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PPS Pasture Variety Sites

2009 -2012

Final Report

Meat & Livestock Australia acknowledges the matching funds provided by the Australian Government to support the research and development detailed in this publication.

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PPS Pasture Variety Sites

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Final Report

Abstract

The Perennial Pasture Systems (PPS) group Producer Demonstration Site trial sites provide a comparison between new perennial grass varieties and the more commonly sown phalaris in the Upper Wimmera and Central Highlands region of Victoria. The region has problems with perennial pasture establishment and persistence which restrict their adoption. In recent years there has been very little pasture trial work in the region and PPS was formed to rectify this situation.

Paddock scale trails were established, managed and data collected for grazing brome, Hispanic cocksfoot and winter active fescue pastures in direct comparison to phalaris. PPS concluded that the grazing brome was unsuited to the region and winter active fescue may have a minor role. Hispanic cocksfoot was found to have a role as a variety in the tougher soils that occur in the region and warrants further evaluation. The benefits to farmers in the region are to offer them proven productive perennial grass pasture options that will persist using the right establishment and management techniques. The use of perennials in a grazing system aids resilience in managing climate and more efficient water use, enhancing overall productivity and profitability to the regions grazing enterprises.

Executive Summary

The Perennial Pasture Systems (PPS) group was formed in mid 2007 after a meeting was conducted at Hall's Gap reacting to concerns about the lack of research and extension into productive pastures in the Upper Wimmera and Central Highlands region of Victoria. PPS now has a membership of seventy five farm businesses covering over seventy thousand hectares, as well as several agribusiness members. The aim of the group is to push the boundaries of perennial pasture research in our region and to provide information on productive pasture management. PPS conducts research trials, seminars and an annual conference to provide pasture management information to members. The PPS Producer Demonstration Site (PDS) trials have formed a vital part of PPS activities since their commencement in 2009.

PPS identified the problems with establishment & persistence of perennial based pastures as a major barrier to improving profitability. There are paddocks within the region which are producing two to three times the district average and the PPS group believes that with appropriate research, paddock trials and extension that these improvements to productivity can be more widely adopted. The PPS PDS trial implemented three paddock scale trials to evaluate three varieties relatively untried in the region in comparison to phalaris which is the favoured perennial pasture variety for improved pastures. The varieties were grazing brome grass, Uplands Hispanic Cocksfoot and winter active Fescue. The trials also allowed an evaluation of the new phalaris variety Holdfast GT. PPS is assessing productivity of the varieties as well as their persistence and although the PDS is completed, the pastures will continue to be monitored as part of PPS research. PPS believes that the varieties need further evaluation under paddock conditions to test their suitability before producers can make an informed decision on whether to include them in pasture improvement programs. The trial varieties met with varying success and the following major conclusions were reached.

1. The rapid establishment of the Brome grass gave hope that it was going to be a successful pasture but the dry matter production of the Brome pasture was far below what is required for an economic pasture renovation in this environment.
2. PPS considers that winter active Fescues can play a minor role in productive pasture systems in this district as a compliment to Phalaris pastures**.**
3. PPS found that Uplands Hispanic Cocksfoot is a valuable variety well suited to the drier areas of the Southern Wimmera and Central Victorian regions and expects its use as a perennial variety to increase in coming years.
4. The recent availability of the Holdfast GT Phalaris variety is an important addition to the perennial grasses that can be established in the region. The PDS trials have complemented other PPS trials including the Mooneys Gap EverGraze Supporting Site which is conducting a best practice phalaris management trails and is showing huge productivity gains.

The results and information from the PPS projects are being conveyed to members and other producers who are increasing their perennial pasture knowledge and confidence in managing productive perennial pastures. The PDS trials have been an essential part of this and the results will assist producers in their perennial pasture variety selection and pasture management longer term, enhancing their overall productivity and profitability.

PPS MLA PDS Project

Key findings

The recent availability of the Holdfast GT Phalaris variety is an important addition to the perennial grasses that can be established in the region. The claims that Holdfast GT will persist as well as Australian Phalaris have not been tested due to the time required to obtain results from a new variety. PPS will continue to test the persistence of Holdfast GT in the PDS trials as well as other pastures in the project.

The performance of the Brome has disappointed PPS as it appeared to have many attributes that would be beneficial such as tolerance to heavy grazing and regeneration from seed. The rapid establishment of the Brome grass also gave hope that it was going to be a successful pasture but the dry matter production of the Brome pasture was far below what is required for an economic pasture renovation in this environment.

PPS considers that winter active Fescues can play a minor role in productive pasture systems in this district as a compliment to Phalaris pastures.

The success of the winter active Fescue pasture has given a clear distinction between the winter active Fescues and the summer active Fescues and has caused PPS members to reconsider the use of Fescue based pastures.

The issue of the winter active Fescue running to head earlier than Phalaris is considered by PPS to be an issue in average seasons where good spring rains extend the growing season. The feedtest results reflect the drop off in feed value in the Fescue compared to Phalaris. PPS considers that this is a significant disadvantage to the Fescue in seasons which extend into early summer.

PPS considers that Uplands Hispanic Cocksfoot is a valuable variety well suited to the drier areas of the Southern Wimmera and Central Victorian regions and expects its use as a perennial variety to increase in coming years.

History of PPS

The Perennial Pasture Systems (PPS) group was formed in mid 2007 after a meeting convened by Julie Andrew and Ewan Letts from Victorian Dept of Primary Industries was conducted at Hall's Gap in response to concerns about the lack of research and extension into productive pastures in the region. An executive committee was formed at the meeting which initiated the PPS group. Simon Brady from Jallukar became the groups first President and PPS undertook to commence three paddock scale projects to trial new pasture varieties which had recently become available. Planning of the project and paddock walks were the main activities through 2008.

PPS was able to gain funding to progress the group through Project Platypus and in March 2009 it hired a part time project manager who oversaw the establishment of the three PPS PDS trial sites as well the EverGraze Phalaris and Lucerne trial site at Mooneys Gap. Also during 2009 the group's newsletter was commenced and PPS held their first annual conference and dinner.

During 2010 PPS continued their extension work with the newsletter, field days and the annual conference. A second EverGraze trial site at Tottington was also commenced.

PPS continued to gain new farmer members as well as attracting several members from industry such as agronomists and seed suppliers who are regular attendees at PPS events. In 2011 a soil amelioration project was commenced with funding from the A W Howard Trust. At the Annual Conference dinner Ben Greene from Elmhurst was elected as the group's second president. Also in 2011, PPS became an affiliated member of the regional Landcare umbrella group Project Platypus, which was a natural progression of the close cooperation between Perennial Pasture Systems and Project Platypus since PPS was formed.

In 2012 PPS started another major project with the establishment of four replicated plant variety trials set up to test pasture species under the different soil and climatic conditions in the region.
PS currently has a membership of 75 farm businesses across the Southern Wimmera and Central Victoria. PPS members are heavily involved in prime lamb, mutton, wool and beef production. PPS also has 30 members involved in agribusiness and agronomic services and one associate group member, the Yarram Landcare Pasture Group, which has 16 farms involved.

The total area farmed by group members is 71,453 Ha.

PPS members manage approx 476,455 DSE, made up of 273,340 sheep, 8,024 cattle and 1502 goats. Cropping and export hay operations are also conducted on many of the farms.
The smallest farm in the group is 20 ha and the largest is 5,000 ha. The average farm size is 952 ha and an average of 6,375 dse is managed by group member enterprises.

The aim of the group is to push the boundaries of perennial pasture research in our region and to provide information on productive pasture management to members.

Perennial Pasture Systems Executive Committee 2012-13

President	Ben Greene	Elmhurst
Vice President	Paul Harrington	Mt Cole Creek
Secretary	Matt Kindred	Stawell
Treasurer	Michael Greene	Elmhurst
Committee	Simon Brady	Jallukar
	Wayne Burton	Mt Dryden
	Rob Gee	Greens Creek
	Ken Hall	Joel Joel
	Tony Roberts	Glenlofty
	Tom Small	Tottington
Project Manager	Rob Shea	Ararat

Standing L-R Michael Greene, Matt Kindred, Simon Brady, Ben Greene
Seated L-R ken Hall, Paul Harrington, Tom Small, Tony Roberts, Rob Gee
Inset - Wayne Burton

PPS Research Projects

PPS MLA PDS Pasture Trials

The three pasture trials at Jallukar, Elmhurst and Joel are the subject of this report.

EverGraze Supporting Site – Mooneys Gap

Established in 2009, it is a two paddock trial site, one trialling Lucerne in the Ordovician foothill country of the Great Dividing Range, where lucerne pastures have not been traditionally established. The other paddock is a best practice Phalaris management site. Both trials have been successful and reported through EverGraze. The trial is now officially completed but PPS will continue to monitor the site for plant persistence and productivity.

EverGraze Supporting Site – Tottington

Established in 2010, the site is researching a three year system of pasture establishment in the tough conditions of North Central Victoria. The trial is ongoing.

Sub soil amelioration project – funded by the A W Howard Trust.

Established in 2011, the site is trialling the sub soil treatment of ripping and adding a soil ameliorant in a Lucerne pasture. It is based on work in cropping soils by Dr Peter Sale of LaTrobe University. The first year results have shown positive gains in dry matter production in the treated replicates.

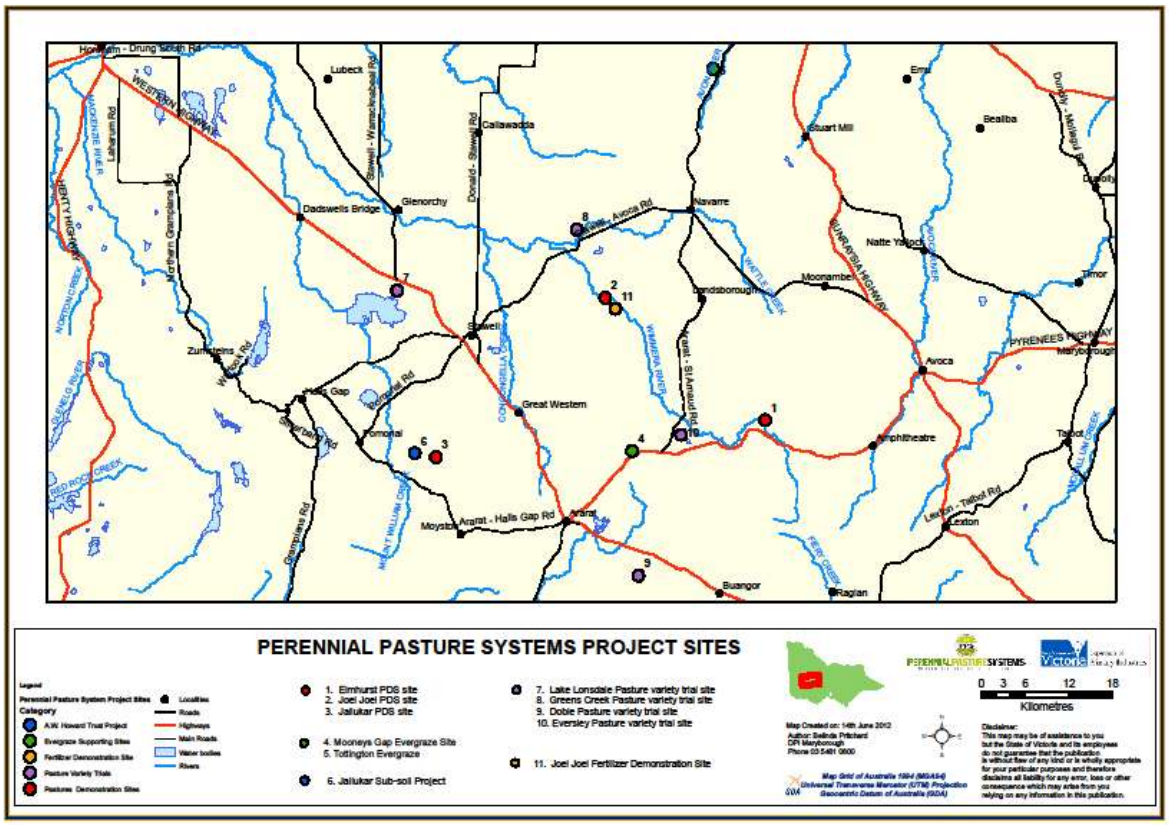
Pasture Variety Trials

Four trial sites were established in 2012 trialling different varieties of grasses and legumes that PPS believes will be of value in improved pastures. They are being compared to control varieties already proven in the region. The trial sites represent the different soil and climatic conditions that occur in the region.

Joel Fertiliser Demonstration Site

A fertiliser demonstration site was included in the Joel PDS site to demonstrate the effectiveness of establishing test strips on member's farms. It was commenced in 2011 but dry conditions did not allow any comparisons to be made. It was continued in 2012 and has demonstration strips of conventional and alternative fertilisers.

Map of current PPS Projects



Proposed Future Projects

Variable lime Project

Paddock scale research into the effectiveness of variable lime application technology on pastures. Physical and economic analysis of the technique to be carried out. The project is funded by the Glenelg-Hopkins CMA (through CFOC) and the Wimmera CMA, It will commence in 2013.

Greenfields

A project to take a newly purchased area of rundown annual pasture to a fully rotational Phalaris-Legume based grazing system. A full economic analysis to be applied; among other research questions, PPS proposes to gain a more accurate estimate of pasture improvement payback times. PPS considers that the current methods overestimate payback times and act as a disincentive to producers who are considering undertaking pasture improvement. Project is currently unfunded but PPS plans to commence it in 2014.

Feedback from members on the PPS group

During 2011, long term members were surveyed about their experience with PPS and their pasture management practices.
There were 26 responses from the 48 surveys sent out and the results are collated below.

Pasture Establishment Questions
Have you established new perennial pastures in the past three years? Yes 92% No 8%
Do you plan to establish new perennial pastures on your farm in the future? Yes 100% No 0%

The total area farmed by survey by PPS members who responded to the survey 22,915 ha
Area sown to perennial pasture in the past three years (2008-2010) by PPS members who responded to the survey 2,389 ha (10.42% of area)
Area sown to forage crops in the past three years (2008-2010) by PPS members who responded to the survey 711 ha (3.10% of area)
Total area of improved pasture in the past three years (2008-2010) by PPS members who responded to the survey 3,200 ha (13.52 % of area)

Have you implemented pasture improvement practices on established perennial pastures in the past three years? –
% of positive responses
Increased fertiliser application – 77%
Implemented Weed control measures (e.g. spray topping, winter cleaning, spray grazing) – 81%
Applied lime applied to existing or new pastures – 81%
Increased use of soil tests – 85%
Altered grazing management of pastures – 88%

Agronomy advice
Do you use the services of an agronomist for your pasture management and establishment decisions? - Yes 96% No 4%
Have you increased your use of agronomists due to your involvement with PPS – Yes 62% No 38%

Perennial Pasture Systems membership
Has your membership of PPS increased your knowledge of perennial pasture management?
Yes 100% No 0%
Has your membership of PPS increased your confidence in establishing and managing perennial pastures? Yes 100% No 0%

Members were asked to rate the following PPS activities from 5 (good) to 1 (poor) as a means of obtaining pasture information from PPS.
The averages of the responses are listed below –

Study tours to leading producers in other areas	4.48	Seminars	4.40
Workshops with guest speakers	4.38	PPS PDS and Evergraze trial sites	4.56
Paddock inspections	4.60	Newsletters	4.42

Summary
The survey responses were from long term PPS members, in fact most were inaugural members from the foundation of PPS in 2007. Their responses to the survey may indicate higher levels of pasture establishment than newer members. Nevertheless, it shows improved pasture establishment at a rate approx 2 times higher than the average for similar areas in Australia (*figure from MLA personal communication*).
The pasture management responses show a high level of best practice management implemented by these members.

PPS MLA PDS Project

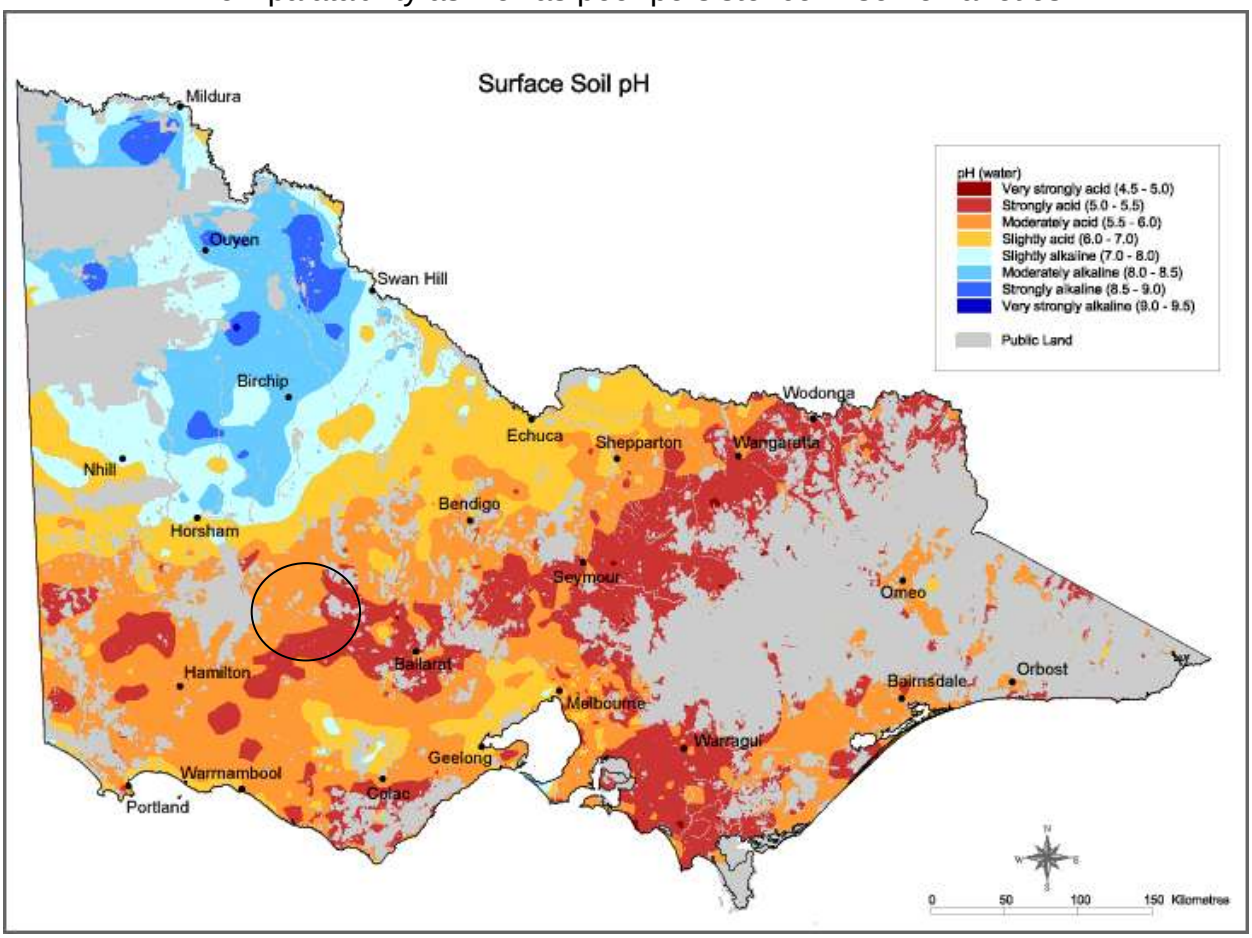
Background

Problems with perennial pasture establishment and persistence restrict their adoption in the Upper Wimmera Catchment and adjoining regions of Victoria. The soils are typically duplex with shallow topsoil overlaying poorly drained clays. They are usually low in phosphorus and sulphur and may also be deficient in molybdenum and other trace elements. The soils are also highly acidic and may contain sodic subsoils; they are also often high in aluminium.

