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NEWSLETTER

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A very happy new year to all our members and let us hope that 2005 will be a productive and satisfying year with far fewer concerns about rainfall than '02 and '04.

Our heartfelt sympathy goes out to our friends and colleagues in the Eyre Peninsula, South Australia who have had to endure one of the worst and devastating bushfires Australia has ever experienced. In particular our deepest sympathy goes to our secretary Rosemary Sweet, whose youngest brother, Neil Richardson, lost his life fighting the bushfire. He was a "man of the land" who loved nothing more than his family; friends and neighbours near the Cockaleechie farm North East of Cummins. His eldest daughter was married on New Year's Day. Ten days later he perished in his vehicle while organizing others to move from the power ball of fire.

In 2004 the NSW Department of Primary Industries has lost through retirement some who have contributed richly and reliably to both our society and to pastures and pasture utilization in general. These include Warren McDonald, John Read, Alan Bell and Peter Dowling.

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Editorial cont.

On January 1 the European Union's anticipated reforms of the Common Agricultural Policy were implemented by 10 of the 15 pre-enlargement Member States. Sweden and the United Kingdom have changed over to the new system which replaces subsidies linked to production with a "single farm payment" that is decoupled from levels of production. Farmers will have to make significant changes to the way they produce in order to observe specific conditions related to environmental sustainability and animal welfare. One cannot help wondering whether Australian producers will benefit from the reduced subsidy system and whether the new system will work.

In attempting to look at the future for the sheep and cattle industries with sheep numbers at their lowest for nearly 50 years I was impressed by the views expressed in the company's newsletter by a very highly respected stud breeder. He states "..... there is most potential for upside in the finer end of the market – and the future for medium and strong wool producers is very much in the field of dual purpose meat and wool". Certainly recent prices for crossbred ewes, lambs and cattle are a cause for optimism in the meat-producing pastoral industries.

I was very pleased to receive a response to my request for comments on the Kyoto protocol from Gordon Refshauge. His response is published in this issue.

Subscriptions are not due until 1 July 2005. Reminder notices will be sent out in May 2005.

Comment on the Kyoto protocol

F.S. Hespe, Chartered Consulting Engineer, Strathaird, Rockley NSW 2795

Dear Professor Lloyd Davies

In a recent Newsletter of the Grassland Society you invited comment on the "Kyoto protocol"; and, by inference, on the remarks of the Commissioner for the European Union on the ratification of the protocol by Russia.

Before doing so perhaps I should introduce myself; I am a consulting forensic engineer, have been a wool grower for some 20 years, was for more than five years a Director of the Australian Wool Growers Association and sometime member of the New South Wales Farmers Association.

My first comment is on the self serving and pietistic remarks of the EU Commissioner. In the first place, the EU "arranged" a dubious deal whereby the whole of Europe including the ex- East Germany *and Great Britain*, which is not a full member of the EU (and which one can only pray never will be), was to be considered as a single entity as far as Kyoto was concerned. This automatically provided the EU with enormous "credits" because of firstly, Britain's much earlier shift to the use of natural gas for electricity generation and its high proportion of nuclear energy driven power stations and secondly, the closure of the majority of East Germany's ramshackle power stations. Because of this, the restrictions of the Kyoto protocol will have little or no meaning to the EU for many years to come.

Secondly, similar remarks can be applied to Russia. The industrial infrastructure inherited from its years of Communist rule was so decrepit that any change; including wholesale closures; will provide Russia an easy path to conformity. In other words, the changes it *has* to make to be able to survive economically will automatically provide it with sufficient" carbon credits". In the meantime it has been granted exemptions similar to, but by no means as extensive, as those granted to, for example, China and India. It is of course well-known that despite their ratification of the protocol, China and India have *made no binding commitment to limit their emissions* (and probably have no intention of doing so). It is worthy of note that both China and India (and principally China) only signed up after a great deal of haggling over the price, since they had nothing to lose and everything to gain from global carbon trading.

Australia has realistically refused to ratify the protocol; principally because of the economic consequences and equally because no matter what Australia (and for that matter the United States) might do, the enormous and unrestricted pollution pumped out by China and India, and to a lesser degree by Russia will inevitably render the whole exercise abortive. This doesn't even take into account the problems of South America and Africa. Nevertheless, Australia has initiated a wide range of measures aimed at reducing pollution and carbon dioxide emissions.

Unfortunately, one of those measures, and one of limited if any value even though it has enormous politically correct overtones, has been the draconian prevention of any land

clearing. This has meant that five per cent on the population (and that five per cent which provides Australia with 25 per cent of its export earnings and with the cheapest and best food in the world) has been grossly discriminated against. Landholders in general and particularly rural landholders have in many cases had a considerable proportion of their capital assets stolen by government action instigated largely by political fishing for the "green" vote.

The land clearing debate generates a great deal of heat but virtually no light. It is a pity that some farmers have been deluded into accepting the illusory arguments of the green movement. No one of course would argue for unlimited clearing. However, the limitations to clearing must be on rational, scientifically and historically based, premises.

In fact the whole argument about global warming and the effect of human generated carbon dioxide needs complete scientific and historic reassessment. All the supporting "scientific" comment in favour of the proposition that extreme measures must be taken against global warming come from governmental scientists or those seeking further grants. I have not seen one comment from a disinterested scientist which supports the proposition.

This letter is perhaps not the place to develop my arguments on the subject of global warming.

I would be very happy to discuss these issues with you at any time.

Yours sincerely

F.S. Hespe

LETTERS TO THE EDITOR

Would you like to comment on an article in the newsletter? or any thing else pertaining to grasslands? If so, send your letter, addressed to "Letters to the Editor", PO Box 471, Orange NSW 2800.

