

## Knee deep in Rhodes!

*Inside this edition:*

\*Summer active perennials use more water

\*Establishment Essentials

\*Q&Q Trial Report

\*Perennial Pasture Incentive Schemes



### Rhodes at Jerdacuttup

Phil D'Emden of Jerdacuttup sowed this paddock to Rhodes grass in early October 2005. It thrived in the wet summer of 2006, especially in areas that received extra moisture and nutrients. The problem is that, like many South Coast farmers this summer, Phil didn't have enough stock! Photo 22 March 2006.

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# Northern Snap Shots - Autumn 2006



### *Mingenew Q&Q Trial Site*

*This is the Mingeneew Perennial Pasture Q&Q trial site at the Gillam's Irwin House property. Rhodes and Green/Gatton Panic are the standout performers so far. They both produced between 1500 and 2000 kg/ha of dry matter by mid February following good summer rains whereas all other species were below 1000 kg/ha. Photo 11 April 2006.*



### *Green Panic at Balla*

*Green Panic at Rowan Ford's. This north eastern wheat belt paddock was sown in the spring of 2004 but only a handful of plants germinated that year due to the drought. There has been a very good germination of mostly Green Panic from rain this summer. Photo courtesy Tim Wiley 5 May 2006.*



### *Saltbush & tag on sandplain*

*Saltbush (Old Man & Rivermore), Weeping Tagasaste and normal Tagasaste planted in 2004 on deep yellow sand at Don Nairn's east Binu property. The weeping tag (planted as seedlings) is not yet as productive as the normal tag (sown from seed). The saltbush appears to be as palatable and productive as the normal tag so far. Photo courtesy Tim Wiley 13 April 2006.*



### *Rhagodia east Maya*

*Philip Barrett-Lennard inspecting Rhagodia planted with salt bush at Colin & Jill McGregor's farm east of Maya. Rhagodia is a native shrub with very good palatability. Seedlings are available from Ian Pulbrook, Greenoil Nursery, Mingeneew (0428 281 470). Photo courtesy Tim Wiley 14 March 2006.*

## From the President



David Monks, Badgingarra, Phone: (08) 9652 9277

The last few months have just flown by and I wonder why the days are so short until I look at the calendar and discover we are already into May.

On my recent travels around the Wheatbelt I was amazed by the thousands of acres of burnt stubble paddocks I saw. I can understand why the farmers are doing this (weed control,

ease of seeding etc) but I wonder about the sustainability of such practices. Obviously the loss of potash, erosion and soil biology is acceptable or the real costs are not clearly seen by the majority of farmers. I am envious of the red soil farmers who have massive potassium levels in their soils. My potash requirements are budgeted at \$500/t applied so its application is critically analysed.

In these days of Global warming due to greenhouse gases, I think we should mention to our politicians the value to the environment of these sustainable perennial pastures. I feel we can safely put forward a case for carbon sequestration although at this stage Governments only appear to have eyes for the corporate end of town. Our new shadow minister for Agriculture, Garry Snook, is very approachable on such subjects having farmed at Dalwallinu prior to moving to Jurien Bay.

On the 2<sup>nd</sup> of May Bob Wilson, Geoff Fysh, John Duff and I attended the Pastures Australia regional workshop in Perth. Pastures Australia is an umbrella group formed to coordinate research projects funded by AWI, GRDC, MLA, Dairy Australia and RIRDC.

The idea of the day was to decide the key issues and areas that will be recommended for funding consideration under the proposed model. Given the variance to the Eastern States, the 40 attendees decided that an advisory group should be formed to control funding applications in WA. The major agreement between attendees was that 'extension' of *existing* ideas and products was going to give the best return on investment. Given the success of our field days and the level of member interaction, I hope that Evergreen will be at the forefront of future funding in WA.

In mid April, the Salinity CRC - MLA Perennial Grass Breeding Projects toured the West Midlands before heading off for Albany. There were 4 representatives from DPI Vic, 2 from NSW Ag and Bruce Cook from QLD DPI (Bruce introduced us to the idea of forage peanuts a few years ago) plus local DAFWA officers.

After visiting Bob Wilson's farm, Geoff Moore (DAFWA) showed them the Bibby trial site and the raised beds sown to perennials on the WR Carpenter Agriculture farm. Other sites visited included the Badgingarra Research Station trial sites, Joe dePledge's farm, the AWI Moora grazing simulation trial site and Arthur Dewar's farm at Gingin. I look forward to seeing some of the sub-tropical species that will result from this work.

In the March issue of this newsletter, we advertised Georgie Gardner's case studies on perennial pastures under the NLP program. Do yourself a favour and get this booklet before it goes out of print; it's a good read and a wonderful reference to have tucked away.

The Committee is heading to the NE Wheatbelt for our June meeting. Two interesting Field Walks will take place the day before, visiting the Sadler's at Wongan Hills and the McGregor's at Maya. I hope to see some of you there.

David Monks

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## Summer production from sub-tropical grasses

John Titterington & Geoff Moore, (DAFWA) on behalf of the Q&Q team. Ph: (08) 9368 3938.

The widespread rain in January and early February was an opportunity to measure the summer production of sub-tropical grasses at a range of different locations through the network of Quantity and Quality sites (Q&Q). It also raises some bigger picture questions:

- What is the likelihood of getting good summer rain?
- What is the expected production from a C4 grass pasture after summer rain?

The Q&Q trials were established in 2004 (except Esperance, established in 2005) to measure the seasonal production and quality profiles of warm season perennial grasses across the agricultural area of WA. This is funded in a collaborative arrangement between Evergreen-AWI, Grain and Graze in the northern agriculture region and the Department of Agriculture-MLA grass breeding project. The trials are located at Badgingarra, Mingenew, Buntine and Esperance. Each site has a range of varieties which cover the main species of warm season grasses, with some adjustment according to the soil type and climate.