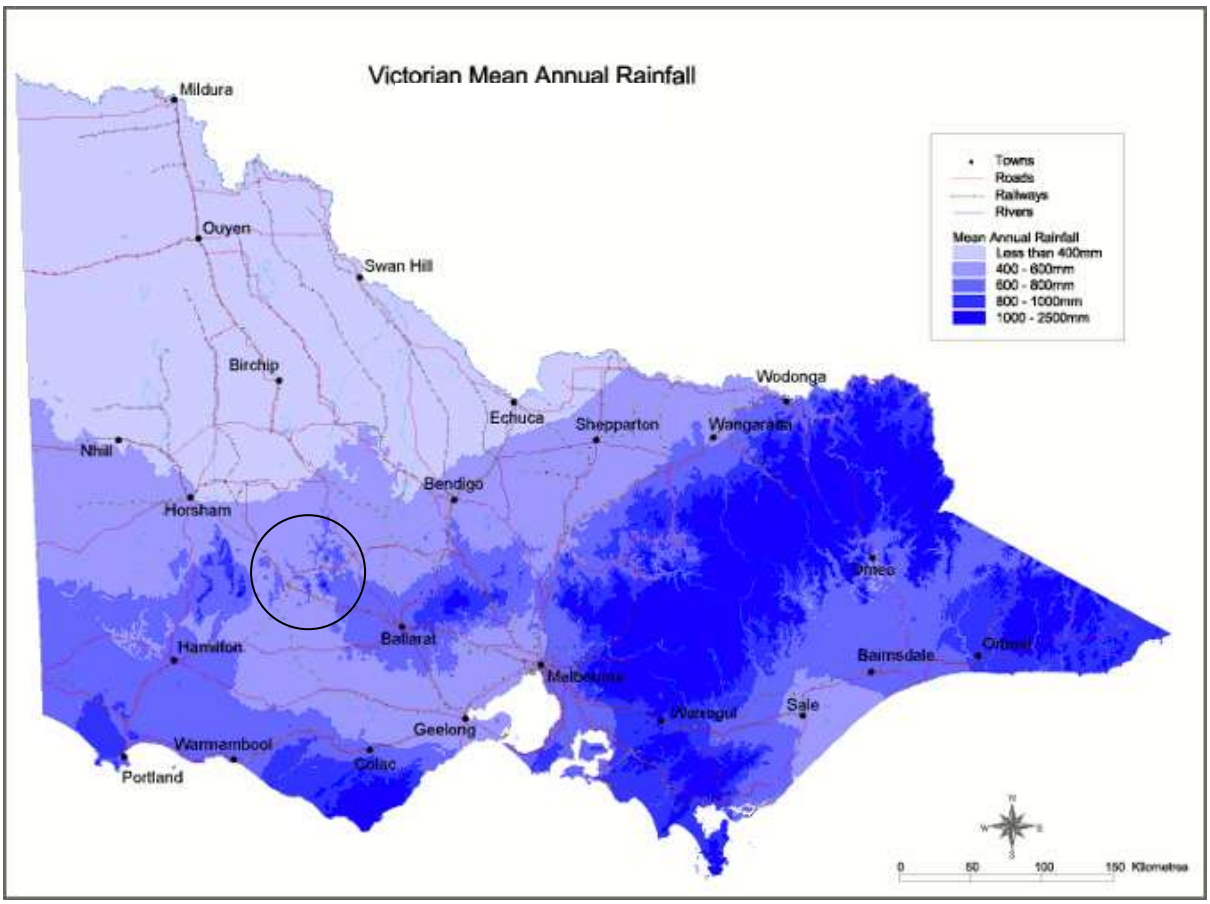
Rainfall in the region can be unreliable creating difficulties in pasture establishment and persistence. Easily established species such as Ryegrass have proven to only have short term persistence and while other species are more suited for long term pasture, several issues restrict their use by producers in the region.

Phalaris is slow to establish and the success of any sowing can be severely affected by weed invasion or low rainfall. High aluminium levels can reduce Phalaris root development which reduces its persistence.
PPS is demonstrating best practice Phalaris management at the PPS EverGraze site at Mooneys Gap which should provide information to producers to give them confidence to increase phalaris use.

Summer active Cocksfoot has proven to be a poor performer in the region due to its low palatability as well as poor persistence in some varieties.



Soil pH Map of Victoria with PPS/PDS Project area circled



Mean Annual Rainfall map of Victoria with PPS/PDS Project area circled

Project Summary

PPS identified the problems with establishment & persistence of perennial based pastures as a major barrier to improving profitability. There are paddocks within the region which are producing two to three times the district average and the PPS group believes that with appropriate research, paddock trials and extension that these improvements to productivity can be more widely adopted. PPS established three trial demonstration sites which are evaluating perennial pasture varieties which are relatively new and may be suitable for the marginal soil types of the region.

PPS believes that the varieties need further evaluation under paddock conditions to test their suitability before producers can make an informed decision on whether to include them in pasture improvement programs.

Project consultant

Andrew Speirs, MS&A Casterton, was appointed by PPS as the consulting agronomist for the project.

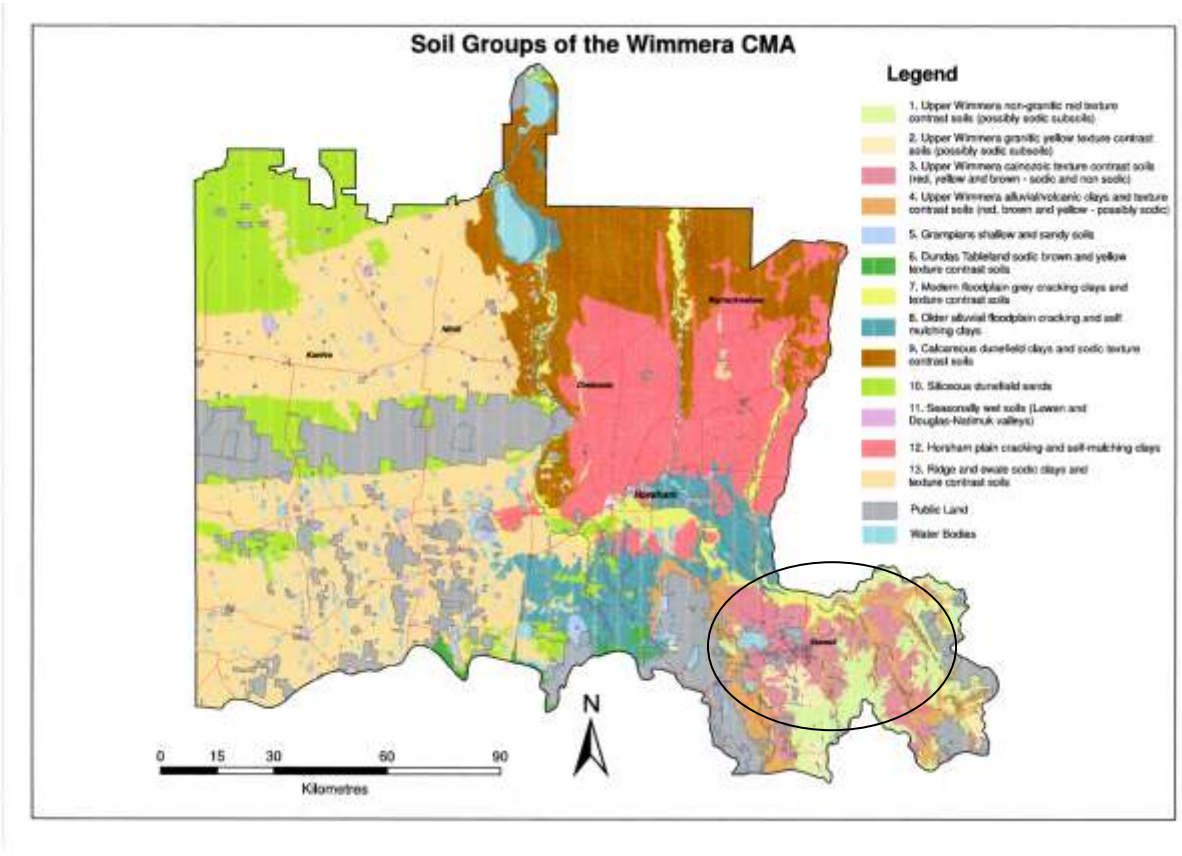
Project Details

Two sites are designed as a comparison trial between the recommended Phalaris/Sub Clover mix (control) & newer species which have not been trialled in the area. The Elmhurst site is a comparison of winter active Fescue against the control & the Jallukar site is a grazing Brome against the control. The third site is at Joel and is a trial of Hispanic Cocksfoot which was sown with another species (Phalaris) as recommended for the area. This site was used as a demonstration of best practice management & was compared with a rundown annual pasture which is typical for this part of the catchment.

Summary of PPS/PDS sites, species and area sown

PPS Elmhurst	**Phalaris & winter active fescue comparison**	**14 ha (2*7ha)**
PPS Joel	**Phalaris/ Hispanic winter active Cocksfoot pasture & Annual pasture comparison**	**25 ha (20ha & 5ha)**
PPS Jallukar	**Phalaris & grazing brome comparison**	**30 ha (2*15ha)**

The PDS ran for a period of four years from 2009 to the end of 2012, PPS intends to continue the trials after the PDS concludes to measure long term productivity and persistence from the sites.



Wimmera River catchment soil map with Project area circled

PPS MLA PDS Project
Site Measurements

Pasture measuring protocols – Andrew Speirs, MS&A Casterton,

As an overall comment, pastures have established well and are a credit to the group. Please find below long term measurements for persistence and productivity of the five paddocks we inspected on Monday the 5th of October 2009

***Monitoring needs for all paddocks*:**

Persistence measurement

- Mark 15 representative areas across each paddock. At each point select two rows, side by side, with a length of 2 metres. Mark these sites with a brass or stainless steel disk, and record on a paddock map and GPS.
- Drop mesh measuring 10cm x 20cm x 2m long on to each row and record presence or absence of the sown species in each square.
- In 2 metres there will be 40 squares to count.
- Convert to a percentage of squares with plants present.

The mesh also needs to be placed between the sowing rows to identify overtime recruitment of seedlings in the case of Cocksfoot and Gala Brome seedlings, in particular, but is also useful to show how all varieties spread, or not, to cover this bare ground.

Grid design

When to do this monitoring:

- The 15 points across each paddock are to be were established in the spring of 2009, so there is an establishment count for the year of sowing.
- The ongoing counts should be done twice per year from then on. Once after the autumn break when everything has greened up, and again in September/October to look at any plant loss or recruitment which has occurred during the season.

Simon Brady, PPS, Andrew Speirs MS&A and Matt Kindred, PPS, setting up trial measurements at Jallukar Brome site 5/10/09

Dry matter production measurement

- To gain some idea of pasture growth by season for each of these paddocks, plus what the group considers a control paddock, pasture cuts by exclusion are required. This would require pasture cages (10 per paddock) to be put out over each paddock to cover the variability of each paddock. These cages would need to be moved after each cut. How often the cuts are taken will depend on the season, but it would be good to measure growth throughout the growing season. Therefore, cages would need to be put out at the start of the season and cuts taken every 4-6 weeks.

Process

Area selected needs to be mown to have a uniform level of pasture, with the cage put over the pasture, and then cut again 4 weeks later. Fresh weight of the sample recorded and a sub-sample, say 200gms, should be dried to then convert to a dry matter yield.

Simon Brady can get cages which are 425mm x 560mm, and these would be suitable for this monitoring. The number of cages required would depend on how many paddocks are being monitored, but there would need to be 10 cages put out over each paddock. I feel it would be useful to have at least one paddock which is a pasture typical of the annual pasture base for the district, to quantify some of the benefits of sowing perennial grasses. (Joel annual pasture site).

At a minimum, this would mean 6 paddocks being monitored for dry matter growth throughout the year. The time taken to do this will be considerable, but, combined with stock data of grazing days and condition scores (possibly), will give some very valuable data for the group.

What results will be possible from the dry matter cuts?

- Growth rate of various pasture species throughout the year.
- If dried samples are retained metabolizable energy (ME) and protein percentage could be done if funding is available.

Overall outcome of measurements:

- Persistence of the sown perennial grasses.
- Whether or not seedling recruitment is possible.
- Whether or not existing plants will bulk up to fill the inter-row.
- Actual dry matter production of the sown varieties in your specific area
- throughout the growing season.

In summary:

Two main measurements need to be taken;
1. Persistence of the sown variety and its ability to expand to fill spaces.
2. Dry matter cuts to show what the pasture curve is for each variety sown.

Trial measurements were undertaken by PPS using the protocols recommended by Andrew Speirs on 8/10/09.

Jallukar PPS PDS site

Jallukar site in spring 2010 with Grampians Mountains in the background.

PPS Annual Conference tour at Jallukar September 2009

Jallukar Trial Site.

Introduction

The Jallukar site is situated approximately 20 km north east of Ararat Victoria, between Great Western and Pomonal, about 10 km east of the Grampians Mountains. As it is situated north of the Great Divide it consequently receives less annual rainfall and has a shorter growing season than the Ararat area. The soil type is a light sandy loam with gravel intersects.

The PPS Jallukar trial site was established in 2009 with two adjacent paddock trialling a Gala Brome grass pasture against a Phalaris pasture.

Producers	Simon & Yvette Brady
Property	Jallukar Park
Location	Pentlands Creek Rd - Pomonal

Brome pasture	Gala grazing Brome & Trikkalla & Urana Sub Clovers
Seeding rate	Approx 20 kg/ha Brome + 4 kg/ha sub clover mix.
Date sown	20 May 2009
Method	Direct drilled with Agrow drill
Pre sowing management	2008 oat crop 2009 2.5 t/ha lime applied. Pre sowing weed control Sown with 70 kg/ha DAP
Post sowing management	Sprayed for earth mite control
Problems & successes 2009	Difficulty at sowing in getting Brome seed to flow through seeder. Area of paddock had minor flooding during May. Areas of self sown oats germinated during winter.

Phalaris pasture	Phalaris with Seaton Park & Trikkalla sub clovers
Seeding rate	2 kg/ha Holdfast GT & 2 kg/ha Australian Phalaris + 4 kg/ha Sub Clover mix.
Date sown	20 May 2009
Method	Direct drilled with Agrow drill
Pre sowing management	2008 oat crop 2009 2.5 t/ha lime applied. pre sowing weed control Sown with 70 kg/ha DAP
Post sowing management	Sprayed for earth mite control
Problems & successes 2009	Area of paddock had minor flooding during May. Areas of self sown oats germinated during winter.

Background

Grazing Brome has being promoted as a possible pasture grass suited to the region. It had not been widely used, and PPS decided to test its suitability by establishing a paired paddock comparison with a Phalaris pasture.

Perennial Brome grasses are short-lived, highly palatable perennial grasses, native to areas of central and southern South America. In their environments of origin they are regarded as a high-quality component of grassland systems, with the capability to produce high-quality herbage throughout the year. They are particularly valuable for producing winter forage. While individual plants are relatively short-lived (2–3 years), perennial bromes are prolific seeders and recruit strongly, maintaining density in a pasture mix if they are well managed.

Grazing Brome - Grasslands Gala was developed in New Zealand from germplasm collected in the Santiago region of Chile. It was released in the early 1990s. Grasslands Gala was selected for vigorous vegetative growth, rapid recovery from grazing and increased seed yield. It is finer leaved and more densely tillered than prairie grasses.
(NSW DPI PRIMEFACT 383 JULY 2007)

2009

Soil tests were taken at 0-10 cm, 10-40 cm, 40-70 cm and 70-100 cm in March and showed no major deficiencies. Lime had been applied in 2008 and the pH reading of 5.7 (CaCl) was satisfactory for Phalaris establishment. The deep soil tests showed slight acidify at depth but not at levels expected to cause any problems with pasture persistence. 70 kg/ha of MAP was applied at sowing

Site host Simon Brady and Craig Drum, Tatyoon Rural taking deep soil tests at Jallukar

Jallukar soil test results March 2009

Status Report
Contact Name Brady
Paddock Name 0-10
Lab Number 2FS09139
Crop to be sown Pasture

Analysis	Result	Desired (pasture)	Interp.
Nitrate N mg/kg	42	20-40	Good
Ammonium N mg/kg	5		
Phosphorus (P) mg/kg (Colwell)	36	30-60	Good
Potassium (K) mg/kg (Colwell)	230	150-350	Good
Sulphur mg/kg (KCL 40)	9.9	8-20	Good
Organic Carbon %C	2.21	2.0-5.0%	OK
Elect Cond. (EC) dS/m	0.139	<0.6	OK
pH (1:5 $CaCl^2$)	5.7	5.8-7.0	OK
pH (1:5 Water)	6.4		OK
Copper (Cu) mg/kg	0.41	>1	Low
Zinc (Zn) mg/kg	1.44	>1	OK
Manganese (Mn) mg/kg	19	2 - 50	OK
Iron (Fe) mg/kg	71.21	>2	High
Exc Calcium (Ca)	5.41	4.5-6.0	OK
Exc Magnesium (Mg)	0.94	1.25-1.7	OK
Exc Sodium (Na)	0.18	<6%	OK
Exc Potassium (K)	0.57	0.5 - 0.9 meq	OK
Aluminium mg/kg	0	<4%	OK
Boron (B) mg/kg	0.5	0.5-2	OK
Aluminium meq/100g	0	<0.22	OK
Ca:Mg Ratio	10.8	3-7	High

Deep soil pH results

Soil test depth	10-40 cm
pH (1:5 $_{CaCl2}$)	5
pH (1:5 $_{Water}$)	6
Soil test depth	40-70 cm
pH (1:5 $_{CaCl2}$)	5
pH (1:5 $_{Water}$)	5.9
Soil test depth	70-100 cm
pH (1:5 $_{CaCl2}$)	4.8
pH (1:5 $_{Water}$)	5.7

Jallukar soil test results September 2012

Further soil tests were taken in 2012

NutriWise LANDMARK

TRADING NAME: Perennial Pasture Systems
ACCOUNT NUMBER:
FARM NAME: Jallukar
CONTACT: Rob Shea
AREA (ha): not provided
DATE: 20 Nov 2012

ACCREDITED ADVISER: Kelly Johnson
PHONE:
MOBILE: 0428 641 556
FAX:
EMAIL: kelly.johnson@landmark.com.au
LABORATORY: CSBP Soil & Plant Laboratory

