



# GRASSLAND SOCIETY OF NSW INC.

## Newsletter

It was good to hear that many areas of the state experienced useful falls of rainfall recently and while this is a positive it does not constitute a major break from drought. As such close to 100% of NSW is still dealing with drought conditions.

Please remember that there is an array of information and support available if you need it. The NSW DPI DroughtHub ([www.dpi.nsw.gov.au/climate-and-emergencies/drougthub](http://www.dpi.nsw.gov.au/climate-and-emergencies/drougthub)) is a good place to start, but there are many other organisations that you can contact including your local Rural Financial Counselling Services (<https://www.raa.nsw.gov.au/rfc>), the Country Woman's Association ([www.cwaofnsw.org.au/droughtaid.html](http://www.cwaofnsw.org.au/droughtaid.html)) and the Centre for Rural and Remote Mental Health (<https://www.crrmh.com.au/>) to name a few.

A new edition of "Managing and preparing for drought" has recently been released and provides relevant information to help make informed decisions on how to manage the current drought and prepare for and manage future dry conditions. More information about the guide can be found on page 10.

Also in this issue we continue a series (pages 3 and 5) of articles adapted from the NSW DPI publication "Temperate perennial pasture establishment guide - Steps to ensure success" focussing on the main factors that need to be considered in the planning and establishment of perennial pastures.

If you haven't already done so, don't forget to renew your membership subscription. Annual subscriptions of \$60 for 2018/2019 were due 1 July

2018. Payment can be made either by cheque or electronically. You can also go to [www.grasslandnsw.com.au](http://www.grasslandnsw.com.au) and access the payment page via the green "JOIN NOW" button. Payments are processed through PayPal, but you don't need a PayPal account - simply choose the option to "Pay with a credit or debit card" which is below the login area on the PayPal page. Don't forget to add your name to the comments box so we know you have paid.

*Carol Harris,  
Editor*



### Grassland Society of NSW

#### TRAVEL GRANTS



The Grassland Society of NSW is able to assist members through its Travel Grants program.

Travel grants are open to financial members of the Society with at least two years of continuous membership prior to the date of application. Funding is available to attend conferences, symposiums or other activities and events associated with grassland science.

More details can be found on the membership tab of the Grassland Society of NSW website [www.grasslandnsw.com.au](http://www.grasslandnsw.com.au) - or by contacting the Secretary ([secretary@grasslandnsw.com.au](mailto:secretary@grasslandnsw.com.au))

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## The Grassland Society of NSW sponsors GRASS Program

The University of New England's Growing Regional and Agricultural Students in Science (UNE GRASS) program thanks the NSW Grassland Society of NSW for their valuable sponsorship and support.



The support of generous sponsors enables our program to develop and create lasting impacts upon student's future outlook in the innovative science based agricultural fields.

This year the response from students has been amazing, with applications and engagement exceeding previous years and some inspiring experiences associated with the camp and industry placement opportunities beginning to unfold.

year we are thrilled to have received the greatest number of applicants for the camp, totalling 55 students. From this, 34 students were invited to take part in the all expenses paid student camp, which ran July 2&3, 2018.

Following the camp, 16 applicants have been offered the opportunity of a five day industry placement of their choice. We are excited to be able to present students with such a vast array of exceptional quality industry placements and hosts this year, that will cater to many tastes and motivate

students toward their future career pathways.

Students will be completing 5 day industry placements working with soil scientists, ecologists, horticulturalists, viticulturalists, agricultural extension officers, precision agriculturalists, animal and plant geneticists as well as agronomists. These opportunities are far beyond the classroom experience making them aspirational building and transformational

Every student engaged in this full scholarship will report back on this scholarship experience.

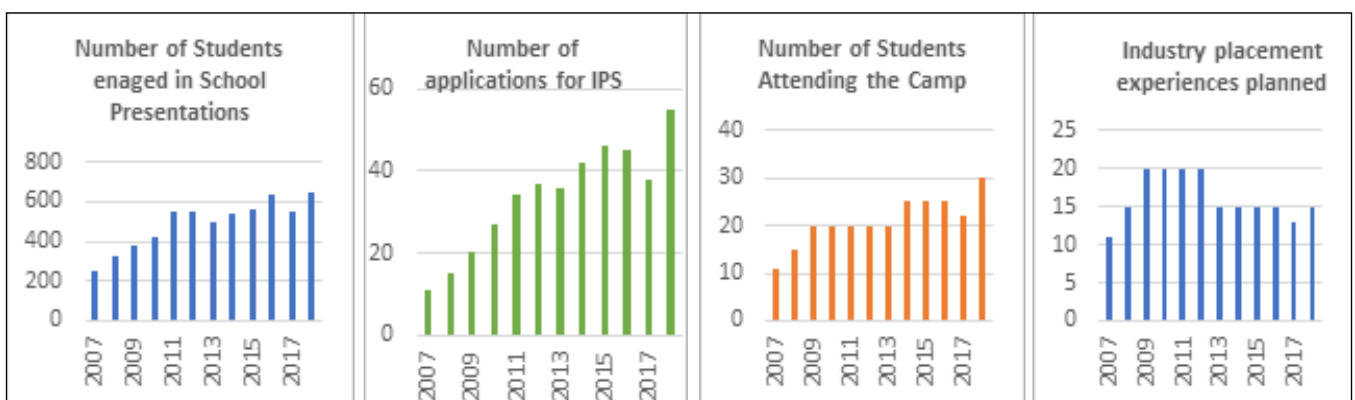
The reporting back session will be held at UNE in February, to which we extend an invitation to members of NSW Grasslands Society. This session allows students to report on their scholarship experience to parents, academics at UNE, industry leaders and the VC, UNE.

