

I  
t is regrettable that 69% of the area of the state of New South Wales is still drought declared. The drought seems to be at its worst in southern New South Wales.

There has been a recent report from the Federal Government reviewing the social impacts of drought. The president of the NSW Farmers Association, Mr. Jock Laurie states that “The report reinforces our view that we need a pro-active long term plan for supporting rural industries and communities so that they are prepared for and can cope with inevitable future periods of drought.”

A recent publication of the Future Farm Industries C.R.C. on “Focus on Perennials” reported that recent research in Southern New South Wales showed that lucerne, with proper management, is the best adapted species to drought conditions. Lucerne has demonstrated superior drought tolerance compared with phalaris, cocksfoot and chicory. Research by Dr. Brian Dear and colleagues demonstrated the value of lucerne in drought was supported by paddock results reported by Greg Condon. These important findings can be obtained from Brian Dear whose e-mail address is [brian.dear@dpi.nsw.gov.au](mailto:brian.dear@dpi.nsw.gov.au) and the paddock results from Greg Condon, Grassroots Agronomy - e-mail address- [gbcondon@westnet.com.au](mailto:gbcondon@westnet.com.au).

**CONTENTS**

<i>Editorial (Haydn Lloyd-Davies)</i> .....	1
<i>Closure of research stations (Haydn Lloyd-Davies)</i> .....	3
<i>Tropical pastures en tour at Tamworth (Suzanne Beschma)</i> .....	4
<i>All round sound pasture management wins coveted competition (Bob Freebairn)</i> .....	7
<i>Retirement of Dr. John Tyres (Carol Harris)</i> .....	9
<i>XXVth International Congress in 2013</i> .....	11
<i>Escalating phosphorus costs ((Phil Graham, Richard Simpson, Alan Richardson)</i> .....	15
<i>Enabling suitable conditions for recruitment of desirable perennial grass seedlings with existing Pastures (Roshan Thapa)</i> .....	19

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As well as drought, salinity is a continuing problem in Australian agriculture. Salinity has degraded more than 2 million hectares of Australian farm land – mostly in Western Australia. There is research being conducted at the Future Farm Industries CRC looking at the role of perennials in overcoming salinity. As well as lucerne the group are investigating Lotus and other species. Other species being investigated are Cullen (a native legume) and *Bituminaria bituminosa* from the Canary Islands. Both are very drought tolerant.

Another issue of importance to our members is the challenge of Climate Change. Recently the NSW Department of Primary Industries produced a special feature “Climate Challenge” – published in *The Land*. It covers topics such as “Farmers adapting to climate change”, “Reducing emissions” and “What scientists are doing about the challenge”. There are many good articles in this publication. The 24 page booklet is available from all Dept. Primary Industries offices.

One of my less happy responsibilities is reporting the departure from official duties of some of our outstanding contributors. In the last issue I reported the retirement of Mike Keys. In this issue we face the retirement of Dr. John Ayres. I first met John when I took up my post at the University of New South Wales in July 1975. We discussed drafts of his Ph.D. Since then we have been in continuous professional and social contact. Like Mike Keys his retirement is a very real loss to the industry. We wish him and Roberta a happy and fulfilling retirement. Also, I have just heard that Professor Jim Scott is retiring in December. Professor Scott has served the society and the industry particularly well. I usually turned to him for a report on our annual conference for the Newsletter... We can ill afford to lose such a fine researcher, teacher and communicator. Thank you and all the best Jim.

The committee wish all members and associates an enjoyable Xmas season and a happy and productive 2009.

*Haydn Lloyd Davies*  
*Editor*



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### **Closure of Research Stations-**

I was very concerned to learn that ~~that~~ the NSW Department of Primary Industries has stated that eight of the State's Research Stations are to be closed. The stations involved are – Alstonville, Berry, Condobolin, Glen Innes, Gosford, Griffith, Jindabyne Hatchery and Temora. Closure of these Research Stations is part of the Rees Government '08 mini budget.

— I am sure that all members will be surprised and distressed at these proposed closures. Research stations have a very important role in the function of the DPI. The research stations are responsible for research affecting the locality, the state and sometimes Australia as a whole and globally. An example is the excellent work being carried out at Glen Innes on pastures, pasture species and their management. Their research has Australian and International importance.