Paddock Name	Phalaris
Target production (t/ha)	**5000.0**
Laboratory sample number	8DS12039
Profile sampled (cm)	0-10
Date of sampling	01 Oct 2012
Evaluation table	Perennial Grass Legume Pasture South West VIC
Description	PPS Jallukar Phalaris

ANALYSIS RESULTS

Paddock Name	Phalaris
Sample Depth (cm)	**0-10**
Soil texture	Clay Loam
Soil colour	Brown Grey
pH (1:5 CaCl2)	4.9 - Low
pH (1:5 H2O)	5.7 - Satisfactory
EC (1:5 H2O) dS/m	0.06 - Satisfactory
EC (se) (dS/m)	0.5 - Satisfactory
EC (se) (dS/m) (Cladj)	0.3
Chloride (1:5 H2O) mg/kg	7 - Satisfactory
Electrochemical Stability Index	0.054
Organic carbon (Walkley Black) %	2.77 - Satisfactory
Nitrate nitrogen (KCl) mg/kg	0 - Marginal
Ammonium nitrogen (KCl) mg/kg	6 - High
Phosphorus (Colwell) mg/kg	20 - Marginal
Phosphorus (Olsen) mg/kg	8.9 - Low
Phosphorus Buffer Index (PBI)	78.0 - Satisfactory
Potassium (Colwell) mg/kg	210 - High
Sulfur (KCl-40) (mg/kg)	6.8 - Low
Exch. Ca (BaCl2/NH4Cl) meq/100g	3.53 - Sufficient
Exch. Mg (BaCl2/NH4Cl) meq/100g	0.47 - Marginal
Exch. K (BaCl2/NH4Cl) meq/100g	0.54 - Sufficient
Exch. Na (BaCl2/NH4Cl) meq/100g	0.05 - Sufficient
Aluminium (KCl) meq/100g	0.01
eCEC meq/100g	4.6 - Satisfactory
Aluminium % Saturation (Group)	0.2 - Satisfactory
Exch. Hydrogen (KCL) meq/100g	0.11
Calcium % of CEC	76.7
Potassium % of CEC	11.7
Exch. magnesium %	10.2 - Low
Exch. sodium %	1.1 - Satisfactory
Copper (DTPA) mg/kg	0.3 - Sufficient
Zinc (DTPA) mg/kg	0.3 - Low
Manganese (DTPA) mg/kg	9.6
Iron (DTPA) mg/kg	82.0
Boron (hot CaCl2) (mg/kg)	0.5 - Sufficient
Grass Tetany Risk Index (Soil)	0.14

BACK PADDOCK SoilMate

Report generated with independant specialist support from Back Paddock Company

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Paddock - Phalaris

Jallukar soil test results September 2012

NutriWise LANDMARK

TRADING NAME: Perennial Pasture Systems
ACCOUNT NUMBER:
FARM NAME: Jallukar
CONTACT: Rob Shea
AREA (ha): not provided
DATE: 20 Nov 2012

ACCREDITED ADVISER: Kelly Johnson
PHONE:
MOBILE: 0428 641 556
FAX:
EMAIL: kelly.johnson@landmark.com.au
LABORATORY: CSBP Soil & Plant Laboratory

Paddock Name	Brome
Target production (t/ha)	5000.0
Laboratory sample number	SDS12040
Profile sampled (cm)	0-10
Date of sampling	01 Oct 2012
Evaluation table	Perennial Grass Legume Pasture South West VIC
Description	PPS Jallukar Brome

ANALYSIS RESULTS

Paddock Name	Brome
Sample Depth (cm)	0-10
Soil texture	Clay Loam
Soil colour	Brown Grey
pH (1:5 CaCl2)	5.3 - Satisfactory
pH (1:5 H2O)	6.1 - Satisfactory
EC (1:5 H2O) dS/m	0.09 - Satisfactory
EC (se) (dS/m)	0.7 - Satisfactory
EC (se) (dS/m) (Cladj)	0.5
Chloride (1:5 H2O) mg/kg	20 - Satisfactory
Electrochemical Stability Index	0.089
Organic carbon (Walkley Black) %	2.82 - Satisfactory
Nitrate nitrogen (KCl) mg/kg	4 - Marginal
Ammonium nitrogen (KCl) mg/kg	35 - High
Phosphorus (Colwell) mg/kg	35 - Sufficient
Phosphorus (Olsen) mg/kg	15.8 - Sufficient
Phosphorus Buffer Index (PBI)	34.9 - Satisfactory
Potassium (Colwell) mg/kg	232 - High
Sulfur (KCl-40) (mg/kg)	6.1 - Low
Exch. Ca (BaCl2/NH4Cl) meq/100g	4.63 - Sufficient
Exch. Mg (BaCl2/NH4Cl) meq/100g	0.66 - Marginal
Exch. K (BaCl2/NH4Cl) meq/100g	0.52 - Sufficient
Exch. Na (BaCl2/NH4Cl) meq/100g	0.06 - Sufficient
eCEC meq/100g	5.9 - Satisfactory
Exch. Hydrogen (KCL) meq/100g	0.07
Calcium % of CEC	78.9
Potassium % of CEC	8.9
Exch. magnesium %	11.2 - Low
Exch. sodium %	1.0 - Satisfactory
Copper (DTPA) mg/kg	0.3 - Sufficient
Zinc (DTPA) mg/kg	0.5 - Low
Manganese (DTPA) mg/kg	10.6
Iron (DTPA) mg/kg	68.2
Boron (hot CaCl2) (mg/kg)	0.5 - Sufficient
Grass Tetany Risk Index (Soil)	0.10
Phosphorus Environmental Risk Index	1.00

Back Paddock SoilMate

Report generated with independent specialist support from Back Paddock Company

http://www.backpaddock.com.au

Paddock - Brome

	2009	2012 Phalaris Paddock	2012 Brome Paddock
pH (1:5 $_{CaCl2}$)	5.7	4.9	5.3
Phosphorus (P) mg/kg (Colwell)	36	20 (marginal)	35 (sufficient)
Potassium (K) mg/kg (Colwell)	230	210 (high)	232 (high)
Sulphur mg/kg (KCL 40)	9.9	6.8 (low)	6.1 (low)
Organic Carbon %C	2.21	2.77	2.82
Aluminium meq/100g	0	0.01	0.0

Table 1: Changes in soil test results 2009 - 2012

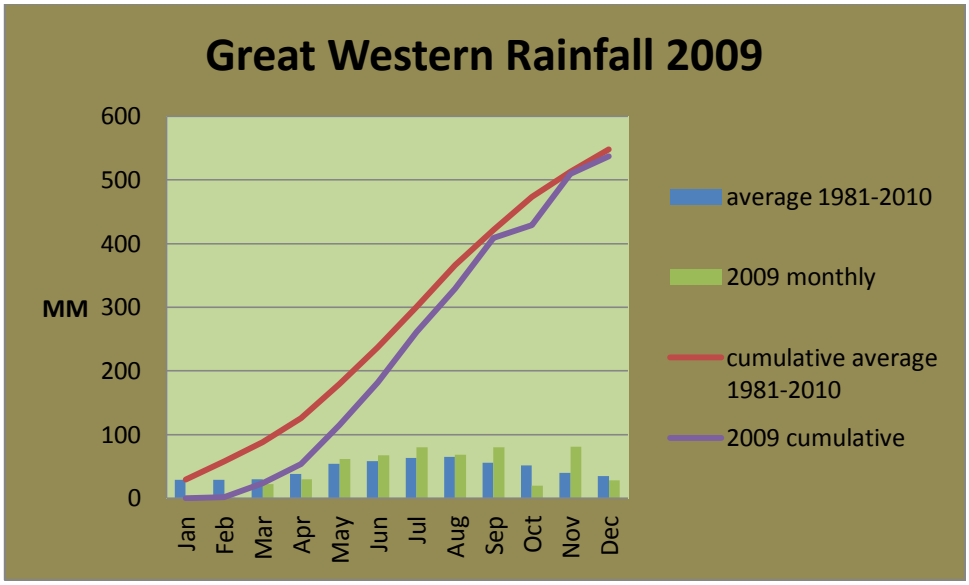
2009 continued

Pastures were sown by site host Simon Brady on May 20, 2009, after a later than normal autumn break . Some difficulty was experienced at sowing with the Brome grass seed not flowing through the seeder sowing tubes evenly, constant agitation was required to allow the seed to flow. This situation caused a fair bit of agitation for Simon as well. These difficulties caused a few uneven areas in the paddock when plants germinated but had no overall effect on the trial.

Gala Brome Grass seed

Trial Sowing May 2009

Both pastures germinated well with the Brome grass making rapid growth prior to winter. Growth then slowed during winter. All months except October had good rains which made for an above average growing season. Late spring rains created conditions that allowed for perennial pasture growth through until mid December.

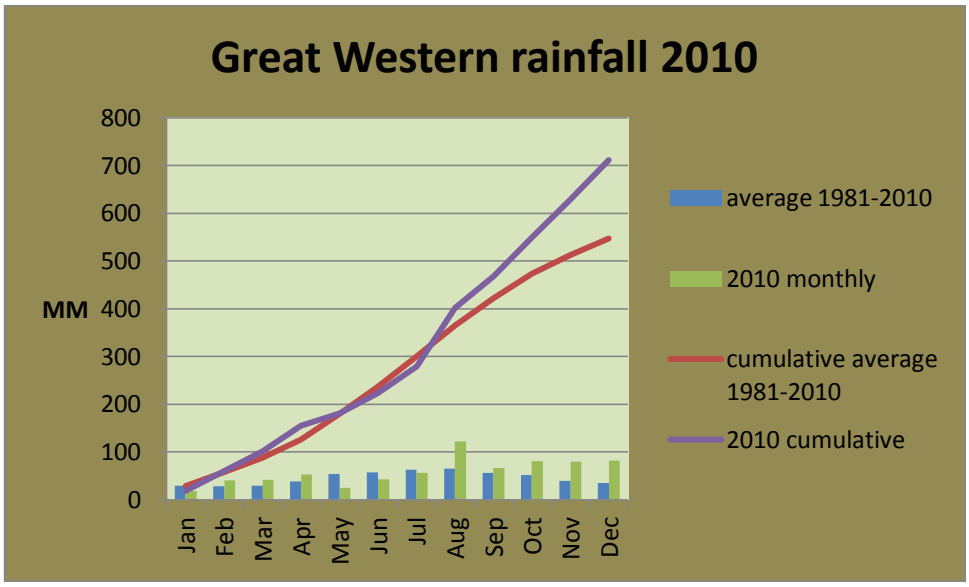


Graph 1: Great Western rainfall 2009

The phalaris pasture had excellent growth through spring although there was some competition from self sown oats from the previous year's crop, but this had little effect on the phalaris. The brome pasture did not make a lot of spring growth which was a disappointment after the rapid growth it had made after establishment. The clover growth in both pastures was below expectations. Both pastures were allowed to run to seed in early summer, with plant establishment counts being taken in spring. Dry matter measurements were not commenced until 2010.

2010

Seasonal conditions were fairly average until late spring when good rains allowed the perennial grasses to grow right through until the end of the year. The late rains bought the total annual rainfall to 25% above average and both paddocks received 150 kg/ha of single superphosphate.



Graph 2: Great Western rainfall 2010

Observations made in early autumn found some root disease in the sub clover which was contributing to poor legume growth in both paddocks. Some seedling recruitment was found in the brome grass pasture but its growth was still much lower than the phalaris.

A count of new brome seedlings was conducted at 15 fixed points in the paddock using a grid of 0.4 square metres. The count gave an average of 6 new brome plants per square metre but the results were variable as shown in Table 2.

Table 2: Brome plant recruitment May 2010 (plants per 0.4 sq m)

BROME	
SEEDLING	RECRUITMENT
date	25/05/2010
fixed point	
	0
2	11
3	1
4	2
5	0
6	2
7	0
8	0
9	1
10	0
11	5
12	5
13	5
14	2
15	2
average	2.40

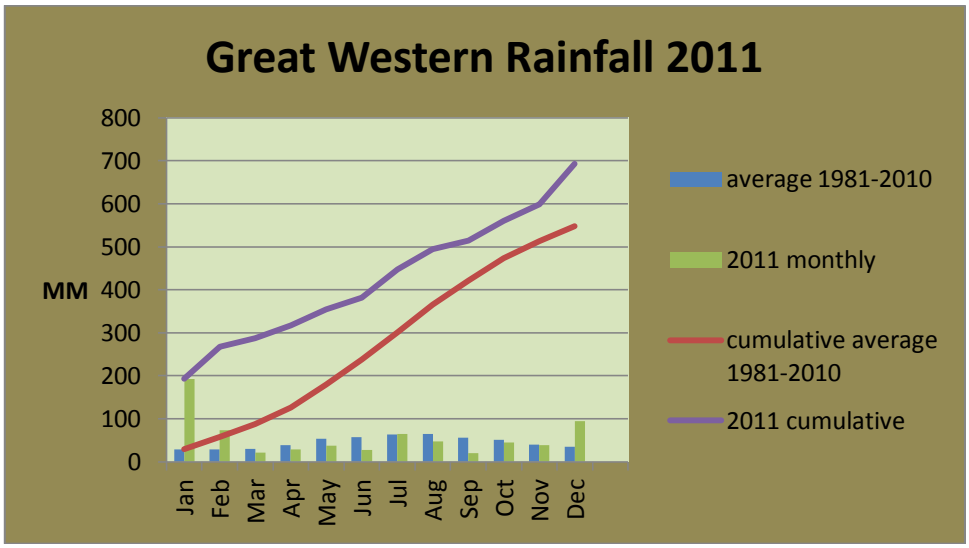
Dry matter cuts commenced in 2010 and the results are shown in Table 3.

2010	Jallukar Phalaris	Jallukar Brome
	Yield kg per Ha DM	Yield kg per Ha DM
Pre cut estimate	700	300
Based on 45 mm		
Cut 1 27/05/2010	1456	717
Cut 2 17/08/2010	1722	1246
Cut 3 30/09/2010	911	0
Cut 4 9/11/2010	2540	2864
Cut 5 16/12/2010	1572	1455
Total Dry matter Kg/dm/ha	**8901**	**6582**

Table 3: 2010 Jallukar dry matter production

2011
The summer of 2010/11 was one of the wettest on record with 233 mm of rain recorded in the Jan – Feb period. Flooding occurred around watercourses on the Jallukar farm. The rains allowed the perennial grasses to remain in growth phase for a full twelve months. Despite this the growth of the brome grass continued to be disappointing. In addition to the poor growth of the brome it also suffered from a locust attack in the autumn of 2011.

Both paddocks again received 150 kg/ha of single superphosphate.



Graph 3: Great Western rainfall 2010

The phalaris continued good growth through 2011, although the dry September (13mm compared to the average 61mm) reduced dry matter production (See table 4)

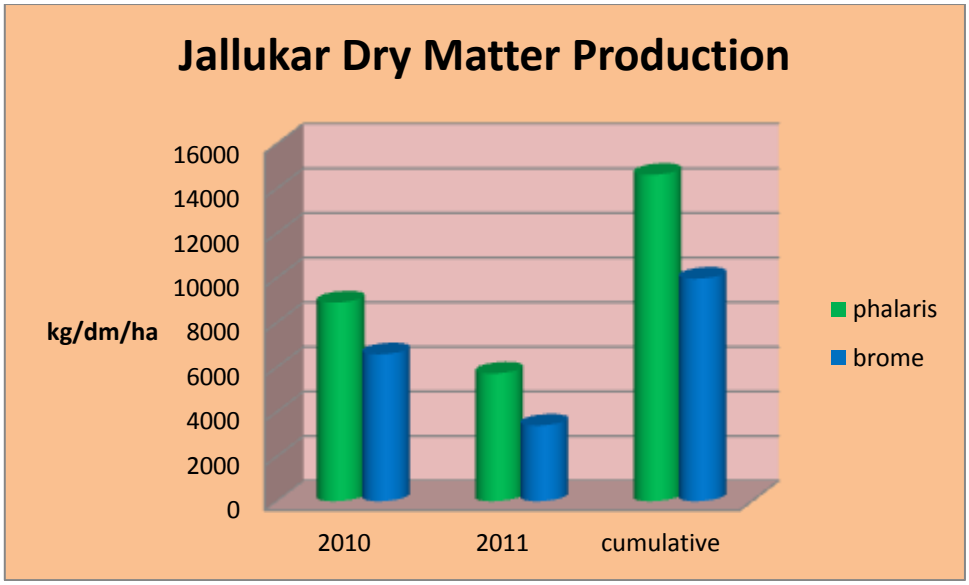
Pastures 1st September 2011

Brome

Phalaris

2011		Jallukar Phalaris	Jallukar Brome
		Yield kg per Ha DM	Yield kg per Ha DM
Cut 1 14/3/2011		2156	0
Cut 2 14 – 20/7/2011		1038	694
Cut 3 23 – 26/9/2011		1388	970
Cut 4 - 19/12/2011		1139	1726
Total Dry matter Kg/dm/ha		**5721**	**3390**

Table 4: 2011 Dry matter Production

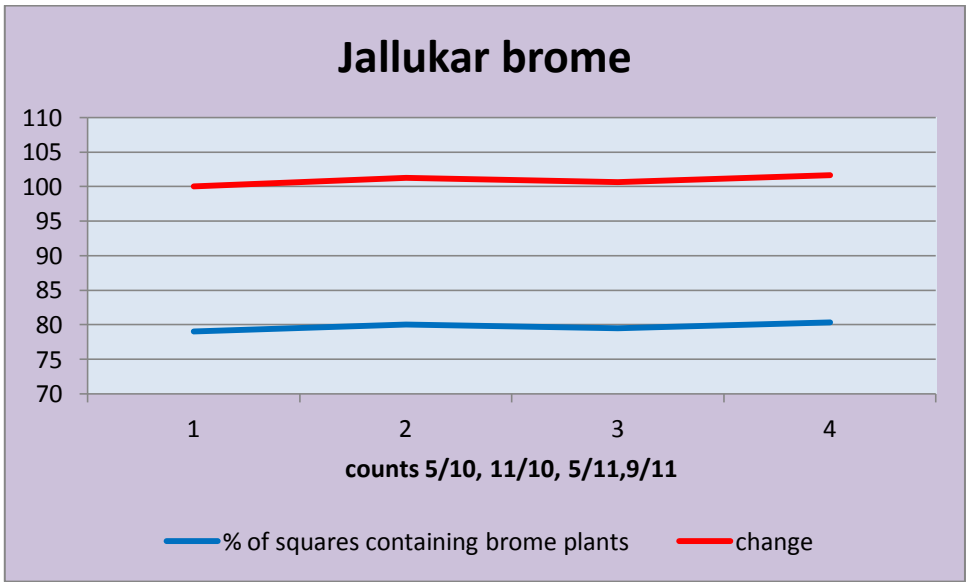


Graph 4: Cumulative dry Matter Production Jallukar 2010-11

Trial Measurements

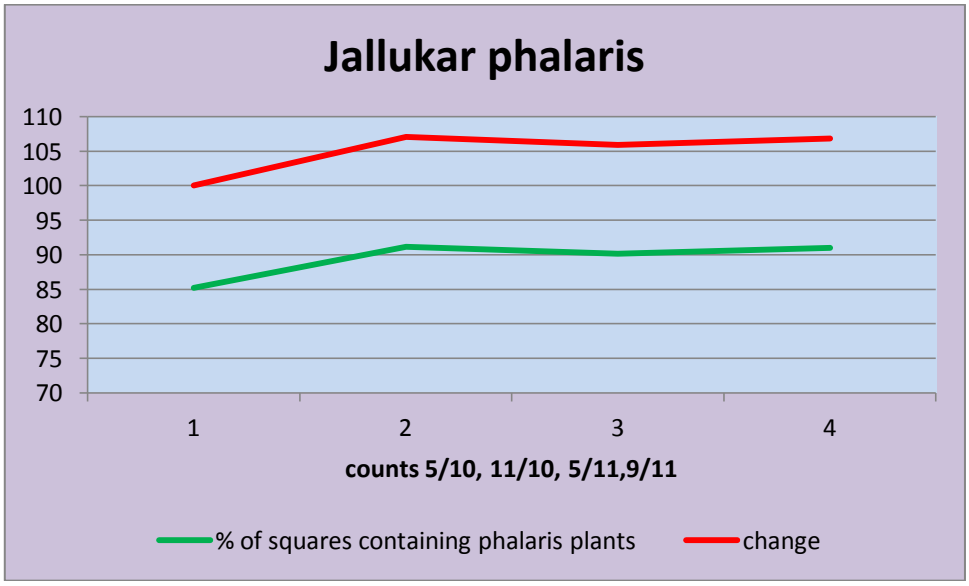
Plant persistence counts

Plant counts were conducted in accordance with the recommendations of project consultant Andrew Speirs (see pages13 – 14).



