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NEWSLETTER

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We are all grateful for the great work carried out by the Organising Committee for the Tamworth Conference. Our President, Mick Duncan has a review of the Conference in this Newsletter. The topics and the selected speakers were very good choices. I feel sure you enjoyed the Conference.

I have recently received the Proceedings of an excellent seminar on "Pushing Grazing Systems –How far should we go?" It was organised by the Australian Society of Animal Production – Southern NSW branch and the NSW Department of Primary Industries. All the papers were relevant to all our members. Among particularly appropriate papers were "Reducing grazing pressure to improve profitability" by Phil Graham; "EverGraze –seeking the most profitable farming system "by Dr. Michael Friend. And "Extreme Grazing System – what can we learn from the Dairy industry". Copies of this seminar can be obtained from Dr. Pietro Celi, Faculty of Vet. Science, University of Sydney, PMB 3, 425 Werombi Road, Camden, NSW 2570.

I was sorry to read recently that it was becoming increasingly difficult to replace retiring District Agronomists because of a shortage of qualified personnel.

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Professor Jim Pratley stated that the demand for graduates in Agriculture is strong and is likely to remain strong into the future. Graduates completing their degrees was below 800. There is an estimated demand for 2,000. There is clearly a need for incentives for school leavers to enrol in Agricultural Science. There is also a need for more post graduate students to research on soil, plants, animals and agricultural economics.

The Grassland Society of Southern Australia will be holding its annual conference in Bairnsdale, East Gippsland on 14 and 15 August. Information on this Conference can be obtained from – Melinda Mann, Secretary, Grassland Society of Southern Australia, PO Box 1387, Echuca, Victoria 3564. –e-mail: office@grasslands.org.au.

Many of us are wondering "How will climate change affect agriculture?" The government has announced that it will introduce an "Emissions Trading Scheme" Although the scheme is scheduled to start in 2010 but the government has indicated that agriculture is unlikely to be ready for inclusion at the beginning because of the difficulties in measuring agricultural emissions. What is inevitable is that once an ETS is introduced costs will be increased by the scheme. The .purpose of the scheme is to make electricity, fuel and emission intensive products such as fertilisers and herbicides more expensive.

I have learnt recently that Mike Keys is retiring from the NSW Dept. of Primary Industries. The department, the Society and the industry are losing an outstanding contributor. We wish Mike and his wife Margie the very best wishes for a happy retirement.

The President's, Mick Duncan, excellent summary of the Tamworth Conference replaces "From, the President's Desk" in this issue.

Haydn Lloyd Davies
Editor

Tamworth Grassland Society Conference 2008 Summary

Mick Duncan, President, The Grassland Society of NSW

The 2008 conference was a great success by all standards.

Most importantly, it was very well received by producers, commercial agriculture representatives and government agency people alike.

Convenor, Loretta Serafin and her team on the organizing committee are to be congratulated on a very memorable event.

The following brief summary will not do justice to the range and quality of information given by the speakers. It is an attempt to provide an overview of the

conference sessions and encourage those members who were unable to attend to browse through the excellent proceedings, which should inspire an even greater attendance at future conferences. Being at conferences enables personal contact to be made with a broad range of people, all with a common interest in improved efficiencies in grassland and animal production.

The conference covered a surprisingly wide range of topics in the space of 1 ½ days' formal sessions. These were complemented by farm tours that featured successful, dryland tropical pastures and a highly efficient dairy farm.

Two excellent papers on aspects of soil health provided the audience with a stimulating account on phosphorus management and the potential for a new material known as "biochar", a high carbon bi product, to be used to improve both physical and chemical soil fertility.

Several papers, covering the important economic factors that influence efficient livestock production alerted the audience to the need to pay attention to these " profit drivers " An analysis of these factors were shown to be capable of making significant contributions to the all important " bottom line"

New and not so new pasture varieties, both temperate and tropical, received thorough coverage in two papers, giving details of animal production as well as the usual agronomic details. Climate change also received attention in a stimulating paper that discussed potential pasture production outcomes as a result of projected climate change factors.

Complementing these papers were two additional presentations that covered aspects of animal nutrition and strategies for managing seasonal feed gaps. In this regard, the Society attempts to present a balance of papers on pastures as they relate to the needs of the grazing animal. This conference, according to our feed back, achieved the balance well by drawing together important features of forage and animal performance.

Producer presentations are always well received and this year was no exception. Good examples of tableland and slopes livestock systems were covered by the producer presenters. These papers make excellent reading and complement very well the technologist papers. They emphasize, in their own particular environment, the need to streamline production to meet increasingly stringent market requirements.

