



# GRASSLAND SOCIETY OF NSW INC.

## Newsletter

As I am writing this, most of the state is again enjoying good soaking rain – lifting everyone’s hope for a good spring and summer. An average of 30 mm has been received across a five-day period with more rain predicted to follow in the coming weeks. For a more detailed description of likely seasonal conditions between September and November refer to page 10.

With good winter rain and rapidly growing grass in spring there are at times a heightened risk of animal health disorders such as grass tetany. On page 9 there is a very interesting article on Magnesium deficiency in cattle by the Northern Tablelands Local Land Services – District

Veterinarian based at Glen Innes Nigel Brown.

Other interesting articles in this edition of the newsletter include “Liveweight gain by cattle grazing native pasture or improved pasture sown on rehabilitated mine land – Upper Hunter study” on page 2 and “Barbervax – the state of play” on page 7.

On the 20<sup>th</sup> July 2016 the Annual General Meeting of the Grassland Society of NSW was held at the NSW Department of Primary Industries office in Orange. At this meeting the State Executive and committee were elected for the 2016–17 financial year (see the back page of the newsletter for a full listing of the executive and

committee members). The only non-returning committee member is Chris Houghton. On behalf of the members I would like to wish Chris all the best in the future and to thank him for his service on the Grassland Society of NSW committee.

Just a reminder if you haven’t paid your membership subs for the 2016–2017 membership year, please do so as soon as possible. You are now able to pay your subs online (see box below on this page) or pay using traditional means - payment details can be found on page 11.

*Carol Harris,  
Editor*

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### Making your subs payment easy.

The Grassland Society of NSW is pleased to announce that members are now able to pay their annual subscription online. Please access our Payments page via the green "JOIN NOW" button on the right hand menu.



Payments are processed through the PayPal service so if you already have a PayPal account, you will be asked to log in to complete the payment quickly and easily. If you don't have a PayPal account simply choose the option to "Pay with a credit or debit card" which is located below the login area on the PayPal page. Use the comments box to put your name or membership number so that your payment can be allocated to the correct person.

The existing payment options still remain (refer to page 11).

[www.grasslandnsw.com.au](http://www.grasslandnsw.com.au)

# Liveweight gain by cattle grazing native pasture or improved pasture sown on rehabilitated mine land – Upper Hunter study

Neil Griffiths<sup>A</sup>, Lester McCormick<sup>B</sup>, Neil Nelson<sup>C</sup>

<sup>A</sup> NSW Department of Primary Industry, Tocal Agricultural Centre, Paterson NSW 2421: neil.griffiths@dpi.nsw.gov.au

<sup>B</sup> Agronomist, Manilla NSW 2346 (formerly NSW DPI): mccormicklester@gmail.com

<sup>C</sup> Neil Nelson Agvce Pty Ltd, Singleton NSW 2330: neil@neilnelsonagvce.com

*Editors Note: Reprinted with permission. This article first appeared in Proceedings of the Livestock Productivity from Pastures Symposium. Editor C. Harris. Australian Grasslands Association Research Series No 3, Armidale 2016 (Australian Grassland Association).*

**Abstract:** Three comparison sites in the NSW Hunter Valley had pastures monitored and cattle weighed seasonally. Cattle were steers introduced as weaners and grazed for 12 to 18 months before sale. Each site used randomly allocated steers with common breeding and background. Stocking rate was the same for each treatment at each site. Pastures were a diverse mix of species. The rehabilitated mine land was dominated by the introduced species, Rhodes grass (*Chloris gayana*) with green panic (*Megathyrsus maximus*) and kikuyu grass (*Pennisetum clandestinum*) also common. The native pasture was dominated by redgrass (*Bothriochloa* spp.), wiregrass (*Aristida ramosa*), *Sporobolus* spp. and Queensland bluegrass (*Dichanthium sericeum*). Soil tests indicated that fertility was similar on each paired

study site. Steers were moved in a simple two or three paddock rotation after each weighing. Results to date show that steers grazing rehabilitated mine land gained an average 77kg/head more weight than those on the native pasture, analogue sites and botanical composition across the sites has been maintained during the study.

**Key words:** Botanical, biomass, coal mining, rehabilitation, analogue

## Introduction

In the Hunter Valley of New South Wales, coal mining companies control large areas of land (over 60,000 ha of agricultural land in 2013). By 2013 a total of 9,145 ha of mined land had been rehabilitated in the valley with 18,283 ha disturbed by mining but not yet rehabilitated. In 2013 a further 1,148 ha was newly disturbed while new rehabilitation had commenced on 962 ha (NSW Minerals Council). There has been ongoing discussion in the community about how effective mine site rehabilitation is and whether it is possible to return mined land to previous levels of productivity. To help inform this discussion three study sites have been established to compare beef cattle production from

rehabilitated mine land and adjacent native pasture which represents what the land was like prior to mining. The primary objective of these studies was to investigate the question “Can rehabilitated mine land sustainably support productive and profitable livestock grazing?”

