



Capital P in Broadacre Cropping and Pasture

In broadacre cropping and pasture, the last two seasons in Victoria and New South Wales have been exceptional. As a result, when considering your fertiliser requirements for 2022, it is important to consider the amount of nutrients your crops or livestock have removed.



Phosphorus is a critical nutrient for high yielding crops and pastures. It is typically tightly bound in soils, particularly in acidic antagonistic soils. In planning fertiliser applications, we need to consider the background or P reserves in addition to the water and citrate soluble/plant-available forms. While it is imperative to have immediately available plant-available P, so crops and pastures can quickly establish, they also need a good level of sustained release / capital P to support growth through the entire season.

BioAgPhos is ideal for both an immediate and long-term P source as it has 30% immediately plant-available P while the remainder is released over the next 1 to 2 years. It will also help build background levels of P in the soil and contribute to neutralising, due to the calcium content and natural alkalinity.

Soluble P is also a lot more susceptible to losses from runoff and tie up in acid soils, so having a sustained release of P such as *BioAgPhos* allows you to get more P for your money as it all becomes available over time.

Including a Bray 2 or Total P test in your soil analysis results will help determine the level of background P and should be done when using *BioAgPhos*.



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Cropping

Most cropping systems include the annual application of soil ameliorants such as lime and gypsum to counter the acidifying impacts of modern production. *BioAgPhos*, a grit sized product, is ideal to incorporate with these ameliorants, as it can be pre-mixed on-farm then spread in one pass before the next sowing.

Applying 100-200kg/ha of *BAP* with your ameliorants per rotation will help build available and background levels of P and Ca. In addition, other macronutrients such as Sulphur, Potassium, Magnesium and traces can be blended with *BioAgPhos* and applied together. *(continued on page 2)*



Scan to see our web resources including info on measuring soil P and sources of P as well as trials and demonstrations.

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(continued)

When growing lucerne or pulses, *BioAgPhos* is beneficial in supporting the higher and sustained P requirements for these crops.

Pasture

It has been well established that aside from Nitrogen, Phosphorus and Sulphur are the next most important macro nutrients for high performing pastures. The ability of *BioAgPhos* to provide a consistent supply of P through the growing season makes it the perfect product for pasture application. This is very important, especially in higher rainfall or lightly textured soils. It greatly reduces the loss of P, with the subsequent benefit of minimising environmental impacts.

Sustained-release P supports root growth and the development of clover, of great value given its ability to fix Nitrogen in soils.

In pastures it is essential to maintain good nutrient levels, not only to maintain and increase production but for animal health purposes as they are essential for energy, bone, muscle, and DNA synthesis.

Again, *BioAgPhos* is ideal to mix with other ameliorants, but in many cases, it is applied on its own. In addition it can be applied every second year, helping to reduce the cost of application.

For these reasons, *BioAgPhos* provides a sensible and cost-effective supply of Phosphorus and other nutrients to pasture systems, supporting growth throughout the growing season, ultimately aiding root growth and nutrient access, improving carbon sequestration and livestock health without compromising production.



BioAg program underpins Oaten Hay success

Colin Falls is a fourth-generation farmer with a property at Dingee, Victoria, that has been in his family for over 100 years. Over the last 20 years, Colin, in partnership with his son Jacko, has been working with BioAg and hence has an excellent frame of reference to base his observations.

This property was used in a BioAg case study, extolling the virtues of using customised programs and products.



The BioAg programs we have been provided address the health of the soil as well as providing for the overall plan. And from this, we have seen a consistent increase in the quality of our crops. The program has more than paid for itself.

– Colin Falls, Falls Family Case Study



Colin uses oats as a break crop with last year's oaten hay crop – an opportunity to profit by extending his cropping rotation. As it turned out, it was particularly successful for him.

In 2021, inputs were modest with 50kg/ha MAP and 3L/ha *Soil & Seed* at sowing. At early tillering, 50kg/ha of urea was top dressed. At mid to late tillering, 2L/ha of *Balance & Grow* combined with 10L/ha of liquid calcium nitrate and 10L/ha of UAN was applied by boom spray.

Colin's hay crops were cut during the first week of October, leaving standing straw at beer-can height, carefully windrowed into 'thatched' rows to help facilitate maturation and maximise the quality of the final product. The hay was baled into large squares in the last week of October and delivered to the local hay exporter.