We are terribly proud to present the graphs below indicating how this UNE GRASS Scholarship program is tracking.

For more information contact Susanna Greig, Science Education Officer, Growing Regional and Agricultural Students in Science (UNE GRASS).

E: [susanna.greig@une.edu.au](mailto:susanna.greig@une.edu.au)  
P: (02) 67 732809  
M: 0457562680

Website: <http://www.une.edu.au/grass>  
Facebook: <https://www.facebook.com/unegrass>



In 2018, the UNE GRASS scholarship opportunity has extended linkage with 24 schools from the Mid North Coast, North East and North West regions of the state. This extended outreach has led to engagement with over 650 students. Consequently, this

experiences for our next generation of motivated school leavers embarking on a career supporting Australian agriculture.



## Establishing pastures - Soil issues affecting pastures

*Editors Note: This article "Soil issues affecting pastures" is a continuation of a series of articles modified from the Temperate perennial pasture establishment guide - steps to ensure success published by the NSW Department of Primary Industries.*

*The Temperate perennial pasture establishment guide is available at [www.dpi.nsw.gov.au/tppeg](http://www.dpi.nsw.gov.au/tppeg)*

### Sodic soils and poor soil structure

Soils with high levels of exchangeable sodium ( $\text{Na} > 6\%$  of the CEC) are known as sodic soils. Excessive Na has the effect of dispersing clay particles, resulting in undesirable physical properties, including poor aggregate stability.

#### Characteristics of sodic soils

Sodic soils lack structure and set hard when dry. They are:

- structurally unstable and 'collapse' when wet;
- highly erodible, particularly when disturbed (soils with exposed sodic subsoils are prone to gully erosion);
- prone to waterlogging and have poor internal drainage;
- lacking in pores, and so there is poor air movement and few cracks for roots to penetrate;
- not trafficable when wet;
- prone to compaction and pugging (trampling of the soil's surface by sheep and cattle hooves) when wet; and
- liable to form a surface crust, which reduces water infiltration and can affect seedling emergence.

Note: Sodicty should not be confused with salinity. Sodic soils have excessive amounts of sodium attached to the clay, whereas saline soils have excessive amounts of salt (sodium chloride) dissolved in the soil water.

### Reducing the impact of sodic soils

#### Gypsum (calcium sulfate) and lime (calcium carbonate)

Gypsum is the product most commonly used for ameliorating sodic soils and is often promoted as a 'clay breaker'. Gypsum only improves the structure of soils that are high in sodium by replacing the excess sodium with calcium, and may need to be re-applied within 2 to 3 years. It will not improve the structure of soils that are not sodic ( $\text{Na} < 6\%$ ) or soils with low clay content.

In cases where soils are both sodic and acidic, and when lime is relatively cheap compared with gypsum, lime is a better choice of product. Lime contains twice as much calcium as gypsum and will improve the structure of sodic soil while also increasing pH.

Once the gypsum or lime has improved the physical condition of the soil, the best way to maintain the improved soil structure is to adopt management practices such as minimal soil disturbance and establishment of vigorous pastures to increase organic matter levels and thereby improve the structural stability of the soil.

#### Soil nutrient decline

Soils fertility varies with soil type (the inherent soil fertility), fertiliser history and product removal.

A sustainable production system requires that nutrients exported in agricultural products are replaced. Failure to replace nutrients is really a form of mining. For nutrients such as iron (Fe), there may be hundreds of years of supply in a typical soil. However, for some important nutrients, such as Nitrogen (N), Potassium (K) and Sulfur (S), soil reserves can be quickly exhausted within a few years.

### Symptoms of soil nutrient decline

#### Nitrogen deficiency

- Reduced pasture growth
- Yellowing and premature death of older leaves; N is concentrated in the younger, darker growth.

#### Phosphorus deficiency

- Poor root development, stunted growth, spindly stems, delayed maturity
- Purplish colouration on older leaves
- Poor seed production
- Legume growth is poor, leaves are very dark green
- Legume content will decline

#### Sulfur deficiency

- Yellowing of leaves, but unlike N deficiency, the new growth is not darker green.

#### Potassium deficiency

- Pale spots on the leaves of legumes
- Yield reductions, especially in paddocks with a history of hay or silage production
- Poor seed production (especially in legumes).

#### Molybdenum deficiency

- Symptoms similar to N deficiency
- Poor or ineffective nodulation in legumes, as indicated by a white (not pink) colour inside the nodules.

#### Soil erosion

Soil erosion is a very important sustainability issue. There are three main types: stream bank/gully erosion, sheet/rill erosion and wind erosion.

Stream bank and gully erosion are often quite spectacular but tend to be site specific. They occur where

large volumes of surface run-off are concentrated. Management options need to target reducing or diverting the surface run-off. Particular care should be taken not to disturb soils in flow lines, especially those with dispersive (sodic) subsoils.