Forage Brassicas challenge oats' reign

Kathy Junor
Buckshot Communications

It sounds too good to be true. A year-round crop that produces high quality milk, but needs less irrigation than oats, and is heaps cheaper to sow too. But Peter Smith, who farms with his wife Debbie, south of Toowoomba, has found such a crop.

Forage brassicas threaten to topple oats' dominance as the mainstay of winter feed production on many properties. And brassicas grow through the summer too. These members of the cabbage family produce leafy feed of exceptional quality and successfully access deep soil moisture with their taproot.

The Smith's farm at Nobby, is the host site of a demonstration conducted by the DFC AgriServices, Pittsworth, together with Auswest Seeds. Two cultivars of forage brassicas, Hunter and Winfred, were sown on the 12th of April at 3kg/ha, combined with 1.5kg/ha of Tonic plantain. "We were chasing something to keep the fat & protein up, and milk as well," Peter said. "And brassicas seem to have done it. There is hardly any need for oats now. It (brassica forage) could be just a good all-year-round feed by the looks of it."

The Smith's 75-cow herd first began grazing the site on the 13th June, nine weeks after sowing. "The first grazing was incredible," Peter said. "You could barely walk through it - it was that thick and high".

Peter reported that milk production went up 100 litres per day across his 75-cow herd during the second grazing. Cows were only allowed access to a strip of the brassica crop for two hours every day and were fed silage, and grazed either lucerne or oats for the remainder.

"In two hours they got filled up real easy," Peter said. The cows came out of the crop to have a drink and a lie around, after which they were generally put onto a lucerne paddock for the afternoon.

According to Auswest agronomist, Kerry McKenzie, there are two main feed gaps facing farmers on the Darling Downs. "There is a feed gap early in the season before the ryegrasses get going. It now looks like we can plant brassicas in March and, in the case of Hunter, have forage available within six weeks that is probably better quality feed than oats," Kerry said. The second gap that brassicas look set to fill is late in the season, when ryegrasses are running out and sorghums aren't yet ready.

Forage brassicas have tended to be considered as something that grows in the really cold areas and not relevant to the northern grazing systems, although some Mammoth Purple Top turnip has been grown in the region. After a trip to New Zealand last year, Kerry came back keen to try some of the versatile varieties bred by PGG Seeds in his very different environment. "I have grown canola up as far as Biloela in central QLD and the Liverpool Plains, so I knew that brassicas would grow up here," Kerry said. "This is quite a similar sort of crop. Having seen them in New Zealand, I just wanted to see what was possible."

The way the demonstration crop performed under dry conditions particularly impressed Peter Smith. The site received only one watering after it's second grazing and, despite it not having rained for the month leading up to an on-site field day in late September, there was still fresh feed there on the day. "The ground was cracked open but there was good fresh feed on it," Peter said. "This stuff doesn't require the same amount of watering as oats. I will be leaning more to brassicas now and less of the others, because they don't take as much water. They have a real deep taproot on them and they go chasing the moisture, you haven't got to worry about putting it on every week."

Both demonstration crops received three grazing by mid spring. The Hunter had all gone to head and, while the cows still chewed it off, had virtually finished its lifecycle so was cultivated for a silage sorghum crop. The Winfred brassica, on the other hand, went right through spring, providing quality leafy feed.

One benefit Peter hadn't counted on was the improvement in soil structure under the brassica crops. He didn't realise how compacted the ryegrass and oats blocks were, until he worked up the Hunter, which was " a lot easier."

He attributes this improvement in soil structure to the big taproots of brassica plants. "I really noticed a large difference in it. I was a gear higher on the tractor working that piece up than when I was working the oats and the ryegrass ground. I am saving a lot of time, fuel and everything. It is a win-win one," Peter said.

After seeing the results from brassicas early in the season, Peter is excited by the prospect of having brassicas to supplement summer sorghum crops. "You can fill your cows up on sorghum, but they don't milk terribly well," he said.

This spring, when the cows came off oats and onto brassicas, they suffered no drop in milk production. "So it is at least as good as oats for fat, protein and milk," Peter said. "And a damn sight cheaper to put in."

"It was only $7 per kilo, and planted at 3.5 kilograms per hectare, it worked out pretty cheap. You are looking at $60 for oats at 45 kilograms per hectare and a lot more lugging bags around," Peter said. "It was real easy to plant – just lightly cover it in, and off you go."

Keen to replicate his success from the autumn and provide early summer feed, Peter sowed a paddock of Winfred in the first week of September, which he reports "really took off." An earlier planting in June was less successful, suffering from cold soil conditions. "It wants a little bit of warmth in the ground to establish I think," Peter said.

The forage system is still being refined for the Darling Downs, and it seems that both spring and autumn sowing may be suited. Planting is spring provides grazing before the forage sorghum is ready, and feed quality is better.

TABLE 1. Approximate nutritive value for a range of feeds

CROP	Crude Protein (%)	Digestibility (%)	Metabolisable Energy (MJ/kg DM)
Forage Brassica	16	85	12
Sorghum	11	65	9
Kikuyu	17	61	9

Source: PGG Seeds Brassica booklet

"This (spring-sown Winfred) is what I want to be grazing when the oats have finished and before the sorghum is ready. It is probably 75-80 mm high after only 3 weeks," Peter said.

Kerry McKenzie admits to having learned a lot this year, including that the demonstration was probably sown too late. He advises that autumn sown crops be timed for the beginning of April in order to get a second grazing before it gets too cold. "Overall the crop is well suited to the Downs and will provide valuable feed during the coldest part of the year when ryegrass is struggling."