— In many instances extension officers in several fields e.g. agronomy, sheep and cattle production and arable crops are either based at research stations

or are in continuous contact with activities of the station. In addition, producers and representatives of agribusiness companies visit the stations to be kept informed on issues relevant to recent agricultural research and information on new products.

— Apparently, the difficult financial status of the State Government required some drastic action to be taken and that some cost cutting was necessary. However, closure of the research stations can not be justified in terms of on going science, and more importantly future research projects. At the local level, these closures will have serious effects on the staff and the local community at a time when regional NSW needs all the assistance it can obtain.

— The New South Wales Grassland Society appeals to the Minister for Primary Industries and through him the Premier and Cabinet to reconsider and cancel the closures of the eight research stations.



## **Tropical pastures on tour at Tamworth**

*Suzanne Boschma, Research Agronomist, NSW DPI, Tamworth*

The use of tropical grass pastures in northern NSW has been gaining momentum over the last few years with both public and private agronomists encouraging producers to try these grasses. Those who attended Tour A at the Grassland Society annual conference held at Tamworth in July got the opportunity to inspect tropical pastures on two properties in the Barraba region and hear first hand the experience of Luke and Tom Bowman.

The Bowmans have traditionally sown temperate pastures. Poor persistence and a mis-match of rainfall and growth periods of the temperate grasses, also low ground cover under lucerne/clover mixes resulting in erosion had them looking for other options. In 2005, Luke and his father Graham Bowman sowed their first tropical grass pasture. Despite an initial establishment failure they persisted and now have tropical grass pasture consisting of Premier digit, Katambora Rhodes, Bambatsi panic, Gatton panic and Bissett creeping bluegrass. Luke had three tips for establishing a tropical pasture: - 1, good weed control is essential, 2, do not sow too early (wait for soil temperatures to increase) and 3, have litter or crop stubble on the soil surface.

Using Luke and Graham's experiences, Tom and Roger Bowman sowed about 50 ha to a mix of Premier digit, Bambatsi panic and Katambora Rhodes grass in

2007 and were thrilled with the result. Tom showed tour participants pictures of the pastures during summer and the stocking rates they had achieved. Luke noted that animal performance had been slightly lower on tropical pastures (compared with temperate pastures) however they were useful during times of bloat risk and their ability to produce large quantities of forage was a major bonus.

Challenges for the Bowmans include incorporation of a legume and grazing management. Luke commented that subterranean clover had been broadcast on to the pastures but with limited success as a result of difficult seasons. Tom also commented that management of tropical pastures when they are actively growing can be difficult and that 50ha is a large paddock for cattle to graze effectively, so consideration will be given to divide the paddock to graze it better.

Thank you to our presenters and hosts – Luke and Tom Bowman also to our guides – Lester McCormick (NSW DPI) and Tony Stuart (Heritage Seeds) for an interesting and well organised tour. It would be good to visit the same paddocks in a few years to see how the pastures have persisted and hear more of Tom and Luke's experiences.

(Luke was an invited speaker at the Tamworth conference and his paper can be found in the Proceedings pps. 58-59.)



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## **All round sound pasture management wins coveted competition**

***Bob Freebairn (Agricultural Consultant, (0428 752 149); robert.freebairn@bigpond.com)***

Addressing soil deficiencies, zero till, tropical grasses, lucerne, added subdivision and watering system, better grazing management, hay and seed production, and suitable annual legumes were features of the property awarded the 2008 Brownhill cup.

Sam and Megan Clifton “Penalva” Coonabarabran, operate a 1050 ha property (plus 100ha leased) and run a 400 cow Angus cross Wagyu herd with steer calves exported direct to Japan and heifers fed out on a shared basis with a feedlot prior to export as boxed meat. Over the last 24 years carrying capacity has increased three fold. Soils range from sandy acidic, loam to heavy self mulching basalt. Average annual rainfall is around 680mm with slight summer dominance.

Over the last 24 years soil erosion has largely been eliminated and soil quality has improved dramatically from hard setting low organic matter to rich and friable.

The Brownhill cup is awarded annually (since 1984) to agriculturalists across the Namoi and surrounding regions who are leaders in conservation farming and efficient innovative management. Major sponsors are the Brownhill family and the Commonwealth bank, in association with NSW DPI and NSW Farmers.

