EverGraze Update

July 2007

Keeping you up-to-date with progress and developments in the EverGraze project

Issued quarterly, EverGraze Update welcomes your feedback, contributions and comments. It is produced by EverGraze, Future Farm Industries CRC, MLA and AWI research and delivery partnership.

EverGraze is developing new grazing systems to increase profits and improve catchment health. With more perennials, better livestock and healthier catchments, EverGraze is aiming to increase profitability of livestock enterprises by up to 50% while simultaneously improving natural resource management outcomes of improved water management, perenniality, biodiversity and soil health. There are experimental sites in Western Australia, Victoria and New South Wales, with a network of Supporting Sites for on-farm evaluation.

In this issue we look at:

Supporting Site developments

The network of EverGraze Supporting Sites is up and running.

Positives from Proof Sites

Despite the season EverGraze systems have produced some great results.

Native grass sites underway

Proof Sites now being set up. In this issue we introduce Chiltern in NE Victoria and Holbrook in Southern NSW.

Pasture Grabs

EverGraze Proof sites at Albany, Hamilton and Wagga Wagga reflect results from the drought year 2006-07.

See full stories below

Supporting Sites underway

Producer groups are now able to trial new pasture or management practices in their local area at a commercial scale with EverGraze Supporting Sites. To be included in the EverGraze network, Supporting Sites need to improve both profits and NRM outcomes, be based on perennial species and be undertaken by a producer group.

Sites are linked to the main Proof Sites and mean that producers in other locations can also be involved in EverGraze activities. Funding is provided by the EverGraze project and local catchment authorities with significant input by producers in establishment and management of the sites.

To date, activities at Supporting Sites fall into three categories:

- Trialling new or different perennial species, such as sub tropical species in temperate pasture areas, chicory or tall fescue where not previously used, and species combinations such as over-sowing lucerne with cereals.
- Improved management of existing pastures, including rotational grazing and fertiliser applied to native pasture, and rotational grazing of improved temperate species.

- New animal production systems from perennials such as summer active perennials to boost ovulation rates in ewes or hedge rows of perennials for shelter at lambing.

The person to contact about Supporting Sites in your region is:

- Namoi Catchment NSW; Simon Turpin , T: 02 6742 9212
  E: simon.turpin@cma.nsw.gov.au
- Border Rivers - Gwydir Catchment; Sally Croker , T: 02 6773 5269
  E: sally.croker@cma.nsw.gov.au
- Lachlan Catchment NSW; Kieran Hawker, T: 02 6341 9307
  E: kieran.hawker@cma.nsw.gov.au
- Murrumbidgee Catchment; Vivien Thomson, T: 02 6940 2943
  E: vivien.thomson@cma.nsw.gov.au
- Murray Catchment NSW; Dale Stringer, T: 02 6051 2206
  E: dale.stringer@cma.nsw.gov.au
- South Coast region WA; Ron Master, T: 08 9892 8521
  E: rtmaster@agric.wa.gov.au
- Warren Catchment WA; Greg O'Reilly, T: 08 9771 1878
  E: greg.oreilly@water.wa.gov.au
- North east Victoria; Lachlan Campbell, E: lachlan.campbell@alpvalleys.com.au
- Glenelg Hopkins and Corangamite Vic; Geoff Saul , T: 0419 328 590

  E: geoff.saul@bigpond.com

Positives from Proof Sites

Despite the difficult conditions over the past 12 months there have been some positive outcomes from EverGraze Proof Sites, including:

- EverGraze farming systems returning a profit in a year similar to the worst case climate change scenario predictions
- The outstanding productivity and persistence of lucerne and chicory
- New interest in kikuyu in the eastern states for ground cover in stock containment areas
- The ability of summer-active perennials to respond quickly to rainfall dramatically reducing supplementary feed costs.

