

EverGraze

More livestock from perennials

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2011

Update

Hamilton Proof Site finishes five years of research

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Hamilton Proof Site finishes five years of research

The Hamilton EverGraze Proof Site has just finished five years of research into the productivity and profitability of perennial pastures and the results have been outstanding.

Ralph Behrent, EverGraze Proof Site Leader at Hamilton, compiled the results which prove that the right perennial in the right place for the right purpose with the right management increases productivity, profitability and improves our natural resources.

Two systems were tested at the Hamilton Proof Site; the Ryegrass System (see Table 1) and the Triple System (see Table 2).

The Right Plant, Right Place, Right Purpose, Right Management principles (see page 8) were used to design the Ryegrass and Triple systems of the Hamilton Proof Site and results were recorded and monitored over five years.

The results showed profitability goals were met from increased product/ha (stocking rate, wool production, weaning percentage and lamb turnoff weight) and reduced supplementary feeding costs in a variable climate. The primary natural resource management goal was to

EverGraze Proof Site

- ▶ Five years of research has shown that perennial systems can be profitable, productive and enhance environmental management.
- ▶ The Triple System reduced the need for supplements during dry seasons increasing profits.
- ▶ Both the Triple and Ryegrass systems have shown gross margin increases of up to 50% above the top 20% of producers in the South West Farm Monitor benchmarking program.



reduce recharge, but additional issues were addressed; from persistence of perennials and improved ground cover, to good pasture composition.

So what did the systems achieve?

Reduced recharge in Triple System
Lucerne in the Triple System reduced leakage of water below the root zone measured at a depth of 3.25-4.25m.

Persistent systems
After five years, all species in the Ryegrass and the Triple pasture system have persisted well and maintained stable botanical compositions.

High stocking rates in both systems
High winter growth rates (40-50 kg/dry matter/ha/day) through the warm and dry winters and 1-2 tonnes dry

matter/ha production from summer active pastures in response to summer/autumn rain resulted in stocking rates on the spring lambing Merino system of between 14-16 ewes/ha.

Improved lamb survival with shelter
Lamb survival at the average birth weight was demonstrated to increase from an average of 69% in open areas up to 90% in the sheltered perennial grass hedge rows.

“Peaky” feed supply in the Ryegrass System matched to spring lambing
On average, the gross margins and productivity of the Triple and Ryegrass systems were similar. However, the Ryegrass System is well suited to spring store lamb production. Modeling showed the value of the summer active species in the Triple

Table 1: The Perennial Ryegrass System for Spring Lambing Ewes (All sown with Leura & Gosse sub clover and Mink white clover)

Right Plant	Right Place	Right Purpose	Right Management	Other options?
Early - season maturing perennial ryegrass (Fitzroy)	Persisted on well drained crests (early dinish allows Fitzroy to survive with low summer moisture)	Winter-spring feed for spring lambing ewes	Rotational grazing: ▶ Spring 14-28 days ▶ Summer/autumn 28-42 days ▶ Winter 42-56 days Set stock at lambing	Phalaris and other summer dormant perennial ryegrasses with early maturity. Winter active tall fescues
Mid-season maturing perennial ryegrass (Avalon)	Persisted on mid slopes	Winter-spring feed for spring lambing ewes	Rotational grazing: ▶ Spring 14-28 days ▶ Summer/autumn 28-42 days ▶ Winter 42-56 days Set stock at lambing	Phalaris and other mid season maturity perennial ryegrasses
Late-season maturing perennial grasses (Banquet)	Persisted on valley floor (tolerates water logging and requires moisture to survive summer)	Winter-spring feed for spring lambing ewes and extended summer feed	Rotational grazing: ▶ Spring 14-28 days ▶ Summer/autumn 28-42 days ▶ Winter 42-56 days Set stock at lambing	Phalaris, summer active tall fescue and other long rotation ryegrass with late maturity
Grass hedge rows with inter row sown to perennial ryegrass (BanquetII)	Hedgerows 10m apart in twin lambing paddocks	Shelter and quality fodder for twin lambing ewes *Recharge reduction from summer activity of hedgerows	Short-term set stocking during lambing. Hay/silage from inter-rows during spring. Rotational grazing in summer/autumn to consume feed heads and inter-row regrowth. Spell from autumn break to lambing to build FOO for lambing	Shrubs, trees, and phalaris. Phalaris, other perennial ryegrasses and short term annuals may be alternatives for inter-row feed.