Sam and Megan Clifton established Bambatsi panic 15 years ago on heavy basalt country badly infested with mint weed, a major summer weed. The area had been long farmed and suffered from erosion. It remains an outstanding pasture and is used for grazing, seed production and hay. It contains a good level of native perennials. Weeds are no longer a problem. Droughts have not reduced its density or productivity.

Premier digit and Consol have been established successfully on medium and lighter soils. Weeds like spiny burr grass have been more or less eliminated. These areas are also used seed production and hay as well as grazing. Hay quality is highly regarded. A big emphasis is placed on producing high quality seed.

The Clifton's sow subtropical pastures after three winter crops that include clean summer fallows. The pasture is direct drilling into the last winter crop stubble soon after harvest. Direct drill equipment includes press wheels. Their logic is that in most years in their environment there should be sufficient soil moisture and rainfall over the summer to successfully establish subtropical pastures provided clean fallows as part of the pre cropping phase eliminate summer weed risks.

Adding sub clover and legumes like serradella and biserrula and correcting sulphur and phosphorus deficiency is addressed with fertiliser (rates and frequency based on paddock history and soil tests).

Native perennial grasses have gradually returned and are major components of non arable country as well as important in sown tropical grass areas.

All crops and pastures for over 15 years are sown via direct drill (self made direct drill plus press wheels). This has been an important part of eliminating soil erosion, improving soil quality and improving productivity.

The Clifton's' have increased their number of paddocks and are further subdividing to allow for greater flexibility in grazing management.



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## **Retirement of Dr John Ayres**

*Carol Harris, NSW DPI, Glen Innes*

After 40 years of enthusiastic and devoted commitment to agriculture and the NSW Department of Primary Industries, Dr John Ayres retired on the 3<sup>rd</sup> of October 2008.

John has spent the last 20 years at the Glen Innes Agricultural Research & Advisory Station. Over this time, John has achieved international recognition as an authority on plant improvement of perennial pasture legumes specialising in breeding white clover (*Trifolium repens*) and birdsfoot trefoil (*Lotus corniculatus*).

John's white clover breeding work contributed to the development of 5 new white clover varieties (including NuSiral and Trophy). These varieties exhibit increased seasonal growth, improved persistence and better grazing value for 'dry margins' environments. John's research on Lotus has led to recognition of the potential of birdsfoot trefoil for the summer-rainfall region of NSW. From this research, 3 new birdsfoot trefoil varieties (Phoenix, Venture & Matador) adapted to Australian conditions have been released. These varieties will greatly expand the use of this pasture species in Australia.

John started his career with the Department of Agriculture in 1965 as a Trainee and in 1968; he took up a position as Livestock (Sheep & Wool) Officer at Wagga Wagga. From 1973, John embarked on postgraduate studies at the University of New South Wales, investigating fertiliser requirements and integrative aspects of the cereal crop and pasture ley; his Ph.D. degree was conferred in 1977. He moved to Wollongbar in 1977 as a Senior Livestock Research Officer where he worked on beef cattle husbandry and management, feed evaluation and nutritional requirements of beef cattle, and integrative aspects of cropping and beef cattle production. John was located at Wollongbar until 1989 – during this time he worked in the Guangdong Province, China as a project director of a New South Wales Government model cattle farm project. John moved to Glen Innes in 1989 as a Senior Livestock Research Officer, in 1990 he became the Supervisor of Research at Glen Innes, in 2003 Principle Research Scientist and in 2005 the Research Leader of the Pasture Genetics and Improvement Unit within the Department.

Over his career, John has made a substantial contribution to the scientific literature on pasture improvement, pasture quality, the pasture feed-year, grazing management and livestock performance with over 200 published documents. John has also always been keen to mentor and foster the career of young scientists and supervised a number of postgraduate and undergraduate students.

John was an active member of the Grassland Society of NSW particularly with the annual conferences where he was part of the editorial team in 1995, 2000 and most recently in 2008. He was also a regular supplier of articles for the state and local newsletter.

The Grassland Society of NSW wishes John and his wife Roberta all the best for their retirement.



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## XXII<sup>th</sup> International Grassland Congress in 2013

The 22<sup>nd</sup> International Grassland Congress will be held in Australia in September 2013. At the recent successful International Grasslands / Rangelands Congress in Hohhot the right to hold the Congress in 2013 was confirmed on the bid submitted by Australia.

