Evergreen FARMING

incorporating

Western Australian Lucerne Growers

Newsletter of Evergreen Farming Issue 33 September 2010

Year Round Feed

Kikuyu based pastures are renowned for boosting summer and autumn stocking rates and eliminating the risk of erosion. But one downside can be a reduction in winter feed. Options to boost winter feed production in kikuyu pastures include the sowing of annual ryegrass and/or cereals, applying nitrogen fertiliser and Gibberillic Acid, and implementing rotational grazing. Phil, Nicole and Rohan Chalmer of Condingup are trying all these options to lift their winter feed production and stocking rate. This kikuyu paddock had wheat dry sown in to it at 100 kg/ha in late April and has been rotationally grazed 3 times since. 100 kg/ha of Urea was applied in June to give the wheat a boost. Rohan says it has definitely helped improve winter feed and they plan to do a lot more of this next year. Photo 12 August 2010 courtesy Matt Ryan DAFWA Esperance.

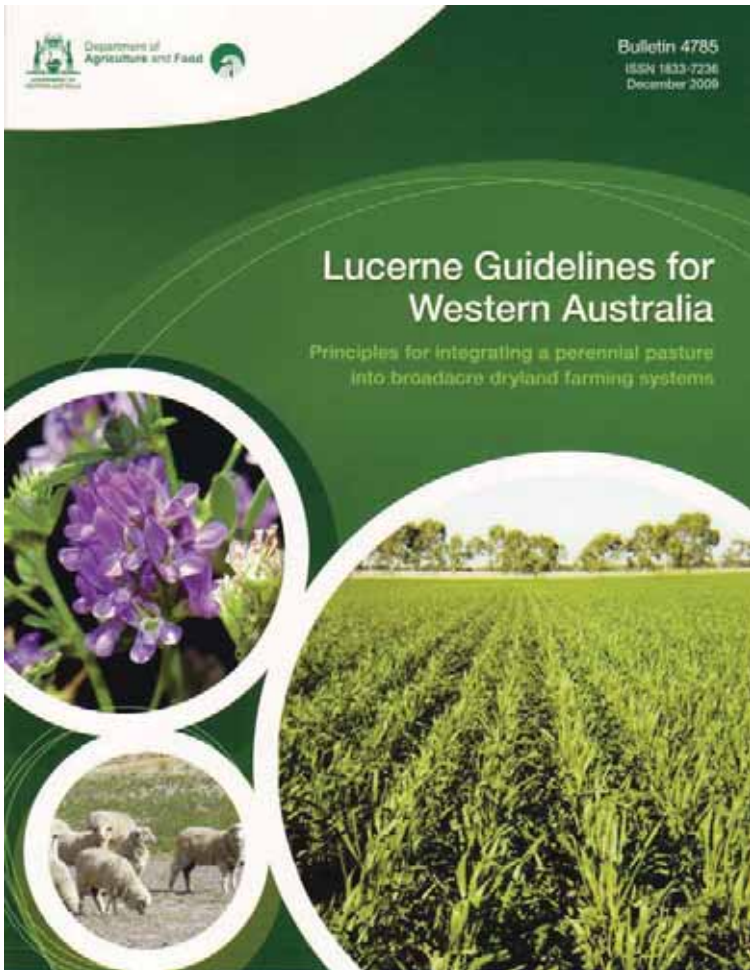
New "Lucerne Guidelines for WA"

Diana Fedorenko, DAFWA, Forrestfield, Ph: (08) 9366 2300, dfedorenko@agric.wa.gov.au

My intention for writing this article is not to convince you to grow lucerne if you already know lucerne is not adapted to your soils. I only aspire to persuade you to read a publication.

Why such a request?

Because I know first hand - from working in partnership with farmers - that you have a remarkable intuition and capacity to spot bits and pieces of information and adapt it to your circumstances. These qualities are only acquired by doing what you know best, farming to feed the rest of us, and knowing each paddock and corner of paddock as you only do. Another reason is because, in my opinion, farmers very often lead the way to significant change. You have an enormous capacity to try new ideas and make observations on the ground. Observation is the first step of the scientific method. When you try something, your observations can open doors for R&D projects. In this way you contribute to generate knowledge that can be applied, not just accumulated.



What's in it for you?

I believe that to some extent many of the lessons and principles in the '*Lucerne Guidelines for Western Australia*' are transferable to any perennial pasture. My gut feeling - I know that this does not sound very scientific, but bear with me - is that if you invest time in reading this publication, you will find some ideas that you can make work for you. No matter what perennial pasture you are using to tackle which environmental problem. This publication has something to offer if you are interested in equipping your farm business with tools to become more shock-proof.

This publication is not to be seen as a recipe book. It is an account of how we studied the adaptation of a perennial to the wheatbelt environments and how we went about incorporating it into farming systems traditionally based on annual crops and pastures. Before you start, set your mind to think beyond lucerne. See the plant as the 'model' of a perennial pasture, just like we did, and not as the species that would solve everyone's problems. Secondly, think beyond salinity - this was the problem that at the time brought funding for R&D to focus on developing more sustainable agricultural practices. We are aware the environmental problems facing you are many. Make comparisons, transfer knowledge where possible, make notes and learn principles. Use your intuition and then put your ideas to the test.

How is the publication organised?

It contains five sections:
1. An overview.
2. The role of a perennial in farming systems.
3. Integrating the perennial into the system.
4. Management and economics of systems with a perennial.
5. The farmer experience.

How to access this publication?

Please follow this link:

http://www.agric.wa.gov.au/objtwr/imported_assets/content/past/bn_lucerne_guidelines.pdf

If you wish to receive a hard copy free of charge, please call DAFWA on 9368 3710 (South Perth).

A favour please.

I would like very much to hear from you if I managed to persuade you to read this publication. Could you please drop me an email or call to let me know what the most useful piece of information was and what you plan to do about it?

Committee Column

Erin Gorter (President), Kojonup

This newsletter column I want to pay tribute to all the behind the scenes people that help the Evergreen committee. These people are the partners and family members of our committee who are often the ones to 'hold the fort' while the committee gets together for meetings and other Evergreen business. Every committee has a group such as this and I'd like to say a huge thanks to you all for the important part you play in the success of Evergreen. Without you, we would not have such a strong and dedicated group to help run this organisation. Your time and support is much appreciated by all.

2010 has seen another great series of Pastures for Profit Seminars held in Mt Barker and Dandaragan. A stark contrast to last year when we held them in Autumn, this year saw some seriously cold days - none colder than Mt Barker! We had a pleasing turn out with some inspiring speakers on a broad range of topics. I was fortunate enough to visit John Sheehan's property a couple of weeks ago and I can tell you he was not exaggerating about the challenges of his steep country!

Frosts have certainly been a widespread issue for growers this winter, slowing pasture growth dramatically. We've had more frosts this year than we have ever had on our farm. The perennials certainly took a hit, but having strong root systems, they have managed to recover and are beginning to charge away. Combined with a strong annual pasture, this spring is looking positive. Adding good lambing percentages to the mix, we are confident of a better year than the last few. Let's hope it's widespread across our membership.

This newsletter we introduce one of the newer members of our committee who has been active in perennial pastures for many, many years. Murray (should have been named Ever) Green has much to share with his vast experience of growing and managing perennials.

