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**PASTURES
& GRAZING** NSW

WINTER NEWSLETTER

Volume 37 - Issue 2, June 2025

LIKE OILS AIN'T OILS — SULFUR AIN'T SULFUR

The form of sulfur in fertiliser affects its availability for plant uptake

CUDAL PASTURE UPDATE 2025 REPORT

Various presentations about feedbase selection and production

PASTURE TRIALS NETWORK 2025 UPDATE

Significant updates to both the MLA PTN eTool and PTN website

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“

Pastures & Grazing NSW has a vision to bring together producers, agronomists, agribusiness firms, animal scientists and teachers of agriculture to review and exchange high-quality information of relevance to grassland farming.

”

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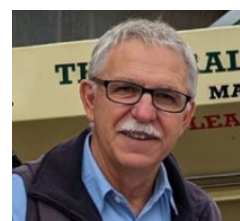
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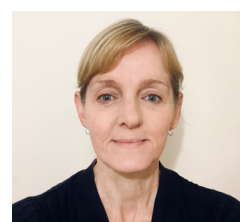
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Editor's Note

The last few months seem to have passed very quickly. During most of that time I have been focused on teaching some of our up-and-coming agricultural scientists the principles of pasture ecology, identification and management. It's a good reminder that we need to get the basics right. For example, understanding our climate and soils so that we choose an appropriate pasture species, understanding the fertility and grazing requirements of a pasture, and so on. More recently, I've been able to travel around the North West and Northern Tablelands visiting several properties and talking with producers about their grazing systems. Many of the pastures were looking very good, with the good rain and late start to winter meaning there was generally plenty of feed around. It's always good to see the principles of pasture production in action!

In this issue of the newsletter, there is an article about sulfur fertilisers (Page 4) and a brief summary of the

'central' pasture update that was held at Cudal earlier in the year (Page 7). There is also an article about the Pasture Trials Network (PTN) which provides a good overview of its relevance to the grazing industry (Page 9). As I included in the last issue of the newsletter, there are the 'From the Conference Proceedings Archive' and 'Research Updates' sections. These include some interesting articles that are worthwhile reading.

The next issue of the newsletter will be distributed in September. If you have something you would like to contribute, feel free to reach out to editor@pgnsw.com.au or you could post something to the Success Stories blog on our website. As always, I'm interested to hear what information you would like to see in the newsletter, so feel free to reach out with suggestions for topics.

Jonathan McLachlan
Director/Editor

2025 SYMPOSIUM

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Like oils ain't oils — sulfur ain't sulfur

Graeme Blair | University of New England, NSW | gblair@une.edu.au

It used to be easy when the predominant fertiliser that was used on pastures was single superphosphate (SSP), where all the sulfur is present as sulfate, which is immediately available to the plant. Single superphosphate is made by treating insoluble rock phosphate with sulfuric acid. This produces a fertiliser which is half mono-calcium phosphate and half gypsum (calcium sulfate). Initially, SSP was applied as a phosphate source, with little thought given to the sulfur component. Because sulfate is easily leached from the soil, losses from sulfate containing fertilisers such as SSP can be quite severe, particularly when applied in the autumn before winter rains that can leach the sulfate from the soil and leave insufficient for spring growth.

“It is important to have a phosphorus and sulfur soil test taken to determine what fertiliser source is required”

Like for phosphate, it is important to have a phosphorus and sulfur soil test taken to determine what fertiliser source is required. The original method of assessing soil sulfur status in Australia was a poor predictor of plant response. The University of New England (UNE) developed the KCl-40 test which better predicts plant responses and is now used in soil laboratories throughout Australia. Soil pH must also be measured because, if this is low and the sulfur soil test is high, there could be a problem with molybdenum availability to the plant.

In the last 20 years, there has been a proliferation in the fertilisers available which contain sulfur in various forms. These fertilisers mostly contain elemental sulfur, which is often not immediately available to the

BELOW: Sulfur response in a white clover pasture at Duri near Tamworth, NSW



“The elemental sulfur contained in these alternative fertilisers must be converted to plant available sulfate by soil bacteria”

plant because the particle size of the elemental sulfur is too large, hence the oxidation rate to sulfate is too slow. The potential advantage of these fertilisers is that they contain a higher nutrient density (more plant nutrients/tonne of product) and hence have lower transport and spreading costs, and they generally have better handling properties than SSP. In addition, the elemental sulfur that they contain becomes available as the plant needs it, which reduces leaching losses.

