GRASSLAND SOCIETY OF NSW INC.

Newsletter

Welcome to the last newsletter for 2017 - it has been a busy year for the Society with Pasture Updates at Grafton, Glen Innes, Bega, Tocal and more recently at Tooraweenah and Bathurst (see reports on page 3–4). We hope you had a chance to get along to and participate in a Pasture Update near you. If not be sure to keep an eye on our website (www.grasslandnsw.com.au) or Facebook page for details of a Pasture Update event near you in 2018. The first Pasture Update of the year will be at Moree in mid-February. Don't forget the Grassland Society of NSW state management committee is keen to hear from members on possible locations for future Pasture Update events, the event format and topics or activities you would like to see covered. Email your comments/suggestions to secretary@grasslandnsw.com.au

The other big event for the Grassland Society of NSW in 2017 was of course the conference at Cowra in July (see report in page 2). After member feedback in 2015 the conference went biennial and the 2017 conference was the first under this new structure and was a great success with an increased turnout on previous years. The committee is working towards a bigger and better conference in 2019 so watch this space.

Please don't forget to pay your annual subscription fee for 2017/18 which was due on July 01 2017 - see details on page 10.

Are you looking for an unique Christmas present for a family member or friend? Why not consider a Grassland Society of NSW membership. Membership includes a quarterly newsletter, a copy of the biennial conference proceedings, discounted registration fees to the biennial conference & other society events, eligibility for travel grants (after two years membership) and access to archived information & publications on the Society's website - at $60/year - its great value.

Thank you to everyone who has contributed to the newsletter this year - it has been greatly appreciated. Please continue to send in your contributions.

I wish you and your families a very Merry Christmas and prosperous 2018.

Carol Harris,
Editor

Wishing our members and their families a Merry Christmas and a Happy & a Healthly New Year

In this newsletter

2017 Biennial Conference report

The 30th Conference of the Grassland Society of NSW Inc., titled "Your system – Taking it to the next level" was held in Cowra on July 25th and 26th 2017. This was the first of the 'biennial' conferences, following member feedback that every second year would be a better format, and what a success it turned out to be. By comparison to previous conference numbers, the 2017 delegate numbers were up 30%.

A very comprehensive program was compiled by the organising committee, in conjunction with the society's state president and conference convener, David Harbison, and this, along with good market prices across all of the grazing industries at present, contributed strongly to the attendance.

The program contained themes and papers on;

• 'The big picture' – MLA's Richard Norton and University of Melbourne's Bill Malcolm,

• Filling the feed gap, grazing cereals and potential 'perennial' crops,

• Opportunities in legumes, native pastures, alternative fertilisers and ameliorants,

• Technologies; drones, DSE potential and EID's, and

• Meat quality and ewe pelvimetry.

These were presented by producers (the next generation of), industry, and researchers and extension personnel from the University of Melbourne, Cowra Research Station, NSW DPI, Local Land Services and Agriculture Victoria.

Attended by approximately 200 farmers, agronomists, and industry personnel, delegates were also able to attend one of three bus tours to regional farming activities. Tours towards Mandurama/ Woodstock, Cowra/Greenethorpe and Gooloogong/Canowindra gave delegates the opportunity to see lamb, beef, legume alternatives, forage conservation and dairy, on farm with producers who very kindly opened their properties for our benefit. Much discussion was generated on all tours, with the conference dinner that evening enabling much networking and further discussion.

Conference delegates attending Bus Tour C - the tour visited the Cowra / Greenethorpe district where a diverse range of farming and manufacturing business were visited. Photo credit: Ted Wolfe

A key to the success of our conferences is our sponsor's involvement. On behalf of the Grassland Society of NSW Inc, I would like to thank all our sponsors very much. To our premier sponsors; NSW Department of Primary Industries, NSW Local Land Services – Central Tablelands and Meat & Livestock Australia, our major sponsors; Heritage Seeds and Agroplow, and our corporate sponsors; Auswest Seeds, Dow AgroScience, Incitec Pivot Ltd, Lachlan Fertilisers Rural, Local Land Services – Lucerne Management Online, Pasture Genetics, Upper Murray Seeds, Valley Seeds, Wengfu Australia Ltd, NuFarm and Maiagrazing, and our local sponsors; Beecher Wool Services, Cowra Council, Elders – Cowra, and Rabobank, Thank you. Without your collective involvement, organisations like ours cannot deliver the technical programs that we do.

Collectively, through the conference program, interaction with our sponsors and their delegates, the bus tours and the dinner, there has been resounding positive feedback. The comments and suggestions for future activities have been enormously encouraging, and we look forward to everyone contributing again for the 2019 conference.

David Harbison
Convener, 2017 Conference.

The Grassland Society of NSW now holds biennial conferences rather than annual conferences. Therefore the next conference will be held in 2019. If you have a suggestion regarding location, topics or speakers for the 2019 conference please contact the Grassland Society of NSW Secretary at secretary@grasslandnsw.com.au

In the meantime keep an eye on the website or Facebook page for notifications of a Pasture Update Event near you in 2018.