System may be greater in self-replacing sheep or cattle enterprises where young stock are carried through summer, reducing supplementary feeding costs and increasing weaner growth.

Reduced supplementary feeding costs in Triple System in poor years

In poor springs and autumns, lucerne and tall fescue responded to summer rain, producing extra feed (compared to the dormant ryegrass) and saving on supplement. During 2006-07, summer growth in the Triple System saved \$295/ha in supplementary feeding costs resulting in gross margins of \$247/ha in the Ryegrass compared to \$547/ha in the Triple System. In most years, time off pasture due to summer/autumn destocking (at ground cover and FOO thresholds of 75% and 800 kg dry matter/ha respectively) also tended to be greater for the Ryegrass System than the Triple System.

Increased product per hectare

Lamb production ranged from 351-774 kg/ha compared with 215-374 kg/ha for the top 20% of the South West Farm Monitor benchmarking program (FMP). Wool production varied with the sheep system from 35-64 kg clean wool/ha compared with 35-46 kg clean wool/ha for the FMP top 20%. Beef steer liveweight production per hectare ranged from 644-928 kg/ha compared to 579-732 kg/ha for the FMP top 20%.



Sheep at the Hamilton Proof Site

Improved gross margins and return on investment

Both the Triple and Ryegrass systems have shown gross margin increases of up to 50% above the top 20% of producers in the South West FMP, and up to 1.5 to 2 times larger than the average benchmarked farm. Care needs to be taken with these figures as they are steady state estimates and do not include extra labour, management complexity, risk or impacts on cash flow over time.

Modeling has shown that implementing EverGraze pasture systems on 10% of the farm area for a typical livestock farm achieved return on capital invested of 20-30% and 5-7 year pay back period. This was accounting only for stocking rate increases, with further returns expected from flushing ewes, increases in weaner survival and improved finishing weights.

Detailed economic analysis of the Hamilton Proof Site will be available later this year.

Differences in animal health and farm management between systems

The Ryegrass pastures had wild endophyte, so could produce ryegrass staggers in certain conditions.

Lucerne also has potential to cause other animal health issues such as red gut, bloat and pulpy kidney.

In general, the Ryegrass System is easier to manage than the Triple System because;

- ▶ tall fescue requires strict management to maintain pasture quality during spring and summer,
- ▶ lucerne requires winter cleaning every few years to keep it productive
- ▶ strict grazing management is required for lucerne to persist and
- ▶ greater vigilance on livestock vaccination and feeding is required when transitioning between species (especially lucerne).

For fact sheets and research results go to www.evergraze.com.au



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Table 2: The Triple System for Spring Lambing Ewes (All pastures sown with Leura and Gosse sub clover and Mink white clover)

Right Plant	Right Place	Right Purpose	Right Management	Other options?
Semi-winter active lucerne on 1/3 of the farming system (SARDI7)	Persisted on well drained crests with aluminium <3%. Lime applied at sowing to increase pH.	Reduced soil moisture in a wet year. Reduced supplementary feeding costs in poor years. High quality summer/autumn feed for improved livestock production.	Rotational grazing: ▶ Spring 14-28 days ▶ Summer/autumn 28-42 days ▶ Winter 42-56 days Set stock at lambing but graze ryegrass and tall fescue if possible. Save lucerne for weaned lambs.	Chicory (short term option). Future options may include tедера or lotus corniculatus
Mid-season maturing perennial ryegrass (Avalon)	Persisted on mid slopes	Winter-spring feed for spring lambing ewes	Rotational grazing: ▶ Spring 14-28 days ▶ Summer/autumn 28-42 days ▶ Winter 42-56 days Set stock at lambing	Phalaris and other mid season maturity perennial ryegrasses
Summer active tall fescue (Quantum)	Persisted on valley floor (tolerates water logging and requires moisture to survive summer)	Winter-spring feed for spring lambing ewes and extended summer feed. Early autumn growth and comparable growth to ryegrass	Rotational grazing: ▶ Spring 14-28 days ▶ Summer/autumn 28-42 days ▶ Winter 42-56 days Set stock at lambing	Phalaris, Banquet ryegrass, Other long rotation ryegrass with late maturity
Hedge rows	(place, purpose and management as for the Ryegrass System)			