Graph 5: Jallukar Brome persistence

The Brome grass showed no significant change in plant persistence during the 2010 – 2011 period.



Graph 6: Jallukar Phalaris persistence

The phalaris showed no decrease in persistence over the two year period and showed an increase in plant density due to the increase in plant size as the phalaris matured and crowned out.

Feedtest Analysis

The late spring rains in 2010 allowed the grasses to continue growth into early summer, a feedtest was carried out on the November and December plant cuts to ascertain any differences between the feed quality of the different varieties in early summer.

	Jallukar Phalaris					
	Yield kg per Ha DM	Digestibility	Metabolisable Energy MJ/kg	Crude Protein %	Total Energy MJ	Total Protein kg
Cut 4 9/11/2010	2540	55	7.9	11.6	20066	295
Cut 5 16/12/2010	1572	45.4	6.2	11.4	9746	179
					29812	

Table 5: Jallukar Phalaris feedtest results 2010

	Jallukar Brome					
	Yield kg per Ha DM	Digestibility	Metabolisable Energy MJ/kg	Crude Protein %	Total Energy MJ	Total Protein kg
Cut 4 9/11/2010	2864	49.9	7	12	20048	344
Cut 5 16/12/2010	1455	51.5	7.2	11.4	10476	166
					30524	

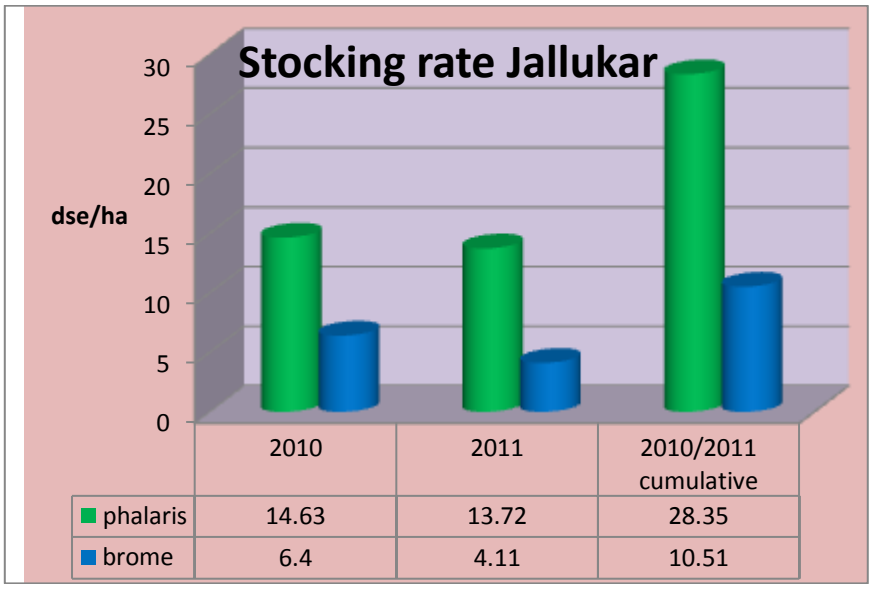
Table 6: Jallukar Brome feedtest results 2010

There was no major difference in total energy between the varieties in the November – December 2010 growing period, but the phalaris had an almost 10% reduction in digestibility while the brome showed little change. It should be noted that the digestibility of the phalaris in November is higher than the brome.

Animal Production

Stocking Rate (dse/ha)

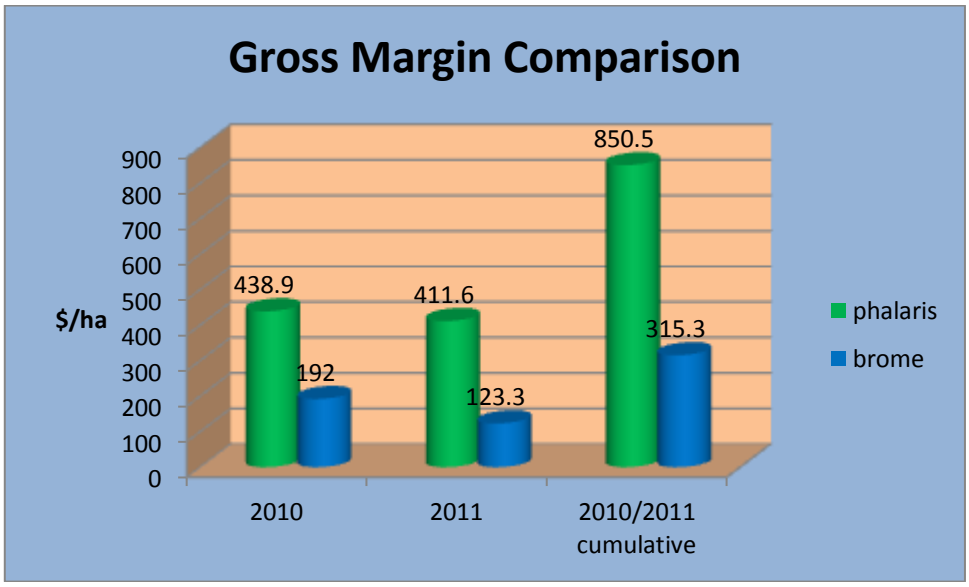
The comparative stocking rates for the Jallukar site are shown in the graph below.



Graph 7: Jallukar stocking rates

The cumulative stocking rate showed the phalaris pasture carrying 270% extra dse/ha than the brome pasture.

Gross margin comparison



Graph 8: Jallukar gross margin comparison (@$40 gm/dse)

The stocking rate difference is reflected in the gross margin comparison above.

Animal Production continued

During 2011 additional animal measurements were taken at all three PPS PDS sites.

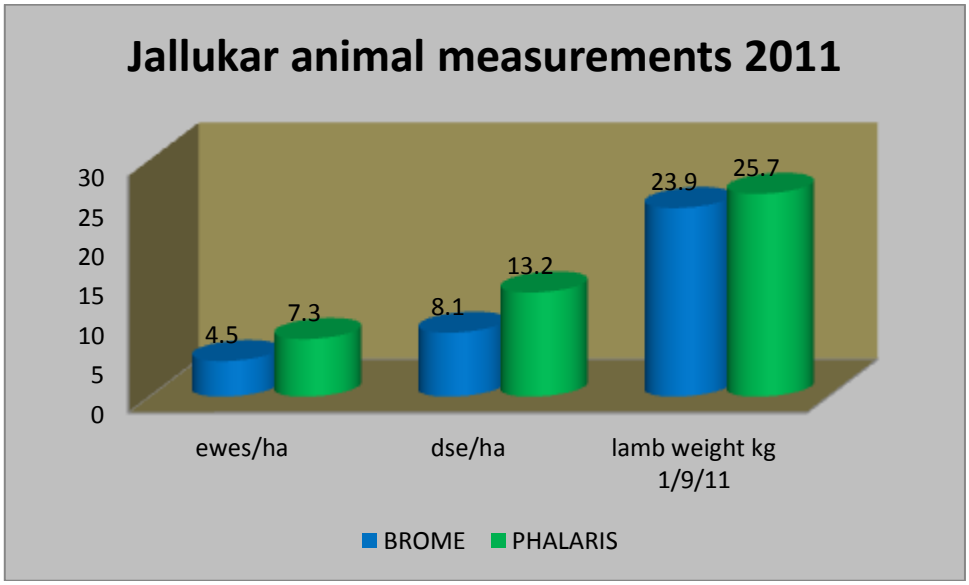
Lambing ewes were used in the comparison at Jallukar. Both paddocks were stocked with lambing ewes at the stocking rate estimated by site host Simon Brady to be the correct level to provide sufficient feed for the ewes from a month prior to lambing through to weaning at 14 weeks.
The Brome paddock was stocked at 4.5 ewes per ha (8.1 dse/ha) and the phalaris at 7.3 ewes per ha (13.2 dse/ha). As noted in Simon's observations below, the stocking rate on the brome turned out to be too high and the ewes were removed for a period during lactation.

Jallukar site observations by Simon Brady, Winter 2011
All ewes were supplementary fed 2kg of oats per head per week from entry on 29th of April until the 9th of July. (oats feedtest of 9.2 Protein/10.1 energy)

Lambs were marked on July 4th, we noted that ewes from the brome paddock had lost a condition score and lambs were not as solid. There was insufficient feed in the brome after this stage but the phalaris was adequate to carry ewes.

Ewes and lambs were removed from the brome after marking and put onto an annual sown pasture to increase weight. On July 30th ewes and lambs were drenched and returned to their appropriate paddocks. On the 20th August the brome ewes were boxed into the phalaris mob due to there being insufficient feed in the brome paddock. Lamb weight was recorded on September 1st.

The differences in stocking rate and lamb weights for winter 2011 can be are presented in Graph 9.



Graph 9: Animal measurements from the Brome and Phalaris pastures 2011.

Simon Brady weighing lambs from trial paddocks September 2011

Jallukar Site Conclusions

Due to the performance of the brome after two years of detailed measurements including dry matter cuts, plant persistence counts and animal production measurements PPS decided to conclude the Jallukar trial at the end of 2011.

The grazing brome has persisted as well as the phalaris over the first three years of the trial but is has failed to crown out and expand its area. It had poor winter growth, no response to summer rain and produced 26% less dry matter than the phalaris in 2010, and the dry matter total was 40% lower in 2011.

Animal production results through the winter show that the phalaris paddock clearly outperformed the brome paddock.

Although the brome grass performance may have been inhibited by a gravel seam that transgresses both paddocks, its production in the better areas of the paddock was still inadequate compared to the phalaris pasture. It should be noted that the brome paddock contained more of the gravel seam by area than the phalaris paddock, which may have slightly skewed results in favour of the phalaris, but it is considered that it did not have a large effect on the results.

The performance of the brome has disappointed PPS as it appeared to have many attributes that would be beneficial such as tolerance to heavy grazing and regeneration from seed. The rapid establishment of the brome grass also gave hope that it was going to be a successful pasture but the dry matter production of the brome pasture was far below what is required for an economic pasture renovation in this environment.

The phalaris pasture has been hugely successful and adds to the opinion of PPS that it is still the preferred pasture variety for productive long term pastures in the parts of the Southern Wimmera where it can be established with confidence.

The recent availability of the Holdfast GT Phalaris variety is an important addition to the perennial grasses that can be established in the region.

The claims that Holdfast GT will persist as well as Australian Phalaris have not been tested due to the time required to obtain results from a new variety. PPS will continue to test the persistence of Holdfast GT in the PDS trials as well as other pastures in the project.

It is also important to note that Holdfast GT wasn't sown as a pure sward in the trials.

Site host comments

Simon Brady, Jallukar Park November 2012

"My initial observations of the brome had me excited, it shot out of the ground like Italian Ryegrass and thus looked very promising. But, after a few months its growth declined as shown on our dry matter cuts.

On its second year the brome failed to perform. When under grazing pressure, the brome could not carry a high degree of stock and its failure to recover, and poor growth rates after grazing, reduced its ability to compete in comparison to the adjoining phalaris paddock.

When we lambed down on the brome and measured lamb growth rates, it fell in a hole. We proved that it was unable to carry a reasonable stocking rate, the stock lost condition and required supplementary feeding while the phalaris maintained a much better stocking rate and animal condition.

It was very much like an annual based pasture due to its poor doing ability, growth rate and recovery therefore I found it not to be an option as a new pasture.'

Jallukar Site Manager Simon Brady at the phalaris paddock

Further research at the site

Uplands Cocksfoot Pasture

After the decision to conclude the brome grass trial, it was sprayed out after final measurements in 2011. PPS and site owner Simon Brady determined that the paddock should be sown to Uplands Hispanic Cocksfoot which is performing well at the Joel PPS PDS site (see pages 58 - 88). It is also persisting well in a pasture on PPS member Matt Kindred's property in difficult soils near Lake Lonsdale as well as in trial strips at the PPS/EverGraze Tottington site.

The sowing was jointly funded by PPS and the site operator. PPS believes that the site will still be a useful comparison over coming years and should assist in perennial pasture establishment decisions for PPS members and other farmers in the region.

Gibberllic Acid, 2012

The phalaris pasture was treated with Gibberillic Acid (Progibb @ 10 mg/ha equivalent of 400 g/ha of Gibberillic Acid) during July 2012 to promote winter growth. A control section was left in the pasture to compare results. There was a growth advantage in the treated area that was visually apparent. No measurements were taken but PPS is considering further more detailed demonstrations of Gibberilic acid in the future.

Jallukar Phalaris August 2012 – Gibberillic Acid treatments on left of photos

Acknowledgements Jallukar Site

PPS acknowledges the cooperation and assistance of

Simon Brady – site manager

Simon, Yvette, Peter & Marylyn Brady – Jallukar Park Farm operators

Craig Drum, Tatyoon Rural – agronomist for Jallukar Park

Andrew Speirs MS&A – consultant agronomist for PPS PDS sites

Debbie Shea –assistance with plant measurements

Elmhurst PPS PDS site

Spring at Elmhurst site 2012

PPS Annual Conference tour at Elmhurst site September 2009

Elmhurst Trial Site.

Introduction

The Elmhurst site is situated approx 2 km North West of Elmhurst, Victoria, between the foothills of the Pyrenees Range and the upper reaches of the Wimmera River. The site receives approximately 20% higher annual rainfall than the other two sites in the PDS project. The soil type is a clay sandy loam.

The PPS Elmhurst trial site was established in 2009 with two adjacent paddocks trialling winter active Fletcha Fescue pasture against a phalaris pasture.

Producers	Ben & Jodie Greene
Property	Millbanks
Location	Landsborough – Elmhurst Rd Elmhurst

Pasture	Fletcha Fescue & sub clovers
Seeding rate	12 kg/ha Fletch max P fescue No clover sown with fescue, paddock has a good history of Trikkalla sub clover.
Date sown	16 May 2009
Method	Direct drilled with Agrow drill
Pre sowing management	2 t/ha lime applied. Sprayed with 1.2 l/ha Roundup Powermax. Sown with 70 kg/ha DAP
Post sowing management	Sprayed with Supracide for earth mite control 40 kg/ha urea applied mid September.
Problems & successes	Good early establishment of fescue.

Pasture	Holdfast GT & Australian Phalaris & Seaton Park & Trikkalla sub clovers.
Seeding rate	2 kg/ha Holdfast GT & 2 kg/ha Australian phalaris + 4 kg/ha sub clover mix.
Date sown	16 May 2009
Method	Direct drilled with Agrow drill
Pre sowing management	2 t/ha lime applied. Sprayed with 1.2 l/ha Roundup Powermax, Sown with 70 kg/ha DAP
Post sowing management	Sprayed with Supracide for earth mite control
Problems & successes	Poor clover establishment in year one

Background

Fletcha is one of the first summer dormant fescues to be released and evaluated in Australia. It is suited to drier and hotter conditions than summer active fescues. Fletcha is promoted as an ideal alternative to phalaris.

Summer dormant (winter active) fescues have not been widely adopted in the Southern Wimmera region. The reasons for this are varied but may be due to the following factors, (a) fescues have a bad reputation due to the failure of summer active varieties in most places when used in the region, (b) difficulty in managing winter active fescue's rapid growth phase in early spring, (c) issues with early summer feed quality, (d) general satisfaction amongst many producers with phalaris based pastures.

PPS decided to test its suitability in a paired paddock comparison with a phalaris pasture.

2009

Soil tests were taken at 0-10cm, 10-40cm, 40-70cm and 70-100cm in March 2009 and showed a few issues. Soil pH in both paddocks was low at 4.5 (CaCl) and aluminium levels in the phalaris paddock were higher than optimum, and two tonnes per ha of lime was applied to correct this situation. The deep soil tests showed no issues with acidity at depth.

The fescue paddock had a low sulphur content which is being alleviated through the annual use single super. .

The pastures were sown on May 16th after a slightly later than average autumn break. 70 kg/ha of MAP was applied at sowing.

(L – R) PPS Project Manager Rob Shea & Site manager Ben Greene inspecting the seeding depth while sowing the Elmhurst Phalaris paddock.