At the closing session in Hohhot the Chair of the Bid Committee, Professor David Kemp from Charles Sturt University, and Dr Richard Sheldrake, Director General of the New South Wales Department of Primary Industries and Principal Sponsor of the Australian Congress, outlined the plans for the Australian Congress and invited all the delegates to meet again in 2013.

Australia wants to attract as big an audience as attended the Congress in China; it is only an overnight flight away from the rest of the world. The main Congress will be in Sydney for four days, then before and after Sydney, a series of specialist meetings and tours will be held across the country.

***The theme for the 2013 Congress is “Revitalising grasslands to sustain our communities”.***

This theme acknowledges the rapid changes that are taking place in the world environment and recognises that between developed countries and developing nations there may be differential responses to these changes. Population pressures, climate change, food security, declining water resources and reduced energy reserves will impact profoundly on grassland resources and their management. By 2013, how will the potential conflicts between livestock production and the environment be resolved? The Congress aims to encourage and support revitalisation processes in terms of:

- Enhancing the traditional role of grazed grasslands in sustainable food and fibre production;
- Shaping grasslands towards new environmental and community roles in response to climate and water imperatives;
- Encouraging more young scientists, in Australia and the world, to become involved in addressing the issues of multiple goals in grassland management; and
- Closing the gap between developing and developed nations in grassland science and management.

***The program will focus on southern Australia.***

Previous Grassland Congresses held in Australia have focused on the north, this Congress aims to focus on the southern Australian grasslands and the science being done there. The program provides an opportunity to discuss, and show to the world and Australian communities, how Australia's largest natural resource, grasslands, can be managed to achieve a balance between production, environmental, economic, social and political objectives. Special emphasis will be placed on:

- The knowledge available and needed to shape grazed grasslands towards new environmental and community roles as well as the traditional production and sustainability objectives;
- The role of young scientists, in Australia and the World, in addressing the issues of multiple goals in grassland management; and
- Addressing the gaps between developing and developed nations in grassland science and management.

***The program and Congress will be designed with the above main themes in mind. In addition, discussion will be sought on results from R&D projects and studies that deal with questions such as:***

- Continent by continent, what trends, problems and solutions are occurring in food and fibre production and services from grasslands?
- How is grassland management adjusting to population pressures, food security, climate change, declining water allocations for agriculture and reduced energy availability?
- Claims and conflicts: tools for resolving competition for grassland resources and managing land use between agricultural and environment imperatives?
- What technologies and innovations have been added to the pool of knowledge for the study and management of grasslands?
- Are the drivers for more effective management of grasslands coming from technology, ecosystem management, cultural and community forces or markets?
- How do grassland agendas vary around the world, particularly between developed and developing nations?
- By 2013, what markets are available for ecosystem services and how are these markets organised?

- Can livestock production be linked with wildlife management?
- What is the role of fire in grassland management?
- How is GM influencing plant breeding and grassland management?
- What changes are happening in the roles of scientists, land and livestock owners, and communities in influencing the management of grassland resources?
- What are the strengths and weaknesses of various models and approaches to R,D&E, in terms of the balance of short, medium and long-term projects, their funding by government, producers, communities and agribusiness, and their impact on the well-being of communities?

***Members of the Bid Committee have contacted relevant Australian Societies and organisations to develop an outstanding program of Satellite Meetings / Tours to be held with the Congress.***

Specialist topics will enable delegates to pursue particular interests and for experts in a field to discuss the state of knowledge in more depth than is often possible. A special attempt will be made to attract Australian farmers and graziers, along with members of community organizations and corporations that have an interest or involvement in the topic area. Examples of proposed Satellite Meetings / Tours are:

<b>Venue</b>	<b>Indicative topic</b>
Armidale	Electronic sheep, beef and grassland management systems
Orange	Bioeconomic modelling of pasture and weed management systems
South Coast & Highlands	Scenic, historic and amenity grasslands
Australian Alps, Riverina	Grasslands for National Parks, conservation; fire in the landscape
Wagga	The ley pasture system in broadacre cropping
Melbourne	Genetic improvement of grassland species
Adelaide	Pasture legumes
Perth	Future farming – perennial systems

In addition both pre- and post-Congress tours will be planned to give visitors every opportunity to see the diversity of Australia's 400m ha of grazing lands.

