June 2011

EverGraze

More livestock from perennials

Update

More lucerne and choice of lambing time provides options

Photo by Bernadette York

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More lucerne and choice of lambing time provides options

EverGraze Proof Site

► For a September lambing meat-Merino system, 40% of the farm to lucerne had greater lamb production and gross margins than 20% of the farm to lucerne. The suitability of soil types should be considered before planting more lucerne.

► For a perennial feedbase of 20% lucerne and 80% grasses (in this case phalaris and tall fescue), lambing in July produced greater gross margins over the years tested, although modelling indicates the opposite should occur over a longer time frame.

► The inherently flexible 'split joining' system performed best over the years tested, indicating the need to have flexibility in livestock systems to limit costs while still producing more saleable stock in poor years, and capitalising on better years to increase lamb/ha.

The Wagga EverGraze Proof Site set out to increase profitability by achieving higher stocking rates and weaning percentages (product/ha) and increasing flexibility to make the most of good years and minimise supplementary feeding costs in failed springs and autumns. The site also aimed to reduce recharge and prevent weed invasion and erosion caused by bare ground.

To achieve this, lucerne, tall fescue and phalaris were sown with sub-clover in 2005 into separate paddocks on a site with a long-term annual average rainfall of 620mm with no acid soil issues.

Michael Friend, Proof Site Leader at Wagga, explains how the site addressed a number of questions and how after four years of failed springs (2006-2009), 2010 was an exceptional year, which enabled the systems to perform closer to expectations.

How much lucerne?

Firstly, for spring lambing - Is there any benefit of having more than 20% of the farm down to a summer-active species?

To answer this question, spring (September) lambing flocks (CentrePlus ewes joined 50:50 to terminal and Merino sires) were run on 5ha 'farms' (three of each) where lucerne was either 20% or 40% of the total farm. The rest of the farm comprised of paddocks of tall fescue and phalaris.

Ewe stocking rate was high (8.5 ewes/ha) for the district and lambs were sold at weaning (three months from start of lambing) unless seasonal conditions permitted.

The average gross margin for 2006-2010 for spring lambing with 40% lucerne was $176/ha compared to $118/ha for 20% lucerne (Fig. 1).

In every year the 40% lucerne system performed better, but it was in the wetter 2010 (the only year without a failed spring), that it excelled. More lucerne in the system enabled greater flexibility with 2010 born lambs. They were retained and finished to much greater weights than lambs born in the 20% lucerne system. The greater gross margin of the 40% lucerne system was due to more lamb (an extra 40kg/ha average per year) and less supplementary feed (70kg/ha less on average per year) than the 20% lucerne system.

Preliminary modelling of the systems over a broader range of years agrees with the conclusion that 40% of the farm to lucerne achieved higher profit than 20% for a meat Merino spring lambing enterprise.

Modelling also shows the benefit of higher amounts of lucerne for reducing recharge. The actual recharge data will be available later in the year.

When should I lamb?

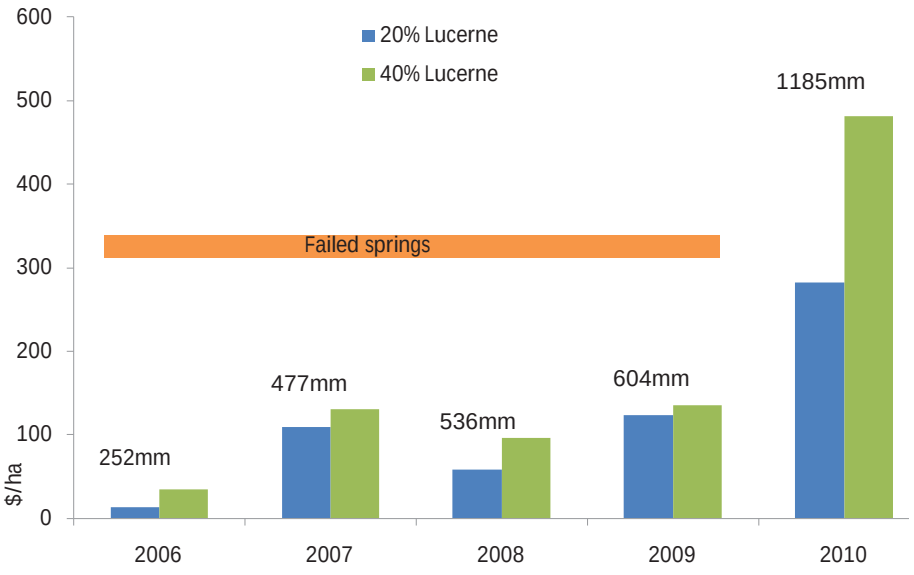
The second main question looked at what lambing time best suited a perennial pasture base - Is it better to lamb in spring (and sell lambs at weaning) or winter (and retain lambs to finish)?