Sheet erosion and erosion caused by wind is less visible but removes valuable topsoil, which can have a major impact on soil fertility. It can take up to 100 years to form 1 mm of soil, which is equivalent to 0.14 t/ha/year. Losses from erosion can range from 0.24 t/ha/year under pasture with more than 70% ground cover, to more than 60 t/ha/year from bare fallows.

Erosion also has major off-site effects on air and water quality (turbidity and nutrient loads).

Reduce soil erosion by maintaining ground cover at a minimum of 70% and minimise soil disturbance by adopting minimum tillage practices.

#### Acid sulfate soils

Acid sulfate soils are typically only found in landscapes less than 5 m above sea level. These soils contain naturally high levels of iron sulfide. When disturbed and drained, the sulfide oxidises to form sulfuric acid, which then acidifies surface and groundwater.

#### Effects of acid sulfate soils

- Severely limit plant growth due to toxic levels of iron and aluminium in the soil
- Cause acidic run-off into waterways
- Corrode concrete, iron, steel and some alloy structures.

#### NEW MEMBERS

*The Grassland Society of NSW welcomes new members*

Tyler Austin- Coolah; Jeff McCormick- Wagga Wagga; and J & K Roberts- Cootamundra



# Pasture Genetics

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# Establishing pastures - Pasture species selection

*Editors Note: This article "Pasture species selection" is a continuation of a series of articles modified from the Temperate perennial pasture establishment guide - steps to ensure success published by the NSW Department of Primary Industries.*

The Temperate perennial pasture establishment guide is available at [www.dpi.nsw.gov.au/tppeg](http://www.dpi.nsw.gov.au/tppeg)

The species and varieties selected can affect pasture persistence and production. Establishment costs may take many years to recoup, so it is important to select species and varieties that persist. The cost of seed alone is a poor basis for selecting a species or variety. Consideration should be given to climate, soil type, landscape, enterprise type and desirable plant traits.

## Climatic considerations

### Rainfall

Select pasture species and varieties with growth patterns that match your regional rainfall. Total rainfall and seasonal incidence (uniform, summer- or winter-dominant rainfall patterns) dictate the growth and production potential of a given species. Other factors such as soil depth and water holding capacity, aspect, steepness of land and ground cover should also be considered as these will influence effective rainfall, i.e. how much of the total rainfall is available for pasture growth and how much is lost via evaporation or as run-off.

### Drought tolerance

Annual species with shallow root systems are less likely to survive severe droughts compared with annuals or perennials, which have more developed root system. Plant dormancy is an important characteristic that enables plants to survive through prolonged dry periods (dormancy is discussed later in this chapter). Soil fertility status and grazing management can also influence the survival of a species during drought periods.

## Temperature and frost tolerance

Temperate pasture species are adapted to a wide temperature range, but favour temperatures between 12°C and 30°C. Growth rates increase as temperature increases, provided there is adequate moisture. Although many temperate species are tolerant of frost and will remain green over the winter months, their growth rate is minimal once temperature drops below 8°C.

Temperate grasses produce higher quality feed compared with tropical grasses – at the same growth stage.

Tropical pasture species are most productive during warmer months. Their distribution and productivity in NSW is limited by low temperatures, frost and low effective rainfall during summer. Tropical pastures are best suited to all the coastal districts and the northern and central inland areas of the lower slopes and plains of NSW. Establishment opportunities outside these regions are limited by spring and summer rainfall, soil temperature and the length of the frost-free period.

For further information on growing tropical species, refer to the booklet "Tropical Perennial Grasses for Northern Inland NSW" available from NSW DPI offices at Glen Innes and Tamworth

*Note: All pasture growth is restricted below 8°C.*

### Altitude

Altitude has a marked effect on pasture growth. In general, as altitude increases, temperatures are lower and rainfall higher. However, severe winters (including snowfalls) in high altitude areas limit pasture growth.

## Soil and landscape factors

### Soil pH and acidity

Soil acidity is a widespread issue that affects the growth and persistence of many pasture species. Species vary in their tolerance to soil pH and levels of available Al and these should be a major consideration when selecting species. Acid sensitive species such

as lucerne and phalaris (seedling stage) grow poorly or fail to persist if sown on soils with low pH and high levels of Al. Liming is effective in ameliorating acidity in the topsoil (0–10 cm), but acid tolerant species such as cocksfoot should be used where soils are acid at depth.

Every effort should be made to preserve acid tolerant native species such as weeping grass (*Microlaena stipoides*), wallaby grass (*Austrodanthonia spp.*) and spear grass (*Austrostipa spp.*) on soils which have acidity problems at depth

## Waterlogging and salinity

Species differ in their tolerance to waterlogging and salinity. Deep-rooted species such as lucerne require relatively deep, free-draining soils, while other species, such as tall fescue, are tolerant of extended periods of waterlogged conditions.

Species tolerant to waterlogging and /or salinity should be selected for paddocks that are poorly drained. For example yaninnicum sub clovers, such as the variety Riverina, are well suited to soils prone to waterlogging, while strawberry clover and tall fescue are recommended if salinity is also an issue.

## Plant characteristics

Matching plant characteristics to environmental conditions and production targets will ensure that the species and varieties sown are adapted and meet production and persistence objectives.

