

Pasture News

Waterlogging and its impact on spring nutrition

By Ralph Papalia, Business Manager/
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2021 has seen a return to the 'Winters of Old' with strong frontal systems penetrating deep into the Southwest and plenty of rain in June and July. While the rain has been welcome, the cold temperatures are not, and there is an obvious downside to excess water laying in paddocks.

Waterlogged and cold soil conditions have a big impact on plant growth, so it's worth thinking about how to best bring pastures out of these conditions going into spring.

An excerpt from the Waterlogging chapter of a book called *Soil Guide - A Handbook For Understanding And Managing Agricultural Soils*, by Moore and McFarlane states; "In well drained soils, 10-60% of the of the total soil volume is air space which allows oxygen and carbon dioxide to diffuse (move) freely in and out of the soil." Roots require oxygen for respiration, and for pastures this is mainly obtained from the air in the soil pores.

In waterlogged soil, the soil pores fill with water. The amount of oxygen dissolved in the water is typically only 5% of that in a well aerated soil.

So, when soil waterlogging occurs, there is a sudden decrease in oxygen supply to roots and soil microbes because oxygen movement is 10,000 times slower in water than in air.

Carbon dioxide and other gases accumulate near roots when soils waterlog and also the population of soil microbes changes to anaerobes (these microbes thrive in low oxygen soils).

This can affect plant nitrogen uptake because denitrification tends to occur. This is where soil nitrate (plant available N) is converted into nitrogen gas which can be lost from the system, leaving less nitrogen for plants.

Manganese and iron can also become more available to plants in



waterlogged soils because they are converted to more soluble forms and can sometimes be toxic to plants.

Organic matter also breaks down slower in waterlogged soils, especially when the soils are cold (hence less mineralised N) and the end products can be different in waterlogged soils i.e. ethylene and methane compared to carbon dioxide and water in well drained soils.

Sulphate sulphur (the main form taken up by plants) converts to sulfide and hydrogen sulfide in poorly drained soils and therefore, less sulphur is available to be taken up by plant roots.

One of the really intriguing things with waterlogging is that not all pasture species or even varieties are impacted to the same degree. Some are better adapted to cope with waterlogged conditions than others.

Typically they have developed a form a spongy tissue called aerenchyma. This internal plant structure has air spaces or channels in the leaves, stems and roots, which interconnect and allow the exchange of gases like oxygen between the shoot and the root.

This network of air-filled cavities is a low-resistance internal pathway for the exchange of gases between the plant above the water and also what is

submerged below.

So when it comes to fertilizing pastures coming out of winter, and moving into spring, especially if they have undergone waterlogging, there is a lot to consider.

Plant analysis is invaluable at this time of year to show where your pasture nutrition is at.

You should be thinking about the base pasture composition, and how badly has it been impacted. Do you want it to transition into spring or do you want rapid growth for maximum fodder conservation? Each paddock will be different.

It is generally recommended that fertilizers should only be applied to waterlogged soils when oxygen supply starts to improve again and clearly some situations - because of their pasture composition - will be more responsive than others.

At Summit, we have completed trials which show that some forms of fertilizer perform better than others after these conditions. Growers in my area can contact me (Ralph) for more information or contact Chloe Turner or Mark Ladny. The areas they manage and contact details are on page 4.



Gearing up for a spring production boost

It will be important to make the most of the opportunity over the coming weeks to boost pasture growth and fodder reserves. Armed with tools like Summit inSITE Plant Analysis, growers can put a plan into place that will achieve maximum economic return for your fertilizer spend.

Often, the same paddocks are chosen for hay and silage production. It's a situation that if not well managed, will quickly export nutrients off the paddock. Table 1 shows the approximate nutrient removal for cereal and mixed (ryegrass and clover) hay.

With improved genetics from new ryegrass varieties, Persian, balansa and sub-clover selections, hay yields now often exceed 6 t/ha. A quick calculation shows this yield removes between 12 and 18 kg/ha P; 72 to 120 kg/ha K and 120 to 150 kg N/ha.