Special efforts will be made for farm stays so that visitors can better understand the environment within which farmers operate.

***Members of the Bid Proposal Committee were:***

Convenor – Professor David Kemp, Charles Sturt University, Orange NSW

Mr Geoff Auricht, South Australian Research and Development Institute

Professor David Chapman, University of Melbourne

Dr Bob Clements, ex-Crawford Fund, former Chair of the IGC Continuing Committee

Dr Hugh Dove, CSIRO Division of Plant Industries, Canberra ACT

Dr David Michalk, NSW Department of Primary Industries, Orange NSW

Dr Alison Southwell, Charles Sturt University, Wagga Wagga NSW

Emeritus Professor Ted Wolfe, Charles Sturt University, Wagga Wagga NSW

An expanded Committee will be responsible for coordinating support for IGC 2013.

***Contact and comments to:***

Professor David Kemp

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## Escalating phosphorus costs

*Phil Graham<sup>a</sup>, Richard Simpson<sup>b</sup> and Alan Richardson<sup>b</sup>*

*<sup>a</sup>NSW Department of Primary Industries (Yass)*

*<sup>b</sup>CSIRO Agricultural Sustainability Initiative, (Canberra)*

Phosphorus costs have escalated over the past 18 months from about \$280/tonne superphosphate to (currently) \$550/tonne, directly eroding the profitability of grazing enterprises (we estimate a profit loss of about \$34/ha may be typical) and dramatically increasing business risk.

The Bookham Grazing Demonstration (near Yass, NSW) which has been run at industry best practice for a fine wool grazing system since 1993 gives a good indication of the impact of the present increase in P cost. Over the last 13 years, the grazing system that has been fertilised optimally with superphosphate earned an average *extra* net farm income of \$78/ha/yr compared with the unfertilised grazing system. If superphosphate had reached \$400/t during this period, the profit advantage would have been reduced to \$63/ha, at \$550/t, to

\$47/ha, and if prices had reached \$600/t the profit advantage would only be \$41/ha.

Profits in the Grazing Demonstration were achieved in 10 of the 13 years, with four years providing 80% of the profits. A superphosphate price of \$600/t price would cause another 4 of the 'profit years' to move from profit to loss. Clearly the price increase that has occurred will have substantial additional impacts on cash flow and interest payments for grazing enterprises. The Bookham site would be well below the industry average in terms of P applied for stock numbers run (114 kg/ha/yr of super to average 14 DSE/ha/yr) so we expect the impact on this site may be below the industry average.

There is no easy solution to this problem. Tests of some of the alternative P sources being promoted to graziers demonstrate they may not be cost-effective (e.g. Fig. 1).

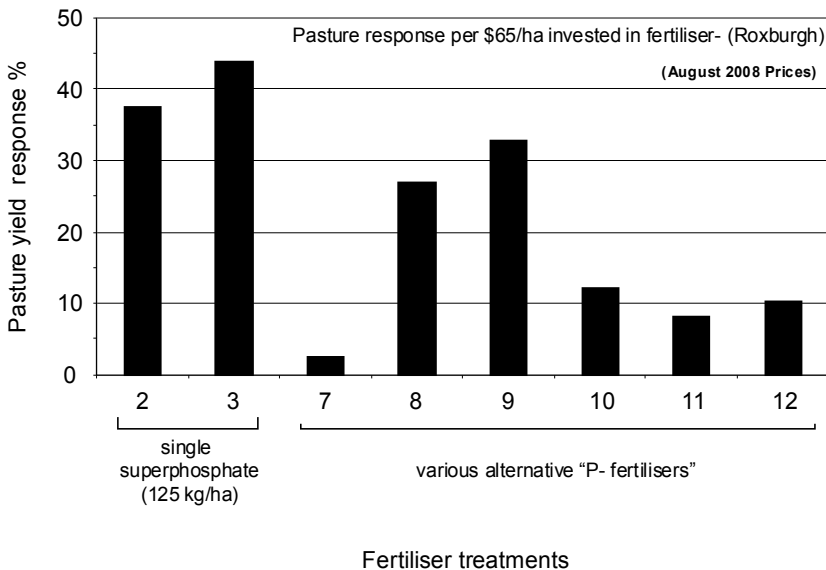


Figure 1. Pasture response per \$65/ha invested in alternative fertilisers from a replicated trial at Young run by NSW DPI and South West Slopes Merino Breeders. This trial started in 2005. The results shown are winter 2008. The results from 2007 were similar. Products 7 to 12 are alternative fertilisers on the market in southern NSW. The benchmark investment of \$65/ha was the cost of applying 125 kg/ha of superphosphate in mid August 2008. By 2008, all



products had 4 years to work so any claimed improvement in soil health should have occurred.