Tall fescue survival was most affected by the drought with virtually no plants persisting at Albany and a reduction of 50% in the density at Wagga. However, survival was excellent in the heavier clay soils at the Hamilton site. Tall fescue is an important species in the EverGraze farming systems as it provides base pasture production in winter and spring and responds to summer rain. The mechanisms behind this varying persistence are unclear and a PhD study at Hamilton may provide some insights to ways to improve its longevity.

While it is early days, the Hamilton site is establishing new benchmarks for pasture and livestock production with 20 to 26 kg DM/ha/mm annual rainfall for all pasture types providing total pasture production of between 8.3 and 12.2t DM/ha and close to 500 kg lamb liveweight/ha or 40 kg carcass weight/ha/100 mm rainfall.

At Wagga, the ovulation study results in 2007 indicated that ewes grazing summer-active perennials increased ovulation rate by up to 22% compared to those on typical pastures.

Next Update we will provide livestock information and further results on perennial pasture recovery. For more details on the EverGraze Proof Sites contact EverGraze Science Leader; Angela Avery, angela.avery@dpi.vic.gov.au

Native grasses EverGraze Proof sites

The Native EverGraze Proof sites are very much in site establishment mode with fencing, treatment application, soil and plant surveys very much on the agenda, and site ewes have been joined in preparation for experiment commencement in spring for the Orange and NE VIC and S NSW sites (Chiltern and Holbrook).

The new Proof Sites will investigate the design and validation of new sheep production systems from native based pastures integrated with improved perennials that increase profit and perenniality; undertake an economic analysis of sheep based production systems that utilise the pasture assets, both introduced and native, within the farm; and develop regional guidelines to improve and/or maintain perenniality in native based pastures.

In the North East CMA at Chiltern, Meredith Mitchell and team will be looking to see if is possible to increase the productivity of native-dominated pastures and ensure the persistence of native perennial grasses by combining fertiliser (superphosphate) application with appropriate grazing management.

The experiment will be the first to combine higher superphosphate use with a rotational grazing management strategy in a regionally-relevant grazing system on a mixed wallaby grass/weeping grass pasture.

The treatments will compare either rotationally grazing or set stocking native grass pastures in four treatments with three replicates.

- Low P, Set stock at 6.2 dse/ha
- High P, Set stock at 9.3 dse/ha
- High P, Rotational graze (time-based) at 9.3 dse/ha
- High P, Rotational grazed (tactical) at 9.3 dse/ha

Time-based rotational grazing is a simple four paddock rotation in which the sheep graze a plot for two weeks, with six weeks before they return to that plot. In spring the plots will be grazed for a week and then rested for three.

From lambing until weaning (August to mid November) the internal fences will be removed and the sheep will graze the whole area.

At Holbrook in the Murray CMA, Jim Virgona's research uses grazing management to increase the quantity of native perennial grasses in native pastures as part of a whole-farm grazing system with phalaris in different areas of the farm.

The experiment will measure the overall gains (profit and NRM) from running a rotationally grazed phalaris system with a native grass pasture. The native grass pasture for this experiment is based on wallaby grass, weeping grass and red grass.

The control is dry sheep grazing 100% native pasture at current best practice. The second treatment will run across native and phalaris pastures and will be a breeding system consistent with EverGraze. The third treatment will be a leader/follower type system with a combination of breeding and dry sheep.

Meredith Mitchell, DPI Victoria, T: (02) 6030 4579 E: meredith.mitchell@dpi.vic.gov.au

Jim Virgona, CSU Wagga Wagga, T: (02) 6933 4174 E: jvirgona@csu.edu.au

Next issue – Orange and Tamworth

Pasture Grabs - Hamilton

The results for 2006 show despite rainfall between May and September last year being 33% below the long-term average (249 vs 356 mm), growth rates during winter and early spring for the Perennial Ryegrass and the Triple Pasture (lucerne on crest; perennial ryegrass on slope; tall fescue on flat) systems were around 50% higher than has been achieved on other high fertility pastures at Hamilton under similar conditions.