The elemental sulfur contained in these alternative fertilisers must be converted to plant available sulfate by soil bacteria. The rate at which this occurs is primarily dependent on soil temperature and moisture and, most importantly, on the particle size of the elemental sulfur in the fertiliser. Since soil temperature and moisture are major determinants of plant growth, and also control the oxidation rate of elemental sulfur to plant available sulfate, plant demand and nutrient supply are synchronous, which limits the risk of leaching losses of sulfate that can occur from SSP.

Because very fine elemental sulfur can be explosive, and it is costly and difficult to produce, some fertiliser manufacturers have instead included large particle sized elemental sulfur, or sulfur in other forms, which only becomes available to the plant slowly, or not at all. These other forms include the addition of sulfur bentonite granules or sulfur pastilles made from molten sulfur.

Research conducted by the UNE over many years has assessed the availability of sulfur from a wide range of fertilisers. These trials have been conducted in both the glasshouse and the field.

One glasshouse trial conducted at UNE over a period of approximately 8 months without leaching losses showed large differences in the availability of sulfur from different sources as shown in Table 1. The highest

plant yield and fertiliser sulfur recovery occurred when powdered gypsum was spread evenly throughout the soil and plant roots easily accessed the sulfur. Whilst the recovery of fertiliser sulfur was lower from MAPS and superphosphate, plant yields were not reduced.

The reason for this is that the sulfur supplied by the powdered gypsum was more than adequate for plant growth so there was luxury sulfur uptake. This luxury uptake can occur under field conditions when sulfate containing fertilisers, such as SSP, are applied. The sulfur concentration in the pasture can reach very high levels soon after application and most of this sulfur is deposited in urine patches where it is of little value for pasture growth and is highly susceptible to leaching.

When the sulfur was applied as a sulfur pastille or as sulfur bentonite, plant yields were not different from the control and there was no fertiliser sulfur recovered by the plant over the 8 month period. This is because the sulfur bentonite granule does not expand quickly and the sulfur is not exposed to sulfur oxidizing bacteria.

TABLE 1.

Results of a glasshouse trial that investigated plant yield and fertiliser sulfur recovery for a range of sulfur fertilisers

TREATMENT	PLANT YIELD RELATIVE TO SSP	FERTILISER S RECOVERY BY THE PLANT (%)
Control, No S	53	
Powdered gypsum	100	37
MAPS ¹	98	27
Superphosphate	99	19
S pastille	50	0
S bentonite	51	0

¹ Mono-ammonium phosphate coated with fine elemental and sulfate sulfur

Early field research conducted by Ron Weir of the NSW Department of Agriculture at Tia on the Northern Tablelands of NSW in the 1960s highlighted the importance of elemental sulfur particle size. He applied elemental sulfur in three particle sizes (<150 (fine), 150-250 and 250-600 (coarse) microns), along with finely powdered gypsum to white clover pasture. The results, shown in Table 2 below, found that the initial response in white clover was not different between

“There is a wide range of sulfur containing fertilisers now available on the Australian market”

gypsum and elemental sulfur with fine particle size, but that cumulative yield over 3 years was higher with fine elemental sulfur than with gypsum.

TABLE 2.

Sulfur recovery by a white clover pasture in response to different sources of sulphur fertiliser

S SOURCE	S RECOVERY IN PLANTS (% OF APPLIED)		
	0-11 MONTHS	11-23 MONTHS	TOTAL OVER 23 MTHS
Elemental S, coarse	1.8	4.2	6.0
Elemental S, fine	13.0	7.0	20.0
Gypsum	18.0	0.4	18.4

There is a wide range of sulfur containing fertilisers now available on the Australian market. An example of those available in New South Wales is shown in Table 3 below.

As for all fertilisers, the selection of the appropriate sulfur fertiliser depends on both the agronomic effectiveness and the applied fertiliser cost. The bottom line is that when buying sulfur containing

fertilisers, information about the form of sulfur in the fertiliser needs to be obtained and the value of the sulfur taken into account when calculating nutrient costs. *Like oils ain't oils – sulfur ain't sulfur.*

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TABLE 3.

A list of common fertilisers that contain sulfur, as sulfate and/or elemental sulfur

FERTILISER	N	P	S	% SULFATE	% ELEMENTAL
Single superphosphate	0	8.5	11.0	11.0	0
Granulock SS	10.0	17.5	12.0	4.0	8.0
SuPerfect 26S	0	7.0	26.8	26.8	0
Super S	11.0	0	75.0	0	75.0
SuStain	0	0	90.0	0	90.0
TriplePlus	0	18.0	10.0	4.0	6.0
MAP	10.0	21.9	1.5	1.4	0

Cudal Pasture Update 2025 Report

David Harbison and Jonathan McLachlan | editor@pgnsw.com.au

Pastures and Grazing NSW, in conjunction with NSW LLS/NSW DPIRD, held their annual 'Central' pasture update at Cudal on Friday 7 March 2025. The event was attended by approximately 35 producers and industry representatives. The day involved presentations in the morning before attendees visited the local PTN site after lunch.