The widespread rain in January and early February has been the first opportunity to measure the response of different warm season grasses in summer across a range of sites. There was good rainfall with all 4 sites receiving 60-90mm (Table 1) in the period from January to early February. This was followed by a 6 week dry, hot spell from mid February until the end of March at all of the sites except Esperance, which had some rain in March and the grasses continued to grow actively.

**Table 1.** Summer rainfall from January-March 2006 at the Quantity and Quality sites.

Rainfall	Badgingarra	Buntine	Mingenew	Esperance Downs
January '06 (mm)	49	80	37	60
February '06 (mm)	22	2	25	29
March '06 (mm)	0	2	0	13

An important factor to consider when comparing the relative production between sites and the various sub-tropical grasses, is that the production in summer depends to a large extent on plant density which is related to persistence. In general, all of the grasses grew well with the summer rain, but some sites had a low density of certain species as they had poor persistence.

The trial at Badgingarra RS is on a moderately deep sand (90-100cm) over gravel and clay. There was excellent production from a number of species with Bambatsi Panic having the highest summer production (2.4t/ha DM), while Green Panic,

Narok Setaria, Gatton Panic and Premier Digit all produced more than 2t/ha DM (Table 2). At this site most species have good to excellent persistence which is demonstrated by the total biomass production in 2005, with Katambora Rhodes grass producing 10.7t/ha DM, Callide Rhodes grass 9.8t/ha DM, Gatton Panic 8.5t/ha DM, Kikuyu 7.2t/ha DM and Green Panic 6.2t/ha DM.

**Table 2.** The average biomass production in January-February 2006 at the Quantity and Quality sites (kg DM/ha).

Species – variety	Badgingarra	Buntine	Mingenew	Esperance Downs**
Kikuyu	200	Not sown	220	2580
Gatton Panic	2200	Not sown	1650	3800
Green Panic	2200	540	1680	3660
Callide Rhodes	720	1010	1250	4140
Katambora Rhodes	1300	1570	1790	4980*
Signal Grass	1650	40^	680	1640
Splenda Setaria	1430	150^	700	4920
Bambatsi	2400	700	310	2180
Strickland Finger	680	Not sown	930	4490
Premier Digit	2100	170^	750	3470
Lucerne	0^	0^	240	110
Annual Volunteer	0	460	0	1950

\* Results from 'Finecut' Rhodes grass which is a selection from Katambora Rhodes grass.

\*\* Includes biomass for March (i.e. Jan-March)

^ Poor persistence

The northern site at Mingenew on a leached deep sand showed similar species responses to summer rain with Katambora Rhodes grass producing 1.8, Green Panic 1.7, Gatton Panic 1.7, Callide Rhodes grass 1.3 and Strickland Finger grass 0.9t/ha dry matter.

The north-eastern wheatbelt site at Buntine on a yellow sand has proved to be a tough environment for the sub-tropical grasses with only a handful of species showing good persistence. Most of the species have a low density, with the exception of Rhodes grass which is reflected in their comparatively low production. The best performers over summer have been Katambora Rhodes grass producing 1.6t/ha DM, Callide Rhodes grass 1.0t/ha DM, Bambatsi Panic 0.7t/ha DM and Green Panic 0.5t/ha DM.

The southern site located on the Esperance sandplain experiences milder summer conditions compared to the other sites. It was sown in September 2005 and there was excellent establishment of all treatments, except Lucerne.

## Summer production from sub-tropical grasses - continued



*Badgingarra trial site*



*Mingenew trial site*

With favourable summer conditions in 05/06 persistence has been excellent. A different group of grasses performed well in this environment. Finecut Rhodes grass producing 4.9, Narok and Splenda Setaria 4.9-5.1, Strickland Finger grass 4.5 and Callide Rhodes grass 4.1t/ha dry matter respectively (Table 2).

### What is the likelihood of good summer rain?

From past experience you need at least 20mm to get a reasonable production response on sandy soils over the summer to early autumn period. Table 3 summarises the likelihood of obtaining more than 20mm in any 7 day period between January and April for the 4 districts where the Q&Q sites are located.

For example, in 8 out of 10 years at Esperance there will be one rainfall event with at least 20mm. This rainfall event could be 22mm or 65mm, but it should equate to a significant production. On the other hand, in 2 years out of 10 there will be no rainfall events more than 20mm (over 7 days) and therefore no effective summer – early autumn production. Therefore even in a mild climate like on the Esperance

sandplain successful species require good drought tolerance as in some years there will be no effective summer rainfall.

### What is the expected production from a C4 grass pasture after summer rain?

From the results of the Q&Q trials, the highest yielding treatments produced 33, 25 and 19kg dry matter/ha per mm of rainfall at Badgingarra, Mingenew and Buntine respectively. These figures could be an over-estimate as the grasses may have been accessing moisture in the subsoil.

At Esperance, the highest yielding treatments produced 49kg dry matter/ha per mm of rainfall, but these figures may have been inflated due to high subsoil moisture (given that it was the first summer) and possibly had more nitrogen in the system.

Overall, sub-tropical grass pastures with a high plant density can be expected to produce in the order of 20-30kg/ha DM per mm of rainfall over the summer-early autumn period (assuming rainfall events of >20mm over 7 days).