In the coming year Auswest is looking to include Grouse chicory, as well as Tonic plantain, in their brassica seed mixes. "It will become almost a permanent crop, providing twelve months of feed from that one planting," Kerry said.

According to Kerry, it takes cows a couple of days to get used to the cabbage-like taste of the crop. However, Peter reported his cows took to it from day one, as he "locked them on it until they got hungry - then they had to eat something!"

The Smiths didn't have any animal health problems while the cows were grazing the crop, nor were there any signs of any crop pests, such as cabbage moths. "I didn't notice any taint in the milk or anything," Peter said.

Kerry McKenzie believes brassica forage crops could be a useful replacement for oats on many farms because of their higher feed quality and the longer grazing period they provide. "They are probably never going to compete with oats in extensive sheep production on the big acres, but in more intensive cattle and dairy situations I think they have a place," he said.

CONTACT:

Kerry McKenzie on 0428 469 363 or kmckenzie@auswestseeds.com.au

BRANCH REPORTS

Northern Tablelands Branch (Previously known as Northern Branch)

With the revival of the North West branch (following the success of the conference in Gunnedah) the Northern Branch committee decided to change their name to the Northern Tablelands Branch to differentiate the two northern branches.

The branch hosted a successful seminar luncheon "Succession Planning – a topic you can't ignore" at Glen Innes on November 19. The seminar was chaired by Kim Horneman, a Rural Financial Counsellor from Inverell and featured Lyn Sykes as the guest speaker. As many of you know Lyn is a specialist in farm succession planning and communication and gave the audience a very entertaining but thought provoking presentation. The seminar was attended by 65 people – 90% of which were local landholders. Five local accounting and solicitor firms sponsored the event.

A 16 page newsletter was printed and distributed to 350 people & companies in early November. This is the biggest newsletter the Northern Tablelands branch has produced to date and is largely due to the generous support of a number of local agribusinesses. The newsletter featured articles on farm succession planning, soil organic matter, pasture endophytes, Biserula and dung beetles.

The Northern Tablelands branch AGM was held on November 19 (after the seminar luncheon). The elected officer bearers are listed below – the remainder of the committee is made of local landholders, agency staff and agribusiness. The new committee plans to meet in late January to plan autumn 2005 activities.

President:	Charles Coldham
Vice President:	Giles Wollen
Secretary/Treasurer:	Jennie Coldham
Branch Rep:	Mick Duncan
Newsletter:	Carol Harris

North West Branch Report

The North West Branch has held two field days one at Narrabri (Turrawan) and one at Manilla.

Narrabri 21st October 2004

This field day highlighted alternate Legume species being evaluated under the NAPLIP program. Graham Crocker Research agronomist with NDPI provided the details on the species and program.

In addition a lime by phosphate demonstration was established by site co operators Ian and Fiona Scott. This clearly demonstrated the need for lime and phosphate to achieve good pasture growth on sandy acid soils.

Members of the NW branch also provided a grass recognition service to producers who had brought samples along.

Forty-five attended the day with five signing up as new members.

Manilla 19th November

This field day provided an opportunity to see temperate and tropical grasses growing together.

Two sites were visited the first was **"Leaholme"** National field evaluation and selection of new pasture plants from the salinity CRC to improve hydrological stability of farming systems.

With around 640 plots at this site there was much to see. Mark Brennan TO and Sean Murphy provided the information on species and water use.

Also of interest was the time of sowing demonstration conducted for Lester McCormick DA Manilla, which included a range of sowing times and combinations of Premier digit grass and lucerne.

The second site **"Narrawarra"** inspected one of the tropical grass trials in the northern evaluation program conducted by Bob McGufficke and Lester McCormick in conjunction with co-operating agronomists. This trial was sown, November 1998, establishing November 1999.

This site provided a very visual demonstration on the adaptability of tropical species and a range of drought tolerances.

Eighty five attended this field day with 15 new memberships expected.

The field days were also supported by members of the NW Branch.

Lester McCormick
NW Branch 23/11/04

OBITUARY

Dr Raymond Milton Moore AO, DSc, FAIAST

1914 -2004

Milton (as he was always known) was an outstanding contributor to pasture research in Australia. He was my first departmental head in Australia and when he introduced me to the CSIRO ecology group in Canberra no-one could have been more welcoming to a raw Pom and ensured that I had all the physical resources I could possibly need to start my research career on sheep production from pasture and the effect of grazing on pasture.

An honours graduate in Agricultural Science from the University of Sydney he initially joined the NSW Department of Agriculture at Bathurst. Soon afterwards he joined the CSIRO Division of Plant Industry and immediately started research on pasture ecology. He set up, in association with Nancy Barry and E H Kipps (a chemist), what remains one of the best designed and conducted experiments comparing continuous grazing, 4 week rotation and 8 week rotation on a Phalaris/ sub clover/ lucerne and cocksfoot pasture. They used Merino wethers and six replicates of each treatment. This superlative experiment showed little differences, in pasture or sheep production, comparing managed treatments with continuous grazing. This experiment was published as CSIRO Bulletin 201 in 1946. Whenever I am consulted on grazing management I always insist that the individuals concerned reads Bulletin 201 before starting.

Apart from his many well written papers in scientific journals, in 1970 he edited Australia's outstanding book on pastures - 'Australian Grasslands'. This 38 chapter book has remained the standard work on Australian pastures for decades.

He was head of ecology and assistant chief of the Division of Plant Industry from 1954 to 1966. He was Senior research Fellow of the CSIRO Division of Tropical Pastures, based at Brisbane from 1966 to1970; Leader Woodland ecology unit 1970 – 1973; chief research scientist Division of Land Use 1973 to 1976. In 1976 he was awarded the Order of Australia. In 1976 he was appointed Minister Scientific in London and was also appointed chairman of the Commonwealth Agricultural .Bureau. Following his service in London he and his dearly loved wife Terry retired to Canberra. Terry predeceased him in 2000, following 60 years of a loving, creative partnership.