Kikuyu for summer production in WA

Erica and Phil farm a property 25-30kms north east of Esperance on typical sand plain soils.

They host an EverGraze Supporting Site which has annual pastures, kikuyu and crops on the property and a mix of sheep and cattle. They have been increasing their area of kikuyu pastures over the last eight years.

“We’ve been on the property since 2003, taking over from my parents, who initially established about 50 hectares of kikuyu. We have increased this area to 250ha and sow a new paddock in most years.

Compared with other perennial pastures, kikuyu offers us better summer production under set stocking and no matter how hard we graze our established paddocks, it just keeps coming back.

Keeping groundcover year round is critical with our coastal soils and kikuyu has proven an important tool against wind erosion. Not only does it provide quality feed and cover for the soil, but also immediate growth and response to out-of-season rainfall, extending the growing season quite substantially. It will grow right through the year.

To establish the kikuyu, we have found weed management leading up to sowing to be really important.

Spring rainfall in the year of establishment is critical and this has been an issue during recent years, with particularly dry summers.

We try to sow the kikuyu as early as we can during spring.

To reduce weed competition during establishment, we typically carry out two knock-down sprays; the first during July and then immediately pre-sowing.

Depending on the paddock and the season we may have to carry out a follow-up post-emergent weed control spray.

Grasshopper control is another challenge during establishment. In many years we have to spray two or three times during the first summer to ensure survival.

Because the grass seed is so small, it needs a carrier at sowing. We typically sow our kikuyu at a rate of about one kilogram per hectare, with 10-20 kg/ha of barley or oats. This cover crop provides groundcover while the kikuyu establishes and offers a grazing opportunity during October–November.

Grazing the cereal at this time also reduces competition for the establishing pasture. We use cattle to graze the cereal as they don’t graze as close to the ground as the sheep, which can uproot establishing seedlings.

If you damage the runners then, it will slow down growth significantly. However, when established the kikuyu is very hardy. The cattle might be on the paddock for about a week depending on stock numbers.

Our grazing management after establishment depends on the year. If we get summer rain, more weeds will come through the kikuyu and we may use stock to manage weeds.

In a dry year we potentially wouldn’t graze a new pasture at all until March or April and then only lightly.

Kikuyu is not a total grazing solution. It does slow down annual pastures coming through the sward. Annual pastures are really important as part of the system.

EverGraze Supporting Site

Producer: Erica Ayers & Phil Cleghorn

Location: Esperance, WA

Property size: 1280 ha

Enterprises: sheep and cattle

Pastures: kikuyu, annual ryegrass and clover



Erica and Phil

I think probably a total farm area of 50% kikuyu would be our goal, relying on annual pastures such as ryegrass and clover for winter feed.

On a year-round basis our kikuyu allows us a stocking rate increase of about 25% on annual pasture alone, but is quite variable with seasons

We are moving from set stocking to rotational grazing with our kikuyu, dividing paddocks and improving pasture through management.

Kikuyu certainly does invade other areas and we are starting to see it in paddocks in which it hasn’t been sown. This isn’t a significant problem for us now, but I think potentially it would be a downside if we wanted to crop into it.

To date kikuyu is the best perennial option for our environment and livestock system, although we are looking to play around with some lucerne this year.”

