



GRASSLAND SOCIETY OF NSW INC.

Newsletter

Well another Grassland Society of NSW conference has come and gone – congratulations to George Truman and his team for putting on a great conference at Gunnedah in July. A brief report can be found on the conference on page 3. Also in this newsletter (page 2) are a set of notes from a very interesting producer panel session on the opportunities that can be found during the drought. I have heard nothing, but glowing reports from this session so make sure you have a read.

On the 3rd July 2019 the Annual General Meeting of the Grassland Society of NSW was held before the conference dinner at Gunnedah. At this meeting the State Executive and committee were elected for the 2019–20 financial year (see the back page of the newsletter for a full listing of

the executive and committee members).

Joining the team this year is Helena Warren from Binda. Helena has been a keen supporter of Grassland Society events, most recently helping to organise a Pasture Update at Crookwell – welcome aboard Helena.

John Ive is the only non-returning committee member this year. John has been a long-serving committee member and has made a great contribution to Society activities and direction. John has been especially helpful to me as Editor either by writing articles himself or securing articles through his networks (such as “Practical application of soil test benchmarks for phosphorus” on page 4 of this newsletter). Thank you John for

all the time you have given to the Grassland Society of NSW – it is much appreciated – we hope you continue to be an active member of the Society.

I have passed a bit of a milestone with this issue of the newsletter as it marks my 10th year in the position. Thank you to everyone who has helped me pull together the last 40 newsletters (wow) – all articles, suggestions and constructive criticisms have helped to shape the newsletter. Here's to another 40 issues ☺

Just a reminder if you haven't paid your membership subs for the 2019–2020 membership year, please do so as soon as possible. See the box below on this page for payment details.

*Carol Harris,
Editor*

Grassland Society of NSW membership subscriptions are due now

Annual subscriptions of \$60 for 2019/2020 are due 1 July 2019.

Payment can be made either by cheque or electronically. Account Name: Grassland Society of NSW, BSB: 032 833, Account No: 421 690, Bank: Westpac, Reference: 'Surname' and then 'first name'

You can also go to www.grasslandnsw.com.au and access the payment page via the green "JOIN NOW" button.

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In this newsletter

Drought opportunities: producer panel session at Gunnedah	2
2019 Conference Report	3
Practical application of soil test benchmarks for phosphorus	4
Research Update	7
UNE GRASS Program Update	8
Grazing lingo - what does it all mean	9
Acid soil management in the 21st century	10
From the President	11

Drought opportunities: producer panel session at Gunnedah

Jillian Kelly, District Veterinarian, Local Land Services Central West Coonamble.

Editors Note: At the recent Grassland Society of NSW conference at Gunnedah (GS NSW) four producers shared their thoughts, decision making processes and were quite honest about the ups and the downs of life during a drought. The overall feeling at the conference after this session was very positive and that those in the room came away with many ideas to think over and it was decided that it would be of great value to all GS NSW members. This session was expertly facilitated by Jillian Kelly who has kindly shared her notes. We also greatly appreciated the producers involved in the panel session for their time & openness.

Elliot Shannon (Bugaldie)

Elliott Shannon runs an 1100ha family cropping and cattle farm at Bugaldie with his dad (who he says works like two 20 year olds), wife Kate and four children. Elliott has made well timed decisions to position his business in drought. One of the best decisions he made was to early wean his calves during 2018. He removed them from their mothers as low as 40kg and fed them a good quality diet from the nearby Baradine Bypass feedmill. Elliott has a good relationship with the feedmill and looks for opportunities with them, such as taking a load of his own home-grown grain over, and returning with a load of weaner ration. Elliott put a lot of thought into his weaning process, building well planned, versatile pens that he can use for years to come as an asset on his farm.

He only keeps three months worth months' worth of stock feed on hand, and views feeding as a way to "buy time" rather than a long term solution. His main focus is on growing grain, and forage crops for stock, and views hand feeding stock (especially adult stock) as a short term option to meet markets or to wait until a crop is able to be grazed.

Elliott always has a bucket, pair of scissors and scales in the car and does pasture cuts and feed

estimations regularly to help his decision making process. He also uses the Drought Feeding App regularly to help with supplementary feeding options and volumes. Elliott says he was a bit overstocked coming into the drought, and should have reacted quicker to reduce stock numbers as it set in. He is currently running 70% of his breeding cow herd, and his 2018 rainfall is about 50% of what it normally is.

Elliott sources advice from a range of people to help him stay positive and make good decisions during drought. He also really values getting off the farm and is heavily involved in Junior Rugby with his children.

Nick and Alex Anderson (Mullaley)

Nick & Alex Anderson run an 1800ha family farm at Mullaley. It is 2/3two thirds cattle and 1/3one third cropping and they live there with their little boy Ollie. They originally ran a 300 cow breeding herd, but as the drought set in they quickly realised how much cost and physical labour was involved in hand feeding cattle, and how much this impacted on the business and their family life. As a result of this realisation, they have completely regeared their business to create as much flexibility as possible. They have moved from a breeding enterprise into a flexible trading

enterprise and are focusing on feed budgeting and creating smaller paddocks with heavier stocking rates for shorter grazing intervals to encourage sustainable land utilisation and pasture recovery. Nick and Alex are definitely definitely a close team, working with each other in the paddock daily, making decisions together and using every opportunity to go to courses, workshops and field days to increase their knowledge and business acumen. They are very good at gathering and analysing data to help them make strategic decisions, decisions and especially to react to market or environmental triggers early. Nick and Alex have developed a strong network of experts they can rely on through their learnings with courses like KLR Marketing and RCS Grazing for Profit, and these sorts of connections have kept them positive and optimistic about the future of their farm and the broader agricultural industry.