In giving a verbal summary at the conclusion of the conference, I selected four themes that appeared regularly throughout the proceedings, from both technologist and producer presentations.

- Plant variety improvements, both grasses and legumes ; to provide extended maturity to take advantage of irrigation or spring rainfall in the more reliable rainfall districts, improved nutritive values, persistence (in the case of permanent pastures), and the addition of endophyte into perennial ryegrass and tall fescue. The endophyte story in northern NSW is still unfolding and research is needed to clarify some aspects of endophyte inclusion in a range of varieties. This development warrants close attention in an attempt to further improve pasture and livestock production.

- Better utilisation of forage to take advantage of the factors listed above. This sounds pretty basic, but as several speakers mentioned, lifting forage utilization from 40 -50 % (or higher) can make a significant and positive difference to animal performance.

- Analysis of individual enterprises on a farm to identify the “profit drivers” and attempt to make efficiencies. This is important as costs rise and commodity prices don’t!

- Potential to make more efficient use of phosphorus (the most widespread nutrient deficiency in Australian soils) by gaining a better understanding of the behaviour of P in the soil.

Finally, I do encourage all members to not only read through the papers that are of particular interest, but make contact with the presenters for more information.

Evergraze in Central and Northern NSW

Luke Beange, Soils Advisory Officer, NSW, DPI, Dubbo.

Central

New research into grazing systems for native pastures has recently begun at Orange as part of the EverGraze national research program, which endeavours to increase the profitability of livestock enterprises by 50% while simultaneously enhancing NRM (National Resource Management) outcomes.

The management of native pastures is often given a lower priority because they are frequently located on less productive and highly variable areas of the landscape. They are generally fenced into large paddocks that are set stocked or have short rest periods causing degradation in over-utilised patches.

High intensity short duration (HISD) grazing systems have been widely promoted as a means of simultaneously improving profit, natural resource management (NRM) outcomes and lifestyle. Currently, there is little objective data available to support such claims, but producers are increasingly adopting these systems due to anecdotal observations of their success.

Research at the Orange EverGraze 'proof' site is investigating whether high-intensity short duration grazing of native pastures can improve perenniality, lift animal production, increase farm profitability, enhance soil structure, reduce erosion and improve biodiversity.

Two experiments at Panuara and Belgravia will examine three grazing management systems: continuous grazing (1 paddock), medium intensity (4 paddock rotation) and high intensity (20 paddock rotation).

At Panuara increasing profitability will also be achieved with a move from wool production to a prime lamb enterprise based on merino ewes joined to elite terminal sires, and matching fertiliser inputs to the capacity of the land to respond.

Research at Belgravia will examine the impact of fertiliser on pasture production and composition in combination with the three grazing systems to determine whether it is profitable and sustainable.

This experiment will help to isolate the role grazing system plays in improving profitability or NRM outcomes compared to changes in livestock enterprise and stocking rate that often occur in unison with a switch to a high intensity short duration grazing system.

In addition to these research sites, we have farmer trials (Supporting) sites being run in conjunction with the Lachlan CMA. These are:

- A tagasaste trial on Wes Brown's at Cargo. Wes has been experimenting with the forage shrub for several years. He manages the shrub for multiple benefits which include feed value, a standing drought reserve,

shelter for livestock in the form of a windbreak, and environmental benefits of a deep rooted perennial in the landscape.

- John Rowland's at Mandurama who is managing his native pastures for improved performance. He has sown oats directly into a section of them to try to improve the winter feed value. A large 40 ha paddock that is steep in some parts has been divided into four to allow for HISD. Sampling points have been established by DPI to allow monitoring over the next few years.
- Two more HISD sites on native pastures at Rye Park near Boorowa (Rod Blake's) and Narrawa near Crookwell (Edward Proudford's) are being set up, with field days planned for spring 2008.

The main focus of our supporting sites is on HISD of native pastures. With the increased costs of establishing and fertilising introduced pastures, there is growing interest in these systems from producers, and our sites will give us more information on them, for all to benefit. It is a good collaboration between DPI, the Lachlan CMA, local graziers and the funding bodies.

Northern NSW

In northern NSW a multi-disciplinary research and extension team is tackling the problem of how best to integrate the on-farm use of native and sown pasture species, forage crops, and supplements to get higher levels of sheep production.