Pasture Update reports

Held over two days, the Grassland Society of NSW Inc. conducted two very successful Pasture Updates at Tooraweenah (October 10th) and Bathurst (October 11th). Funded by MLA, along with some local sponsor support, these days attracted great interest, and reflected the very current and relevant agendas put together by the organising committees. Below is a brief report from each day.

Tooraweenah: A very successful Pasture Update was held at Tooraweenah on 10th October with 80 producers and advisors attending. Some had travelled more than 150 km to attend. The day was sponsored by Meat and Livestock Australia, The Grassland Society of NSW Inc. and Central West Local Land Services.

There were a number of presentations held in the morning session and some of the key points were:

• Dr Susan Orgill of NSW DPI provided and excellent presentation and demonstration using soil cores typical of those found in the Tooraweenah district. This allowed those attending to gain a better understanding how to address common constraints in these soils to improve productivity. Importantly, Dr Orgill pointed out characteristics of the soil that could not be changed by management and strategies that may be used to better manage them.

• Dr Belinda Hackney CWLLS talked about how to set pasture legumes up so that they could maximise nitrogen fixation. In many cases the soil pH is too low to allow rhizobia to survive and function effectively and this reduces nodulation and nitrogen fixation. Where this is a problem, producers may have to think about liming to increase soil pH or otherwise consider growing legumes such as serradella which has better acid soil tolerance as does its associated rhizobia.

• Clare Edwards from Central Tablelands LLS discussed establishment and management of tropical grasses and particularly the importance of getting the fundamentals right to ensure long-term success of the pasture.

• John Piltz from NSW DPI provided very valuable information on using supplementary feeding in the current dry situations. One of the most important aspects of this presentation was getting attendees to consider the impact the quality of the supplement (digestibility and protein) could have on livestock production. Given the amount of tropical pasture grasses sown in the area and how quickly they can respond to summer rainfall events , Mr Piltz also provided information on how tropical grass quality changes over time and the importance of utilising it in the early active stages of growth for highest livestock production as feed quality rapidly declines as the plant matures.

In the afternoon, attendees visited two local farms where they were able to see some of the information from the morning being practised in the paddocks. At the Smith's family farm, attendees saw how dual purpose crops were being used in conjunction with tropical grass pastures to maintain year-round productivity. The Smith's also discussed how they strategically use cropping in preparing paddocks for sowing to tropical grass-legume pastures.

At the second property owned by the Bowman family, attendees were able to see how distinctly different landscapes were being managed for high levels of livestock production. The property is a mix of hill-country , which over the years has undergone extensive pasture improvement by air with flatter, higher productivity country. The hill country was particularly challenging with respect to weed control.

Attendees at the Toorweenah Pasture Update enjoying the formal session on October 10 2017.

The need for weed control strategies which do not impact kurrajong tree stands was discussed.

Overall, this was a very successful and educationational day for all who attended. The local Lions Club provided fantastic catering for the day. Brendan Butler was instrumental in organising the day and promoting it locally – it is only with this sort of local enthusiasm that these days are so successful

Bathurst: Similar to the Tooraweenah Pasture Update there were presentations at Bathurst by Dr Susan Orgill , John Piltz (NSW DPI) and Dr Belinda Hackney (Central West LLS) who all gave the attendees some key messages to benefit their businesses at home.

Also at Bathurst, Fiona Leech (South East LLS) gave a terrific presentation of her very intensive study, over 8 years now, of alternative fertilisers and their impacts on production and the microbial populations within the soil. What a power of information to try and take in. There was one very clear message, nutrition works and plants respond accordingly. Individuals can assess and choose whichever product they like, they come at variable costs, and consequently the cost of that extra kg of dry matter can range significantly. To the 'bugs' and the soil biology, after very extensive studying, and with CSIRO's assistance, there appears to be no clear benefit from any particular fertiliser, compost or 'brew'.

Post lunch, with compliments to the masquerading chef Brett Littler (Central Tablelands LLS), he joined local Bathurst farmer Charles Dutton and Bruce Watt (Central Tablelands LLS) to talk animals, managing sheep in feedlots in dry times, lessons learned and pitfalls experienced, weaner management and feed requirements (both lambs and calves), and other local livestock issues that were very topical.

All in all, two fantastic days. The Grassland Society of NSW Inc would like to thank three people in particular, Brendan Butler, Belinda Hackney and Clare Edwards. Their collective efforts in making these days a success relies on dedicated individuals, and these three excelled. We do hope all attendees took some key messages home with them from the days, thanks to MLA and the local sponsors for their contributions, and as a society, we look forward to further activities throughout the state in the near future. Please keep an eye on the society's web site, www.grasslandnsw.com.au for future activities and respective dates.

