calcium, phosphorus and other nutrients. The result is a complete range of liquid cultures used in addition to the best components of a conventional fertiliser program. They contain complex and potent sources of vitamins, minerals, proteins, enzymes, amino acids, carbohydrates, beneficial organisms and growth promoters.

Whilst Soil & Seed® is applied at seeding (for cropping) and at pasture establishment or rejuvenation to deliver essential nutrients and metabolites and stimulate soil microbial activity, **Balance & Grow** and **Fruit & Balance** are applied during the growing season to promote vegetative growth and seed and grain development.

Balance & Grow has been developed to directly increase the vegetative growth energy of the plant, and to increase and expand the soil's beneficial microbial activity. **Continued page 2**

Soil & Seed® achieves a 17.6% yield benefit in independent wheat trials

Last year, BioAg commissioned Agrisearch Services Pty Ltd, an independent contract scientific research and development and testing organization, to evaluate the efficacy of its liquid fertilisers in wheat. The results from the Lake Bolac trial site are just in and show that the use of Soil & Seed produced an increased yield of 17.6% over the untreated control.

The summarised Soil & Seed results are shown below.

The researchers concluded that "The BioAg products Soil & Seed, Balance & Grow and Fruit & Balance did not affect crop tillering, however all treatments significantly increased crop yield compared to the untreated control."

To download a copy of the report, or to find out more about Soil & Seed, go to our website at www.bioag.com.au.

The BioAg Trial Program

In response to market demand for independent data, BioAg has committed itself to a substantial trials in 2010/11 and beyond. In addition to the Agrisearch trials, we are also collaborating in DPI cropping trials at Horsham (Vic.), with Delta Ag in cropping trials at Young (NSW), and with Tamworth Rural (NSW) in cropping and pasture trials. We have recently commissioned Nicon Rural Services to conduct trials of our products in pastures in Victoria. These trials will run over several years, and are intended to demonstrate the efficacy of BioAg products and programs in the field. As results come through, we have been reporting them in *BioAg Country*, and on our website, and shall continue to do so.

Table 1 Agrisearch Services Summary of Results - Lake Bolac, Victoria: Mean Tillers m² and Yield (t/ha)

Treatment	Rate/ha	Application Timing and Method	Yield (t/ha)	
			26-Nov-10	01-Feb-11
Untreated	-	-	108.0	3.4
BIOAG SOIL & SEED	3 L	Pre-sowing ground application	95.7	4.0

Trials Progress in Sri Lanka and India with Excellent Results

In our December edition, we reported on the commencement of trials on a wide variety of crops, conducted on our behalf by the University of Peradeniya in Sri Lanka. Recent information back from our collaborators indicates that the BioAg fertiliser treatments have performed better (in all crops) than fertiliser systems generally applied in Sri Lanka. Trials were carried out on rice, maize, and vegetables including radish, chilli and brinjal (a type of eggplant).

Rice is the most important crop in Sri Lanka; over 75% of the farmers are in paddy cultivation. The latest results indicate that the BioAg treatment performed substantially better than the control (standard fertiliser application). The final harvest was carried out in the last week of April. Chilli is also an important crop among South Indian and Sri Lankan farmers. Recent results indicate that the BioAg treatment is performing better than control. Harvesting will be completing at the end of May.



BioAg rice trial plots in Sri Lanka



Sri Lankan crop trials (maize and radish). In each case, the BioAg treated produce are represented by samples T₃ and T₄.

Our collaborators at the University are presently analysing the data and completing the final report on the trials, which is due in June.

In January, trials also commenced at the Centre for Strategic Studies at Kolkata in India, initially on rice and bananas. Whilst they are not as advanced as the Sri Lankan trials, it is clear that the outcomes for rice will be similar. A longer term trial program is planned for India, including a rice-potato crop rotation, maize, wheat, cotton, barley, sorghum, sugar cane, carrots, cauliflower and tomatoes.

It is clear that BioAg fertilisers are agronomically and economically effective in tropical climates, and on tropical and sub-tropical crops, which opens up very large markets for BioAg in South Asia.



Rice trials at Kolkata, India.

Continued from page 1 The soil's capacity to utilise moisture and fertiliser for the purpose of feeding plants is enhanced as is the plant's capacity to utilise them.