Presentations

Speakers included Dr. Ed Clayton, Matt Newell and Tony Butler who presented on a range of relevant topics, which are briefly summarised below. The presentation slides can be viewed on our website at the following link: <https://pgnsw.com.au/2025-autumn-pasture-update-cudal>

“Rumen fermentation may be more efficient when cereals are included in the forage mix”

Dr. Ed Clayton spoke on two topics. The first presentation was about mixed species annual fodder crops which was a summary of grazing studies on different forage mixes. The take home messages were that weight gain is largely influenced by dry matter on offer and rumen fermentation may be more efficient when cereals are included in the forage mix.

The second presentation was about maximising omega-3 in beef and lamb. The main factor that influences the amount of omega-3 in meat is the diet of the animal, which means that maximising the amount of omega-3 in forages can enhance omega-3 in meat.

Matt Newell presented on pastures with low methane potential, highlighting some of the pasture species

Maximising Omega-3 in Beef and Lamb

Dr Edward Clayton

NSW Department of Primary Industries
Wagga Wagga Agricultural Institute

Mr Richard Meyer, Dr Robert Taylor,
Mr Tim Dale, Ms Helen Burns,

Mr Bryan Ward, Ms Patricia O'Keeffe,
Dr Michael Wilkes, Mr Greg Ferrier,
Dr Peter Orchard, Dr Michael Campbell



Department of
Primary Industries



Mixed Species Annual Fodder Crops Grazing Studies

Dr Edward Clayton

NSW Department of Primary Industries
Wagga Wagga Agricultural Institute

Dr Mark Norton, Dr Carol Harris, Helen Burns,
Hannah Fahey, Ann-Marie Farley, Peter Tyndal,
Richard Lowrie, Binbin Xu, Sue Street, Geoff
Casburn, Kathleen Bernie



Department of
Primary Industries



“The main factor that influences the amount of omega-3 in meat is the diet of the animal”

with potential for lower emissions, while Tony Butler presented on the Pasture Trials Network (PTN), specifically what it is and how it benefits the grazing industry.



PTN Site Visit

The PTN trial site is located just south east of Cudal and includes evaluations of cocksfoot, phalaris, tall fescue, lucerne and sub clover. There was much discussion for ~90 minutes about the different species, including times of production, general performance and persistence.

Overall, it was a great day which included terrific interaction and questioning. Keep your eye out for the 'Central' pastures update which will be held again in March 2026, and for other pasture updates hosted by P&G NSW in an area near you..

BELOW: David Harbison and some of the attendees of the Central Pasture Update at the PTN trial site visit at Cudal, NSW



Pasture Trials Network 2025 Update

Tony Butler (PTN Executive Officer) and Fergus Brown (PTN Support Officer) | letstalk@pasturetrials.com.au

Introduction

The Pasture Trials Network (PTN), an industry-focused initiative, has dedicated the past two years to enhancing the program's value by actively listening to feedback. The program has been running for over a decade and has grown exponentially in recent years, going from strength to strength.

While we have been busy behind the scenes, we are excited and proud to launch a significant update to both the MLA PTN eTool and PTN website.

“The 2025 sowing season is progressing well, characterised by contrasting conditions”

The engagement effort we have been working on has allowed us to refine the needs and capabilities of the new MLA PTN eTool, which entirely rewrites the previous tool and introduces new features designed to present additional data over time. We will incorporate more data from our files into this tool in the future.

We have thoroughly revamped our PTN website, enabling us to share more comprehensive program details and create more transparency on the location and species of current trials from across the country. We appreciate any feedback on bugs discovered.

The PTN team is expanding with the appointment of Tim Pepper. With Tim's expertise, we plan to redefine the future of PTN data communication, aiming to boost user confidence in pasture variety selection, which will be developed in consultation with the industry.

The 2025 sowing season is progressing well, characterised by contrasting conditions — from dry spells in the western districts of VIC and SA to saturated areas in northern NSW. This year, we are excited to include grazing oats in the program, with trials in VIC

and SE QLD. Continuing with last year's introduction of white clover and chicory, PTN is committed to providing high-quality, reliable, and independent forage species data to the industry, by the industry. We are also enhancing the data available through our eTool update.