Jack Brennan (Warren)

Jack Brennan is the manager of Merrimba Station, a 25,000ha sheep and cropping property near Warren, owned by Paraway Pastoral Company. Jack has been the manager there for 6 years, and he lives there with his wife Grace and their three children. There are two other staff members who work



Photo credit: Dale Kirby, LLS North West Gunnedah

Drought opportunities continued from page 2

on Merrimba, an overseer and a jackaroo, and they use contractors for bigger management events such as lamb marking and shearing. Merrimba has had extremely low rainfall for the past three years, measuring just 27 mm so far during 2019, 87mm in 2018 and 123mm in 2017. On a 12 month rolling rainfall basis, they are sitting at 12% of their annual average of 450mm.

When Jack took over managing Merrimba, he quickly started to practice objective measurements and reengineered the type of ewe he was running and the stocking rate of the property. They are currently running about 8500 ewes. With virtually no pasture growth for the past two and a half years, Jack made the decision early to lock stock into drought lots to preserve pasture grass butts and has been handfeeding them in a lotfed situation ever since, aside from at lambing time. Jack has built the drought feed lot cheaply, but effectively, and with minimal equipment and labour feeds 10,000 sheep in an hour and three quarters. Always on the look out for opportunity, Jack sees potential cash flow and profit in feeding sheep and has also bought additional sheep to fatten in the drought lot, in addition to taking his own home-bred weaners through to a killable weight. This was no easy task - weaning as low as 8kg in September 2018 was a steep learning curve with a few animal health issues encountered and subsequently managed. But overcoming all of the challenges paid off with the lambs being sold at 70kg average with the tops making \$298 after over 200 days on feed.

Jack is always planning ahead, looking for the next opportunity and has a range of people, such as vets, agronomists, nutritionists and analysts that he uses as a sounding board and support network to help him make decisions and stay positive. He finds it's really important to involve his staff in the decision making and in the wins the business has. "It's really tough going feeding sheep all day, every day, but it's great when the kill sheets come in and the staff are all doing the sums on their phones to see how much profit we made on the lambs we just sold".



2019 GS NSW Conference Report

George Truman, Senior Land Services Officer – Mixed Farming, Local Land Services North West Gunnedah.

The 31st Conference of the Grassland Society of NSW Inc., titled "Renewed focus on livestock systems for resilience - the swing back to forages" was held in Gunnedah 3 and 4 July 2019. With the ongoing dry conditions across much of NSW we endeavoured to attract people to the event by promoting it as opportunity to plan and learn from others as to how they are adapting to the dry conditions and what opportunities have arisen with the increasing demand for forages and livestock. The committee, comprised of people from Local Land Services, NSW Department of Primary Industries, Landcare, Agronomists, Advisers and Landholders, have been meeting for the last eight months and designed a great program which focused on producers. Total registration numbers were strong which was great given that many producers are hand feeding, enduring time and financial pressures.

The program contained themes and presentations on;
'Overview', Climate Change and Variability - Prof Mark Howden.
Economics - Producers Changing - the swing to forages
Livestock Production Systems - dairy, beef and sheep
Livestock Nutrition and Genetics
Drought Opportunities - producer panel



Photo credit: Dale Kirby, LLS North West Gunnedah

Attended by approximately 160 farmers, agronomists, and industry personnel, delegates were also able to attend one of two bus tours to regional farming activities. One tour headed to Carroll and Tamworth, the second to Boggabri and Narrabri. The tours gave delegates the opportunity to see beef, temperate pastures under irrigation, forage conservation, re – use of effluent water, resultant changes to soil structure from tropical grasses and a visit to the Sydney University Plant Breeding Institute. Much discussion was generated on all tours, with the conference dinner that evening enabling much networking and further discussion.

A key to the success of our conferences is our sponsor's involvement. On behalf of the Grassland Society of NSW Inc, I would like to thank all our sponsors very much. To our premier sponsors; Local Land Services, NSW Department of Primary Industries, Landmark and Meat & Livestock Australia, our major sponsors; Heritage Seeds, Valley Seeds, Corteva and Agrimix Pastures, our corporate sponsors; Auswest Seeds, Pasture Genetics, Sumitomo Australia, Upper Murray Seeds, Wengfu Australia and Elders, and our local sponsors; Rabobank and Gunnedah Shire Council. Without your collective involvement, organisations like ours cannot deliver the technical programs to producers locally.

We had a great trade display with around 15 companies and organisations setting up a table. This provided a great opportunity for networking and receiving technical advice on many of the products on display.

Collectively, through the conference program, interaction with our sponsors and delegates, the bus tours and the dinner, there has been much positive feedback. The comments and suggestions for future activities have been enormously encouraging.

Practical application of soil test benchmarks for phosphorus

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Soil test benchmarks for managing extractable phosphorus (P), potassium (K) and sulphur (S) in clover-based pastures have been available in southern Australia for about a decade: (<http://www.asris.csiro.au/downloads/BFD/Making%20Better%20Fertiliser%20Decisions%20for%20Grazed%20Pastures%20in%20Australia.pdf>). These “critical” benchmark values represent the soil fertility level at which 95% of maximum pasture yield is expected to be achieved (Fig. 1). The research that underpinned their determination was outlined in the June 2019 newsletter, as well as use of the Phosphorus Buffering Index (PBI) test which allows us to predict the critical Colwell P value for different soils.

Soil tests are the tools by which we achieve benchmark soil fertility, so it is important to understand how your soil test works and how to use it effectively. There are many different soil tests for “plant-available” P, but here we will focus on the Olsen P and Colwell P tests which are widely used in Australia. In both tests, P is extracted from soil using sodium bicarbonate solutions. However, P is extracted under different conditions and time periods in each test and,

consequently, these alternative soil P tests return different values.