Australia has lost an outstanding creative scientist who was loved and respected by all who knew him.

Haydn Lloyd Davies

Views on Kyoto Protocol

Gordon Refshauge

My understanding of the Kyoto Protocol is that it is not more than an acknowledgement of climate change and a recommendation for emissions control and reduction. My understanding, limited as it may be, is that the protocol is not binding, so even if all countries signed the protocol, still nothing can be enforced, particularly against non-signatory nations (e.g. USA and its newest state AUS). Further, even if the Protocol is implemented the atmospheric and climate changes won't stop or slow until the end of this century.

However, I wanted to respond by allaying my concerns about climate change and the implications for NSW graziers, grasslands, productivity, profitability and the way we do things now and in the future.

Listed are a number of referenced predictions that have caught my attention:

- A warm world means warm waters. Warm waters means more, and more intense El Niño events[1]. Warm water means less chance of exceeding median rainfall[2].
- A warm world increases upper atmosphere wind speed, which pulls winter rainfall cloud bands and cold fronts far south, likened to the tightening wobble on a top as it spins faster[3] , resulting in lower winter rainfall potential.
- Climate change may reduce mean rainfall by up to 100mm[4] for NSW.
- Climate change is likely to increase max and min temperatures, and increase daily evaporation[4]. Increases in min temperatures will affect vernalisation[5].
- Climate change is likely to see increases in freak weather events, rainfall is likely to become more sporadic, fall harder and pass faster[1].
- Global annual mean temperatures are likely to increase at ten times their current rate of increase. In 20 years Melbourne's climate may be more like Moree's[6].
- CO_2 is a thermal retaining molecule[6] that takes a up to 120 years to be cycled through and sequestered in biomass[2#]. The effects will be around for generations.
- Early evidence is suggesting that increased CO_2 levels are affecting plant production negatively, in contrast to expectations[7].

My interpretation of these predictions is that farmers are going to **need** to change their practices sooner rather than later.

- If evaporation and the number of dry days increase, and if rains fall less often but harder, we are going to need to be ready to catch and utilise it when it falls.
- More evaporation will dry out soil to depth, minimise production potential and increase erosion potential. This suggests that we will need more groundcover all year round, not just to hold soil and moisture but to slow run-off.
- Prolonged dry spells, more frequent drought and severe weather are going to increase risk, reduce production, productivity, product quality and profitability.
- As land values scream beyond agricultural economics, who will get caught with high value-low return land?

In summary, I see it this way: *The Rangelands move east*. Where we talk of DSE/Ha will we change to Ha/DSE? *Will the period of Conservation Farming evolve into the period of Fodder Conservation?* Periodic dry spells and more frequent droughts are likely to compromise the carrying capacity goals of many high production grazing systems, and push marginal small area graziers closer to their limit, particularly so in areas where subdivision is prolific.

Where does The Grasslands Society of NSW fit into this debate? Well, I think there needs to be some discussion and pre-research planning into how we will cope if it does happen as predicted…and how we will cope if it doesn't. After all, a warmer atmosphere can hold more moisture, which increases cloud potential - which reduces temperature. Also, the weather has its own ebb and flow, one year wet, one year dry, no obvious pattern and at the end of the day the timing of the rainfall is more important than total, mean or median. Further, a warmer May-September period will increase production potential of annual grazing systems, given sufficient moisture.

And so to the debate…where to from here?

Firstly, it would seem apparent that the only way graziers will cope with increased dry, and other extremes, will be through whole farm rotational grazing. We don't 'time-control' or 'cell-graze' but do use rotation to manage weeds and micron during spring. We are noticing more native perennial grass cover each year in response.

Secondly, there has been a recent focus in pasture production research and extension into annual winter production grasses, legumes and dual purpose cereals. This research is really important and benefits all producers, but don't you think climate change will shorten winter and spring and lengthen summer and autumn? Should there be more research looking at dual-season pasture mixes or finding best practice methods of establishing summer active, drought tolerant grasses into the high production winter active pasture mixes? The dual-season challenge is to establish completely different production system grasses at the same time, or in the same year, without disadvantaging either. Sow in summer and broadcast in winter, perhaps?

In conclusion, the climate change predictions are dire for agriculture in its current form. I think the changes will occur slowly but additively. Suddenly we will wake up and it will never be as it once was for us or our parents. We will have to learn to cope – full stop.

My interpretation of the change is that pushing high production will increase the risk of overgrazing, soil erosion and pasture deterioration at some point in the future. But how you cope with change is not relevant now because what's really important, now, is that we discuss, think, learn and prepare for the changes that seem not so far away. Discussion needs to be at all levels in our community – the DPI, Councils, RLPBs, NSW Farmers Assoc., NFF, State and Federal Government, and in the media (print and radio). Nowhere on the planet will be free from change, so at the very least we should think we will be ready.

Gordon Refshauge

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1. Lydia Dotto (1999). Storm Warning. Doubleday Canada Limited.
2. Paul Carberry, DPI Climatologist.

2#. Paul mentioned this in a debate on CO_2 and I wasn't able to clarify the details.
3. CSIRO, Melbourne based research on Antarctic weather, *Catalyst* ABC TV.
4. CSIRO based article printed in *The Land Magazine* (2004 early-mid year).
5. CSIRO seminar (2004). My younger brother is doing his PhD at CSIRO Canberra and relayed this prediction to me.
6. 2004. Article in *Sydney Morning Herald - Good Weekend Magazine*.
7. Professor Derrick Eamus, University of Technology Sydney, Public seminar abstract (2004).