Table 3. Likelihood of summer rain (January to April) from long-term rainfall records. (Climatology and Modelling Group, DAFWA)

Site	Badgingarra	Buntine	Mingenew	Esperance Downs
Mean rainfall Jan. to April (mm)	74	76	58	112
<b>Likelihood of receiving &gt;20 mm rainfall in any 7 day period between January and April</b>				
Likelihood of one event (>20mm)	7 out of 10 years	7 out of 10 years	6 out of 10 years	8 out of 10 years
Likelihood of 2 events (>20mm)	3 out of 10 years	4 out of 10 years	3 out of 10 years	5 out of 10 years
Likelihood of 3 events (>20mm)	1 in 10 years	2-3 in 10 years	1 in 10 years	1-2 in 10 years

## Cold Zone....!

Geoff Moore, Tony Albertsen & Dennis van Gool, DAFWA. Ph: (08) 9368 3293.

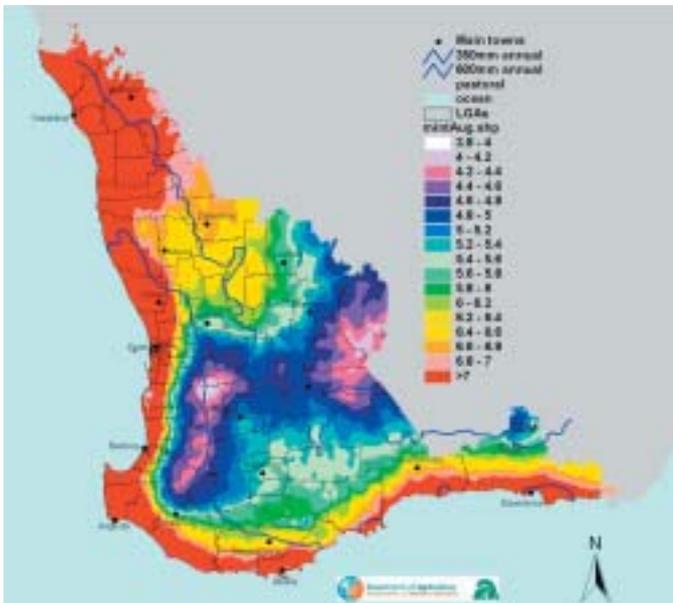


Figure 1. The mean minimum temperature in August showing the so-called 'cold zone' where there is poor persistence of most sub-tropical grasses.

There are a number of challenges with growing sub-tropical (C4) perennial grasses in a Mediterranean environment especially with respect to persistence. By this we are usually referring to persistence over hot, dry summers when the summer drought can extend for 4-7 months. Despite these challenges, sub-tropical grasses show good potential in many areas of south-western Australia. However recent results from two trials south of Kojonup raise persistence over winter as a major question-mark for sub-tropical grasses in this district.

The Kojonup trials were established in spring 2003 and 2004 and most lines persisted well over the first summer and grew strongly over the summer-autumn period (e.g. 2005 producing 1.6-3.1t/ha DM). As expected the sub-tropical grasses were burnt off by the first frosts in winter, but instead of re-growing in spring with warming temperatures, a high proportion of plants died over winter.

There was a high mortality of bunch grasses with 70-100% of the plants dying over winter (Table 1). Species affected included: Setaria, Panic, Bambatsi Panic, Signal Grass and Digit Grass. On the other hand, Kikuyu was unaffected with almost 100% groundcover in spring while the diploid Rhodes grass varieties had partial survival (<25% groundcover in spring).

These trial results from Kojonup reinforce other results and farmer experience that there is a 'cold zone' in WA where there is poor persistence of many sub-tropical grasses over winter. The poor persistence seems due to a combination of

cold, wet soils and frosts.

This is not simply a response to frosts. Areas of northern NSW and southern Queensland receive a much higher frequency and severity of frosts, but persistence of sub-tropical bunch grasses is unaffected. The green leaf may be burnt off but the plants recover in spring. In fact some varieties of Setaria were specially selected from high altitude environments for their cold tolerance. A key difference between the two environments is that NSW and southern Qld have a summer rainfall pattern and the soils are relatively dry in winter.

This 'cold zone' has been spatially defined from maps of July-August mean minimum temperature (min temperature <5.3°C) and frost frequency (Figure 1). The cold zone extends into the central and eastern wheatbelt.

The sub-tropical grass options for the 'cold zone' appear to be limited to species with a rhizomatous growth habit (e.g. Kikuyu, Couch, Paspalum), while 'Consol' Lovegrass is probably also an option given the widespread occurrence of the 'Wild' African Lovegrass on roadsides.

On the other hand, there are a wide range of temperate perennial grasses (i.e. Tall Fescue, Tall Wheat Grass, Veldt Grass, Phalaris, Cocksfoot) plus Lucerne which are showing good potential in this area.

Table 1. Persistence over the first winter for spring sown perennial species at Kojonup (Evergreen-AWI, DAFWA trial).

Treatment	Variety	Plant persistence (plants/m <sup>2</sup> )	
		May-05	Dec-05
Digit grass	Premier	54	0
Finger grass	Strickland	20	0
Kikuyu		67	52
Evergreen mix		34	5
Panic	Bambatsi	27	1
Panic	Gatton	41	0
Panic	Green	45	0
Rhodes grass	Callide	48	1
Rhodes grass	Finecut	46	6
Rhodes grass	Katambora	52	19
Setaria	Narok	30	7
Setaria	Splenda	32	1
Signal grass		33	0
Tall wheat grass	(spring sown)	24	21
Lucerne	(spring sown)	40	37
Siratro		17	0

## More Livestock From Perennials

Erin Gorter, Evergreen Farming Vice President & WA Evergraze NAC representative, Ph: (08) 9833 7524.



*Tall Wheat Grass hedgerows in the "Maternity Ward" at Hamilton*

The Evergraze 'More Livestock from Perennials' project is now in full swing across WA, NSW and Victoria. In December the Evergraze National Advisory Committee (NAC) held their meeting at Hamilton and took the opportunity to meet with local farmers and DPI staff and view the Victorian Evergraze site. As the Western Australian producer representative for the Evergraze NAC, along with being a member of the Evergreen Farming committee, I thought I would briefly share some of my observations of the Victorian Evergraze site.