Soil tests provide a rapid assessment of P-availability in soil by extracting a component of total soil P that is correlated with plant growth response. As such, soil tests are analogous to using a dip-stick to measure fluid in a tank. The critical soil test P (STP) value indicates when the tank is “full”. Fertiliser decisions are then based on your objectives for topping up the soil P tank. The link above outlines the critical STP values that apply to most clover-based (e.g. subterranean clover; white clover) pastures in southern Australia when sampling soil using a 0-10 cm sampling depth. These critical values assume that most extractable soil P is in the topmost 10 cm of soil. Long-term fertiliser experiments indicate that 70-80% of P applied to most Australian soils will be retained in this soil layer with most of the remaining applied P being held in the 10-20 cm layer. (There are exceptions to this such as sandy soils with very low PBI values (e.g. <15); these soils can be P leaky. If you have a soil like this, critical P values based on 0-10 cm sampling will not be a good indicator of your soil P fertility and you should seek local agronomic advice.)

Setting your target for soil P management

The critical STP value represents an upper boundary for the P management of your soil. It is not sensible to exceed it excessively because: (i) over-use of fertiliser does not grow more pasture, (ii) high STP concentrations drive faster rates of P accumulation in the soil (i.e. “P-fixation”), (iii) the risk of P loss to streams (where it is a pollutant) is increased, and (iv) you will be wasting money.

The target you set for soil P management should be guided by the critical STP level, after taking pragmatic and business considerations into account.

Pragmatic considerations: Soil test results are always quite variable due to seasonal fluctuations in P availability, soil sampling errors, lab variability, etc. (e.g. Fig. 2). Set a target range that recognises the practicality of maintaining your soil P target level. For example, when using Colwell P tests a target range of ~5 Colwell units would be sensible. See Figs 2 and 3 for examples of using a target STP range. Note the typical difficulty of keeping inside the target range is due mainly to seasonal variations in soil P fertility and variation in pasture growth between years.

Business objectives: The purpose of applying fertiliser to a low-P soil is to increase pasture growth and, consequently, animal production per hectare. However, it is not mandatory to manage soil at its optimum fertility level. This is primarily a business decision; if you opt to maintain a suboptimal P fertility level you will grow less pasture and run less stock. There are many legitimate instances where setting a target that is less than optimal may be the preferred plan of action. For example, when aiming to conserve a pasture species that is intolerant of plant competition or high grazing

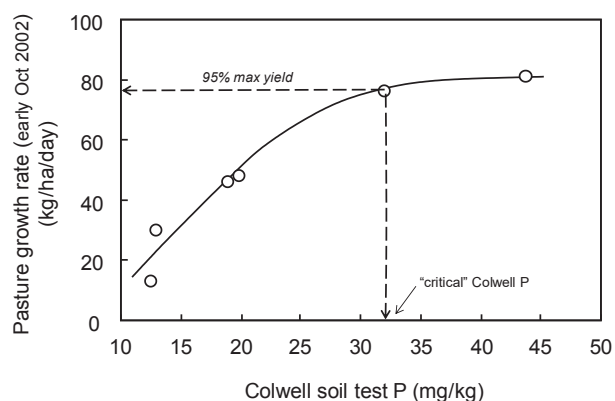


Figure 1. Growth in response to improved soil P fertility by a subterranean clover-rich pasture at Bookham, NSW (October 2002).

pressure, or when high pasture yields are not expected due to other constraints, and/or the economics of fertiliser use do not stack up. Some businesses prefer to run lower stocking rates out of preference and/or as a risk management strategy. Having set your target for soil P management, the aim is to apply enough fertiliser to reach the target and then to back off to a maintenance fertiliser rate that will hold paddocks in the target range (e.g. Figs 2 and 3).

When to soil test

It is possible to test soils at any time of the year. However, STP concentrations fluctuate seasonally so it is important to test soil at the same time each year to reduce the temporal “noise” in soil test results. This is illustrated in Figure 2 where solid grey lines show the wide seasonal variability of soil tests taken every 6 weeks, while the dashed lines show how annual testing at the same time each year can smooth out the seasonal effects to some extent. Soil samples taken at random intervals will accentuate the possibility that a fertiliser decision may be based on a seasonally high or low value.

It is usually recommended to test soil when the pasture growth rate is at its maximum for the year (i.e. typically during spring). This is when the demand for soil nutrients by a rapidly growing pasture is at its greatest. A myriad of reasons are advanced

to support this practice (e.g. soils are moist and sampling is easy, soil cores remain intact and sampling accuracy is improved; results are obtained in time to order fertiliser for the next season, it is wise to separate the timing of buying fertiliser from the application date so that “deals” can be made. etc.). However, the most important agronomic reason is that the soil test is timed appropriately to assess whether nutrient levels can support maximum pasture growth. Fertiliser is usually then ordered and applied close to the opening of the following growing season. A spike in nutrient availability follows fertiliser spreading, but available nutrient concentrations typically fall as the growing season progresses (e.g. see the seasonal fluctuations in Olsen P concentration shown in Fig. 2). A regime in which: (i) soil testing coincides with maximum pasture growth (e.g. spring), and (ii) fertiliser is spread close to the start of the growing season (e.g. late summer/autumn), ensures soil P levels will be maintained at, or above the soil fertility target over the growing season.

Monitoring soil P fertility

It has been recommended in the recent past that soil tests can be taken about every 3-5 years and rotated around the paddocks on a farm. Recent long-term soil P monitoring experiments have changed our opinion of this advice. The intrinsic variability of soil test

results means that fertiliser decisions may inadvertently be based on atypically high or low results. Monitoring soil P fertility with annual testing allows fertiliser decisions to be based on trends in soil fertility data, rather than on single soil test results (e.g. Fig.3).

