Evergreen FARMING

Sustainable "Green Farms All Year Round"

www.evergreen.asn.au

Newsletter of Evergreen Farming **March 2007**

The Evergreen Revolution!

Agriculture in Western Australia is undergoing an Evergreen revolution. More and more growers are adopting perennial pastures to significantly enhance farm profitability and sustainability. The current drought looks set to accelerate this adoption as the benefits of out of season feed and better groundcover are so clear to see.

However, significant ongoing investment is needed to develop and adopt these new and innovative farming systems. With perennials, one size doesn't fit all, so a whole range of species and management practises are needed to cater for the diversity of climates, soil types, livestock classes, and people that exist. We have come a long way but in reality we have only scratched the surface. We need to make perennials a viable proposition for EVERY farm, not just those with the right rainfall or soil type. Let's make it happen!

Highlights from the drought. Clockwise from top left: A trial plot of Gatton Panic at Esperance; Cattle grazing sub-tropical grasses at Jurien Bay; newly sown Rhodes grass at Esperance; a trial plot of Rhagodia at Badgingarra.

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Statewide Snap Shots - Summer 2006

Melik Tall Fescue

A 30 year old clump of Melik Tall Fescue at Geoff Grewar's farm east of Esperance. All the modern winter active Tall Fescue varieties such as Resolute, Fraydo and Flecha have been bred from Melik. It was bred by CSIRO in WA during the 1960's. Photo 8 February 2007.

Vitamin E

Joe Young of Kojonup has fenced off most of his creek lines over the years. They now contain a thick stand of salt water couch and in some cases Phalaris. He uses them as a source of Vitamin E for sheep over summer, letting a mob in for a day or two every month. It is a far quicker and easier alternative to yarding and injecting them. Photo 20 February 2007.

Rhagodia

An old Rhagodia plant on Geoff Grewar's farm east of Esperance. Rhagodia is a native shrub that is very palatable to livestock. This photo shows how the sheep have grazed every leaf from the lower branches. Geoff says Rhagodia is common on both heavy and lighter soil types around Esperance. Photo 8 February 2007.

Winter Active Tall Fescue

Winter active tall fescue shows promise on heavier textured soils in the south of WA. It has the ability to completely shut down over summer and become dormant, greatly improving its persistence. This photo of Fraydo tall fescue at a Kojonup trial site shows just that. Consider mixing it with Tall Wheat Grass when sowing low lying waterlogged sites in the Great Southern and South Coast. Photo 20 February 2007.

From the President

Erin Gorter, Kojonup, Phone: (08) 9833 7524

Farming in 2007 - I think we are all wondering what nature has in store for us this year! Hopefully a bumper season, or should we say bumper seasons as perennial pastures become of greater importance outside the traditional 'season'. Few weeks go past lately where we don't read of climate change and global warming. Will these factors change the way we regard agriculture in WA - what we grow, where and when we grow it? Time will tell!

In the meantime, those on the Evergreen Committee have been devoting many hours to looking forward and planning what Evergreen has to offer now and into the future, whatever it may bring. I would like to thank them all for their time and enthusiasm in helping keep Evergreen Farming at the forefront of perennial pasture innovation in this state and beyond. Our members have also been integral in this as we try to continue to consult you all on how Evergreen membership can continue to be some of the best tax deductible money you spend every year!

We received some highly valuable input from the surveys sent out in the last newsletter. The information gathered is helping us to improve the services we offer as well as help attract funding to continue the invaluable research and development that we have been conducting. It was phenomenal to recognize through these surveys that producers in WA could be planning to sow up to 24,000 ha of perennial pastures in the coming year. Of course, the question then beckons as to seed supply for such plantings. Evergreen Farming is pursuing this issue to try and address possible seed shortages.

2007 will again see Evergreen organizing some important events around the state for those interested in incorporating perennial pastures in their farming systems, both for those new to the experience and those who continue to gain benefits from doing so. I look forward to seeing many of you at some of these events.

Member Survey 2006

We would like to thank everyone who participated in the survey last December. We received many interesting comments and results.

Congratulations to Simon & Denise Combes, the lucky winners of a year's free membership.

Growers indicated that the area of perennial pastures anticipated to be sown is very likely to exceed 40,000 hectares by 2009 and that the likely demand for seed in 2007 and 2008 may be in the order of 15-50 tonne. Many growers requested assistance in sourcing seed of sub tropical perennial grasses (such as gatton panic), kikuyu and tall wheat grass.

Evergreen members indicated that their preferred methods of obtaining information are field days and "Evergreen" newsletter. Interestingly, many members indicated that they did not access the website and preferred hard copy information. So much for tech savvy farmers!

92% of survey respondents plan to plant perennials over the next 2 years with 37% sowing more than 100 ha each. 98% of surveyed respondents stated they had learnt something from their Evergreen experience that had prompted change.

This information and the rest of the survey is invaluable to Evergreen and the industry so once again thankyou to those who participated.

Charlene Kolman

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Plant Densities & Summer Production

John Titterington & Geoff Moore, DAFWA, South Perth, Ph: (08) 9368 3938.