Sites used in these studies were rehabilitated after open cut coal mining fifteen to thirty years previously using standard practices from that time (W.Baxter pers. com.). After mining the sites were rehabilitated and sown to a pasture mix comprising Rhodes grass cv. Pioneer (*C. gayana*), green panic (*M. maximus*), lucerne (*Medicago sativa*), couch grass (*Cynodon dactylon*), medic (*Medicago* spp.) subterranean clover (*Trifolium subterraneum*) and white clover (*T. repens*). The native pasture comparison sites reflect the original pastures of the area and are separated from the rehab sites by a fence or road.

## Methods

### Site description

Three sites were monitored, each site comprised a rehabilitated mine site and an adjacent native pasture analogue site of the same area. The mine sites were rehabilitated at least 15 years ago. This has allowed the sown pasture to establish and stabilise.

Site 1 (-32.499560, 150.990693) Singleton, NSW. Comprises two 20 ha paddocks each for rehabilitation and analogue.

Site 2 (-32.364081, 150.836125) Muswellbrook, NSW. Comprises three 10 ha paddocks each for rehabilitation and analogue.

Site 3 (-32.373304, 151.020559) Liddell, NSW. The initial trial at this site (2012 – 2014) used two 36 ha paddocks each of rehab and analogue.

**Table 1 Soil Analysis (0-10cm depth) results at three trial sites in the Hunter Valley NSW at the commencement of the grazing study**

Site	pH (CaCl <sub>2</sub> )	Phosphorus (Colwell mg/kg)	Cation exchange capacity (cmol(+)/kg)
Site 1 Analogue	5.7	6.0	17.4
Site 1 Rehab	6.8	31.0	14.4
Site 2 Analogue	5.5	7.0	13.2
Site 2 Rehab	7.8	5.0	32.4
Site 3(1) Analogue	4.7	7.0	5.8
Site 3(1) Rehab	6.1	11.0	12.9
Site 3(2) Analogue	4.7	14.0	5.5
Site 3(2) Rehab	5.9	17.0	12.9

A second trial at the same site (2014 – 2015) had a reduced area of 25 ha per paddock.

#### Soils

Top soil (0-10 cm) was sampled and analysed over the 0-10 cm profile at the beginning of the studies.

#### Cattle

Steers were vaccinated, drenched and ear tags applied for identification before introduction to the study sites as weaners. No supplementary feeding was undertaken. Sites 1 and 2 used Angus steers (sourced from different herds at each site). At each site steers were randomly allocated to the sown rehabilitation pasture or native pasture treatment with 10 steers in each. At site 3, 30 Charbray steers were allocated to each treatment in the first trial; 20 per treatment in the second trial. See Table 2 for cattle weights.

#### Pastures

Pastures were monitored for herbage mass and botanical composition. At sites 1 and 2 a Botanal (Tothill *et al.* 1978) (Powells 2015) was assessed at approximately six week intervals. Botanals used 3 random 1000m transects at in each paddock with sampling every 20m. Site 3 used 2 fixed transects of 100 metres per paddock with sampling points every 5 metres, assessed seasonally. Fertiliser was used when mine sites were initially rehabilitated but no fertiliser had been applied for at least 10 years except for the second study at site 3 when fertiliser was applied to both rehabilitation and analogue on 10 June 2014, at the same application rate (single superphosphate at 125 kg/ha).

## Results

#### Cattle

Steers grazing on the rehabilitated mine land gained an average 77kg/head more weight than steers grazing native pasture analogue comparison areas (Table 2). This result was associated with a greater pasture availability on the rehabilitated land (Table 2).

#### Soil Analyses

Soil analyses indicated the rehabilitated land was less acidic than the analogue undisturbed sites (Table 1). Phosphorus (Colwell P) was medium at site 1 rehabilitation, low at site 1 analogue, low at both site 2 areas and slightly higher in the rehabilitation area than the analogue paddock at the site 3. The relatively low soil phosphorus levels are typical in the area. The topdressing of superphosphate to both site 3 areas in 2014 increased the soil phosphate level in both native and improved treatments and encouraged more legume growth.

#### Pastures

Pasture measurements at site 1 (Figure 1) show that analogue pastures have more species diversity but less herbage mass available for grazing than the pastures on rehabilitated mine sites. The “native” pastures were dominated by redgrass, wiregrass, Queensland bluegrass and *Sporobolus* species with The rehabilitated pasture was dominated by Rhodes grass.

## Conclusions

Comparison across three sites in the Upper Hunter Valley has shown

that steers grazing rehabilitated mine land have achieved growth rates equal to or well above steers grazing adjoining undisturbed native pastures. Tropical pasture grasses sown into the rehabilitated sites were able to provide higher pasture productivity than many of the native species.

Soil analyses indicated rehabilitated land typically was less acidic than undisturbed topsoil, had higher CEC and similar, or higher phosphorus levels.

Legume content varied between sites, with one trial site having both treatments (rehabilitated and native) top-dressed with superphosphate, resulting in a greater contribution of white clover, medics and subterranean clover.