From a Western Australian perspective it was inspiring to see plots of Kikuyu being trialed, so far with great success. Not a species that has been considered seriously in that area, it is now being looked at with great interest by those involved. It is being trialed in the lower section of the landscape and is persisting well so far. Naturally it is early days for the project, but it is being viewed with great interest as a possible addition to pasture systems in the area.

Tall Wheat Grass has been planted as hedgerows in sections of the research plots for use as shelter in 'maternity' paddocks. Lamb survival is naturally an issue of great concern to farmers, especially as we try to increase fertility in our flocks. The TWG has been allowed to grow rank so the stock won't eat it and it bunches up enough low to the ground to act as wind breaks. The stands are approximately 1 meter wide and should reach 1 – 1.2m high. It will be most interesting to see the results of this work as it is something that many farmers

could easily adopt without too much added infrastructure. The hedgerows have been planted 10m apart with the area between the hedgerows sown with Italian ryegrass, a highly palatable and nutritious pasture for livestock to eat in preference to the TWG. These were mown (could be baled or wrapped) while the TWG was allowed to establish and grow rank.

Other species being grown across this 70ha trial are summer active Tall Fescue, Lucerne and ryegrass, all of which had established well at the time of our visit.

The sheep have now been introduced, thus marking the beginning of some valuable data collection regarding modified livestock systems.

Evergraze is a joint project between MLA and CRC Salinity. It aims to boost farm profit by 50% and reduce recharge by 50% in high rainfall areas.



## Upcoming Events

20 June - Field Walk in NE Wheatbelt

September - Pastures for Profit Workshop



## Pushing the boundaries with Kikuyu

Nicole Witham, DAFWA, Esperance. Ph: (08) 9083 1110.



*Attendees of the Ireland Farms workshops happily gaining a better understanding of Kikuyu management strategies*

The Department of Agriculture and Food (DAFWA) hosted two days of workshops on Ireland Farms near Esperance in March to enable participants a more fundamental understanding of strategies for Kikuyu pasture management.

Around 30 local farmers attended day one to learn about Kikuyu establishment from other local producers. Day two was more of a closed strategic forum for about 15 of the South Coast's more serious Kikuyu farming enthusiasts, to ascertain how the deep rooted perennial grass can be better implemented within a total farm system.

The field day was also a salute to manager David Johnson who in March ended three decades of a research relationship with DAFWA on the Ireland Farms, with the American-owned property's sale, and his semi-retirement.

Organiser, Department of Agriculture and Food (DAFWA) Development Officer, Kira Buttler, said Kikuyu is a low maintenance pasture which can substantially increase profit for many farmers on the south coast. As farmers gained more knowledge of its potential, they were developing various systems of management with some amazing results.

"This is a deep rooted perennial that has the capacity to dramatically increase productivity and profitability by better utilising our available water resources and stabilising erosion-prone infertile sands," Kira said.

"Esperance typically receives 30% of its rainfall outside of the annual growing season of May to October. Kikuyu is summer active, so farmers can turn this additional rainfall into farm income."

David Johnson said that kikuyu had been the savour of the "gutless" deep, sandy soils that comprised half of the 2000ha property he managed 25km from the coast.

He had questioned the logic in clearing the non-wetting sand country soon after he started managing it, realising that it was highly prone to wind and water erosion due to its soil's incapacity to retain nutrients and water.

A small section of Kikuyu had slowly spread, from a 20ha area seeded 25 years ago, through the movement of livestock in manure, to now cover 1000ha – around half of the property. He found that where Kikuyu was now established, the soils were more stable and annuals such as clover were then capable of thriving in winter between the Kikuyu stands.

"The potential of this grass is endless – I think we have only just scratched the surface of its capacity to make these kinds of (sandy) soils highly productive," David said.

The process of establishment at Ireland Farms had resulted over decades, with seed being spread mostly through manure. As a result, input costs had been minimal and carrying capacity had expanded in keeping with his breeding herd size.

"We had made a management decision not to buy in more breeders, but to build up the herd from our existing base. In some years, the expansion of our herd still couldn't keep up with the Kikuyu pasture growth," David said.

The main management principle that Mr Johnson had found successful was to treat Kikuyu like lawn – keep it down low to stop it going rank and also to allow annual pastures to get away in winter.

"You can't be too kind to it – run it hard and fertilise it often," Mr Johnson said.

Although he had only fertilised at traditional rates, he said DAFWA trials had shown that increases in nitrogen were directly proportional to Kikuyu's increased performance, with

## Pushing the boundaries with Kikuyu - continued

protein levels proving a direct correlated response.

He had found that once the Kikuyu had formed a mat, it was much easier for annuals such as clover to establish because the deep sands had been stabilised and annual species were able to take over while the Kikuyu was dormant from June through to November.

Wellstead fine wool sheep farmer, and one of only two known Kikuyu seed producers in the world, Morgan Sounness, said sowing was a critical phase for Kikuyu establishment and preparation of the paddock should be thorough to ensure minimum weeds existed that would compete with seedlings on emergence.

“You need to plant as late as possible in spring to ensure you have killed all the weeds; and so it all comes back to preparation. You need to start preparation the year before by spray topping the paddock to get rid of the weed seed burden, and then you will have opened up the window of establishment opportunity.”

“In Wellstead we sow from August onwards at a depth of 1cm and although we have a minimum rainfall between 350mm and 400mm, it is the amount of summer rainfall that is important. If you have a dry summer, then production will be limited.”

Kikuyu can survive inundation and handles mild salinity. Morgan said he planted it with a double disk opener with press wheels. He then sprayed for mites which could attack the seedlings.