Significant advances in plant establishment techniques has seen the sowing of sub-tropical perennial grasses improve enormously from patchy seedling emergence to continuous drill runs like a cereal crop.

With these major advances in establishment we have seen plants at higher densities being stressed by competition for moisture, what we refer to as the *edging effect*. This is particularly evident following out-of-season rainfall events of 20-40 mm, when the sub-tropical grasses should be showing their full potential.

Typically the plants on the edge of a plot adjacent to the buffer are healthy and growing strongly while the neighbouring plants in the middle of the sward show signs of moisture stress with minimal growth. However, single plants on their own will look impressive but the overall biomass per hectare will be disappointing.

It begs the question. What is the ideal plant density? This is especially relevant with bunch grasses like gatton and green panic which show good adaptation in many environments and have the added benefit of superior feed quality (65-70% digestibility compared to 55-60% for rhodes grass).

A trial was established in October 2006 with swards of gatton panic at different densities (1 plant every $2m^2$ to 16 plants/m^2)

at north Wellstead by the Establishment project funded through the Salinity CRC to determine optimum plant densities. Plant size and herbage production of both the perennial and annual components will be measured over the duration of the trial. Initial measurements taken last month have already shown significant differences in herbage production. The photo above shows the different plant densities and the edging effect on the higher density swards. The plan is to repeat this trial in different environments in spring 2007.

Determining the optimum plant density may bring potential cost savings with lower seeding rates. Stay tuned.

"Evergreen Committee Gets Down to Business"

On 5th and 6th of February 2007 your committee got together to monitor and evaluate Evergreen's performance and objectives.

A comprehensive review of the past five years of operation was conducted to identify areas of good performance and areas to be improved. Vision and mission were revised and most importantly new opportunities and needs identified.

Discussions were expertly navigated by the captain of proceedings Bevan Bessen. An executive summary of the revised business plan will be posted on the website in April and members can obtain a complete copy if they wish.

It is clear that the newsletter, communication and the research activities are highly regarded. More needs to be done to improve and communicate member value. However the committee unanimously agreed that ***"Evergreen has made a big difference to perennial pastures adoption in WA."***

Looking forward key opportunities could include Climate change, carbon credits and the recent drought. Naturally improving our agronomy of perennials is also on the agenda. Evergreen needs to ensure a back-up for Philip Barrett-Lennard as our key technical specialist and to further build its vital relationships with members, funders and supporters.

Participants *("the usual suspects") clockwise from the left: Craig Forsyth, Erin Gorter, Philip Barrett-Lennard, Bob Wilson, Tim Wiley, David Monks and John Duff*

Perennial Pastures at Esperance

Matt Ryan & Harvey Jones, DAFWA, Esperance, Ph: (08) 9083 1107.

A recent survey of beef producers in the Esperance region has revealed some interesting facts about perennial pastures. The survey captured information relating to individual beef enterprises from 25 per cent of producers in the region. These included producers from the sand plain on the coast right through to the cattle farmers in the mallee. Of all the producers surveyed 72 per cent had some form of perennial pasture growing on their property. Of the producers who had perennial pastures the average area of perennial pasture on their property was 18 per cent. The graph below shows the area of perennial pastures by the proportion of farm income that comes from their cattle enterprise. As the proportion of cattle increases so does the area under perennial pastures.

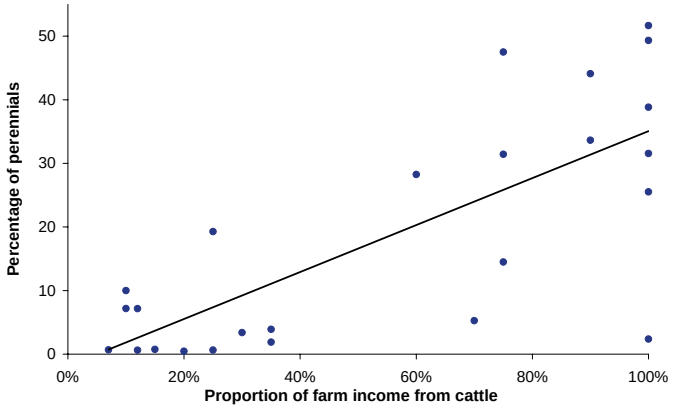


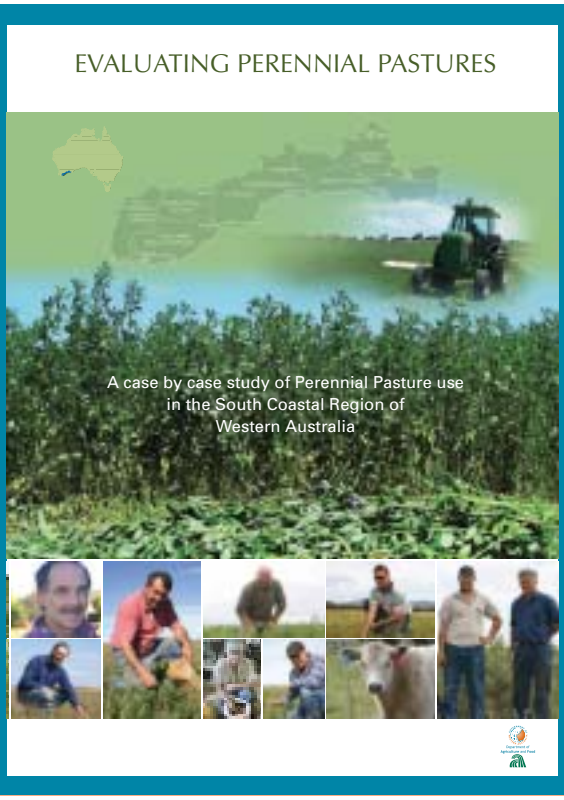
Figure 1: The proportion of farm income from cattle verses the area of the farm under perennial pastures.

