

# EverGraze & Caring for Our Country

## 6 Monthly Milestone

To be submitted 8<sup>th</sup> June 2012

### **Purpose of Supporting Sites:**

1. Develop awareness of EverGraze principles and practices among the local farming community
2. Assist members of producer groups to identify farm productivity, natural resource management, risk management and lifestyle issues that can be addressed using perennial pasture systems
3. Use EverGraze and other resources to assist members of producer groups assess the pros and cons of different options to select the right plant for the right place for the right purpose with the right management to address productivity, NRM, risk management and lifestyle priorities within their farming systems
4. Develop skills of producers for implementation, monitoring and evaluation of changes to the farming system
5. Use research results together with demonstration, monitoring and evaluation of Supporting Sites to develop confidence among producer groups to adopt practices
6. Develop skills and knowledge of Supporting Site coordinators to facilitate producer groups through decision making processes, utilise EverGraze research findings, products and tools, deliver skill development to producer groups and understand the interactions between elements of the farming system and the impact of pasture and animal practices and management decisions on whole-of-farm productivity, natural resource management, risk management and lifestyle.

### **Section 1: Site details**

1. **Name of the Site:** SM – MFS / Taylor
2. **Site location:** “Bellevue”, Monaro Highway, Nimmitabel NSW 2631
3. **Name of the host producer:** Richard Taylor
4. **Coordinator of the Site:** Nancy Spoljaric – Monaro Farming Systems
5. **Start date:** -trial sown 1<sup>st</sup> Sept to 10<sup>th</sup> Sept 2010 using direct drill  
-all three plots sown with 7kg/ha lucerne only (three treatments)
5. **Farm description (will be used in the case study)**
  - a) **Rainfall:** 850mm, elevation 1020m
  - b) **Enterprise(s) (eg. spring calving cows):** Fat Lamb / Merino enterprise
  - c) **Farm area (ha):** 2000
  - d) **Number sheep (ewes/wethers/weaners):** 5000 ewes, 2000 wethers, 3000 weaners
  - e) **Number cattle (cows/weaners):** 300 breeders
  - f) **Describe the combination of pastures, soils and landscapes on the farm:**

Farm has predominantly undulating country on red basalt soil with a combination of both improved and native pastures. Elevation is approximately 1020m. The property is traditionally set stocked, with strategic spelling of paddocks.

### **6. The site and treatments**

#### **a) Describe the site (soils, original pasture, landscape)**

The treatment site is gentle to medium western facing slope, on red basalt soils, with a moderate level of surface basalt rock. 40 ha of the paddock is sufficiently arable to direct drill, and was sown to a phalaris/cockfoot/subclover pasture in 1996. Persistence has been good, though there has been some re-invasion of poa tussock, and Kentucky blue grass.

The main pasture base is phalaris and subclover, though percentage of subclover is highly variable (2%-30%) depending on season. Other species include cocksfoot, ryegrass (Victorian perennial), poa, danthonias, and Kentucky bluegrass.

**b) Describe the treatments and management (fertiliser, pasture sowing/species and seasonal grazing management)**

**Paddock preparation**

**Treatment 1 – Nth Paddock - 56.2 acres**

- sown with straight lucerne (rate 7kg/ha) into a phalaris based pasture (sown 1996). Paddock was sprayed May 2010 with 3L glyphosate (roundup) and left fallow over the winter, resprayed just prior to sowing with another 3L glyphosate
- Very good soil moisture due to fallow period, very good lucerne establishment observed visually.

**Treatment 2 – Middle Paddock – 41.9 acres**

- sown with same rate lucerne (7kg/ha) into same base pasture but only sprayed once with 500ml round-up and 200ml dicamba. Not fallowed over winter so soil moisture not as good. Lucerne establishment was much less and very obvious dominance of phalaris. The aim with this paddock was to set the phalaris back (not kill it) to try and allow lucerne to get going more successfully.
- Patches in paddock with bare ground where lucerne plants have established but in main sown area, lucerne is not as vigorous or as densely established as North Paddock.