Balance & Grow's benefits are that it reduces calcium deficiency in plants, facilitates vegetative growth and balances the plant's minerals and physiology. It provides the plant and soil with the appropriate nutrients to stimulate and support growth. It enhances the yield and growth potential of the crop and usually increases the plant's sugar (Brix) level.

Fruit & Balance has been developed to increase the fruiting and reproductive energies of the plant and to increase and expand the soil's beneficial microbial activity.

Fruit & Balance increases the plant's phosphate supply at a time when the plant is under peak load, stimulating the plant's physiology into strong fruiting. Its main benefit is that it enhances fruit, seed and grain quality and nutritional value.

How efficacious are these natural growth

promotants? As we reported in March, Andrew Forrest of "Columbia Park" in the Riverina achieved additional half a tonne of wheat per ha last season in a paddock treated with Balance & Grow compared with an untreated paddock, resulting in an economic gain of \$200 per ha for an additional cost of \$23.25. Not a bad return!

Fruit & Balance® Delivers at Nyngan

Paul Kerin of "Fairfield Grange", near Trangie NSW, has been a BioAg customer for about eight years, serviced by our Central West agents at Cumnock, Andrew and Rhonda Watt. In 2010, he share-cropped wheat at "Willida" near Nyngan (average annual rainfall 442.5 mm or 17.5"). The variety was Gregory which was early sown in April over 50 kg/ha of MAP.

In early September, he treated 600 ha of the 800 ha block with 1.5 L/ha of UAN and 2 L/ha Fruit & Balance®, mixed with a herbicide. When the block was harvested in November, the results in the 600 ha area

were quite dramatic, with a 1% increase in protein and a one tonne per ha (28%) increase in yield over that of the untreated 200 ha.

The results achieved don't surprise us at all. In marginal country, the foliar nutrient Fruit & Balance® is very useful in topping up the crop towards the end of the growing cycle. Nitrogen and phosphorus are needed at the fruiting stage for protein development and improvement of crop yield. The UAN provides the nitrogen, and the Fruit & Balance complements it by supplying some phosphorus, and releasing additional phosphorus from the soil in a plant available form.

The economic benefit of another tonne to the hectare plus an upgrade for the increased protein is estimated at about \$400 per ha, against a cost of about \$20 per ha to apply the foliar in spring (not including the cost of the herbicide). Clearly, the trial shows that the Fruit & Balance and UAN application was well worth the effort and expense.

Potatoes: Improving Tuber Quality in South-West Victoria



In an effort to reduce input costs and improve the quality of potatoes produced, several growers around Ballarat have completed on-farm trials of BioAg's potato program with great results. While there was some variation between the trial sites, the BioAg potato program comprised:

Pre-Planting – BioAgPhos®, lime, dolomite, Soil & Seed® and soluble boron

Planting - ammonium sulphate, mono-ammonium phosphate (MAP), potassium sulphate and Soil & Seed®

Pre-Flowering – Soil & Seed®, calcium nitrate, Balance & Grow® and copper sulphate

Tuber Bulking – Soil & Seed®, tech grade MAP and Balance & Grow®

The average cost of this program was \$925/ha (+GST), which was on average 15% cheaper than the fertiliser program the growers had historically used.

Whilst there was no yield difference recorded between the treatment and control areas on any of the trial sites, there were some key tuber quality improvements made under the BioAg program. These included increases in specific gravity, dry matter, starch percentage and nutrient density within

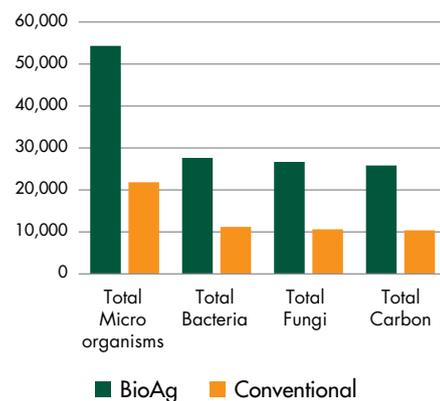
the tuber. Not only do these increases have significant implications for the production of French fries and potato chips, as the overall yield of chips and also the oil content of the chips are increased, but they should also improve early plant vigour and health when these potatoes are used as seed potatoes.

Whilst it was not quantified, it was noted that there was greater uniformity in tuber sizing in all trial areas, and there was a greater spread of tuber induction within the planting bed, thus indicating a better plant hormonal balance.