Committee Exposé

Murray Green, Gingin

I managed "Glencoe" at Gingin for 18 years before just recently deciding to take a break. Glencoe is 8,000 acres and is predominantly a cattle enterprise with both breeders and trading, and a few sheep for pasture manipulation. The property is covered in perennial grass, mainly couch and kikuyu, but we have been playing around with Rhodes grass, Panics and other perennial grasses for 15 years. We had no idea how to establish them back then but look at us now!

Four years ago we started a program of replacing some of the couch with Evergreen Mix on the better quality sands. This has worked well - doubling the carrying capacity of the paddocks. How did I kill the couch? You don't really. You just create a window to establish the Evergreen Mix before the couch seed germinates again and then it fills in any gaps that are left. If you rotationally graze your paddocks it will keep the Panic plants strong and the couch will not take over again. The method that was used was a combination of spraying, multiple cultivation passes and an oat crop.

We have also had some success with dryland Lucerne on Glencoe in recent years on the better quality soils.

The main thing I used perennials for was weaning calves onto them and drifting the first calvers on to green feed. It makes a huge difference if you have enough area under perennials to use.

I firmly believe perennial pastures have a large role to play in the future of agriculture in WA.

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The Coming Famine

Julian Cribb, Julian Cribb & Associates, ACT, julian.cribb@work.netspeed.com.au

Modern wars are often driven by scarcities of food, land and water. Dafour, Rwanda, Eritrea, the Balkans were all destabilized, at root, by squabbles over these resources. Going further back, the French and Russian civil wars both grew out of bread crises. We know that hunger breeds war.

The UK Ministry of Defence, America's CIA, the US Center for Strategic and International Studies and the Oslo Peace Research Institute all identify famine as a potential trigger for conflicts and possibly even for nuclear wars.

The wars of the C21st are less likely to be global conflicts with sharply defined sides and huge armies than a scrappy mass of failed states, rebellions, civil strife, insurgencies, terrorism and genocides sparked by bloody competition over dwindling resources.

However the good news is that many wars can also be prevented – by using science to meet the rising demand for sustenance.

Refugee and internally displaced person numbers have risen sharply in recent years. Future famines in any significant region – Africa, India, Central Asia, China, Indonesia, Middle East or any of the megacities – will confront the world with tidal waves of tens, even hundreds of millions of refugees.

But the 50 million refugees who now flee every year are now preceded by over 200 million legal immigrants – a quarter of a billion people on the move each and every year. These are mostly people smart enough to read the signs in their home countries – and leave before disaster strikes.

Yet such vast movements are as nothing to the movements of the future.

These will dwarf the greatest migrations of history.

Thanks to the universal media, all the world now knows that safety, sustenance and a good life are to be found elsewhere if you have the courage and the means to reach for them. In future, even places that are physically remote may face refugee tides in the millions or tens of millions, threatening profound change to society.

If we fail to secure the world's food supply, governments in many countries may collapse under the onrush of people fleeing regional sustenance disasters. Every nation will face heavier aid and tax burdens and soaring food prices as a result.

Solving the challenge of global food insecurity should be the paramount concern of all nations and all people in the coming three generations. The global financial crisis is trivial in comparison. Even climate change, for all its menacing potential, is less immediately pressing.

If we don't want wars and tidal refugee movements, one way we can prevent many of them is by securing the food supply - everywhere.

So what are the solutions? Here are the four important ones.

1. Redouble Knowledge

We need to redouble the global investment in agricultural science. In my estimate we should lift the total agrifood R&D spend to at least $80 billion, twice what it is today.

Then, for every research dollar we need to spend another dollar getting the knowledge into the hands of the world's 1.8 billion farmers and food processors. Science not applied is science wasted.

We must generate the greatest knowledge sharing effort in history – to reach not only farmers, but also consumers everywhere, because the farmers alone will not be able to solve the challenge.

It is essential that all national governments understand that agricultural science IS defence spending. Devoting just a tenth of the world's current weapons spend to sustainable food production would secure both the food supply and enhance the prospects of world peace.

2. End Waste: re-use

An obvious way to enhance global food security is to reduce the colossal waste of half the food we currently produce. This will also spare water, nutrients, energy, soil and human labour.

However it means extensively redesigning both our diets, our cities and the food production and distribution systems that satisfy them.

It means greening our cities by recycling the vast volumes of water and nutrients they presently collect, purifying them and designing entirely new urban-based food production systems.

These will turn what we now regard as organic waste back into food, fuel and a great many other essential things.

It will involve growing large quantities of fresh vegetables within urban areas by hydroponic, aquaponic and aeroponic methods. We need to design this new urban agriculture or mass permaculture from scratch and incorporate it into the buildings, landscapes and social milieu of our mighty cities.

It will also involve creating an entirely new food industry that uses waste to produce vegetable, microbial, fungal and animal cells in biocultures and turns them into healthy and

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novel processed foods - but also into fuel, fertilizer, stockfeed, pharmaceuticals and fine chemicals.

Above all we need a World War on Waste. Let us design farming and food systems that do not waste or, if they do, that then reuse.

3. A New Diet

Recognising that 11 billion people cannot all eat like Americans or Australians and hope to survive on this planet, we need to refashion the world diet.

Sounds hard? Not really. It means returning to the sort of balanced nutrient intake our grandmothers would approve.

One way to do this is to double the amount of vegetables in the diet, many produced in these new urban systems using recycled water and nutrients.

There are over a thousand "undiscovered" indigenous vegetables to make this a culinary adventure as well as a global awakening and a health revolution. The richness of nature has scarcely been tapped in this regard and our shops, supermarkets and restaurants are poor in diversity compared with what they will become.

To achieve this we should also embark on the world's most ambitious educational campaign – to install one full year, a food year, in every junior school on the planet.

A year in which every subject – maths, language, geography, science, society and sport – is taught through the lens of food, how precious it is and how it is produced, where it comes from, how to eat safely, thriftily and healthily. How to help ensure it never fails.

Teaching food is acceptable in all cultures, races and creeds. Teaching respect for food and how it is produced is equally so. The means already exist to share these principles and educational courses universally.

4. Pay more for food

Today many people enjoy the cheapest food in human history. In rich countries it is one third the price our grandparents used to pay for it. But it is destroying landscapes, water and farming communities worldwide and causing colossal wastage.

It is too cheap to last.

It is imperative in the coming decade that we do two things – first abolish all trade barriers so food production can go wherever it is most efficient and second, to start paying all farmers a fair price.

The prices that globalised food chains now pay farmers will end up destroying agriculture and its resource base. They will hollow out global food security. Almost everyone in society now receives fair pay – except farmers. This has to end if we want to eat sustainably in future.

Summary

The coming famines of the mid-21st century cannot be solved by governments, by scientists or by farmers alone. We need a change in behaviour by every person on the planet, especially in rich and urban societies.

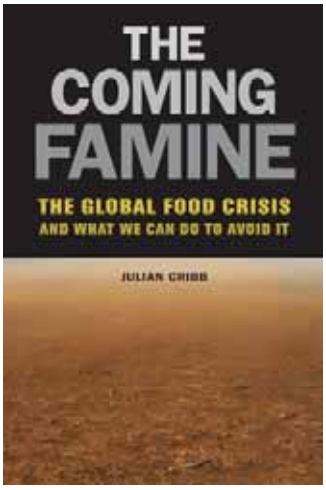
This is a challenge at the species level. It will decide, once and for all, whether or not we are fit to bear the title sapiens.

Farmers not only grow food. Our 1.8 billion farmers – mostly women – also manage half the world's land, three quarters of its fresh water and a third of its atmosphere. They need our help to do so. And they need fair prices for their produce to do so sustainably.