Pasture grass composition did not change any more than the normal seasonal variation and ground cover remained above 70 percent throughout the studies.

Tropical perennial pasture grass species used in mine rehabilitation are suited to the soil conditions at these sites and the stop/start growth periods associated with variable rainfall. Ground cover, an important component of grazing management with variable rainfall, was maintained throughout the study.

The study across the three sites provide strong evidence that with successful rehabilitation, selection of species and pasture management, rehabilitated mine land can be used for profitable grazing.

**Table 2. Cattle weight gain comparing rehabilitated mined land and native pasture analogue at three sites in the Hunter Valley NSW.**

Site	Area (ha)	Number of steers	Days in study	Average start weight (kg/ha)	Average end weight (kg/ha)	Weight gain (kg/hd)	Weight gain per day (kg/hd/day)	Weight gain kg/ha
Site 1 Analogue	40	10	551	358	611	253	0.46	63
Site 1 Rehab	40	10	551	344	764	420	0.76	105
Site 2 Analogue	30	10	581	275	537	262	0.45	87
Site 2 Rehab	30	10	581	278	586	308	0.53	103
Site 3(1) Analogue	72	30	533	418	597	179	0.34	75
Site 3(1) Rehab	72	30	533	406	662	256	0.48	107
Site 3(2) Analogue	49	20	383	319	548	229	0.60	94
Site 3(2) Rehab	49	20	383	316	562	246	0.64	100

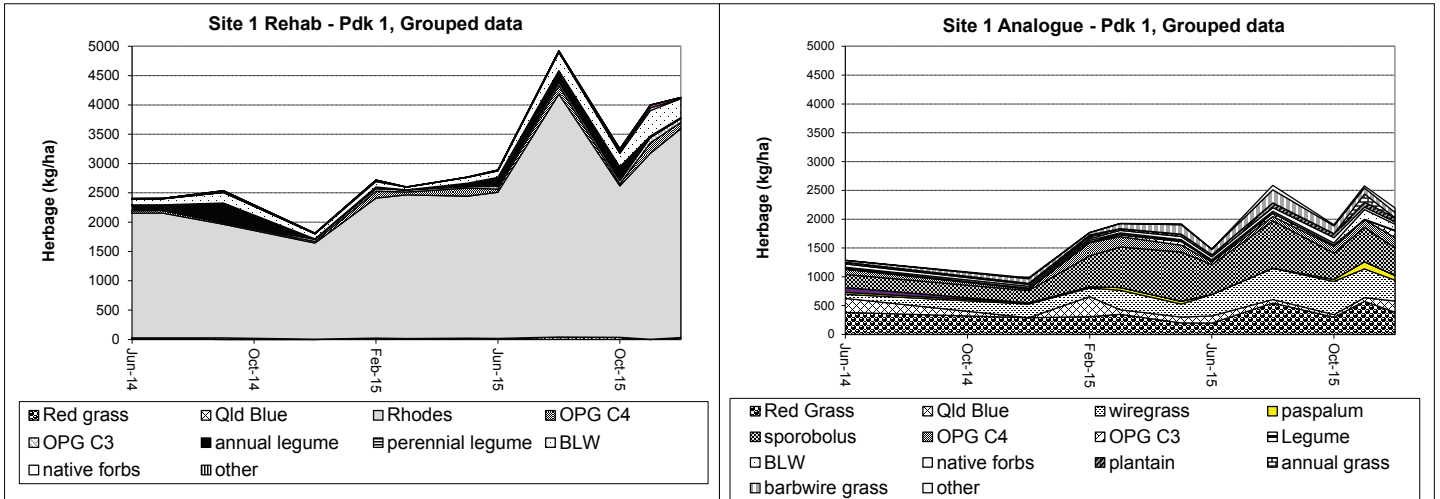


Figure 1. Pasture species diversity at a) Site 1 Rehab and b) Analogue Site

**Acknowledgements**

These studies were organised through the Upper Hunter Mining Dialogue and are supported by the NSW Department of Primary Industries and Division of Resources and Energy, ACARP (the Australian Coal Industry’s Research Fund), Glencore, Rio Tinto, and BHP Billiton. We especially want to acknowledge input into the studies from Jo Powells, Harry Rose, David Deane, Bill Baxter and Luke Stevens. Study site 3 was supported by Glencore (Coal Assets Australia), and conducted by Neil Nelson Agvice P/L with co-operation of Colinta Holdings

P/L. The input of Terry Launder, Rob Slaughter and Nigel Charnock is gratefully acknowledged.

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**Local Land Services South East**

## Upcoming Pasture Updates

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### Manildra, Central West - Thursday, 13 October 2016

A Grassland Society of NSW Pasture Update funded by MLA and supported by Local Land Services and NSW Department of Primary Industries.