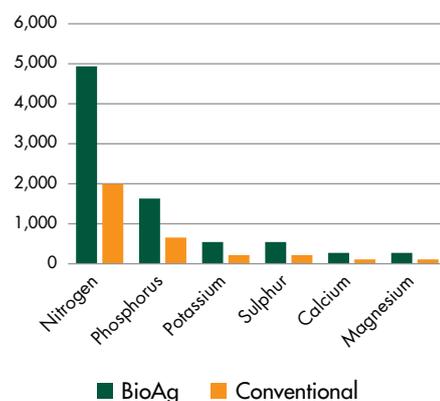
As potato production is part of a rotational cycle in most potato growing areas, it was important to evaluate how the BioAg program had affected the soil conditions for the next crop or pasture. The graph below highlights how the soil has improved under a BioAg program, in terms of nutrient retention and biological diversity.

Microbiological analyses were conducted on soil samples from the trial sites by Creation Innovation Agriculture and Forestry (CIAAF). The results, shown below, indicate much greater microbial diversity in the soils treated under the BioAg programs, and also greater retention of key nutrients such as nitrogen, phosphorus, potassium, sulphur, calcium and magnesium.

Microbial Diversity (kg/Ha)



Nutrient Retention (kg/Ha)



A summary of the results is provided in the following table.

Cultivar	Treatment	Specific Gravity	Dry Matter %	Starch (%)
Nardine	Control	1.067	17.4	11.41
	Treatment	1.074	18.8	12.73
Mac 1	Control	1.079	19.9	13.77
	Treatment	1.083	20.8	14.63
Russet Burbank	Control	1.099	24.1	17.75
	Treatment	1.099	24.0	17.75



One of the potato trial sites near Ballarat. The BioAg treated plants are on the right hand side of the picture.

Post-Harvest Fertilisation



Preparing Orchards and Vineyards for Winter and Spring



Now is the time to prepare your orchards and vineyards for winter by 'putting the plants to bed with full stomachs'. It's also a good time to lay down your spring fertilisation program against the possibility of wet conditions hampering access later in the year. We recommend the following approach to winter and spring fertilisation of grapes, citrus, almonds, stone fruit and cherries:

Post Harvest

Apply BioAg Soil & Seed® to your orchards and vineyards as a post harvest treatment. Soil & Seed and calcium nitrate together activate the soil biomass and root development, particularly during winter. Soil & Seed maintains plant nutrient and hormonal balance, reactivating vegetative growth and strengthening flower induction in early spring.

Orchard and Vineyard Fertility Programs

BioAg has developed year-round soil and foliar fertility programs for each of these crops, starting pre-budburst and running through to post-harvest. Your distributors are supported by BioAg's strong agronomic team who can tailor programs to suit your soil and climatic conditions and your particular crops.



New Appointment

We welcome Andrew Hacker, an agronomist who joined us in March. Andrew holds a Bachelor of Agricultural Science degree, majoring in plant and soil science, from the University of Queensland. He is from a farming family in southern Queensland and has a keen interest in agriculture, with a passion for improving the sustainability of farming systems into the future.

Andrew is spending the next six months at our Narrandera headquarters, undergoing intensive training, and providing agronomic support to senior management and to our customers in the Riverina, before taking up a territory management post in Central West NSW.

Preparation for Spring

For each of the crop types listed, we have developed special blends of solid fertiliser containing optimum levels of nitrogen, phosphorus, potassium and calcium. These can be applied by belt spreading now, or any time up to pre budburst or flowering as they contain slow release nutrients, which prevent losses or "locking up" in the intervening period.

The blends are scientifically formulated mixes of BioAgPhos®, BioAg's microbially digested phosphate rock fertiliser, with compost and sulphate of ammonia. The formula and application rate that are right for your orchard or vineyard can be determined by your BioAg adviser on the basis of soil test results. Details of the blends can be found on our website on the "Programs" page.

"If it hadn't been for the BioAg program, I would have lost most of my crop this year. As it was, my grapes achieved a higher baume than anyone else's, and the colour was like blood in all of the red varieties. We were able harvest one week earlier than the others in the area. The winemaker was very happy with the quality and observed that our shiraz had the best baume. I'm very happy with my experience with BioAg's fertility programs."
Tony Valeri, Graywood Towers, Tharbogang NSW, wine grape producer



Better soils. Better crops. Better stock.™

**For more information,
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