Farmers, and the scientists who serve them, are today the most important human beings alive.

The world has forgotten this. It needs to be reminded.

Delivering new farming systems and technology to all the world's farmers, paying fair prices and changing our eating habits is a matter of both national and global urgency. It is time that humanity as a whole, and governments in general, awoke to this.



This is an extract from "The Coming Famine" which was published by the University of California Press and CSIRO Publishing in August 2010.

It was supported by the Crawford Fund and Land & Water Australia.

Another Successful Pastures for Profit Seminar

Tom Bailey & Philip Barrett-Lennard, Evergreen Farming, Ph: (08) 6272 4545.

Evergreen's sixth annual "Pastures for Profit" seminars were held this year in Mt Barker and Dandaragan. Over 130 members and supporters attended the days that focused on profitable prime lamb production from pasture. The key messages from each speaker are detailed below.

John Sheehan, the manager of Yaloak Estate in the cental highlands of Victoria, spoke on large scale profitable lamb production. He emphasised that setting pasture and livestock targets was paramount to the success of a farm enterprise. Yaloak is primarily a prime lamb operation using Coopworth ewes joined to terminal Dorset rams. They sell over 15,000 lambs a year targeting a 21 to 22 kg carcase weight. Twins are very important and only ewes from twins and that have twins in the first and second lambing stay in the maternal ewe breeding Coopworth flock. Perennial pastures play a major role in the success of Yaloak's sheep enterprise. Perennial grasses such as phalaris and cocksfoot compete against the weedy serrated tussock and provide good pasture for lambing ewes. Dryland lucerne paddocks are direct drilled with oats or barley in April for extra winter feed. And irrigated lucerne (using waste water from treatment plants) ensures that all lambs reach their target weight on time, irrespective of rainfall. Annuals such as ryegrass and forage brassica are used as break crops to set paddocks up for cropping or pasture renovation.

Ashley Herbert, a Farm Management Consultant from Agrarian Management, discussed the question on everyone's lips of "how to increase kg/ha productivity of lamb…cost effectively". From Ashley's experience a profitable production system has to be simple, robust and flexible with the main production drivers being lambs weaned/ha, lamb sales/ha and ewes run/ha. The aim of a lamb enterprise is to turn off as many lambs as possible at a reasonable price and at a low cost of production. Ashley (controversially some say!) considered that twin lambs were not necessarily advantageous in that they required more complex management, have greater mortality and lower growth rates. He suggested that in most cases running more single bearing ewes/ha was a more profitable and simpler system.

David Pethick and Graham Gardner from Murdoch gave us the low down on how to produce high quality beef and lamb from pasture. They said the MSA beef grading system has changed the way meat quality is defined and gave confidence to the beef eating consumer. And MSA is now increasingly being adopted by the lamb industry. They both said the failure to meet pH and colour specifications are the main reasons for carcasses to fall out of MSA grading. Muscle glycogen affects meat colour and pH, and managing animal nutrition and stress will help maintain glycogen levels and produce a better quality product. And they outlined steps producers could take to develop "premium 4 and 5 star" quality beef. These included achieving high weight gains (to ensure the animals are still young at slaughter), a moderate level of marbling and no use of HGP implants.

Irrigated lucerne on raised beds at Yaloak Estate

Dianne Haggerty spoke on her and husband Ian's experiences in building a resilient farming system by improving soil health through biological farming practises. The Haggerty's run a wheat, sheep and hay enterprise at Wyalkatchem in the central wheat belt. The biggest challenge they faced apart from unreliable rainfall, land degradation, high input costs and price fluctuations was soil health. To improve their soil health they started with microbial products and simple microbial foods, used full stubble retention and ceased using fungicidal seed dressings. Poor performing soils were targeted for permanent grazing using saltbush, rhagodia and perennial grasses. Using biological inputs (such as worm juice, compost extracts and fulvic acid) they have created a healthy soil with better root growth, less weeds, disease and insects and reduced the chance of wind and water erosion. The Haggerty's have found that biological farming is simple, requires less labour, lower input costs and the soils are much easier to work.

Mike Hyder, a DAFWA Research Officer from Albany, talked about the Grazing Systems Analysis project at the Mt Barker Research Station where annual and perennial pasture based systems are being compared. The sheep on the perennial pasture farmlet, with one paddock sown to lucerne and one to

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Sowing pastures requires tough gear at Yaloak Estate

Sowing pastures in steep gorge country at Yaloak Estate

kikuyu, required 22% less supplementary feed and had 20% more lambs reach target slaughter weight by mid December. The kikuyu has been the most successful perennial pasture in terms of productivity and persistence, but its winter productivity has varied depending on the season. In 2008 it was superior to annual pastures, while in 2009 and 2010 it was inferior to them. This relates to the density of the annual component within the kikuyu sward.

Kirk Reynolds and Stephen Loss from CSBP spoke on fertiliser use in environmentally sensitive areas such as the Swan Coastal Plain. Historically, the leaching of nutrients from highly soluble fertilisers into water ways has led to the development of algal blooms. The Government's Fertiliser Action Plan could eventually see the use of highly soluble fertilisers banned on the Costal Plain. In response, CSBP is developing a new low water soluble fertiliser that is showing considerable promise in reducing P leaching and increased clover growth. Field trials are underway.

Paul Omodei from agVivo discussed the return on investment from perennial pastures based on real farm data from 3 EverGraze Supporting Sites in the South West. In all 3 cases significant improvements in stocking rate had been achieved with the introduction of perennials and this had lifted whole farm profit. However, with only one paddock in perennial pasture, the impact on the whole farm profit was small. But if perennial pastures were sown on 15 to 20% of each farm, the impact on the whole farm profit would be significant, particularly over a 10 year time frame.

Increasing the annual legume content in perennial pastures was the focus of Brad Nutt's presentation. Based on his work as a Pastures Research Officer with DAFWA, he showed how Summer Sowing of some hard seeded Serradella varieties offered great potential to rapidly enhance legume content in pastures. Both Erica and Margurita Pink Serradella appear well suited to Summer Sowing but unfortunately the most promising legume for this tactic is an as yet unreleased variety of Yellow Serradella.

At each seminar, results from the Caring for our Country Demonstration Sites were presented. Detailed reports on some of these sites can be found in this edition of the Newsletter. And stay tuned for more reports in the December Newsletter.

Pastures for Profit 2010 was made possible with the support of CSBP, Heritage Seeds, Caring for our Country and the Department of Agriculture and Food.

Caring for our Country Demo Site - Luke Caelli, Ravensthorpe

Tom Bailey & Philip Barrett-Lennard, Evergreen Farming, Ph: (08) 6272 4545.

Aim:

To demonstrate the companion sowing of winter active Tall Fescue, Spanish Cocksfoot and Sulla with Lucerne to produce extra winter feed, increase summer ground cover and lengthen the pasture phase.

Background:

Approximately one third of the annual rainfall along the eastern South Coast occurs outside the growing season. To turn this into valuable out of season feed and to reduce groundwater recharge and the spread of dry land salinity, farming systems need to include deep rooted perennials in their pasture phases.

Lucerne is usually grown as a mono-culture or with annual pastures such as sub clover, ryegrass and volunteer weeds. The mono-culture in particular can create a winter feed gap and less than ideal ground cover over summer and autumn.

A long term pasture containing both lucerne and a drought tolerant but winter active perennial grass could help fill the winter gap, reduce the cost of supplementary feeding and provide additional ground cover. The lucerne component of the pasture would take advantage of any out of season rainfall providing summer and autumn feed and at the same time minimize ground water leakage.

