EverGraze
More livestock from perennials

More perennials
Better livestock
Healthier catchments

Update

November 2012

Supporting Sites demonstrate impact on farm

Also in this issue

- New challenges with tropical perennial grass management in northern NSW
- Trading low productivity for high protection
- Pastures for place and purpose in bent grass country

www.evergraze.com.au

An Australian Government Initiative
CRC AUSTRALIA

EverGraze® is a Future Farm Industries CRC research and delivery partnership:

FUTURE FARM INDUSTRIES CRC
awi Australian Wool Innovation Limited
Charles Sturt University
Department of Agriculture and Food
NSW Department of Primary Industries
mla MEAT & LIVESTOCK AUSTRALIA
State Government Victoria Department of Primary Industries

EverGraze
More livestock from perennials

EverGraze Supporting Sites demonstrate impact on farm

As the Caring for Our Country *EverGraze* Supporting Sites draw to a close, a final evaluation reveals a plethora of positive outcomes.

With over 3,000 participants attending activities such as paddock walks, formal and informal training, technical expert discussions, field days and bus trips to see research and on-farm implementation, the impacts have been impressive.

The impact

Of course, attendance doesn't always amount to action, but the final analysis demonstrated that from 2009–12, changes made by producers impacted more than 200,000 hectares. These impacts result from changes to the feedbase (establishment of perennials), grazing management and soil management.

The estimated increase in production per year from Supporting Sites participants who have made and intend to make feedbase and grazing management changes will be 3.5–5.0 million kg of lamb (live weight), 572,718–820,085 kg wool (greasy) from prime lamb enterprises, 556,354–796,654 kg extra wool (greasy) from wool enterprises and 14.1–20.2 million kg of beef (live weight).

The analysis indicated that further changes and intentions to change sheep management practices will result in approximately 46,000 extra lambs weaned per year. All of these figures are very conservative as they don't account for participants making changes as a result of wider communication and interaction with service providers who attend activities.

Almost all Supporting Sites reported that perennials had persisted as a result of putting the *EverGraze* Principe of '*Right Plant, Right Place, Right Purpose, Right Management*' into action. Density of native grasses had also increased on some sites as a result of improved management practices.

Further environmental benefits included increases in ground cover, fewer weeds and reduced soil loss, demonstrating that the duel target of production and environmental benefits had been met.

Return on investment of establishing perennials

Data collected from the Supporting Sites made it possible to conduct a rough analysis of the return on investment in pasture establishment using the *EverGraze* Pasture Improvement Calculator (available on the *EverGraze* website). From 19 paddocks established over 12 farms in northeast and southwest Victoria, the average perennial pasture establishment cost was $450/ha and ranged from $263–$757/ha. The average stocking rate increase as a result of the improved pastures and management was 9.4 DSE/ha. The average return on investment (including investment in extra sheep) was 32% and the payback period ranged from three to ten years with an average of six years. Returns were faster where sown pastures were run as a system with several paddocks of summer and winter active species, allowing stock to be carried for longer and finished at a higher price; or where new pastures allowed a finishing enterprise to be run instead of breeding units.

By investigating costs and potential return from investment in pastures and infrastructure associated with Supporting Sites, groups and their coordinators are better equipped to make decisions on their own farms.

A final legacy

While evaluating the Supporting Sites, the *EverGraze* team noted that the approach has provided an effective channel for dialogue between researchers, public and private service providers and farmers. This has been invaluable in understanding on-farm issues and the practicalities of adopting new research outcomes and farming practices.

Lessons from the Supporting Sites project will be incorporated into the design of future work by *EverGraze* partners. A list of 'Golden Rules' for demonstration sites was developed as a result of the Supporting Site project. A summary will be provided in the November release of *Future Farm* magazine and the full report will be published online later this year.

The *EverGraze* team would like to sincerely thank the Supporting Sites hosts and coordinators and acknowledge the project funders.

More information and Supporting Sites case studies can be found at www.evergraze.com.au

The Supporting Site phases:

The Supporting Sites were established to complement research conducted on the six *EverGraze* Proof Sites by allowing groups to apply small-scale research to a larger scale and under 'real farming' conditions.

Each site had a host farm, at least one coordinator and was associated with a producer group.