Rules-of-thumb and calculators (e.g. the “Five Easy Steps” P tool; <https://www.mla.com.au/extension-training-and-tools/tools-calculators/phosphorus-tool/>) can be used to estimate the amounts of fertiliser to apply when building or maintaining soil P fertility. However, because of the intrinsic variability in soil P fertility, these calculations are best considered as “ball-park” estimates. Soil fertility monitoring allows the calculated fertiliser rates to be checked and adjusted once the trends in the soil test data have been established.

In practice, we also find that available-P is, at least partially, conserved in the soil in dry years. When monitoring confirms this has happened, you can back-off your next P fertiliser application without compromising pasture yield. Figure 3 reports a farm-level demonstration of a STP monitoring program that allowed stocking rate to be doubled and maintained over a 25-year period, while the P-fertiliser cost of production has continued to decline. The initial drop in P fertiliser cost occurred when the target STP range was reached and capital

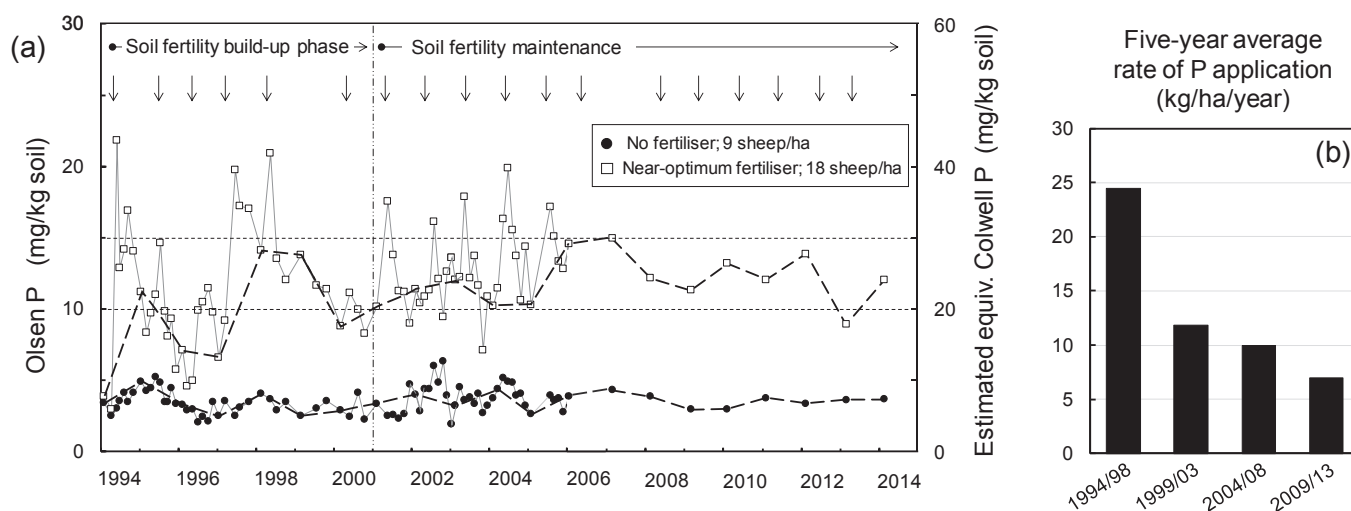


Figure 2. (a) Soil test P results from a long-term grazing experiment at CSIRO’s Ginninderra Experiment Station. (Redrawn from Simpson et al. 2015). The target for soil P management was 10-15 mg Olsen P/kg soil. Arrows indicate when P fertiliser was applied. Soil tests were taken initially at about 6-week intervals. These data show that P availability is seasonally variable. Soil tests were taken annually at the same time each year over the last 9 years of the experiment. The annual tests are not subject to extreme seasonal variations, but they still vary because soil and climatic conditions vary between years. “Trends” developed using the annual data collected over time are the best way to check and adjust fertiliser management. (b) The five-year average rates of P application (kg P/ha) required to build towards and then maintain the STP target fertility level in the fertilised treatment

(building) rates of fertiliser input could be replaced by lower maintenance rates of application. Ongoing declines in P fertiliser use were most probably due to proactive decisions to reduce fertiliser inputs after dry seasons when soil P levels were conserved. However, research also tells us that continuing fertiliser use should have a “P-sparing” effect (i.e. each subsequent application of P should become more effective) because the chemistry of the soil is modified by loading P onto the soil particles. It is difficult to know how much P-sparing has contributed to the declining P input requirement in this example.

The bottom line: monitoring soil P levels can help to deliver high P-use efficiency on farm.

Soil testing costs

Soil test labs now recognise that many farms are moving to soil test monitoring and are adapting to this with customised soil test options in which you can specify only the key tests that you need to be watching. For most soils this means an extractable-P test, but for many soils it is also wise to monitor sulphur and/

or potassium depending on whether these nutrients are likely to be deficient in your soil type. Start with a comprehensive soil test (particularly to assess phosphorus buffering index, pH, aluminium, cation exchange capacity, salinity, etc.). Once confident about the properties of your soil, use comprehensive tests at much less frequent intervals to check the ongoing status of the soil. With thought, annual testing for key nutrients (monitoring) can be implemented at a similar cost to the less frequent, comprehensive testing that you may already be doing.

Acknowledgements: Richard Simpson is presently researching ways to increase the effectiveness of phosphorus fertiliser use in the “RnD4P-15-02-016 Phosphorus Efficient Pastures” project. This project is supported by funding from the Australian Government Department of Agriculture as part of its Rural R&D for Profit program, Meat and Livestock Australia, Dairy Australia, Australian Wool Innovations Ltd.