### Perenniality

Perennials are plants that live for more than two years. Some perennial species may live for decades under appropriate management. Biennials are plants that take up to two growing seasons to complete their life cycle. Annuals are plants that complete their life cycle in less than 12 months (one growing season) and are therefore dependent on setting seed in order to regenerate in the following year.

Perennials are an important component of pastures as they ensure

pasture stability and longevity. Their root systems are large compared with those of annuals.

### Seedling vigour

Seedling vigour is a characteristic which contributes to the 'Establishment ease' rating given to pasture and herb species. It can be associated with seed size, but there are exceptions, e.g. phalaris is considered as the perennial grass species with the least vigorous seedlings, although its seed is twice the size of cocksfoot seed

Fertility status and soil moisture availability during growth and seed development can influence the size of seed produced.

### Plant growth habit

Plants with a prostrate growth habit tend to be more competitive with weeds, and once established, more tolerant of heavy grazing and more persistent than erect types. However, these plants can be less productive in winter compared with erect types. Erect species require careful grazing management if persistence is a priority.

Some plants have the capacity to spread vegetatively with rhizomes or stolons e.g. white clover. Species with tap roots, such as chicory or lucerne, may require deeper soils compared with those with fibrous root systems, e.g. cocksfoot or tall fescue.

### Hard seed levels

Hard seed protects a species or variety against depletion of the seed bank when summer storms and false autumn breaks cause a succession of early germinations. Hard seed also provides a bank of seed capable of germinating over one or more seasons when seed set has failed.

Many legume species are described as having a certain level of hard seed. Hard seeds are impermeable to water and will not germinate until the seed coat breaks down and

becomes permeable. The level of hard seed produced can vary from season to season, with a higher proportion formed if soil moisture levels are marginal when the plants are producing and setting seed.

### Ploidy

Ploidy is a term used to describe both tetraploid and diploid ryegrasses. Tetraploid types have double the number of chromosomes as diploid types. Tetraploid varieties tend to be higher in quality than diploid varieties, e.g. more leaf and higher sugar levels.

### Dormancy and seasonal production

Many pasture species exhibit a dormancy mechanism that enables them to survive during periods of extreme conditions, e.g. winter dormancy to avoid severe cold, and summer dormancy to survive periods of heat and drought stress. Different terminology is used to describe dormancy within a given species, e.g. dormancy is used to describe the relative seasonal production of varieties of lucerne.

### Lucerne

Lucerne varieties have growth patterns ranging from winter dormant to highly winter active, although all varieties become dormant under moisture or severe heat stress. Dry matter production of all varieties peak between late spring to early autumn, when moisture is available. In Australia, dormancy of lucerne varieties is rated on a scale of 1 to 10 (1 = winter dormant, 10 = highly winter active).

#### *Winter dormant (1–4 rating)*

This group is able to withstand very low temperatures for long periods. These varieties have a distinct dormancy period, which is triggered by day length.

#### *Semi-dormant (5 rating)*

These varieties grow significantly slower in winter than in summer.

Growth may stop for a short period or it can be restricted (depending on the climate). Autumn and spring growth will be quicker than that of winter dormant varieties. Winter dormant and semi-dormant types tend to have better persistence under grazing than winter active types.

#### *Winter active (6–7 rating)*

Growth of these varieties will slow in winter but they will not become totally dormant. Their recovery after cutting or grazing is faster than the dormant varieties. Growth is not affected by day length, provided temperatures are suitable. Winter active varieties tend to have fewer tillers and bigger leaves compared with winter dormant varieties. They also have narrower and higher crowns, which mean that these varieties are more susceptible to overgrazing.

#### *Highly winter active (8–10 rating)*

Highly winter active varieties are generally more productive than semi-dormant and dormant varieties during the first three years. Their seedling vigour, growth and less active varieties. They lose quality more quickly as they reach maturity and they are less resilient under heavy grazing.

### Perennial grasses (tall fescue, cocksfoot and phalaris)

A key trait to consider when selecting a perennial grass is the degree of summer or winter dormancy. For cocksfoot and phalaris, the degree of summer dormancy is used to separate varieties into three categories:

#### *Winter active or Mediterranean types.*

Dormancy of winter active plants is triggered by rising temperatures and declining soil moisture towards the end of spring. Varieties in this category will not respond to summer rainfall and will only become active once temperatures decline, towards the end of summer. These types e.g. 'Atlas PG' phalaris and 'Kasbah' cocksfoot, are well adapted to areas typified by low and unreliable summer rainfall, and prolonged dry periods. They

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are sometimes described as highly summer dormant.

#### *Intermediate dormancy*

Plants with an intermediate dormancy rating will 'shut down' once soil moisture is limiting, but will begin active growth in summer if significant rain falls. These varieties need reliable climatic conditions for persistence, and are suited to areas that do not have periods of intense summer moisture stress and where there is a low incidence and intensity of drought. This group includes most varieties of phalaris, and cocksfoot varieties such as 'Currie' and 'Porto'.

#### *Summer active or temperate types*

These varieties have no summer dormancy and will attempt to grow regardless of moisture or temperature conditions. They are unlikely to persist when moisture remains low for an extended period of time. These varieties are suitable for areas with high overall rainfall with a slight summer dominance. They will not tolerate drought.