'Riverslea'
Darbys Falls Rd
Woodstock NSW 2793

Grain & Graze off to a flying start in Central West/Lachlan

Libby Roesner
Extension Coordinator, NSW DPI, Condobolin

Several new projects are now underway that should provide some valuable insights and outcomes for broadacre mixed farmers. The new 'Grain & Graze' initiative involves joint funding from four partners (Meat & Livestock Australia, Australian Wool Innovation Limited, Grains Research and Development Corporation, and Land and Water Australia) and the Central West Catchment Management Authority. This is the first time that these funding bodies have joined forces to develop projects specifically aimed at mixed-farms which have until now missed out on a truly integrated research and development focus. Grain & Graze is a national initiative which is working with catchment, regional and farmer groups in eight regions within Australia's wheat-sheep zone.

Our regional Grain & Graze group

The local Central West/ Lachlan regional group is currently being run by a steering committee which is chaired by Sue Rahilly. The steering committee has representatives from Stipa, Central West Farming Systems, Central West Conservation Farming Association, the Lachlan and Central West Catchment Management Authorities as well as NSW Department of Primary Industries and independent producers.

The steering committee has put together a comprehensive program which will be funded over the next 4years. The aim of this program is three-fold; first to develop more profitable and sustainable mixed-farming systems through research and collation of existing knowledge; second, to improve environmental outcomes by reducing leakage of water and nutrients and improving biodiversity. And finally, to help the managers of mixed farming systems to make more confident decisions by providing opportunities for networking, training and extension relating to both production and natural resource management.

Launching Grain & Graze at "Baragonumbel"

The Central West/Lachlan Grain & Graze project was launched on 21st October when 75 people gathered at "Baragonumbel", the property of Mathew and Kylie Barton at Gollan near Wellington, to hear a number of speakers and view the 'pasture cropping' system practiced on the property. This innovative technique of sowing crops directly into living perennial (usually native) pastures provides a combination of cropping and grazing into one land management system where each one potentially benefits the other.

The pasture cropping system was initiated over 10 years ago by Darryl Cluff and Col Seis. It has been used by several farmers in the east of the Central West/Lachlan project area and it is of interest to many farmers and researchers. The implications of this type of system including potential production, economics and environmental benefits will form the basis of a research project which will be undertaken by the local Grain & Graze group from next year. In the meantime, this property and the pasture cropping system will be profiled as one of the national case studies that are being undertaken on mixed-farming properties.

Case studies profiling 'successful' farming systems

As part of the national Grain & Graze initiative, 40 properties will be showcased throughout Australia to provide insight to a range of 'successful' systems for managing the plant and animal components of a mixed farm. In the Lachlan/Central West region six case studies are planned. Two of the properties are conventional mixed farms, managed by farmers who are regarded as successful by their peers. The others involve farmers who are pursuing different/ innovative practices such as, pasture cropping, controlled traffic and integration of woody forages into their farming system.

The project officer, Ms Margaret Wynne (DPI, Condobolin), was appointed to undertake these case studies in September. She has initiated the local case studies with self-assessment questionnaires which have been sent to each of the profiled properties. She will be making farm visits with Mark Gardiner, a member of the national case studies team, in the New Year to collect further information. An assessment of the farm biodiversity and an economic analysis are included in the case studies to demonstrate the overall success of the different management systems.

The case studies will aim to define the producers' understanding of their landscape and the important principles that underpin their management rather than simply document the details of their day to day operations. The results from these case studies will be prepared into an informative publication which should be available after April next year.

Other mixed farming projects to be undertaken

Overall, the Central West/Lachlan Grain &Graze program has six sub-projects and each relates to potential improvements to mixed-farming systems in the region. In addition to the case studies, the subprojects include matching forage production profiles to the nutritional requirements of alternative livestock enterprises, landscape design for improved biodiversity, and major studies of integrated systems including pasture cropping in the east of the region and alley farming in the west. The program also involves an important extension and training component based on the results of these subprojects. Further details of these sub-projects will be provided in successive newsletters.

Hawkesbury Nepean Catchment Management Board

Wollondilly and Upper Nepean Catchment Inspection

TREES AND PASTURES – FINDING A BALANCE
PART 1

Peter Simpson
former Regional Director of Agriculture, NSW Agriculture, July 2003

INTRODUCTION

There is no doubt that during the last decade there has been an increasing interest in reviewing the cause and effects in different landscapes and environments of policies and practices that have occurred during the last 200 years. We have certainly changed the vegetation pattern, be it pasture or trees during this period and there is currently a great deal of soul searching going on reflecting on changes over time.

The title of this talk is both challenging and stimulating to me and links very well to my role as an agricultural adviser trying to help individual landholders develop more sustainable and profitable systems for their whole on-farm management goals, and with my other hat as being an active participant in catchment management and the broader issues that relate to developing catchment management policies that are going to be in the long term interests of the landscape, agricultural and urban communities.

I believe the balance between trees and pastures will vary from individual farm and farmers goals and their enterprises, compared with catchment issues where some of the macro benefits eg. reduction of dryland salinity, the movement of soil and nutrient into our waterways may require different strategies to those that are going to be cost effective for individual landholders. However, I am absolutely certain that the more action that is taken on individual farms, the more there will be a collective benefit for the catchment as a whole.

LANDSCAPE VISION

I believe it is useful to have an overall vision, either for a catchment or for an individual farmer. My vision statement for our family farm near Goulburn is *"to harmoniously develop and/or maintain the landscape in ways that protect or improve the natural resource base"*.