Dr Susan Orgill of NSW DPI, using soil cores to demonstrate to attendees at the Bathurst Pasture Update some soil characteristics that may be constraining productivity.

Date for the diary

The next Grassland Society of NSW Pasture Update will be at Moree in mid-February 2018.

Program and registration details will be available on the website (www.grasslandnsw.com.au) and Facebook in early 2018.

Response of white clover (Trifolium repens) varieties and ecotypes to phosphorus on the Northern Tablelands of New South Wales

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Abstract: White clover has been the primary legume used in improved pastures of the Northern Tablelands over the past 90 years, however data is lacking on the ability of white clover varieties and ecotypes to yield under low and high P conditions. An evaluation was undertaken that examined the yield performance of 5 white clovers when grown under P application rates of 0, 10, 20, 40 and 80 kg P/ha applied each year for just under 2 years. At the first harvest taken 7 months after sowing Ladino produced the highest yield at P_0 and Tablelands the lowest with responsiveness to P in the order New Zealand > Clarence > Algerian > Ladino > Tablelands. Yields at P_{80} ranged from 33 kg/ha for Tableland to 242 kg/ha for Clarence. Responsiveness to P over the 4 harvests taken over the experimental period was in the order New Zealand > Clarence =Algerian > Ladino = Tablelands. Yields at P_{80} ranged from 2013 kg/ha for Tableland to 5226 kg/ha for Ladino. Data like that reported here is becoming increasingly important as fertiliser prices rise. The lack of investment in public research to objectively evaluate new germplasm leaves producers without clear guidelines about replacement species. Significant value could be gained from developing well adapted and productive white clover cultivars that are significantly more P efficient.

Introduction

White clover has provided the backbone of pasture improvement on the Northern Tablelands over the past 90 years. Research conducted in the 1920's on pastures containing white clover and trefoil found substantial increases in liveweight gain and carrying capacity from the application of single superphosphate (SSP), (Moody 1934). Subsequently the optimal P fertility for a legume based pasture was developed (Olsen *et al*. 1954) for the top 10 cm of soil and is considered to be 15 mg P/kg (Moody 2007). This approximates a Colwell P of 30 mg P/kg where the soil phosphorus buffering index is less than 80 (Colwell 1963). Despite this knowledge and a long history of SSP application, Colwell P soil test results from throughout the New England Tablelands commonly remain below 20 mg/kg due to the relative low application rate and sporadic nature of the application, which is dependent on rainfall and disposable income.

Crush (1995) found that Al-tolerant genotypes of white clover collected in NZ had similar P response characteristics to the P-efficient genotypes indicating that in plant breeding it is possible to select white clover genotypes that are Al-tolerant without increasing the need for P fertiliser.

There have been many introductions of white clover varieties into the New England region, many which have been selected under high soil P conditions in New Zealand and other parts of the world, and the question arises as to how these perform under low P conditions and how they respond to applications of P, which is the aim of this study. This is becoming increasingly important as fertiliser prices rise. The lack of investment in public research to objectively evaluate new germplasm leaves producers without clear guidelines about replacement species.

Methods

The experiment was established on a podzolic soil with low P status (Colwell P = 6 mg/kg) at the University of New England, Armidale in March, 1971. Plots 0.9 x 2.7m were laid out following cultivation in a split block design that included P rate as the whole plot and white clover (*Trifolium repens*) genotype as the sub-plot with 2 replicates. P was applied as single superphosphate at rates equivalent to 10, 20, 40 and 80 kg P/ha with a 0P control. Sulphur (S) was balanced with gypsum. These applications were repeated at the start of year 2 of the experiment. A basal application of 200 kg/ha KCl, 5 kg/ha each of $CuSO_4.5H_2O$, $ZnSO_4.7H_2O$, $Na_2B_4O_7$ and $MgSO_4$ and 0.25 kg/ha $Na_2MoO_4.2H_2O$ was added to all treatments. Year 1 fertilisers were topdressed onto the soil surface and raked in following seeding and year 2 topdressed. Plots were sown at 5.7 kg seed/ha in March 1971 with 5 genotypes of white clover (Table 1). Plots were harvested on 25/10/71, 26/4/72, 20/11/72 and 16/1/73 by cutting the plants approximately 3 cm above the soil surface. Harvested plant material was hand sorted to obtain a clean sample of white clover and dried at 80^0C for 48 hours before weighing.

Table 1. White clover type sown and source of seed used in the experiment.

Variety (v) or ecotype (e)	Source
Ladino (v)	Commercial cultivar
New Zealand (v)	Commercial cultivar
Algerian (v)	Commercial cultivar
Tablelands (e)	Ecotype - collected from unfertilised pasture near Armidale
Clarence (e)	Ecotype - collected from fertilised pasture near Grafton

Results

The dry period after sowing in 1971 (Table 2) resulted in poor early growth in the P limiting plots (Table 3) which did not recover well in spring. A dry autumn in 1972 similarly restricted growth (data not shown).