The research approach involves on-farm monitoring and assessment of 18 properties across the region and detailed surveys to determine current practices for pastures and grazing livestock including stocking rates, grazing methods, pastures sown, fertiliser use, animal production levels and attitudes in the grazing industries. This work has targeted focus groups of leading producers and advisors (both public and private sector) to establish regional pasture and animal production benchmarks.

Regional benchmarks will help livestock producers assess what aspects of their grazing business (soils, pastures, animal performance, grazing enterprises or management) are limiting their profitability and environmental impacts, and ways to improve their performance.

One activity involves on-farm monitoring and assessment of 18 properties across the upper half of the Namoi and Border Rivers-Gwydir Catchments from Nundle

and Wallabadah in the south and east, to Barraba and Mt Kaputar in the north and west.

A range of sheep systems are being monitored including Merino wethers and self replacing flocks, first- and second-cross lambs and lamb trading. These enterprises use a wide range of forage sources, ranging from 100 percent native perennial grass pastures through to combinations of native and sown temperate and tropical pastures, summer and winter forage crops and supplements.

The relationship between production, profit and biodiversity is being examined to see if trade-offs on one part of the farm can be compensated for by gains on another part of the farm. A simple easy-to-use biodiversity guide will be developed that producers can use to monitor and assess biodiversity on their farm.

A whole farm economic model is being developed for assessing the profitability and risk of sowing improved pastures and changing sheep production enterprises. This will provide information on the comparative cost of production for different pasture systems and grazing enterprises.

The role of perennial pastures based on lucerne is being investigated using mixtures of annual legume, herbs and grasses rather than the traditional lucerne monoculture. Lucerne mixtures will overcome problems associated with bloat and low ground-cover.

Modelling will be used to determine the impact of climate variability on the success of sowing pastures and forages and production systems with higher animal feed demand. Both existing and new production systems will be studied, using historical daily climate data, to provide insights into their robustness in challenging and variable climates.

In addition to these research sites, the northern region has farmer trial (Supporting) sites being run in conjunction with the Namoi and Border Rivers – Gwydir CMA. These are:

- **“Dundee” Glen Innes:** Improving the diversity and utilisation of pastures dominated by African Lovegrass.

- **"Sentry Box" Bundarra:** What impact do different species of grazing animals (sheep, cattle, goats) have on the persistence and condition of native pastures?

- **"Rangari" Kelvin:** Will a low input time control grazing management system increase pasture quality and quantity in native pastures?

- **"Karuah" Currabubula:** How does herd impact (cell grazing management) influence the regeneration of native perennial grasses in previously cropped paddocks?

- **"Carthian Hill" Tambar Springs:** Will applying fertiliser alone improve native pasture quantity and quality compared to a system combining improved grazing management, fertiliser and sub-clover?

Evergraze is a collaboration between NSW DPI, CMA's including the Lachlan, Namoi and Border Rivers Gwydir, Future Farm Industries CRC, MLA and AWI.

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Grain and Graze: Pasture Cropping Sub Programme

Geoff Millar & Warwick Badgery, Research Agronomists, NSW DPI, Orange

Key Messages

Pasture cropping can produce crop yields similar to conventional cropping, provided soil fertility, weed control and soil moisture are adequate.

During the cropping phase pasture production may be reduced, depending on pasture type, but can return to production levels similar to straight pasture after the cropping phase.

Project Background

Pasture cropping is an innovative farming system where cereal crops are sown directly into perennial pastures. Generally, the crops are sown into summer growing native perennial pastures, such as red grass (*Bothriochloa macra*), after the first frost in autumn when these species become dormant. This is done to exploit the differential growth phases of the annual crop and the perennial grasses. Delayed sowing, or applying a selective herbicide like paraquat/diquat, can reduce competition at the beginning of the cropping phase when these species are grown together. Also, shading from the crop delays the growth of the summer growing perennial grasses until the crop senesces and the canopy opens. Therefore, the system can be managed to have no direct competition while the crop is growing. However, perennial grasses growing through summer may prevent the accumulation of nutrients and water, which can reduce crop performance.

Pasture cropping can improve year-round resource use, increasing overall annual productivity compared with conventional annual cropping or pasture alone. In addition, costs are limited as fallowing is not required and fertiliser input can be matched to available soil moisture at sowing. However, improved profitability requires efficient use of the additional forage to compensate for reduced crop yield that can occur.

Experiments

This research project has two major experiments based at the NSW Department Natural Resources (DNR) Wellington Research Station. The aims of the two experiments are to:

1. Determine the success of pasture cropping compared with no till cropping and pasture treatments.

2. Determine the effect of fertiliser level and in-crop weed control on the production and resource use of a pasture cropping system.