Further reading:

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Simpson R, Graham P, Davies L, Zurcher E (2009) Five easy steps to ensure you are making money from superphosphate. CSIRO & Industry and Investment NSW, Australia, Farm Advisory Booklet and Computer Decision-support Tool. Available at: <https://www.mla.com.au/extension-training-and-tools/tools-calculators/phosphorus-tool/>

Simpson R, Haling R, Virgona J, Ferguson N (2017) Managing the phosphorus cycle in clover-based pasture for more effective use of P-fertiliser inputs. Proceeding of the 58th Annual Conference of the Grassland Society of Southern Australia. pp 17-21.

Simpson RJ, Stefanski A, Marshall DJ, Moore AD, Richardson AE (2015) Management of soil phosphorus fertility determines the phosphorus budget of a temperate grazing system and is the key to improving phosphorus-balance efficiency. *Agriculture Ecosystems and Environment* 212, 263–277.

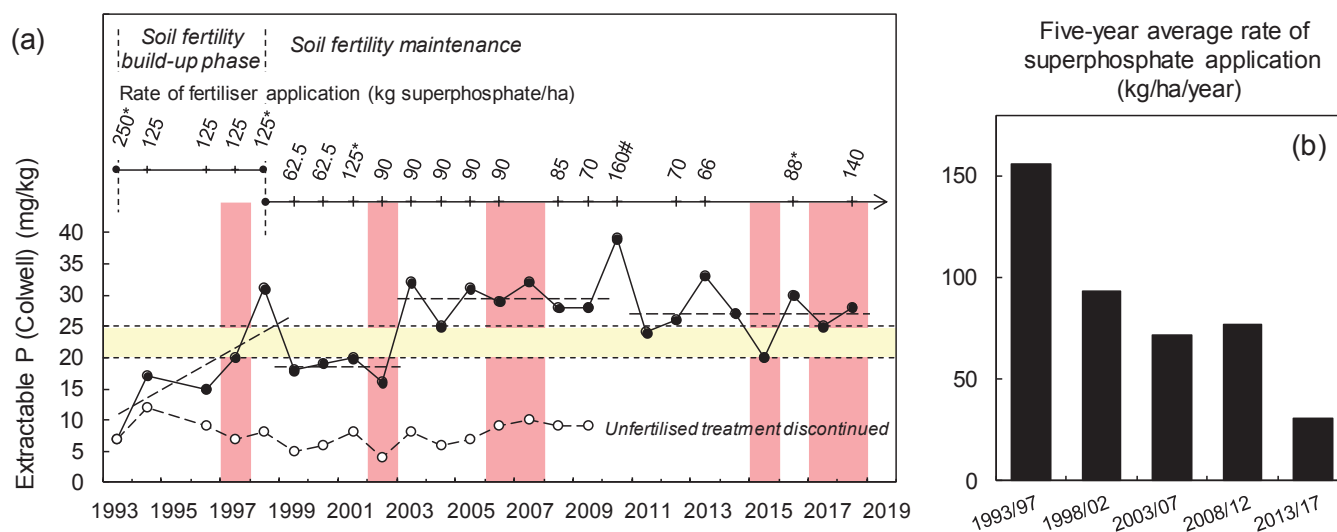


Figure 3. (a) Fertiliser application history and results of annual soil test P (STP) monitoring in a Grazing Systems Demonstration at, Bookham, NSW. Asterix (*) indicates application of molybdenum with the superphosphate fertiliser. # indicates a year in which twice the planned rate of superphosphate application occurred by accident. The shaded horizontal panel delineates the target range (20-25 mg P/kg soil) originally set for STP management. Shaded vertical panels indicate years in which spring droughts have occurred. Spring droughts were initially followed by elevated STP concentrations. Once this was understood, the STP monitoring was used to determine whether fertiliser was needed in the year after drought. The fertilised field carried 12-15 wethers/ha with continuous grazing once the target STP concentration had been achieved. Soil test results from an adjacent unfertilised paddock which carried 6 wethers/ha are also shown; this treatment was discontinued in 2010. The long-dash lines show “trends” in the data which were used at intervals to gauge progress in STP management. (b) Fertiliser application rates (shown as averages over 5-year intervals) have declined since the inception of the Demonstration trial. However, STP concentrations and stock carrying capacity have been maintained. Source: Graham (2006) and P. Graham (unpublished data).

Research Update

Keeping you up-to-date with pasture and grassland research in Australia. Abstracts of recently published research papers will be reprinted as well as the citation and author details in you wish to follow up the full paper.

Minerals in pastures—are we meeting the needs of livestock?

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Abstract: In Australia, ruminants rely on introduced pastures or native vegetation for most or all of their nutritional requirements. Recent pasture selection and breeding

programs have focused on improving or facilitating the establishment, persistence and growth of plants, with little emphasis on nutritive value or mineral composition. In some cases, such as selection for phosphorus (P) utilisation efficiency, mineral supply from plants may even decrease. Currently, a significant proportion of pasture plants contain less calcium (Ca), P, magnesium (Mg), sodium (Na), sulfur, copper, iodine, zinc, selenium or cobalt than is required for growth and reproduction, with significant genetic variation among and within legumes and grasses. Young crops and shrubs are now also an integral part of grazing systems. Many young crops contain concentrations of Ca, Mg, Na and potassium (K) that are low or imbalanced for ruminants. Conversely, many shrubs contain minerals at levels higher than

required by livestock. Livestock requirements may have changed in recent years with animals selected for more efficient feed conversion, and flock and herd structures changed to increase productivity. New studies have indicated that higher mineral supply may be beneficial during periods of oxidative stress related to growth, reproduction, and external stresses such as heat and parasites. These results indicate that mineral supply from pastures is not sufficient to support high levels of production for at least part of the year and that designing grazing system to incorporate the complementary benefits of grasses, legumes, crop forage and shrubs may improve the mineral status of grazing ruminants.