**Venue:** Manildra Golf Club

**Time:** 8.30 am – 4.00 pm

**Cost:** \$20 per person, includes morning tea and lunch

**Book online at:** <https://www.trybooking.com/MZWA>

Topics to be discussed include: MLA investment in research and development, regional update on pasture agronomy, getting legumes to work harder, soil fertility - current status & key nutrients, phosphorus efficient pasture research, grazing cereals with demanding sheep and role of plant tissue nutrients for livestock. The day will also include local property tours.

**RSVP:** Tuesday 11 October 2016

**Local contact:** Phil Cranney, Senior Land Services Officer - Pastures - Mobile: 0458 745 478

**Registration form & further details available at [www.grasslandnsw.com.au](http://www.grasslandnsw.com.au)**

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### Tamworth - Friday 28 October 2016

A Grassland Society of NSW Pasture Update funded by MLA and supported by Local Land Services - North West, NSW Department of Primary Industries and the Southern Australia Meat Research Council.

**Venue:** Tamworth Agricultural Institute

Topics to be discussed include: Livestock issues, current pasture research, tour of a local property and be involved in setting priorities for future research, development & advisory activities.

To join the email list for further information email/phone

George Truman - [george.truman@lls.nsw.gov.au](mailto:george.truman@lls.nsw.gov.au) (Ph 0427 505 040)

Lester McCormick - [mccormicklester@gmail.com](mailto:mccormicklester@gmail.com) or

Suzanne Boschma - [suzanne.boschma@dpi.nsw.gov.au](mailto:suzanne.boschma@dpi.nsw.gov.au)

**Further details will also be posted at [www.grasslandnsw.com.au](http://www.grasslandnsw.com.au)**

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## 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.

### Neonatal lamb mortality: factors associated with the death of Australian lambs

G. Refshauge<sup>A,B,F</sup>, F. D. Brien<sup>A,C</sup>, G. N. Hinch<sup>A,E</sup> and R. van de Ven<sup>D</sup>

<sup>A</sup> Sheep CRC, University of New England, Armidale, NSW 2351, Australia.

<sup>B</sup> NSW Department of Primary Industries, Cowra, NSW 2794, Australia.

<sup>C</sup> School of Animal and Veterinary Sciences, The University of Adelaide, Roseworthy, SA 5371, Australia.

<sup>D</sup> NSW Department of Primary Industries, Orange, NSW 2800, Australia.

<sup>E</sup> School of Environmental and Rural Science, University of New England, Armidale, NSW 2351, Australia.

<sup>F</sup> Corresponding author. Email: gordon.refshauge@dpi.nsw.gov.au

**Abstract:** The objective of the present study was to examine the factors associated with the death of neonatal lambs. Postmortem autopsy data were collected from 3198 newborn lambs in the Sheep CRCs Information Nucleus Flock situated in various environments throughout southern Australia. The proportion dying by category from highest to lowest was starvation–mismothering (25%), stillbirth (21%), birth injury (18%), dystocia (9%), death in utero–prematurity (10%), predation (7%), cold exposure (5%), undiagnosed (4%), infection (1%) or misadventure (1%). Factors best explaining the probability of lambs falling into a death category included both birth type and birthweight for dystocia, stillbirth,

starvation–mismothering and death in utero–prematurity. The probability of a lamb falling into any category was predicted at the mean birthweight, within birth type. Single-born lambs were more likely to die from dystocia and stillbirth, while twin lambs were more likely to die from birth injury, starvation–mismothering or from undiagnosed causes. Triplet lambs were more likely to die from starvation–mismothering or death in utero–prematurity. Sire type (Merino, maternal or terminal) did not affect the proportions of lambs within any category. The proportions lost to each cause of death were largely consistent among locations, despite the rate of death varying. Dystocia, stillbirth and birth injury,

as evidenced by the presence of oedema around the head and neck or by lesions of the central nervous system, accounted for 48% of autopsied lambs. We conclude that for improvements to occur in the rates of lamb survival, the Australian sheep industry must focus on minimising losses due to dystocia, stillbirth, birth injury and starvation.

**Additional keywords:** autopsy, cause of death, dystocia, neonatal lamb mortality, starvation.

*Animal Production Science* **56**(4) 726–735

<http://dx.doi.org/10.1071/AN15121>

### A survey of the meat goat industry in Queensland and New South Wales. 1. General property information, goat and pasture management

D. M. Nogueira<sup>A,B,D</sup>, C. P. Gardiner<sup>B</sup>, B. Gummow<sup>B,C</sup>, J. Cavalieri<sup>B</sup>, L. A. Fitzpatrick<sup>B</sup> and A. J. Parker<sup>B</sup>

<sup>A</sup> Embrapa Semiárido, BR 428, Km 142, Caixa Postal 23, CEP 56302-970, Petrolina, PE, Brazil.

<sup>B</sup> School of Veterinary and Biomedical Sciences, James Cook University, Townsville, Qld 4811, Australia.

<sup>C</sup> Faculty of Veterinary Science, University of Pretoria, Private Bag X04, 0110 Onderstepoort, Pretoria, South Africa.