There was a marked response to P at each harvest (Table 3 and Figure 1). At the first harvest taken 7 months after sowing Ladino produced the highest yield at P0 and Tablelands the lowest (Table 3) with responsiveness to P in the order New Zealand > Clarence > Algerian > Ladino > Tablelands. Yields at P80 ranged from 33 kg/ha for Tableland to 242 kg/ha for Clarence.

Cumulative dry matter over the 4 harvests showed marked differences between genotypes in both their yield under P_0 conditions and at P_{80} (Table 3 and Figure 1). As was evident in the first harvest Ladino produced the highest yield at P_0 and the 2 ecotypes produced the lowest yield. Responsiveness

Table 2. Armidale rainfall received in the experimental period.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1971	195.5	125.0	24.1	13.6	11.7	23.8	64.4	105.5	97.9	34.2	75.7	94.2	847.3
1972	168.3	66.7	40.2	42.9	25.5	20.1	4.5	54.1	58.4	157.8	103.8	39.1	781.4
1973	187.5												
Mean (1857–1997)	104.5	87.1	65.0	45.9	44.4	56.9	49.2	48.4	51.6	67.8	80.4	89.2	791.2

to P was in the order New Zealand > Clarence =Algerian > Ladino = Tablelands. Yields at P80 ranged from 2013 kg/ha for Tableland to 5226 kg/ha for Ladino. Tableland, Clarence and Ladino had a curvilinear response curve and the other ecotypes a linear response over the 0-80 kg/ha application range.

The two applications of P resulted in changes in Colwell P being 8, 10, 19, 26 and 56 mg/kg for 0, 10, 20, 40 and 80 kg P/ha/year, respectively.

These results indicate a large scope for selection of appropriate germplasm for the New England Tablelands as has occurred in New Zealand. For example Caradus (1983) grew eight white clover ecotype populations and two cultivars in culture solutions containing 10 ppm and 0.01 ppm phosphorus (P). Large differences in total P uptake were found between genotypes and most of this variation was accounted for by differences in root length.

In a range of other annual legume species Yang *et al*. (2015) showed similar effects to that of Caradus (1983) in a pot experiment using soil. Haling *et al*. (2015) demonstrated that many of the legume species tested by Yang *et al*. (2015) had different soil P requirements to achieve 90% of maximum dry matter yield (critical soil P requirement) when tested in a pot experiment. Haling *et al*. (2015) concluded that selecting legumes that maximise nutrient foraging (e.g. long, thin roots with long root hairs) may reduce the critical P requirement of pasture legumes. Sandral *et al*. (2015) showed differences in the P application rates for 90% of maximum dry matter yield under field conditions which were consistent with Haling *et al*. (2015) results where the P efficiency differences where greatest (e.g. in serradella species).

Even under the cutting conditions imposed in this study it was observed that the growth habit and flowering time of the genotypes tested changed and similar or greater changes might be expected where hard grazing is imposed.

The Tableland entry represents selection made under low P and hard grazing and is a small leaved, prostrate type with a wide flowering period. In this research it was shown to have a low potential yield; however adaptation, P efficiency and potential shoot biomass production all need to be considered when trying to maximise P efficiency, plant persistence and stocking rate. To this extent plant adaptation issues where highlighted in the P efficiency research undertaken by Sandral *et al*. (2015).

Conclusion

Considerable differences have been found between white clover genotypes in both their yield under P limiting and P adequate conditions as determined by dry matter response. Farmers are often choosing to run Colwell P levels below optimal levels and where this occurs significant dry matter increases might be possible by selecting more P efficient white clover genotypes that have adequate environmental adaptation. This research and development approach to improving plant P efficiency is currently being undertaken in subterranean clover (*T. subterraneum*), and white clover would benefit from a similar approach.

Acknowledgements

This research was funded by the Australian Meat Research Committee (AMRC) and the University of New England. The research was initiated during a sabbatical leave by Dr Warwick Harris, now of Landcare Research, Christchurch, NZ.

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Table 3. Dry matter yield from regression analysis of white clover tops grown without applied P and yield response (kg DM/kg P applied).

White clover	Harvest 1			Cumulative		
	Yield at P_0	kg DM/kg P	r^2	Yield at P_0	kg DM/kg P	r^2
Ladino	521	29.0	0.94	5226	58.2	0.95
New Zealand	184	45.6	0.99	3391	93.4	0.98
Algerian	123	34.0	0.99	2967	77.2	0.90
Tablelands	29	28.5	0.95	2468	54.0	0.90
Clarence	285	39.3	0.98	2013	77.6	0.99