A financial case study on Erica and Phil’s farm can be downloaded from the EverGraze website

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Boundary of kikuyu (left) and annual paddock in April 2010



Implementing whole farm grazing strategies at Holbrook

John Keogh set out to implement a grazing strategy which would allow him to run a productive sheep enterprise at high stocking rates without losing his phalaris.

“My undulating country (350ha) is predominately sown to phalaris and sub clover. The remainder is crop (50ha), which is available to graze for part of the year, productive native pastures (30 ha) and native scrub (50 ha). The stocking rate varies from 10-15 DSE/ha during the year. There are 47 paddocks on the farm.

After nine years of below average rainfall, many of the phalaris pastures were dominated by annual grasses and broadleaf weeds.

Together with the Holbrook Landcare Grazing Group we recognised that rotational grazing should address the problem. But we were uncertain how to organise the grazing system to integrate management of different land classes and stock classes. Time management was also an issue.

So we participated in the EverGraze Whole Farm Grazing Strategies pilot training program with Kate Sargeant and Tim Ekberg. During the six sessions, we developed a whole farm grazing plan accounting for seasonal management objectives of pastures and livestock, mob sizes, where they would graze at different times of the year, risk management, calving/lambing strategies, water

and fencing requirements.

This autumn and winter, I will run two mobs - 1900 spring lambing ewes and 900 weaners. I hope to bring on more

cattle which will graze with the weaners on the highest quality feed. The ewes will move about every second day (consuming approx 500 kg/ha/day), and will be useful for increasing utilisation and improving pasture composition.

The paddocks in the rotation need to be ordered according to what we are trying to achieve. We need to be flexible and target the biggest problems at the right time.

This season is proving difficult to manage as we are still building our numbers and have a lot of dry standing feed. We need to eat this off to allow clover germination.

We are prioritizing paddocks on the south facing slopes which are low in clover. The weaners are grazing the shorter, higher quality feed. The ewes will crash graze the north-facing phalaris just prior to lambing in early August to prevent barley grass from seeding. I will set stock during lambing (15th August – 1st October) to reduce the chances of mis-mothering and lamb losses.

Ewes and lambs will be mobbed up

EverGraze Supporting Site

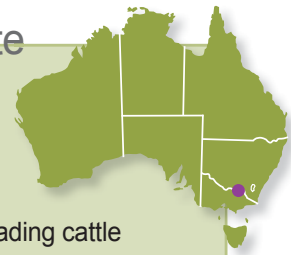
Producer: John Keogh

Location: Holbrook, southern NSW

Property size: 480 ha

Enterprises: 1900 Merino ewes, 250 trading cattle

Pastures: phalaris/clover, native pasture



into one big mob after marking in October. We will try using the big mob to eat off the flowering silver grass in the native paddocks in early October with stocking rate 180 DSE/ha.

The late-flowering native grasses should then produce seed and quality green feed in summer.

Results from the Holbrook EverGraze Proof Site showed there was little or no reduction in lamb growth from grazing native pastures while still on their mothers during spring compared to lambs grazing phalaris.”

Three paddocks will be monitored for perennial persistence, ground cover, composition and feed quality and the results shared on. <http://holbrookgrazing.posterous.com/> and www.evergraze.com.au

John will also use the EverGraze stocking rate tracker (soon to be released) to monitor the grazing days in each paddock on the farm.

