

This edition of EverGraze Update focuses on recent survey results and the results of research on additional benefits of perennials, such as improving reproduction performance and lambing.

We trust that you enjoy this edition of EverGraze Update and welcome any feedback via email at gill.fry@networksw.com.au

Producer survey shows impact

During April, EverGraze commissioned a survey of 600 producers and extension agents who have been involved with EverGraze over the last four years. In addition, 100 producers, who according to our records have not attended any EverGraze events, were also interviewed.

Key findings were that producers who were involved in EverGraze activities were significantly more likely to;

- have increased the area of perennials on their farms
- be actively planning or considering making changes to management and use of perennials in future years
- be planning to make changes to livestock management in future years
- be addressing environmental issues on their farms

In addition, producers who have attended EverGraze field days and events have a better understanding of matching perennials to soils, using summer active perennials, managing grazing to maintain 70% ground cover and managing grazing to improve persistence of perennial species.

Producers were very interested in ways to manage and integrate native pastures with areas of improved pastures within the farm. Also, both producer and extension agents are looking for ways to use perennials to improve reproductive performance of sheep. Another topic of interest is how to match different perennials to the soils and landscape of the farm.

The results from the survey will be used to provide direction for future extension and research and a full report on the survey will appear in the next EverGraze Update later this year.

We thank all producers and extension agents who participated in the survey. It is essential we obtain feedback so that EverGraze continues to meet the needs of producers and advisors.



EverGraze participants gather at a recent field day

October 2010

In this Issue

Page 1 Producer survey shows impact

Page 2 Lucerne leads in ovulation research

Page 3 A change at the helm

Page 4 Shelter increases lamb survival at Hamilton and Wagga

Page 6 Providing shelter can improve profits

Page 7 Get ewes into right condition at lambing

Page 8 Latest events
What's new

1

For further information;

Angela Avery,
EverGraze Research Leader,
P: 02 6030 4578
E: angela.avery@dpi.vic.gov.au

Kate Sargeant,
EverGraze Extension Leader
P: 0428 325 318
E: Kate.Sargeant@dpi.vic.gov.au

Gill Fry,
EverGraze National
Communications Coordinator,
P: 03 5573 4539
E: gill.fry@networksw.com.au

Visit the website:
www.evergraze.com.au

Lucerne leads in ovulation research

The EverGraze Proof Site at Wagga Wagga has been researching the effect of short term grazing of lucerne and chicory on increasing ovulation rates.

key research

- ▶ Short-term feeding of live/green pastures (summer perennials) can flush oestrus in synchronised ewes
- ▶ Lucerne and chicory can lift ovulation rates in synchronised ewes



The research aimed to investigate the effects of short term grazing of live lucerne and chicory on ovulation rates in summer/autumn joined Merino ewes compared to the existing dead perennial pasture, phalaris with and without short term lupin grain supplementation.

The research trialled four different grazing treatments;

- phalaris (*Phalaris aquatica*),
- phalaris plus 500g lupin grain per ewe per day,
- lucerne (*Medicago sativa*)
- chicory (*Chicorium intybus*)

The study used 100 synchronised Merino ewes per treatment and was repeated over three years (2006, 2007 and 2008). In 2010, the trial was repeated using unsynchronised ewes.

Lucerne and chicory are perennial pastures that provide good quality nutrition during the summer and autumn when traditional annual pastures are low in nutritive value.

Lucerne is suited to medium and high rainfall areas and in addition to extending the supply of quality pasture, can be sown as a pasture phase in crop rotations to provide a disease break and fix nitrogen.

Chicory is more tolerant of acid soils than lucerne, thereby providing an alternative where lucerne cannot be grown.

The mechanism driving the increase in ovulation rate from either green feed or lupins is not known. Research in recent years

suggests that energy is the nutritive factor of importance, although it is not clear exactly how it works. It is likely to be either an increase in the number of ovarian follicles which develop and ovulate (more eggs), or a reduction in the death of these follicles.