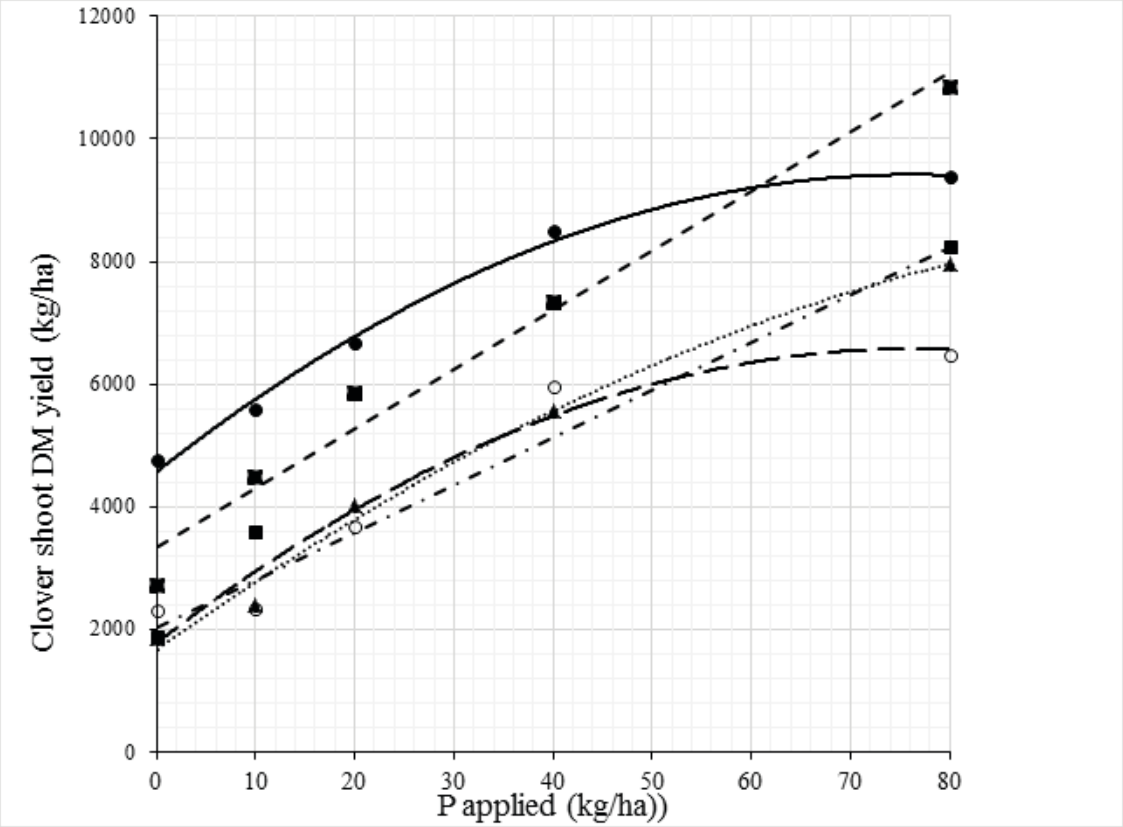

Figure 1. Cumulative shoot dry matter over 4 harvests of white clover at P application rates ranging from 0 to 80 kg P/ha/yr for Ladino (solid line)($y=-0.83x^2 + 127.1x + 4574$, $r^2=0.996$), New Zealand (bold broken line) ($y=96.624x + 3344$, $r^2=0.988$), Algerian (dot dash line)($y=77.56x + 2024$, $r^2=0.986$), Tablelands (unbolded broken line)($y=-0.81x^2 + 124.6x +1783$, $r^2=0.969$ and Clarence (dotted line)($y=-0.463x^2 +115.8x +1663.5$, $r^2=0.995$).

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Editors Note: This paper was first presented at the 18th Australian Agronomy Conference at Ballarat in September 2017. For more papers from the conference go to http://agronomyaustraliaproceedings.org/index.php/2017

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. The committee are particularly interested in applications from our producer members.

More details can be found on the website (www.grasslandnsw.com.au) - click on the membership tab - or by contacting the Secretary (secretary@ grasslandnsw.com.au)

New guidelines for snakebites

With the warmer weather upon us - snake sightings are fairly commonplace - would you know what to do if you or someone with you was bitten?

Recently, the Royal Flying Doctor Service (RFDS) issued new guidelines for snakebite victims based on a 10-year study of snakebites.

The Australian Snakebite Project, published in the Medical Journal of Australia in August this year, is the most comprehensive ever carried out, involved over 1500 patients and collated snakebite data from the past 10 years (2005-15).

"The publication of this study is very timely as the warm, dry winter and sudden rise in temperatures has brought snakes out early this year," said Tracey King, Senior Flight Nurse at the RFDS South Eastern Section.

“As venomous snakes are found in every state and territory we urge everyone, not just those in the warmer Outback locations, to be vigilant.”

“There are around 3,000 reported snakebites each year in Australia, resulting in 500 hospital admissions and an average of two fatalities.”

The Australian Snakebite Project threw up some surprising statistics, which challenges many long-held perceptions about where snake attacks occur and how to treat them.