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Landclass & description	Pasture composition	Management objectives	Management Strategy
Landclass 3 North facing undulating slopes	23% Phalaris, 16% sub clover, capeweed, barley grass	Reduce capeweed and barley grass and maintain phalaris persistence	Rotational grazing: Graze phalaris at 4-leaf stage with rest periods:(20-30 days spring, 70 days summer, 30-50 days autumn (allow 4 leaves to appear before first grazing), 40-60 days winter). Maintain ground cover > 75% and FOO >800 kg/ha dry matter, especially in Autumn to minimize capeweed and barley grass germination. Use a big mob to crash graze barley grass in early spring to 500 kg/ha in early August
Landclass 3 South facing undulating slopes	18% Phalaris, 4% sub clover	Increase phalaris utilisation, increase sub-clover % and overall feed quality	Rotational grazing as above. Fence off from north facing slopes to increase utilisation. Reduce FOO to 800-1000 kg/ha prior to the autumn break to allow for clover germination
Landclass 4 multiple aspects, rocky slopes	Approx 50% native grasses - danthonia (wallaby grass), microlaena (weeping grass), 50% annual weeds (silver grass, capeweed)	Increase/maintain proportion of native grasses, reduce silver grass and capeweed, maintain clover % for feed quality and nitrogen fixation	Rotational grazing throughout the growing season. Put stock in when FOO is 1500-2000 kg/ha and remove when it reaches 1000 kg/ha. Apply phosphorus to increase clover %. Heavily graze mid spring to reduce biomass and weeds and allow for late maturing native grass to grow and flower. Maintain >75% ground cover at all times.

Introducing our Regional Coordinators



Anita Morant - South West Victoria

Hamilton has experienced the wettest summer since 1963 (320mm) creating some challenges and opportunities for perennial pastures. The large carry over of feed has created issues with feed quality for young stock and may also suppress good clover germination this autumn. Lucerne has been invaluable in filling the quality gap. With high lamb and wool prices, every extra Merino weaner kept alive, and the extra weight on a prime lamb or light ewe has been of significant benefit.



Alison Desmond - North East Victoria

The NE has experienced a wet start to 2011 resulting in an abundance of green feed. The natives have also responded well to the rain, with great seedling recruitment. The Euroa MLA Producer Demonstration Sites flooded twice in Spring 2010. The phalaris coped well with the water logging, however the cocksfoots (Uplands and Yarck) did not and the number of plants per square metre has been reduced and weeds have invaded the plots. This has highlighted the importance of putting the right plant in the right place in a whole farm system.



Darren Hickey - Gippsland, Victoria

The east of Gippsland average annual rainfall for 2010 was under long term averages but farms with summer crops or summer active perennials have maintained a good feed supply for livestock. Areas in the west/south have experienced at least one major flooding event. Pastures are still very wet and some waterlogging and pugging has occurred from which pastures are still recovering.



Nigel Phillips - Southern NSW

*2010 was the wettest year on record for Wagga with one of the wettest summers on record. Lucerne has grown exceptionally well over summer. This has allowed many producers to strategically rest lucerne to build up reserves before winter. Phalaris is normally dormant at this time of year but the summer rain has kept phalaris pastures green throughout the summer. Summer weeds have been an issue, especially Witchgrass (*Panicum capillare*).*



Lester McCormick - Northern NSW

In many areas of NSW it became too wet to establish tropical perennial grasses which led to delayed sowings or the decision not to sow. In some areas there was enough rain for establishment. In excess of 250,000 ha have now been established across central and northern inland NSW. Across the north, the good growing conditions challenged graziers on how to maintain feed quality with the rapid grass growth. Methods such as further paddock subdivision, slashing and using supplements did help. Maintaining feed quality will be an ongoing issue.



Tim Prance - South Australia

On Kangaroo Island, Fleurieu Peninsula and south eastern SA we have had good summer rain (between 60-120 mm). This has produced a fantastic response in kikuyu, cocksfoot and lucerne. There have been issues with some instances of ryegrass staggers with both sheep and cattle. Breeding stock are in very good condition. At this stage of the season it is important to defer grazing of perennials until plants have three leaves.



Ronald Master - Western Australia

The summer season in WA has proven to be drier than expected. However, January was wet and the kikuyu responded well to the summer rain. It is important now to make sure kikuyu is well grazed in order to set up for the annuals to come through. Keep an eye on the lucerne and don't overgraze as it needs a spell. If planting sub tropicals in August/September, think about weed control options now.

EverFarm - applying EverGraze principles to a real farm

EverGraze Proof Sites have proven that profitability and natural resource management (NRM) can be significantly improved when EverGraze principles are applied in development of a farming system in a research environment.

The EverFarm pilot project is applying the same principles to real case study farms and using modeling to project a range of strategic change options.