While the absence of water logging and mild conditions enhanced pasture production, the combination of new species, appropriate soil fertility and rotational grazing has allowed

higher pasture production than was previously anticipated.

Banquet PRG, despite performing well in the summer of 2005/06, produced less in the winter of 2006, and the poor regeneration of the Italian ryegrass limited the carrying capacity of the Novel pasture system (chicory on crest; Italian ryegrass on slope; kikuyu on flat) in April/May. After re-sowing, the Italian ryegrass provided good production in late winter and spring.

Sub-clover growth in the kikuyu treatments was slow in early autumn-winter despite a high density of seedlings, but by spring most growth in the kikuyu treatment was from sub-clover.

Between October and December 2006 rainfall was 60% below the long-term average (69 vs.162 mm) resulting in the growing season finished 4 to 6 weeks early and reduced the feed on offer going into summer. Consequently, the ryegrass pastures had to be de-stocked from mid-January to the end of March.

123 mm rain fell in January 2007 and allowed the summer-active species such as lucerne, chicory, kikuyu and tall fescue to produce up to 2.6 t DM/ha over the next 4 to 6 weeks. Banquet PRG also responded to the summer rain, while Italian RG and the summer dormant perennial ryegrasses (Fitzroy and Avalon) did not respond to the summer rain.

Following another 45 mm in the last week of April 2007, the perennial ryegrass, lucerne, tall fescue and kikuyu pastures all regenerated well. Sub clover seedlings that germinated after the January rain were still alive and started growing. However Crusader Italian ryegrass sown in 2006 did not persist and these plots were re-sown with Feast II Italian ryegrass.

Watch for *EverGraze Every Month*, a regular update from the Hamilton site in the *Western District Farmer* newspaper supplement.

Contact: Ralph Behrendt ralph.behrendt@dpi.vic.gov.au

Pasture Grabs - Albany

At Albany, 2006 turned out to be one of the driest years on record with the site receiving only 290 mm. Only one year since 1900 has been drier - 2002 which recorded just 264 mm.

Pasture growth rates were less than 20 kgDM/ha/day for most of 2006, only reaching 50 kgDM/ha in spring on the kikuyu pasture. This is much less than the typical peak spring growth rates of 80 to 100 kgDM/ha/day in this environment.

The highest yielding pastures were kikuyu (5900 kgDM/ha), tall fescue (4700 kgDM/ha) and lucerne (3900 kgDM/ha). Throughout summer and autumn,chicory consistently recorded the highest DMD values; only falling below 75% DMD in January. Lucerne had the second highest DMD values for this period at around 70% DMD.

Both species have the potential to grow livestock outside the growing season with chicory proving to be particularly impressive. The kikuyu and setaria/panic pasture DMD values are typical of warm season grasses in summer/autumn between 60 to 65% DMD sufficient for a maintenance diet for adult sheep.

The dry conditions have continued into 2007 with only 95 mm received until the end of May compared to 200 mm expected in an average year.

Following the opening rains in April, it became apparent that the majority of the summer-active tall fescue had died as a consequence of the drought, although these pastures hadn't been grazed since October 2006 (Table 1). The persistence of kikuyu, chicory, setaria and panic through the drought has been excellent. Table 1 also suggests a loss of lucerne plants though the decline in basal cover between 2006 and 2007.

Table 1. Basal cover (%) of tall fescue, lucerne, chicory and frequency cover (%) of kikuyu at Albany in May 2006 and 2007.

Pasture type	2006 (%)	2007 (%)
Tall fescue	3.5	0.0
Lucerne	1.4	0.3

Chicory	2.7	2.6
Kikuyu	84	85

Since late November 2006, the majority of the ewes have been in a feedlot. Joining started on 19 February and the rams were taken out 31 days later. At scanning the ewes had a potential lambing percentage of 146 %. The ewes will remain in the feedlot until a week before lambing to allow sufficient herbage to be accumulated for lambing. Ewes are currently 52 kg in liveweight and condition score 2.8.