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Nitrate is safe to feed ad libitum in molasses roller drums as a source of non-protein nitrogen

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Abstract: We investigated voluntary intake, growth and safety of cattle offered low-quality forage diets plus isonitrogenous molasses-based liquid supplements containing either urea (U) or a calcium nitrate-containing compound (NO₃). We hypothesised

that changing the nitrogen source from U to calcium nitrate would not jeopardise animal health or affect intake. Angus cattle (n = 24) were

allocated to six pens, with three pens each receiving a molasses supplement containing U or a molasses supplement containing NO₃ for 31 days. There was a trend (P = 0.06) for the NO₃ treatment group to consume more of the (oaten chaff) basal diet than the U treatment group. The U group consumed more supplement than did the NO₃ group (1.31 vs 0.40 kg DM/head.day s.e.m. = 0.094, P < 0.0001), but total DM intake was not different (6.45 vs 6.10 kg/head.day, P = 0.15). Mean final animal liveweight was not different between treatments. Methaemoglobin levels were higher in the NO₃ group (2.1 vs 1.3%, P < 0.001). Low

consumption of nitrate was also reflected in there being no effect of nitrate on the methane production rate when assessed in open-circuit calorimetry chambers (7.1 vs 7.0 g/head.2 h, P = 0.898). It is confirmed that nitrate may be safely provided to cattle when dissolved at 154 g/kg in a molasses-based liquid supplement available ad libitum, but may not be an effective methane mitigant due to low NO₃ intake. It is speculated that nitrate may be a useful tool to limit voluntary intake of non-protein nitrogen supplements.

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1288-1292

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A big thank you to our sponsors for 2019–2020

Thank you to our sponsors for the upcoming financial year - Premier sponsors; Local Land Services, NSW Department of Primary Industries, Landmark and Meat & Livestock Australia, Major sponsors; Heritage Seeds, Valley Seeds, Corteva and Agrimix Pastures, Corporate sponsors; Auswest Seeds, Pasture Genetics, Sumitomo Australia, Upper Murray Seeds, Wengfu Australia and Elders, and our local sponsors; Rabobank and Gunnedah Shire Council.

UNE GRASS Program Update

This article is to update, thank and acknowledge the NSW Grassland Society for their generous sponsorship of the University of New England (UNE) Growing Regional and Agricultural Students in Science (GRASS) Program. This scholarship program has been transforming students perspectives on future studies and the careers in science based agricultural industries for eleven years. The support of sponsors enables our program to continually develop and create a lasting impact upon student's futures.

The response we have received from students the past two years has been amazing, with applications and engagement reaching record highs, in 2018 the UNE GRASS scholarship extended linkage with 24 schools from the Mid North Coast, North East and North West regions of the state. This extended outreach led to engagement with over 650 students. Consequently, we were thrilled to receive the greatest number of applicants for the camp - 55 students. This year we have also had a similarly enthusiastic response with students applying from as far as Queensland and the Northern Territory.

Through the generosity of the NSW Grasslands Society, talented students such as Jamie Nordstrom, Haylee Murrell and Megan Seis were able to partake in a five day industry placement with an industry host of their choice to complete their Full Industry Placement Scholarship.

Jamie is passionate about a career in the poultry industry and has commented that for him the "GRASS Program was a life changing experience providing the foundation for interested agricultural and science students to take up a career in their chosen sector of the Australian Agricultural Industry." For Jamie after the camp and five days of hands on practical activities with Poultry Hub Australia, he is now strongly considering a career in the Agricultural industry.

For Haylee Murrell from Gunnedah, her placement made possible by the NSW Grassland Society took her to the sunny Coffs Harbour Coast with the Mid North Coast Local Land Service. Even before attending the GRASS Camp Haylee knew the program to be a "recognisable scholarship that encouraged and fostered young agricultural student's growth in the primary industries sector."

Following her participation in the camp and the five day placement Haylee was still adamant to say that she "loved absolutely everything offered over the course of the program! Each workshop was diverse and engaging and could not fault it." Haylee's week with the LLS was full of interesting sessions from strategic plans, biosecurity, dog baits, pests, horticulture, to a dairy open day. This experience was a chance for Haylee to gain a "short but insightful view of agriculture on the coast."

Megan Seis was also fortunate enough to be hosted by the Northern Tablelands Local Land Services, Sustainable Agricultural Team as a result of generous sponsorship. During Megan's week of placement, she was able to work with "some diverse and knowledgeable people who really gave her an insight into a number of different roles and positions available within the agriculture industry", along with the pathways they followed to arrive where they are today, which was an inspiring experience.



Data analysis complete by an external body has confirmed, students engaged by the UNE GRASS Program, now studying at UNE are performing at a higher grade point average, have higher retention rates and are completing their studies at a faster rate to fellow peers.

The NSW Grassland Societies sponsorship of the UNE GRASS Program was absolutely invaluable in granting students such as Jamie, Haylee and Megan experiences that will shape their future career pathways and opportunities. We hope to continue to build our relationship with sponsors to support the future of the program and the next generation of agricultural leaders to flourish.