The cost increase for P is a major threat to grazing businesses because P inputs remain critical to the productivity and profitability of most grazing systems. Presently, there is considerable uncertainty about what management actions should be taken in response to the dramatic escalation of input costs. Farmer reactions to the crisis are varied. There are strong indications that in the absence of objective information concerning appropriate P use strategies, many graziers will opt to apply less P fertiliser, some will grasp at alternative fertilisers and others will apply no P at all without really understanding what the optimum management path should be.

The grazing industries need to address this threat on a number of fronts.

### **Actions that may provide immediate benefits:**

Remove the potential for over or under fertilising by using the recently developed Phosphorus Buffer Index (PBI) soil test to set objective targets for soil P fertility management.

The PBI test is a measure of P-sorption to soil and because the Colwell-P soil test value (the *critical* Colwell value) that corresponds to near-maximum pasture growth is related to this, it is possible to estimate the target for appropriately managing P in your soil type. Further information about the PBI test and its relationship to critical Colwell soil test values can be found in the 'Making Better Fertiliser Decisions for Grazed Pastures in Australia' technical booklet at: [www.asris.csiro.au/themes/nutrient.html#Nutrient\\_Soil\\_Test](http://www.asris.csiro.au/themes/nutrient.html#Nutrient_Soil_Test)

Right now, aiming to fertilise to achieve maximum pasture growth may not be feasible or appropriate. Many farms are running less stock as a result of the drought and the drought itself means that there will be some conservation of unused P in the soil. Knowing the soil test target for maximum pasture growth and your current soil test value can help in making sensible adjustments to the amount of fertiliser that is appropriate for your particular circumstance and for calculating whether a fertiliser outlay will make an adequate return on investment.

Think about other possible constraints to P use if making a fertiliser investment. Pasture type and condition should influence where fertiliser investments will go. Use soil test information and consider when you last put molybdenum out to avoid ineffective investments in superphosphate. Recently we have seen 3 out of 11 southern tableland fertiliser trial sites constrained by sulphur, potassium

and/or micronutrient deficiencies. These 'other' nutrient deficiencies reduced the response to P by 20%-100% depending on the site.

**Actions that will provide benefits in the longer-term:**

Grazing systems are generally relatively P inefficient. Woolgrowers might typically apply 10 kg P/ha, but export only about 1-3 kg P from the farm in products. The inefficiency arises because: (i) P inputs need to exceed P export from the farm to counter the high proportion of applied P that enters sparingly-available pools in soil (so called 'fixed' soil P); and (ii) pasture systems rely on N inputs from legumes which have a relatively high P requirement.

The cost of P is unlikely to return to previous levels and it is consequently important to improve the P-efficiency of grassland systems (i.e. improve production and profit per kg of P applied). There are no magic cures to counter the nature of our soils. Some efficiencies are already built into the fertilisers we presently use.

On farm, the focus should be on anything that constrains pasture production or stocking rate as this effectively lowers the P use efficiency of the grazing system. Using the most appropriate and productive and persistent plant species/cultivars for your environment and efficient, productive animal genetics also improves the P efficiency of a grazing enterprise.

The holy grail, of course, might be the possibility of growing just as much pasture with less fertiliser input. There are longer term research goals we should be exploring to address the inefficiency in P use. Plants which display various nutrient-efficiency traits are known, but can these traits be captured usefully in the mainstream agricultural plant species?

These will not be easy objectives to achieve and it will not be possible to reduce P inputs (long term) to less than the rate that P is exported from a farm in products. Any novel soil treatments, management schemes or research projects, therefore, can only be expected to reduce the P requirements of pastures (without significantly reducing productivity) so that P inputs come closer to matching the rate of P export from farms.