To answer this question, two systems were compared, both running on farms of 20% lucerne, 20% tall fescue and 60% phalaris.

The spring lambing system was as described above, while the winter lambing system ran 4.8 ewes/ha with the aim of retaining lambs for finishing.

A third system (same pasture mix) was also compared, where 60% of the mob were joined for two weeks in early February to a terminal sire

Figure 1. Gross margins for September lambing systems run on farms of 20% or 40% lucerne



with the aim of having 50% of the mob lambing in early July, the balance (and those scanned dry from this joining) were then joined to a Merino sire for a September lambing.

This 'split joining' system ran 6.2 ewes/ha and was designed to be flexible enough to either retain lambs (most years) or sell at weaning (poor years) depending on season.

While ewe numbers varied between the three systems, the different lambing times meant that mid-winter (the normal crunch time) stocking rates of all systems were the same at 11.5DSE/ha.

The 2006-2010 data show that lambing in July and running less ewes/ha was superior to running more ewes/ha and lambing in September (Figure 2). This was largely a result of failed springs restricting the growth rate of September born lambs. The failed springs had much less effect on the growth rate of July-born lambs. Even though more lambs were sold/ha from September lambing, the lower weights of these at sale meant that the average kg lamb/ha was similar between July and September lambing systems.

Supplementary feed was much greater (640kg/ha/year averaged over 2006-2010) for the September lambing system, although they did produce 12kg/ha more wool.

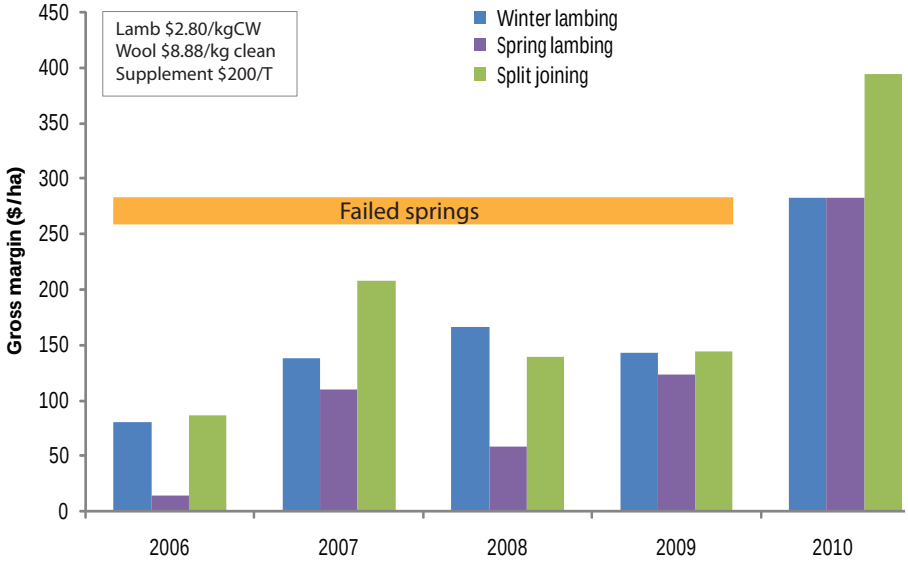
Modelling of systems over a wider range of years indicates the opposite to what we observed – September lambing should yield a higher average gross-margin long term, but clearly in failed springs a strategy is needed to limit costs for September lambing.

Split joining provides options

Split joining produced the highest gross margins over the years tested - $30/ha more than July lambing and $75/ha more than September lambing, averaged over 2006-2010.

In poor years, supplementary feed costs for split joining were much lower than for September lambing, while lamb/ha was similar or greater due to greater lamb growth rates from July-born animals in this system. It also enabled lambs to be retained on lucerne when seasonal conditions permitted (all years except 2006) to increase lamb produced/ha and gross margins.