#### **Pest and disease tolerance**

Reaction to pests and diseases is an important consideration when selecting a variety. For example, in coastal or humid regions, in irrigation districts or in waterlogged areas,

diseases such as rusts, root rots and anthracnose can proliferate and therefore, resistance is a desirable trait.

Tolerance to pests such as scarabs, redlegged earth mites, aphids, and lucerne flea should also be a consideration when selecting a variety.

#### **End uses – hay/silage or grazing**

Consideration should be given to the end use of the pasture. Some species have been specifically bred for hay/silage production, e.g. some Persian clover varieties, and lucerne varieties with a high winter activity rating. Other pasture species are described as 'dual purpose' and were bred for both grazing and silage/hay production.

#### **Livestock enterprise**

Some plant species and varieties within species are more suited to cattle than sheep or vice versa, due to characteristics such as leaf size, tolerance to grazing, crown height and animal/plant interactions. Consider when peak feed demand occurs for the livestock enterprise, such as lambing, calving, and joining.

Pastures for horses need to be based on perennial species, e.g. phalaris,

although it is difficult to maintain a working horse without supplementary feeding. Goats and alpacas require high roughage and lower moisture content pastures than do sheep. They tend to 'do' poorly on clover dominant pastures.

Supplementary feeding may be required across all livestock enterprises when feed requirements are not met by pastures.

#### **Compatibility with herbicides**

It is important to consider the herbicide compatibilities of species to be included in the sowing mix. If mixtures are complex and include many different species, it can be difficult to control some weeds without compromising the survival of some of the sown species. In addition, if a paddock has a known weed history it can be advisable to avoid sowing some species. For example, if a paddock has a history of thistles it would be wise not to include chicory or plantain in a mixture for that paddock as they would be killed or damaged by the herbicides used to control thistles.

*These key features of the major temperate pasture grass species are further discussed in *The Temperate perennial pasture establishment guide* available at [www.dpi.nsw.gov.au/tppeg](http://www.dpi.nsw.gov.au/tppeg)*

Note: Dormancy ratings are 'continuous', which means that some varieties described as 'summer dormant' can still respond to summer rain, whereas others in the same category remain absolutely dormant regardless of rainfall.

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Department of  
Primary Industries

## 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.

### Data capture through Australian beef cattle and meat sheep value chains: opportunities for enhanced feedback to commercial producers

S. Z. Y. Guy<sup>A B C</sup>, D. J. Brown<sup>A B</sup> and R. G. Banks<sup>A</sup>

<sup>A</sup> Animal Genetics and Breeding Unit, a joint venture between The University of New England and NSW Department of Primary Industries, Armidale, NSW 2351, Australia.

<sup>B</sup> Advanced Livestock Measurement Technologies Project, Meat & Livestock Australia, North Sydney, NSW 2060, Australia.

<sup>C</sup> Corresponding author. Email: Sarita.Guy@une.edu.au

Technologies for capturing and transmitting data from different points in livestock value chains are developing very rapidly, and interest is growing in how best to use such technologies. While new data-capture technology comes with the promise of producers and others being more informed about a system, what usually results is large and complex datasets. A key challenge is to make use of the data or information. The present paper initially outlines the data-capture points and flow of information that occurs throughout the Australian beef cattle and meat sheep value chain. The avenues

through which feedback can be delivered to commercial producers are briefly summarised, along with the value of this feedback and the factors that affect its value. Finally, practical principles for effective feedback systems are provided. While data capture is occurring throughout the value chain, the main focus of the paper is on carcass- and eating-quality feedback from processors to commercial producers. There is significant variation in the volume, nature and quality of data collected, and also the flow of information among members of the chain. Further, there appears to be an inconsistency in the levels of demand or desire for the feedback. The value of feedback ultimately depends on the producer's ability to make better business decisions as a result of having that data or information. Increasing market specifications and compliance will result in greater profitability for the producer, as well as processor. The value of feedback also depends on several other factors, including its accuracy, its granularity, whether or not it can be connected to other data, and what options the producer has to use that information in the future. Feedback must be interpretable and enable better business decisions. The value of feedback will also increase if extended further upstream along the supply chain for genetic evaluation, provided there is enough information on genetically informed animals and their

identifications can be tracked across the supply chain. For efficient feedback systems, every member in the chain needs to see value in the feedback, and there needs to be a mutual commitment and shared vision between all value-chain partners. Further, feedback must be provided in an efficient and practical manner, so as to increase the willingness of the information providers to deliver the feedback. Producers should be involved in any attempts to enhance feedback systems. Since there is variability in the needs, wants and capabilities of processors and producers, multiple dynamic and flexible feedback systems are required. An incentive to enhance feedback systems is to provide a value proposition by calculating the monetary value of the feedback to all members of the chain. Better objective measurements and Meat Standards Australia for lamb is likely to also contribute to better feedback value propositions. Communication and fostering of relationships among supply-chain members will always remain critical. While data permissions add a complication to information sharing across the chain, benefits can be gained by not only the commercial producer, but the entire industry.