The survey captured the percentages of individual species that are being grown in the region and the number of producers growing each of the species. Table 1 shows the percentage of the producers (from the survey with perennial pastures) with each species of perennial pasture.

Kikuyu is still the dominant perennial pasture making up more than a third of the perennial pasture in the region.

Table 1: The number of producers growing each perennial species and the percentage of each species grown in the region.

Perennial	No. of producers (%)	Total Perennial area (%)
Kikuyu	60	35.9
Velt grass	24	20.8
Rhodes grass	8	0.1
Phalaris	24	16.4
Tagasaste	12	0.2
Strawberry clover	8	6.4
Tropical grass mix	16	2.2
Perennial ryegrass	8	5.1
Other	48	13



Evaluating Perennial Pastures booklet

A book showcasing 17 progressive farmers on the South Coast should inspire many who have been thinking of planting perennial pastures to make use of their out of season rainfall.

The book culminates a two year research project managed by the Department of Agriculture and Food (DAFWA) which was funded through the South Coast Regional Initiative Planning Team (SCRIPT) and the National Landcare Programme. It was published by Esperance Regional Forum (ERF).

The glossy 86 page Evaluating Perennial Pastures book gives handy tips on planting and managing perennials and also has had an economic analysis done on each paddock-scale trail within each of the case studies.

The book has been produced as part of a major collaborative NRM project underway along the South Coast which is working to address key degradation issues in priority catchments.

Call DAFWA Esperance on (08) 9083 1111 for a copy.

Think whole-farm and dare to be different

Georgina Wilson, Communications Officer, CRC Salinity (WA), Ph: (08) 6488 7353.

Jeff Patterson with seedling lucerne under a cover crop of barley in very dry conditions, 2006.

Lucerne is often considered a high rainfall plant, but Jeff Patterson, east of Dumbleyung in WA has seen the opportunity to make it a successful component of his whole-farm operation, as he described to Georgina Wilson.

"When I took over the property completely in 1990 we were a traditional operation of wheat and sheep on annual pastures, with a one to one rotation on the better country and one year of crop to two of pasture on the rest. At that stage salinity was affecting about 240 hectares, mainly in the valley floors, and growing from both the top and bottom of the slopes.

I tried lucerne on 120 ha around the salt in 1994 and it struggled. 1995 was very wet and urea needed to be spread by air to prevent machinery becoming bogged. However, the pilot was able to land on my lucerne block safely!

That was the start of seeing what lucerne could do. The next year I planted another big block then divided the farm into eight units, four for crop and four for a lucerne phase at any one time.

I can't afford not to crop, and in 2001 started cover-cropping on about 280 ha after two bad years. I got confidence from that, and most years put that much in, while a similar area comes out. Cost to establish is about $120 to $140 as a monoculture. Cover-cropping barley I expect three-quarters of the yield of a monoculture. In 2005, a wet year, I established lucerne under canola for the first time, and this performed even better with no loss of grain yield.

In the last year I've established lucerne in a mix with annual subclover and balansa. That gives good production throughout the year. With its deep roots lucerne helps break up the ground (a biological deep ripper) providing channels for the next wheat crop and better soil fertility. Even in dry seasons I have found it gives a two bag and 2% protein benefit.

I run about 2,500 Merino ewes, 2,000 hoggets and 2,000 lambs at the peak. I don't spray-top to remove weeds such as ryegrass but use winter cleaning, as we can't afford to shorten the growing season of the annual pasture plants mixed with the lucerne. No ryegrass plants survive and I use fewer chemicals.

Our rainfall is outside the recommended zone but I believe you can take lucerne anywhere you can grow wheat. The obstacle for many people is being prepared to change their rotations, and not spending that money to remove the lucerne next year.

What farmer wouldn't want extra out-of-season quality feed plus product diversification such as seed and hay even if livestock isn't for them. In January to March 2006 for example I had 120 ha of knee-high lucerne. What a bonus in a dry year!

After 13 years, some salt has retreated, perhaps under the local influence of the lucerne, but new areas have also appeared. The challenge is to mimic nature, work with it and produce the most food and fibre we can, profitably. While we use less rain than we get, salt will still be mobilised, and once mobilised we have a problem.

It's obvious that our farming systems have stuffed up. Some farmers believe drainage is the answer to get rid of the salt, but this won't work unless we change the system as well. Farming is like medicine. There's little point in doing lap-band surgery if the patient doesn't eat better afterwards. Unless we change our ways to control the water below, we will continue to suffer salinity. No reclamation will be sustainable long-term without a change of land use.