The Supporting Sites program was carried out in two phases:

Phase 1: June 2007 – June 2010 — Supporting Sites, funded by Australian Wool Innovation (AWI) and Catchment Management Authorities, were established on more than 50 farms across Victoria, South Australia, Western Australia, New South Wales and Tasmania.

Phase 2: June 2009 – June 2012 — Caring for Our Country (CfoC) provided additional funds through Central Highlands Agribusiness Forum (CHAF) to maintain a selection of the strongest Victorian sites (8) and two sites in South Australia. Sixteen new sites were also established: 13 in Victoria and three in New South Wales. The Supporting Site coordinators network and linkages to *EverGraze* research and extension was maintained by the national *EverGraze* project through Future Farm Industries CRC and Department of Primary Industries Victoria.

CHAF Central Highlands Agribusiness Forum

CARING FOR OUR COUNTRY

Pastures for place and purpose in bent grass country

The effect of drought and climate variability prompted John and Maureen Fish to look for more resilient and productive pasture systems for their grazing operation at Mt Wallace, south-west Victoria. Hosting an *EverGraze* Supporting Site has given them first-hand experience in how perennial species, such as tall fescue, perform and persist under a range of landscape challenges on their property.

EverGraze supporting site

- **Producer:** John and Maureen Fish
- **Location:** Mt Wallace, south-west Victoria
- **Property size:** 1460 ha
- **Mean annual rainfall:** 601 mm
- **Soils:** Grey loam over buckshot clay and black cracking clay
- **Enterprise:** Self-replacing spring-calving Angus beef cattle.

John and Maureen Fish in their lucerne paddock which provided out of season feed for finishing cattle at higher weights.

"We have experienced considerable climate variability during recent years — our long-term average rainfall is 600 mm per year but recently it has been closer to 450 mm with an increased amount of out-of-season rainfall," John said.

"This variability hasn't suited our perennial ryegrass based pastures and we were looking for perennial species that would survive the dry periods and respond to rain when it falls. I was keen to try fescues in some of our more challenging country after seeing an excellent stand of summer-active tall fescue grown in similar soil types at a field day," said John.

"We run 180 Angus breeding cows and aim to sell weaners at 6–8 months old and about 320 kg," he explained. "Over time we have improved our pasture base and increased carrying capacity to around 12.5 DSE/ha, mainly by using perennial ryegrass, which has significantly reduced our supplementary feed costs."

John explained that finding suitable perennial pastures species to extend the growing season and overcome the summer-autumn feed gap had become more critical for the business since deciding to boost cattle numbers to around 350 breeding cows with 160–200ha of grazing crops.

Resource base

"Our farm has some challenging soil types, including black cracking clay in some low-lying waterlogged areas. Around 40 ha often goes under water for periods of up to 14 days and is prone to pugging." John said. "This limits grazing to late spring and summer."

Bent grass is also prevalent in the district and is increasing in wetter seasons. The grass weed significantly impacts on pasture production, growing season length and overall carrying capacity. The district average carrying capacity is about 8.5 DSE/ha, considerably below that achievable with improved pastures and soil fertility.

On-farm comparisons

John explained his interest in following the *EverGraze* philosophy of putting the right pastures in the right place across the landscape, for the right purpose and with the right management.

"We had observed how this can be achieved at a local field day. In this case we wanted suitable options for low-lying waterlogged clays and better-drained clay rises, as well as special-purpose pastures that provide quality feed throughout the year for finishing weaner calves," he said.

The Supporting Site was established during May 2009 as a large scale on- farm trial. The particular aims were; to find a persistent perennial pasture species other than ryegrass to provide summer-autumn feed and ground cover; to find a perennial grass to compete with bent grass; to trial a perennial grass (summer-active tall fescue) that would persist in waterlogged conditions and to trial new winter-active tall fescues in the local environment.

Landscape challenges

Two 14 ha sites were selected to compare the performance of both summer-active and winter-active fescues.

Site 1 (summer-active fescue) featured black cracking clay soil and bent grass dominated pasture. Clover struggled to persist in the low-lying paddock due to long periods of waterlogging and as a result perennial grasses often appeared nitrogen deficient. The paddock was also prone to pugging, which limits winter grazing capabilities.