*Animal Production Science* **58**(8) 1497-1503 <https://doi.org/10.1071/AN17807>

### Removing Grazing Pressure from a Native Pasture Decreases Soil Organic Carbon in Southern New South Wales, Australia

Orgill, S. E., Condon, J. R., Conyers, M. K., Morris, S. G., Alcock, D. J., Murphy, B. W., and Greene, R. S. B.

Grazing management is a known influence of carbon accumulation in agricultural soil, but there is conflicting evidence on the extent. This study compared organic carbon and nitrogen stocks at the conclusion of a 5-year grazing trial on a fertilised native pasture in south-eastern Australia. The study included three grazing treatments: ungrazed, tactically grazed (set stocking with biannual rest periods) and cell grazed (intense stocking with frequent long rest periods). There was no influence of grazing treatment detected

on pasture sward composition when averaged over seasons or on total nitrogen or bulk density. The cell grazing treatment had total carbon stock of 32.9 Mg C ha<sup>-1</sup> (SE = 1.8) in the 0–0.30 m soil layer, which was a significant increase ( $p < 0.05$ ) relative to the ungrazed treatment at 25.6 Mg C ha<sup>-1</sup> but not statistically greater than the tactical treatment at 29.5 Mg C ha<sup>-1</sup>. There was no difference detected in labile carbon stocks to 0.30 m, which indicates that differences in soil carbon due to grazing was accumulated over the 5-year trial rather than reflecting short-term seasonal impacts. We propose that a combination of factors contributed to a greater stock of soil carbon under grazed pastures including differences in plant shoot/root allocation, root growth and root turnover with defoliation under grazing as well as lower plant productivity where grazing is excluded because of

shading and nutrient tie-up. This study demonstrates removing grazing pressure may lead to lower soil carbon stocks in native pastures over time and provides evidence of the potential for grazing management to increase soil carbon in the short-term.

*Land Degradation and Development* **29**: 274–283. doi: 10.1002/ldr.2560

Correspondence to: S. E. Orgill, Wagga Wagga Agricultural Institute, NSW Department of Primary Industries, PMB, Pine Gully Rd, Wagga Wagga, NSW 2650, Australia.



## Largest ever remote monitoring project kicks off

HerdDogg an innovator of precision livestock and remote animal health solutions, is partnering with MLA for the largest real-time cattle health pilot ever conducted. The MLA-funded pilot will install DoggTags™ on 10,000 animals on several farms and feedlots across NSW.

The goal of the MLA-HerdDogg pilot is to provide earlier indications of animal illness, to improve overall animal health, and to test a new long-range bluetooth system capable of transmitting biometric and proximity-based behaviors at a distance of 300 metres from the DoggBone™ readers.

Founded in 2015 by Melissa Brandao, HerdDogg markets a patented IoT-based system that includes DoggTags (attached to the animals' ears); the cloud-connected DoggBone readers (placed at strategic sites around the farm, these gather livestock biometrics and behavioral data); and the HerdDogg mobile app (provides anytime/anywhere access and alerts for each animal's health record).

"Until now, technology solutions for the beef industry have been expensive and unsuitable for remote areas, whereas our low-cost HerdDogg system is designed for grazing operations," said Melissa Brandao, founder and CEO of HerdDogg.

"For this trial, we're eager to prove that HerdDogg can provide animal managers with early warning of illness by automating the analysis of animal biometrics. This delivers two important benefits: reduced labor costs and improved animal health and wellbeing."

Data gathered will be made available to Australian researchers to further develop insights for the benefit of HerdDogg's offering and the advancement of the Australian meat and livestock industry

"Despite significant private-sector activity, we have yet to see a

commercial solution that Australian producers can easily buy off the shelf and implement on an extensive grazing property," said Sean Starling, MLA's General Manager of Research, Development and Innovation.

"We're eager to see how the HerdDogg system can impact positively on the way livestock are managed across the industry and bring significant economic and non-financial value."

Data gathered during HerdDogg/MLA pilot will be used to enhance HerdDogg installations already underway in Australia. Researchers such as Mark Trotter are eager to see wider deployment of tags across different Australian grazing systems, because this will allow researchers to really explore a rich data set from which a range of behavioral algorithms and alerts can be developed.

"We are currently testing the HerdDogg system on cattle here at CQU," said Mark Trotter, associate professor of precision livestock at Central Queensland University (CQU).

"We've been using these types of sensors in a research context for years, and the data tells us an enormous amount about the animal: its reproductive status, grazing activity, health, and welfare. The HerdDogg system aims to take this from an expensive scientific tool to something that can be affordably used by any red-meat producer, and that will make a big impact on the livestock industries."

HerdDogg aims to capitalize on a growing industry that is hungry for animal biometric data

The trial with MLA advances HerdDogg toward widespread commercialization of its field-tested and proven system to monitor herd health to boost livestock profitability and sustainability. By transmitting



current herd information direct from field to cloud to mobile app, producers now have real-time answers to key questions such as:

Is my animal hot?  
Is she ill or injured?  
Is she in the right pen or paddock?

HerdDogg requires minimal technical expertise and provides immediate insights without any previous health history or animal records. In field trials, farmers have seen two- to three-day early detection of illness and received real-time status updates on heats and missing animals, enabling them to get out to the animals faster. HerdDogg is already responding to strong demand through its market presence in North America, Australia, and Brazil.