In 1999 I received a Churchill Fellowship, allowing me to travel to the United States and Canada. At Highwood in Montana it was amazing. In 1941 there was less than 1% of natural salinity. But then the sodbuster moved in and ploughed up the native grasses for intensive cropping. By 1971 a third of the area was lost to salinity, but after 30 years they have

Continued

returned it to only 3% salt using lucerne, salt-tolerant pastures and flexi-cropping or phase farming.

If we could get half that result in double the time, it would still be a wonderful win!

Think whole-farm, think long-term and don't be afraid to be different."

Key points

- The challenge is to mimic nature and work with it to maximise production - profitably
- Salinity can't be overcome just by concentrating on affected land - it must be a whole-farm strategy or preferably whole landscape
- Lucerne can work anywhere you can grow wheat.

Lucerne with windrowed canola, 2005.

Science behind the story

By Dr Perry Dolling

Compared with conventional annual-based farming systems, a lucerne-based system dries out more of the soil profile. WA trials generally show that lucerne systems tend to have ~15-80% or 20-130 mm less water in the soil profile over the summer than annual systems. Although lucerne is sensitive to waterlogging, if it can establish in a drier year it can prevent future waterlogging.

Like most legumes, lucerne pastures improve soil fertility through nitrogen fixation. A healthy lucerne stand can add 10-20 kilograms of nitrogen per tonne of above-ground dry matter to the soil annually (~50-90 kg N/ha/yr). This is usually just below or equivalent to an annual legume pasture (e.g. clover). However, in response to high summer rainfall events, lucerne stands are able to fix more nitrogen due to greater dry matter production.

However, lucerne does not release yearly flushes of nitrogen like annual legumes. Its perenniality means it will only release a flush when stands are terminated. Soils around lucerne are often low in nitrogen as its release from fixation and decaying residue is quickly taken up again by the living plants. In infertile situations, lucerne will fix and use its own nitrogen with any excess released into the soil. As this increases, plants preferentially switch to the soil nitrogen pool only to revert back to fixed sources when the pool is depleted.

Lucerne can improve soil porosity and enhance subsequent crop root exploration. The crop can grow in old root channels, and combined with improved water infiltration result in crops extracting more water. This is likely to be soil and season-specific, therefore cannot be relied on every year.

Ongoing research by Daniel Murphy and Francis Hoyle has shown direct connection between the biological fertility of soils and crop yield. The key to biologically active soils is that they host many micro-organisms which decompose organic matter which in turn releases plant-available nitrogen. It has been shown that such nitrogen cycling is sufficient to satisfy 80% of crop demand for nutrients without additional fertiliser. Rotational practices that incorporate a pasture phase, in particular lucerne, result in higher microbial biomass and greater supply of biological soil nitrogen.

A sowing rate of 2-3 kg/ha is sufficient for low to medium rainfall areas which should result in a density of 15-25 plants per square metre. This should persist for at least three years if there is some rotational grazing, especially during dry summers. In addition, this density will allow winter cleaning of weeds using broad spectrum chemicals.

Lower density of under 10 plants/m^2 is okay if other species such as subterranean clover are present. However, winter cleaning may not be an option if the density is too low.

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Demonstration of perennials in the West Midlands

Dr Jill Wilson, Rural Solutions WA, Ph: (08) 9655 2323.

A new farming systems project being carried out by the West Midlands Natural Resources Group, has a focus on introducing more perennial pastures. The project area is in the south of the Dandaragan shire and the north of the Gingin shire, and is loosely based on the Minyulo catchment.

A recent activity of the project, in association with Tim Wiley of DAFWA, is the implementation of trials to demonstrate various perennial grasses, legumes and herbaceous pasture species. Three trials are being carried out, on yellow sand at Kim & Lyn Glasfurd's property, on red earthy sand at Graham & Margaret Murphy's property, and on poor white sand at Richard & Pam Hamilton's property.

Very interesting differences between sites and species have developed, with the red earth site showing the best growth. However, even on the poor white sand many of the grasses look very promising.

Current observations

- The grasses started slowly but several showed excellent establishment after 5 months: Gatton Panic, various Rhodes grasses, Digit grass and Bermuda grass are all performing well.
- Lucerne started strongly at all sites, but suffered severe water stress over summer and in some places has died out completely.
- The establishment of Lotononis on the red earth is promising, considering difficulties usually experienced, and warrants futher work.
- Mulla Mulla, a native forb, may well have promise however the development of a seeding methodology is required.
- Kikuyu is likely to do better on wetter sites - all three of these sites were deep dry sands.
- Bissett blue grass is more suited to heavy country and was therefore not expected to perform well.
- Establishment of grasses in the white sand, while slower than other sites, is still promising.
- Chicory is well established at the red earth site and is worth following.