Winter active temperate perennial grasses (especially Tall Fescue and Cocksfoot) have not been widely sown before in WA. We need to demonstrate that additional winter feed, stand life, water use and summer ground cover will result from their use before more widespread adoption can occur.

Soil Type: Duplex sand over clay

Lucerne and Tall Fescue in June 2010

Rainfall:

Average annual rainfall: 400 mm (2009 rainfall: 289 mm)

Method:

Weeds and insects were controlled pre-sowing with a double knockdown in June 2009.

The demonstration was sown on 30 June and 1 July 2009 with twin combines fitted with Walker discs.

Treatments:

1: Flecha Tall Fescue (3 kg/ha) & SARDI 10 Lucerne (4 kg/ha)
2: Prosper Tall Fescue (3 kg/ha) & SARDI 10 Lucerne (4 kg/ha)
3: Resolute Tall Fescue (3 kg/ha) & SARDI 10 Lucerne (4 kg/ha)
4: Uplands Spanish Cocksfoot (1.25 kg/ha) & SARDI 10 Lucerne (4 kg/ha)
5: Wilpena Sulla (6 kg/ha) & Stamina GT6 Lucerne (6 kg/ha)
6: SARDI 10 Lucerne (4 kg/ha)

The perennial grasses (and Sulla) were mixed with the Lucerne in the seed box and sown together in the same rows. All the treatments received 50 kg/ha of DAP at sowing.

Plant numbers were counted regularly during the establishment phase using 20 randomly placed quadrats per treatment.

Two pasture (exclusion) cages were placed in each treatment. After each grazing, biomass cuts were taken and the cages shifted. The samples were sorted, dried and weighed.

The paddock was initially grazed in late November 2009 to assist with weed control as the perennial grass section of the paddock could not be sprayed with grass selective herbicides (to remove annual ryegrass). In 2010 the paddock has been grazed in February, April and June (so far), with stock numbers and the class of stock recorded.

Results:

Considering the exceptionally dry establishment conditions in 2009, the Lucerne, Tall Fescue and Cocksfoot germinated well and established good plant densities (20 to 30 plants/m^2 for each species, 40 to 50 plants/m^2 for the whole sward). The Sulla germinated well but establishment numbers were very low possibly due to low rainfall and competition with the lucerne.

So far, the Lucerne / Tall Fescue mix has produced significantly more biomass than the Lucerne / Cocksfoot mix (Table 1)

Apart from the Lucerne / Cocksfoot mix, most of the paddock has produced approx. 1,500 kg/ha of dry matter from late February to mid July.

Continued

Lucerne vs annual pasture in April 2010

The RAIN field day inspected the site in August 2010

In the Wilpena Sulla / Stamina GT6 Lucerne mix, the Lucerne component has compensated for the low Sulla production and still produced approx. 1,500 kg/ha of dry matter.

Grazing during the establishment year of perennials is often minimal, but the 1.4 DSE/ha stocking rate achieved was better than expected. Compared to an annual pasture, where there is little grazing from January to June, this paddock has already produced some handy out-of-season feed.

Conclusions:

The seeding rates for the Tall Fescue and Cocksfoot appear to be suitable for this area given the good plant numbers achieved. With better rainfall during establishment, the germination would have been even better. The use of alternate row sowing might further improve establishment by minimizing competition between the Lucerne and the grasses.

The Stamina GT6 Lucerne in the Lucerne / Sulla mix was sown at 6 kg/ha which resulted in a very high 92 seedlings/ m^2. A large number of these seedlings died due to moisture competition. A sowing rate of 4 kg/ha would probably have produced similar establishment numbers.

It is still too early to tell if the inclusion of winter active perennial grasses improves the winter feed supply. So far the pure Lucerne has been just as productive. The Spanish Cocksfoot has not produced as much feed as the Tall Fescue, but it is still early days. And interestingly, the sheep have found the Tall Fescue to be more palatable.

However, the combination of Lucerne and perennial grasses has already provided a more balanced diet for the sheep and should protect them from redgut.

In the first year, the perennial grasses appeared to provide better summer ground cover but it is way too early to tell if the perennial grasses can lengthen the pasture phase.

Farmer's perspective:

Luke Caelli is very enthusiastic about the demonstration. Because of the low rainfall in 2009 he feels that the perennials will take at least two years to establish properly, and that data collection should continue for at least another two years to reflect this. Luke thinks the Tall Fescue is the most promising option at this stage and that his sheep definitely targeted it before the Lucerne and the Cocksfoot. With the mixture of Lucerne and Tall Fescue he hasn't had any stock health issues and he considers that it is providing a well balanced diet that

Table 1. Biomass cuts (kg/ha of dry matter) from autumn and winter 2010

	10 May			13 July		
	Lucerne	**Perennial Grass**	**Total**	**Lucerne**	**Perennial Grass**	**Total**
Lucerne + Tall Fescue	160	256	416	270	746	1016
Lucerne + Cocksfoot	140	183	323	220	210	430
Lucerne + Sulla	466	10	476	1004	30	1034
Lucerne	n/a	n/a	n/a	1357	0	1357

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Table 2. Rainfall at Luke Caelli's farm (mm)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2009	16	14	32	17	15	60	22	16	41	21	30	6
2010	12	24	16	24	79	28	30					

has improved the condition and growth of his hoggets.

Luke said that the Cocksfoot seems to be less palatable and in a dry establishment year tended to out-compete the Lucerne, probably because the cocksfoot wasn't completely dormant over summer.

In the future Luke said he would try a less winter active Lucerne (Stamina GT6 or similar) mixed with winter active Tall Fescue for a longer term pasture phase, hopefully up to 10 years in length.

Although the Sulla did not persist well, Luke said it might be a useful option in higher rainfall areas. And his advice when sowing mixtures was to pick weed free paddocks or control the weeds before sowing as the inclusion of perennial grasses limits post-emergent herbicide options.

HERITAGE SEEDS is pleased to announce the appointment of Matt Lane as Regional Business Manager for Western Australia.

Matt comes to Heritage Seeds with extensive knowledge and experience, and looks forward to working in Western Australia, developing and expanding markets and developing trial sites around the state.

Matt can be contacted on: 0418 191 060 and mlane@heritageseeds.com.au

Tropical Pasture Mixes

Heritageseeds® Tomorrow's Pasture Today

Evergreen North Mix

Variety	% in Mix	Comments
Gatton Panic	60%	Productive and persistent drought tolerant species with good palatability
Rhodes Grass – Fine Cut, Katambora & Callide	20%	Quick to establish and moderately tolerant of salinity. Callide: productive palatable grass suited to fertile soils. Katambora: productive, more stoloniferous grass, suited for erosion control. Fine Cut: fine leaf selection, has been selected for its improved grazing qualities, of uniform maturity and high yielding.
Signal Grass	20%	Forms a dense soil cover, valuable grass in the humid tropical regions.

Evergreen South Mix

Variety	% in Mix	Comments
Gatton Panic	60%	Productive and persistent drought tolerant species with good palatability
Rhodes Grass – Fine Cut, Katambora & Callide	20%	Quick to establish and moderately tolerant of salinity. Callide: productive palatable grass suited to fertile soils. Katambora: productive, more stoloniferous grass, suited for erosion control. Fine Cut: fine leaf selection, has been selected for its improved grazing qualities, of uniform maturity and high yielding.
Splenda Setaria	20%	Hardy, palatable, coastal grass suited to sub tropical regions.