About HerdDogg  
Headquartered in Ashland, Oregon, HerdDogg Inc. is a venture-backed agtech startup focused on increasing herd happiness by deriving unparalleled insights into key indicators of animal health and wellbeing. The HerdDogg system provides rapid and accurate breeding and health insights on individual animals, whether in the barn or pasture. HerdDogg reduces labor costs while increasing herd productivity and sustainability.

For more information, visit [www.herdogg.com](http://www.herdogg.com).

## Automation could be the way of the future for shearing sheds

Automated shearing could be the way of the future for shearing sheds around Australia following the launch of an Australian Wool Innovation (AWI) funded research project to automate wool harvesting from sheep.

In partnership with Ranken Research and Robo Shear, the four-year project is a practical engineering research and development project that aims to design, construct, field test and evaluate a proof of concept prototype machine for fully automated end to end wool harvesting.

Australian Wool Innovation General Manager Research, Jane Littlejohn said the research aim of full automation of the whole wool harvesting process is innovative and future focused to support the future sustainability of the sheep and wool industry.

“This research is a long-term project that is seeking to develop a prototype machine to fill the shearer shortage gap,” Ms. Littlejohn outlined.

“AWI invests in research into alternative wool harvesting technology to improve the efficiency organising and conducting shearing.”

Robo Shear Project Director Richard Lyons said the final product envisaged is a modular, portable, reliable machine that can fully automatically harvest traditional fleece wool from a sheep.

“Our long-term aim is to develop a readily available and capable automated alternative to manual shearing that will provide a range of benefits including ensuring the welfare of the sheep and reduces the risk of both human and animal injury,” Mr. Lyons explained.

“It is critical the end product of our project ensures the quality of the fleece with a target rate of 1,500 de-fleeced sheep in a continuous 10-hour period.”

Established in 2001, AWI is a not-for-profit company owned by more than 24,000 Australian wool levy payers who have registered as AWI shareholders.

The company invests in research and development, marketing and promotion to enhance the profitability, international competitiveness and sustainability of the Australian wool industry and to increase the demand and market access for Australian wool.

## Updated drought guide available now

The NSW Department for Primary Industries (DPI) has launched its ‘Managing and Preparing for Drought Guide’, just in time for spring to give the State’s primary producers relevant information to help them make informed decisions.

The drought guide has been a widely used and popular reference for primary producers since it was first published more than 10 years ago.

NSW Drought Coordinator, Pip Job said the current dry conditions are having wide reaching impacts and touching regional communities.

“Farmers right across NSW are facing one of the driest winters on record resulting in failing crops, drastic water shortages and a diminishing supply of fodder to sustain livestock,” Ms Job said.

“With the forecast for spring predicting warmer and drier conditions, this edition of the ‘Managing and Preparing for Drought Guide’ reflects the diversity of pressures placed on NSW primary producers during this drought.

“Farmers and graziers have told me that previous editions were really

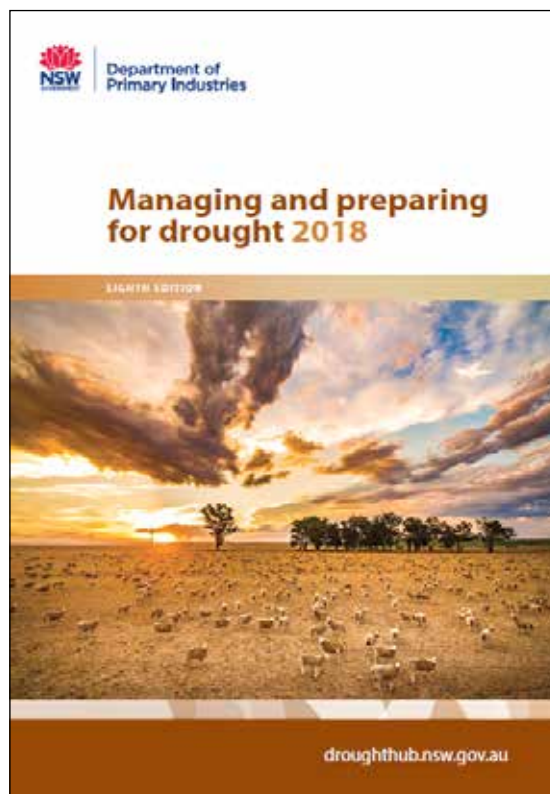
useful and that an updated print would help them navigate current challenges.

“Importantly, it includes new information on relevant resources added by the NSW Government and DPI in recent years, including the online DroughtHub, the Feed Cost Calculator and the Combined Drought Indicator.

“The current conditions are extremely challenging and I am sure farmers will find the strategies and actions in the guide useful as they deal with the drought.”

This is the eighth edition of the NSW ‘Managing and Preparing for Drought Guide’. It includes information that primary producers can consider as they deal with drought, as well as practical tips on feeding livestock, farm management, sustainable practices and personal and financial wellbeing.

The ‘Managing and Preparing for Drought Guide’ is available online at [www.droughthub.nsw.gov.au](http://www.droughthub.nsw.gov.au), from NSW DPI research institutes across the state, or at your nearest Local Land Service office.



## From the President (2018 Report for the Annual General Meeting)

It is with great pleasure that I present my 'President's report' for 2018. I do apologise for my absence, however I have gone on a "pasture study" of the species that exist in north west Queensland (better known as the Channel Country and the Gulf).