The project manager is Dr Jill Wilson of *Rural Solutions WA*, with Penny Keenan acting as project officer. If you have suggestions or comments, contact Jill on 9655 2323 or jwilson@wn.com.au

Examples of some of the better species in the trial. Photos at 6 months in February 2007 at Murphy property

Perennial pastures for Western Australia

A new resource, **'Perennial pastures for WA'** a Department of Agriculture and Food Western Australia Bulletin brings together the agronomic and management information on perennial pastures for WA. It will help to empower farmers and their advisers with the information they require to integrate perennial pastures into farming systems with confidence. The book is an output from a joint project between the Department of Agriculture and Food WA and the CRC for Plant-based management of dryland salinity with funding from GRDC.

Perennial pastures for WA is a comprehensive, user friendly publication with a target audience of producers, farm advisers, agribusiness and students. The editorial team has brought in many leading pasture agronomists and scientists from related disciplines (>20 authors) to contribute to this publication. It includes a comprehensive reference list.

There are nine chapters in **Perennial pastures for WA**. The first two chapters cover both the benefits and potential negative effects of perennial pastures, the economics of perennial pastures (F. Flugge), grazing management (P. Sanford), animal production from extensive grazing systems (H. Norman and D. Masters), animal toxicity (J. Allen), internal parasites of animals (B. Besier) and the green bridge (R. Jones and D. Wright).

This bulletin should be available by the end of March and a review will be included in the June edition of the

Perennial pastures for Western Australia

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Pipe dream or possibility?

Roy Butler, District Veterinary Officer, Dryland Research Institute, DAFWA Merredin, Ph: (08) 9081 3111.

When I arrived in WA's eastern wheatbelt from Tasmania, many years ago, I wondered whether perennial pastures could be practical and profitable in this hot, dry, infertile place. The answer from locals was a definite NO. I now believe the answer is probably yes, but with some qualifications and provided the pasture is based on native perennial grasses. Following is some background to why I have come to this belief and some of the obstacles to adoption of perennial pastures in the eastern wheatbelt.

My wife and I have owned 33 hectares on the western outskirts of Merredin since 1992. It was previously part of a large, conventional wheat-sheep farm. The soil ranges from sandy Salmon gum to red clay-loam. Since purchase it has not been cultivated and for the first few years of our ownership it was only lightly grazed. Suited by this "neglect", native grasses appeared. Presumably they emerged from seed of existing plants that survived around the perimeter and along nearby roadsides. These native grasses multiplied and seemed promising as the basis of a pasture, hence I bought several sheep to observe how sheep and pasture performed together. I chose Dorpers for their claimed ease of management and because I like their appearance.

Over the years the number, density and variety of perennials in the pasture has increased. The quantity of some annuals, such as barley grass, ryegrass and capeweed has declined. The native perennial grasses, including both summer and winter active species, are all volunteers and nothing has been sown. Native species include the one I first discovered and which still predominates, *Enteropogon ramosus* (formerly *E. acicularis*), plus *Chloris truncata*, *Enneapogon polyphyllus*, *Aristida contorta*, and unidentified species of *Austrostipa* and *Austrodanthonia*. There is also a range of common introduced annual grasses, legumes and capeweed. The only objectionable weed is caltrop due to its seeds. However it has not caused any sheep health problems as the natives rapidly out-compete it following summer rain.

There is an increasing amount of bluebush (*Maireana brevifolia)*, which provides useful feed and shelter. However soil plant cover is declining between the bluebush plants.

Pasture inputs have been low. Fertiliser (ordinary super) has only been applied once, in 2002. Gramoxone®, for barley grass and rye grass seed control, was applied in three consecutive years in the early 90's.

The sheep are run as a single mob, rotationally grazed. A ram runs continuously with the flock. Lambs are dropped year

round as Dorpers breed any time of year if adequately fed. The flock produces 120-140% lambs per year from ewes defined as any female sheep over 40 kg. Stocking rate fluctuates but averages about 3.9 DSE/ha year round. Supplementary feeding of hay and lupins is usually required from November to March or April according to need. Sheep growth rates are highest in July and August when annual grasses, legumes and capeweed constitute a major portion of their diet.

Overall sheep performance is good and inputs are low for Dorpers as no shearing, crutching, mulesing or fly treatment is required. Over the years several sheep have suffered from a variety of disorders but there have been no metabolic or nutritional problems. I believe the pasture mix provides the sheep with most of their nutritional requirements. Pasture composition changes gradually over the seasons, hence my sheep do not face the radical dietary changes commonly experienced by wheatbelt sheep. For wool-growing sheep this would be an advantage.

For a hobby farmer in the eastern wheatbelt, perennial pastures based on native grasses are definitely possible, productive and persistent. They are easy to manage, only require low inputs and provide some feed all year round. Once established, they can tolerate occasional very hard grazing and long, hot dry periods and will bounce back when rested or it rains. I confess I am a True Believer in relation to native perennial pastures. However, when wearing my DAFWA scientific hat I am more restrained. Commercial farmers in this area have some good reasons to be wary about the adoption of perennial pastures.

Eastern wheatbelt farmers have two main practical concerns in relation to perennial pastures: establishment and integration. A third, over-arching concern is whether it is beneficial to introduce perennial pastures into the current annual-based

Continued

system that is familiar and reasonably profitable. Perennial pastures generally, and native perennial pastures especially, can be costly and difficult to establish and establishment will take time. On our farm, with natural grass regeneration only, the density of the native grasses reached what seems to be their limit only after four or five years, during which time grazing pressure was very low. Assuming the pastures can be established, there is a need to develop systems to integrate them with annual cropping, because crops still make economic sense for eastern wheatbelt farmers.