**Treatment 3 – South Paddock – 48.3 acres**

- sown with same rate lucerne (7kg/ha) into same base, using chemical called “sprayseed” which “browned” out the phalaris very quickly ie 48hrs but it came back very quickly. Long term there has been no phalaris kill at all and very little, if any lucerne establishment.
- Sub-clovers and Kentucky blue grass appear visibly more evident than other two paddocks.
- **2011**; Spray fallowed 24th June 2011: 3l/ha 450 g/l glyphosate, 200 ml/ha dicamba, 100 ml/ha wetter, 100 ml/ha alphacypermethrin
- Pre sow sprayed 29th August 2011: 3L/ha 450 g/l glyphosate, 200 ml/ha dicamba, 100 ml/ha wetter, 100 ml/ha alphacypermethrin
- Sown 7<sup>th</sup> & 8<sup>th</sup> Sept 2011; 8 kg/ha L70 lucerne. Good establishment. First graze in Jan 2012.

**Grazing Plan**

- Paddocks were rotationally grazed with Xbred ewe lambs to bring to joining weights and merino ewes and wethers periodically
- Grazing records, see below

**c) What were the main production issues being addressed or questions being asked?**

- a. Economics of what pasture to sow versus return / gross margin ie. match pasture economics with enterprise. Merino / wool enterprises rate of return may not warrant pasture improvement investment whereas X-bred enterprises may?
- b. Address in an economic sense the effectiveness of sowing a legume ie .lucerne into traditional phalaris based pasture due to over-riding dominance of the phalaris
- c. Increasing the feed quality and legume content of a run-down pasture to match with a Xbred, fattening enterprise and looking at the most effective strategy to establish lucerne in a traditionally phalaris based pasture.

**d) What were the main environmental issues being addressed or questions being asked?**

Legume production on the Monaro is generally believed to be below potential targets based on average rain fall received and without this nitrogen re-cycling benefit, resultant grass production is often poor. The reasons behind this are poorly understood.

Achieving the optimum legume mix/balance for the basalt soil type of the Monaro as well as analysing the role of perennial legumes in a grazing system has been identified as a key priority for members of MFS. Maintaining an optimal legume mix is vital and integral to increasing production as well as understanding the limiting factors such as rainfall patterns, species selection and soil fertility/type.

By integrating legume's into the pasture system and thereby increasing nitrogen in the cycle, land managers are promoting a more diverse, productive, resilient and sustainable grazing system.

Nitrogen is a key to driving pasture production and helping to correct soil fertility by recycling of N and is therefore a significant contributor to overall soil health and productivity.

Annual sub clovers only last approx 3 years on the heavier basalt soils (possibly related to the wilting point and WHC (withholding capacities) of the basalt soils and problems with retaining and regaining moisture?).

Perennial white clovers are more persistent but are very seasonal. This project is focussing on integrating Lucerne into the pasture system.

**Section 2: Measurements**

- 1. Outline the measurements that have been taken in the last 6 months (or 12 months if you didn't submit a November report) and when they were completed; remember soils, pasture data, livestock movements. Indicate any difficulties in getting measurements completed.**

<b>Monitoring undertaken</b>	<b>Date</b>	<b>Recording spreadsheet filled out and submitted to website</b>
Pasture dry matter cuts	Sept and Dec 2011, May 2012	yes
Species counts, establishment estimates	Dec 2011, May 2012	yes
Soil Tests	April 2010, May 2012	yes
Feed Quality	Oct 2011	yes

**Section 3: Results**

- 2. Enter the results into the EverGraze Supporting Site monitoring spreadsheet, attach the updated spreadsheet and present the final results from the experiment (collated over the years) here.**

**a) Rainfall records (since the beginning of the demonstration)**

**Bellevue Rainfall (mm)**

	<b>2010</b>	<b>2011</b>	<b>2012</b>
<b>January</b>	46.1	21.5	44.1
<b>February</b>		122.8	133.0
<b>March</b>	47.4	92.2	211.4
<b>April</b>	8.6	12.6	101.4
<b>May</b>	207.2	45.7	20.6
<b>June</b>	17.0	70.6	
<b>July</b>	13.4	73.0	
<b>August</b>	33.6	76.5	
<b>September</b>	13.8	24.1	
<b>October</b>	63.7	53.4	
<b>November</b>	65.2	73.3	
<b>December</b>	128.2	52.7	
<b>Total annual</b>		718.4	

**b) Trends in soil nutrient status (since the beginning of the demonstration)**

-nutrient trends not recorded, see soil test results, no fertiliser applied during trial period

**c) Costs of establishment, paddock development and management over time**

**-Total Invoice Paid for establishment = \$13,637.43 (incl GST)**

- chemical = \$1024.42
- fencing/gates = \$2442.94
- pipe = \$957
- seed = \$1306.25
- fert = \$2019.60
- fence construction = \$2,722.50 (\$2.50/m)
- boom spraying = \$664.95 (\$15/ha)
- sowing (direct drilling) = \$2,499.75 (\$75/ha)