Two trial areas have been set up: a high perennial (HP) pasture dominated by red grass, and a degraded lucerne (DL) pasture dominated by lucerne and annual grasses (wild oats, barley grass and annual ryegrass). It is important to note that this research has been carried out at the extremes of pasture condition as pasture cropping is usually practised in paddocks with lower plant density than in the red grass pasture studied here,

Both trials have core treatments: continuous pasture (PA) with no fertiliser or herbicide, a no till (NT) crop with a glyphosate treated summer fallow, and pasture crop (PC) which was treated with paraquat/diquat prior to sowing. All crops were sown with 60 kg/ha of wheat (cv Ventura), in one pass to minimise soil disturbance. PC had 0, 50 or 100 kg/ha and NT 100 kg/ha of DAP fertiliser at sowing. Plot size was 18m X 50m (0.09 ha per plot), with 3 replicates per trial.

Both trials looked at the effects of N fertiliser, while the DL experiment also looked at post emergent annual grass control. Measurements included plant composition and biomass, ground cover, perennial grass recruitment, crop yields, and soil fertility and moisture.

Results

Seasonal conditions: Rainfall was above average in 2005 due to substantial rain in the second half of the year, but the late 'break' delayed sowing until 24/6/05. 2006 was an extremely dry year with only 302 mm of rainfall, of which 71 mm fell in the crop growing period (sown 22/6/06) and crops were grazed instead of harvested. In 2007, rainfall was above average from April to June (sown 25/5/07), but substantially below average for the remainder of the crop growing season.

Pasture Production and Demography. In the HP paddock, red grass was effectively removed in NT by mid 2006. During the cropping phase, red grass was reduced in PC compared with PA, but it returned to similar levels to that in PA in the non-cropping phase, except during the dry conditions of summer 2006/07. In the DL paddock, lucerne biomass was significantly lower in PC compared with PA only in July 2007, and was maintained at low levels in NT.

Ground cover was maintained on PA at over 80% throughout the experiment, while it was significantly less on NT and PC (average 40%). In late 2007, ground cover was significantly greater on PC compared with NT.

There was no difference in the number or basal area of red grass plants in 2005 (prior to sowing) in any treatment (Table 1). Red grass plants were completely removed from NT by 2006 but were retained at similar levels in PC and PA. There was a decreasing number of older plants but an increasing number of seedlings in the PC treatment. The basal area of adult plants was significantly lower in PC compared with PA in 2006, but there was no difference by 2007.

Crop yields. Mean crop yields were significantly lower in HP than DL in 2005, higher in HP than DL in 2006, and not significantly different between the two paddocks in 2007 (Table 2).

In the high perennial (HP) paddock there was a higher yield in NT for all 3 years. There was very little difference in crop yields between PC and NT in 2005 and 2007 in the degraded lucerne (DL) paddock, but in 2006 crop biomass was doubled in NT. In both paddocks there was very little effect of DAP level at sowing on PC crop yields, except in 2005, where nil DAP significantly reduced crop yield in DL.

Crop yields in DL were more affected by annual grass weeds than by DAP application (Table 3), with nil post emergent plots yielding 30% less than treated plots. In all years the nil DAP and nil herbicide treatment produced the lowest yields (Table 4), but by including annual grass weed control on the nil DAP treatment near maximum yields were produced in all years.

Soil Fertility. Mean soil nitrate in autumn was significantly higher in DL than HP in all years (Table 5). In 2005, there were no differences in soil nitrate between the treatments for each paddock. In 2006, significantly more soil nitrate was available in autumn for NT than for PC and PA, in both paddocks. In 2007, significantly less soil nitrate was available in autumn in PA in the HP paddock compared with NT and PC, but there were no significant differences between the treatments in the DL paddock. However, in the HP paddock there was a strong relationship between grain yield and N measured as soil nitrate 0-10cm and added as DAP in 2005 (R^2=0.95), and to a lesser extent in 2007 (R^2=0.46). Furthermore, in the HP paddock in 2007, soil nitrate, measured soon after sowing, was significantly higher in NT than PC in the 0-10cm and 40-80cm depth increments (data not presented).

Soil Moisture. While there were no consistent treatment effects on drying of the soil profile down to 1.8m, the profile was generally drier in DL than in HP (maximum soil water deficit of 120mm in DL compared to 100mm in HP).

Conclusions

Pasture cropping affected red grass production during the cropping phase, but red grass production levels from pasture cropped land returned to that for pastures during the non-cropping phase. Lucerne production was generally not affected by pasture cropping.