2006 to 2008

For the trials from 2006 to 2008, oestrous cycles were synchronised using an intravaginal CIDR® inserted for 12 to 14 days. Nine days before the CIDR's were removed, the ewes were placed on one of the four grazing treatments. Ewes were removed from the grazing treatments when the CIDR's were removed (see Figure 1).

It was expected that the mean time of ovulation would occur approximately three days after CIDR's were removed.

Ewes were weighed and condition scored (without fasting) at the beginning and end of the nutritional treatment periods.

Results - 2006 to 2008

Ewes grazing lucerne pasture achieved an average increased ovulation rate of 10% (see Fig 2). Chicory also produced greater ovulation rates than ewes on a diet of phalaris or lupins.

It is interesting that these results were achieved during extremely dry years where pasture availability was low (<1000kg DM/ha) (see Figure 3).



Ewe with twin lambs

This graph shows that more ewes had twin, rather than single, ovulations as the quantity of live pasture increased. 90% of maximum response occurred with as little as 350 kg green/ha. This shows that even a small amount of green live pasture on offer can achieve an increase in ovulation rate. Larger quantities of pasture did not lead to much further rise in ovulation rate.

Similarly, as the quantity of live pasture remaining at the end of grazing increased, there was an increase in the proportion of ewes with twin ovulations.

On average, 8% of ewes did not ovulate, and this was similar between treatments and years. The majority of multiple ovulations were twins; only 1.8% of ovulating ewes had triplet ovulations.

2010

In 2010, the ewes were naturally joined on lucerne compared with dead phalaris pasture (had live weeds). 100 ewes were grazed on

Figure 1. Timeline for synchronisation and grazing of treatments

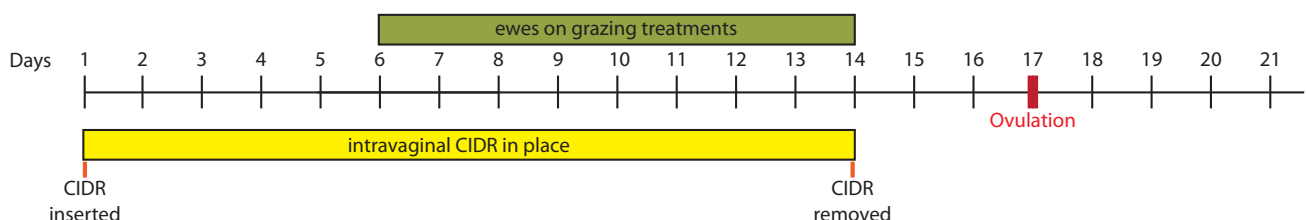


Figure 2. Mean ovulation rate (2006 - 2008)

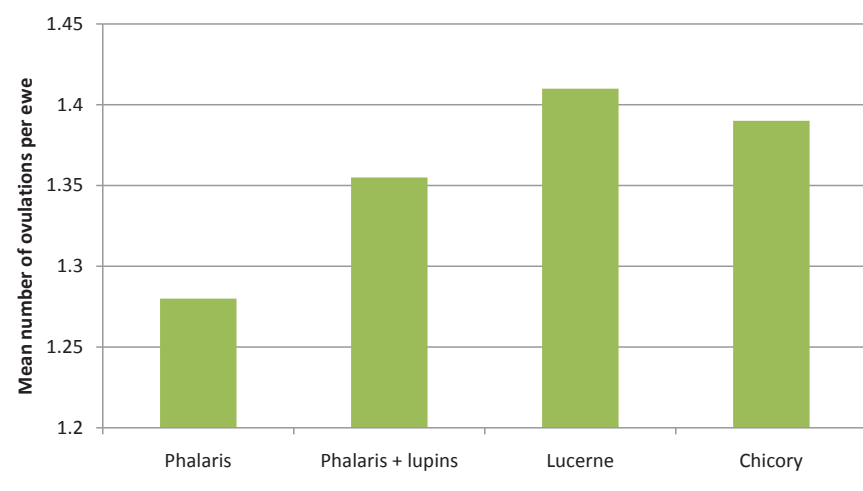
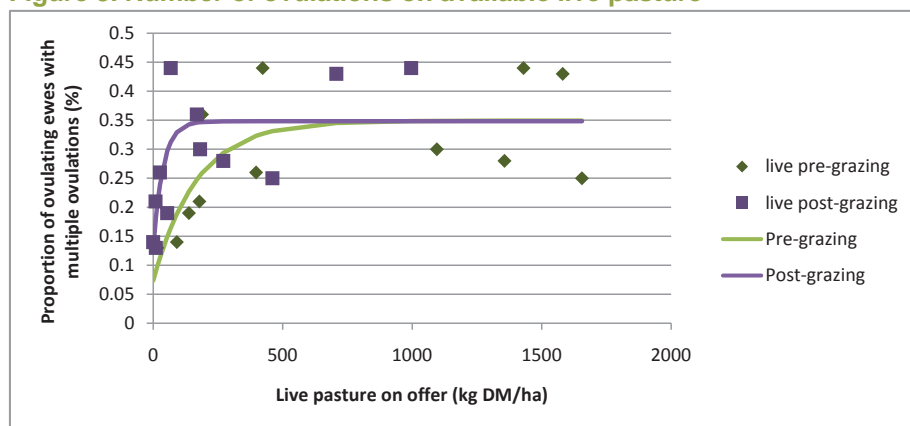