This year is an 'off year' as far as conferences go, but it does follow a very successful conference, titled "*Your System – Taking it to the next level*", last year at Cowra. We had much larger numbers than recent times, and the program was very warmly received by all who attended. I have thanked them previously, but again would like to extend my thanks to the Cowra Conference Committee for all the effort they put in. It was well worth it.

During the last twelve months, the society has continued with the delivery of the "Pasture Updates". Funded by MLA, as part of their Feedbase Investment Plan, attendees across four locations (Tooraweenah, Bathurst, Moree & Berrembed) were presented relevant and regionalised pasture research, some of it as final reports, and other works in progress. The society continues to gain momentum on the back of these updates, with more planned for this spring. A big thank you goes to MLA for

their support, and our society's state committee member, Lester McCormick, for his management of this MLA initiative. The society would also like to thank those key local people who have done much of the leg work in organising such days. I encourage all pasture businesses to have a look at the Pasture Update programs and try to get to one when in their regions.

Our membership is growing, and very pleasingly we have seen new membership applications at all state meetings in the last 12 months. In total, our membership stands at approximately 340, with 77 new members this last year. Many of these new members joined us as part of the Cowra conference, with others joining after attending a Pasture Update. Hopefully this growth will continue with the current enthusiasm for the livestock industries and the interest in pastures. There is plenty of room for growth, and we are looking to the younger folk to get more actively involved.

Our quarterly newsletter continues in very good hands, those of editor, Carol Harris. This is a big job, one that we all take for granted when our newsletter arrives. On behalf of the society and its' members, I wish to convey a huge thank you to Carol for all her efforts.

Thank you also goes to our secretary Janelle Witschi for her valued, willing secretarial support, and our trusted treasurer, Frank McRae for looking after our finances. The society is currently in a strong financial position.

To our sponsors, thank you. Our 2017/18 sponsors have hopefully benefited from their last 12 months of involvement, and with our conference program now biennial, the additional 12 months of promotion for them will be a bonus.

With livestock prices remaining strong, beef, lamb, wool etc all doing well, hopefully pasture producers are supporting the sponsors and investing in their own businesses. Disappointingly, the extended dry period is heavily "eating" into farm reserves at the expense of farm maintenance.

I would like to thank the state committee as a whole for their continued voluntary contributions to the society, and the members in general for the opportunity to lead. I am aware that some of the committee members will not be seeking re-election, and to those I say thank you. John Coughlan in particular, served as President of our Society, and has spent many years on the committee. He vacates in the interest of succession, and seeing fresh, and younger blood, take his position. On behalf of the Society, I thank John for his enormous contribution over the many years, and know that when time prevails, he will actively part-take in the society's activities. Your time, energy, and friendship have been greatly appreciated. I look forward to serving the Grassland Society of NSW again in 2018/2019, if given the opportunity.

David Harbison, President.

Regards,  
David Harbison,  
President.

Editor's note: At the Grassland Society of NSW Annual General Meeting in Orange on July 17 David Harbison was returned as President for another term.

The remaining executive and committee elected at the meeting were:-

Peter Wilson (Vice President)  
Janelle Witschi (Secretary)  
Frank McRae (Treasurer)  
Mick Duncan (Immediate Past President)  
Carol Harris (Editor)

Committee: Amanda Britton, Helen Burns, Nathan Ferguson, Keith Garlick, John Ive, Jeff McCormick, Lester McCormick and Stuart Tait.

### Disclaimer

While every effort is made to publish accurate information the Grassland Society of NSW does not accept responsibility for statements made or opinion expressed in this newsletter.

Inclusion of an advertisement in this publication does not necessarily imply an endorsement of the company or product of the Grassland Society of NSW.

***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](http://www.grasslandnsw.com.au) or contact the Secretary at [secretary@grasslandnsw.com.au](mailto:secretary@grasslandnsw.com.au) or at PO Box 471 Orange 2800

***Office Bearers of the Grassland Society of NSW - 2017-2018***

**State Executive**

David Harbison (President)  
Peter Wilson (Vice President)  
Janelle Witschi (Secretary)  
Frank McRae (Treasurer)  
Mick Duncan (Immediate Past President)  
Carol Harris (Editor)

**Committee:** Amanda Britton, Helen Burns, Nathan Ferguson, Keith Garlick, John Ive, Jeff McCormick, Lester McCormick and Stuart Tait.

**Branch Representatives**

Lester McCormick (North West Slopes)  
Frank McRae (Central)  
John Ive (Southern Tablelands)  
Mick Duncan (Northern Tablelands)  
David Harbison (Central West Slopes and Plains)  
Nathan Ferguson & Helen Burns (South Western Slopes & Riverina)

If you are interested in reactivating an old branch or forming a new branch please contact the Secretary at [secretary@grasslandnsw.com.au](mailto: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 2018. 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](mailto:carol.harris@dpi.nsw.gov.au) or DPI NSW 444 Strathbogie Road Glen Innes 2370. The deadline for submissions for the next newsletter is November 2 2018.



**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](mailto: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.

**Grassland Society of NSW - PO BOX 471 Orange NSW 2800, [www.grasslandnsw.com.au](http://www.grasslandnsw.com.au)**

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