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**Enabling suitable conditions for recruitment of desirable perennial grass seedlings within existing pastures**

*Roshan Thapa, PhD student, Charles Sturt University, Orange*  
*Email: rthapa@csu.edu.au*

This research project on recruitment of perennial grasses aims to identify low-cost strategies to rehabilitate perennial grass pastures. The approach being taken is to investigate management tactics that encourage seed set by desirable species, to prepare the more suitable sites for seedling recruitment and to identify the better post-emergence tactics that aid plant survival in the short to medium-term. Research is being done on the introduced grass *Phalaris aquatica* (C3) and the native grasses *Bothriochloa macra* (C4) and *Austrodanthonia* species (C3). Detailed background on the project can be found in 2007 edition of this Newsletter (Vol. 22, No. 2) and this article provides a brief summary of findings from the 3 years of research.

In all field experiments done to date there has been successful recruitment of the desirable species with limited recruitment of the less-desirable species. Unfortunately the severe drought has meant that few young plants have survived the first year. Emphasis in the project has then focused on the first stage conditions that enhance the recruitment of seedlings. It is now clear that seedling recruitment depends almost solely on current seed set, requires a suitable rainfall event soon after mature seed fall, on a minimum amount of rainfall over more than one day, plus sward conditions that help maintain a suitable microclimate around germinating seeds. Leaving swards intact, but creating some soil disturbance has often produced the better results. The need to create some soil disturbance is not needed in self-mulching soils. This research is demonstrating that seedling recruitment can be enhanced by management, but need reasonable seasons for young plants to then survive.

In this study successful recruitment was observed but young plant survival became extremely difficult, the principal factor being the on-going longest drought recorded. Few important messages though have emerged from this study.

- For each of the species being studied, successful seedling recruitment occurred when viable seed was available either through natural seed fall or external input.
- Seedling recruitment was greater where there was more seed set, more biomass in intact swards present and for the native grasses where some soil disturbance occurred.
- There is a minimal soil seed bank for these desirable perennial grass species.
- Soil disturbance had less effect at the phalaris experiment, but in that case the soil is naturally self-mulching.
- Results suggest that a light scarifying on non-self-mulching soils would help seedling recruitment, provided the season has resulted in good seed set and the prospects of sufficient rain to enable germination are likely.
- Seed production is low during dry years, thus recruitment is highly unlikely in those conditions as seed set in the current year is critical for recruitment in that year.

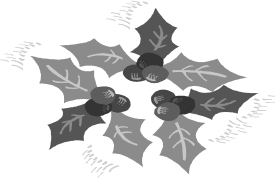
- Recruitment is typically minimal even during wet years when high seed production occurs.
- Conditions for ideal seedling recruitment may differ from those for survival of young plants and would be related more to maintaining adequate soil moisture conditions and reducing competition through the hotter six months of the year.

An irrigation experiment where additional seed was provided and plots irrigated over two days, repeated several times through the summer at three field sites, also failed to achieve any seedling recruitment under hot dry atmospheric conditions. Modelling work has therefore commenced to identify the minimum climatic conditions for a satisfactory level of recruitment and the likely minimum rainfall events required in the following summer for young plants to survive. The soil moisture modelling aims to determine what rainfall events resulted in the successful recruitment of seedlings and then subsequently what conditions in the following summer did not enable the young plants to survive. Soil moisture modelling is based on the climatic data collected at the sites and used in conjunction with seedling emergence data to estimate the amount of moisture needed in the soil for a germination event and the frequency of rainfall events necessary to keep the soil moist for sufficient time to achieve satisfactory recruitment. Initial modelling already shows some useful trends in highlighting the periods when soil moisture was adequate in the soil surface layer (0-5 cm) for the recruitment event to occur. Further work aims to predict the frequency of the events when the soil moisture is sufficient and the probability of recruitment, by modelling the historical climate data. The aim in each case is to resolve the minimum conditions for successful recruitment and survival.