Visions are all very fine and give us all warm feelings which help us sleep well at night, but they are "pie in the sky" until they can be translated into some specific action. It has generally been agreed (across all landscapes) that perennial species (be they native or introduced perennial grasses or native or exotic vegetation) that result in permanent ground cover and maintain soil stability are essential to maintain the natural resource base. One of my main objectives *is "to maintain or increase ground cover with perennial species"*.

You will notice I have not restricted my options to native species because I fundamentally believe in the concept of diversity and the track record for many introduced species has shown, when placed

in their correct environment, that they can be productive, sustainable and are compatible with both my objective and vision statement, as outlined above.

ROLE & PLACE OF TREES

There is ample evidence to show that the need for trees in the Tablelands landscapes is indisputable. It is really a matter of determining what types of trees, where they best fit and why.

Bob Marchant, former Sheep and Wool Officer at Goulburn, many years ago looked at the effect of shelter on lamb losses by paddock engineering, ie. he looked at the topography and aspect of various paddocks on properties and developed strategies to minimise exposure. Where this involved a simple realignment of fences, the increased lamb survival (which varied between 10-20%) more than recouped this cost in less than three years. Where this involved additional fencing and the planting of trees for shelter, it took six to eight years to recoup the establishment costs (may be longer under current costs and returns).

Generally speaking, it seems that up to 10-15% of most properties could be retired from active grazing and revegetated and the overall effect of stocking rates would be minimal. There is also the added bonus of:

1. Reducing dryland salinity somewhere in the landscape.
2. Reducing pasture pest problems such as wingless grasshoppers which tend to have their major breeding sites on dry degraded ridges (it is known that wingless grasshoppers will not move through dense woodlots).
3. Serrated tussock is one of the worst invasive introduced noxious weeds that loves degraded pasture sites. Revegetation is an effective way of reducing and controlling this problem over time. Note: (NSW State Forests has for nearly 50 years used radiata pine to successfully control serrated tussock in the Oberon area).
4. Attracting additional capital gains. (This has certainly been the case in Victoria and, talking to real estate agents locally, I believe the same is applying here on the Southern Tablelands).
5. Reducing our import bill for timber (currently in excess of $3 billion/annum). There will be much more concerted look at trees as an enterprise in their own right and this fits very comfortably into the challenge that Australia has to stabilise and progressively reduce greenhouse gas emission.
6. Reclaiming degraded erodible sites, particularly non-arable acid soils.

However, like most things in life there are some minuses for individual landholders that we should be aware of. These include:

1. Additional fencing and maintenance costs.
2. There is no doubt that many native animals and feral animals including kangaroos, wombats, foxes, rabbits, etc. quickly seize on the protection that windbreaks offer and controlling the feral plant and animal problem in these areas is difficult, time consuming and costly.
3. Whilst there might well be an off-farm benefit for a well planned, integrated whole farm plan involving revegetation, you still pay rates and taxes on your total land area irrespective of the cash flow it earns.
4. I am more than comfortable with the need to revegetation and planting more trees, but I am open-minded enough to know

that in some environments there could be selective harvesting of these trees and the right to harvest and current taxation and local government laws are hurdles to overcome.

ON-FARM ACTION

There is incredible diversity of landscapes and soil types in the Tablelands areas of NSW and the ACT and our climate variability is immense. The challenge then is to read and understand your landscape variability and work within the strengths and weaknesses of the diversity you have. Programs such as Farming for the Future was a very useful base to develop a physical farm plan, and PROGRAZE and Landscan for managing and implementing soil, pasture, livestock and conservation goals.

Critical features, I believe, in reading your landscape and knowing how to arrive at a balance between trees and pastures include:

- Determining those areas that are arable (ie. are trafficable with ground driven machinery and can be cultivated with minimal problems for crops or introduced pastures). Generally speaking, these areas include our most fertile soils even though they can become water logged occasionally or discharge ares for dryland salinity, ie. mid to lower slopes and valley floors.
- It is the non-arable areas where there are major limitations for development options and aerial pasture development is not suited to acid soil landscapes and is a high risk venture.
- Slope, soil type, erodibility and aspect area are all important features to consider. Shallow, low fertility erodible soils with western aspects have major limitations for pasture growth, are generally the most exposed and should be seriously looked at when considering the relative economics of trees and pastures as a collective mix.
- Acid soils are widespread throughout the Tablelands – many of these were naturally acid though the problem has increased over the last 50 years with pasture improvement. In the arable areas where we can apply lime and incorporate this strategy with other pasture and development options, then pasture still has a viable role to play in its own right. It is the non-arable areas where there is acidity to depth (below 20cms) where we have major restraints on pasture productivity and development options. These areas should be non-destructively developed within the existing native pasture depending on the species present, or should be seriously considered for revegetation of trees
- It is essential that individual landholders can identify and understand the major pasture and weed species present to their property, be they native naturalised or introduced. There is no perfect grass or legume, each have their own combination of strengths and weaknesses and this diversity allows landholders choices when looking at pasture development options that relate to the diversity of landscape features present on their properties.

It then becomes a matter of developing a whole farm plan and setting priorities for action that are compatible with the vision, resource base and enterprise requirements for each farm.