Elmhurst Fescue paddock soil test results March 2009

Status Report & Recommendation

Contact Name	Greene
Paddock Name	Fescue 0-10
Lab Number	2FS09122
Crop to be sown	Pasture

Analysis	Result	Desired (pasture)	Interp.
Nitrate N mg/kg	18	20-40	Low
Ammonium N mg/kg	29		
Phosphorus (P) mg/kg (Colwell)	79	30-60	Good
Potassium (K) mg/kg (Colwell)	270	150-350	Good
Sulphur mg/kg (KCL 40)	5	8-20	Low
Organic Carbon %C	3.44	2.0-5.0%	OK
Elect Cond. (EC) dS/m	0.095	<0.6	OK
pH (1:5 $CaCl^2$)	4.5	5.8-7.0	Low
pH (1:5 Water)	5.5		
Copper (Cu) mg/kg	0.34	>1	Very Low
Zinc (Zn) mg/kg	2.19	>1	OK
Manganese (Mn) mg/kg	13.21	2 - 50	OK
Iron (Fe) mg/kg	273.84	>2	High
Exc Calcium (Ca)	3.73	4.5-6.0	OK
Exc Magnesium (Mg)	0.44	1.25-1.7	Low
Exc Sodium (Na)	0.1	<6%	OK
Exc Potassium (K)	0.63	0.5 - 0.9 meq	OK
Aluminium mg/kg	2.7	<4%	OK
Boron (B) mg/kg	0.4	0.5-2	OK
Aluminium meq/100g	0.18	<0.22	OK
Ca:Mg Ratio	9.3	3-7	High

Deep soil pH results

Soil test depth	10-40 cm
pH (1:5 $_{CaCl2)}$	4.9
pH (1:5 $_{Water}$)	5.8
Soil test depth	40-70 cm
pH (1:5 $_{CaCl2}$)	5.9
pH (1:5 $_{Water}$)	6.8
Soil test depth	70-100 cm
pH (1:5 $_{CaCl2}$)	6.0
pH (1:5 $_{Water}$)	6.9

Elmhurst Phalaris paddock soil test results March 2009

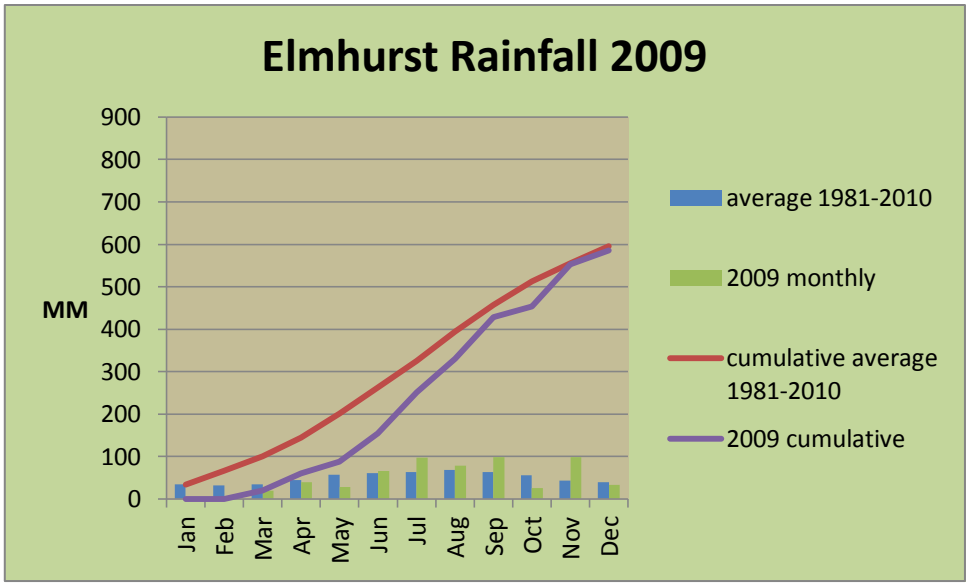
Contact Name	Greene
Paddock Name	Flat 0-10
Lab Number	2F S09126
Crop to be sown	Pasture

Analysis	Result	Desired (pasture)	Interp.
Nitrate N mg/kg	43	20-40	Good
Ammonium N mg/kg	20		
Phosphorus (P) mg/kg (Colwell)	51	30-60	Good
Potassium (K) mg/kg (Colwell)	282	150-350	Good
Sulphur mg/kg (KCL 40)	16.1	8-20	Good
Organic Carbon %C	4.16	2.0-5.0%	Ok
Elect Cond. (EC) dS/m	0.185	<0.6	Ok
pH (1:5 $CaCl^2$)	4.5	5.8-7.0	Low
pH (1:5 Water)	5.5		
Copper (Cu) mg/kg	0.71	>1	Low
Zinc (Zn) mg/kg	2	>1	Good
Manganese (Mn) mg/kg	46.52	2 - 50	Ok
Iron (Fe) mg/kg	231.18	>2	High
Exc Calcium (Ca)	5.34	4.5-6.0	Ok
Exc Magnesium (Mg)	0.7	1.25-1.7	Low
Exc Sodium (Na)	0.23	<6%	Ok
Exc Potassium (K)	0.66	0.5 - 0.9 meq	Ok
Aluminium mg/kg	5.5	<4%	High
Boron (B) mg/kg	0.4	0.5-2	Ok
Aluminium meq/100g	0.22	<0.22	High
Ca:Mg Ratio	7.6	3-7	High

Deep soil pH results

Soil test depth	10-40 cm
pH (1:5 $_{CaCl2}$)	4.9
pH (1:5 $_{Water}$)	5.8
Soil test depth	40-70 cm
pH (1:5 $_{CaCl2}$)	5.9
pH (1:5 $_{Water}$)	6.9
Soil test depth	70-100 cm
pH (1:5 $_{CaCl2}$)	6.4
pH (1:5 $_{Water}$)	7.3

Both pastures germinated well, and had good growth prior to winter. Growth then slowed during winter. All months except October had good rains which made for an above average growing season. Late spring rains created conditions that allowed for perennial pasture growth through until mid December.



Graph 10: Elmhurst rainfall 2009

No sub clover was sown with the fescue due to the excellent Trikkalla content in previous years; it was decided that there would be a sufficient seed bank for the sub clover to recolonise the pasture. The fescue paddock had very poor clover in 2009 as can be seen in the 2009 photo below but recovered over the following years as seen in the 2012 photo.

2009

2012

A point of interest in the newly sown pasture was the appearance of several shallow holes dug in the newly sown pasture. Observations by Ben Greene established that this was the work of several echidnas searching for food in the paddocks. This did happen again in the following years.

Although the growth of both grasses was more than satisfactory during the establishment year, there was an area in the phalaris paddock that created some issues during the spring.

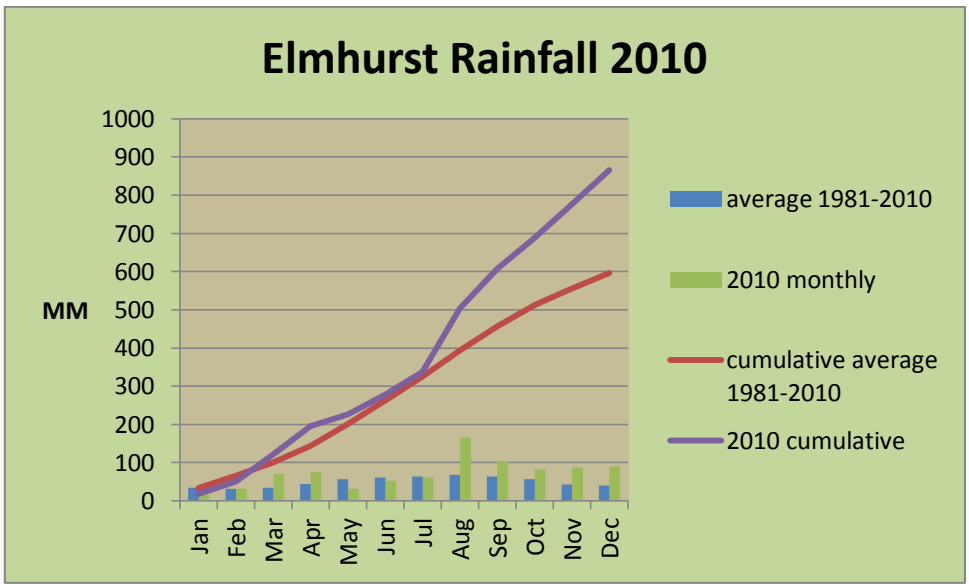
A small area of the phalaris had very poor, stunted growth with yellowing of the plant leaves. Although it was only a very small part of the paddock, approx 20 square metres, it created a lot of interest in trying to discover the cause of the poor growth. The area was inspected by consultant agronomist Andrew Speirs who suggested the soil tests be taken from the area and tissue tests taken from the affected plants. The test results were inconclusive and did not identify what may be causing the problem. The plants recovered during 2010 and there is now no discernible difference between the affected area and the rest of the paddock.

Area of poor phalaris growth November 2009.

2010

2010 was an average year until above average late winter and spring rains produced exceptional growth. This created differences in feed quality between the grasses which will be discussed later (see Tables 12 & 13).

Both paddocks received 150 kg/ha of single superphosphate and the fescue paddock was sprayed with 500 ml/ha MCPA 500 for spray graze capeweed control.

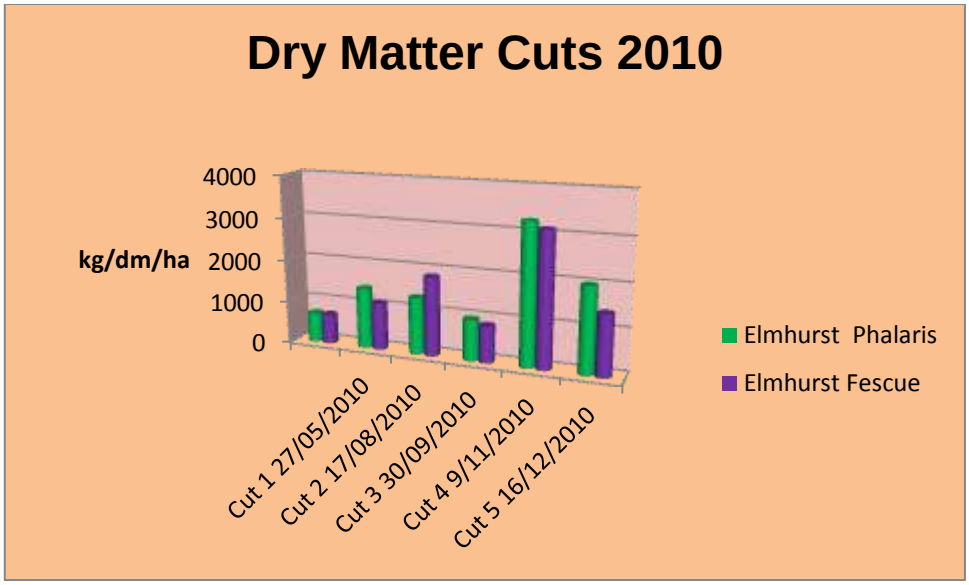


Graph 11: Elmhurst rainfall 2010

Dry Matter cuts commenced in 2010 and the results are in following table:

	Elmhurst Phalaris	***Elmhurst Fescue***
	Yield kg per Ha DM	Yield kg per Ha DM
Pre cut estimate Based on 45 mm	700	700
Cut 1 27/05/2010	1426	1108
Cut 2 17/08/2010	1336	1860
Cut 3 30/09/2010	966	859
Cut 4 9/11/2010	3280	3127
Cut 5 16/12/2010	2002	1427
Total Dry matter	**9710**	**9081**

Table 7: Elmhurst 2010 dry matter production



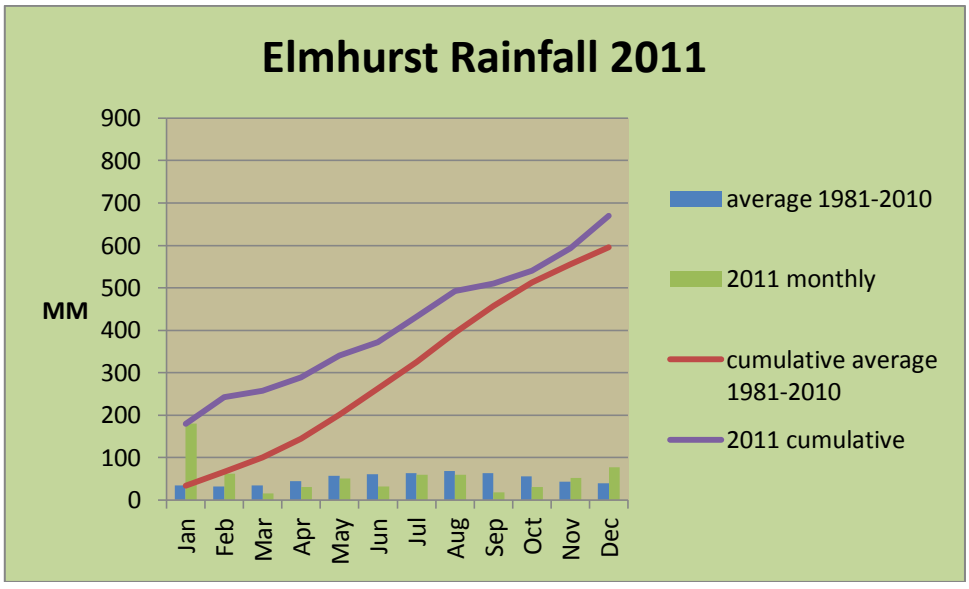
Graph 12: 2010 dry matter production at the Elmhurst site

Graph 12 shows the difference is growth patterns for the two species with the phalaris out yielding the fescue in the May, late September, November and December DM cuts. The August DM cut shows the fescue out yielding the phalaris which is consistent with its reputation for rapid late winter-early spring growth.

2011

The summer of 2010/11 was one of the wettest on record with 242 mm of rain (average 106 mm). This allowed the perennial grasses to continue growing right through the summer and autumn. The remainder of the year experienced average rainfall.

Both paddocks received 150 kg/ha of single superphosphate in the autumn.

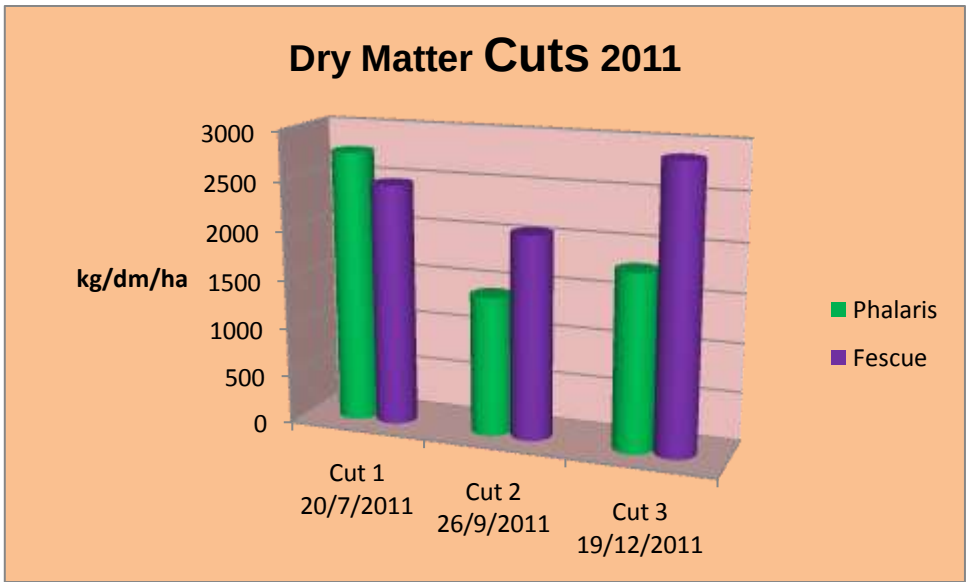


Graph 13: Elmhurst rainfall 2011

2011Dry matter Production

Date of plant cut	**Elmhurst Phalaris**	**Elmhurst Fescue**
	Yield kg per Ha DM	Yield kg per Ha DM
Cut 1 14 - 20/7/2011	2763	2462
Cut 2 23 - 26/9/2011	1417	2070
Cut 3 5-19/12/2011	1796	2874
Total Dry Matter	***5976***	***7406***

Table 8: Elmhurst 2011 dry matter production



Graph 14: 2011 dry matter production at the Elmhurst site

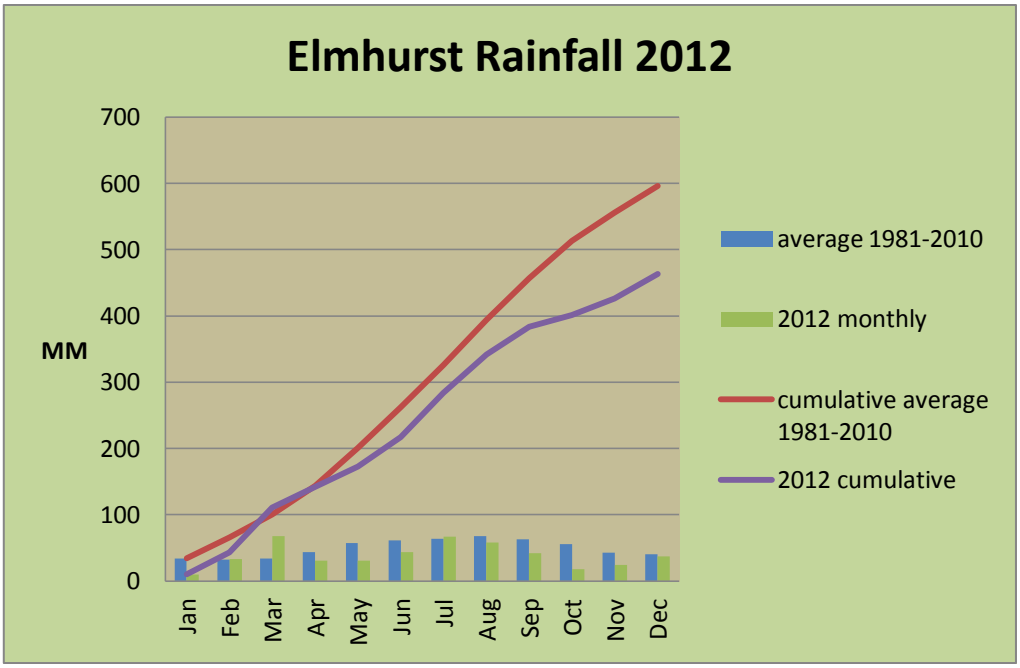
2012

The Southern Wimmera region experienced a very patchy autumn break with some areas receiving insufficient rain to call an autumn break until mid June. Elmhurst was one of the more fortunate areas with rainfall only slightly below average during the winter and early spring. Good pasture growth occurred and the Elmhurst area had a very good clover year which was reflected in the trial paddocks.

October and November rainfall was well below average which reduced the amount of feed grown in both pastures. The fescue again ran to head in mid spring reducing its feed quality in comparison to the phalaris.