I hope that, within a few years, these concerns will be resolved by Western Australian researchers and farmers, as they have been to some degree in the eastern states. Considerable work on native pasture establishment (and its necessary precursor, seed supply) has been done in recent years. Work is still in progress to provide reliable, cost effective recipes for native pasture establishment on a commercial scale. Regarding integration of native perennial pastures and annual crops, one method (often termed pasture cropping) has been developed by New South Wales farmers and validated there by researchers. Pasture cropping could work here but we won't know until it's tried; for WA there may be other systems for integrating annual crops and perennial pastures.

There is still considerable work to conduct and data to collect, before farmers in low rainfall areas, such as the eastern wheatbelt of WA, will take any more than polite interest in native perennial pastures. Over to you, Evergreen Farmers.

What happened to high-performing businesses during the drought?

Holmes Sackett & Associates, Wagga Wagga, NSW, Ph: (02) 6931 7110.

One of the key questions from the drought is how well those businesses and enterprises that had performed consistently well in the years prior to the drought actually performed during the drought year.

Good performance in average and better years is associated with, among other things, a stocking rate that is above the district average. These businesses usually also have high levels of labour efficiency. The combination of these factors may mean that such businesses are less resilient during droughts because their high stocking rates increase the severity and cost of the drought. At the same time, high levels of labour efficiency may mean that the additional labour demands during a drought cannot be met and the whole system frays around the edges, or worse still, collapses. One of the reasons that this question is so important is that many managers perceive the risk associated with highly productive systems as being too great in the below-average years. Therefore, their risk management strategy is to accept lower profitability in the average and above-average years to minimise the impact of the occasional bad year. What is the best approach to adopt?

To look at this question, Holmes Sackett & Associates selected farms from those that had participated in their previous benchmarking programs according to the following criteria:

- They had at least three years data prior to the drought.
- They had data for the drought year & were drought affected.
- They were grazing farms, because this question is more relevant to grazing enterprises than cropping enterprises.

All farms that met the above criteria were than ranked according to their average profitability over the years prior to the drought. Profit was measured by return on total assets. The profit for the drought year was then calculated for each group according to their predrought performance. The results are shown in Figure 1. This shows that, as a group, those farms that performed well in the years leading up to the drought continued to perform above average during the drought. Those that performed poorly leading up to the drought performed even worse during the drought. For the 2002/03 drought, those that coped best were the ones that ran the best businesses

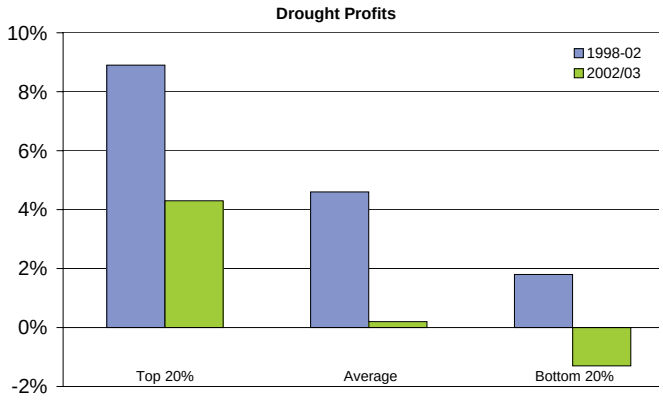

Figure 1. The most profitable grazing farms prior to the drought were also the most profitable during the drought.

leading up to the drought. These businesses did not fall in a heap during the drought, even though the general perception was that they were running higher-risk systems.

If we take these figures and apply them to a theoretical farm over the same 6-year period, culminating in the drought, the cumulative profit over the 6-year period is shown in Table 1. These figures are based on the average asset value of farms in this sample, which was $3.5 million. Over the last 6 years, the farms that have been run profitably have had cumulative profits of $1.75 million, or an average of $284,000 per annum. Compare this to the bottom 20%, which had average returns of $45,000 per annum.

Some issues could not be measured in the benchmarking conducted by Holmes Sackett & Associates, such as any effect on pasture composition or persistence, soil loss, etc., so it is not known whether those that survived the drought well did so at the expense of their natural resource base. However, from experience of management strategies during the drought, it is unlikely there was a major difference between farms in each of the groups. If anything, those that were more productive had invested considerably more in pasture productivity over the years, so their managers were often more conscious of implementing strategies to preserve soil fertility and improved pastures.

This shows that foregoing profits in the average and good

Table 1. Over six years, including the drought, the more productive businesses generate a lot more profit.

Group	Average Predrought Profit	Drought Profit/Loss	Cumulative Profit 1998-03	6-Year Average
Top 20%	$311,000	$150,000	$1.075 M	$284,000
Average	$161,000	$7,000	$0.812 M	$135,000
Bottom 20%	$63,000	-$45,000	$0.270 M	$45,000

Continued

years as a strategy to manage the bad years certainly did not work leading up to and during the 2002/03 drought. By adopting that strategy, returns over the 6-year period would have been reduced by a total of $1.435 million for the average farm in this group. The reason it did not work was twofold. Firstly, those that have low profitability do not perform better in the bad year; they actually just get worse. Secondly, and more importantly, the conservative strategy means so much foregone income in the more normal years that, even if it was better during the drought, the advantage would have to be very large to compensate for the income foregone.