PASTURES versus AGROFORESTRY

With pasture degradation being widespread and the high capital cost involved in resowing pastures to introduced species (from $200 to $250 per ha), there has been a general reawakening where agroforestry may be an economic enterprise in its own right. Certainly landscapes that have a combination of degradation features eg. low fertility, skeletal soils with acidity to depth, invaded by serrated tussock, then there is no way, in my opinion, that the capital costs of trying to cure this combination of problems agronomically can be successful and the sooner these areas are revegetated, the better

I was involved in a series of field days talking on the role and place of pastures and agroforestry. The following is a thumbnail sketch of the major points made at these field days, information I have obtained by talking to full time professional people involved in the timber industry, and from being a committee member of the Southern Tablelands Farm Forestry Group

Table 1 - ***Features and broad options for land classes***

Land Class	Key Features	Options
1-3	- Arable - High fertility - Minimal erosion risk - non acid (pH above 5)**	- Unlimited for both pasture and crop production in seasons when the amount and distribution of rainfall is adequate - High input-high output systems should work well
4-5	-Semi arable - Lower natural fertility - Moderate acidity (pH 4.5-5.0) - Moderate erosion risk - Lower to middle slopes	- Irregular cropping - Ground cover and pasture persistence important - Maintain native pastures or non-destructively develop (eg. direct drill)
6	- Non arable - Low fertile shallow soils - Acidic (pH below 4.5) - Moderate to high erosion risk - Middle to upper slopes	- Only suitable for permanent pasture - Generally hostile environment for most introduced perennial grasses - Best suited to low input system based on year long green native grasses - Manage to maintain pasture stability and ground cover
7-8	- Non arable - Low fertile shallow soils - Acidic (pH below 4.5) - Usually highly erodible - Steep upper slopes	- Leave undisturbed to either timber or revegetate - Lightly graze to maintain existing native pasture/ground cover - Retire from agriculture for conservation

NOTES: A brief summary of key points:

* Land classes as per DIPNR (Department of Infrastructure, Planning and Natural Resources)
Class 1 – Arable land suitable for cultivation – wide variety of uses
Class 2-3 – Arable land suitable for cultivation for crops but not suited to continuous cultivation. Grazing land or land well suited to pasture improvement. It may be cultivated or cropped in rotation with pasture with appropriate conservation practice.
Class 4-6 – Land best suit for grazing but not for cultivation. Land suitable for light grazing - maintain ground cover.
Class 7-8 – Unsuitable for grazing – leave to trees and/or manage for biodiversity
** All pH measured by $CaCl_2$ test

End of Part 1

KAITUNA- persistent grazing lucerne

M. Gout (Wrightson Seeds)

Lucerne is grown by many producers in different regions around Australia with different objectives and expectations.

This paper looks at a lucerne variety well suited to grazing which is fast gaining praise from growers for its production, quality and excellent persistence.

Introduction

Kaituna was bred by a joint breeding initiative between WL Research (USA) and AgResearch (NZ) to provide a high producing, high quality lucerne that would be weII adapted across a wide area for persistence under animal grazing.

Originally trialled in Australia and New Zealand under the code B80, Kaituna was first released in limited quantities in Australia in 1998. Since that time it has gained a strong following from farmers and agronomists, but now has a large amount of longer term trial data to support its strong growth in sales.

Breeding

Kaituna was bred from a broad background of material including some of the parentage of WL Southern Special as well as some New Zealand grazing lucernes that had persisted for up to 12 - 18 years and shown good resistance to a wide range of lucerne pests and diseases.

The result has been the development of a variety with good production and excellent quality traits, plus excellent long term persistence even under grazing by sheep.

Persistence

Kaituna has shown outstanding persistence in variety trials where plant density has been measured after a minimum of 3 years following establishment. It has been one of

the most persistent varieties in both irrigated trials *(see Table* 1) and dryland trials at Gundagai .

Australian Feedback

Kaituna was originally sown under code in Tasmania in the early nineties. It was first sown in APPEC and Wrightson Research trials in Australia in 1997 and sold commercially since 1998. As time has gone by it has continued to gain strong support from commercial growers who sowed it back then, and from agronomists who have seen it in trials sown in the late 1990's.

Yield Results

Kaituna was sown in a dryland trial managed by Peter Wilson at Cowra where it has been the highest yielding lucerne in the trial.

In an irrigated trial sown at Ballarat in spring 1999 Kaituna has been the highest yielding of all the dormant and semi dormant varieties sown.

Kaituna also performed close to best of varieties sown in an irrigated APPEC trial at Mt Gambier SA.

Quality

Kaituna produced the highest leaf to stem ratio of all semi-dormant lucerne varieties sown in an irrigated trial at Cowra. *(see Table 2*)

Discussion

Over the past five years Kaituna has gained a strong reputation for providing high levels of production of high quality lucerne. Farmers who first sowed it five years ago have also testified to its excellent persistence.

Lucerne trials have to run for a number of years to assess persistence. Kaituna is now showing excellent persistence in those early sown trials.

Kaituna offers the best package of yield quality and persistence of all semi-dormant lucernes on the market today.

Table 1. Lucerne Persistence (plants per sq metre) 2002 from APPEC trials sown 1996

Variety	Mt. Gambier '98–'01	Wagga Wagga '98–'01	Tamworth '98–'01
Kaituna	94.0	93.65	67.8
Cimarron	89.2	91.63	60.6
L 52	87.2	91.59	67.2
WL 414	88.7	92.40	67.8
Aurora	91.0	Not sown	Not sown
Trifecta	88.7	Not sown	Not sown
WL 516	92.0	Not sown	Not sown

Table 2. Irrigated lucerne quality (Leaf to Stem ratios. Source P. Wilson CRT)

Variety	November 2002	January 2003
Kaituna	1.46:1	1.57:1
Venus	1.36:1	1.27:1
Pioneer L 55	1.25:1	1.19:1
WL 414	1.35:1	1.51:1
Genesis	1.18:1	1.28:1

Keeping the legume in mixed pastures with Potassium

Mixed legume and grass pastures continue to form the basis of intensive grazing industries in Australia with the legume component providing the double benefit of improved feed quality and a source of nitrogen to the pasture system.