The drought over the last few years coincided with the field experiments, presenting major challenges especially to young plant survival. The drought has though provided some useful insights, helping to define some of the limiting conditions for when recruitment could be managed in practice. During dry years, there is every possibility that seed production is minimal. Lack of seed means less emergence and even less survival due to lack of soil moisture. The experiments suggest that availability of seed in the system is critical to recruitment. During these less than average years of rainfall, management interventions such as summer rest to encourage recruitment may not be productive when there is not enough seed available. Therefore, little could be done to promote recruitment. Hence paddocks may not have to be locked up to

allow seed set and possible intervention for creating microsites or seed beds for germination in dry years. In contrast, when there is a better year (wet year), there is every possibility of having more growth. The likelihood of maximum seed set is higher and feed is also available. Locking up some paddocks in the farm to promote flowering and seed set may not offset feed, instead may assist in recruitment. Seasonal conditions, therefore, have to be closely monitored if recruitment is to be encouraged in that year.

The research is supported by Meat and Livestock Australia (MLA) and Charles Sturt University (CSU) for the period 2005-2009. It is supervised by Professor David Kemp and the team includes Dr's David Michalk, Warwick Badgery, Peter Dowling and Bruce Auld. This project is also part of the larger program being done on pasture establishment (Coordinator Dr Phillip Nichols, DAFWA). Within that project the complementary studies on seed enabling technologies are of particular interest to this project.



The Management Committee of the  
Grassland Society of NSW wishes all  
members and their families a happy  
Christmas and best wishes for good  
seasons in 2009.



## From the President's desk

Another very informative newsletter hits your mail box, thanks largely to Haydn Lloyd Davies, our editor.

Member contributions are always welcome. In addition, if you have any specific requests for a particular subject to be covered, please let us know by e-mail or direct to the secretary at P.O. Box 471, Orange NSW 2800.

The 2009 conference is now beginning to take shape. For some years now, we have contemplated a move away from our traditional locations of Orange, Wagga, Queanbeyan and Tamworth. Successful conferences have also been held at Gunnedah, Dubbo and Armidale. All these locations are to the west of the Dividing Range where traditional farming enterprises are common and fit with the Society's general objectives.

Next year will see the conference move to Taree with an emphasis on pastures, weed control and fodder conservation. The dairy industry is currently on a roll after several years of adjusting to deregulation, droughts and steep rises in cost of production. We felt it would be both interesting and informative to hear first hand, how successful producers have managed this adjustment.

We also recognize that much of the technology that is vital for milk production is equally important for sheep and cattle producers. With this in mind, the theme and topics for the 2009 conference are now being finalized. Details of the 2009 conference will be outlined in the next newsletter.

The end of the year approaches rapidly. Northern NSW is experiencing a better spring for livestock and above average grain harvest prospects. The outlook in southern NSW is less rosy but I am told there are some good pockets. I trust the harvest is successful for all our members.

On behalf of your state committee, I wish all members and their families, best wishes for the approaching Christmas season. I trust you enjoy a happy and restful holiday period.

*Mick Duncan*  


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## ***THE GRASSLAND SOCIETY OF NSW INC.***

**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 approx. 500 members and associates, 75% of whom are farmers and graziers. The balance are agricultural scientists, farm advisers, consultants, and 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.

### **OFFICE BEARERS OF THE GRASSLAND SOCIETY OF NSW – 2008-2009**

#### **STATE EXECUTIVE**

Mick Duncan (President)

Lester McCormick (Vice President)

Janelle Witschi (Secretary)

Frank McRae (Treasurer)

David Harbison (Sponsorship)

Committee: Rob Eccles, Linda Ayres, John Ive

John Coughlan, Hugh Dove, Philip Stacy,

Carol Harris, Haydn Lloyd Davies,

Richard Bloomfield, Keith Garlick,

Nigel Phillips, Col Langford, Jeffrey House

#### **BRANCH REPRESENTATIVES**

*North Western Slopes*

Loretta Serafin

*Central*

John Coughlan

*Southern Tablelands*

Mike Keys

*South Western Slopes & Riverina*

Vacant

*Western Slopes & Plains*

Vacant

*Northern Tablelands*

Mick Duncan

### **APPLICATION FORM**

Name: .....

Address: .....

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..... Postcode.....

Telephone:.....

Subscription for 12 months (July to June) is \$50. This entitles you to copies of the Newsletters and a copy of the Annual Conference Proceedings.

For more information, please contact the Society's Secretary, Janelle Witschi (telephone: 02 6369 0011).

Send membership application to:

*The Secretary*

*Grassland Society of NSW*

*PO Box 471*

*Orange NSW 2800*