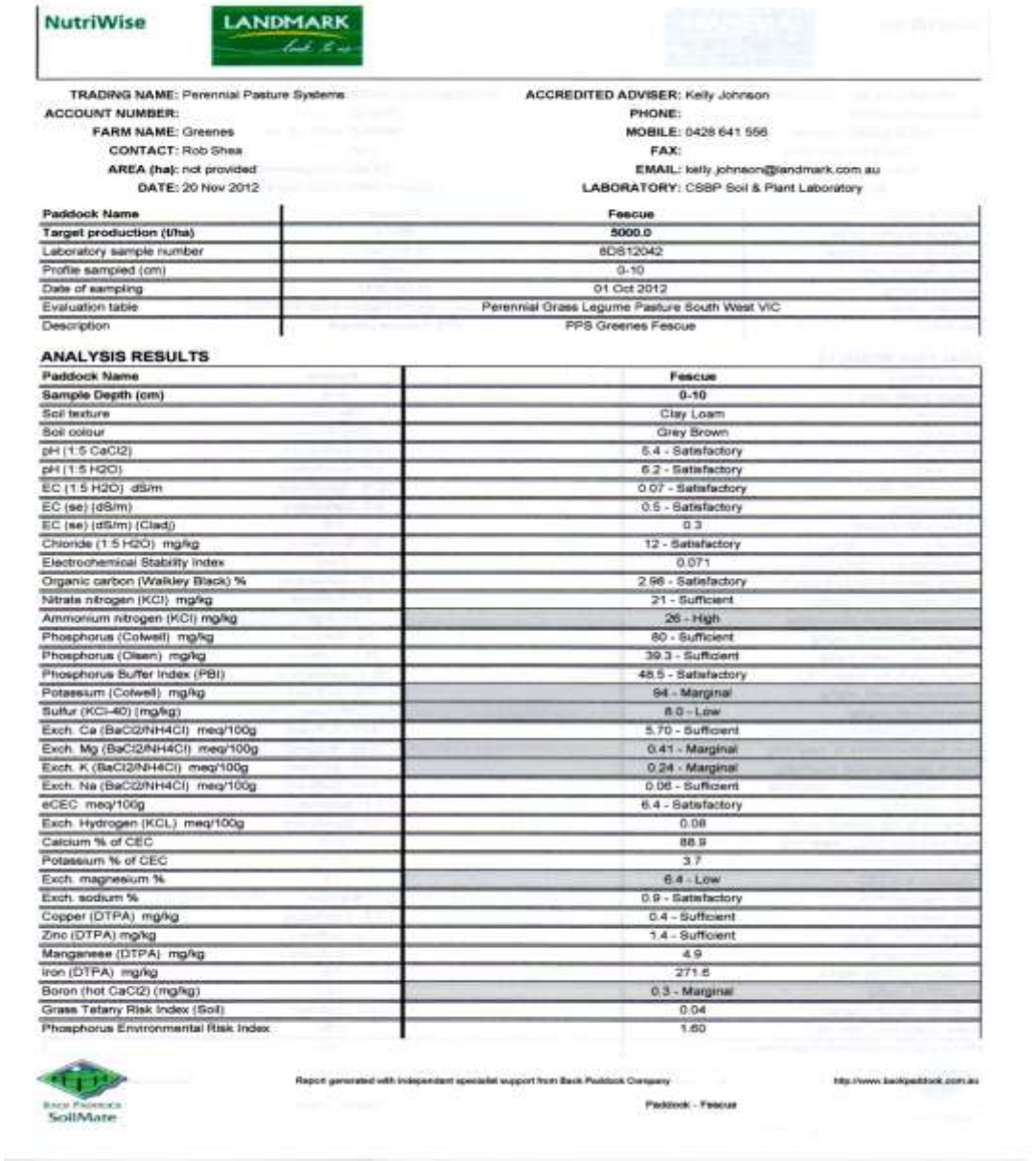
Both pastures received 150 kg/ha of single super in 2012.

Soil tests were taken in spring; results are on pages 44 & 45.



Graph 15: Elmhurst rainfall 2012

Elmhurst Fescue paddock soil test results September 2012



NutriWise

LANDMARK

TRADING NAME: Perennial Pasture Systems
ACCOUNT NUMBER:
FARM NAME: Greenes
CONTACT: Rob Shea
AREA (ha): not provided
DATE: 20 Nov 2012

ACCREDITED ADVISER: Kelly Johnson
PHONE:
MOBILE: 0428 641 556
FAX:
EMAIL: kelly.johnson@landmark.com.au
LABORATORY: CSBP Soil & Plant Laboratory

Paddock Name	Fescue
Target production (t/ha)	5000.0
Laboratory sample number	8DS12042
Profile sampled (cm)	0-10
Date of sampling	01 Oct 2012
Evaluation table	Perennial Grass Legume Pasture South West VIC
Description	PPS Greenes Fescue

ANALYSIS RESULTS

Paddock Name	Fescue
Sample Depth (cm)	0-10
Soil texture	Clay Loam
Soil colour	Grey Brown
pH (1:5 CaCl2)	5.4 - Satisfactory
pH (1:5 H2O)	6.2 - Satisfactory
EC (1:5 H2O) dS/m	0.07 - Satisfactory
EC (se) (dS/m)	0.5 - Satisfactory
EC (se) (dS/m) (Clad)	0.3
Chloride (1:5 H2O) mg/kg	12 - Satisfactory
Electrochemical Stability Index	0.071
Organic carbon (Walkley Black) %	2.98 - Satisfactory
Nitrate nitrogen (KCl) mg/kg	21 - Sufficient
Ammonium nitrogen (KCl) mg/kg	26 - High
Phosphorus (Colwell) mg/kg	80 - Sufficient
Phosphorus (Olsen) mg/kg	39.3 - Sufficient
Phosphorus Buffer Index (PBI)	48.5 - Satisfactory
Potassium (Colwell) mg/kg	94 - Marginal
Sulfur (KCl-40) (mg/kg)	8.0 - Low
Exch. Ca (BaCl2/NH4Cl) meq/100g	5.70 - Sufficient
Exch. Mg (BaCl2/NH4Cl) meq/100g	0.41 - Marginal
Exch. K (BaCl2/NH4Cl) meq/100g	0.24 - Marginal
Exch. Na (BaCl2/NH4Cl) meq/100g	0.06 - Sufficient
eCEC meq/100g	6.4 - Satisfactory
Exch. Hydrogen (KCL) meq/100g	0.08
Calcium % of CEC	88.9
Potassium % of CEC	3.7
Exch. magnesium %	6.4 - Low
Exch. sodium %	0.9 - Satisfactory
Copper (DTPA) mg/kg	0.4 - Sufficient
Zinc (DTPA) mg/kg	1.4 - Sufficient
Manganese (DTPA) mg/kg	4.9
Iron (DTPA) mg/kg	271.6
Boron (hot CaCl2) (mg/kg)	0.3 - Marginal
Grass Tetany Risk Index (Soil)	0.04
Phosphorus Environmental Risk Index	1.60

SoilMate

Report generated with independent specialist support from Back Paddock Company

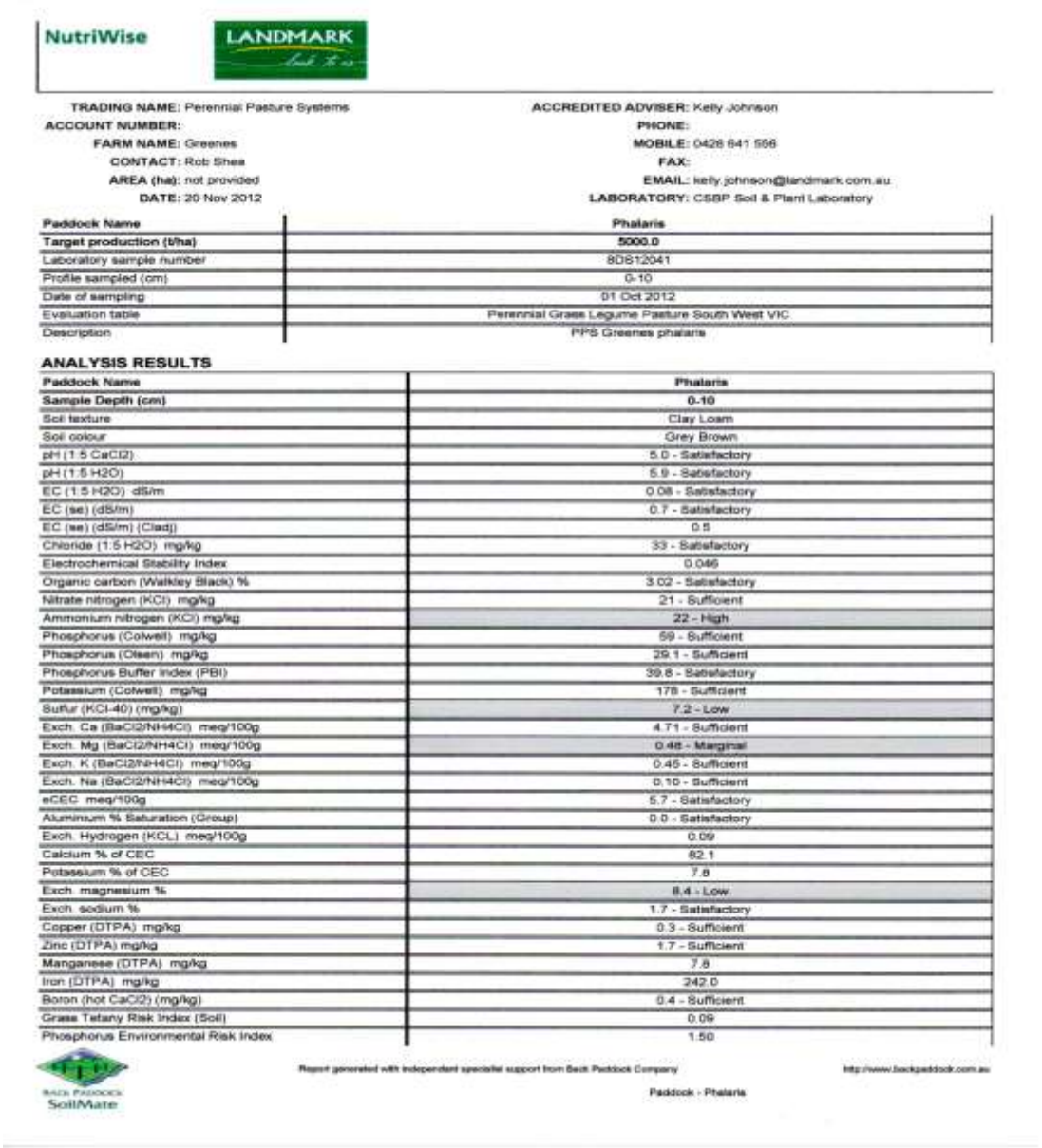
http://www.backpaddock.com.au

Paddock - Fescue

	2009	2012
pH (1:5 $_{CaCl2}$)	4.5	5.4
Phosphorus (P) mg/kg (Colwell)	79	80 (sufficient)
Potassium (K) mg/kg (Colwell)	270	94 (marginal)
Sulphur mg/kg (KCL 40)	5.0	8.0 (low)
Organic Carbon %C	3.44	2.98
Aluminium meq/100g	0.18	0.0

Table 9: Changes in soil test results 2009 - 2012

Elmhurst Phalaris paddock soil test results September 2012



NutriWise LANDMARK

TRADING NAME: Perennial Pasture Systems
ACCOUNT NUMBER:
FARM NAME: Greenes
CONTACT: Rob Shea
AREA (ha): not provided
DATE: 20 Nov 2012

ACCREDITED ADVISER: Kelly Johnson
PHONE:
MOBILE: 0428 641 556
FAX:
EMAIL: kelly.johnson@landmark.com.au
LABORATORY: CSBP Soil & Plant Laboratory

Paddock Name	Phalaris
Target production (t/ha)	5000.0
Laboratory sample number	8D812041
Profile sampled (cm)	0-10
Date of sampling	01 Oct 2012
Evaluation table	Perennial Grass Legume Pasture South West VIC
Description	PPS Greenes phalaris

ANALYSIS RESULTS

Paddock Name	Phalaris
Sample Depth (cm)	0-10
Soil texture	Clay Loam
Soil colour	Grey Brown
pH (1:5 CaCl2)	5.0 - Satisfactory
pH (1:5 H2O)	5.9 - Satisfactory
EC (1:5 H2O) dS/m	0.08 - Satisfactory
EC (se) (dS/m)	0.7 - Satisfactory
EC (se) (dS/m) (Clad))	0.5
Chloride (1:5 H2O) mg/kg	33 - Satisfactory
Electrochemical Stability Index	0.046
Organic carbon (Walkley Black) %	3.02 - Satisfactory
Nitrate nitrogen (KCl) mg/kg	21 - Sufficient
Ammonium nitrogen (KCl) mg/kg	22 - High
Phosphorus (Colwell) mg/kg	59 - Sufficient
Phosphorus (Olsen) mg/kg	29.1 - Sufficient
Phosphorus Buffer Index (PBI)	39.6 - Satisfactory
Potassium (Colwell) mg/kg	178 - Sufficient
Sulfur (KCl-40) (mg/kg)	7.2 - Low
Exch. Ca (BaCl2/NH4Cl) meq/100g	4.71 - Sufficient
Exch. Mg (BaCl2/NH4Cl) meq/100g	0.48 - Marginal
Exch. K (BaCl2/NH4Cl) meq/100g	0.45 - Sufficient
Exch. Na (BaCl2/NH4Cl) meq/100g	0.10 - Sufficient
eCEC meq/100g	5.7 - Satisfactory
Aluminium % Saturation (Group)	0.0 - Satisfactory
Exch. Hydrogen (KCL) meq/100g	0.09
Calcium % of CEC	82.1
Potassium % of CEC	7.8
Exch. magnesium %	8.4 - Low
Exch. sodium %	1.7 - Satisfactory
Copper (DTPA) mg/kg	0.3 - Sufficient
Zinc (DTPA) mg/kg	1.7 - Sufficient
Manganese (DTPA) mg/kg	7.8
Iron (DTPA) mg/kg	242.0
Boron (hot CaCl2) (mg/kg)	0.4 - Sufficient
Grass Tetany Risk Index (Soil)	0.09
Phosphorus Environmental Risk Index	1.50

Report generated with independent specialist support from Back Paddock Company http://www.backpaddock.com.au

SoilMate

Paddock - Phalaris

	2009	2012
pH (1:5 $_{CaCl2}$)	4.5	5.0
Phosphorus (P) mg/kg (Colwell)	51	59 (sufficient)
Potassium (K) mg/kg (Colwell)	282	178 (sufficient)
Sulphur mg/kg (KCL 40)	16.1	7.2 (low)
Organic Carbon %C	4.16	3.02
Aluminium meq/100g	0.22	0.0

Table 10: ***Changes in soil test results 2009 - 2012***

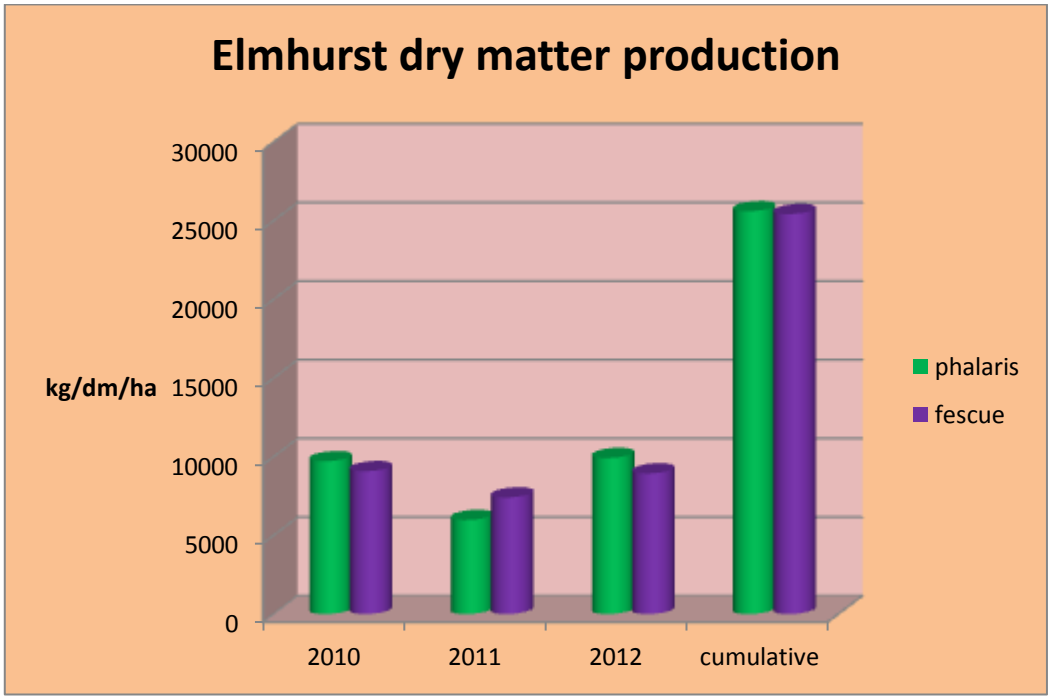
2012 Dry matter Production

Date of plant cut	**Elmhurst Phalaris**	**Elmhurst Fescue**
	Yield kg per Ha DM	Yield kg per Ha DM
Cut 1 25/7/12	2651	1678
Cut 2 24/9/12	2140	2667
Cut 3 23/11/12	5125	4591
Total Dry Matter	***9916***	***8936***

Table 11: Elmhurst 2012 dry matter production

Graph 16: 2012 dry matter production at the Elmhurst site

Dry Matter Production 2010-12



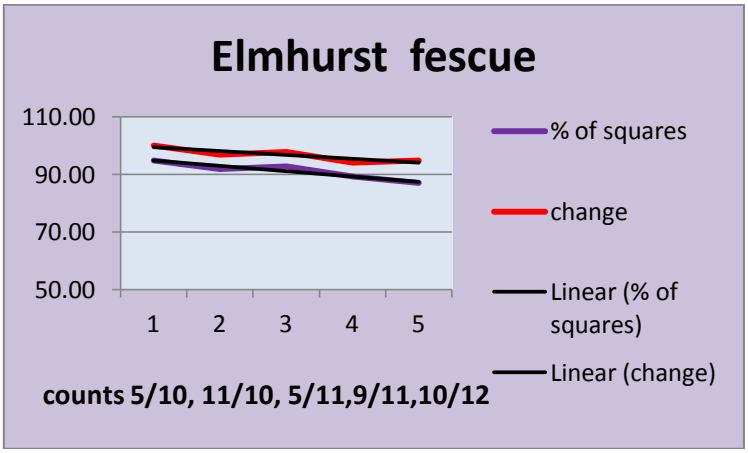
Graph 17: Cumulative dry matter production at the Elmhurst site

Elmhurst Fescue November 2012

Trial Measurements

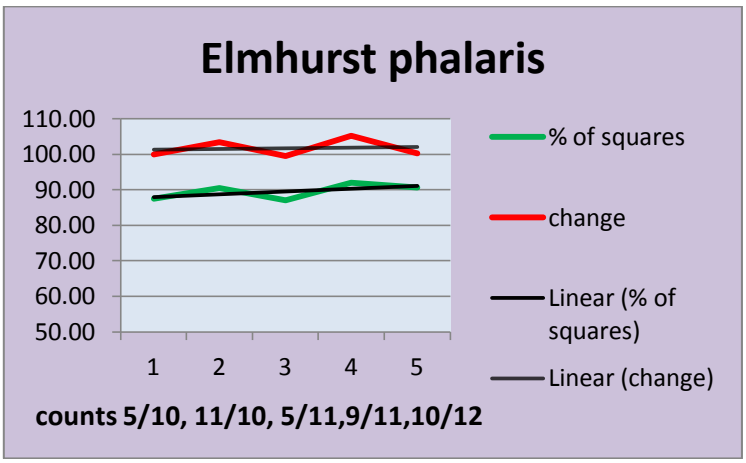
Plant persistence counts

Plant counts were conducted in accordance with the recommendations of project consultant Andrew Speirs (see pages 13 - 14).



Graph 18: Elmhurst Fescue persistence

The fescue showed a small decline in plant coverage during the 2010-2012 period; however it still had excellent plant density.



Graph 19: Elmhurst Phalaris persistence

The phalaris showed no decrease in persistence over the two year period and showed an increase in plant density due to the increase in plant size as the phalaris matured and crowned out.

The differences in plant density is not significant and is a reflection of the different growth habits of the varieties with the phalaris crowning out and the fescue having a more erect growth habit.

Feed quality analysis

The late spring rains in 2010 allowed the grasses to continue growth into early summer. A feedtest was carried out on the November and December plant cuts to ascertain any differences between the feed quality of the different varieties in early summer.