Total ha = 59.27

Total cost = \$230.1/ha

Nth Paddock = \$5,223

Middle Paddock = \$3,912

Sth Paddock = \$4,487

**d) Production – grazing days (since the beginning of the demonstration)**

**Nth Paddock** (56.2 acres, 22.7 ha)

- 967 merino wethers - 5th to 31st Oct 2011 – grazing days = 26, SR(stocking rate) = 43hd/ha
- 1109 merino weaners – 7<sup>th</sup> Feb to 28<sup>th</sup> Feb 2012 – grazing days = 21, SR = 49hd/ha
- 222 rams (1 year old) - 2<sup>nd</sup> Mar to 19<sup>th</sup> Mar 2012 – grazing days = 17, SR = 10hd/ha
- 1050 XB lambs – 19th Mar to 26th Mar 2012 – grazing days = 7, SR = 46hd/ha
- 95 merino ewes – 3rd April to 20th May 2012 – grazing days = 47, SR = 4hd/ha
- **Total Grazing Days = 118, Average SR = 30.4 hd/ha**

**Middle Paddock** (41.9 acres, 17ha)

- 86 lambing ewes - 30th July to 11th Oct 2011 – grazing days = 73, SR = 5hd/ha
- 967 merino wethers - 1st to 12th Nov 2011 – grazing days = 12, SR = 57hd/ha
- 1109 merino weaners – 28th Jan to 6th Feb 2012 – grazing days =10, SR = 65hd/ha
- 331 merino ewes – 20th to 28th Feb 2012 – grazing days = 8, SR = 19hd/ha
- 90 merino ewes – 3rd April to 20th May 2012 – grazing days =47, SR = 5hd/ha
- **Total Grazing Days = 150, Average SR = 30.2 hd/ha**

**Sth Paddock** (48.3 acres, 19.5ha)

- Not stocked in spring 2011 as pasture sowing/establishment taking place
- 1109 merino weaners – 9th to 27th Jan 2012 – grazing days =18, SR = 57hd/ha
- 222 rams (1 yr old) – 28th Feb to 1st Mar 2012 – grazing days = 4, SR = 11hd/ha
- 1050 XB lambs – 3rd to 18th Mar 2012 – grazing days = 15, SR = 54hd/ha
- 94 merino ewes – 3rd April to 20th May 2012 – grazing days = 47, SR = 5hd/ha
- **Total Grazing Days = 84, Average SR = 32hd/ha (note info from 2012 only)**

**e) Persistence (growing points and frequency)****f) Pasture condition**

Paddock	1/12/11	29/5/12
<b>Nth Paddock</b>	5510.4kg DM/ha	5460 kg DM/ha
<b>Middle Paddock</b>	5160 kg DM/ha	4554 kg DM/ha

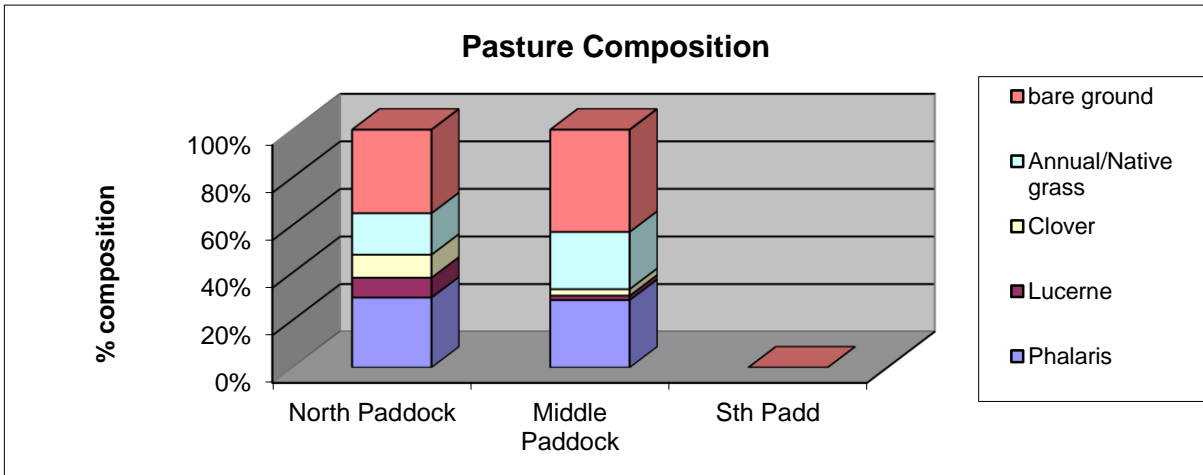
**Feed Quality – October 2011**

Paddock	Protein %	DMD %	Dry Matter %	Metab. Energy MJ/kg DM	Organic Matter %
<b>Nth Paddock</b>	24.3	65	17.8	9.6	91
<b>Middle Paddock</b>	<b>11.0</b>	50	23.1	7.0	90