Colin yielded 7 tonnes per hectare, and at \$230 per tonne delivered locally, he was delighted with the return achieved on his inputs. In addition, the grade of the hay Colin delivered was the highest possible grade – Super Premium.



Scan for the complete Falls Family Case Study

Post-harvest – A key period for Orchards and Vineyards

Post-harvest is an important period for perennial tree crops and vines. This is when carbohydrates and nutrient reserves (like nitrogen) are replenished prior to dormancy. These reserves are then used at bud or flower burst and the start of the next season.

Post-harvest applications of nutrients and biostimulants ensure adequate levels of nutrients are available and accessed by your trees or vines. Application immediately after harvest also avoids the rush or non-application of required nutrients later in the season due to overly wet conditions.

Carbohydrate reserves play a crucial role

In woody plants, carbohydrates are found at their highest levels in the roots. As a result, energy reserves in roots change dramatically throughout the year, decreasing rapidly with bud-burst and early leaf growth and sensitive to late-season stresses, management practices and soil fertility.

Poor accumulation of energy reserves post harvest can greatly affect a crop's performance next season.

Energy and nutrient reserves are vital in tree crops such as almonds and stone fruit which start the season with reproductive growth and fruit development before substantial canopy development can supply the energy trees require.^[i]

Perennial crops such as apples or vines start a new season with vegetative growth. They depend on reserves only during their earliest stages of development, or until the first five or six leaves have formed. Thereafter, photosynthesis from the leaves becomes the primary source of carbohydrates for flower and fruit growth.

Building energy reserves

Post-harvest leaves remain active to build carbohydrate and nutrient reserves. Sugars synthesised in leaves are converted to starch in the perennial tissues (Fig. 1) and used the following spring to support shoot or flower growth and fruit cluster development.

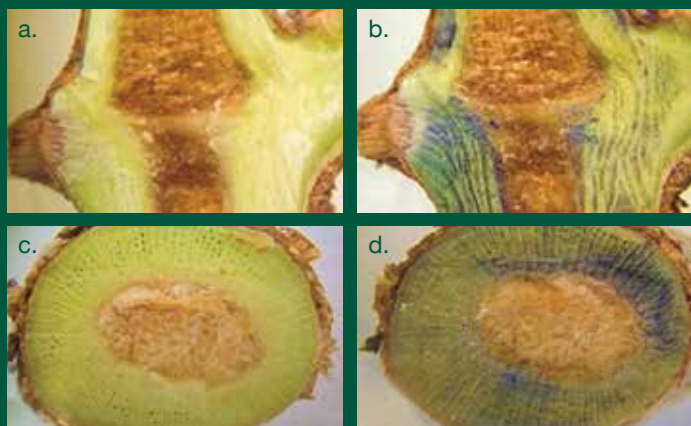


Fig. 1: Winter vine cane sections and starch colouration with iodine solution: a. horizontal section at the node level; b. horizontal section with starch colouration; c. transversal section at the internode level; d. transversal section with starch colouration.^[ii]

It is important to provide 4-6 weeks after harvest and before leaf fall so perennial crops can renew their carbohydrate and nutrient reserves.

Importance of nutrients

Nutrient requirements vary depending on the type of crop, age of the plantings and yield target. Typically though, post-harvest applications of N, P and K can be 20 to 40% of the entire season's nutrient budget.

While N, P and K are well understood, the importance of microelements is often underestimated, with corrective action taken through foliar applications during the season after an issue has been detected. For example, a mild boron deficiency does not show recognisable foliar symptoms, but trees will not reach their potential on fruit set, often resulting in fruit drops. This is particularly important for crops where boron is not mobile in the plant, e.g., walnuts.

Applying nutrients as part of a post-harvest application ensures crops are prepared for the next season.

Including Phosphorus

Correcting nutrient deficiencies is best performed by supplying nutrients through the soil.

BioAgPhos-based blends supply additional calcium, potassium, sulphur or magnesium and can also be produced with trace elements: Boron, Iron, Manganese, Zinc, Copper, Cobalt, Molybdenum etc., to meet the needs of the crop. They are also compatible with other solid soil conditioners such as lime, gypsum or compost and can be blended on-farm and applied in a single pass.