Snake bites occur near the home while walking, gardening or trying to catch a snake. Three-quarters of people bitten by snakes are males aged in their 30s. The brown snake is the most likely to attack (41 %), followed by the tiger snake (17 %) and the red-bellied black snake (16 %). Snakebites can often be painless and may go unnoticed. Over 90 per cent of snakebites are found to occur on the upper and lower limbs.

Staying in the area after an attack can be dangerous and recent advances in medication mean we can now treat any snakebite with a generic polyvalent anti-venom, so identification is no longer necessary said Tracey King, Senior Flight Nurse at the RFDS South Eastern Section. The study prompted the RFDS South Eastern Sector to reverse previous long-standing advice about the importance of identifying the colour and type of snake.

While only 20- 25 out of 835 cases they studied resulted in death, the effects of a snakebite can be debilitating and far-reaching. Three-quarters of those bitten experienced venom-induced consumption coagulopathy, which causes blood clotting and life-threatening haemorrhages. Acute kidney injuries, brain and muscle damage and cardiac arrest are other possible side effects.

That’s why it’s important that people act quickly after a possible bite,” said Tracey.

Treatment for snakebites

DO

► Bandage firmly, splint and immobilise to stop the spread of venom. All the major medical associations recommend slowing the spread of venom by placing a folded pad over the bite area and then applying a firm bandage. It should not stop blood flow to the limb or congest the veins. Only remove the bandage in a medical facility, as the release of pressure will cause a rapid flow of venom through the bloodstream.

► Seek medical help immediately as the venom can cause severe damage to health or even death within a few hours

DO NOT

► Allow the victim to walk or move their limbs. Use a splint or sling to minimise all limb movement. Put the patient on a stretcher or bring transportation to the patient.

► Incise or cut the bite, or apply a high tourniquet. Cutting or incising the bite won't help. High tourniquets are ineffective and can be fatal if released.

► Wash the area of the bite or try to suck out the venom. It is extremely important to retain traces of venom for use with venom identification kits.

What about spider bites?

It can be difficult to know if a bite from a spider is dangerous or not. It’s important to be aware that bites from spiders can cause a severe allergic reaction (anaphylaxis) in some people.

Spider bites are best considered in three medically relevant groups: big black spiders, redback spiders and all other spiders.

The type of treatment will depend on the type of spider &/or if a severe allergic reaction to being bitten or stung has occurred.

For more information go to https://www.healthdirect.gov.au/spider-bites. If you suspect a spider bite from a big black spider or redback spider seek medical treatment immediately.

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.

Persistence and productivity of phalaris (*Phalaris aquatica*) germplasm in dry marginal rainfall environments of south-eastern Australia

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Abstract: Perennial grasses have production and environmental benefits in areas of southern Australia typified by the mixed farming zone of southern New South Wales (NSW). The perennial grass phalaris (*Phalaris aquatica* L.) is widely used in southern Australia; however, it would find more use in the mixed farming zone if its persistence in marginal rainfall areas (450–500 mm average annual rainfall) were improved. We evaluated a range of germplasm (n = 29) including wild accessions, lines bred from these, and existing cultivars for persistence and production at three sites in a summer-dry area of southern NSW with 430–460-mm average annual rainfall. Two sites were used over 4 years and the third site over 5 years. Summer dormancy, maturity time and seedling growth were also assessed. Analysis of genotype × environment interaction employing factor analytic models and accounting for spatial and temporal correlations indicated that changes in persistence occurred mainly over time rather than between sites. Ranking changes occurred in the dry establishment phase of the experiment and during a severe final summer drought, with few changes occurring in the intervening high-rainfall years. Lines that survived the establishment phase best had vigorous seedlings and earlier maturity, whereas those surviving the final summer best were earlier maturing and higher in summer dormancy with high winter-growth activity. Some later maturing lines within the higher summer dormancy group were less persistent. Some accessions from North Africa were the most persistent; also, populations bred from these and other more persistent accessions generally persisted and produced better than cultivars used presently. However, present cultivars were capable of high yield in the higher rainfall years. We suggest that persistence of higher summer dormancy cultivars over very dry years could be improved by selecting for earlier maturity time.

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Winter wheat cultivars in Australian farming systems: a review