As improved pastures age, the legume component becomes less prominent, with re-sowing necessary to return pasture composition to a more favourable balance. However, some factors can cause the legumes in a pasture to disappear faster than expected, a common culprit being a deficiency of potassium (K).

Grasses have a higher K concentration and are better at getting K than legumes

When grown alone both grasses and legumes can contain high concentrations of K in the herbage, however when grown together grasses (particularly perennial grasses) are much more efficient at accumulating K.

Surveys of mixed pastures, which have separated the grass and legume components for tissue analysis, have shown that grasses generally contain a higher K concentration than do legumes.

Several factors combine to result in the superior accumulation of K by grasses. The deeper and more dense root system of grasses is more effective at competing for scarce soil K resources. It has also been suggested that the root system of legumes tends to absorb calcium and magnesium in preference to potassium, whereas the reverse occurs with grasses.

Grasses need less soil K to produce well

Because of their inherent efficiency in extracting it, grasses require a lower soil K content for optimum production. For example, in Western Australia a series of field experiments showed that clover growth in mixed pastures responded to K fertiliser when soil test values were less than 80-100 mg/kg in the top 40cm. Grass growth, however, was only responsive where soil test values were less than 20-25 mg/kg in the top 40cm.

It is understandable that as a K deficiency develops, legumes are the first to display deficiency symptoms. Seed production of clover is also reduced when K is deficient and eventually the legume component of the pasture will decline.

Pasture growth responses to K depends on the ability of legumes to regenerate

In most cases growth responses in mixed pastures is due almost exclusively to an increase in the growth of the legume component. If seasonal conditions or a poor seed bank prevents the establishment of legume plants, responses to K fertiliser will be lower than expected.

For example, if a poor or false break to the season prevents the germination or establishment of clover seedlings, pastures may not respond to K fertilisers. Similarly, if years of poor clover growth have resulted in a sparse clover seed bank, pasture response will not be as marked as expected.

Adequate K + legumes = better feed quality

Plants have a much higher requirement for K than do grazing animals, in fact up to 90% of the K ingested by cattle is excreted

in dung or urine. So a pasture K deficiency will not result in K deficiency in grazing animals. Correcting a K deficiency can, however, improve the feed quality characteristics of the pasture.

Improving the legume content of a mixed pasture will result in an increase in the protein content of the herbage, and has been shown to increase the digestibility of sub clover. Some studies have also noted an improvement in the palatability, even of poorer grass species, where a K deficiency has been corrected.

Deciding if a pasture will benefit from K fertiliser

Soil and tissue testing are readily accessible tools for determining if a mixed pasture will respond to K application, but remember the test results are only as good as the sample that was taken. Because of the wide variability in K content of pastures mostly due to transfer by stock, a permanent transect sampling strategy may be more appropriate than taking random samples. This will also allow the comparison of soil test results taken over several years.

Where severe deficiency occurs, pasture appearance and individual plant symptoms will become apparent. Legume plants will be sparse and will display scorching or spotting on the margins of older leaves. Small patches of healthy clover plants may be associated with recent urine or dung deposits. However, by the time these visible symptoms appear, large losses in pasture productivity will already have occurred.

So keep an eye on the legumes in the mixed pastures in your region – they might be trying to tell you something!

Further Information:

Jonnie White
Market Development Agronomist
Canpotex/Agrow Australia
PO Box 936
Biloela QLD 4715
tel: 07 4992 6041
fax: 07 4992 6043
mob: 0409 870 771
jrwhite@tpg.com.au
www. potash-info.com

From the President

The Society's state committee met in Orange in late February.

Some of the items that were discussed are summarized below. If members would like more detail, minutes are available from the Secretary or feel free to contact any committee member from the list shown on the back of the newsletter.

The internet site is nearing completion and now contains an increasing range of information and very useful linkages to seed and fertiliser companies, met information, government agencies, recent newsletters and other interesting and informative sites .Like all internet sites, it relies heavily on new material. If members have suggestions to add to our site please contact Linda Ayres at DPI Orange who has been working with Leah Lane from Glen Innes. Leah has done a great job in re- building the site which is now quite separate to the Grassland Southern Australia site where we previously were linked. Leah is currently organizing the "members only " area which will require a password. This information will be sent to members when finalized. Please check out your new website at grasslandnsw.com.au .

Conference planning is progressing well. The organizing committee has already assembled an impressive group of speakers to complement the full program. The dates again; 19-21 July at Orange.

A reminder to all members that our subscriptions now conform to a financial year and reminders will be sent out to all financial members in May. Conference proceedings will be sent out to financial members unless they prefer to pick up at the conference.

Our membership list is now all but complete thanks to the hard work of Rosemary Sweet and the many members who responded to my letter of last September. Replies are still trickling in to our PO Box 471. If anyone has yet to reply you would be welcome to do so to ensure your continued membership of the Society.

I would like to acknowledge the tremendous effort from our departing secretary, Rosemary Sweet who will soon be leaving Orange. We wish Rosemary and Steve all the best in their new location and hope the link with the Grassland Society may continue in some form. I would also like to welcome Dianne Smith to the job. Many Orange people will probably already know Di from her long association with NSW Agric/DPI. We look forward to working with Di in the future.

Finally, here's to a good autumn wherever you are.

Best wishes,

Mick Duncan
President

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 530 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.

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APPLICATION FORM

Name: .....

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.....

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Subscription for 2004-2005 (July to June) is $50. This entitles you to copies of the Newsletters and a copy of Annual Conference Proceedings.

For more information, please contact the Society's Secretary, Dianne Smith (Telephone: 02 6362 6150).

Send membership application to:

The Secretary
Grassland Society of NSW
PO Box 471
Orange NSW 2800

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