Figure 3. Number of ovulations on available live pasture



each plot for 8 days before rams were introduced for 28 days.

Trials were also conducted on four Supporting Sites grazing either lucerne or dead pasture/stubble during joining.

Results - 2010

At the Proof Site, the proportion of pregnant ewes in the first oestrous cycle bearing multiple foetuses was similar ($P>0.05$) between the lucerne (0.72) and the phalaris (0.63) groups.

The high rates of multiple lambs suggest both groups responded to live pasture so the results are inconclusive, but show that very high twinning rates can be

achieved with ewes flushed on lucerne.

At the Supporting Sites the results are variable, possibly due to the amount of 'live' material in the control. However one property in particular, at Bookham, showed a great response in the increased percentage of twins (see Table 1).

Conclusions

In synchronised ewes, both lucerne and chicory increased the proportion of ewes with multiple ovulations compared with phalaris. Feeding lupins produced an intermediate response.

It is possible that on better quality pasture, where the quantity is maintained at higher levels

Changes at the helm

Geoff Saul has stepped down as the National EverGraze Coordinator. Geoff has been instrumental in coordinating EverGraze extension since the inception of EverGraze in 2004. We would like to thank Geoff for his hard work and dedication and wish him well.



Kate Sargeant has taken on the position of EverGraze Extension Leader. The contact details for Kate are on the front page of this newsletter.



Michael Friend also succeeds Joe Jacobs as Program 1 Leader.

throughout the flushing period, there could be some continued increase in the number of ewes with twin ovulations.



contact

Michael Friend

P: 02 6933 2285

E: mfriend@csu.edu.au



contact

Susan Robertson

P: 02 6933 4199

E: surobertson@csu.edu.au

Table 1. Supporting sites showing percentage of unsynchronised ewes scanned with twins

	Jugiong trial 1		Jugiong trial 2		Bookham		Yass	
	Lucerne	Control	Lucerne	Control	Lucerne	Control	Lucerne	Control
Twins %	44	34	38	43	67	20	20	21

Shelter increases lamb survival at Hamilton and Wagga

key research

Research from the Hamilton and Wagga EverGraze Proof Sites is showing that shelter from perennial based pastures or shrubs can significantly improve lamb survival.

Poor lambing weather causing high chill and heat loss can be a major driver of lamb deaths in some years.

Various forms of shelter belts can be used to reduce wind speed and therefore reduce the chilling of lambs during adverse weather conditions. Providing shelter to lambing ewes helps to reduce lamb mortality.

Hamilton Proof Site

The use of perennial grass hedge rows on the EverGraze Proof Site at DPI Hamilton has reduced twin lamb mortality by close to 40% in both Merino and Coopworth ewes in 2009.