Figure 2. Gross margins for farm systems grazing a feedbase of 20% lucerne, 20% tall fescue and 60% phalaris



Wagga Proof Site

This system is inherently flexible. Lambs can be retained in most years while lambs and ewes (especially if older ewes are joined to the terminal sire for the July lambing) can be sold early at weaning at acceptable weights to reduce supplementary feeding costs in poor years. This was demonstrated in 2006, the worst rainfall year on record for Wagga, when 35kg lambs were able to be sold early.

Depending on flock structure, individuals should consider the consequences of managing two separate lambing times. It is recommended the first joining to terminals in early February be limited to three weeks to reduce management for this flock.

The site was not designed to compare the performance of the different pasture types. Pastures were planted on different soil types in line with the EverGraze principle of putting the right plant in the right place for the right purpose with the right management.

Acknowledging this however, lucerne persisted better than phalaris or tall fescue at the site, and produced the greatest amount of DSE grazing days/ha, supporting its inclusion in systems at higher levels.

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

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Perennials address salinity, waterlogging & summer feed shortage

Barry and Genie Pearce have a property at Woogenellup, 70 kms north of Albany in WA.

They host an EverGraze Supporting Site which is looking at perennials to address salinity and waterlogging whilst also increasing summer forage production.

"Our farm enterprise includes sheep, cattle and cropping although the dominant enterprise is prime lamb production. The farming system mix is cropping 42%, perennial pastures 19%, annual pastures 33% and trees 6%.

The pastures are mainly volunteer annual rye grass and clover, although I have experimented with forage crops, like rape. We have an area of tagasaste and another with kikuyu. These perennials combined with the lucerne make up about 20% of the farm.

Salinity and waterlogging have affected a portion of the farm. Wind erosion on the lighter soils has also been an issue. These combined problems along with a desire to produce more feed out of season have led me to trial perennial pastures and shrubs on the property.

I have been experimenting with perennial pastures for some time. I first tried lucerne, tagasaste and kikuyu on some of the light country, which proved to be quite a success. The tagasaste and kikuyu combination successfully stabilised the light soils and has provided useful feed for the sheep and cattle. This has encouraged me to think about using other perennials.

The paddock I considered had a significant portion affected by waterlogging. This combined with the salinity prevalent in the paddock over the road prompted me to look at potential options to use the excess water in the paddock.

Good growth in the lucerne paddock in 2009

I was also keen to try to produce quality out of season feed to allow me to finish lambs for market. This was why I went for lucerne and fescue. Another reason was that the bottom third of the paddock was affected by waterlogging. Lucerne would use more water in the profile higher up the slope and the fescue would potentially dominate in the wetter parts of the paddock.

The paddock was sprayed out with a double knock of glyphosate and then sprayseed just prior to seeding. Following this, Chlorpyrifos and Cypermethrin was used for insect control. The paddock was sown in August 2006 using K-Hart double disc openers with press wheels and after seeding, 100 kg/ha of TEK Phos 2:1 (Super CZM + Muriate of Potash) was spread. The seed rates were 4 kg/ha of Stamina GT6 and Cropper 9 Lucerne and 6 kg of Resolute (summer dormant) and Quantum (summer active) tall fescue.

The germination was excellent with a good mix of fescue and lucerne. Managing the fescue and lucerne together was initially tricky. The lucerne emerged and grew faster. It needed grazing but this had to be deferred to allow the fescue to establish.

The fescue component has declined over time. This is most likely due to the dry seasons in 2006, 2007 and 2009, which resulted in drier soil profiles. The lucerne has competed well and would make up 95% of the perennial component.

The comparison paddock has been cropped in the past and since 2006 was annual pasture. However in 2008 we trialled 5 kg/ha of forage rape.

Overall the lucerne has performed very well and has carried higher stock rates than the annuals over the monitoring period except for winter/spring of 2010. This has provided 1638 more DSE grazing days per ha than the annuals with almost identical levels of supplementary feeding in the summer/autumn of 2010.