He said every farmer worked with different climate and soil types. The way a farmer managed their pasture varied tremendously depending on what variables they had to work with.

His focus was to increase staple strength and get premiums for superfine wool in Newcastle (NSW). He had a goal to achieve a gross margin of \$1500 per hectare with set stock rates on his Kikuyu pastures, and minimum supplementary feeding requirements.

“I like to give some mineral supplements and I also feed out a few lupins and a bit of hay, but I run my Kikuyu hard with a long term average of 20 to 25 DSE/ha on an average rainfall year. When it is a wet year, that stocking rate may go up to 30 DSE/ha. This compares with our annual pastures that we run at about 7 DSE/ha,” he said.

He was working towards achieving 80% of his farm sown to Kikuyu, with Lucerne and a bit of cropping comprising

the remaining 20%. He said he still liked to have Lucerne available for his ewes to have a higher level of nutrition at lambing and lactation.

Morgan said the density of a Kikuyu pasture should be around 70% in order to achieve peak grazing productivity.

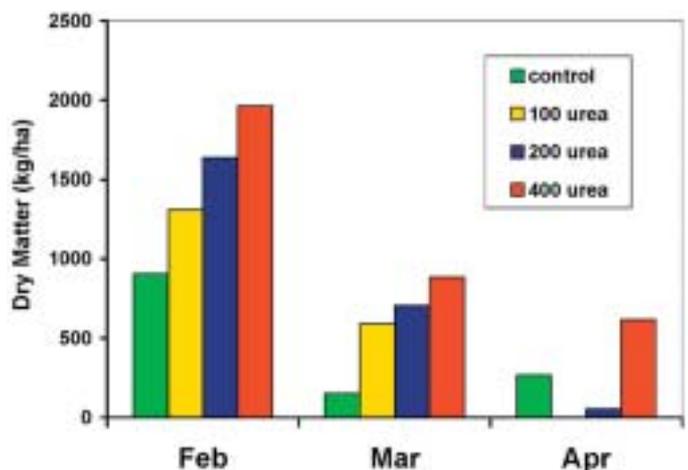
Sowing the seed was far quicker than waiting for it to spread itself – “Unlike the Ireland Farm, I don’t have 25 years to wait for it to cover my farm,” he said.

Morgan’s system was also different to Albany agronomist Wayne Smith who within a more intensive small scale system, and with an average 800mm rainfall, stocked a phenomenal four breeders per hectare (40 DSE/ha).

Wayne said he carries dry breeders from February through to June with calving in July and weaning in January – which meant that his Kikuyu pastures had a carrying capacity of around 60 DSE/ha during the second part of the year.

Wayne said he put ryegrass in with fertiliser to increase the amount of annual grasses in his Kikuyu pastures. He said that applications of nitrogen were necessary to improve the quality and palatability of the Kikuyu and it made the plants healthy so they were less likely to be attacked by insects.

In summary, Kira Buttler said the overall message to come from the field days was that high stocking rates were not possible with an annual system, but many farmers along the south coast were proving that a carrying capacity of between 25 and 40 DSE/ha was achievable with Kikuyu pastures.



*Trial results from Ireland Farm showing the big response in Kikuyu to extra nitrogen following summer rain.*

## Summer active perennials use more water

Matthew Crosbie, Salinity CRC, Wagga Wagga, NSW, Ph: (02) 6926 2817.

Summer growing native grasses have the edge over cool-season species and introduced annuals when it comes to water use.

PhD student with Charles Sturt University at Wagga Wagga, Alison Southwell, has found that an extra 50mm of soil water can be used annually in paddocks with the right type of perennial natives.

The CRC for Plant-Based Management of Dryland Salinity sponsored student is researching the role of native perennial pastures to control recharge and salinity and believes that the summer-growing native, Redgrass (*Bothriochloa macra*) offers significant potential.

“By the end of autumn, Redgrass was able to create a soil water deficit of up to 50mm greater than annual ryegrass,” Alison says.

“Interestingly, the native cool-season perennial, Wallaby grass (*Austrodanthonia spp.*), was no better than annual ryegrass in its water use, showing that it is the species’ growth habit, not just the fact that it is a perennial, which contributes to water use.

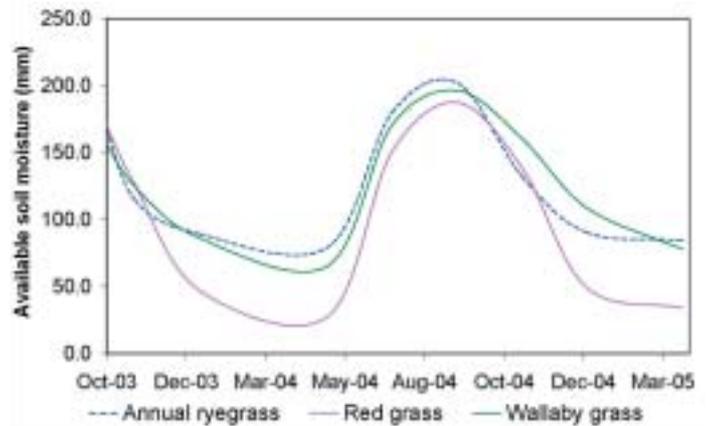
Redgrass has a number of advantages, including an ability to maintain large amounts of green leaf further into summer than the cool-season species tested and a much deeper root system which reaches depths of 1.5m compared with the 1.1m which annual ryegrass and Wallaby grass have.

Redgrass also seems to be able to compensate for low planting densities by growing larger individual plants when pasture competition is low.

This work, which was carried out at a trial site in Wagga Wagga, matches the results of a farm study at Yass in southern NSW.