Rhodes Grass


Signal Grass


Gatton Panic


Splenda Setaria

Caring for our Country Demo Site - Jim Wedge, West Binnu

Tom Bailey & Philip Barrett-Lennard, Evergreen Farming, Ph: (08) 6272 4545.

Aim:

Improving the year round productivity of a subtropical perennial grass based pasture.

Background:

Subtropical perennial grasses are increasingly being sown as permanent pastures on the poor sand plain soils of the West Midlands and Mid-West. These perennial grasses co-exist well with annual pasture species. Their growth slows or stops in mid winter as temperatures fall, allowing the annuals to establish and grow. It is widely accepted that nitrogen fixing annual legumes such as blue lupins and serradella should be grown with subtropical grasses to supply both soil nitrogen and quality winter feed.

After hearing Bruce Maynard's presentation on "no-kill cropping" a number of Evergreen members were keen to trial the sowing of oats and serradella into subtropical perennial grass. Oats are seen as a low cost option that could provide additional winter and spring feed and potentially a small grain harvest in a good season (or a standing fodder crop). Serradella could provide high quality winter and spring feed while at the same time fixing nitrogen for the subtropical grasses to use later on.

On the flipside, anecdotal evidence from the 2008 growing season showed that when broadleaf weeds (and blue lupins) were removed from subtropical grass pastures in winter, the subsequent spring and summer growth of perennials was superior to unsprayed areas. It is likely that removing the broadleaved weeds increased soil moisture levels during winter and spring, effectively storing moisture for the perennials to use in late spring and summer. Moisture competition between the annuals and perennials is likely to be an important issue in years with below average rainfall and in low rainfall regions.

Soil Type:

Deep pale sand

Rainfall:

Average annual rainfall 400 mm (2009 rainfall 417 mm)

Method:

A 40 hectare subtropical perennial grass paddock at Jim Wedge's farm was subdivided using electric fencing into four paddocks sharing a common water trough.

In mid May 2009 (prior to the break) a triple disc no-till drill was used to dry sow different rates of oats and Cadiz serradella.

The oats looked good in July 2009

To minimize damage to the existing perennial pastures, seeding was carried out with a no-till disc machine.

The following treatments were used:

- Paddock 1: sown to a mix of Oats (50 kg/ha) and Cadiz Serradella (10 kg/ha).
- Paddock 2: sown to Oats at 100 kg/ha on the western portion of the paddock, and Oats at 50 kg/ha on the remainder.
- Paddock 3: Control with the western half of the paddock sprayed in early August with 300 ml/ha of Ester 680 and 5 g/ha of Ally to remove broadleaf weeds.
- Paddock 4: sown to Cadiz Serradella at 20 kg/ha.

The paddocks were rotationally grazed during the winter and early summer, with feed produced from each treatment measured at each grazing. The paddocks were spelled during Spring to allow the Serradella to set seed.

A large number of Gatton Panic seedlings germinated in the paddock following the break of the season in late May 2009. They germinated from seed set by the existing Panic plants in the paddock over previous years. To monitor the survival of these new seedlings, three permanent quadrants were placed

Table 1. Average biomass (kg/ha of dry matter) for each treatment on 15 July 09.

Paddock	Treatment	Perennial Grass	Oats Cadiz	Blue Lupins	Total kg/ha
1	50 Oats 10 Cadiz	250	111	256	617
2	100 Oats	143	93	156	392
2	50 Oats	81	27	25	133
3	Control	348	18	135	501
4	20 Cadiz	225	101	157	483

Continued from previous page

Oats, Blue Lupins & Panic in July 2009

over some of the newly germinated seedlings and the area was protected from grazing with a hot wire. Seedling numbers were counted in July and October 2009 and again in May 2010.

Results:

Grazing data:

The whole site was grazed with 50 steers for 30 days in August, 65 steers for 22 days in December, 60 steers for 7 days in April, and with 50 cows for 1 day in May this year. This produced an annual stocking rate of 2.28 DSE/ha.

Paddock 1 had the best soil type and hence it had the highest production for all species.

Paddock 2 had the worst soil type and hence it had the lowest production.

Seedling recruitment:

The self sown Gatton Panic seedling numbers declined from a very high 80 plants per m^2 in July 2009 to only 1 plant per m^2 at the last count in May 2010.

Conclusions:

The biomass and stocking rate was limited by the low late spring and summer rainfall (Table 3). The whole site was also de-stocked from late August until late November to allow the serradella to set seed. This restricted the amount of spring grazing and ultimately the whole year's stocking rate.

Jim observed that the cattle tended to spend more time on the sprayed section of Paddock 3 where the blue lupins and broadleaf weeds had been removed. This might indicate the perennials were fresher and more palatable from the reduction in moisture competition from the blue lupins. A rapid increase in soil nitrogen might also occur as the sprayed out Blue Lupins quickly rotted down.

Table 2. Average biomass (kg/ha of dry matter) for each treatment on 7 October 09.

Paddock	Treatment	Perennials	Oats Cadiz	Blue Lupins	Total kg/ha
1	50 Oats 10 Cadiz	1024	511	1362	2897
2	100 Oats	268	86	1134	1488
2	50 Oats	82	52	686	820
3	Control	292	18	598	908
3	No Lupins	338			338
4	20 Cadiz	506	292	1032	1830

Drilling oats into the perennials produced a small increase in biomass (Tables 1 and 2). However, the Serradella was more successful and importantly also fixed nitrogen. A hard seeded yellow serradella would be the ideal annual legume in this system as it wouldn't need reseeding but seed is expensive and often hard to source. Cadiz and the hard seeded Pink Serradella (e.g. Erica) are the best short term solutions due to their lower seed cost. The productivity of the oats could be improved with the addition of additional fertilizer but this may not be economic on these very infertile deep sands.

There was limited survival of the Gatton Panic seedlings that germinated following the opening rains. Above average rainfall and some summer / autumn rain is probably essential to get more of these seedlings to survive and mature into larger plants.

Farmer's perspective:

Jim Wedge said that it was worth persisting with the demo site and that with normal conditions and rainfall he is confident that the system will work. In 2009 Jim didn't use fertiliser when he sowed the oats and serradella and he considers that was a defining factor in the results. This year Jim used fertiliser but it wouldn't rain and the germination has been very slow and staggered.

Table 3. 2009 Rainfall (mm)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
0	0	2	0	86	110	100	49	46	7	17	0	417

Continued

Cows grazing the demonstration site in May 2010

Oats drying off in October 2009

Jim said that because he was dealing with deep sand with no water holding capacity he needed normal rainfall with good opening rains so that the oats and serradella could establish to complement his perennials.

Jim plans to spray the blue lupins every 3-4 years to reduce competition for water and if he can successfully establish the serradella this would provide good grazing and nitrogen and eventually he would remove the lupins.

Jim said the big thing was to produce more biomass for stock feed and more litter to improve the soil.

Caring for our Country demo site - Kevin Moir, Wilga

Sam Taylor, agVivo, Dardanup, Ph: 0429 332 593.

Key Messages:

Perennial pastures offer significant opportunity to produce out of season feed in annual production systems. This feed can be used to finish stock for market, reduce supplementary feeding requirements, or utilise excess ground water, reducing environmental issues such as salinity. In this comparison between annual and perennial systems, the ability to increase stocking rate with perennial pastures has been demonstrated, even during extremely challenging conditions. The selection of perennial pasture type is also a critical factor in helping to achieve lifts in stocking rate as this demonstration highlights large differences between lucerne and mixed plantings of fescue, phalaris, chicory and plantain.