Where access to shelter is limited, the best use of shelter is to scan ewes and place twin lambing ewes in sheltered

paddocks with good feed prior to lambing.

On the Hamilton EverGraze Proof Site, perennial grass hedge rows are used as lambing areas.

Strips of hedge rows 1.0-1.2m wide, (half a seed drill width), were sown and established in 2004.

Hedges were sown in rows 8m-10m apart.

The hedges were oriented north-south to provide the best protection from the westerly winds which is the most common direction for high wind chill in Hamilton.



Tall wheat grass hedges provide shelter for lambs

The bays in between these rows were sown to improved pasture that would supply a large quantity of high quality feed for the ewe during the lambing period.

Previous research has demonstrated that for every one metre of hedge height, there is up to a 10m benefit in reduced wind speed.

By having high quality forage between the hedge rows, a micro-climate is provided for the ewe and lamb to stay in close proximity to the shelter of the hedge. If the ewe does not have to graze very far away to gain her nutrient requirements, then she can stay close to her new born lamb which can shelter next to the hedge row.

Latest Results

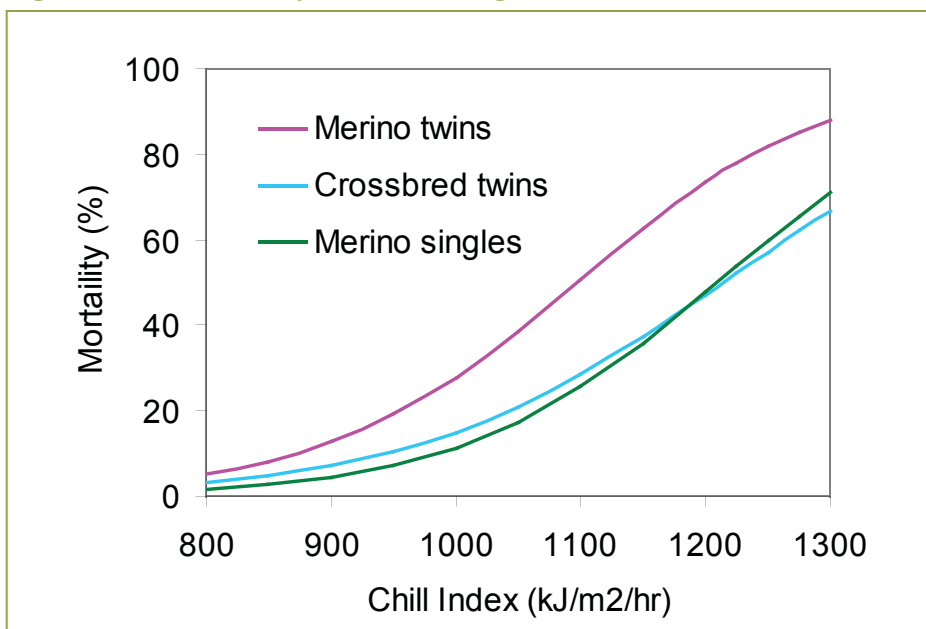
In 2009, ewes on the Hamilton EverGraze Proof Site lambed down in either the hedge row shelter areas or on the flat/slope open areas of the site in normal pasture paddocks.

Throughout the lambing period wind speed measurements were taken.

Table 1. Effect of shelter on lamb survival at Hamilton

	Lamb survival with shelter	Lamb survival with no shelter
Single Lambs	82%	78%
Twin Lambs	87%	76%
Triplet lambs	96%	50%

Figure 1. Lamb mortality with increasing chill index



As the chill index exceeds 1000 units (kilojoules per square metre per hour), the predicted mortality rate increases for new born lambs (Figure 1).

When the chill index in the open exceeded 1000 units, the chill index adjacent to the hedge was on average 101 units lower.

Lambing in shelter resulted in higher survival than lambing in open areas (Table 1.)

At an average birth weight, lambs born in sheltered areas had 90% survival compared to open areas with 69% survival.

There was a significant shelter by birth type interaction where single lambs gained least from the provision of shelter and twins and triplets gained most.