Site 2 (winter-active fescue) was on top of a slight rise and featured grey basalt over a buckshot loam. The pasture was also predominately bent grass with ryegrass. The aim for this paddock was to establish a competitive, persistent and productive

pasture, to ensure winter livestock production. At the start of the trial phalaris struggled to persist at this second site due to low pH and high aluminium levels.

Both sites were sprayed with broadleaf and grass weed herbicides and direct drilled during May 2009.

Site 1 was sown with 12 kg/ha of summer-active fescue (Quantum XP2) and 8kg/ha of a sub-clover mix (Leura and Trikkala). Site 2 was sown with 12 kg/ha of winter-active tall fescue (Flecha) and a sub-clover mix (Leura and Trikkala).

Both paddocks received 100 kg/ha monoammonium phosphate (MAP) fertiliser at sowing and were rotationally grazed on a time-based system — approximately two weeks on and six weeks off with a 70% ground cover targeted to lower the risk of soil erosion and weed invasion.

Carrying capacity boosted

While the wet seasons experienced during the three years of monitoring resulted in strong pasture establishment and growth, it made it difficult to estimate the relative productivity increases achieved by sowing the perennial pastures. The seasons did, however, provide ideal conditions to test the performance of summer-active fescues on the low-lying clay soils on Site 1. Carrying capacity on the summer-active fescue averaged 15 DSE/ha over the three years and from January to June 2012 the paddock carried 12 DSE/ha.

"Pasture production was actually higher than represented by the stocking rate as a result of having to restrict grazing to the summer months due to waterlogging and pugging. Hay was cut in 2011 to reduce biomass after the wet spring-summer in 2011 which also prevented grazing," he said.

The winter-active fescue on Site 2 provided excellent production, carrying on average 15 DSE/ha, and it has so far persisted well.

Trouble in spring

Cattle didn't seem to like the summer-active fescue and despite ample feed, headed for the gate not long after going into the paddock. This is most likely due to the lack of late winter-early spring grazing (due to water-logging) and the resulting poorer feed quality due to under-grazing and low clover content. It's unlikely that the lack of palatability was due to the species itself as at another Supporting Site, the cattle were observed to prefer the fescue pastures with a higher clover content compared to the neighbouring phalaris and ryegrass plots.

Tall fescue has proven it is able to tolerate waterlogging but pugging is still a problem in the lowlying areas.

Low clover contents were measured in the overall pasture mass, which may have been due to waterlogging or the high residual feed levels shading out the clover. Ground cover throughout the winter-active site remained high, at 98%, but clover content during autumn–early winter declined between 2011 (24% April) and 2012 (11% June). This may have been season related as there was a good autumn break and enough bare ground for strong germination and effective grazing control over the spring flush during 2011.

"In hindsight I probably should have sown strawberry clover with the summer-active fescue as it suits wet conditions and had previously dominated the site," John suggested.

Lucerne finds a place

A lucerne paddock was sown during 2009 adjacent to the *EverGraze* Supporting Site as part of a MLA Producer Demonstration Site (PDS). The PDS investigated the ability of lucerne to capture summer rain and provide high-value feed for finishing cattle outside of the main growing season.

A grazing tolerant dormancy 6 lucerne was sown at 14 kg/ha together twith 0.3 kg/ha of summer active cocksfoot and 0.3 kg/ha of winter active phalaris, in an eight paddock rotation.

The site was not ideal for lucerne, but was representative of common soil types in the district with a soil pH of 4.8–4.9.

John explained that the paddock had been cropped for four years before sowing the lucerne and subsequently he found the paddock was infested with fusillade-resistant Wimmera ryegrass. "We sprayed in 2010 to control the ryegrass and re-sowed the phalaris and cocksfoot," he said.

"Overall the lucerne provided the opportunity to take weaners up to heavier weights before selling, compared with our standard practice of selling them at 6–8 months," he explained. "On the lucerne we grew them out to 430–440kg at 14 months old across both the summers of 2010–11 and 2011–12."

In 2010-11, steer weight gains averaged 1.37 kg/head/day tapering to 0.9 kg/head/day at the end of summer. "Ideally the lucerne could have been grazed earlier and more often with young stock, to take advantage of the strong early growth of the phalaris and cocksfoot" John explained. But I found that when the paddocks were wet, the cattle damaged the lucerene and we had to limit grazing. Another key challenge was managing bloat in the cattle when grazing lucerne.