BioAgPhos is manufactured from high-grade reactive phosphate rock. It contains up to 12.7% P and 35% Ca and is treated with phosphate solubilising bacteria and other soil beneficial micro-organisms. As a result, it does not leach or lock up in soils, is over 98% plant available, and is an ideal source of long-lasting P in all permanent plantings.

Supporting your crop by supporting soil biology

Post-harvest crops can face abiotic stresses, hot or cold conditions, dry or wet. Supporting soil microbiology supports roots and the uptake of nutrients.

BioAg Soil & Seed is applied to soils and is an excellent soil microbiome builder, feeding and expanding the volume and diversity of beneficial soil micro-organisms. This, in turn, improves nutrient solubilisation, cycling and uptake and soil properties, mitigating heavy clay and issues associated with high Magnesium levels.

The addition of macro- or micronutrients in a tank mix with Soil & Seed increases their plant availability by creating amino and organo-acids bonds (chelation). This is particularly true for micronutrients that are readily oxidised or precipitated in soils, such as iron, manganese, zinc and copper.

i Wayne H. Loescher et Al. Carbohydrate Reserves, Translocation, and Storage in Woody Plant Roots. Hortscience, vol. 25(3), March 1990

ii Deloire A., Pellegrino A., (2021). <https://lnkd.in/emVWAHSm>

Building a Feed Wedge



While this season's rainfall has extended pasture growth; it is traditional that livestock operations start to run short of good pasture any time from late summer through to late winter. Spring reserves are grazed down, while cold weather reduces the amount of new vegetative growth.

Managing this through correct fertiliser usage is important. Trials, demonstrations and on-farm use show that pasture growth can be enhanced in poorer growing conditions both in quality and quantity with strategic applications of biostimulants; *Soil & Seed* and *Balance & Grow*, in conjunction with other products. Biostimulants improve nutrient uptake and enhance plant physiology during times of stress, cold and or wet conditions.

Soil & Seed is perfect for applying at or soon after sowing when you have good moisture and soil contact. *Soil & Seed* helps feed and activate the biology allowing for improved nutrient cycling and faster root establishment. This is achieved by allowing for easier take-up of nutrients by the plant through the rhizosphere and providing an optimal environment for the plant roots during the season.

Once the vegetative phase is reached and you have more leaf coverage, the application of *Balance & Grow* alone or in conjunction with liquid nitrogen fertiliser and/or Gibberellic acid allows for faster plant growth with enhanced feed quality and improved health and recovery post grazing.

A typical BioAg liquid program for pasture would involve:

Soil & Seed[®]

Formulated to improve soil microbial activity, natural soil fertility and moisture and nutrient utilisation.

3-6L/ha at or soon after sowing (ideally with a moisture event).

Balance & Grow[®]

Formulated to increase vegetative growth, root development and soil microbial activity. Ideal for broadacre, pastures and horticulture.

2-3L/ha at early vegetative stage or post grazing (ideally with a liquid fertiliser like CalNitSol, UAN, and/or Gibberellic Acid).



To read more about the BioAg Biostimulant range of products, scan to visit our new-and-improved website – product labels, data sheets, and a range of related resources are readily available.

Duck Island Connection

There is a natural connection between Duck Island and BioAg. We both question convention and apply solutions to problems based on evidence.

Duck Island is a large grazing property in the Upper South East of South Australia, situated on the saline soils of the Ninety Mile Desert.

The land, once officially considered valueless by the SA Department of Agriculture, is now covered in healthy pasture and turns off prime beef at a decent profit. But you have to look below the soil and across all aspects of farm management to see why things are so good compared to a time when prospects looked so bad.

Everything that is part of the landscape, and connections between all parts, are respected by owner/manager James Darling.

“At one level there has been a program of restoring soil health through development of microbial life affected by conventional farming and natural occurrences,” James said.



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“At another, an appreciation that high salinity will persist (due to geological history) has meant an innovative approach to salinity management.”

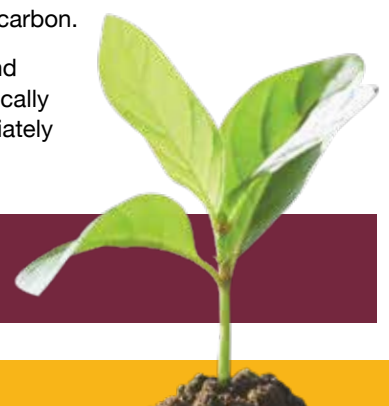
For both of these matters there are connecting considerations, like maintaining cover over the ground during summer, which in turn influences grazing management. The cover produced by healthier soil also has a mitigation role when flooding occurs across lower-lying areas of the property.