Aim:

Demonstrate the value of temperate perennials in the SW mixed farming region. Mainly the increased availability of feed in the "shoulders" of the season, creating earlier feed opportunities in the Autumn and extending the spring into summer.

Background:

Small areas of perennial pastures have been sown and used in the mixed farming areas West of the Albany Highway. Often these small areas have been used as "reclamation" lower in the valley floor and have not been adopted further "up" the landscape.

To date there has been limited data demonstrating the economic benefit of these perennial pastures in comparison to the predominant annual pasture systems.

Recent plantings of these perennials across larger areas of the landscape have demonstrated that the persistence of perennials in these areas is good, although the exact "value" that these perennials add to the farming systems is not fully understood.

Significant areas of both perennial and annual pasture exists on the property of Kevin Moir at Wilga (20 km northwest of Boyup Brook) and comparisons between these systems can be made in order to determine the financial benefit that is created through the introduction of perennial pastures.

Method:

Comparisons have been made between perennial and annual pasture systems in this demonstration. Due to the rapid adoption of perennial pastures by Kevin Moir, annual pasture paddocks were selected on the neighbouring property of Ian Affleck. In total, 2 paddocks containing perennial pastures and 2 annual pasture paddocks were monitored, with details recorded of grazing days by stock class and supplementary feed provided to stock while in these paddocks.

Paddock Details: Perennial Paddocks

Paddock 13 (16.1 ha) – Pasture composition consists of existing lucerne that was partially renovated in 2008 with 5 kg/ha Lucerne to fill in bare patches and then over-sown with 20 kg/ha oats in 2009 as the season was very late in starting.

Paddock 20 (12.8 ha) – An established perennial stand sown in 2008, to a mix of Winter Active Tall Fescue (10 kg/ha), Phalaris (5 kg/ha), SubClover (5 kg/ha), Plantain (1.5 kg/ha) and Chicory (1.5 kg/ha).

Rotational grazing is employed by Kevin.

Paddock Details: Annual Paddocks

2 paddocks selected by Ian Affleck, Bobs Road as being a "warmer" paddock (23 ha) with Northern Aspect, the second, B5/B6 being a colder paddock (22 ha) with more timber and shade. Pastures consist of self regenerating subclover, with some ryegrass. Set Stocking is the practiced grazing management technique on this property.

Results:

Details of stocking rate for each paddock are detailed below.

Table 1. Summary of Actual DSE/ha carrying capacity.

Paddock Name	Pasture Type	Stocking Rate (DSE/ha)
Paddock 13	Perennial	9.81
Paddock 20	Perennial	18.03
Average		**13.92**
Bob's Road Paddock	Annual	8.93
B5 / B6 Paddock	Annual	9.46
Average		**9.20**

Discussion:

The initial results of this demonstration highlight the potential for increased stocking rate in mixed farming areas using perennial pastures. The 2 seasons that this demonstration was run over were far from "normal" and may not have provided a true reflection of the potential for perennial pastures to extend the season.

Extremely late breaks to the season were experienced in 2009 and 2010 at Wilga, with negligible amounts of summer rainfall received to provide extra out of season feed opportunities from the perennial pastures. The lateness of the breaks also meant that cooler conditions were evident and pasture growth rates were slow in both annual and perennial types once rainfall was received.

Continued

The lucerne paddock in March 2010

The annual pasture in March 2010

Conditions in mid Winter 2009 also saw all paddocks except the lucerne become waterlogged, which limited the amount of stock that could be introduced and also further slowed pasture growth rates.

The records taken from each paddock have detailed the amount and class of animals grazing the paddocks, along with supplementary feed provided so comparison can be made on a DSE equivalent basis.

To account for the value of feed provided to the stock from the various pasture types, the value of any supplementary feed supplied has been discounted from the stocking rate calculations based on the amount of energy supplied from the supplementary feed. It is assumed that 1 DSE is equivalent 10 MJ (Mega Joules of Metabolisable Energy).

From a comparison between the 2 perennial paddocks, it can be seen that the mixed planting of Fescue/Phalaris/Chicory and Plantain provided far higher stocking rate than the lucerne only pasture. This is most likely due to the high plant density of the mixed planting and the long periods of rest provided to the lucerne between grazings. A higher plant density should increase overall dry matter production, and the mixed planting allowed various species to capitilise on conditions and provide feed where possible. The deep, tap rooted nature of the chicory has proved valuable on this property as the perennial species with the most potential for improving productivity in the region. The hardiness of the fescue and phalaris has shown through, and with careful grazing management, there have been no issues associated with phalaris toxicity through these challenging periods. Plantain provides a useful addition to the mix, although it appears more susceptible to insect attack initially when small, and does not appear to provide as much dry matter as the chicory.

Annual pastures which are set stocked are not allowed to "get away" at the break of the season as continual grazing keeps dry matter levels low and does not allow for increased pasture growth rates. On these soils types, the continual grazing and ability of stock to be able to dig for clover burr without risk of erosion during the summer and autumn period reduces the requirements for supplementary feeding over this period. It is only the gravelly nature of these soils that makes this possible, although the risk of erosion is still apparent should heavy summer storms prevail.

Consistent stocking rates were achieved over the period of the demonstration in the annual paddocks, and it may be possible through improved grazing management that the stocking rate in this system could be lifted without the use of perennials.

The use of both annual and perennial systems would combine to make a more robust and adaptable grazing system in my opinion. This combination would be able to capitalise on the extra out of season feed provided by the perennials and also possibly reduce supplementary feeding requirements. Annual pastures provide a robust platform and high quality pasture which can be set stocked during periods such as lambing.

Future Plans:

Further investigation between the productivity of perennial species is warranted based on the findings of this demonstration. Now that we have increased confidence on the ability for various perennial species to persist and produce in this environment, further comparisons can be made to determine the most productive species. This should be done at the paddock scale and would be possible using the grazing recording system employed in this demonstration. Continued evaluation of these sites will be possible, along with other paddocks on the property using this same grazing recording system.

Caring for our Country Demo Site - Beaufort Flats

Sally Thomson, Sowing Seeds, Dumbleyung, Ph: 0417 983 356.

Aim:

Demonstrate the farm-level value of grazing saltland pastures

Location:

Beaufort Flats, West Woodanilling (~400 mm rainfall)

Farmers:

John & Di Pickford, Graydn Wilcox

It's a generally accepted view that saltland pasture offers some out of season grazing value and provides landscape benefits including groundcover provision, increased water use and biodiversity promotion. Through the Perennial Pasture Companions project, two Beaufort Flats farmers explored grazing strategies to demonstrate the value of management of saltland pastures within a whole-of-farm context.

Deferred Grazing of Annual Pasture at Break of Season:

With over 250 ha of their 1,210 ha property established to various perennial pastures, John, Diana & Richard Pickford obviously believe perennial pastures have a strong role to play in their farming landscape and business. Saltland pasture mixes, saltbush blocks, tagasaste and lucerne on "Beckwith" are generally shut up over the dry months until opening rains, when they become standing feedlots for stock and allow annual pastures on the rest of the farm to get away.