EverGraze Supporting Site

Producer: Barry and Genie Pearce

Location: Woogenellup, WA

Property size: 558 ha plus 420 ha leased

Enterprises: Mixed farming system, sheep, cattle, cropping

Pastures: lucerne, tall fescue, rye grass and clover

Barry and Genie

The additional feed has provided a great finishing system for lambs. We run a self replacing South African Meat Merino flock and the last of the lambs finish on the lucerne. The response of the lucerne to summer rainfall is fantastic. Late spring and summer rains meant that the animals could not keep up with it. The value of quality green feed in summer cannot be underestimated.

An additional advantage has been the production of hay from the lucerne paddock. Over the period, the lucerne produced an additional 100t of hay on top of the usual grazing that was carried out.

My experience with perennials has certainly been positive. I plan to concentrate more on the animal side of the farm, which has always been the dominant part of our operation. Perennials will continue to play an important and ongoing role in this."

A financial case study on Barry and Genie's farm can be found on the EverGraze website www.evergraze.com.au

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Lucerne-grass pasture mixtures control runoff and erosion

While lucerne is the most widely sown improved pasture species on the North-West Slopes of NSW, grazed stands have problems associated with low persistence, low growth in winter, potential bloat in cattle and low ground cover leading to high surface runoff of water.

More widespread use of lucerne in livestock systems is likely if these issues can be overcome.

The EverGraze Northern NSW team is running field experiments to test mixtures of lucerne with species of either temperate or tropical perennial grasses to determine persistence, production, soil water use and affects on surface runoff and soil erosion.

A rainfall simulation study, where a storm of 105 mm per hour for 30 minutes is applied and repeated again one hour later, has shown that lucerne-grass mixtures reduce surface runoff and erosion in both spring and summer compared with lucerne alone.

Runoff losses and erosion are reduced in the lucerne-grass mixtures because of higher levels of ground cover and litter mass together with an interaction with stored soil water.

Fig. 2. Portable rainfall simulator delivering a rain storm of 105 mm/h for 30 minutes on a lucerne + digit grass pasture mixture.

Studies will continue to evaluate how the lucerne-grass mixtures use stored soil water and how this affects water use efficiency of the system.

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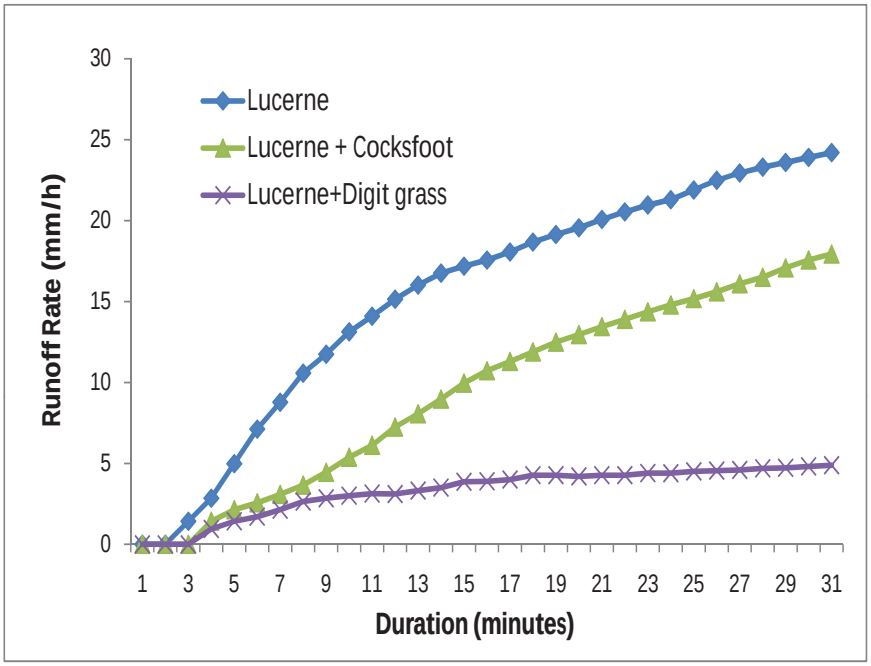


Fig. 1. Runoff response for lucerne, lucerne+cocksfoot and lucerne+Digit grass pastures subjected to a simulated rain storm of 105 mm/h for 30 minutes in autumn 2011.