<sup>D</sup> Corresponding author. Email: daniel.nogueira@embrapa.br; daniel.maianogueira@my.jcu.edu.au

**Abstract:** This study aimed to survey farmers' knowledge and practices on the management of pastures, stocking rates and markets of meat goat-producing enterprises within New South Wales and Queensland, Australia. An interview-based questionnaire was conducted on properties that derived a significant proportion of their income from goats. The survey covered 31 landholders with a total land area of 567 177 ha and a reported total of 160 010 goats. A total of 55% (17/31) of producers were involved in both 'opportunistic harvesting' and commercial goat operations, and 45% (14/31) were specialised seedstock producers. Goats were the most important livestock enterprise on 55% (17/31) of

surveyed properties. Stocking rate varied considerably (0.3–9.3 goats/ha) within and across surveyed properties and was found to be negatively associated with property size and positively associated with rainfall. Overall, 81% (25/31) of producers reported that the purpose of running goats on their properties was to target international markets. Producers also cited the importance of targeting markets as a way to increase profitability. Fifty-three percent of producers were located over 600 km from a processing plant and the high cost of freight can limit the continuity of goats supplied to abattoirs. Fencing was an important issue for goat farmers, with many producers acknowledging this could potentially add

to capital costs associated with better goat management and production. Producers in the pastoral regions appear to have a low investment in pasture development and opportunistic goat harvesting appears to be an important source of income. Additional keywords: feral goats, market, rangeland, seedstock producer

*Animal Production Science* **56**(9) 1520–1532

<http://dx.doi.org/10.1071/AN14793>

If you are interested in this article you should also check out "A survey of the meat goat industry in Queensland and New South Wales. 2. Herd management, reproductive performance and animal health" also in *Animal Production Science* **56**(9) 1533–1544 <http://dx.doi.org/10.1071/AN14794>

# Barbervax – the state of play

Dr David Smith, Moredun Research Institute, Scotland

## Background

Barbervax is a vaccine that protects sheep against barber's pole worm (*Haemonchus contortus*). Launched in Armidale, New South Wales in October 2014, it is the first vaccine in the world for a sheep worm and is the culmination of more than 20 years research at the Moredun Research Institute in Scotland. The vaccine is made in collaboration with the Department of Agriculture and Food Western Australia at its Albany laboratory, where the final development phase was funded by Meat and Livestock Australia.

## Performance in Lambs

During the last two summers Barbervax has been used in some 250,000 lambs, mainly in the Northern Tablelands, where barber's pole is endemic and anthelmintic resistance common. Free egg counts were offered to all users so that the performance of the vaccine could be monitored to some extent. Provided the recommended vaccine schedule was followed, lamb egg counts were suppressed to levels below or close to the drench threshold of 1,000 epg recommended by Wormboss (<http://wormboss.com.au>). (This threshold has been set to prevent build up of larvae on the pasture and future infection. Clinical signs or deaths caused by *Haemonchus* don't usually arise until egg counts reach 5,000 epg or more). Graphs summarising these results can be found at <http://barbervax.com.au>

## Use in adult sheep

Initially Barbervax was registered

for lambs only, but permission to use it in adult sheep was granted in late 2015 and so the vaccine will also be available for hoggets and breeding ewes during the forthcoming 2016/17 season. A few producers used the vaccine "off label" in hoggets and ewes last summer. Examples of vaccine performance on some of these properties as well as recommended vaccination schedules for hoggets and ewes whether vaccinated in a previous season or not can be found at <http://barbervax.com.au>

Barbervax customers will continue to be offered two free worm tests for each class of sheep they have vaccinated during the high risk period (January to April) so that general vaccine performance can continue to be monitored.

## Barbervax supply

Initially the supply of vaccine was limited, but this obstacle has now been overcome and so future production is expected to be able to meet demand.

In addition to the usual 250 ml packs, during the 2016/17 season and beyond Barbervax will also be available in 100 ml amounts. Using the smaller pack size will be more cost effective when the number of sheep to be vaccinated is not close to a multiple 250.

Thanks to favourable results with trials of Barbervax after prolonged storage, its shelf life has now been extended to 33 months provided it is kept refrigerated.

## Attempts to register Barbervax for goats

Barbervax will not be registered for use in goats in Australia in the foreseeable future.

After numerous enquiries from owners, three field trials funded by Meat and Livestock Australia were conducted with a view to registering Barbervax for goats. Unfortunately the results were mixed and for unknown reasons the vaccine did not work on one of the properties. Given the relatively small number of farmed goats in the *Haemonchus* endemic zone of Australia, it is not considered economically viable to run the numerous trials needed to determine whether the failed trial was an exceptional result."

Barbervax is available through Grazag in northern NSW. I understand it will be available through Landmark in southern NSW.

*Editors Note: Preprinted with permission. This article was first published in WormMail July 2016.*

*For more information go to WormMail in the cloud (<http://wormmailinthecloud.wordpress.com>) - a blog about internal parasites in livestock & veterinary science in general.*



## MLA to host forum on red meat industry's digital future

The digital future of the Australian red meat industry will be on the agenda at a unique forum to be hosted by Meat & Livestock Australia (MLA) in Brisbane on Thursday 6 October.