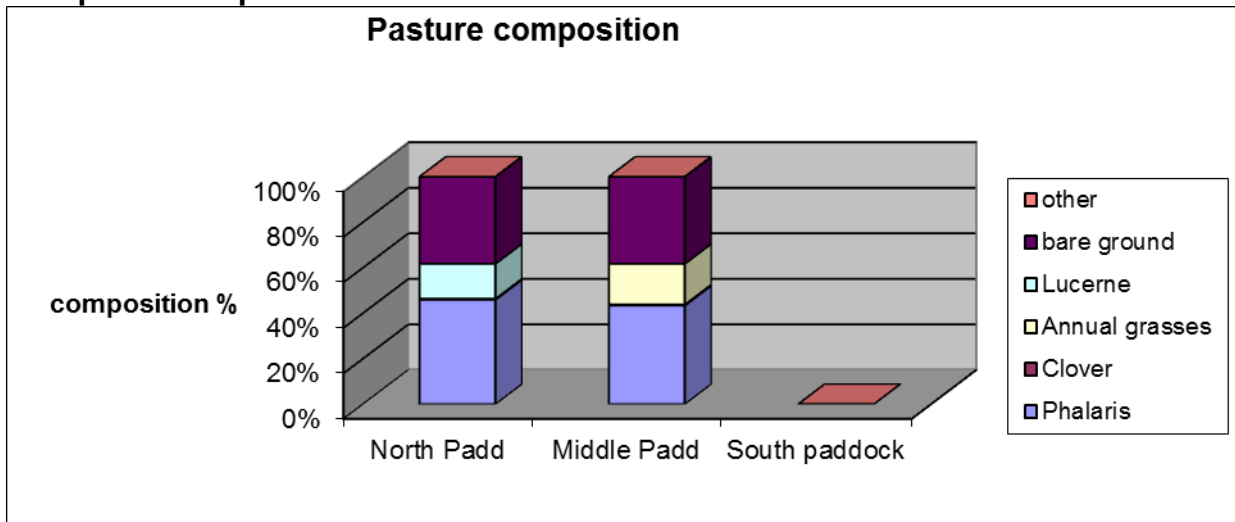
- Pasture composition (if recorded)