The majority of lamb losses (>95%) and births (>90%) occurred in the period between 9th August and 31st August 2009. During this period there were six days that the average daily chill index exceeded 1100 units.

These days were associated with 40% of all lamb deaths over lambing but only 30% of lambs were actually born on those days.

This indicates that lambs born on the days before each weather event were also affected.

Conclusions

Lambing in shelter resulted in higher survival than lambing in open areas

Throughout lambing, photographic evidence clearly showed both ewes and lambs, but particularly lambs, used the hedge rows.

When shelter is provided close to lambing ewes, their lambs have an increased chance of survival.



Ralph Behrendt

contact

P: 03 5573 0900

E: ralph.behrendt@dpi.vic.gov.au

key research

- ▶ Investigating the potential of fast growing shrubs and grasses and using hessian to provide shelter and improve survival of twin lambs.



Wagga Proof Site

At the Wagga Proof Site, we are investigating the potential of fast growing shrubs to provide shelter and improve survival of twin lambs.

In this experiment, twin bearing ewes lamb in July/August under two types of protection (shrubs or hessian shelter) at relatively high stocking rates. The survival of twin lambs in protection is then compared to that of single lambs born in open paddocks.

Each shrub belt (all Acacia spp) is 10m wide with three rows of shrubs; the inner row is planted with taller species while the outer rows are shorter species to provide a dense impermeable windbreak.

The objective is to have a shrub belt of at least 3m high which provides wind reduction for about 30m.

The hessian shelters were placed closer together (20m apart) due to their lower height.

Latest Results

Little effect was seen in 2006-2007 due to mild winters and dry conditions restricting shrub growth. However in 2008 and 2009 survival of twins in shrubs (80%) was similar to that of singles, whose survival was not affected by the provision of shelter.

Interestingly though, single lambs benefited from shelter in another way – lambs born in shelter had higher weaning weights.



Acacia shrubs provide shelter

Type of shelter also appears to influence ewe and lamb behaviour.

Twin lambs born in shrub belts spent significantly more time (2 hours/day) closer to their mothers in the first day of their lives, compared with twin lambs born in the hessian shelter.

Consequently twin lambs born in the shrub belts had reduced incidence of mismothering, starvation and exposure.

The EverGraze website, www.evergraze.com.au has several EverGraze Action fact sheets including; 'Perennial grass hedges provide shelter at lambing' and 'Improving survival of lambs'



Michael Friend

contact

P: 02 6933 2285

E: mfriend@csu.edu.au

Providing shelter can improve profits

The articles on page 4 and 5 discussed the potential benefits of the provision of shelter to increase the survival of twin born Merino lambs. This article examines the profitability of establishing grass hedge shelter areas with pasture established between the hedges.

The overwhelming benefit of shelter is the survival of multiple lamb births. Twin lambs are identified by scanning and are moved into the shelter areas for the lambing period. Single lambs are maintained in the standard pastures.

The profitability of using shelter areas for twin lambing ewes depends on;

1. the costs associated with establishing & maintaining the shelter areas,
2. the area of shelter required, which depends on the stocking density on the shelter area during the lambing period and the number of twin bearing ewes in the flock,
3. the benefit achieved, which is dependent on the number of extra lambs weaned and the value of an extra lamb.

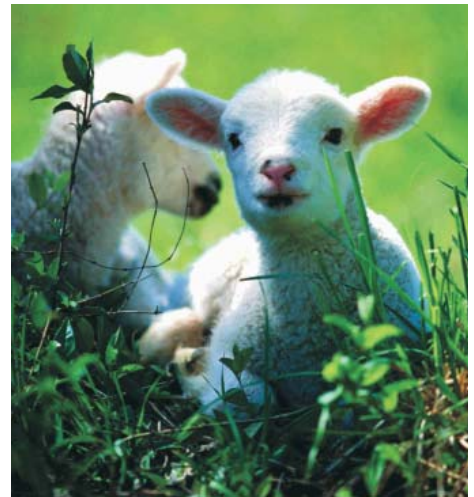
Grass hedges with a pasture inter-row is a relatively inexpensive system to establish and maintain. The average establishment cost is \$250/ha. The system also has a low opportunity cost in lost grazing because the hedge and the inter-row pasture area are both grazed by the lambing ewes and can also be grazed at other times of the year.