ABOVE: A snapshot of the PTN partners and funding sources

“PTN collects data from a wide array of trials conducted in temperate regions of Australia, ensuring all trials uphold independent standards”

What is the Pasture Trials Network?

For those not already aware of the PTN, the Pasture Trials Network provides independent and robust temperate grazing feedbase variety performance



ABOVE: Sowing oats at the AGF Seeds PTN trial site at Smeaton VIC (left) and annual ryegrass emerging at the RAGT PTN trial site at Hamilton VIC (right)

information, supported by MLA, Dairy Australia, the Australian Seed Federation, and leading proprietary seed companies.

PTN collects data from a wide array of trials conducted in temperate regions of Australia, ensuring all trials uphold independent standards. With over ten years of freely accessible data, PTN has conducted numerous pasture variety trials. Additionally, PTN data and trial

reports are available to everyone at no charge through the MLA PTN eTool.

The new MLA PTN eTool

Producers, agronomists, consultants, and others interested in learning about pasture variety performance can check out the newly refined MLA PTN eTool for the latest trial updates. Users can compare

BELOW: A snapshot of the MLA PTN eTool page

Pasture Trials Network
LOGIN

This tool allows you to **assess** and **compare** the performance of more than 100 pasture varieties across the key pasture species for the red meat industry:

Annual Ryegrass, Chicory, Cocksfoot, Italian Ryegrass, Lucerne, Perennial Ryegrass, Phalaris, Sub Clover and Tall Fescue

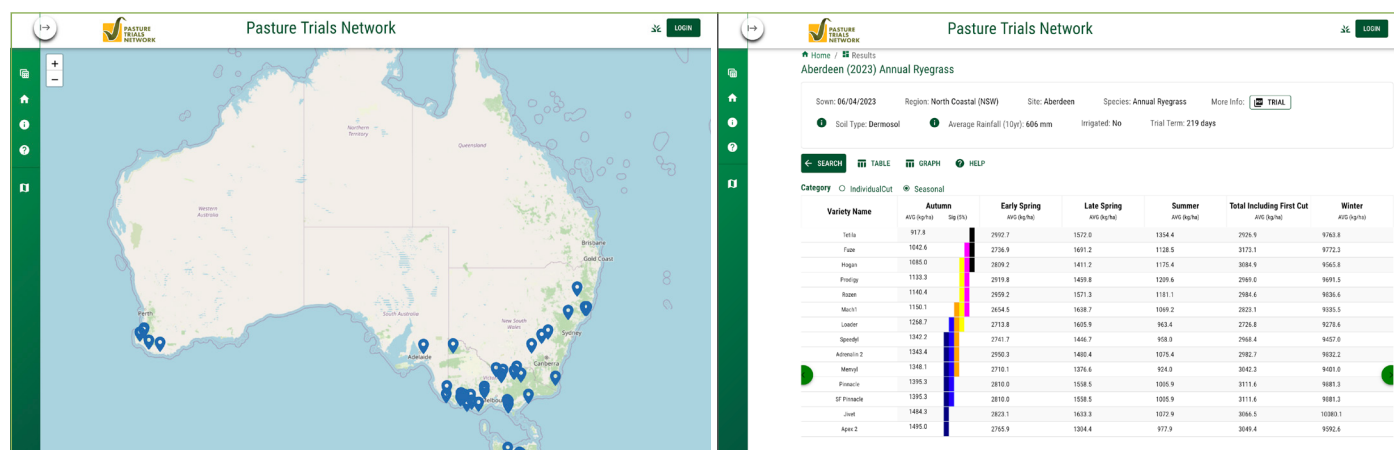
Search By

☒ Trial Name
 ☐ Species
 ☐ Site
 ☐ Sowing Year
 ☐ Region
 ☐ Variety / Cultivar
 ☐ Code
 RESET

Average Annual Rainfall (10 yr)