Date - 1/12/2011

Composition - estimates

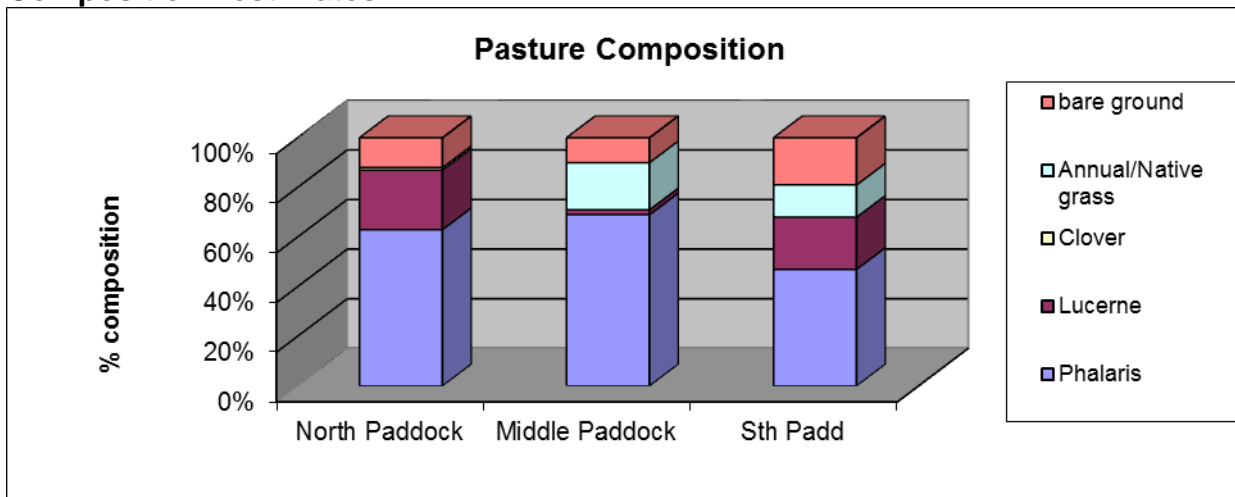


Composition – pasture stick

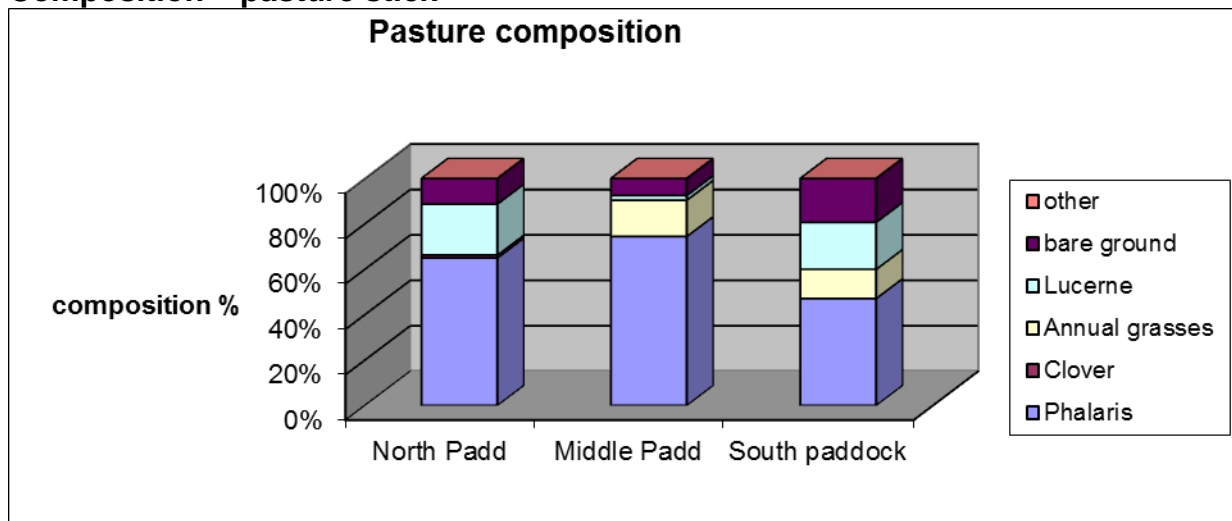


Date - 29/5/2012

Composition - estimates



## Composition – pasture stick



### Section 4: Discussion

#### 3. Provide interpretation of the results ie higher/lower animal carrying capacity, decline/maintenance of sown pastures and why?

As the Lucerne is still pretty new, I think the value of the stock numbers is limited at this stage, but will become interesting over the next few years. It is hard to draw validated conclusions from the stocking rate, grazing data as to longer term carrying capacities because the paddock sizes vary and the paddocks were not grazed at the same time or stock weights recorded on and off.

However, the data suggests that having a higher Lucerne component in pasture does increase dry matter production via the increase in nutrient recycling and subsequent plant growth. This assumption is demonstrated by the higher dry matter yields measured in North paddock (20% higher) versus the middle paddock which had little to no Lucerne establishment.

#### Host comments are as follows;

Other comments are:

1. Successful Lucerne establishment has only occurred where we have done two full sprays – the single low rate of roundup or sprayseed were unsuccessful, partly due to fact there was no fallowing to accumulated moisture, partly because of competition. Even where we have sprayed 3 litres of glyphosate twice, approximately 50% of phalaris has survived.

Conclusion from this, is that Lucerne can be introduced into existing phalaris pastures, but only with this two full spray program. However the amount of phalaris surviving meant final result was a mixed phalaris/Lucerne pasture, rather than a straight lucerne pasture. It is likely that the amount of surviving phalaris will depend somewhat on the timing of spraying, and growth stage of phalaris at spraying, so it therefore can be manipulated. The good news here is that the Lucerne content in mixed phalaris/Lucerne pastures can be topped up by this means, while maintaining much of the phalaris base.

2. Given one of our major issues on the Monaro is having a competitive legume component in our pastures to provide nitrogen, Lucerne is potentially an attractive legume component in our improved pastures, at least on the basalt. However, the serious shortcoming of Lucerne is that it is likely to only persist for 7-10 years, so older pastures will lose their lucerne component. This

trial indicates a method whereby Lucerne can be reintroduced to a phalaris pasture while still maintaining a good stand of phalaris.