In valuing the extra lambs weaned, an analysis was carried out for a 'typical' 1000 ha farm in the Hamilton region in south west Victoria.

The calculations were done for two different sheep enterprise types; a self-replacing Merino flock, and a dual purpose flock producing cross bred lambs

- The analysis accounted for;
- impact of raising twin lambs on wool production & quality of ewe,
 - reduction in productivity of a lamb raised as a twin compared to being raised as a single,
 - extra energy required by a ewe lactating with twins versus a single or being dry.

There is still uncertainty about the level of reduction in mortality that can be achieved through the use of shelter.



Lamb survival is key to profits

This desktop study looked at the impacts on profitability if mortality of twins could be reduced by 25% or by 50%.

We also examined a range of; wool & meat prices, costs for hedge row establishment, and stocking density on the hedge rows during lambing (Table 1).

Table 2 shows the increase in profit (\$/ewe/year) achieved from investing in hedge rows for a Merino wool flock (Merino ewe mated to Merino sire) or a dual purpose flock (Merino ewe mated to a terminal sire).

This is shown for different levels of twin conception and survival with a lamb price of \$4.50/kg and ewe price \$60/hd.

The values account for the cost of establishing and maintaining the shelter area and is presented as \$ increase in profit for each dry, single and twin bearing ewe.

At current prices for sheep meat and lamb, it is highly profitable in every scenario to invest in establishing hedge rows due to mortality of twin born lambs being reduced by 25% or more.

When the proportion of ewes carrying twins is high, the benefits from reducing mortality are greater for the dual purpose flock than the Merino wool flock because the value of the extra lambs is greater.

Table 1: The range of key values examined in the analysis

	Standard level	Range examined
Proportion of ewes carrying twins	30%	10% , 30%, 50%
Survival of twins without shelter	50%	30%, 50%,70%
Reduction in mortality of twin born lambs		25% & 50%
Price of wool & sale sheep	Wool 750 c/kg clean, Ewes \$40/hd, Prime Lamb \$3.00/kg	-50%, std & +50%
Establishment Cost (\$/ha)	250	150, 250 & 350
Stocking density (twin ewes/ha)	30	20, 30 & 40

Table 2: Increase in profit (\$/ewe/year)

Proportion of ewes with twins	Survival of twins no shelter	Increase in profit (\$/ewe/year)			
		Merino		Dual Purpose	
		25% reduction in mortality	50% reduction in mortality	25% reduction in mortality	50% reduction in mortality
10%	50%	1.25	3.00	1.20	2.85
	70%	0.55	1.60	0.55	1.60
50%	50%	3.40	7.95	6.00	12.30
	70%	1.40	4.00	2.50	6.40

contact

John Young

P: 08 9833 6259

E: john@farmingsystems.com.au

Getting ewes into the right condition at lambing

On the northern slopes of NSW, pastures dominated by summer growing native perennial grasses are not suitable as the sole forage base for profitable sheep breeding enterprises.

The integration of other forage sources such as sown pastures, forage crops and/or supplements are required to successfully run breeding or finishing enterprises.

Sheep breeding production systems in northern NSW are based primarily on an autumn joining-spring lambing program or less commonly, a spring joining-autumn lambing program.

For both of these systems there are critical production targets to be met if the enterprises are to perform profitably.

According to Lifetime Ewe Management, in northern NSW the recommended fat score at joining is 3.5 and in late pregnancy (day 90 to lambing) it should be maintained at 3.

On-farm monitoring of fat score for ewes lambing in spring on different pasture types indicated that maintaining ewe fat score at the recommended score 3 in the last 50 days of pregnancy was not achieved on native perennial grass-based pastures on either the Northern Tablelands or the North-West slopes.

key research

- ▶ The recommended fat score at joining is 3.5 and in late pregnancy (day 90 to lambing) it should be maintained at 3
- ▶ In northern NSW, additional forage sources or supplements may be required



To achieve these targets, pastures and forages need to be available in sufficient quantity and quality at different stages of the season.