Increased red grass seedling recruitment can help offset the reduction in perennial plant coverage caused by the sowing process in pasture cropping. The potential to regenerate pastures without removing them from production attracts farmers to this technique. The pasture cropping system can reduce the risks associated with ground preparation and pasture establishment that are associated with conventional crop–pasture rotations.

Crop yields from pasture cropping can match those obtained by conventional methods, but are dependent on good soil fertility, weed control and soil moisture. The Wellington and Gulgong region, where pasture cropping was developed, has a seasonal rainfall that can sustain summer pasture and winter crop growth. Soil moisture may have determined differences in crop production between years but differences in yield between NT and PC systems in the HP paddock appeared to be explained by differences in soil N. In this paddock yield was higher in NT than PC in 2007, even when similar fertiliser levels were applied, apparently due to lower N through the whole soil profile in the PC treatment. As for any cropping program, good weed control is essential for good crop yields

Acknowledgements

The trial is funded by the Central West/Lachlan Grain & Graze program. Grain & Graze is a national program investigating ‘mixed farming systems’ and is a collaborative partnership between the Grains Research and Development Corporation (GRDC), Meat and Livestock Australia (MLA), Australian Wool Innovation Limited (AWI) and Land & Water Australia. The Central West/Lachlan is one of nine regions across the traditional sheep/wheat zones of southern Australia. For more visit the website at www.grainandgraze.com.au

This research is being conducted by NSW Department of Primary Industries.

CWFS is a regional partner of the Central West/Lachlan Grain & Graze program.

Table 1. Mean adult red grass plants and seedlings (plants / m^2) and adult plant basal area (cm^2 / plant) measured in autumn annually in PA, PC and NT on the high perennial paddock.

Autumn	Treatment	Adult	Seedling	*Total*	Adult Basal Area
2005	PA	-	-	30	36.6
	PC	-	-	28	35.2
	NT	-	-	20	45.1
	l.s.d.	-	-	*ns*	*ns*
2006	PA	27	4	31	47.2
	PC	22	6	28	19.3
	NT	0	0	0	0
	l.s.d.	*7.58*	*4.77*	*9.83*	*15.61*
2007	PA	22	6	28	30.9
	PC	15	11	26	19.7
	NT	0	0	0	0
	l.s.d.	*18.20*	*6.41*	*12.83*	*14.59*

Table 2. Grain yields (2005 and 2007) and crop biomass (2006) measured in NT and PC with different fertiliser, in both a high density native perennial (HP) and a degraded lucerne (DL) pasture (l.s.d. $P<0.05$). All plots treated with post emergent herbicide. * indicates significant differences in mean yields per paddock each year.

Treatment	DAP kg /ha	2005 Grain (t/ha)		2006 Crop biomass (t/ha)		2007 Grain (t/ha)	
		HP	DL	HP	DL	HP	DL
Mean		1.4**	2.0**	1.0***	0.4***	1.9	2.2.
NT	100	1.7	2.3	1.6	0.8	2.7	1.9
PC	0	-	1.7	-	0.3	-	2.1
PC	50	1.1	2.1	0.6	0.4	1.4	2.2
PC	100	-	2.2	0.7	0.3	1.5	2.3
	l.s.d	*0.1*	*0.3*	*0.2*	*0.2*	*0.5*	*nsd*

Table 3. Mean effects of DAP fertiliser and post emergent herbicide on grain yields (2005 and 2007) and crop biomass (2006) measured in PC plots in a degraded lucerne (DL) pasture.

Year	DAP kg /ha				Herbicide		
	0	50	100	lsd	nil	plus	F prob
2005	1.36	1.90	1.90	0.18	1.39	2.03	*P<0.001*
2006	0.25	0.37	0.25	nsd	0.22	0.37	*P<0.01*
2007	1.43	1.98	2.05	nsd	1.44	2.21	*P<0.01*

Table 4. Effects of DAP fertiliser, with nil or plus post emergent herbicide, on grain yields (2005 and 2007) and crop biomass (2006) measured in PC plots in a degraded lucerne (DL) pasture. Values within each year followed by the same letter are not significantly different.