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Abstract: Winter wheat cultivars are defined as those that have an obligate vernalisation requirement that must be met before they will progress from the vegetative to reproductive phase of development i.e. they must experience a true winter before they will flower. Historically, very little breeding effort has been applied to the selection of winter cultivars suited to southern Australia, with the notable exception of the New South Wales Agriculture breeding program based in Wagga and Temora that ran from the 1960s until 2002. A shift by growers to earlier sowing, increased usage of dual-purpose cereals, and research highlighting the whole-farm benefits of winter cultivars to average farm wheat yield has increased grower interest and demand for winter cultivars. Three major wheat breeding companies operating in southern Australia have responded by commencing selection for milling quality winter cultivars, the first of which was released in 2017. Existing research relating to winter wheats in southern Australian farming systems is reviewed here, including interactions with agronomic management, environment and weeds and disease. It is concluded that winter wheats can offer significant production and farming system benefits to growers by allowing earlier establishment, which increases water-limited potential yield (PYw) by ~15% relative to later sown spring wheats, and makes forage available for dual-purpose grazing during vegetative development. Winter wheats sown early require agronomic management different to that of later sown spring wheats, including greater attention to control of grass weeds and certain diseases. There are significant research gaps that will prevent growers from maximising the opportunities from new winter cultivars once they are released. The first of these is a well-defined establishment window for winter cultivars, particularly in medium-low rainfall environments of South Australia, Victoria and Western Australia that have not historically grown them. There is circumstantial evidence that the yield advantage of early established winter wheats over later sown spring wheats is greatest when stored soil water is present at establishment, or the soil profile fills during the growing season. Explicit confirmation of this would allow growers to identify situations where the yield advantage of winter wheats will be maximised. Given the imminent release of several new winter wheat cultivars and the increases in PYw that they embody, it is critical to experimentally define the management and environmental conditions under which performance of these new genotypes are optimised, before their release and availability to growers. Optimising the genotype × environmental × management interactions possible with these cultivars will empower growers to make the best use of the technology and better realise the gains in water limited potential yield possible with these genotypes.

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The Grassland Society of NSW welcomes new members

Luke Carr, Dubbo, Andrew Hunter, Yerong Creek, David Nugent, Dubbo, Tim Mort, Randwick, Donna Wheatley Gilgandra and Donald Langford, Orange

Australia is a red meat nation: Inaugural Industry Report

Australia is the leading supplier of red meat to the world and Australians eat more red meat than anyone else according to a recently released report.

The Red Meat Advisory Council (RMAC) today released "State of the Industry 2017", the first-ever snapshot of the value of red meat industry to the Australian economy and community.

In 2016 Australia was the largest exporter of beef and the second largest exporter of sheepmeat; and the world's third largest livestock exporter.

Not only does Australia lead the world in selling meat, Australians are some of the highest consumers of red meat in the world, eating four times the average amount of beef and six times the amount of sheep meat compared to the global average.

RMAC Independent Chair, Don Mackay, said the "State of the Industry 2017" demonstrates for the first time the key part red meat plays in the Australian economic success story, from our plates, to our jobs and our businesses.

"No industry has a more important place in society than an industry that feeds its people and sustains and improves their way of life."

"We have achieved turnover growth of 11 percent, contributed $18 billion to Australian GDP, sustain 405,000 direct and indirect jobs and feed 24 million Australians day in and day out," Mr Mackay said.

"Our industry continues to work for our rural and regional jobs, accounting for almost a quarter of agrifood jobs in Australia."

The report shows the value of Australian red meat and livestock exports increased by almost $6b over the past five years from $9.2b in 2011-12 to $15.1b in 2015-16.

It also showed that a once niche industry in goat meat has experienced a significant boom with Australia now a leading supplier of global goat meat, enjoying a recent price increase of 177 per cent and exporting over 27, 000 tonnes of goat in 2016 alone.

Mr Mackay said the State of the Industry 2017 demonstrated the need for government to show leadership in food and farming policy.

"Our industry's success is Australia's success. As an industry, we are responsible for far too many Australian businesses and Australian jobs for government to be cavalier about our industry."

Mr Mackay said inaction and conflict with government in the red meat sector was costing the Australian economy money and jobs.

"We've seen recent examples of the Australian red meat industry being damaged by attacks from crusading politicians who are more interested in making a name for themselves than protecting Australian jobs."

"The reality is despite an incredibly challenging environment out there, we've seen a five percent growth in businesses across the chain, there are more processing businesses now than four years ago and we've seen a 48 percent rise in saleyard prices."

"We know the key, tangible outcomes that government can deliver that help us be a bigger and better red meat nation for businesses and workers alike."

According to Mr Mackay getting trade and infrastructure right is critical in order to become an attractive place for global and Australian investors into the industry. "To attract much needed capital investment into our market we need urgent reform into our policy settings. We must tactically reduce our 3-billion-dollar technical trade barrier bill, optimise our supply chains which will add $750 million and up to 4, 000 jobs to our bottom line and make all agricultural policy with a commercial and agribusiness focus."

Glenn Carmody, Consumer and Industrial Products Market Segment Leader, EY said that the report demonstrates the significance of the industry within the Australian economy. "The red meat and livestock industry is a key contributor to the nation's employment, noting a large number of jobs are in rural and regional areas."

Mr Carmody highlighted the strong performance of the industry in recent years, with increases in turnover, value add and employment and high livestock prices.

"The report also demonstrates the industry's significance within the global marketplace – in 2015 Australia was the world's largest exporter of beef, and second largest exporter of sheep meat."

"The most recent data in relation to goat meat shows that in 2013, Australia was the largest goat meat exporter," said Mr Carmody.