	Elmhurst Phalaris					
	Yield kg per Ha DM	Digestibility	Metabolisable Energy MJ/kg	Crude Protein %	Total Energy MJ	Total Protein kg
Cut 4 9/11/2010	3280	53.5	7.6	17.5	24928	574
Cut 5 16/12/2010	**2002**	**53.4**	**7.6**	17.1	**15215**	342
					40143	

Table 12: Elmhurst Phalaris feedtest results 2010

Large differences shown in bold print

	Elmhurst Fescue					
	Yield kg per Ha DM	Digestibility	Metabolisable Energy MJ/kg	Crude Protein %	Total Energy MJ	Total Protein kg
Cut 4 9/11/2010	3127	53.3	7.6	16	23765	500
Cut 5 16/12/2010	**1427**	**46.3**	**6.4**	15.7	**9133**	224
					32898	

Table 13: Elmhurst Fescue feedtest results 2010

Elmhurst Phalaris September 2010

Feed quality analysis continued

The results from the Elmhurst site show that the digestibility and ME of the phalaris remained fairly constant while the digestibility and ME of the fescue declined. This resulted in a large difference in the total megajoules of energy available despite there being only fairly small differences in the pasture yield.

Site manager Ben Greene said that the results backed up his observations during the early summer of 2010.

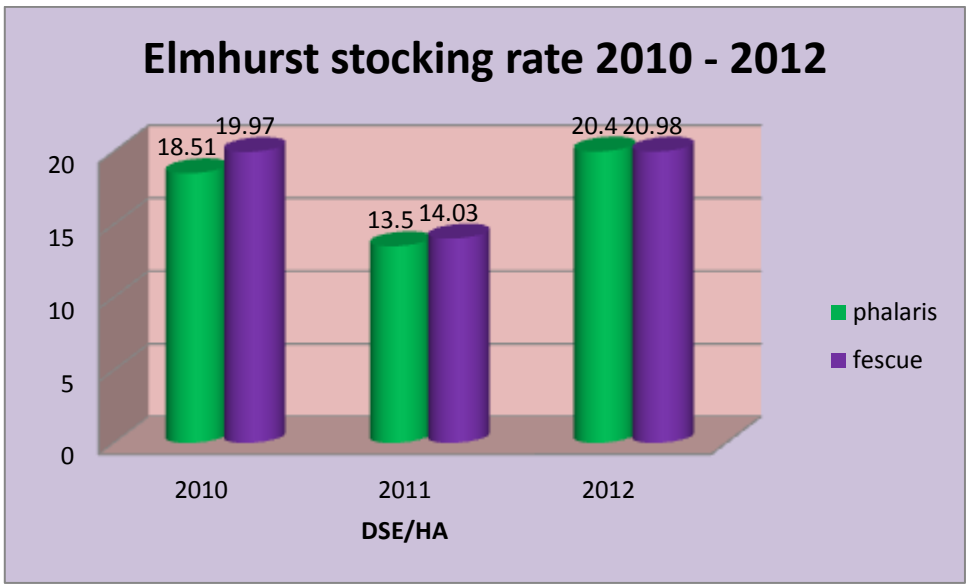
Ben commented that "*Observing the two different species throughout the year has been interesting, the biggest point of difference was in October when the fescue really wants to run to head and this is the time you can add more grazing pressure. Even with the added grazing pressure the plant ran to head and then the feed quality dropped off significantly leaving the paddock with a lot of spindly, unpalatable heads. The leaf tended to stop growing at this stage and the paddock appeared finished for the season, to my surprise. The phalaris at this point was responding to the late spring rain and still providing fresh feed, although it was heading into its reproductive stage. The phalaris, even when it did come to head was still palatable. One observation is that the fescue, to ensure its survival through summer, seems to me to have a lot more harsh characteristics than other species. This can be viewed as a positive maybe for persistence, but a negative on production."*

NOTE—from Andrew Speirs MS&A, who analysed the tests**.**
A word of caution with the feedtests as we have taken whole tops from the plants, the sheep would have been much more selective.
At Elmhurst there is a difference in ME between the phalaris and fescue which is very interesting, imagine if we could select what the sheep are eating and only testing leaf; the differences may be larger.

PPS members in the Elmhurst Fescue paddock on the PPS Annual conference Tour September 2010

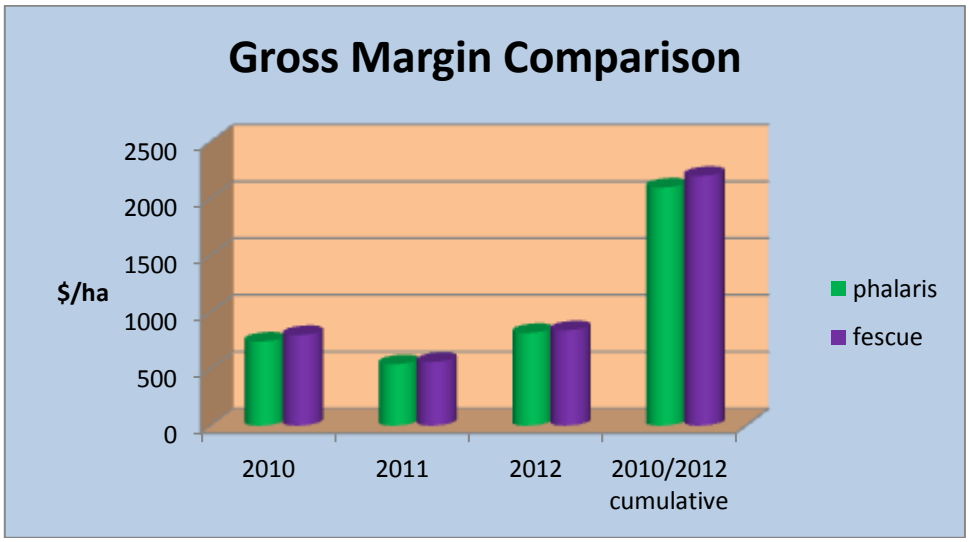
Animal Production

The comparative stocking rates for the Elmhurst site are shown in graph 20.



Graph 20: Elmhurst stocking rates

The stocking rate data shows a slight advantage to the fescue but the differences are not large and are due to the timing of stock movements. The average of both paddocks is significantly higher than the district average of approx 9 dse/ha.



Graph 21: Elmhurst gross margin comparison (@$40 gm/dse

The small difference between the varieties is again reflected in the gross margin comparison.

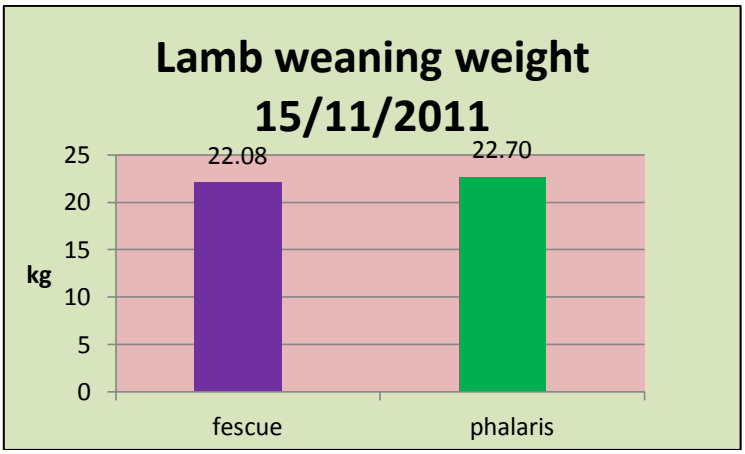
Additional animal measurements 2011

During 2011 additional animal measurements were taken at all three PPS PDS sites. Lambing ewes were used in the phalaris/fescue comparison at Elmhurst.
Measurements of lambing ewes were taken at the Elmhurst site during lambing in winter 2012.

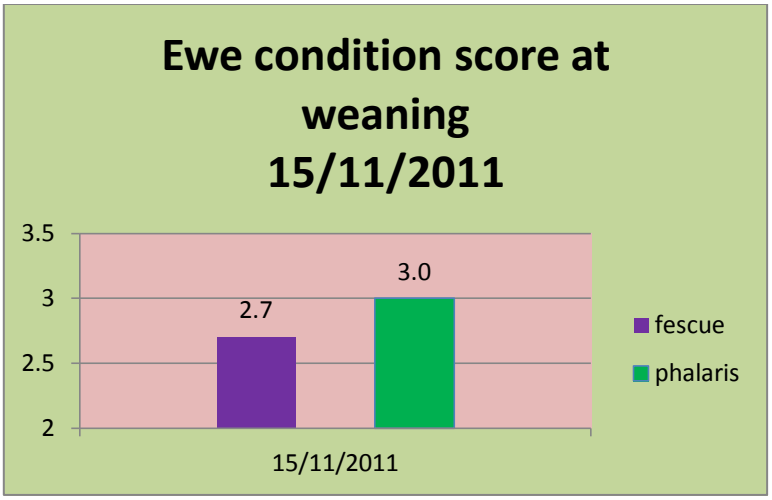
Both paddocks were stocked with 54 Merino ewes lambing to Merino rams at a stocking rate of 7.7 ewes per ha (rated at 1.8dse =13.8 dse/ha). The ewes entered the paddocks on the 28th of July just prior to lambing and measurements were taken at weaning on the 15th of November.

The ewes off the fescue paddock had a weaning rate of 96% and the ewes off the phalaris paddock had a weaning rate of 116%, although this is not of any significance as factors other than the paddock differences are involved.

The results from both paddocks show good lamb growth rates and show that the perennial pastures carried the lambing ewes in good condition through lambing and lactation. The differences between the paddocks are small but show a slight advantage to the phalaris.



Graph 22: Lamb weaning weight November 2011



Graph 23: Ewe condition scores November 2011

The major differences in the animal measurements were lamb weaning weight and ewe condition score. The lambs from the phalaris paddock weighed 0.62 kg more than the lambs off the fescue paddock: (Graph 22) and the ewes from the phalaris paddock had a body condition score 0.3 points better than the ewes off the fescue: (graph 23)

The increase in condition score of the lactating ewes and the lamb weaning weights of the mob in the phalaris paddock are quite valuable in a winter/spring lambing flock.

As noted in the introduction there were factors other than pasture variety type in the difference in lambing percentages between the paddocks. If the lambing percentage had been equivalent the lamb weight increase would show an advantage to the phalaris pasture of 4.78 kg lamb weight per ha.

Ewes and lambs on the phalaris paddock spring 2011

Conclusions

Both varieties combined with sub clover have produced pastures that have a stocking rate at close to double the average of the district. Both species have also shown good persistence over the trial period and this is expected to continue with the current management practices. PPS believes that a minimum of seven years is required to properly assess perennial grass persistence and will continue to monitor and report on the trial sites into the future.

There has only been a small difference in stocking rate in favour of the fescue, although this may be influenced by stock movement factors due to farm management. PPS regards the difference as being of minor importance.

There were minor differences in the weights of weaned lambs and the condition scores of lactating ewes between the paddocks when measured in 2011 in favour of the phalaris. PPS regards the differences as being of importance and may influence choice between the suitability of either species for lambing ewe productivity.

The recent availability of the Holdfast GT Phalaris variety is an important addition to the perennial grasses that can be established in the region.

The claims that Holdfast GT will persist as well as Australian Phalaris have not been tested due to the time required to obtain results from a new variety. PPS will continue to test the persistence of Holdfast GT in the PDS trials as well as other pastures in the project.
PPS has been in contact with Holdfast GT breeder Richard Culvenor (CSIRO) about persistence trials being conducted in the Canberra region and will follow the progress of those trials to gain extra insight into the variety.

It is also important to note that Holdfast GT wasn't sown as a pure sward in the PPS PDS trials.

The use of Holdfast GT as the preferred phalaris variety is borne out in the preliminary results of the 2012 PPS members' survey where Holdfast GT has been used in over 60% of the area sown to Phalaris in 2012.

The rapid early spring growth of the fescue has not been an issue in the paired paddock trial situation but PPS recognises that it could cause management issues if there is a high proportion of fescue on a farm or if a farm with fescue pastures is understocked. Careful management during the late winter is essential to control the fescue to avoid shading over sub clover plants and to try to maintain the digestibility of the fescue.

The success of the winter active fescue pasture has given a clear distinction between the winter active fescues and the summer active fescues and has caused PPS members to reconsider the use of fescue based pastures.

The issue of the winter active fescue running to head earlier than phalaris is considered by PPS to be an issue in average seasons where good spring rains extend the growing season. The feedtest results reflect the drop off in feed value in the fescue compared to phalaris. PPS considers that this is a significant disadvantage to the fescue in seasons which extend into early summer. Heavy grazing or cutting the fescue for silage may need to be adopted in these seasonal conditions.

PPS considers that winter active fescues can play a minor role in productive pasture systems in this district as a compliment to phalaris pastures.

The different spring growth patterns allow heavy grazing of the fescue in late winter and early spring, allowing phalaris pastures to have reduced grazing when going through stem elongation in early spring. Reduced grazing at this time is known to have a positive effect on the persistence of erect and semi erect varieties of phalaris. The phalaris can then be grazed later in the spring when it's feed quality is likely to be higher than the fescue.

PPS is trialling winter active fescues (Fletcha and Resolute varieties) in its series of pasture variety trials established in 2012, which will test its suitability in the drier areas of the region.

Elmhurst site manager Ben Greene on right with PPS members Charles DeFegely and Simon Brady at the Elmhurst site on the 2010 PPS Annual Conference tour.

Site host comments

Ben Greene Millbanks Elmhurst

January 2013

Phalaris vs. Fescue trial at Millbanks

Both paddocks have performed well from a persistence point of view. The phalaris has been fairly indicative of what we are achieving on some of our best paddocks.

The fescue has been the most challenging paddock to draw a conclusion on; I have established a "love hate" relationship with it. The reason for this is the growth pattern the plant takes over the growing season. For example, it cranks up early in the autumn with adequate moisture and cool temperatures and the paddock is good at producing feed during autumn and winter, from this perspective it is very comparable with the phalaris. It seems to allow the clover to compete very well thus providing nitrogen. The real issue is in spring around the 15th of October when the plant bolts into reproduction and becomes unpalatable and rank seed heads are all that is left.

It is easy to assume that it can be stocked more heavily at this time to keep it vegetative but in practice this doesn't occur as the decline in feed value appears to be that great the stock won't eat it, and pushing stock in the spring just to remove the seed head isn't really an option. This is not a problem with well fertilised phalaris residue as the stock will eat it with appropriate grazing pressure.

The other issue is that the fescue tends to shut up shop after mid October and as this is its unique ability to survive the harsh summer we experience, it also begs the question, is it worth trying to keep it vegetative?
We also noted a reduction in condition score of 0.3 with the ewes removed at weaning time off the fescue compared to the phalaris; this was not replicated and was through random scoring before and after lambing, but it is still a worthwhile observation.

I like the fescue for some of the things I mentioned but do ask the question if you had it as the main pasture species over the farm I feel come the middle of spring and early summer when you require finishing pastures for livestock turn off, you could do your income some real damage. You would also then have a real residue issue to clean up ready for the autumn break. The argument has been presented to me that the sheep are selective grazers and the residue in the following year isn't a problem. This is flawed as it is well documented that every bit of residue an animal ingests with green feed lowers the digestibility of the available feed. In saying all this I still believe that there is a place for the winter active fescue and one idea is that its application on steep hilly country fits the management model that we use up on these slopes. These areas are predominantly grazed during winter and early spring and left with well over 100 percent ground cover for the summer to protect their soils. The fescue could have a good fit with this application. Persistence of this species seems to be very impressive at this stage and from that point of view it may be more suited to moving it a little further north to where the growing season is shorter and the vegetative habits may not be as big an issue, provided that the residue can be cleaned up over summer.

In conclusion I am of the opinion that where phalaris can perform well I will be sowing it in preference, but the fescue trial paddock will remain and PPS will still be using it for information and trial work, so time will tell if my opinion can be altered.

Future Research at the site

PPS will continue to collect results from the site. The Elmhurst comparison is important to PPS research into productive long term perennial pastures in the region. The persistence of perennial grasses is of core importance to PPS and the site will continue with best management practices to ascertain the longevity and production of the two varieties.
The fescue paddock will be used in spring 2014 for a small trial by James Sewell of PGG Wrightsons who is looking at a potential study to look at ways of off-setting the stem elongation period of the fescue, and treating the plants using a combination of management techniques so that the plants continue to remain in a vegetative state to extend the period of quality feed longer through the season..

PPS is continuing to seek out opportunities for further research projects and the Elmhurst site may be suitable for further trials.

Fescue October 2012

Phalaris October 2012

Acknowledgements Elmhurst Site
PPS acknowledges the cooperation and assistance of
Ben Greene - site manager
Ben, Jodie, John & Coral Greene - Millbanks Farm operators
Michael Joss Beaufort Rural - agronomist for Millbanks Farms
Andrew Speirs MS&A - consultant agronomist for PPS PDS sites
Debbie Shea - assistance with plant measurements

Joel PPS PDS site

Joel site in September 2011

PPS spring field day visit to the Joel site in September 2012

Joel Trial Site

Introduction

The Joel site is situated approximately 20 km east of Stawell and about 1 km west of the Joel Joel Hall. It is situated on the light grey clay loam soils of the Southern Wimmera, North of the Great Divide. The trial paddocks are on rising country between the alluvial flats of the Wimmera River and the Six Mile Creek. Lucerne is grown on the flats and cropping and annual pastures make up the rest of the farming area. There has not been very much perennial grass establishment in the area.

Producers	Ken, Cheryl & Justin Hall
Property	South Glengowan
Location	Landsborough Rd - Joel
Pasture	Uplands Spanish Cocksfoot & Holdfast GT & Australian Phalaris & Trikkalla & Urana sub clovers.
Seeding rate	1 kg/ha Holdfast GT Phalaris & 1 kg/ha Australian Phalaris 2 kg/ha Uplands Cocksfoot & 4 kg/ha sub clover mix.
Date sown	15 May 2009
Method	Direct drilled with air seeder
Pre sowing management	2007/08 barley crops 2 t/ha lime applied. pre sowing weed control roundup @800 ml/ha Sown with 70 kg/ha MAP
Post sowing management	Sprayed for earth mite control
Problems & successes	Annual ryegrass problems in late winter and spring of 2009.

1st x ewes & lambs at the Joel site in winter 2010

Background

Uplands Hispanic Cocksfoot was officially released in 2010 after extensive trials in Tasmania and central Victoria. At trials near Natte Yallock in Victoria running from 2007 to 2009, Uplands and Sendace Hispanic Cocksfoots had survived well in the difficult conditions after three years where the four other Cocksfoots in the trial had not.

The Uplands showed superior production to the Sendace. Uplands is a finely tillered summer dormant Cocksfoot and although classified as a Cocksfoot it is considered by PPS to be a vastly different variety to the coarse leafed, summer active Cocksfoots that have been used in the region with variable success.

Uplands is claimed to have a very high level of drought tolerance, suited to an annual rainfall of 350-500mm and is adapted to dry hill country. This suggested that it may be a variety suited to the tough conditions in the Southern Wimmera.