A more diverse future

John felt that the *EverGraze* Supporting Site had shown the potential of both winter-active and summer-active fescues, phalaris and lucerne pastures on his country.

"Relying on only one pasture species made us vulnerable to seasonal conditions, but I can see we now have more options when it comes to choosing species," he said.

"I hope to improve our pasture diversity by sowing more phalaris and fescue to improve pasture productivity across the farm, reducing our reliance on cropping and as an insurance policy against climate variability," John explained.

"I may also include some lucerne into our system specifically for growing steers out to heavier weights, but we may need to fine-tune our management of these pasture mixes in the future," he said.

And while the wet years still pose the challenge of preventing cattle damaging the pastures and reduced feed quality, John now sees that strawberry clover may be the legume option in his wet country.

■ ***More information, fact sheets and a full version of this case study can be found on the EverGraze website www.evergraze.com.au***

Contact

Neil James, DPI Ballarat

m: 0417 353 929 **p:** (03) 5336 6620
e: Neil.James@dpi.vic.gov.au

Trading low productivity for high protection

For many years, Merino producer Rick Robertson from Bengworden, Victoria wondered how best to increase the productivity of certain parts of his East Gippsland property.

EverGraze supporting site

- **Producer:** Rick Robertson
- **Location:** Bengworden, East Gippsland, Victoria
- **Property size:** 1400 ha
- **Mean annual rainfall:** 640 mm
- **Soils:** Vary from clay loam to sand dunes
- **Enterprise:** Self-replacing Merinos.

Rick runs a breeding flock of 3000 Merino ewes, with wethers turned off at 1.5 years of age (at about 55 kilograms liveweight) and culls his ewes at 5.5 years of age.

The property landscape ranges from saline flats on the shores of Lake Victoria to undulating dunes and swales. Most of the property is undulating with light sandy loam soils.

During 2004, Rick started a trial to see if a low productivity area of lakeside flats on his property could be successfully sown to saltbush to provide feed and shelter for his lambing Merino flock.

"While only a small part of our farm, it was the saline flats that we were most keen to transform into a productive area again. We also hoped the site could be used as a lambing paddock with the saltbush providing protection from wind chill," Rick said.

ABOVE: East Gippsland Merino producer Rick Robertson with saltbush hedgerows at the Bengworden *EverGraze* Supporting Site.

LEFT: Anemometers were placed among the saltbush hedgerows on the trial site, to measure and record wind speed at 10-minute intervals.

Establishing saltbush

During spring 2004, Rick chose a 16 ha trial site on the lakeside flats, less than 1500 metres from the shores of Lake Victoria. This site was split into a 10 ha treatment block and a six hectare control block.

The control block was covered in mainly native grasses, tussocks and weeds and was left untouched.

The treatment block was disced and cross ripped. Dolomite was applied at a rate of one tonne per hectare and incorporated with a second cultivation. To maximise shelter for lambs, the saltbush was established as hedgerow windbreaks, aligned north to south, with 4.5 metre spacing between the rows.

Six hectares of the treatment block were sown to *Atriplex nummularis* (oldman saltbush), *Atriplex nummularis* cv De Kock (De Kock) and *Rhagodia candolleana* (seaberry saltbush), at a rate of 2700 seedlings per hectare, planted with a lettuce planter hired from a local vegetable grower, and costing $1000/ha.

The remaining four hectares of the treatment block were sown with oldman saltbush seed, at a cost of $150/ha for seed, using a borrowed homemade saltbush seeder.

Both the seeds and seedlings established well, and while the seedlings were faster to establish, there was little difference between the two techniques after two years.

The plants were left untouched for the first 12 months, reaching an average height and width of one metre. The plants were dense and multi-stemmed, producing a significant quantity of leaf material.

Grazing benefits

The saltbush certainly achieved the aim of bringing a previously unproductive site back into production, providing significantly more grazing days than the neighbouring, unimproved control block.

(Continued from page 5)

"We found the adult sheep adapted quickly to saltbush as a feed source and that they could maintain their body condition during general feed shortages. This reduced the time and money we spent on supplementary feeding. Lambs were more difficult to introduce onto the saltbush, as they preferred the grasses in the inter-row areas," Rick explained.