Selective grazing focus for PhD student

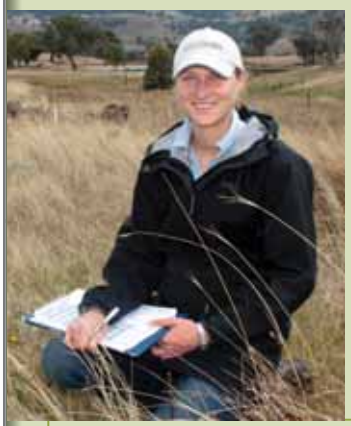
A PhD project being undertaken by Felicity Cox at the Orange Proof Site in NSW aims to gain a better understanding of the complex interactions between native pastures, sheep grazing and animal performance.

The project explores the diet selection of sheep grazing native pastures at the Proof Site in terms of plant species, plant parts and seasonal variation. It is important in the development of more efficient grazing systems and increased production.

The project also investigates the diet quality of sheep grazing within different management systems (continuous grazing and high-intensity rotational grazing) and the effect on livestock production parameters (live weight, body condition score, wool fibre length and fibre diameter).

Diet quality (metabolisable energy and organic matter digestibility) is determined using chemistry analyses of faecal samples, using calibration equations developed specifically for the native pasture at the site. Additionally, the project attempts to investigate the grazing location of animals within a landscape by tracking the animals using GPS collars.

An interesting observation to date has been the strong seasonal selection of key species by the animals. Further investigation of this may provide a means of inferring the animal's diet quality and aiding the decision making process of where and when to move animals within a grazing system.



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EverGraze thanks Angela

Back in 2003, EverGraze was a research idea initiated by the Dryland Salinity CRC with MLA. A group of leading scientists were challenged to put forward a potential perennial pasture-based livestock system that could increase profit by 50% and halve the recharge to ground water.

Over eight years EverGraze has evolved to more profitable, sustainable grazing systems tried out on many farms following the "Right Plant, Right Place, Right Purpose, Right Management" principle.

Through this journey Angela Avery, Victorian Department of Primary Industries, has been the EverGraze national research and project leader. As most people involved in EverGraze know, Angela does this job with extreme care, diligence and a deep commitment to her research teams.

Inevitability Angela's senior agency research responsibilities meant she could not give EverGraze the time she had so passionately done in past years. Vic DPI and Future Farm Industries CRC have agreed reluctantly to her finishing up on 30 June, while we appoint a new EverGraze project leader. Such is Angela's loyalty to EverGraze she will continue to assist the new leader.

On behalf of all EverGraze participants, I most sincerely thank Angela Avery for her superb leadership and remarkable achievements.

Kevin Goss
CEO, Future Farm Industries CRC

Angela's contribution to the EverGraze National Advisory Committee has been quite extraordinary.

Angela's unwavering loyalty, optimism and ability to find logic and direction has supported the NAC throughout its journey. Hard work, determination and sincerity are also qualities that the NAC has come to admire in Angela. Such qualities are rarely seen in one package and we will miss her.

On behalf of all of the members of the NAC, I would also like to thank her sincerely for her strength, guidance and friendship.

Chris Mirams
Chair, EverGraze National Committee

New FFI CRC perennial legume species show potential

Research at the Wagga Wagga, Hamilton and Albany EverGraze Proof Sites have demonstrated how important lucerne as a summer active perennial legume is to profitable and sustainable perennial farming systems.

Future Farm Industries CRC is developing new species and cultivars which have the potential to expand the agro-ecological zone for which it is possible to grow perennial legumes.

Messina (Melilotus siculus) demonstrated persistence and production in highly saline and waterlogged conditions in WA (Darkan and Yealering) and SA (Naracoorte).

Tedera (Bituminaria bituminosa ssp. Abomarginata), tested in WA and NSW, has shown huge potential as a drought tolerant legume which can continue to produce and retain its green leaf over summer despite significant heat and moisture stress.

Acid tolerant lucerne (Medicago sativa) and associated rhizobia, tested in NSW, SA and Victoria, has demonstrated significant increases in tolerance to acid soils which are high in aluminium.

Birdsfoot Trefoil (Lotus corniculatus) has proven its persistence and production in soils which are too acid or waterlogged for lucerne or too dry in summer for white clover.