Fertilizer type and rate for this spring's fodder production should be matched to the paddock's plant composition, nutrient requirements and seasonal conditions. The aim should be to have a good thick stand of grass/legume without it being excessively

Table 1. Approximate nutrient removal (kg/t) of hay or silage

	Nitrogen	Phosphorus	Potassium	Sulphur	Calcium	Magnesium
Cereal hay	20	2	12	1.5	12	3
Mixed hay	25	3	20	2.5	9	4

Table 2. Fertilizer suggestions based on nutrition and pasture varieties

Paddock nutrition and pasture mix scenario	Product	Fertilizer rate
Some phosphorus required in spring. Paddock has predominantly ryegrass and some clover in the sward.	HaySpecial	150kg/ha to 250kg/ha*
Some phosphorus required in spring. Paddock has predominantly clover and some ryegrass in the sward.	Hay	
No phosphorus required in spring. Paddock predominantly ryegrass and some clover. The paddock has a long history of being cut for hay or silage and has low soil potassium test results.	NKS32	
No phosphorus required in spring with predominantly ryegrass and some clover, but has good soil test results for potassium	NKS21	
No phosphorus required in spring and predominantly clover with some ryegrass and low potassium soil test results	GrassBoost	

*Fertilizer rate will depend on a range of factors including yield potential, seasonal conditions etc.

bulky to the point where it lays over, because this reduces light penetration and potential energy production.

When budgeting, consider additional factors such as nutrient movement and mineralisation, and remember the soil will have a reserve

of nutrients including nitrogen and sulphur in the form of organic matter.

In high production systems or where the season is favourable - such as an extended wet spring, there may be justification for rates beyond those indicated in Table 2 above.

Think of us as your partner in growth

At Summit we aim to offer much more than just fertilizer. We also have a conveniently located Bunbury depot, dedicated local Area Managers, a Field Research team and state-of-the-art inSITE soil and plant analysis.

Summit's core business is delivering to you high quality fertilizers and local advice. For additional support services we offer, such as laboratory analysis of soil and plant samples, or provision of NDVI imagery, we work closely with our industry business partners.

APAL

For soil and plant analysis, Summit has enjoyed a long-standing relationship with APAL (Australian Precision Ag Laboratory). APAL has state-of-the-art laboratories and is an accredited member of ASPAC (Australasian Soil and Plant Analysis Council). ASPAC promotes the adoption of preferred methods and protocols used in soil and plant tissue

analysis within Australasia.

Over many years, APAL has shown to consistently deliver high quality independent soil and plant analytical services and is an important part of the Summit service offering.

DataFarming

In 2020, Summit Fertilizers joined forces with Queensland company, DataFarming. The result was that clients immediately had **free** and regular access to 10 x 10m resolution, satellite based NDVI images through our SummitConnect user platform.

To ensure in-season continuity, these images are updated at least every 5 days.

This **free** NDVI information can be overlaid with Summit's inSITE test results. When combined they provide an exciting new way of in-season

assessment of paddock performance.

An important development, it enables our Area Managers like Ralph Papalia, Chloe Turner and Mark Ladny and grower clients to more easily:

- monitor pasture and crop health;
- pinpoint on-ground issues in-season to identify problem areas worthy of further investigation;
- save time and money knowing where to best target fertilizer applications.

We see all three businesses as being very complimentary and this cooperative partnership is proving to be the perfect match.

DataFarming also works closely with APAL, which completes the loop for growers in the Southwest who use Summit Fertilizers.



inSITE into better fertilizer decisions

Behind the scenes at Summit there has been a lot of work going on, developing systems that make it as easy and as rewarding as possible when you do business with us.

SummitConnect is our online customer portal. It is unique to our business and is a user-friendly interface with everything you need to know about what you do with us, all stored in the one place. On SummitConnect you can view:

- Orders - see details of all your orders with Summit, including collection month and payment terms.
- Collections - you can view individual fertilizer collections and download loading and weight dockets.
- Transactions - review your payments, credit limit, monthly statements and download your tax invoices.