CRC Salinity PhD student, Alison Southwell, in a Wagga Wagga, NSW, trial plot of native grass species.



*The total plant available water to a depth of 180cm beneath Redgrass, Wallaby grass and Annual ryegrass.*

At Yass, pastures that contained larger populations of summer active perennials were found to use the most soil water over the year.

Although these studies were carried out using native grass species, the implication for introduced species is potentially the same.

Grass species which remain actively growing further into summer and which have deeper root systems are more likely to create larger soil water deficits – which is the aim for salinity and recharge management.

Conventionally, the management options to increase perennial coverage and reduce recharge in the less arable parts of the landscape have concentrated on trees and shrubs.

But, although degraded, there are millions of hectares of native perennial pastures spread across the high rainfall zone of south eastern Australia.

These high rainfall areas, often fairly inaccessible with rocky, shallow and sometimes acidic or sodic soils, contribute heavily to salt loads in the Murrumbidgee and Murray Rivers. It is neither economical nor practical to sow these areas with introduced perennial pastures, so we need to work with what is there already.

So far these areas have received scant attention in terms of the potential water use of individual grasses.

“I’m hoping that this research will help farmers to see their pastures as another tool for managing recharge and to consider critically how the types of grasses already existing within their paddocks may affect soil water levels.”

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## Establishment Essentials for Sub-Tropical Grasses

Philip Barrett-Lennard, Evergreen Farming, Ph: (08) 9475 0753

### Paddock Selection

Sub-tropical grasses are performing best on sandy soils with depth. Focus your attention on these soil types. Stay clear of paddocks with heavy clay either on or close to the soil surface, and those that are highly saline.

It also makes sense to choose paddocks with historically poor production from annual pasture as there is a lot to gain and not a lot to lose if establishment fails. And avoid paddocks that you may wish to bring back into crop in the future.

### Species Selection

Refer to the February 2006 Evergreen Newsletter.

### Weed Control

100% weed control is required when sowing sub-tropical grasses. They have poor initial seedling vigour and suffer badly from any competition. Ideally, commence weed control the year before sowing with spray topping in spring to lower the annual grass seed bank.

In the year of establishment, weed control should start 6 to 8 weeks pre-seeding. Spray the paddock with at least 2 L/ha of Glyphosate. Consider adding a spike such as Hammer or 2,4-D if large broadleaved weeds are present. This early weed control will help to conserve moisture and provide a cleaner seedbed for machinery to operate in.

A second spray a few days pre-seeding is also required. This will kill any new seedlings and older plants that have recovered from the first spray. Again use at least 2 L/ha of Glyphosate. SpraySeed is not recommended when the second knock is more than 10 days after the first knockdown. Add broad spectrum insecticides to act as a short term insurance policy.

### Time of Sowing

Sub-tropical grasses must be sown in spring due to their requirements for warm soil temperature at germination. Mid-late August is an ideal time for growers near Geraldton while along the cooler south coast, mid-late September is a better time.

There is a trade-off with earlier sowings receiving more follow-up rain while later sowings achieve better weed and insect control. The trick is to be ready to sow as soon as the weather warms up a bit. Early knockdowns greatly assist with this.

### Seeding

There are 4 critical things you must do at seeding time:

1. overcome non-wetting sand by furrow or scalp sowing,
2. sow shallow (5 to 10 mm),
3. apply lots of press wheel pressure, and
4. mix your seed with fertiliser (1 kg seed : 25 kg fertiliser) to ensure good seed flow

### Emergence:

Post-sowing weed and insect control can be critical, especially along the south coast. Make sure you add insecticides with your final knockdown to provide short-term cover. And consider adding a "coalmine canary" such as lucerne, chicory or serradella to your seed mix that will act as an early warning indicator for insect damage. Being unaffected by soil temperature they will germinate immediately and act as a magnet for insects. Sow very low rates (50 to 100 gm/ha) so they are not competitive and monitor them regularly for damage. If they do not appear, or disappear in a flash, you know you have a problem on your hands.

If competition from wireweed or fleabane is an issue, be prepared to spray early. Mixtures of Dicamba and 2,4-D amine have been used successfully in the past.

And make sure you get off the header during harvest to inspect your newly emerging stand and take action if necessary. Last year, a number of people paid a heavy price for a lack of due diligence.

### Early Grazing

My advice is to not be in any rush! Do not graze establishing sub-tropical grasses over summer unless you get substantial amounts of rain (such as 2006). In a dry year, it is best to wait until after the annual break of season before first grazing. Test plants for grazing suitability by tugging on them. If they come out easily, stock will only do the same when grazing. If the establishment has only been poor to average, let the grasses set seed before grazing. We have seen a reasonable amount of Panic recruitment this summer in older stands where seed was set in previous years.

Kangaroos love sub-tropical grasses and will migrate from wide and far to graze them! Ignore them at your peril. They can devastate emerging plants if not controlled.



Nitrogen response on pasture

# Flexi-N on Pastures

## Why would I use Flexi-N on my pasture?

Flexi-N will help grow extra pasture on some paddocks and allow you to defer grazing on others. Growing more pasture will also reduce the need for handfeeding.

## When's the best time to apply Flexi-N?

If pasture growth is slow and you require additional feed, apply Flexi-N to fill the gap economically.

## What pastures respond best?

Pastures with a high grass component – particularly where ryegrass is the dominant species.

## How much of a response can I expect to see?

Experience and trials suggest you can expect an extra 10-25kg of dry matter produced for every kg of nitrogen applied. You can also expect to see a significant improvement in feed quality.

## What rate of Flexi-N should be used?

Typically rates of 60 – 100 litres/ha Flexi-N are recommended. Your local CSBP area manager or sales agent will be able to give you specific advice.