Contact: Paul Sanford, psanford@agric.wa.gov.au

Pasture grabs - Wagga Wagga

At the Wagga site (Tarcutta catchment) four separate farmlets are being compared and each has paddocks of lucerne, phalaris and tall fescue.

The Self-replacing merino farm system acts as a control, with merino ewes joined in February to a merino ram to produce replacement ewes, with excess ewes and wethers sold as finished lambs. This system has the lowest annual stocking rate.

Two Later Lambing systems are also being tested, one with 20% of the farmlet lucerne (Later Lambing), and the other 40% lucerne (High Lucerne).

In both the self-replacing and later lambing systems merino ewes are joined 50/50 to either merino or terminal sires in April. Replacement ewes are kept, with all other offspring sold as store lambs after weaning at 10 weeks post-lambing.

Because ewes in these systems have lower nutrient requirements in July (normally the time of greatest feed shortage) than ewes in the self-replacing merino system (as they are essentially still a dry ewe), these systems run 70% more ewes than the self replacing merino system. These systems have the highest annual stocking rate.

The fourth system is Split Joining and involves half of the merino ewes joined in February to a terminal sire with the aim of finishing these crossbred lambs by the end of the year, with the remaining ewes joined in April to a merino to generate replacement ewes. This system has an annual stocking rate midway between the other systems, but it is important to realise that because of the different lambing times and hence nutrient requirements in July that all systems have the same stocking rate mid-winter.

2006 results in

Only 252mm of rain was recorded at the Wagga site in 2006, compared to the long-term average of 620mm. All the ewes were removed from the plots and fed in a feedlot situation to save the pastures sown in 2005.

Perennial pasture grazing systems site

The ewes were taken off the pastures as they reached critical FOO levels between October and December 2006 and then received maintenance feeding in a containment area until May 2007 when sufficient pasture growth had occurred to restock the pastures.

Plant density was maintained in the lucerne but declined to 50% of 2006 levels in the tall fescue (Table 1). The phalaris density declined by 50% in the later lambing treatment, but was maintained at 70 to 90% of 2006 levels in the other treatments. All pastures have grown well after the opening rain with over 1.5 T DM/ha feed on offer.

While in the feedlots, ewes were maintained at an average condition score of 2.9. Although a tail end developed with the prolonged feeding, all ewes have improved since returning to pastures. The February joined merino ewes had pregnancy scanning rates of 116 and 128% (up to 152% in some replicates).

Pasture type	Treatment	2006	2007
		Plants/m^2	
Tall fescue	High Lucerne	54	27

	Later Lambing	51	27
	Split Joined	52	26
	Self-replacing Merino	45	22
Lucerne	High Lucerne	40	40
	Later Lambing	33	38
	Split Joined	38	35
	Self-replacing Merino	40	37
Phalaris	High Lucerne	28	18
	Later Lambing	22	11
	Split Joined	24	20
	Self-replacing Merino	28	26

For further information about the Wagga Wagga EverGraze Proof Site, contact Michael Friend mfriend@csu.edu.au

CRC Salinity becomes FFI CRC – but the partnership continues

The new Future Farm Industries CRC began on 1 July 2007 taking over from the CRC for Plant-Based Management of Dryland Salinity. EverGraze is a major project in the new CRC Future Livestock Production Program. Joe Jacobs from DPI Victoria is the leader of this program. T: (03) 5561 9946, E: joe.jacobs@dpi.vic.gov.au

AW Howard Award to EverGraze PhD student

Maggie Raeside from the EverGraze Hamilton team has won the 2007 AW Howard Memorial Trust $15,000 three-year research fellowship. Maggie's PhD with Charles Sturt University is investigating the grazing ecology of summer-active tall fescue and nitrogen fertiliser application to determine best management strategies.

Contact: Margaret Raeside T: (03) 5573 0752, E: Margaret.Raeside@dpi.vic.gov.au

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