The landscape model, however, is more than the concept of whole farm management. It is a design that shapes everything – from where and how fences are constructed, to the way we respond to the natural environment.

It is perhaps the response to nature that is the most obvious difference seen at Duck Island. For example, rather than the widely-accepted deep drains of the region, there are banks and shallow drains to hold and spread water. Effects of salinity are reduced by pasture selection, expansion of native vegetation, and grazing management.

Quantifiable improvements to soil health include increased microbial activity and higher organic carbon.

BioAg is proud to be associated with the Duck Island success story, providing nutrient advice and products where needed. *BioAgPhos*, for instance, has been an ideal fit given the fact this biologically enhanced high grade reactive rock fertiliser is able to supply all its P as a combination of immediately available and sustained release P.



Customers interested in securing products early should contact their BioAg representative to discuss pre-payment and early contract offers.

Powered by Watts

Antony Isles, a BioAg client of 10 years, is delighted that his 2,500 acre 'Green Trees' property at Black Springs, south of Oberon, is powered by Watts, not Amps. Watts being BioAg Agent Andrew Watt.

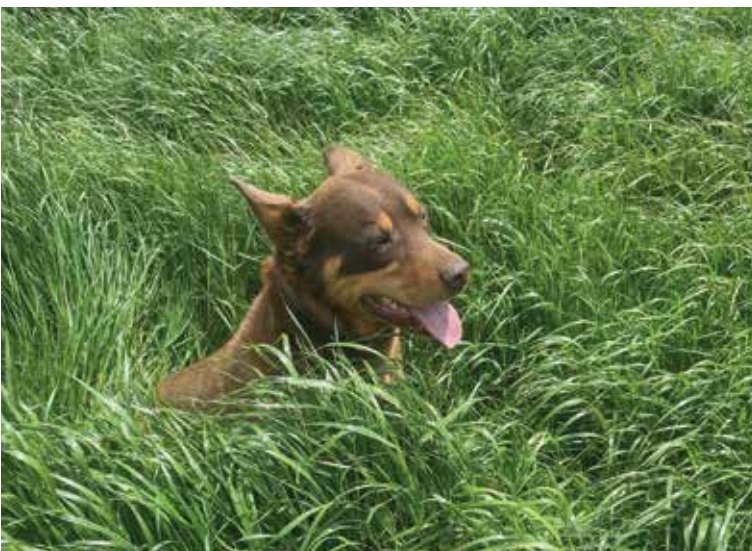
Andrew and his wife Rhonda have been working with BioAg for 22 years, overseeing clients like Antony and helping him turn this run-down farm into a fodder producing Cattle property.

Antony has taken a very keen interest in his soils. His vision, plus ongoing soil analysis and use of BioAg solid fertiliser *BioAgPhos*, biostimulant *Soil & Seed*, SOA, lime and gypsum, have been the key to his success.

To change your farm production – start with the soil!



Cattle might be in need of GPS assistance as they navigate their way through this impressive fodder paddock on Antony Isles' property.



'Heinz' steps in to be the measuring stick, showing excellent crop growth.

Demos and Trials



Cropping farmer Gary Drew inspecting canola on a BioAg demo site at Brocklesby last spring.

BioAg continues to participate in ongoing demonstrations with growers and independent trials where needed. The coming season is no different, with both long term trials and demos in pastures being planned or continued.

We are part way through a 3 year wheat and canola trial using a liquid biostimulant program, as part of Farmlink programs being run at Temora. Initial observations have been promising.

Peter Emerson (BioAg Area Manager for SE NSW and NE Victoria) is also running a large scale demonstration block with Gary Drew of Brocklesby, assessing the performance of liquid biostimulants. This is also over a period of a few years ensuring we gather adequate data. Early results have shown better root growth, and crop health between treated and untreated. The last two seasons have been so good that we haven't seen significant differences in yield, so it will be better to look at longer term averages over a few more seasons.

We are also evaluating and planning on more pasture demonstration sites, to show the benefits of BioAg based fertilisers over conventional alternatives. These will include demonstrations in the Upper Murray and Holbrook, plus other regions as needed.

If you would like to discuss running some larger scale demo strips, please contact us today.