Birdsfoot trefoil project leader, Graeme Sandral (NSW DPI, Wagga Wagga) explained that when sown with a perennial grass such as phalaris, tall fescue or cocksfoot, Birdsfoot trefoil has the potential to replace sub-clover as the dominant legume in a wide range of pastures across southern Australia.

EverGraze is partnering with the Birdsfoot trefoil project and producer groups to test and demonstrate the performance of the species on farm.

The first of these trials will be 2 ha of Birdsfoot trefoil mixed with phalaris sown on Andrew Walta's farm in association with an existing demonstration site in Euroa, Victoria this month. The site is prone to waterlogging and too hot and dry in summer for white clover to persist.

It will be compared to a sub clover/phalaris mix which is currently the highest performing combination in the existing trial. A high acid/aluminium soil on the property will also be over-sown into an existing stand of native pastures to test the potential use of the species.

It is expected that Birdsfoot trefoil and Messina will be ready for commercialisation in 2014, while the Tedera program will be entering into a plant breeding phase over the 2011 to 2014 period.

New perennial grass varieties of Phalaris and Cocksfoot have been tested through Victoria and NSW.

Results to date indicate that one variety from each of Phalaris and Cocksfoot will be selected for commercial release.

The new varieties will be targeted for the more dry marginal areas of permanent pastures and in the cropping zone where farmers are looking to improve winter pasture production and summer grown cover. Commercialisation of these new varieties is likely to be in 2014.

For more information visit Future Farm Online http://www.futurefarmonline.com.au/

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EverGraze National Advisory Committee

Vicky Geddes, a partner in a large mixed farming business at Holbrook, NSW, has joined EverGraze's National Advisory Committee. Vicky brings a wealth of experience, applying her science qualifications to improving livestock productivity from perennial pastures and her skills as a policy executive in government, to complement the other producers on the committee – Debbie Shea, Ararat, Victoria; Morgan Sounness, Wellstead, WA; and James Street, New England, NSW.

The National Advisory Committee keeps a close eye on all aspects of EverGraze research and extension activities, and makes recommendations to FFI CRC on management and delivery of what is largest of the CRC's projects.

Chris Mirams has chaired the committee since its inauguration, and has been highly effective in guiding the committee and in advocating for EverGraze within industry. Chris's planned departure from this role has been postponed until later this year when the new EverGraze project has been settled between FFI CRC, Meat & Livestock Australia and Australian Wool Innovation Limited.

BetterBeef and BESTWOOL/BESTLAMB

The Victorian BetterBeef and BESTWOOL/BESTLAMB programs are unique and innovative networks providing a framework for sheep and beef producers to improve their farming business. EverGraze partners with the networks through Supporting Sites and other activities, facilitating the uptake of practices based on the latest research.

Being involved

Network groups involve 10 to 15 producers meeting on farm around six times each year. Each group has a coordinator (from private industry or DPI) and tailors the program to their own collective requirements.

The group becomes a forum for exchange of information and learning which is very effective allowing participants to systematically build on previous experiences and knowledge.

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Associate membership is a great way of keeping in touch with extension activities delivered by BetterBeef and BESTWOOL/BESTLAMB.

Associate membership is **FREE** of charge and available to anyone with an interest in the Victorian grazing industries.

Associate members receive:

- invitations to phone seminars and webinars
- invitations to field days and workshops in your region,
- a copy of the networks newsletters,
- the Networks email newsflash and
- discounted entry fees to some conferences and Network events.

Diary dates

Friday 17 June	Steep hills grazing systems field day **Flowerdale, VICTORIA**	Brad Costin P: 57840609 E: brad.costin@dpi.vic.gov.au
Monday 11 July	Managing pastures for climate change Supporting Site field day, **Murmungee,VIC**	Tim Ekberg P: 03 5727 3931 E: tim@farminganswers.com
Wednesday 14 September	Perennial Pasture Systems Annual Conference **Ararat, VICTORIA**	Rob Shea M: 0438 521357 E: yadin@netconnect.com.au

What's the latest?

The 'Feed budget and rotation planner' has been updated and is now available on our website www.evergraze.com.au
This spreadsheet is designed to help you to plan your rotational grazing systems, determine appropriate stocking rates, calculate your pasture growth rates, determine how long your paddocks will last and calculate the most economical ration for your stock.

Dont know where to start?
Contact your Regional Extension Coordinator

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