In the demonstration, photo-point monitoring of two similar, side-by-side paddocks of annual pasture, along with the recording of grazing days was carried out over 12 months to assess the value of deferring annual pastures. The basic strategy was to choose two similar paddocks and defer one paddock for 4-6 weeks after opening rains by putting the mob of sheep into a 8 ha saltland pasture paddock, while the other paddock would be grazed from the break of season. Apart from this variable, both paddocks were treated the same in terms of grazing technique and pasture management. Supplementary grain feeding took place where necessary in both paddocks.

As summarised in Table 1, the non-deferred annual paddock was first stocked just before the opening rains, while the neighbouring paddock was deferred, allowing pastures to germinate and get away. By early September, similar grazing had been achieved from the two paddocks, with 623 grazing days/ha in the non-deferred compared to 610 grazing days/ha in the deferred paddock. The surprise came towards the end of the growing season, when the deferred pasture paddock 'hung on' longer through late spring and summer. Due to the limited groundcover of the non-deferred paddock it was not grazed past 5 February 2010, while the deferred paddock was grazed until early April, giving the Pickfords an extra 460 grazing days per hectare over the twelve month period.

Table 1. Grazing value comparison of 3 paddocks at Pickford's from May 2009 to May 2010

Paddock	DSE average (12 months)	Grazing days/ha	Comments
Annual (28 ha)	3.1	1120	Grazed from 19/05
Deferred Annual (50 ha)	4.3	1580	Grazed from 2/07
Salt Valley (8 ha)	8.3	3037	Grazed from 11/05 - 29/06 only

The results above indicate 25% more grazing was achieved over the twelve month period by deferring annual pastures for 6 weeks. This is the ideal time to graze many perennial pastures such as saltland pastures and shrubs. Furthermore, the demonstration suggests that the increase in grazing value could be higher as the non-deferred paddock was overgrazed in the twelve month period to the extent that it will be cropped in order to bring it back into production.

Maximising Grazing Value of Saltland Pastures:

For Graydn Wilcox, grazing saltland pastures over autumn and early winter presents a significant opportunity to reduce supplementary feeding costs. After working with DAFWA to determine establishment cost and grazing value of different pasture compositions, Graydn concluded that promoting understorey was the key for profitable perennial pastures on his mild-moderately waterlogged and saline country.

This demonstration focused on understanding sheep grazing behaviour and fine-tuning decision-making tools to determine stock movements through saltland pasture paddocks, based on cell grazing theory. Each grazing cell had a good water source, and no supplementary feeding occurred.

Between February and April 2009, 920 weaner ewes were rotated through 33 ha, totalling 5 cells, of established saltland pastures. An important aspect for Graydn was the 40 ha of untreated paddock as an exit strategy, given that his stocking density peaked at 180 DSE/ha. Having previously grazed saltland pastures at a stocking density of 30 to 50 DSE/ha, Graydn was interested in what stocking density his pastures, his management and his sanity could cope with.

Continued from previous page

Grazing at high densities promoted non-selective grazing, which equated to more grazing of less palatable species such as saltbush, rather than sheep selecting out the more palatable understorey grasses (eg barley grass, puccinellia, tall wheatgrass). It also meant a more noticeable change in grazing behaviour, as once the understorey began to diminish and the sheep relied to a greater extent on the saltbush, they were moved to a new paddock.

Graydn intentionally started the sheep on the least-saline paddock with a good understorey of annual and perennial grasses so that the sheep could adjust to a high salt diet which comes with eating saltbush. He observed that this worked well, as by the time the sheep were moved into the last few paddocks they were evenly grazing all species and a lot more saltbush was eaten from early on. In future he intends to broadcast lupins across saltland pasture paddocks which will hopefully provide an energy supplement rather than pasture substitute, which has proven to be a problem when either hay or barley has been fed in the past. Also it is hoped by broadcasting the lupins the sheep will be encouraged to graze the saltbush more evenly across the paddock rather than just around the watering point.

So What's The Value?

In terms of grazing value, 920 weaner ewes were maintained by being rotationally moved through 33 ha of saltland pasture divided into 5 cells for 6 weeks. The paddocks that had been direct seeded with saltbush had an average of 1,000 stems/ha and gave 30 per cent more grazing days than paddocks planted with seedlings at 400 stems/ha. The understorey was the main driver of grazing days when compared to the saltbush, and understorey density decreased with increased waterlogging and salinity. No supplementary feeding was required over the 6 week period, which was a function of grazing to understorey. But the saltbush provided a valuable source of vitamin E at a time of year when green feed is scarce.

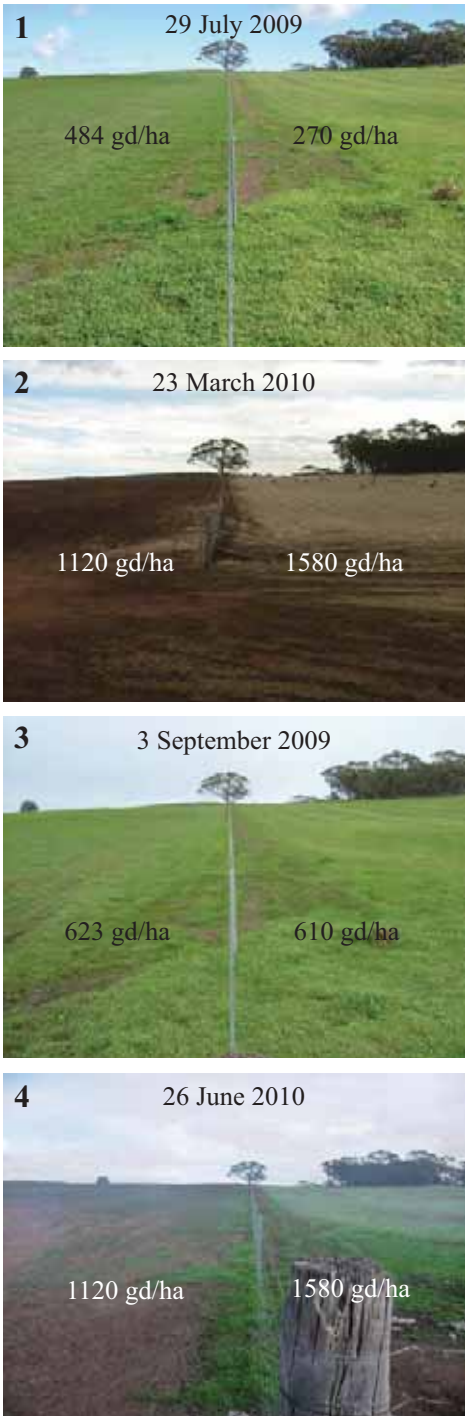

Photo-point monitoring and data of non-deferred (1 & 2) vs deferred (3 & 4) annual pasture paddocks at Pickford's

Productive Landscapes, Sustainable Farming:

Protecting our farm landscapes is a major consideration when planting perennial pastures. In a region where much 'salt-affected' land also suffers from waterlogging, establishing and maintaining groundcover is an important part of breaking the salinity cycle. In addition to providing almost 3,000 sheep grazing days, the 8 ha saltland pasture paddock in the Pickford demonstration has been transformed from a scalded paddock back in 2001 to a dense, diverse and evolving pasture paddock that now hosts birds, frogs, ants, dung-beetles and worms.

In terms of water-use, a nest of piezometers on the site have been regularly monitored and plotted twice-yearly; in March (when the water table is theoretically at its lowest) and in September (when the watertable is theoretically at its highest). The September readings have remained roughly comparable over the years, indicating the soil profile fills up each year but the March readings indicate that the amount the watertable drops over summer is increasing. While these results have not been analysed against district trends, a reasonable conclusion from this data is that excess water is being used over summer to produce sheep feed and provide year-round groundcover.