Scan to sign up and receive our updates as they are released.

You can also read the next update in our July newsletter.

Distributor Spotlight – Southern Soils Fertiliser

Southern Soils Fertiliser is based at Hamilton in South West Victoria, servicing a large customer base predominately across Western Victoria and South-East South Australia.

They manufacture and supply a comprehensive range of biologically enhanced fertilisers suitable for pastures and crops.



Our relationship with BioAg has been very strong since taking over Southern Soils in 2016, with a number of their products mainstays in our business.

– Southern Soils Fertiliser



The Southern Soils motto, 'A Balanced Approach', is reflected in the advice and products they provide, resulting in tailor-made fertiliser blends specific to individual customer requirements.

BioAgPhos is their preferred phosphorus source and is regularly used in custom mixes, and at times as a stand-alone phosphorus source.



Rebecca works with BioAg to trial and demonstrate some of their products at their sites in the Upper Murray.

Quality outcomes in the Upper Murray

Technical Sales Agronomist, Rebecca Bingley of Ag Warehouse Kiewa has advocated for BioAg fertilisers and liquids for her customers in the Upper Murray.

"BioAg has given growers more opportunities to improve their soil health and nutrition. The products have a high concentration of active ingredients allowing our clients to access a cost-effective product that is still of high quality.

The *BioAgPhos* fertilisers have the ability to be spread on alternating years, which is giving my clients the option of focusing their fertiliser budget on half their farm instead of the whole area annually.

We have also been finding an increase in seedling germination when we use BioAg's *Soil & Seed* in our knock-down spray and a jump in quality when the product is added to any of our growing season's sprays. In addition, we are beginning to see a visual difference in soil organic matter increase and animal health grazing these pastures."



Did you know?

BioAg is an Australian owned and operated manufacturer of liquid biostimulants and natural phosphate fertilisers, since 1999.

Staff at the liquids plant at Narrandera and the solids facility near Geelong ensure our products are stored, maintained and shipped efficiently to your farm or distributor.

Area Manager Focus – Slobodan Vujovic

Slobodan Vujovic recently joined BioAg as Area Sales Manager for SE Victoria and Tasmania. He has over twenty-five years experience in Australian agricultural industries within government research organisations, various primary industry associations and the private sector. Slobodan has extensive knowledge in general agronomy, soil health, pest and disease management, ag bio-security, and irrigation.

“I am excited for the opportunity to work for BioAg. They are a company whose products can make a real difference to farm profitability by increasing crop yield, at the same time improving soil health and the farm’s environmental footprint,” he said.

Slobodan started his career in Agriculture with the Victorian Agriculture Department, where he worked as an agricultural and horticultural researcher and extension officer. He worked on research projects in agronomy of Asian vegetables and integrated pest management in vegetable crops. This included observing pests such as heliothis, lettuce aphids, diamond back moth and diseases such as Septoria, sclerotinia, white blisters and others. He also worked as a technical extension officer.



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“This position was multi-faceted. I was involved in communication with horticulture growers and other stakeholders, daily. I was responsible for producing industry newsletters, organising industry meetings, field days, and helping individual growers with a range of enquiries. I handled technical enquiries, such as advice on preventing pest and diseases in vegetables or storage and post-harvest advice. I also handled QA and other farm organisation enquiries regarding OH&S.”

Slobodan also worked with Compost Victoria as a Marketing and Industry Development Officer. He was involved in marketing and promotional activities and working with compost producers providing technical support to improve their composting processes to produce fit-for-purpose compost. The position also involved working with end-users, farmers, and land holders, assisting them in placing compost as a soil amendment in their production system.

Prior to commencing with BioAg, Slobodan worked as an Area Sales and Marketing Manager with Bauer Irrigation Australia. He provided technical, marketing, and logistic support to Bauer Irrigation Australian distributors and dealers throughout Victoria, South Australia, Tasmania, and Southern NSW.

Slobodan believes that his experience with government research organisations, various primary industry associations and private industries in agriculture coupled with his technical knowledge and networks within the Victorian and Tasmanian agricultural industries will benefit all involved – BioAg, farmers, the environment and consumers.

Slobodan has begun contacting existing clients; however, in the interim, please feel free to reach out to him or your local Area Manager with any enquiries you may have. Scan for contact details.



Better soils. Better crops. Better stock.

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