For more information contact the UNE GRASS team; Susanna Greig - 0457562680, sgreig2@une.edu.au or Elizabeth Argue - 0448767872 eargue2@une.edu.au



Grazing lingo - what does it all mean

Term	Definition
Grazing duration or grazing	The time livestock spend grazing a paddock.
Grazing intensity	The combination of stocking rate and grazing period. Pasture utilisation is lifted by increasing the grazing intensity, however if the intensity is too great: performance per animal will decline pasture regrowth will slow groundcover benchmarks (minimum 70%) can be harder to maintain, and weed invasion can increase
Rest periods	The time in a rotational grazing system when the stock are not in the paddock, so the pasture can re-grow before the next grazing. Rest period is sometimes referred to as the grazing interval.
Rotational grazing	Livestock are moved to a 'new' pasture paddock regularly, based on one of three factors Time based - livestock are moved using fixed time intervals. For example, with a four-paddock system, stock might spend two weeks in each paddock, giving a six-week rest period. The philosophy is to keep the management simple without any pasture monitoring or fodder budgeting. As this system is often the starting point for rotational grazing, the number of existing paddocks usually dictates the grazing and rest periods. Plant growth based - livestock are moved using plant growth criteria (feed on offer, pasture re-growth phase, or leaf stage). The philosophy is based on optimising pasture performance (for example: to keep the pasture in growth Phase 2). Animal intake based - animal intake criteria dictate the movement of livestock. The philosophy is based on controlling livestock intake to a desired level, by calculating the amount of feed to allocate per dry sheep equivalent (DSE) per day. This is either to 'ration' feed intake (e.g. in autumn, to save feed for winter), or to provide maximum pasture availability to certain livestock to optimise growth. Rotational grazing means usually leads to bigger mob sizes in paddocks, which equates to higher stocking densities. This increases pasture utilisation by reducing the potential for livestock to selectively graze.
Set stocking (or continuous grazing)	Stock are run in one paddock year round and the pasture receives no rest. Stocking rate is set to match paddock pasture production over the whole year, but can be increased or decreased in response to changes in forage availability. In reality few producers set stock in the strictest sense. Most 'set stockers' have some ability to move stock when feed runs out.
Stocking rate	The number of livestock carried per hectare. Stocking rate is usually calculated over a full year, and expressed in dry sheep equivalents (DSE) per hectare per year. Stock density is usually calculated over a shorter time period and can be expressed as DSEs or animal class/ha/week (or similar shorter time period, such as 100 ewes/ha for 20 days).
Tactical grazing	The practice of using a range of grazing methods through a single year, or series of years, to meet different animal and pasture objectives at different times.

This article was sourced from Meat and Livestock Australia <https://www.mla.com.au/research-and-development/Environment-sustainability/Sustainable-grazing-a-producer-resource/grazing-management/grazing-lingo---what-does-it-all-mean/>

Acid soil management in the 21st century

In response to producers' renewed interest in soil acidity the Grassland Society of NSW (GSNSW) is co-investing in a two-year project: 'New approaches to tackling soil acidity in perennial pasture systems' that will answer key questions: What is the status of soil pH under temperate perennial pasture systems in the NSW southern and central slopes? Are current liming programs keeping acidity in check? If not, why not; and what can be done to improve the efficiency of liming programs?

The project commenced in July 2019, with funding from GSNSW, Holbrook Landcare Network (HLN), NSW Department of Primary Industries (NSW DPI) and the Australian Government Landcare Program, and the support of Mid Lachlan Landcare. The two main components of this project are: (i) a survey of perennial pasture paddocks that will provide a check of the current status of soil pH in layers from depths of 0-30 cm on the NSW central and southern slopes;

and (ii) two large-scale demonstration sites to monitor pH change to depth under a range of lime treatments; one to be located near Holbrook and the other in the Cowra/Canowindra area.

Lead by HLN, the project team combines the technical expertise and local experience of NSW DPI and GSNSW, who will work closely with Murray and Central Tablelands Local Land Services, industry and private consultants. Local data will be used to revisit the principles of managing acid soils and introduce new information and techniques to give producers and advisors the skills and confidence to assess and adjust their acid soil management programs to meet short and long-term production targets and soil management objectives.

Liming has been an important component of crop and pasture production for over 30 years on the acidic soils that dominate some of the most productive livestock regions of NSW. However, acid soil management practices have barely changed and their effectiveness of has not been checked. This is despite significant modifications to livestock management and farming practices and positive changes to key economic drivers (productivity, interest rates, and land and commodity prices).

The urgent need to review acid soil management in the perennial pastures was highlighted when acidic subsurface layers found

in recent surveys of cropping soils in the medium and high rainfall zones of southern and central NSW (Burns et al 2018) were also identified in pasture paddocks. Severely acidic layers (pH_{Ca} < 4.5) at 5-15 or 20 cm were present in over 50 percent of the most productive crop and lucerne paddocks surveyed. Even on those paddocks with a long history of lime application, surface-applied lime at commonly used rates had little or no impact on increasing pH below 5 cm. It was no surprise that 'soil acidity' was the most relevant topic at the 2018 Pasture Updates GGNSW held at Cudal and Holbrook. It hadn't been on the radar as most producers do not monitor subsurface soil pH and the traditional ad hoc approach to soil sampling at depths of 0-10 or 0-15 cm does not detect acidic layers at depths of 5-15 cm.

Bringing producers up to speed on improved methods to measure and monitor soil pH is essential for effective management of soil acidity and the sustainability of perennial pasture systems. This project will highlight the importance of detailed sampling and monitoring to track the impact of liming programs on soil pH. In the short term, information collected from surveyed pasture paddocks and the demonstration sites will give producers the confidence to customise acid soil management programs at the paddock level. In addition, the demonstration sites provide a valuable resource beyond the term of this project, creating opportunities for future research projects to, for example, track pH change, pasture persistence and production under a range of lime treatments.

Reference:
Burns H.M. Burns and M.R. Norton (2018) Subsurface acidity threatens central and southern NSW cropping areas. In: Proceedings National Soil Science Conference, Canberra 2018.