Spring dropped lambs (September) will be weaned at 3-4 months of age in December/January, which allows about three months for ewes to regain condition for joining in March/April.

It is common that ewes will need to regain 1-1.5 fat scores to attain a fat score of 3.5 by joining.

This equates to 7-10 kg of live weight over a period of about 100 days (i.e. a growth rate of 70-100 g/head per day).

Tropical grass pastures with an appropriate grazing management system would enable ewes to achieve these growth rates.

Once ewes have attained the target fat score for joining they will need to be maintained (or allowed to fall by no more than 0.5 fat score) during the first 100 days of pregnancy.



Condition score of ewes is vital

The critical last 50 days of pregnancy coincides with late winter when green herbage is limiting in northern NSW.

At this time, sown forages like oats or lucerne, are required to maintain ewes and provide for peak nutritional requirements during lambing and lactation (September to November) when feed quantity and quality cannot be compromised if lamb growth is to be optimised.

After weaning, lambs require feed of sufficient quality (digestibility of 60% plus) and quantity to achieve satisfactory growth rates.

Under normal seasonal conditions lucerne or summer forage legumes, such as lab-lab or cow peas, would be the preferred pasture for weaners to maximise growth rate, especially for prime lamb enterprises.

Merino weaners could achieve adequate growth rates on well managed tropical grass



pastures to achieve live weight targets for joining at 18 months of age.