Did the same results apply at the enterprise level?

To look at the effect at the enterprise level, Holmes Sackett & Associates selected beef herds and wool flocks using the same criteria as discussed for the whole farm. The results are shown in Tables 2 and 3. Both results show a very similar picture, with those that performed better during the predrought years also performing better than average during the drought year. For beef cattle, each group had a big decline in net profitability, with the size of the decline greatest for the top 20%, which fell by $17/DSE compared to $13 for the average. However, because the bottom 20% only had a profit of $1.91/DSE prior to the drought, a fall of $12 puts them seriously into the red. In comparison, the top 20% had a larger margin before slipping into the red, so their fall of around $17/DSE still resulted in a loss during the drought year but not nearly as large as for other herds. Note that all herds had a substantial increase (approximately $1.00/kg) in their cost of production, but the top 20% still managed to produce beef at $1.59/kg compared to $2.43/kg for the bottom 20%

The results for the wool flocks were very similar, in that all declined during the drought, as one would expect; but those that were the most profitable in the years prior to the drought still had above-average profitability during the drought. In fact, they managed to avoid any loss. The cost of production increased by about $4/kg for each group, but the top 20% still produced wool for $9.10/kg clean, which was $1.47/kg below their average price. On the other hand, the bottom 20% increased their cost of production to $11.18/kg clean, resulting in a net loss.

These results at the enterprise level support what showed up at the whole-farm level: that those that have more productive and profitable enterprises over the long term were not the ones most severely affected by the drought.

For more information or to purchase a copy of AgInsights – Knowing the Past: Shaping the Future, *contact Holmes Sackett & Associates on (02) 6931 7110 (phone), (02) 6931 7113 (fax), or hsa@hs-a.com.au (e-mail). Holmes Sackett & Associates' website is at www.hs-a.com.au.*

This article is extracted from AgInsights – Knowing the Past: Shaping the Future, which contained the outcome of comprehensive industry benchmarking studies by independent agribusiness consultants Holmes Sackett & Associates. It displays the detailed results of the performance of a group of farm businesses, presents some interesting findings, and challenges some of the long-held and widely promoted ideas on how droughts should be managed.

A flyer about AgInsights has been included with the newsletter delivery.

Table 2. The most profitable beef herds prior to the drought were less severely affected by the drought.

	Net profit/DSE		Cost Production/Kg Beef		Price Received/Kg Beef	
Group	1998-02	2002/03	1998-02	2002/03	1998-02	2002/03
Top 20%	$14.34	-$2.97	$0.69	$1.59	$1.47	$1.56
Average	$7.86	-$5.53	$0.94	$1.83	$1.38	$1.46
Bottom 20%	$1.91	-$10.79	$1.30	$2.43	$1.34	$1.27

Table 3. The most profitable wool flocks prior to the drought were less severely affected by the drought.

	Net Profit/DSE		Cost Production/Kg Clean Wool		Price Received/Kg Clean Wool	
Group	1998-02	2002/03	1998-02	2002/03	1998-02	2002/03
Top 20%	$9.33	$3.32	$5.59	$9.10	$8.27	$10.57
Average	$3.48	-$3.55	$5.89	$10.84	$7.10	$10.19
Bottom 20%	-$3.48	-$6.04	$7.07	$11.18	$6.67	$10.30

Making the most of moisture and spring sowing

Gordon Dodd, Jurien Bay, Ph: (08) 9652 1792.

A wet seepage area with a thick stand of kikuyu and strawberry clover

Green grass in summer was something unimaginable to Gordon Dodd when he farmed at Kalannie in the NE Wheatbelt. The long, hot and dry summers produced the iconic image of a brown and dusty land.

But after 7 years of 'semi-retirement" on the coast he is now surrounded by an oasis of green feed all year round. But it didn't just happen. By establishing perennial pastures, and a bit of hard work, he has transformed his 700 acre "hobby" farm at Jurien Bay into a showcase of sustainable farming in the West Midlands.

The farm runs along the southern bank of the Hill River about 20 km east of Jurien Bay. The soil is mainly sandy, much of it deep and non-wetting, but with some gravel on the hill tops and clay nearer the river. There are a number of mostly fresh seepage areas as the farm is located relatively low in the landscape.

Gordon started sowing perennial pastures in 2000 following summer rain. He sowed in Autumn and only had a patchy germination. He soon learnt after attending an Evergreen Field Day in 2001 that he should have sown in Spring.

That original autumn sowing, however, eventually came good after some careful management, and now contains a good stand of Tall Wheat Grass in a salty patch, Kikuyu and Strawberry Clover in a seepage area, and Rhodes grass over most of the rest of the paddock.

All sowings since then have been in Spring. This has significantly improved establishment and reduced the lag time until full production is reached.