Soil Type

Trial	Species	Region	Trial Year	Avg Annual Rainfall (10yr)	Soil Type	Irrigated	Trial Term
Cressy (2024) Annual Ryegrass	Annual Ryegrass	North (TAS)	2024	608	Kurosol	✓	255 days
Frankland River (2024) Annual Ryegrass	Annual Ryegrass	South Coast (WA)	2024	601	Sodosol	✗	109 days
Frankland River (2024) Italian Ryegrass	Annual Ryegrass	South Coast (WA)	2024	601	Sodosol	✗	146 days
Gomersal (2024) Annual Ryegrass	Annual Ryegrass	Adelaide Hills (SA)	2024	452	Chromosol	✗	182 days
Gomersal (2024) Italian Ryegrass	Italian Ryegrass	Adelaide Hills (SA)	2024	452	Chromosol	✗	182 days
⚠ Smeaton (2024) Annual Ryegrass	Annual Ryegrass	North Central (VIC)	2024	633	Ferrosol	✗	219 days
⚠ Smeaton (2024) Italian Ryegrass	Italian Ryegrass	North Central (VIC)	2024	633	Ferrosol	✗	219 days
Wingham (2024) Annual Ryegrass	Annual Ryegrass	North Coastal (NSW)	2024	1056	Dermosol	✗	219 days
Wingham (2024) Italian Ryegrass	Annual Ryegrass	North Coastal (NSW)	2024	1056	Dermosol	✗	219 days
Bool Lagoon (2023) Italian Ryegrass	Italian Ryegrass	South East (SA)	2023	567	Chromosol	✓	1 Years, 292 days



ABOVE: A snapshot of the eTool map page (left) and eTool data (right)

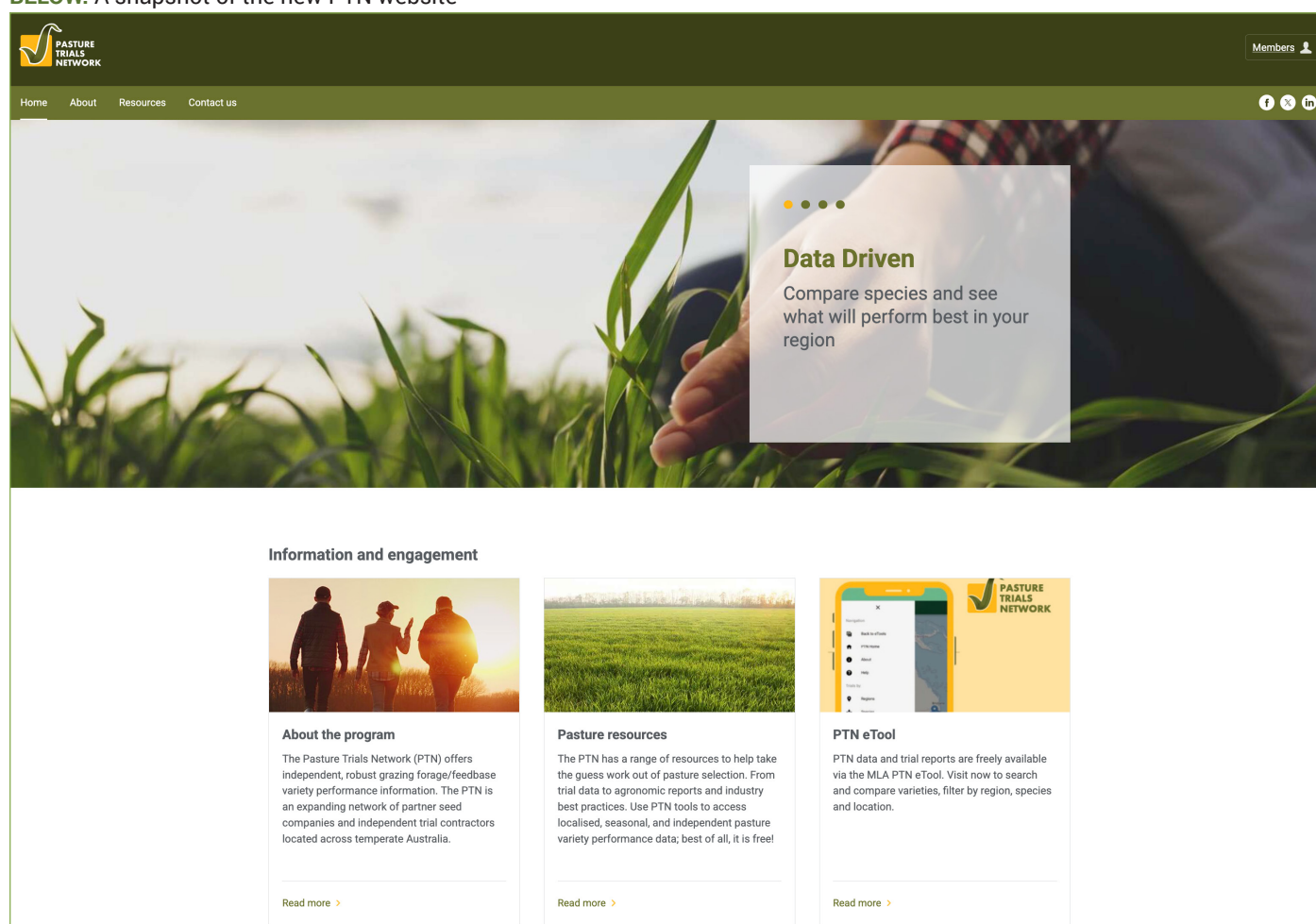
and select with confidence, backed by data. With the recent update to the MLA PTN eTool, users can now utilise advanced filters and search functions to better understand the trial data and how it applies to their production environment and requirements.