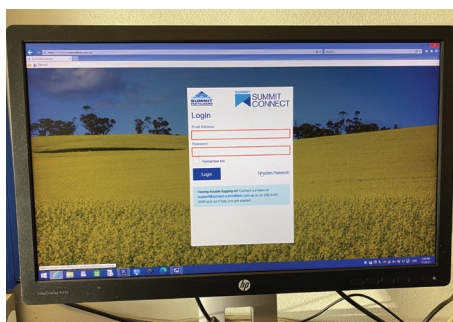
You can even provide your accountant or farm consultant with access to your SummitConnect to save time when it comes to gathering financial information.

Further inSITE

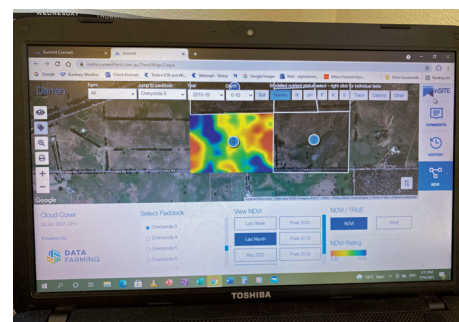
Joining SummitConnect is easy and is a real game changer, because it automatically links you to our inSITE platform. In inSITE, you have access to vital agronomy data that can assist in better decision making. You can view and download all your soil and plant test history, including recommendations and reports.

Another feature growers are finding increasingly valuable are trend maps. These maps allow you to visualize how soil nutrients, pH and other soil properties are tracking over time, across different depths, in different paddocks or different locations within the paddock.

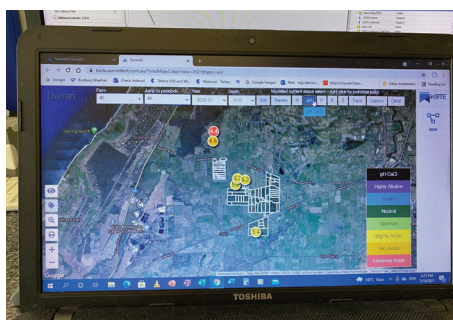
Ultimately our aim is to provide you with the most up-to-date, accurate information, in an easily accessible way. We want to help you make the best fertilizer decisions and put in place the best future management strategies. Customer owned inSITE data can be viewed at any time (24/7) on SummitConnect. Talk with Chloe Turner, Ralph Papalia or Mark Ladny.



Easy login with SummitConnect.



inSITE NDVI can identify in-season issues.



Test results for pH and nutrients such as phosphorus and potassium can all be accessed in inSITE.