"The result was that the 10 ha of saltbush improved the overall carrying capacity of the farm, adding value to it as an asset."

Combating wind chill

To determine the protective value of the saltbush, as part of an *EverGraze* Supporting Site, Rick decided to carry out a simple demonstration using two flocks of lambing ewes to compare weaning percentages on the saltbush paddocks with the unimproved site.

The Supporting Site was complemented by concurrent trials performed by Darren Hickey, Department of Primary Industries, Victoria, who used equipment to measure the difference in wind chill between saltbush hedgerows and unsheltered areas.

TABLE 1. The number of wind chill events from the sheltered and open sites

Number of wind chill events (where heat loss exceeded 1000kJ/m²/hour)	2010	2011
Sheltered, hedgerow site (best across sites)	330	640
Open, unprotected site	3292	1615
Percentage reduction	**90%**	**60%**

Source: Darren Hickey, DPI Victoria

The results for the saltbush hedgerows were again encouraging, and showed that the hedgerows were undoubtedly effective in reducing the number of wind chill events and chill days during lambing periods (see Table 1).

"The hedgerows reduced the occurrence of wind chill events by up to 90 per cent compared with the open paddocks," Rick said, "although this did not translate into significant marking rate increases in the study years, which had few severe wind chill days."

■ ***Further information can be found on the EverGraze website www.evergraze.com.au***

Contact

Rick Robertson

p: (03) 5157 7516
e: gracemere.merinos@bigpond.com

New challenges with tropical perennial grass management in northern NSW

Tropical grasses can produce large quantities of feed, however they bring their own management challenges. As their adoption continues to rise across the north and central-west of NSW, it is timely to view tropical grasses in light of the *EverGraze* Principles – put the *Right Plant* in the *Right Place* for the *Right Purpose* with the *Right Management*.

Initially, tropical pasture research and extension activities in northern NSW focused on agronomy — that is the successful establishment and early management of tropical grasses. Now key issues relate to grazing management and stocking rates. In summer, particularly if it is wet, most graziers find they do not have enough stock to utilise the feed and maintain feed quality. In winter there is not enough quality in the remaining frosted bulk to drive the required animal performance. Addressing these issues can require investment in infrastructure such as watering points and fencing to reduce paddock size and increase stock density.

Introducing or improving pasture impacts the whole farm, so it is important to examine these issues on a whole of farm basis and apply the *EverGraze* Principle. In applying the principle, a number of options for management come to light.

Right Plant

Tropical perennial grasses represent the right plant as temperate perennial grasses have not persisted in the slopes and plains environments. Research and grazier experience has shown that tropical grasses persist across a wide area of northern and central NSW, with different species groups suited to light, medium or heavy soils, and some species that can handle waterlogging and flooding.

Right Place

In many cases, the right place is retired farming land where it is no longer profitable to produce grain. These soils not only need perennial grasses to lift animal production, but to improve soil organic matter, structure, ground cover and reduce runoff, particularly after a long cropping history. Land that is retired from farming is ideal for perennial pasture establishment as it is arable, occupies lower slope positions and generally has better soil depth and water holding capacity.

Right Purpose

Tropical grasses provide green feed and improve production from retired cropping country. These grasses provide a high growth rate of green leaf during the warm season, increase ground cover and reduce surface runoff and erosion. Growth rates of tropical grasses can be more than 50 kg dry matter per hectare per day (DM/ha/day) for up to seven months of the year. It is known that at the same stage of growth a tropical grass will be of lower digestibility compared with a temperate grass. Like temperate grasses, there is variation between species, and quality is also influenced by nutrition. The feed quality of tropical grasses will not support high animal growth rates and is more suited to maintaining production units such as breeding cows and sheep. Younger animals can make moderate gain on these pastures during the warm season if they are maintained at the short green leafy stage.

Right Management

Getting the management right is one of the biggest challenges. With adequate moisture and nutrient, tropical grasses can produce green leaf at a rate in excess of 150 kg DM/ha/day in summer. This means that a tropical pasture with approximately 2000 kg DM/ha running steers at 300 kg, with an intake of approximately 8 kg DM/hd/day, as a rough estimate, would need to be stocked at 18 steers/ha to maintain the pasture in the short leafy stage to maximise feed quality. Finding the stock required to do this can be difficult.