When assessing the options, profit, NRM, farm management and lifestyle implications are also considered.

EverFarm is being tested in three regions; Hamilton, Wagga and Albany.

Geoff Saul is coordinating the EverFarm project.

EverFarm has three elements;

- ▶ the regional steering committee,
- ▶ the case study farm and
- ▶ the whole farm modeling.

The regional steering committees consist of producers, agricultural consultants, economists and the regional extension and research project teams.

The committees are determining what profitability and NRM issues need to be considered and analysed together with risk management, lifestyle and farm management considerations when incorporating EverGraze principles and practices into whole-of-farm management.



Farming with EverGraze principles in SW Victoria

Case study farms are real farms that are described in terms of resources, existing infrastructure and biophysical performance of the current system. Strategic decisions are based around the use of the right plant in the right place for the right purpose with the right management. The process also considers the current manager's goals and aspirations.

Whole farm biophysical and economic modeling is undertaken over at least a ten year period.

Case study farm in SW Victoria

The EverFarm pilot is most progressed in South West Victoria.

The steering committee has visited the case study farm and considered the producer's goals, benchmarking data and management calendar.

They have toured the paddocks, reviewed the strengths and weaknesses of the farm and developed seven key strategic long

term changes that will be modeled using GrassGro and a discounted cash flow spread sheet.

The modeling will generate a gross margin per hectare for each of the different scenarios. For example; the base case (what they are doing now) will be compared to increased soil fertility and introduction of lucerne into the system, and a discounted cash flow analysis will be produced to reflect the value of the investment over time.

The South West is approaching its final workshop in which it will deliver the modeling results to the steering committee and the case study farmers.

Everyone involved will have the opportunity to provide feedback on the process and the outputs.

Each EverFarm case study will be published in the future and made available on the EverGraze website.

What's new?

Financial case studies

In this newsletter we presented a case study on Erica Ayres and Phil Cleghorn. A detailed financial analysis has been prepared detailing costs and returns under different modelled scenarios.

There are three other WA financial case studies available.

A free version of these financial case studies can be downloaded from the information section of the EverGraze website www.evergraze.com.au



Grasslands Conference in Hamilton - June 2 and 3

This year's conference is titled 'Many Roads - One Destination', so the line up of speakers and bus tours suitably address the many pathways to a profitable sustainable farming system. For further information go to <http://www.grasslands.org.au/>

The four pillars of EverGraze

Right Plant:

It is important to identify the right pasture species and cultivar/variety that is most suitable for the place it is to be sown and for the purpose for which it is to be used.

This also involves consideration of the role this perennial species may play in addressing environmental issues including recharge, discharge, soil erosion, soil health and weed control. Also consider seed cost, establishment ease, persistence and complementary with other species in the mix.

Right Place:

Match pasture species to landscape, topography, soil type and climate to maximise production, persistence and environmental benefit.

Right Purpose:

- ▶ Match feed supply and quality to the most profitable livestock system.
- ▶ Match joining, calving, lambing and selling times to seasonal feed supply and quality.
- ▶ Match species selection to specific environmental purposes (reducing recharge, improving ground cover, improving soil health, reducing soil acidity), and productivity purposes (summer feed options for finishing or flushing, grasses or shrubs for shelter).

Right Management

- ▶ Utilise pastures with high stocking and reproductive rates to increase product/ha.
- ▶ Implement grazing management strategies targeted at maintaining persistence, composition and quality of perennial pastures.
- ▶ Use Food On Offer (800 kg/ha) and 75% ground cover thresholds in grazing management and stock containment areas when required to optimise persistence and maintain good pasture composition.
- ▶ Manage ewes to Lifetime Wool guidelines to achieve condition score 3 for joining and lambing to improve weaning rates and reduce ewe mortality.
- ▶ Maintain soil fertility at critical levels for optimum production, persistence and return on capital.
- ▶ Optimise feed quality and supply at joining for increased ovulation and conception rates.
- ▶ Use shelter for increasing lamb survival.



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