Key new features include filtering by rainfall and soil type, searching for specific cultivars, and displaying individual yield cut data. We also have a heap of new

trial data on the eTool from recently completed trials. We encourage people to take a look and learn from the results. The tool also enables the presentation of additional data types within our files, which will gradually be integrated into the tool in the future.

You can check out the MLA PTN eTool here: www.etoools.mla.com.au/ptn

BELOW: A snapshot of the new PTN website



For those who haven't used the MLA PTN eTool before, it is a tool that producers and advisors can access trial data that is localised, seasonal, independent, and free.

The MLA PTN eTool is a powerful tool for producers to access independent, robust forage variety performance data for key species, including phalaris, cocksfoot, tall fescue, perennial ryegrass, annual ryegrass, Italian ryegrass, sub-clover, and lucerne.

Even more critical is the ability to search trials by region, utilising geographic data, rainfall, weed and pest control considerations, site-specific conditions, and even photos of the trials to review and assess what is relevant to producers, thereby assisting in making the best pasture variety selections for their production requirements.

New PTN website

Along with the update to the MLA PTN eTool, PTN recently launched a new website. This new site is designed as a one-stop resource for pasture

information and staying up-to-date with the PTN and its activities.

Key updates to the website include:

- **PTN active trials list** | keep up to date on what trials are in operation
- **PTN events** | find where you can see PTN trials in action and learn more about the program
- **PTN members & trial operators** | learn about the network and the scope of the program
- **Pasture resources** | easily access tools and resources to help take the guesswork out of pasture variety selection

Check it out here: www.pasturetrials.com.au

2025 PTN Trials

Sowing is well underway for the 2025 PTN trials. This year, 28 new trials are being undertaken, with some new locations and trial operators added to the program.

BELOW: PTN trial site visit at Cudal, NSW



We continually consult with our seed company partners and the industry to determine trial needs and locations. Through this process, we ensure we can provide the most valuable and relevant data for making informed pasture selections.

The 2025 trial program includes:

- **Dorrigo (NSW)** | Long-time trial operator Josh Hack of Ag Farming Systems will operate several trials at this hub in Dorriggo, including continental cocksfoot, annual and Italian ryegrass, and lucerne
- **Angaston (SA)** | Located in the Barossa region of South Australia, this new site will trial sub clover and annual ryegrass
- **Hamilton (VIC)** | RAGT will run this trial at their new irrigated trial facility. Species being trialed include annual ryegrass, Italian ryegrass, and continental cocksfoot, as well as continental tall fescue later in the season
- **Wellcamp (QLD)** | This new trial sees grazing oats added to the pasture trials roster for the first time, managed by the Barenbrug team at the Wellcamp facility near Toowoomba

- **Hamilton (TAS)** | New trial operators Pinion Advisory are operating the PTN trial at Hamilton in Tasmania's south with irrigated trials of lucerne and perennial ryegrass and a site containing perennial and Italian ryegrass

Current trials in NSW

- Working alongside Charles Sturt University, a dryland hub featuring lucerne, phalaris, sub clover, and tall fescue in Wagga with 3-year data making its way to the MLA PTN eTool this year
- Other NSW trials include a dryland hub of five species at Cudal with David Harbison (DR Agriculture), as well as other lucerne trials in the area. Local growers and consultants recently visited this site at Cudal. Data is expected to be available later in 2026, including forage quality
- PTN also operates a lucerne trial at Aberdeen with Clydsdale Rural, with data expected to be available later in 2026

To learn more, please get in touch with the team at Pasture Trials Network. You can reach us at:

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From the Conference Proceedings Archive

Below is a selection of papers from past conference proceedings that focus on the role of legumes in pastures and some of the constraints that can limit the effectiveness of the legume component of the pasture. The full papers can be found on our website using the links provided below.