Gordon has experimented with a number of different machines for sowing perennials including a combine fitted with either knife points, wide points, or discs. For the first sowing, the seed was simply spread on top of scarified ground with a super spreader.

He believes the machine he used in 2006 looks the most promising. It has evolved after a bit of tinkering over the years.

- A set of fairly wide, vertical points are used to push non-wetting sand out of the way to create a furrow.
- A seed tube follows, delivering the seed just in front of a press wheel.
- The seed is pushed into the bottom of the furrow.
- A small amount of soil falls in behind the press wheel covering the seed.
- A row spacing of 14 inches (35cm) is selected by removing every second tyne on the 28 run combine.

A mixture of species is always sown to better account for soil type variation within a paddock and to "have a look" at new species. The better performers so far have been rhodes, gatton panic and signal grass on the well drained sands, kikuyu, strawberry clover and setaria in the wet seepage areas, and Tall Wheat Grass in salty areas. Another species showing some promise is the sub-tropical legume siratro.

Gordon has now planted over 300 acres to perennial pastures but would like to see that rise to at least 80% of the farm, leaving just the gravels for annual sub clover based pastures and the occasional oaten hay crop. Most of the seepage areas have areas of kikuyu and strawberry clover. Productivity is expected to improve as rushes and reeds are controlled and the

Successful establishment of sub-tropical grasses in 2006 with furrow sowing

Continued

perennials colonise bare areas (mainly from seed in the cow dung). The well drained sands will continue to be sown to a mix of perennial grasses with an emphasis on Gatton Panic and Rhodes grass.

A flock of self replacing Dorper ewes graze the perennials year round, with the high quality feed allowing Gordon to lamb them down 3 times every 2 years. Gordon believes the extra lamb every 2 years is only possible with the perennial pastures. An un-economic level of grain supplementation would be required if this was attempted on annual pastures.

Trade cattle, mainly light weight ex-pastoral heifers and steers, are also run on the perennial pastures. These animals are grown out for 6 to 9 months before live export. The perennial pastures provide much greater flexibility for buying and selling times as feed supply is more constant throughout

The over the fence comparison - perennials vs annuals

the year. Gordon is not forced into buying in May and June when most other buyers are in the market. He is also not so concerned at selling time if boats are delayed. There is always a paddock with feed in it to keep them happy.

Minimal supplementary feeding is used.

Gordon realises that a productive perennial grass pasture requires a good annual legume companion to provide winter feed and fix nitrogen. Sub clover fails to grow on the deep sandy soils where the perennials grow well so he is looking at serradella as an alternative. Hard seeded yellow and pink serradella is disced into existing perennial grass pastures. A culti-trash drill with only one row of discs is used to cut through the perennials and place the serradella seed in contact with the soil. A following press wheel firms the seed bed.

Tall Wheat Grass growing on saline land

Gordon has applied SpraySeed before discing in the serradella to control annual weeds and slow down the perennials but was a bit concerned by the damage to the perennials. The majority of rhodes grass runners were killed and a small number of plants. So in 2006 he disced in his serradella dry before the break of the season. This worked reasonably well in a very tough year and has given him confidence to try this again, even though false breaks may cause the odd failure. He will also trial spreading serradella seed with Super in autumn.

Gordon's success with perennials at Jurien Bay has him thinking that it might also be possible at Kalannie as well, albeit on select soil types. Now there's another challenge.

A 28 run combine fitted with wide but steep points for furrow sowing

Statewide Snap Shots - Summer 2006

Gatton Panic Density

This trial at Esperance Downs Research Station was sown in September 2005. The plot on the left was sown at 4 kg/ha while the plot on the right was sown at 1 kg/ha. You can see that the density is higher at 4 kg/ha, but the individual plants are bigger at 1 kg/ha. The plants at the lower density have more water (and probably nutrients) at their disposal. Trials are underway (see page 4) to resolve what the ideal density should be. Photo 7 February 2007.

Gatton Panic

This is a plot of Gatton Panic at our Q&Q trial at Esperance Downs Research Station. Following a whopping 200mm of rain in early January, it produced 3 ton/ha of dry matter in 26 days! That is over 100 kg/ha/day. The plot was mowed at the end of January and this photo shows the recovery 1 week later. It was still going strong. By comparison, Kikuyu, Rhodes, Setaria and Premier Digit all produced between 2 and 3 ton/ha in the same period. Photo 7 February 2007.

First up success

Zac Roberts of Dandaragan was a first time grower of sub-tropical perennial grasses in 2006. He employed contractor Dan Rieussett to sow this 75 ha paddock in early September with his converted culti-trash combine on 21 inch spacings. Given the dry conditions, the germination has been excellent. The soil type is deep red "sugary" sand that is highly non-wetting. Photo 28 February 2007.

Green Panic

It appears that Green Panic may be less palatable than Gatton Panic. This paddock of Evergreen Mix at Esperance has a mix of species including both Green and Gatton Panic. All the Gatton Panic plants had been grazed down hard while the Green Panic plants were ungrazed. Much of the Rhodes grass was also ungrazed. This selective grazing is regularly seen when stock graze a mixture of perennials. Photo 8 February 2007.

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