DAP kg/ha	Herbicide	2005 Grain (t/ha)	2006 Crop biomass (t/ha)	2007 Grain (t/ha)
0	nil	1.0 a	0.16 a	0.8 a
0	plus	1.7 b	0.35 c	2.1 b
50	nil	1.7 b	0.32 bc	1.8 b
50	plus	2.1 c	0.42 c	2.2 b
100	nil	1.5 b	0.17 ab	1.8 b
100	plus	2.2 c	0.34 c	2.3 b
		P<0.001	*P<0.05*	*P<0.05*

Table 5. Soil nitrate (mg/kg) in the top 10cm measured prior to sowing (2005 – 2007) in PA, PC and NT in both a high density native perennial (HP) and a degraded lucerne (DL) pasture (l.s.d. *P<0.05*). Significant differences between paddock means in each year are indicated by *** (P<0.001), ** (P<0.01) or * (P<0.05).

Treatment	2005		2006		2007	
	HP	DL	HP	DL	HP	DL
Mean	9.8***	36.0***	17.9*	41.0*	38.6**	75.7**
NT	10.9	31.0	35.0	60.7	52.0	100.7
PC	9.5	34.3	10.5	39.0	40.0	69.0
PA	8.8	42.7	8.2	23.3	23.7	57.3
lsd	*nsd*	*nsd*	*10.7*	*16.2*	*13.6*	*nsd*

Tropical's – They're Good

Jeff Lowien District Agronomist, NSW DPI, Glen Innes

Harsh conditions have certainly sorted the chaff from the grain and in the case of pastures it's the tropical grasses that have come through in shiny colours. Just ask Dennis Hogan of the Hogan Bros. from Rocky Creek, and as he puts it "tropicals are bloody good".

The Hogan Bros. (Dennis, Geoff, and David) own a property located between Emmaville and Bonshaw in a 650 mm rainfall (26 inch) area with the elevation ranging between 650 to 700 metres.

The pasture mix and sowing rates that the Hogan's direct drilled were Bambastic Panic grass (1 kg/ha), Premier Digit grass (Digitaria smusii) (1 kg/ha) and Aurora lucerne (2 kg/ha). All the seed was coated and so weights are of coated seed.

The first paddock was sown in spring (October) 2005 and the second paddock in summer (January) 2006. Given similar rainfall patterns after sowing for both paddocks it was interesting that the end result was completely the opposite – the October sown paddock successfully established whilst the January sowing ended in failure.

This result though does fit in with the trial work that NSW DPI District Agronomists Bob McGufficke (Inverell) and Lester McCormick (Manilla) have undertaken throughout the Northern Slopes area, where spring sowings have been the most successful. However landowners on the eastern fall country which have that coastal weather influence will find that the January – February period as being the more reliable sowing time.

The other interesting comment made by Dennis Hogan is the sowing rate – as he put it "double the rate of the grass, but keep the lucerne the same because as you can see in the headlands that's how thick I believe the grass should be. Obviously the extra soil disturbance has helped but it's the extra seed that has made the big difference". Although seed is expensive, most agronomists would agree with Mr Hogan to use much higher rates than he did. The coating on the seed does reduce the amount of seeds per kilogram you are getting.

The Hogan's have persevered with the temperate grass species of fescue and phalaris in the past but have found they won't persist, getting only one to two years out of them before having to replant. After trying the tropical's they have now found that the type of feed and the timing of production fit in quite well their livestock requirements of their enterprises.

Running a second cross lamb production system that lambs in August/September and selling from February to May, Dennis Hogan said "the feed requirements fit the pasture production better than what I was getting out of the fescue/phalaris paddocks. Lambs can handle the bulk quite well provided they are managed correctly, keeping it relatively short putting big numbers on for short periods but making sure not to chew the crowns out".

Production from the paddock has been good with 70 acres carrying 220 first cross twinning ewes from June to September and wintered cows without needing feed supplements.

Asked about any disadvantages and the quick answer from Dennis was “can’t see a downside – they’re drought tolerant and produce heaps of feed when wanted. However the tropical grasses may kill out the lucerne quicker than expected, requiring the redrilling of lucerne at more frequent intervals”.

Dennis Hogan inspecting his successful tropical grass paddock.

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Rabobank

Lucerne Breeding in Tamworth Agricultural Institute Current Happenings

Dr. Shoba Venkatanagappa, TAI, Calala, Tamworth, NSW 2340

Lucerne breeding program which relocated to Tamworth in the mid 1990s from Yanco, NSW, has been breeding new varieties of lucerne combining high yield, pest and disease tolerances and persistence in all major dormancy classes (5-9). More recently, the program has been pyramiding several genetic traits together to develop varieties with genetically contrasting desired traits. First example of such a released variety is Pegasis which has high winter activity combined with persistence which is generally associated with lower winter active types. The advantage of such a variety is the ability of the farmers to get good initial growth and better stand longevity compared to other high winter active types.