Producing 'greener' grass with legumes enhances \$ustainability

J.M. Scott

Proceedings of the 24th Annual Conference of the Grassland Society of NSW (2009)

Abstract: Global concerns about increasing levels of atmospheric carbon dioxide mean that the nitrogen needs of pastures will increasingly need to be met through nitrogen fixation by legumes. Recent research on the Northern Tablelands of NSW shows that deep-rooted, fertiliser-responsive perennial grasses combined with legumes provide multiple environmental, production and financial benefits compared to pastures based on grasses alone.

<https://pgnsw.com.au/conference-proceedings/conference-2009>

Nitrogen fixation and cycling of pasture legumes – a review

D.F. Herridge

Proceedings of the 19th Conference of the Grassland Society of NSW Inc. (2004)

Abstract: Pasture legumes provide high quality feed for animals in grazing systems. They also fix nitrogen (N) and add organic N to the soils in which they grow, thereby restoring the chemical and physical quality of the soil. In the Australian grains belt, pasture legumes are rotated with cereal and other grain crops, with the pasture phase countering the degradation of the cropping phase.

<https://pgnsw.com.au/conference-proceedings/conference-2004>

Legume content and sub-optimal nodulation linked to soil acidity and nutrient availability in the Mudgee region of the Central Tablelands, NSW

C. Edwards and B. Hackney

Proceedings of the 32nd Conference of the Grassland Society of NSW Inc. (2021)

Abstract: A recent survey of pasture paddocks (n=24) in the Mudgee region of the Central Tablelands found 89% of the sub-clover plants sampled were below the industry benchmark for adequate nodulation. Soil chemical analysis of the sub-clover paddocks revealed 90% of paddocks had $\text{pH}_{\text{Ca}} < 5.5$ with 80% and 60% below the critical level of phosphorus and sulphur respectively. We propose that persistence and performance of sub-clover in this region is partly being limited by natural soil constraints, as well as current soil and landscape management factors.

<https://www.pgnsw.com.au/conference-proceedings/conference-2021>



Research Updates

Keeping you up-to-date with the latest pasture and grassland research in Australia. We reprint the abstracts of recently published research articles so you can follow up the full paper if you wish.

Changes in pasture and soil properties with liming and superphosphate application on five soils in the Central Tablelands of New South Wales over 12 years

P. M. Dowling ^{A,B,F}, I. A. Vimpany ^{C,D,F}, M. K. Conyers ^{E,F}, G. D. Millar ^A, K. R. Helyar ^{E,F}, D. L. Michalk ^{A,F}, H. I. Nicol ^{A,F}, J. Bradley ^{D,F}, P. J. Milham ^{D,FG} and R. C. Hayes ^{E*}

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Abstract

Context

The decision to lime pastures requires understanding of the benefits and their duration.

Aims

To quantify the effects of contrasting rates of superphosphate and lime on soil chemistry and pasture productivity on five acidic soils over 12 years.

Methods

The sites were established in 1978 on the Central Tablelands of New South Wales, Australia. Initial treatments of lime were 0, 0.63, 1.25, 2.5 and 5.0 t/ha. Single superphosphate (SSP) was top-dressed annually at 0, 125 and 250 kg/ha.

Key results

Across the five sites, initial pH increase due to liming was 0.3 units/t. After 12 years, pH declined to 0.1 pH units/t. Without lime, soil pH declined by ~0.02 units/year. For all lime treatments and sites, the annual decline averaged ~0.07 units/year. Annual applications of SSP were associated with lower soil pH and exchangeable soil K and higher Al saturation, but differences required 2–7 years to emerge. There was an increase in annual dry matter with SSP application. Lime generally increased pasture biomass, with pastures dominated by *Trifolium subterraneum*. Pasture yields generally increased with exchangeable Ca but yield responses to %Al were more variable.

Conclusions

A single application of lime had many enduring beneficial effects on soil chemistry, still evident 12 years following application and generally proportional to the quantum of lime initially applied. Ongoing applications of SSP led to cumulative changes in some soil properties and resulted in an increase in pasture productivity.

Implications

The historical view of lime and SSP being alternative investments is counterproductive. Pasture renovation may be necessary to realise the full benefit of lime and SSP application.

Crop and Pasture Science **76**(5) 1–25
<https://doi.org/10.1071/CP24336>

Plantain-mixed pasture collected in different climatic seasons produced less methane and ammonia than ryegrass–white clover pasture *in vitro*

Komahan Sivanandarajah ^{A*}, Daniel Donaghy ^A, German Molano ^B, David Horne ^A, Peter Kemp ^A, Soledad Navarrete ^{A,C}, Thiagarajah Ramilan ^A and David Pacheco ^B

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Abstract

Context

Plantain (PL) is recognised for reducing nitrate leaching and nitrous oxide emissions in pastoral systems. Evidence has shown that cows fed pure PL produced less methane (CH₄) than cows fed ryegrass. However, it is unclear if the CH₄ reduction can be achieved with PL in mixed pasture.