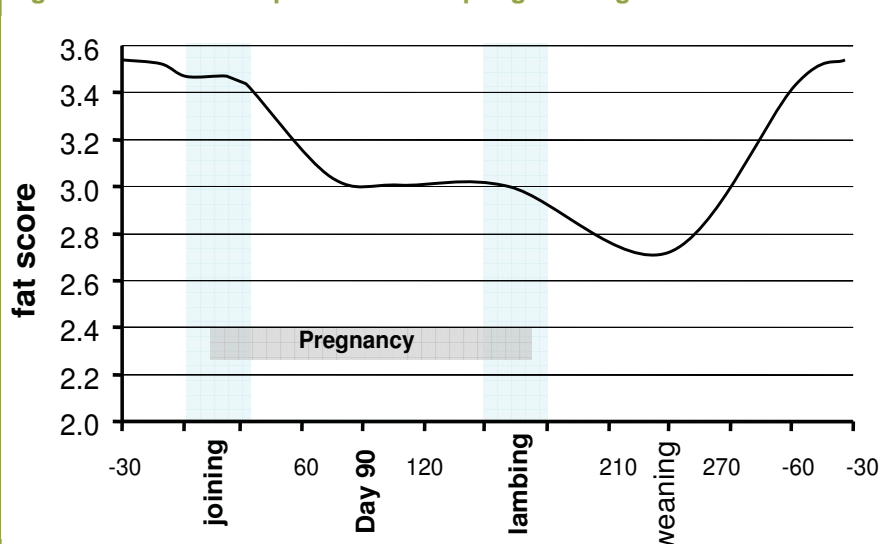
contact

Sean Murphy

P: 02 6763 1244

E: sean.murphy@industry.nsw.gov.au

Figure 1. Fat score requirements for spring lambing ewes



Source: Lifetime Wool Website: www.lifetimewool.com.au

Events in your region

EverGraze Field Days ~ more events and details on www.evergraze.com.au		
Tuesday 5th October	Ararat, VICTORIA Mooneys Gap Supporting Site	Rob Shea, P: 03 5352 1357 E: yadin@netconnect.com.au
Monday 18th October	Tottington, VICTORIA near Ararat,	Rob Shea, P: 03 5352 1357 E: yadin@netconnect.com.au
Thursday 21st October	Nimmitabel, NSW near Cooma	Nancy Spoljaric, P: 0428 516 297 E: nancy@msanda.com.au
Wednesday 27th October	Orange, NSW Panuara Proof Site	Warwick Badgery, P: 02 6391 3814 E: warwick.badgery@industry.nsw.gov.au
Tuesday 2nd November	Willow Tree, NSW near Tamworth	George Truman, P: 02 6742 9203 E: George.Truman@cma.nsw.gov.au
Wednesday 3rd November	Tamworth, NSW Tamworth Agricultural Institute	Lester McCormick, P: 02 6785 1790 E: lester.mccormick@industry.nsw.gov.au
Thursday 4th November	Gwabegar, NSW near Narrabri,	James Fleming, P: 02 6842 1377 E: james.fleming@industry.nsw.gov.au
Friday 5th November	Ararat, VICTORIA Ararat DPI	Julie Andrew, P: 03 5355 0526 E: Julie.Andrew@dpi.vic.gov.au

What's new??? More farmer Case Studies

Last newsletter we introduced you to some of our farmer case studies. There is nothing like looking over the fence to see what other farmers have tried, what has worked well and what hasn't. All of the case studies are available on the website under the information / fact sheets area;

- ▶ **Perennial pasture systems put in practice** - Rod and Bernadette Vearing - south west Victoria
- ▶ **Native grasses an asset for steep hills** – Ian and Susan Maconachie – south west Victoria
- ▶ **Grazing management makes the difference** - Judy and Chris Griffiths, Wangaratta, Victoria
- ▶ **Paddock subdivision allows more strategic grazing** - Terry Hubbard, Three Sisters, Victoria
- ▶ **Kikuyu offers low input, low maintenance alternative** - Austin and Joy Johnson, Fleurieu Peninsula, SA
- ▶ **Pairing perennials proves profitable** - Thys and Erin Gorter, Moberup, WA
- ▶ **Summer-active pastures provide flexibility** - Craig & Woody Oliver, Dunkeld, south west Victoria

Estimating feed availability for native perennial pastures

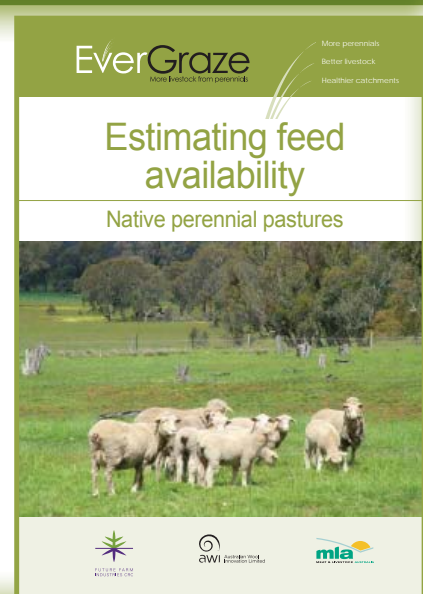
A native pasture can be considered any pasture where native grasses are the dominant perennial species. Most native pastures are a mixture with annual grasses and legumes as well as broadleaf weeds.

Over 1000 grasses can be considered native to Australia.

This booklet contains photographs and helpful data for three of the most commonly found native grass genus in grazing pastures across South East Australia.

Managing grazing pressure correctly is critical for improved productivity and native grass persistence.

A free version of the booklet can be downloaded from the information section of the website www.evergraze.com.au



www.evergraze.com.au

Disclaimer

The information provided in this publication is intended for general use, to assist public knowledge and discussion and to improve the sustainable management of grazing systems in southern Australia. It includes statements based on scientific research. Readers are advised that this information may be incomplete or unsuitable for use in specific situations. Before taking any action or decision based on the information in this publication, readers should seek professional, scientific and technical advice. To the extent permitted by law, the Commonwealth of Australia, Future Farm Industries CRC, Meat and Livestock Australia, and Australian Wool Innovation (including their employees and consultants), the authors, the EverGraze project and its project partners do not assume liability of any kind resulting from any persons use or reliance upon the content of this publication.

EverGraze is a Future Farm Industries CRC, MLA and AWI research and delivery partnership