The Australian Red Meat Industry's Digital Strategy Forum will be an opportunity for everyone in the value chain to hear about the digital future and participate in the development of a plan for the red meat and livestock industry.

The forum is the next phase in the development of the Value Chain Digital Strategy for the Australian red meat and livestock industry outlined by MLA last month.

The strategy – an industry first – will be designed to empower every participant at every point in the value chain through data-driven commercial decision making. Working with industry, it will aim to deliver seamless capture, integration and interpretation of the vast and increasing range of data being generated through new technology.

A range of domestic and international experts will present at the forum and challenge our industry on the real potential available from new technology and how to realise it.

Speakers on the day will include:

Steve Sonka, University of Illinois - "Big Data and Agriculture-what's the outlook?"

Graham Gardner, Murdoch University - "Objective Measurement - a catalyst for change."

Michael Whitehead, ANZ - "How the digital world will disrupt how industries interact with the banking sector."

MLA Managing Director Richard Norton said the forum was an important opportunity to participate in the development of this vital digital strategy and learn more about the role it will play in the ongoing success of the red meat and livestock industry.

"There is a compelling need to harness the multitude of new digital technologies to ensure they work together to build prosperity throughout the red meat industry," Mr Norton said.

"Maximising information exchange will be critical to ensuring our industry identifies and produces what our markets need in a more sustainable and profitable way. Improved communication will also increase the capacity of all industry players to

embrace new technology – and the use of meaningful data in their own business.

"Collaboration across the industry and with the world's best innovation companies will be vital to achieving these goals – and this forum is a perfect first opportunity for interested participants to come together and discuss our digital future."

The Australian Farm Institute is coordinating the forum on behalf of MLA, having recently delivered an extremely successful Disruption in Digital Agriculture conference. The forum is interactive and will close with networking and refreshments.

Australian Red Meat Industry's Digital Strategy Forum Thursday, 6 October 2016, 9.00 am Stamford Plaza, Brisbane

Registration for the day is essential as numbers are limited. To register and for more information please visit [www.mla.com.au/digitalforum](http://www.mla.com.au/digitalforum)

### Russian Wheat Aphid Update

Russian Wheat Aphid (RWA) has been confirmed to be present in NSW. Grain growers, agronomists and consultants across NSW are urged to monitor cereal paddocks for signs of RWA and to report suspect paddocks or symptoms to NSW Department of Primary Industries.



More information is available at

[www.dpi.nsw.gov.au/content/biosecurity/plant/russian-wheat-aphid](http://www.dpi.nsw.gov.au/content/biosecurity/plant/russian-wheat-aphid)

### New Zealand Grassland Association

Annual Conference 2-4 November 2016

Timaru

Sessions include;

- Land diversity,
- Building resilient farm systems,
- Protecting soil, water and the environment,
- Forage productivity,
- Hot topics, cool solutions, and
- Field tours to dairy, beef and sheep properties.

To register or for more information:-

[www.grassland.org.nz/events.php](http://www.grassland.org.nz/events.php)

Don't forget to check out the Grassland Society of NSW Travel Grants. 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 or other activities and events associated with grassland science. More details are available on the website ([www.grasslandnsw.com.au](http://www.grasslandnsw.com.au)) - click on the membership tab - or by contacting the Secretary ([secretary@grasslandnsw.com.au](mailto:secretary@grasslandnsw.com.au)).



# Magnesium deficiency in livestock

Nigel Brown, District Veterinarian, Glen Innes, NTLIS, NSW

## Introduction

Hypomagnesaemia is proving to be a real problem on the Northern Tablelands during late winter and spring this year. Hyperacute cases in cattle (found dead) have been seen in large numbers and there have been countless acute cases treated by local vets - some successfully, others not responding to treatment. Quite a few sheep owners have identified 'lazy lambers' in their flocks - probably another syndrome related to low blood magnesium levels. Several factors have combined to create this high risk season - very changeable weather, early pasture growth, an upturn in economics which has encouraged application of fertilisers plus a low level of routine mineral supplementation. Clostridial diseases can also cause sudden death and are a major differential diagnosis.

## How does magnesium deficiency occur?

Magnesium, a major mineral, is absorbed primarily through the rumen and makes up about 0.1% bodyweight.

Apart from its importance in body structure (bones and muscles), magnesium has critical roles in facilitating numerous energy-generating reactions in animal tissues and for the orderly transmission of nerve impulses. Although livestock have significant reserves of magnesium in their body - more than 60% is in the skeleton and most of the rest in muscles - skeletal magnesium can only be released during general bone resorption which decreases in adult animals. Livestock therefore have very small reserves of magnesium to buffer changes in ruminal absorption and need a continuous dietary supply to maintain adequate blood levels. The kidneys are vital for magnesium homeostasis - when the plasma concentration falls to the renal threshold level of 18 - 22 mg/l plasma, magnesium excretion is sharply reduced.