Tamworth lucerne breeding program has collaborated with other state agencies and has been at the forefront of developing a new type of lucerne germplasm, screening methods, laboratory and field assessments which have led to the

development of new breeding lines which not only has the usual desired traits but also have unique traits of acid soil and Aluminium toxicity tolerances. This work is expected to provide a choice of utilizing lucerne in farms with acidic soils and/or certain levels of Aluminium toxicities where such a choice is currently is non existent. This type of germplasm will be used to develop new varieties which will pave the way for opening up new livestock enterprises in certain parts of NSW and Australia.

Development of varieties with tolerances to four major diseases and pests in Australia is a key objective of the group. Breeding programs screens 1000s of seedlings each year in its ISO 9001: 2000 accredited laboratory to select best tolerant germplasm for Phytophthora root rot, Anthracnose and for Spotted Alfalfa Aphid and Blue Green Aphids. Heavy infestations from these pests and diseases can result in a crop loss of up to 95%.

Understanding the genetic basis of water use efficiency under dryland conditions, large seededness, high seed yield, root architecture, better establishment are also being pursued to develop better lucerne varieties and maximize profitability and better management of farmland.

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Why not more lucerne?

Bob Freebairn (agricultural consultant, (0428 752 149); robert.freebairn@bigpond.com

Lucerne grows more feed than any other pasture, responds to rain any time of the year, is relatively easy to establish with winter crops, and builds soil nitrogen.

Recently Parkes farmer Edwin Nash "Coradgery" Goonumbla queried why more people do not grow lucerne. He reports that lucerne has all the above advantages plus fits in well with his mixed crop and livestock enterprises. He reports that during the run of droughts lucerne has been by far the most efficient pasture and has been able to turn what rain did fall into valuable feed.

Despite the tough years he has been able to establish lucerne with his wheat crops. Last year while the rain came too late for the winter crop, new lucerne plantings had survived and were able to rapidly respond to the late spring rains when they arrived.

Edwin Nash says a key requirement for lucerne sowing success was a very high standard of weed control. For example he says farmers that sowed lucerne without cover crops were commonly in no better position, or even a worse position than those that sowed with a crop. Weeds can easily replace the crop as competition, and especially ones like wireweed can be even more competitive than a crop.

Mr Nash believes, especially on his heavier soils, direct drilling with narrow points to form a trench and that press wheels combined with shallow sowing are very important for reliable establishment. He also sows wheat at reduced rates and in 30 cm rows.

Part of good lucerne success is also at least a reasonable degree of rotational grazing. Research has shown that lucerne continually grazed will draw down root reserves that leave plants vulnerable to loss, especially during stress periods such as droughts.

Edwin Nash says the outstanding research undertaken years ago by Dr Ian Holford (NSW DPI and now retired) showed the high soil nitrogen building ability of lucerne is borne out by his experiences. Dr Holford's work showed that a three year lucerne pasture could fix enough nitrogen to supply a major part

of the needs of the next five winter crops. Research has shown that every t/ha of lucerne can fix 40 kg nitrogen.

Research conducted by Dr Alison Bowman at Trangie Research Centre also showed lucerne can build soil organic matter if at least reasonably managed. Sometimes lucerne is criticised as leaving the soil exposed and not contributing to improving soil quality. But Edwin Nash supports Dr Bowman's findings and says that lucerne grazing management should aim not to totally bare off the plant and where possible manage to have good ground litter levels.

Mr Nash says in his environment lucerne based pasture with sub clover is a good winter grower and largely negates the need for winter as well as summer grazing crops. For those that grow winter dual purpose crops greater emphasis can be given to grain recovery and it is this part of the dual purpose enterprise that brings in the most return if there is ample alternative feed.

It is easy to dwell on the negatives of lucerne, but Edwin Nash says most of these are related to management and can be dealt with. The bottom line he feels is that lucerne provides top quality feed whenever a rain event occurs, including commonly in droughts. Winter annual pastures in contrast have been found unable to provide much feed when autumn breaks are late and early springs are dry.

The Grassland Society gratefully acknowledges the following premier sponsor for 2008/2009

Pasture Systems in the Central West

Matt McRae, Walkers AGnVET Services

Despite some very tough seasons, pasture survival has been quite surprising along the Lachlan Valley. Summer rainfall was very useful in degraded lucerne pastures as native summer grasses colonised well to fill up dry matter. Many livestock enterprises not only maintained animals but fattened young stock. Mild autumn conditions presented graziers with valuable dry matter from lucerne based pastures, especially for early lambing flocks.