Conclusion:

Saltland pastures have a valuable role in farming systems on the Beaufort Flats when grazed over the late-summer to early winter period. Beneficial outcomes demonstrated by this work included:

a) utilising otherwise unproductive land by establishing saltland pastures with an understorey component,
b) reducing and/or eliminating supplementary feeding,
c) providing valuable nutrition to stock, and
d) defering the grazing of annual pastures for increased pasture growth and ground cover.

Caring for our Country Demo Site - Flora Downs, Gillingarra

Tom Bailey & Philip Barrett-Lennard, Evergreen Farming, Ph: (08) 6272 4545.

Aim:

To improve the establishment of subtropical perennial grasses on non-wetting sand using modified machinery.

Background:

Subtropical grasses such as Gatton Panic, Rhodes grass and Signal grass are the most promising perennial pasture species for the light sand plain soils north of Perth. These deep sands are renowned for there poor productivity under conventional farming practices due to their low fertility, low water holding capacity and high water repellence. Subtropical perennial grasses must be established in early spring when soil temperatures are rising. As rainfall is declining at this time of the year it is critical to get the seed to germinate quickly by sowing into damp soil.

Some farmers have converted old combines to establish their perennial grasses using the "furrow sowing" technique. Scalping away the worst of the non-wetting sand and sowing into the damp sub soil has significantly improved establishment. This demonstration compared two modified machines with a conventional combine fitted with knife points and press wheels.

Soil Type:

Deep non-wetting sand

Rainfall:

Average annual rainfall: 500 mm

2009: 451 mm

Method:

Weeds and insects were controlled with a double knockdown prior to seeding.

Seeded 27 August 09.

All the combines were calibrated to sow 4 kg/ha of the Heritage Seeds Evergreen Northern Mix (Gatton Panic 60%, Rhodes grass 20%, Signal grass 20%).

Machinery:

- Conventional International combine fitted with knife points and press wheels on 18 cm row spacing.
- Modified Chamberlain combine fitted with plough discs for scalping non-wetting sand and press wheels on 65 cm row spacing.
- Modified Massey combine fitted with scalping points, Soil Rider tynes and press wheels on 62 cm row spacing.

Table 1. Seedling density measured in plants per m^2

Machine	Chamberlain	Massey	International
17/09/09	4.5	17.9	5.4
6/10/09	11.1	24.7	16.6
22/10/09	17.8	69.2	21.9
21/12/09	10	18.4	15.5
30/03/10	5.4	7.7	7.2

Seedling numbers were counted (per metre of row) over the spring, summer and autumn and converted to a plants per square metre basis.

Results:

The plots were checked on 7 Sep 09 (10 days after seeding) but no seedlings had germinated.

25 mm of rain fell on September 10 & 11.

The plots were checked on 17 Sep 09 and the following seedling densities were observed:

- The conventional International combine averaged 5.4 plants/m^2, varying from 0 to 30.
- The modified Chamberlain combine averaged 4.5 plants/m^2, varying from 0 to 12.
- The modified Massey combine averaged 17.9 plants/m^2, varying from 0 to 52.

Seedling numbers increased with the next two counts (both in October), as the soil temperature rose and further rain fell.

As the moisture availability declined (and temperatures rose) over summer, the seedling density declined in all plots. However, the plots with the highest densities suffered the most from competition and lost a greater percentage of seedlings. It must be noted that a decline in seedling density over summer is a very normal event, with the weaker seedlings dying and the stronger ones surviving. Summer rainfall events can halt this decline in density.

Conclusions:

The modified Chamberlain combine was excellent at scalping the non wetting sand away from the seed bed but as it just dropped the seed in the bottom of the furrow there was little or no soil coverage of the seed. This significantly reduced the germination. A tyne or other modification (finger tyne harrow, snake chain, etc) fitted behind the plough disc would have

Continued

International

given better soil coverage and seed-soil contact, enhancing the germination. It must also be noted that there was very little furrow in-fill due to the wide furrow shape, the excellent soil moisture levels and lack of strong wind events post-sowing. Normally some furrow in-fill can be expected, and this can provide the required level of soil coverage (and sometimes too much!).

Chamberlain

The modified Massey combine had the best germination (well done DAFWA!). It combined adequate scalping of the non-wetting top soil with excellent seed placement (thanks to the Soil Rider tynes). The challenge is to re-create this result with cheaper modifications, as the Soil Rider units are expensive. Interestingly, the initial very high seedling density combined with the dry summer resulted in a big decline in plant numbers between October and March.

The conventional International combine did not scalp any of the non-wetting sand away from the seed bed. But by increasing press wheel pressure, it did create small furrows that were effective in water harvesting. Combine this with the reasonably favorable Spring rainfall, and the result was OK. We did notice that this machine gave a higher percentage of Rhodes grass and less Panic. This reinforces our belief that some form of modified machinery is needed to achieve a reasonable and reliable germination of Gatton Panic.

Farmer's Perspective:

Bob Hendry (the manager of Flora Downs) said that he had a very successful establishment year in 2009. He considers the Evergreen Northern mix as an ideal mixture for his conditions. Contrary to some farmer's views, Bob likes the Rhodes grass component as it tends to cover the sandy hills and blow holes. In some parts of the paddock establishment was much better, sometimes up on the hills, and Bob said it was hard to pin point reasons for this.

In the demonstration plots Bob said the DAFWA Massey combine with the Soil Rider tynes gave the best results. Bob didn't like the modified Chamberlain with the plough discs as it left the paddock too rough to drive across and his machine gave similar results. Bob said that he was considering doubling the row spacing of his machine and experimenting with a soil wetting agent.

In the future, Bob said he would sow serradella in the paddock the year before sowing perennials. This would establish a large seed bank of serradella for years to come. With his existing perennial paddocks Bob is intending to broadcast out some serradella pod to improve legume content.

Massey

"Show us your grass"

Grazing Canola at Narrikup

Kelvin Ridgeway of Narrikup sowed this paddock to the hybrid Canola variety 46Y78 in April this year on the back of good March rains. He then grazed it for most of June with cows and calves. Kelvin said the cows took a while to adapt to it but then did really well on it. It has now been locked up for harvest. Photo 7 July 2010.

Moby Grazing Barley at Manjimup

Brain Cole of Manjimup dry seeded 80 kg/ha of Moby Grazing Barley in to this annual pasture paddock in late April using a no-till drill. It has greatly enhanced early pasture production without appearing to affect the sub clover based pasture, which is thick beneath the barley. This photo was taken just prior to the first grazing. Photo 15 June 2010.

Lucerne and Chicory under Canola

Marcus Sounness of Borden has sown Lucerne and Chicory with one of his IT Canola crops this year. A number of farmers have successfully established lucerne under IT canola before but it is unknown if we can do the same with chicory. The limiting factor being the tolerance of chicory to the herbicide Raptor. This photo was taken not long after the Raptor was applied. Photo 1 July 2010.

Pasture Cropping with Field Peas

Morgan Sounness at Wellstead has sown a Kaspa Field Pea crop in to one of his kikuyu paddocks this year. The paddock was sprayed with SpraySeed to kill annual weeds and slow down the kikuyu prior to sowing with a no-till disc drill. Morgan hasn't worked out yet if he will harvest the peas, cut them for hay, leave them as a standing fodder crop or graze them out... Too many options! Photo 2 August 2010.