Magnesium is poorly absorbed by the rumen (only 30 - 50%) but several factors can reduce absorption further - high rumen pH, potassium and rapidly degradable protein all have a negative effect. This means that high dietary intake of potassium and degradable protein in rapidly-growing spring herbage predispose animals to hypomagnesaemia. The added stress of cold exposure or, perhaps worse, frequent changes between cold, wet, warm and chilling days, further increases the risk because of reduced feed intake and a large proportion of the magnesium absorbed being sequestered by adipose tissue.

## Clinical Hypomagnesaemia (grass staggers, grass tetany)

Livestock are at heightened risk of fatal grass staggers in the spring with fresh, lush, rapidly-growing early grass growth (especially if heavily fertilised) that has low dry matter and magnesium content. Leaching of magnesium from pasture over the last few wet months of winter won't have helped. Older pastures and those with higher legume content are less dangerous but stock grazing early-growth cereal forages can develop hypomagnesaemia with concurrent hypocalcaemia.

Many cases of acute deficiency occur after stress, e.g. yarding, transport or change of pasture as well as bad weather with little shelter, as discussed above.

This is usually a herd or flock problem with the highest-risk age group of animals being 4-6 years old (younger and older animals are less prone). In sheep, the acute form most commonly occurs within 4-6 weeks of lambing. Affected ewes exhibit sensitivity to touch and trembling of the facial muscles; some are unable to move, others move stiffly; extreme cases collapse and show repeated tetanic spasms with all four limbs rigidly extended. Cattle become irritable,

show aggression and signs of muscular tremors (often with the ears drawn back) but these can be missed in extensive grazing herds with sudden death being the first signs of an outbreak.

## Subclinical Hypomagnesaemia

The signs of sub-clinical disease are less noticeable. In cattle they are often associated with an increased incidence of milk fever (hypocalcaemia), lowered milk production and reduced performance. In sheep, flocks are commonly found where lazy lambing is a problem. In these, the cervix dilates but uterine contractions are inadequate for parturition (inertia). Investigation usually reveals that the lamb can be delivered easily and the dystocia is not related to absolute or relative foetal oversize nor malpresentation.

## Prevention

Magnesium supplementation should be provided to stock prior to the spring grass flush and other high risk periods. Daily supplementation for livestock is reasonably well known (Cattle = 60 g/head/day of magnesium oxide but up to 100 g/head/day in some cases; Sheep = 10 g/head/day).

This author recommends that all producers should be providing grazing livestock with ad lib access to common salt (NaCl) all year round. Prior to spring, causmag (reactive calcined magnesium oxide) can be added to this salt in equal parts. After calving or lambing, the same amount of lime (calcium oxide) can also be added to the mix in a 1:1:1 ratio. Most soils are deficient in common salt so it generally takes stock 2-3 weeks to remove their salt deficit when it is first presented in the paddock near a water source. Initially, animals usually eat large amounts before settling down to a daily intake level so it makes sense to let the large amounts of salt be eaten before

adding the more expensive causmag. This also avoids the unlikely risk of magnesium toxicity.

An effective method is to mix magnesium salts (which can be unpalatable) with the ration or to mix it with hay when molasses can help to counteract the palatability issue. Hay should either be wetted to prevent the magnesium granules falling off or dissolve the magnesium in water and sprinkle it on the hay from a watering can (beware - magnesium salts can be abrasive and destroy spray nozzles).

Other preventative techniques include the use of ruminal boluses, oral drenches, treated water and commercial licks. The NSW Primefact (Grass tetany in cattle – treatment and prevention) provides a good overview and is well worth consulting.

### Treatment

Intravenous magnesium can easily prove fatal if delivered to excess. Veterinarians invariably monitor heart activity during delivery - but enthusiastic producers might not. Care is needed to avoid the excitement / stress of handling and some veterinarians may decide to administer sedative first. Subcutaneous magnesium is absorbed less quickly but has a useful role in preventing deterioration of early cases. Administered solutions are frequently a mixture of magnesium with calcium, phosphorus and dextrose to cover deficiencies that can occur in similar metabolic syndromes. It should be routine procedure to warm solutions before administering and maintain high standards of hygiene.

### Conclusion

Hypomagnesaemia is a common cause of death among grazing livestock but it can be almost completely prevented by adequate preparedness on the part of the grazer. Treatment of clinical cases has much poorer success rates and many animals will be found dead.

Magnesium oxide supplementation should start well in advance of anticipated high-risk periods which, if routine intake patterns for the supplements on offer have been established, will be easily identified by a sudden increase of lick intake when the pasture is providing inadequate daily amounts of magnesium.