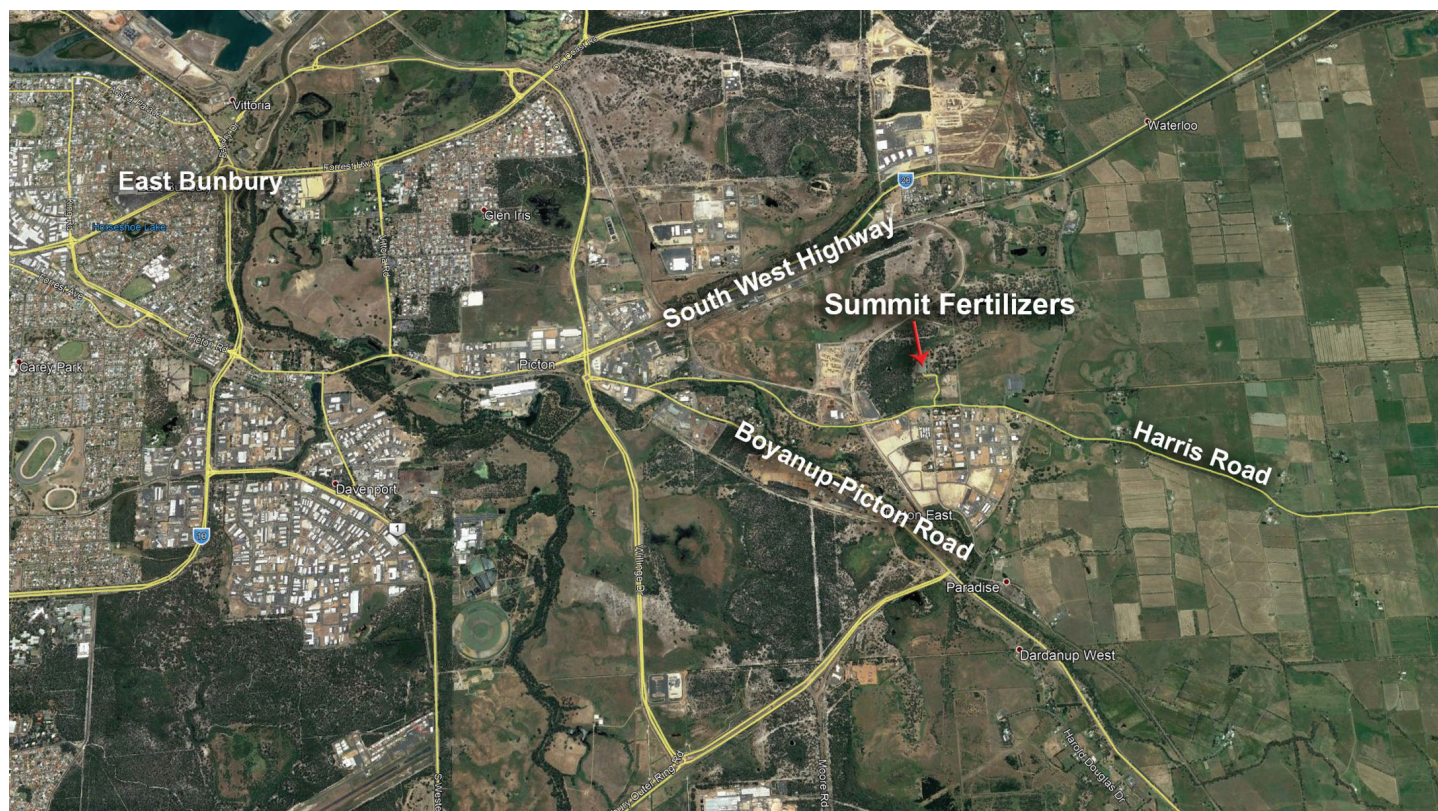
Summit Fertilizers Bunbury Depot and Area Manager, Ralph Papalia, visited Daren Merrit of Elgin Dairies (above left) in mid-July to introduce him to the SummitConnect online customer portal. Daren's SummitConnect account was set up in just a couple of minutes with only an email address required. It was as simple as that!

Just a couple of mouse clicks later he was able to access paddock specific information for his dairy in Summit inSITE. Past history along with 2021 soil pH test results was readily accessible along with phosphorus and potassium results, and a whole lot more.

Summit clients should not be apprehensive about getting started with SummitConnect. Our Southwest Area Managers are on-hand and happy to help get you started, guide you through the process, and discuss any trends you feel are important to your farm.

Their contact details are on the back page.

Our Bunbury Depot is conveniently located



The Summit Fertilizers Supply Offer 2021/2022

Our 2021/2022 Summit Fertilizers Supply Offer (FSO) is open from August until the end of October 2021 and offers substantial rewards to assist your farm business.

Customers who order early and commit to the offer will receive a \$2/tonne rebate (all products) on Summit Technical Services used, which includes inSITE soil and plant testing.

In addition to saving money, growers that take up our FSO are given priority access to depot supplies when it comes to collection time, providing peace of mind. This can be an advantage in situations when there is increased demand for fertilizer resulting from good seasonal conditions.

Growers can choose a Fixed Fertilizer Supply Contract (where the

product, price, quantity, depot, and month of collection are fixed at the time of signing), or take up a Variable Fertilizer Supply Offer for increased flexibility. For ease of doing business, a wide range of payment and credit options for approved customers are available. For more information on our Fertilizer Supply Offer contact our Southwest fertilizer experts, Chloe, Ralph or Mark, details below.

Contact your Summit Fertilizers pasture specialists



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