There has been a strong trend towards grass and legume pasture mixes being sown in recent months. Growers have seen advantages in providing a balanced forage source, rather than straight lucerne paddocks. Highly winter active lucerne varieties have been included in many mixes comprising Balansa, Arrowleaf and Sub clovers, with Medic species also proving popular in more western environments.

Mediterranean Fescues and/or Ryegrasses have replaced Phalaris and Cocksfoot as the grass base in many mixes. Limited seed supply has been one catalyst; however growers seem well educated in gaining feed quality through short intense grazing and subdividing large paddocks. CMA and MDB funding has facilitated pipe and trough water systems onto many local farms further aiding paddock subdivision. Whilst the recent dry years have hit the Lachlan Valley and Central West region hard, most growers are optimistic of a positive return for livestock enterprises within their farming systems.

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Tamworth Conference Tour B

Frank McRae, Technical Specialist (Cereal Farming Systems), NSW DPI

Tour B visited 2 properties in the Quirindi district, approximately 80 kms south-south west of Tamworth.

"Bonny Rigg" a 1600 ha property with 600 mm rainfall is owned by Craig Miller. Visitors were given an overview of the property and its operations by the property manager Ken McLennan.

Benchmarking with Holmes Sackett since 1997 has driven dramatic changes in the enterprises conducted. Sheep and cropping have been phased out due to the cost of production with sheep and the scale of operation and difficulty of getting contractors on time for the cropping. Some grazing wheats (Marombi) and oats are currently sown but more emphasis is being placed on pastures to fill the autumn/winter feed gaps. The main focus now is on breeding and growing out steers to sell into feedlots. Breeders are joined for 9 weeks and replacement heifers for 6 weeks for a July/August calving.

Soil types dictate the types of pastures sown. Rising water tables forced a change from cropping to lucerne on the heavy self mulching black soils along Warrah Creek. Fescues are now being sown on these soil types and oversown with clovers. Mediterranean type mid-season flowering fescues such as Flecha Max P are replacing the mid-late flowering Continental types such as Jesup Max P that were failing to persist on these cracking soils.

The basalt soils were predominantly lucerne but these pastures have thinned out. Paddocks are cropped for 2 years before sowing with a phalaris, lucerne, Antas, Seaton Park and Clare sub clover and Haifa white mix.

Lighter loam soils are native grasses with introduced shorter season sub clovers such as Seaton Park, Dalkeith and Nungarin. Tropical summer grasses (Rhodes and Premier digit) have also been sown with sub clovers broadcast in autumn mixed with fertiliser. 125 kg/ha of single superphosphate is normally spread each year.

Grazing management is a modified rotational system based on Prograze and Holistic Resource Management with mostly 10 ha paddocks. Water is reticulated to all paddocks.

Silage is fed as a drought strategy. Lucerne silage supplemented with cotton seed meal was being fed at the time of the visit. Silk sorghum had also been conserved as silage.

Environmental issues are high on the agenda. 32 ha of saltbush was established in 1996 and 25,000 trees have been established east-west along fence lines and for salt reduction in that time. The saltbush was found to be more suited to sheep than cattle.

The second property visited was “Manuka” owned by David Wallis where product branding and marketing are key elements of business success. Consisting of 140 ha of black basalt soil with 640 mm of rainfall the main enterprise is the production of chaff products for the horse industry. An innovative value added product is silage suitable for the horse industry, including potential overseas markets into the racing industry. Manuka alone does not produce sufficient hay to meet demand and outside suppliers provide hay for the mill. Changes to water allocations will require innovation and changes to the business. The original irrigation system was a side roll spray system. David introduced sub surface drip irrigation to improve water efficiency when cuts to water allocations were introduced. Future cuts to water allocations mean Manuka is facing a 95% reduction in entitlements. Limited water in future is likely to be used for irrigating winter cereals. Uncertainty with water allocations and availability is a major problem faced by all irrigated producers and will affect the long term viability of many.

David considers the soil as the driver of his intensive system and lime, gypsum, potassium and sulphur are used and practices aimed at encouraging microbial and fungal activity in the soil have been implemented.

A special thanks is extended to Ken McLennan and David Wallis for accommodating such a large group, and making the visits to “Bonny Rigg” and “Manuka” informative and enjoyable.

The Grassland Society gratefully acknowledges the following major sponsors for 2008/2009

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.

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