## Bureau of Meteorology Climate Outlook: September – November 2016

### Rainfall - Wetter three months likely for parts of northern Australia

- ⊗ Spring (September to November) rainfall is likely to be above average across parts of northern Australia. For most of the country, the chances of a wetter or drier three months are roughly equal.
- ⊗ September is likely to be wetter in localised areas over northwest WA, southern NSW and southern Tasmania, but drier in parts of southern WA.
- ⊗ The current outlook reflects a weakening negative Indian Ocean Dipole and tropical Pacific Ocean temperatures that may briefly approach La Niña thresholds.
- ⊗ Historical outlook accuracy for September to November is moderate to high over most of Australia.

### Temperature - Warmer season likely for most of Australia, except for the east

- ⊗ Spring (September to November) days are likely to be warmer than average for most of Australia. Southern Queensland, eastern NSW, and the far southern coast of WA have roughly equal chances of warmer or cooler spring days.
- ⊗ Night-time temperatures are also more likely to be warmer than average for most of Australia. Southwest WA, southeast Queensland and northeast NSW have roughly equal chances of warmer or cooler spring days.
- ⊗ The current outlook reflects a weakening negative Indian Ocean Dipole and tropical Pacific Ocean temperatures that may briefly approach La Niña thresholds.
- ⊗ Maximum temperature accuracy is moderate to high over most of Australia, except for some small patches in WA, where accuracy is low to very low. Minimum temperature accuracy is moderate over much of the country, but patchy in WA and parts of the northern tropics.

### Climate influences

- ⊗ Bureau climatologists continually monitor the climate for any significant developments, with information on the El Niño/La Niña and Indian Ocean Dipole (IOD) events available fortnightly via the El Niño-Southern Oscillation (ENSO) Wrap-up ([www.bom.gov.au/climate/enso/](http://www.bom.gov.au/climate/enso/)). For a summary of the Pacific and Indian Ocean outlooks see the Climate Model Summary ([www.bom.gov.au/climate/model-summary](http://www.bom.gov.au/climate/model-summary)).

For more information on the September - November Outlook - [www.bom.gov.au/climate/outlooks/#/overview/summary](http://www.bom.gov.au/climate/outlooks/#/overview/summary)

Or watch the Outlook video at [www.bom.gov.au/climate/outlooks/#/overview/video](http://www.bom.gov.au/climate/outlooks/#/overview/video)

A new Outlook video will be released on Thursday 29 September

## From the President

Wow, what a turnaround in seasonal conditions. When I wrote in May, much of NSW had just received much needed rain. Three months on, and to the delight of a very wide audience, it is still raining. Much of the past three months has seen wet to very wet conditions over vast areas. There have been all sorts of pictures circulating over social media, each trying to show who has been the 'most bogged'!. I think the 8 wheeled tractor pulling the quad bike out probably wins.

From a pasture's perspective, growth has been occurring as the extreme cold and frost events have been far less than normal. Some areas have had more cold conditions lately than they did through June and July. Additional to this growth, has been a greater

emergence of annual weeds. Plenty of broadleaf and annual grass issues are being spotted, and with limited trafficability, control has been limited. It may be a season to try some mid spring spray topping strategies, or hay and silage options on the 'dirtier' pastures to try and prevent a significant seed set by those rogue weeds.

Cattle and sheep pricing continues to remain very strong. Taking advantage of these and putting some effort back into our pastures is very achievable. Be mindful of nutrient removal through grazing and product being shipped off farm. There are many good references and calculators which can help estimate these numbers, and maintenance of our pasture based is the 'food' for the next cheque.

The "Pasture Updates" program is in full swing. Gloucester has been conducted, Manildra is on October 13th, and plans for others in NSW are being finalised. Please keep an eye on the web site for the next "Pasture Update" near you.

Enjoy the spring. It looks like being a good one for a change. I look forward to talking with members and guests at some of the pasture updates later this year.

All the best,  
Regards,  
David Harbison,  
President.



### Membership subscription due now for 2016/2017

Annual Grassland Society of NSW subscription of \$60 for 2016/2017 is due July 1 2016.

Payment methods: Cheque, Credit Card (Mastercard or Visa) or electronic\*

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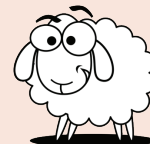
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*Grassland Society of NSW membership includes four newsletters per year, a copy of the Conference Proceedings and discounted registration fees for the Conference and other events held by the Society. The information archives on the website are available to members only – newsletters, articles and current conference proceedings stored in the "Member Access" area can be viewed by entering your user name and membership number when prompted.*

### Did you attend LambEx 2016?

Don't forget if you are a current financial member of the Grassland Society of NSW you can claim a cash back of \$150 on your LambEx 2016 registration. Proof of receipt will be required to claim the cash back.

For more information email  
[secretary@grasslandnsw.com.au](mailto:secretary@grasslandnsw.com.au)



### New members

*The Grassland Society of NSW welcomes new members*

David Rothery, Mosman; Albert Mullen, Taree;  
Martin Murray, Tamworth; Scott Young, Tamworth; Julie Dart, Coffs Harbour; and Sam Newsome Tamworth

### 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

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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](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 2016. 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 7th November 2016.



**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 articles 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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