The "State of the Industry 2017" was commissioned by Meat & Livestock Australia at the request of RMAC and member councils; and compiled by Ernst & Young (EY). The full report is available at: http://rmac.com.au/state-industry-2017/

The Grassland Society of NSW annual subscription fee of $60 for 2017/2018 was due July 1 2017 - have you paid?

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From the President

Agriculture is a wonderful industry, if only we could average the rain out. This time last year we were trying to get main highways to open again through central NSW, as a result of flooding, now we are looking for the next grain paddock that may be worth harvesting. Plenty of cereal paddocks have been eaten out, and not even the "reliable" Central Tablelands have escaped. I looked this morning at the state of play, for Orange - average annual rainfall to November is 807 mm - this time last year, 1116 mm, this year, 414 mm. My brother once told me "there is no point being 'average', you are either the bottom of the best, or top of the crap"!

Fortunately, it has rained in parts of the state. Areas in the south, pending location, have had a fair run, and I hear similar stories from the north, albeit that seems to be going off quickly. Once again the coast seems to be getting a run, I just wish for all our sakes it could work its way west of that range. Some are lucky enough to be making hay, others are madly trying to buy it. Unfortunately for many cropping folk, if the dry season wasn't tough enough, a couple of very hard and late frosts sorted much of the canola out. Those with considerable dry matter baled, and are finding homes for it with plenty of hungry stock, while others just opened the gates themselves and kept their own stock going.

As anticipated from last season's seed set, there was a pretty good germination of annual rubbish this year. It seems to have struggled, like any good weed would, through the dry and cold winter and is now potentially setting seed.. Many have tried spraying this year, and their timing has been good. However due to the dry and cold, I have seen and heard of many disappointing results from those who did spray, and stories from others saying we just didn't get the right conditions. I fully empathise with both camps, and can only encourage you all to continue to focus on the 'goodies'. Knowing those desirable plants and species will benefit from rest and a good nutrient base, which will enable them to provide strong competition to the annuals and less desirables as Autumn gets closer.

Another year has passed, and again the MLA funded 'Grassland Society of NSW Pasture Updates' have been a great success. The most recent of these were at Tooraweenah and Bathurst. Numbers at both were terrific, near 80 at Tooraweenah in what was a 'cracker' of a day. The organisers need to be congratulated on providing such great content, that attendees saw great value in. It is important that we continue to reach out to the grazing enterprises of NSW, as one could easily be forgiven thinking Tooraweenah, near Gilgandra, was cropping country. We will continue to extend "what's new" in the pasture game to all we can reach. The next Pasture Update is at Moree, in mid-February 2018. Others will be planned early in the new year, so please keep an eye on our web site (www.grasslandnsw.com.au). On behalf of the Grassland Society of NSW Inc. I would like to thank MLA for their ongoing support of this initiative.

On behalf of the Grassland Society of NSW, I wish all our members, their families and friends a very safe and Merry Christmas, and I hope to hear of a prosperous start in all regions of NSW in 2018. For those who have lost loved ones of recent times, this may be a difficult time for you. Take comfort as we will all be thinking of you. Stay well, think of others, and as always, don't be afraid to ask "How are you going?"

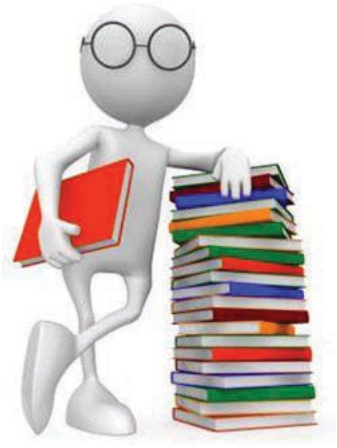
All the best,
David Harbison,
President.

Tocal Skills Training

Tocal Skills Training, previously known as PROfarm, is the training program developed by NSW Department of Primary Industries (NSW DPI) to meet the needs of farmers, primary industries, agribusiness and the community.

Courses are delivered locally by highly skilled and respected Department of Primary Industries staff. Many of the courses are subsidised to reflect the public benefits provided by the adoption of more sustainable farming practices. For more information go to https://www.dpi.nsw.gov.au/content/agriculture/tocal-skills-training/about

You can also suscribe to the mailing list (http://nsw.us6.list-manage1.com/subscribe?u=b84448c63dcd303c5a327f287&id=bba155c545) and be one of the first to hear about the latest news, events, publications and upcoming courses available through Tocal College. Upcoming Tocal Skills Training course dates are constantly being updated at https://www.dpi.nsw.gov.au/content/agriculture/tocal-skills-training/profarm_course_calendar.



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

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

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

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

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

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

Grassland Society of NSW Snippets

Next Newsletter: The next edition of the newsletter will be circulated in March 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 or DPI NSW 444 Strathbogie Road Glen Innes 2370. The deadline for submissions for the next newsletter is February 19 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) and you will be added to the list. Next newsletter you will receive an email notification with a link to the newsletter on the website.

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

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