Aims

The study evaluated the *in vitro* rumen fermentation profiles of ryegrass–white clover (RWC) and medium-level PL (PLM, containing ~40% PL) pasture collected during different climatic seasons, to determine whether this inclusion level influences CH₄ and rumen ammonia (NH₃) production.

Methods

Substrates were selected from samples with various proportions of PL. Samples were categorised into three climatic seasons (i.e. spring, summer and autumn) and two pasture types (PLM and RWC). Representative samples for these scenarios were tested in an automated *in vitro* rumen batch culture system for gas, CH₄ (mL/g DM) and NH₃ (mM/g DM) production.

Key results

In summer samples, PLM produced approximately 8%, 14% and 19% less CH₄ at 12 h, 24 h and potential CH₄ production (PCH₄), respectively. Although gas production (GP) was similar at 12 and 24 h, PLM had 13% lower potential GP than RWC ($P < 0.05$). In spring samples, PLM had approximately 11% greater GP and CH₄ production at 12 h. For the autumn samples, GP and CH₄ production were similar between PLM and RWC ($P > 0.05$). Net NH₃ production from PLM substrates was significantly lower in spring (27%) and autumn (17%) samples, with no differences in summer, despite higher crude protein levels in the selected PLM.

Conclusions

Compared with RWC, PLM changed rumen fermentation parameters that could translate to potential environmental benefits: PLM produced less net NH₃ in spring and autumn samples (27% and 17%, respectively), and up to 19% less CH₄ production in summer samples.

Implications

Incorporating ~40% PL into RWC pasture showed a promising reduction of CH₄ emissions and nitrogen losses *in vitro*. If the *in vitro* results translate to cows grazing pasture, this could offer greater environmental benefits with minimal input costs. *In vitro* results suggest that PLM's potential to mitigate CH₄ emissions can be influenced by seasonal variations in pasture quality compared with RWC. However, further animal studies are needed to fully comprehend the CH₄ mitigation potential of this forage.

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From the Chairperson

Winter has well and truly arrived with cold winds, frosts and even snow across parts of the state.

The clean-up continues on the North Coast after the recent floods and there is still a long way to go. My thoughts are with the producers who have been heavily impacted. To the west, there has been reasonable rain across the tablelands, slopes and plains. There has also been light falls across much of the south of the state and we would like these to continue to provide a reasonable spring coming out of winter.

“Our conference planning committee met on 23 June to formulate agenda items and consider potential speakers”

I have been out and about promoting Pastures & Grazing NSW over the last few months. As anticipated in the previous newsletter, I attended the Total Field Days that were held from 2 to 4 May. I thank Neil Griffiths, former Technical Specialist Pastures, for assisting on the stand over the 3 days.

The next event was the North West Beef Producers Forum on 15 May in Winton at Tangarratta Vineyard, which was hosted by the North West Local Land Services. This was a well-attended and received event. I then travelled to Coonamble for the ‘Grow It, Graze It, Bank It’ workshop on 4 and 5 June, which focused on pasture improvement strategies for variable climates in central and northwest NSW. This event was hosted by Jillian Kelly of AHN Consulting who I would like to thank for inviting us to participate. This was another well attended event.

At each of these events, P&G NSW ran a ‘Plant Identification Competition’, which included a range of tropical grasses, and at the first two events, a ‘Guess the Number of Seeds Competition’. These competitions allowed interaction with attendees which helped to promote P&G NSW. I would like to thank Dr Suzanne Boschma, Senior Research Scientist DPIRD, for the loan of the grasses and Dr Jonathan McLachlan, University of New England, for supplying the counted seeds.

Our conference planning committee met on 23 June to formulate agenda items and consider potential speakers for our conference in Tamworth next year. I invite input from our members to have their say on potential topics and speakers. If you have any ideas, you can address them to Jonathan McLachlan, our Editor (editor@pgnsw.com.au) or Anne Baker, our Executive Officer (admin@pgnsw.com.au).

Stay safe and warm this winter.

Regards,



Lester McCormick

Chairperson (on behalf of the Board)
Pastures & Grazing NSW

Next Newsletter

The next edition of the newsletter will be distributed in September 2025. If you wish to submit an article, short item, a letter to the Editor or a photo please email your contribution to:

editor@pgnsw.com.au

The deadline for submissions is
Friday 15 August