*Grow to your full potential.*

CONTACT YOUR LOCAL CSBP AREA MANAGER OR SALES AGENT TODAY.  
FREECALL 1 800 808 728 [WWW.CSBP.COM.AU](http://WWW.CSBP.COM.AU)

## Perennial Pasture Incentive Schemes

### SOUTH COAST

On farm trials along the South Coast are underway to help producers better understand sub-tropical perennial pasture establishment and management techniques, and what species best fit the differing climate and soils.

Evergreen is guiding the trials in collaboration with the Esperance Regional Forum in Esperance, the Fitzgerald Biosphere Group in Jerramungup and the WA Lucerne Growers in Katanning. They are National Landcare Program funded through the South Coast Regional Initiative Planning Team (SCRIPT), with technical support from Department of Agriculture and Food (DAFWA).

These trials will complement a major \$5.2 million SCRIPT investment recently made available to four strategic catchment groups from Albany through to Esperance. Oyster Harbour, Lake Warden, Bremer River and West River catchment groups attracted first round funding from the National Heritage Trust and National Action Plan for Salinity and Water Quality through SCRIPT.

According to Ron Master, Development Officer at DAFWA in Albany, this is the first time there has been funding at a scale sufficient to make a real impact on the key degradation issues in priority catchments.

"Within those catchments, issues such as salinity, waterlogging, nutrient loss, soil erosion, sub soil acidity, non wetting soils and preservation of biodiversity will be the focus over the next three years," Mr Master said

The funding will come in the form of incentives to individual landholders, on a cost sharing basis, to those willing to implement changes in their current land use practices. Mr Masters anticipates that a massive 19,000ha of perennials will

be planted by 2009 as part of the incentives across the four catchments.

Perennials systems that will be included are: phase farming using Lucerne; permanent perennial pastures and salt tolerant perennials. Permanent perennials will cover a range of pasture species from sub-tropical through to temperate grasses and perennial legumes.

These four catchments will soon be followed by the Upper Hay in the Wilson Inlet catchment in the West of the region, the Middle Pallinup just north of the Stirling Ranges and the Lort and Young River Catchments in the East of the region in 2006. The SCRIPT region covers 5.4million hectares from Frankland in the west to Cape Arid in the east.

Additional plantings of perennial pastures are occurring outside of these catchments as part of the Southern Incentives 3 program run by SCRIPT. The perennial pasture component of this program aims to establish nearly 6000ha of perennial pastures across the region; however the focus is on supporting and encouraging innovative new approaches and trialling species of perennial pastures not grown in the applicant's area. This program will work closely with perennial pasture technical support staff and will aim to further develop perennial pasture systems across the region.

#### FOR MORE INFORMATION

For **application forms** and **guidelines** for SCRIPT funding incentives contact:

Chris Baillie - SCRIPT

Phone: (08) 9892 8494

Email: [chris@script.asn.au](mailto:chris@script.asn.au)

For assistance in completing **application forms** contact your subregion Natural Resource Management Officer (NRMO).

### AVON

The Saltland Pastures Association (SPA) has developed two projects to increase the adoption of saltbush-based pastures in the Avon catchment. The combinations of high establishment costs, and a lack of on-ground support and expertise has prevented many farmers from adopting saltland pastures. This has been the basis for the development of the two projects.

The first project is State and Australian government funded through the Avon Catchment Council's Valley Floor Management program, and encourages farmers to grow saltbush-based pastures by providing incentive payments. The payment covers half the costs of saltbush seedlings or seed. Ninety six farmers are participating in the Avon catchment this year, with around 1,200 hectares being planted.

The second project is Australian government funded through the National Landcare Program's Community Support scheme. This project is called the Grower Support Network and aims to increase the on-ground support available to farmers, by providing six part time saltland pasture advisors across the Avon catchment. All farmers participating in the incentive payment scheme will receive technical support from the advisors. Six saltland pasture demonstrations will also be implemented by the advisors to generate interest in their local area.

#### FOR MORE INFORMATION CONTACT:

Sally Phelan - Saltland Pastures Association

Ph: (08) 9865 1205

Email: [spa@agric.wa.gov.au](mailto:spa@agric.wa.gov.au)

## 4 cows per hectare...

Wayne Smith, Agronomic Acumen, Albany, Ph: (08) 9842 1267.



*Paddock 1 containing mainly flatweed, sorrel, and bit of Kikuyu and some reeds. Photo 18 Dec 2003.*

I hear so many different views on how one should grow Kikuyu, half of which I do not agree with.

My parents have a small hobby farm in Marbellup, which is about 20km west north-west of Albany. I call it my little research station. There was ~10.5 hectares (26 acres) of arable pasture however, 1-2 acres has now been replaced with a lake and a soak.

We are currently only at ~35 DSE/ha (with beef cattle) but will be at 70-80 DSE/ha by the end of 2006. This could not have been done without Kikuyu.

The soils are non-wetting, acidic white sand, with some areas of underlying coffee rock that dry out a few weeks after the rains stop. There are also some peaty bogs that grow nothing in winter and very little in summer.

Average rainfall is in the 700-800mm range.

Fortunately Kikuyu already existed over most of the farm when we started in January 2004. pH's were in the 3.6-4.3 range. Phosphates were mostly 8-12ppm and potassium in the 40-50's. There were reeds, sorrel, flatweed and silvergrass in the pastures, with the odd sick clover, lotus and phalaris. The farm is divided into five paddocks with electric fencing everywhere.

I have found the best way to improve the pastures is lime, plenty of trace elements in the right balance, lime, phosphate and potassium in regular doses, lime, and plenty of nitrogen and sulphur when required with some ryegrass seed.

Rotational grazing makes the whole system pump.