For a copy of this short paper, please contact Helen Burns at helen.burns@dpi.nsw.gov.au



Checking for acidic subsurface layers using a soil pH kit against plant root growth can help confirm whether soil acidity may be an issue affecting plant productivity. In this photograph, the root of Wedgetail wheat did penetrate the severely acidic layers below 5 cm. From the colour chart the green shows a 0-5 cm pH about 6 (using the 1:5 water test) (which is about 5.2 from the CaCl₂ test), but dropped to pH 5 (water test), which is pH 4.2 CaCl₂

From the President

If only the whole state could look like the South West Slopes! Hello to you all, and it is in such contrasting pasture and stock feed situations that producers in NSW find themselves. Much of inland South Western NSW is pretty good season wise, while Northern NSW is wearing the full brunt of the ongoing drought. Many parts in between, especially Central NSW is not far behind the North, and deteriorating rapidly. I do hope everyone is coping as best they can in such times; keep thinking of, and talking to, friends, family and neighbours.

I continue to see truckloads of hay heading north and wonder just how much longer this has to go on for. Hay supply is extremely tight, and many crops are now seeing stock introduced to them as a means of recouping some return as the 'water bucket' dries up. Sadly, the BOM has no good news for us in site. Pockets may see the odd rain

event, however the 10 mm and greater falls just seem to keep eluding us. It's getting scary when your neighbour quotes the rainfall amount to two decimal places, even worse when the total is still less than 5 mm!!

Despite the dry in the North, George Trueman (Conference Convenor - Gunnedah) and his committee have just conducted a very successful 31st 'Biennial' Conference of the Grassland Society of NSW Inc. at Gunnedah in July. I thank and congratulate all involved in collectively putting such a comprehensive pasture program together. Attendees topped at 160, some travelling more than 500 km to attend. A great effort all round, with the bus tours again proving very successful and a chance to see plenty of pasture activities 'in the flesh'. As always, the society wishes to thank all our sponsors for their very significant contributions to the conference. The knowledge and product range in that sponsors hall was

tremendous, and I do hope the

attendees took full advantage of the experience present.

Given the dry, there is not a lot planned at this stage for Spring. The Grassland Society has partnered with NSW DPI and the Holbrook Landcare Network to commence some new liming practice and application work. This is an NLP funded project that Helen Burns, NSW DPI Wagga, will co-ordinate with two key sites to be established in the Cowra and Holbrook areas. We do hope to bring you more information on this project as it comes to light and see the establishment of such work critical to extending the potential new liming strategies for the future.

Stay well, keep talking, and all the best.
Regards,
David Harbison,
President.

SAVE THE DATE - July 6-9 2020

Australian Grassland Association Inc.

Research Series No 5

July 6-9 2020

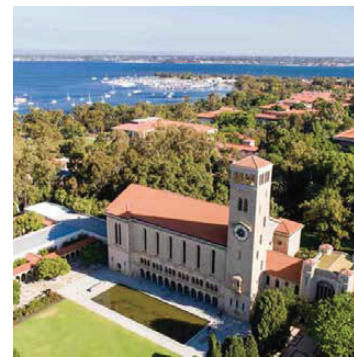
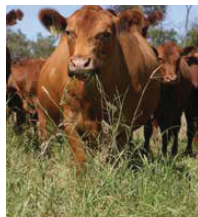
Resilience in the face of change - pastures for the future
University of Western Australia, Perth Australia

This symposium offers the opportunity for you to present your research and interact with colleagues from around Australia who are actively engaged in lifting the pasture productivity of the grazing industries and mixed farming systems.

The scientific program will feature a mix of invited and contributed presentations. In addition the symposium will incorporate a full day field tour.

Add the dates to your calendar and forward to your colleagues. A call for papers will be distributed shortly.

Register your interest at www.australiangrassland.org.au to receive further updates.



Contact: Stuart Kemp: +61 437 278 873
aga@pasturewise.com.au

www.australiangrassland.org.au

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The Grassland Society of NSW Inc is a unique blend of people with a common interest in developing our most important resource - our Grasslands

The Grassland Society of NSW was formed in March 1985. The Society now has approximately 500 members and associates, 75% of whom are farmers and graziers. The balance of membership is made up of agricultural scientists, farm advisers, consultants, and or executives or representatives of organisations concerned with fertilisers, seeds, chemicals and machinery.

The aims of the Society are to advance the investigation of problems affecting grassland husbandry and to encourage the adoption into practice of results of research and practical experience. The Society holds an annual conference, publishes a quarterly newsletter, holds field days and is establishing regional branches throughout the state.

Membership is open to any person or company interested in grassland management and the aims of the Society. For membership details go to www.grasslandnsw.com.au or contact the Secretary at secretary@grasslandnsw.com.au or at PO Box 471 Orange 2800

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If you are interested in reactivating an old branch or forming a new branch please contact the Secretary at secretary@grasslandnsw.com.au or by mail at PO Box 471 Orange NSW 2800

Grassland Society of NSW Snippets



Next Newsletter: The next edition of the newsletter will be circulated in December 2019. If you wish to submit an article, short item, a letter to the Editor or a photo please send your contribution to the Editor - Carol Harris at carol.harris@dpi.nsw.gov.au or DPI NSW 444 Strathbogie Road Glen Innes 2370. The deadline for submissions for the next newsletter is the 1st November 2019.



Electronic newsletter: Don't forget you can receive the Grassland Society of NSW newsletter electronically. Just email your details to Janelle (secretary@grasslandnsw.com.au) and you will be added to the list. Next newsletter you will receive an email notification with a link to the newsletter on the website.



Fan of Facebook - make sure you check out the Grassland Society of NSW Facebook page. You can either search for GrasslandNSW or access the Facebook page through our web site. Pasture Update details will be posted on the Facebook page as well as the website. Please feel free to Like Us, as well as post photos of pasture and/or related topics in your area.

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