3. It would be expected that having a Lucerne component in phalaris pastures will increase total dry matter production through nitrogen fixation. The dry matter cuts provide some evidence of this, as North paddock (with Lucerne) had 20% higher DM production than middle paddock (without Lucerne). It would be good to continue these cuts over a longer period.

It will be useful to get good production and stocking rate information of the phalaris (middle) v phalaris/Lucerne (Sth & Nth) pastures over the next couple of years to see if these trends continue.

#### 4. What do the results mean in the context of managing the rest of the farm, and in addressing the production and environmental issues identified in Section 1?

As above, these conclusions can be extrapolated to include management of the entire property. Improving the legume content of sown pastures is highly desirable in terms of production and environmental benefits ie. increased nutrient recycling, root mass and depth and overall soil health.

5. What does the collaborating group of producers and the host think about the results? To what extent have the results increased the confidence of the producer group to adopt the practices being demonstrated on the Supporting Site?

These results and demonstrations have given renewed confidence to other members of the producer group to place more emphasis on sowing Lucerne into existing phalaris pastures, specifically those on basalt soil. These results give producers an effective spray program to use to integrate Lucerne successfully into a phalaris dominated pasture. It has been a continual challenge for many on basalt soils to maintain the legume component of both native and improved pastures. With these results, several producers now have the tools to try this paddock preparation strategy on their own properties.

### Section 5: Extension, monitoring and evaluation

6. Outline key extension/communication opportunities completed List the details of field days/activities held in the last 6 months, include participant numbers and feedback

**A field day was held at this site in Dec 2010** (this table below has been reported on in both the June and Nov 11 Milestone Report). The Soil Club sessions continue annually, the last session held on November 29<sup>th</sup> 2011 at the second Evergraze site (Cobana). See workshop slides attached.

Activity	Key Result area and/or skills and knowledge areas delivered	Were any EverGraze results or messages presented?	Date	Numbers attending	General comments on feedback/assessment of success – use narrative format for more detailed responses
Soil Club (training activity linked to this site)	Whole farm soil fertility targets and planning	Soil health principles and relationships to pasture growth, matching SR to pasture growth	6 <sup>th</sup> Dec 2010	30	Very successful session following on from 1 <sup>st</sup> session in Oct 2010, exploring soil deficiencies and soil fertility targets. Monaro results analysed and plotted by CSIRO, Dr Richard Simpson. See attached. This activity will be on-going to build a data base of soil fertility trends across the Monaro for the three main soil types.



**7. Please provide information on any highlights that have been achieved or comments you have heard during Field Days, Activities, etc.**

-highlights for this trial include the visual response achieved between the Lucerne component of the three paddocks as a direct result of chemical spray programs. This evident difference in Lucerne establishments in the three paddocks provides a tangible result that is much more likely to be recognised and adopted by the group as it is “local information” and managed by a highly respected land holder in the district. Richard Taylors observations will be received with a high level of interest from other group members.

-one of the goals of Monaro Farming Systems is to implement “on-ground” trials to slowly build a data base of “locally validated” information. This trial has certainly contributed to the data base and helped the group gain confidence in managing similar trials in the future.

**8. Feedback from group members in terms of practice change on farm**

-actual practice change not recorded as producers waiting for final results of this demonstration before committing to practice change. However based on group feedback the “expected” practice change has been recorded. This practice change also relates to the participation of the group in the “soil club” training sessions which were linked to this site.

Practice implemented (use one row per farm)	Issues addressed (and any indication of impact in terms of stocking rate etc)	Area of land covered
-greater area of country sown to Lucerne due to renewed confidence of feed quality and benefits of legumes	-improving soil health and nutrient recycling, increasing stocking rates to match pasture quality	500ha

**9. Please attach any handouts you have developed for the sites or articles that have been written about the site**

- See attached

**10. Please send a high res photo of your host farmer (with their permission) with the farm in the background; and any good photos of the site which highlight key results/contrasts of treatments etc for use in the case study.**

-see photos attached (did not get opportunity to photograph farmer on site)

**11. Please provide any final feedback on your experience in the EverGraze/CHAF Supporting Sites program**

This opportunity has been a huge learning experience for me as a project coordinator with little prior knowledge or skills in pasture assessment and experimental design. Evergraze has certainly made available an abundance of resources and support available to help with the process of pasture assessment and data collection and recording.

My disappointment is that time constraints have prevented me from taking full advantage of these resources and collecting a greater data base of results for this site which would have been useful in the evaluation process.