I was told by many when I started that perennial ryegrass and Kikuyu do not mix. I was also told, "do not add nitrogen

because it will stuff up the clover, will not be worth it, you will get ryegrass toxicity etc." None of this supported what I had read and experienced over the years.

We fertilise often, usually five times a year, and usually that has ryegrass and other seeds mixed in with it. We rotationally graze because we consider it the most efficient way to make money from livestock.

The system works very well for us in that the Kikuyu slows down in late May just as the winter grasses and clovers take over. Then in October to November as the winter species slow down, the Kikuyu is cranking up rapidly underneath. To me it is the perfect pasture system.

Perennial ryegrass, phalaris, annual ryegrass and all sorts of clovers fit in very well with our system. Anything that can grow rapidly and is good for the livestock is useful.

Kikuyu needs and loves nitrogen and sulphur. It can scavenge potassium from way down which is why it does not respond very much to potassium fertiliser. Kikuyu does not seem to need much phosphate either, yet phosphate and potassium are the main nutrients people add to Kikuyu.

Kikuyu is a C4 grass. C3 & C4 are methods that plants use to accumulate carbon from the air and C4 is a far more efficient pathway found usually in summer active grasses like Sorghum, Kikuyu, bamboo and corn. Kikuyu will produce more biomass per unit of water than any C3 grass such as ryegrass, phalaris, fescue or cocksfoot.

Kikuyu loves nitrogen and you have an anchor on your profits if you do not add nitrogen to your Kikuyu pastures.

If you want the nitrogen to only come from your clovers, you are missing out on substantial profits and will never get close



*Paddock 1, showing my daughter able to play hide & seek with her brother. Photo 6 June 2005.*

## 4 cows per hectare - continued

to the potential that is waiting for you from this amazing grass.

We have found the complete opposite of what everyone said would happen. With plenty of nitrogen and other fertilisers and rotational grazing, the clovers are thick and healthy and we struggle to keep enough non-Kikuyu grass in the system. The Kikuyu is thriving. It is an awesome grass when grown properly.

With the rotational grazing, the tops are eaten off regularly and it allows plenty of light onto the clover. Because the clovers are eaten off less tightly than the grasses by nature of their more prostrate growth habit, they grow incredibly well and it is only the last week

or two before the cows come back in that the clovers are struggling for light among the grasses.

If you are stocked to the maximum, your annual grasses will not make it to seed because they will be eaten off. This is why we need to keep spreading ryegrass seed, which we do from May to August.

We have also started adding Chicory in Spring and Autumn, and when it arrives (it is sold out in

WA), will be spreading one of the new winter active Tall Fescues this May to see how they go (in trials they appear to be far more productive than all ryegrasses).

However, we always want mixtures in the pasture. Never put all your eggs in one species.

Our ryegrass is a mixture of whatever clients have harvested, which is a mixture of perennial and annual varieties, and is much cheaper. We spread 5-20kg/ha of seed with the fertiliser (usually nitrogen and potassium fertilisers). The biggest dose of seed is in May and lower doses are added after every grazing.



*Paddock 1, showing green Kikuyu underneath the now dead winter grasses. Photo 3 Feb 2006.*

We used to spread fertiliser with ryegrass seed and other plant species immediately after the cows were taken out of a paddock, but now we are trying to do it one day *before* they are taken out so that the hooves push the seeds in while the pastures are eaten off tightly.

Besides continuing to improve the nutrition, the only improvements I can see are to find more productive species that we can squeeze in, like the winter active Tall fescues and Chicory (summer growing). We have seen enough to know these will fit in with the Kikuyu and other species.

All the weeds like flatweed, sorrel and silvergrass are

disappearing out of the paddocks as the better species are now in less acidic soil and are well fertilised. We did not need to use any herbicides to remove the useless weeds. Just nutrition, lime, and rotational grazing. Those weeds are there because they can tolerate the acidity and poor nutrition better than ryegrass and clover. They get out-competed when conditions are good.

So if you have deep sand and are in a greater than 400mm rainfall area, and want to make money from cows or sheep, get Kikuyu into the system, rotationally graze it, sprinkle in some grass seed and/or clovers if needed, get the pH >5.0 in calcium chloride, make sure trace elements are at high levels and are well balanced, but especially use nitrogen and sulphur a few times a year. Go on, give it a go.

I am more than happy to walk people over our little farm, but individually or in small groups only. Our cows are very calm and obedient and we do not want to upset them with too many strangers. Have fun. I do.

## Southern Snap Shots - Autumn 2006



### *Perennial Grass breeding trial Wellstead*

*Geoff Moore's MLA funded sub-tropical perennial grass breeding site at Wellstead. A number of new Panic accessions are looking good. Photo courtesy of Tim Wiley 20 April 2006.*



### *Kikuyu germinating in dung*

*Phil and Nicole Chalmer's farm at Condingup is slowly covering over with Kikuyu. The majority of this spread has come from seed moved around in cattle dung. Only very small areas of the farm have been sown to Kikuyu. Photo 23 March 2006.*



### *Bermuda Couch at Salmon Gums*

*This is Giant Bermuda Couch growing in a demonstration plot at Salmon Gums. We suspect most of the plants germinated with the big January rains rather than in spring when it was sown (given the cool spring). It should be tough enough to survive in this environment but it will be interesting to see how productive it is. These Giant Couches come from the USA where they are widely grown. Photo 23 March 2006.*



### *Rhodes and Lucerne at Cascades*

*Scott Welke of Cascades (~60 km NW of Esperance) sowed this paddock to a combination of Rhodes and Lucerne in the spring of 2003. It is mainly Rhodes but there is a reasonable amount of Lucerne in patches, especially where he upped the sowing rate. Scott will also introduce some hard seeded Erica and Margarita serradella to the paddock this year. Photo 22 March 2006.*