The options for managing the under-utilised paddocks may include; fodder conservation (hay or silage); holding over the excess feed until winter and utilising it while feeding supplements; running a higher stocking rate and feeding supplements at critical times, or managing the variability in pasture growth rates and feed quality by providing supplements throughout the year.

ABOVE: Planning to utilise tropical perennial grasses needs to include infrastructure such as paddock subdivision and additional watering points.

RIGHT: Premier digit grass frosted in winter. Winter active species are required on other parts of the farm to compensate for low production of tropical pastures in winter.

Integrated management across the farm

Earlier grazing in the warm season, afforded by the tropical grass paddocks, allows the slower starting native growing species to get away and then be utilised if the improved paddocks run short of moisture.

When tropical perennial grasses are integrated with winter cereals, the stock coming off winter cereals can generally be moved onto tropical grasses well before native grasses start to grow.

In good seasons, livestock coming back off native and tropical grasses can be returning to early sown oat paddocks, maintaining access to green feed.

Questions you should ask

Improving any pasture requires a great deal of planning over and above the establishment phase. Some questions you should ask when introducing tropical perennial grasses include:

- Are your paddocks small enough to achieve the stock density required to utilise summer growth and maximise feed quality?
- Have you got enough water points, and with enough capacity, to accommodate increased paddock numbers or herd and flock sizes?
- Will your yard facilities handle the additional animals?
- How will the under-utilised or frosted pasture growth be conserved or grazed with the use of supplements?
- How will the supplements be handled and stored?

For more information on tropical grasses go to: www.futurefarmonline.com.au > research > future livestock production > tropical grasses

BELOW: With adequate moisture, tropical grasses grow rapidly during late spring to the end of summer, finishing growth at the first frost.

Contact

Lester McCormick

p: (02) 6763 1100
e: Lester.McCormick@dpi.nsw.gov.au

Don't know where to start?
Contact your Regional Extension Coordinator

SW Victoria	**Anita Morant** p: (03) 5573 0732 e: anita.morant@dpi.vic.gov.au
NE Victoria	**Alison Desmond** p: (03) 5761 1643 e: alison.desmond@dpi.vic.gov.au
Gippsland Vic	**Claire Geri** p: (03) 5662 9908 e: claire.geri@dpi.vic.gov.au
Southern NSW	**Nigel Phillips** p: (02) 6938 1981 e: nigel.phillips@industry.nsw.gov.au
Central NSW	**Linda Ayres** p: (02) 6391 3965 e: linda.ayres@dpi.nsw.gov.au
Northern NSW	**Lester McCormick** p: (02) 6785 1790 e: lester.mccormick@industry.nsw.gov.au
SA	**Tim Prance** p: (08) 8552 8058 e: t.prance@bigpond.net.au
WA	**Ronald Master** p: (08) 9892 8521 e: ronald.master@agric.wa.gov.au

Further information

- **Kate Sargeant**
  EverGraze Project Leader
  p: 0428 325 318
  e: kate.sargeant@dpi.vic.gov.au
- **Paul Sanford**
  EverGraze Research Leader
  p: (08) 9892 8475
  e: paul.sanford@agric.wa.gov.au
- **Bindi Hunter**
  EverGraze Communications Officer
  p: (03) 5561 9909
  e: bindi.hunter@dpi.vic.gov.au

EverGraze
More livestock from perennials

If undeliverable, return to:

Bindi Hunter, Department of Primary Industries,
78 Henna St, Warrnambool, 3280, VICTORIA

Postage Paid

Are your email details up to date?

If you received this update in the mail, we do not have your latest email address. Please send your name and email address to bindi.hunter@dpi.vic.gov.au to receive this newsletter by email or if you are about to change your email address.

Two new *EverGraze* publications are now available

Two new *EverGraze* publications are now available to assist land owners in northwest NSW to make decisions about conserving native vegetation on farm and to help identify opportunities to access stewardship payments or incentive programs. The biodiversity assessment tool in these resources was developed through a series of studies undertaken by Nick Shchultz as part of his PhD project at the University of New England.

Go to: www.evergraze.com.au to download your copy.

FRONT COVER: Tallangatta Valley Supporting Site Group assessing new pasture