PPS initially planned to compare the Uplands to a Phalaris pasture by sowing half of a 20 ha paddock to each species. For a variety of reasons this was not done and the varieties were sown as a pasture mix. This has proven to be a fortuitous decision for reasons that will be will become clear in the analysis of the pasture trial. It was decided that the paddock would be split east west after sowing to reflect the topography at the site. The Northern part is on a slope rising from the Six Mile Creek flats while the Southern part runs off the slope to a black soil flat.
It was decided to trial the Cocksfoot/Phalaris pasture against an adjacent degraded annual pasture consisting of Brome (Bromus mollis), Silver grass (Vulpia spp), Onion grass (Romulea longifolia) and a low percentage of sub clover. This pasture is typical of run down pastures in the area.

2009

Soil tests were taken in March at 0-10 cm, 10-40 cm, 40-70 cm and 70-100 cm from both paddocks and showed a few issues. Soil pH in both paddocks was low at 4.9 and 5.1 (CaCl) although aluminium levels were below the levels which cause issues with Phalaris. Lime was applied at 2 tonnes/ha prior to sowing, the paddocks were sufficient in major nutrients so a maintenance phosphorus fertiliser was used at sowing. The deep soil tests showed no issues with acidity at depth.

Uplands Cocksfoot and Phalaris at Joel winter 2010

Joel Northern paddock soil test results
Spring 2009

Status Report & Recommendation	
Contact Name	Hall
Paddock Name	Nth 0-10
Lab Number	2F S09131
Crop to be sown	Pasture

Analysis	Result	Desired (pasture)	Interp.
Nitrate N mg/kg	35	20-40	Good
Ammonium N mg/kg	12		
Phosphorus (P) mg/kg (Colwell)	34	30-60	Good
Potassium (K) mg/kg (Colwell)	204	150-350	Good
Sulphur mg/kg (KCL 40)	9.1	8-20	Ok
Organic Carbon %C	2.31	2.0-5.0%	Ok
Elect Cond. (EC) dS/m	0.151	<0.6	Ok
pH (1:5 $CaCl^2$)	4.9	5.8-7.0	Low
pH (1:5 Water)	5.9		
Copper (Cu) mg/kg	0.34	>1	Very Low
Zinc (Zn) mg/kg	0.88	>1	Low
Manganese (Mn) mg/kg	11.94	2 - 50	Ok
Iron (Fe) mg/kg	195.62	>2	High
Exc Calcium (Ca)	4.48	4.5-6.0	Ok
Exc Magnesium (Mg)	1.54	1.25-1.7	Ok
Exc Sodium (Na)	0.63	<6%	Ok
Exc Potassium (K)	0.46	0.5 - 0.9 meq	Ok
Aluminium mg/kg	1.5	<4%	Ok
Boron (B) mg/kg	0.5	0.5-2	Ok
Aluminium meq/100g	0.06	<0.22	Ok
Ca:Mg Ratio	2.9	3-7	Low

Deep soil pH results

Soil test depth	10-40 cm
pH (1:5 $_{CaCl2}$)	6.7
pH (1:5 $_{Water}$)	7.6
Soil test depth	40-70 cm
pH (1:5 $_{CaCl2}$)	6.7
pH (1:5 $_{Water}$)	7.7
Soil test depth	70-100 cm
pH (1:5 $_{CaCl2}$)	7.2
pH (1:5 $_{Water}$)	8.1

Joel Southern paddock soil test results
Spring 2009

Status Report & Recommendation

Contact Name Hall

Paddock Name Sth 0-10

Lab Number 2F S09135

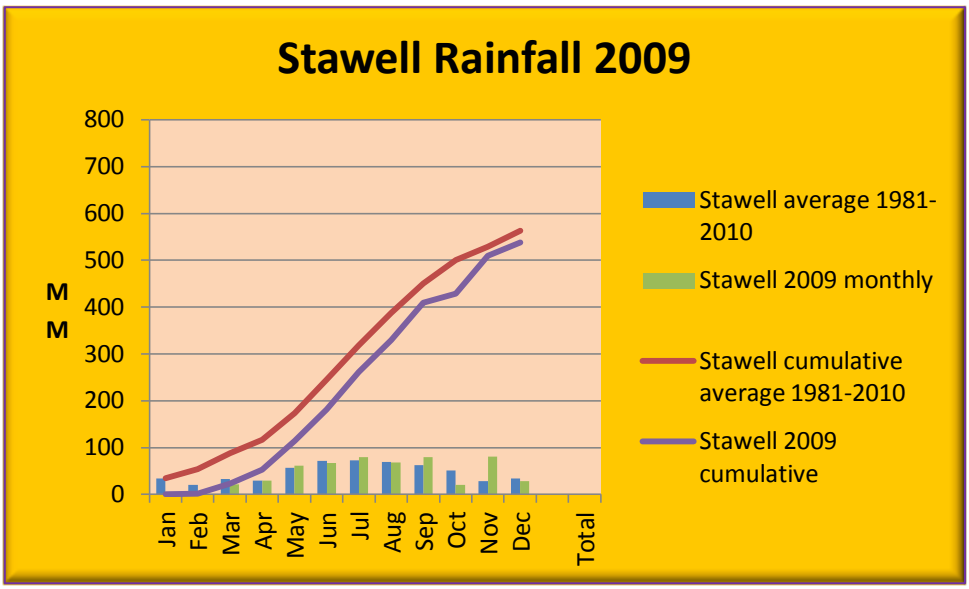
Crop to be sown Pasture

Analysis	Result	Desired (pasture)	Interp.
Nitrate N mg/kg	47	20-40	Good
Ammonium N mg/kg	24		
Phosphorus (P) mg/kg (Colwell)	46	30-60	Good
Potassium (K) mg/kg (Colwell)	312	150-350	Good
Sulphur mg/kg (KCL 40)	10.3	8-20	Ok
Organic Carbon %C	2.46	2.0-5.0%	Ok
Elect Cond. (EC) dS/m	1.56	<0.6	High
pH (1:5 $CaCl^2$)	5.1	5.8-7.0	Ok
pH (1:5 Water)	6.1		
Copper (Cu) mg/kg	0.66	>1	Low
Zinc (Zn) mg/kg	0.88	>1	Low
Manganese (Mn) mg/kg	14.47	2 - 50	Ok
Iron (Fe) mg/kg	112.53	>2	High
Exc Calcium (Ca)	5.37	4.5-6.0	Ok
Exc Magnesium (Mg)	3.44	1.25-1.7	High
Exc Sodium (Na)	0.82	<6%	Ok
Exc Potassium (K)	0.74	0.5 - 0.9 meq	Ok
Aluminium mg/kg	0.4	<4%	Ok
Boron (B) mg/kg	0.9	0.5-2	High
Aluminium meq/100g	0.05	<0.22	Ok
Ca:Mg Ratio	1.6	3-7	Low

Deep soil pH results

Soil test depth	10-40 cm
pH (1:5 $_{CaCl2}$)	6.6
pH (1:5 $_{Water}$)	7.5
Soil test depth	40-70 cm
pH (1:5 $_{CaCl2}$)	7.6
pH (1:5 $_{Water}$)	8.6
Soil test depth	70-100 cm
pH (1:5 $_{CaCl2}$)	8.2
pH (1:5 $_{Water}$)	9.1

The pastures were sown on May 15th 2009 after a slightly later than average autumn break. 70 kg/ha of MAP was applied at sowing. Despite the year having below average rainfall, there was sufficient rain for good growing conditions. The grasses established well and grew well into spring; the clover establishment was below desired levels.



Graph 24: Stawell rainfall 2009

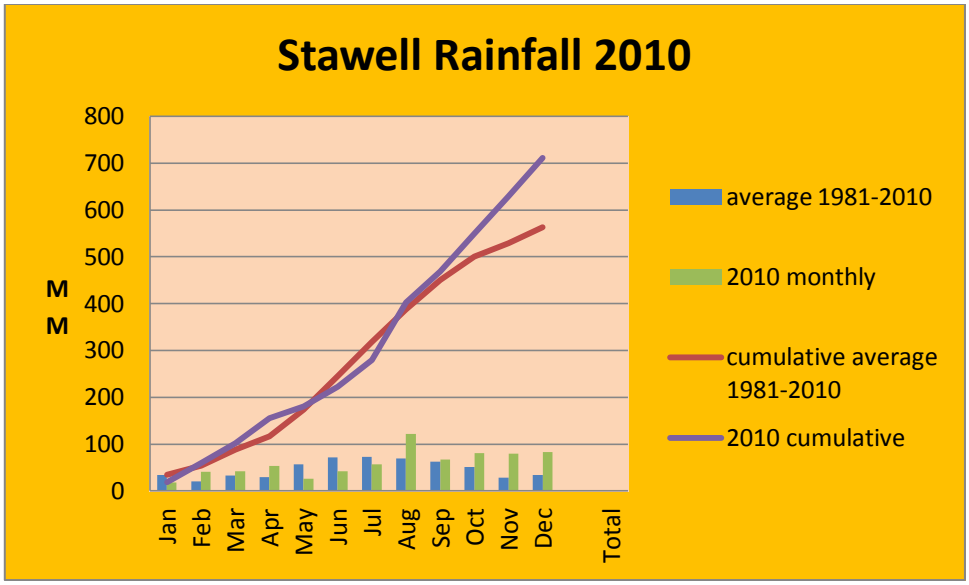
In late winter it became apparent the there were patches of Wimmera Ryegrass (Lolium rigidum) in the northern paddock and large areas in the southern paddock. While the areas in the northern paddock appeared to be thick enough to affect growth of the perennials, PPS were confident that they were well enough established to survive. The ryegrass areas in the southern paddock appeared to have completely smothered the perennials and it was feared that an area of about 4 ha would be lost completely.

The ryegrass infestation was surprising as the pasture establishment followed two years of crop in the paddocks with best practice weed control. The option of a chemical control for the ryegrass was investigated but PPS was advised that there would be too big of an adverse effect on the newly established perennials.

Inspections at the site in late November after the ryegrass had died off showed that several Phalaris and Cocksfoot plants were still growing under the dead annuals and gave hope that there may be enough plants surviving in the badly affected areas to make a good pasture.

2010

Seasonal conditions were fairly average until late spring when good rains allowed for the perennials to grow right through until the end of the year. The late rains bought the total annual rainfall to 25% above average.



Graph 25: Stawell rainfall 2010

The pasture responded well to a good autumn break and the areas affected by annual ryegrass in 2009 showed little ill-effects and were recovering well. Initial observations suggested that the entire area would be dominated by the phalaris but this changed as the cocksfoot entered its second year of growth and began to gain density. This will be discussed further later in the report (see pages 72-73).

150 kg/ha of single super was applied to the perennial pasture. No fertiliser was applied to the annual pasture during the trial period in line with district practice. The application of fertiliser to these run down annual pastures would be unlikely to Generate an economic return.

Dry matter measurements were commenced in 2010 with cuts taken from areas under cages

Dry Matter Production 2010

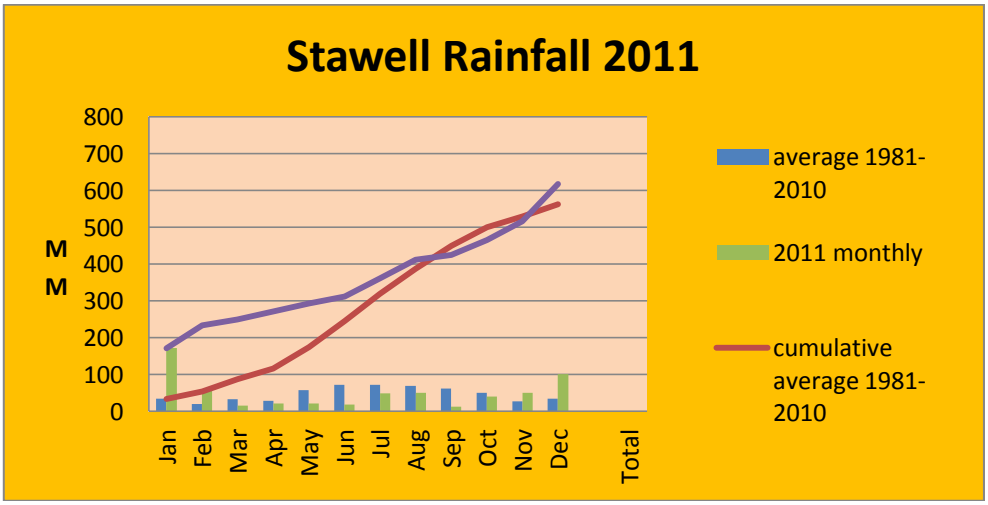
Hall	Joel Cocksfoot	Joel Annual - barley grass/silver grass/ (estimate)
	Yield kg per Ha DM	Yield kg per Ha DM
Pre cut estimate	300	
Based on 45 mm		
Cut 1 27/05/2010	485	
Cut 2 17/08/2010	1667	
Cut 3 30/09/2010	502	
Cut 4 9/11/2010	1869	
Cut 5 16/12/2010	1898	
Total Dry matter	**6721**	**4823 (estimate)**

Table 14: Joel 2010 dry matter production

Note: Cages were not put on the annual pasture in 2010 so an estimate of growth was made with reference made to the paper "pasture growth model" by Tom Morgan (2005).

2011

The summer of 2010/11 was one of the wettest on record with 233 mm of rain recorded in the January – February period. Serious flooding occurred around the Wimmera River and its tributaries. The rains had allowed the perennial grasses to remain in growth phase for a full twelve months from autumn 2010 through to autumn 2011.



Graph 26: Stawell rainfall 2011

The summer and autumn rains allowed for good pasture growth but dry conditions in late winter and spring restricted growth and there was little pasture growth after mid October. The fertiliser regime changed for the perennial pasture as PPS decided to put fertiliser demonstration strips in the northern paddock at the Joel site.
The late winter growth was restricted by poor rainfall and no assessment of the fertiliser strips was possible. Details are on pages 85 – 87.
Gypsum was applied in the Southern paddock @ 1 tonne/ha.

Dry Matter Production 2011

	Joel Cocksfoot	**Joel Annual**
Date of plant cut	Yield kg per Ha DM	Yield kg per Ha DM
Cut 1 14/3/2011	0	0
Cut 2 14 - 20/7/2011	1348	774
Cut 3 23 - 26/9/2011	1362	984
Cut 4 5 - 19/12/2011	2102	1917
Total Dry Matter	***4812***	***3675***

Table 15: Joel 2011 dry matter production

On December 18th 2011, severe thunderstorms hit an area from Stawell to just West of Joel Joel with up to 150 mm of rain causing severe localised flash flooding. Farmers along the Six and Seven Mile Creeks had serious issues with approximately 400 kilometres of fencing damaged and sheep losses totalling around 1500. The deluge destroyed livestock worth an estimated $264,000 and damaged farm fencing to an estimated value of $2.8 million leaving some landholders in the Joel Joel and surrounding area with damage bills of more than $100,000.

The Hall's farm was near the eastern limit of the storm but still received 100 mm of rain in an hour and suffered some fencing damage. The rain boosted lucerne growth on the farm and did green up the perennial pasture in the trial but did not add a lot of dry matter production as hot summer conditions quickly dried out the soil..

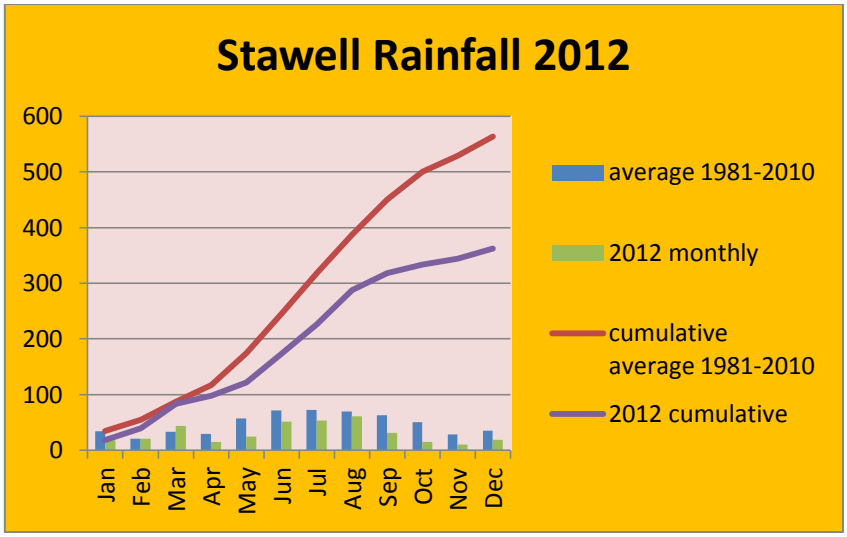
Still waiting: Joel Joel farmer Ken Hall surveys the damage following the December 2011 flood.

Photo from Weekly Times which accompanied a flood story.

2012

The Southern Wimmera region experienced a very patchy autumn break with some areas receiving insufficient rain to call an autumn break until mid June. The Joel Joel area was a bit more fortunate although rainfall during winter was below average. The spring rainfall was well below normal with only 57 mm of rain compared to the average of 140 mm. Pasture growth in the trial paddocks was restricted by the lower rainfall.

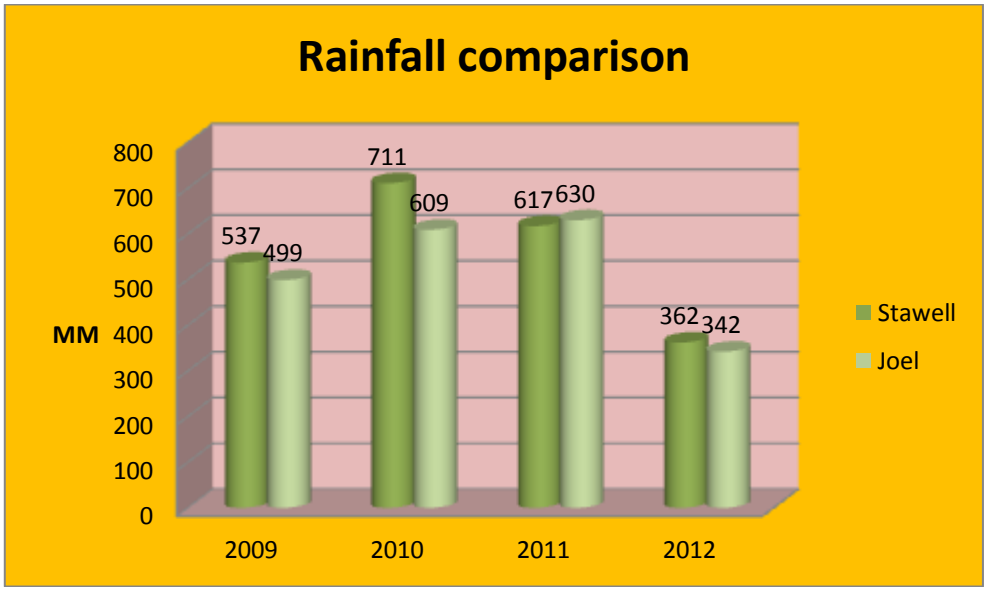
The north paddock was again used for fertiliser demonstration strips and the area was locked up from mid winter to allow assessment.
Details of the fertiliser demonstration are on pages 85-87.
A Soil test was taken in spring see results on page 69.



Graph 27: Stawell rainfall 2012

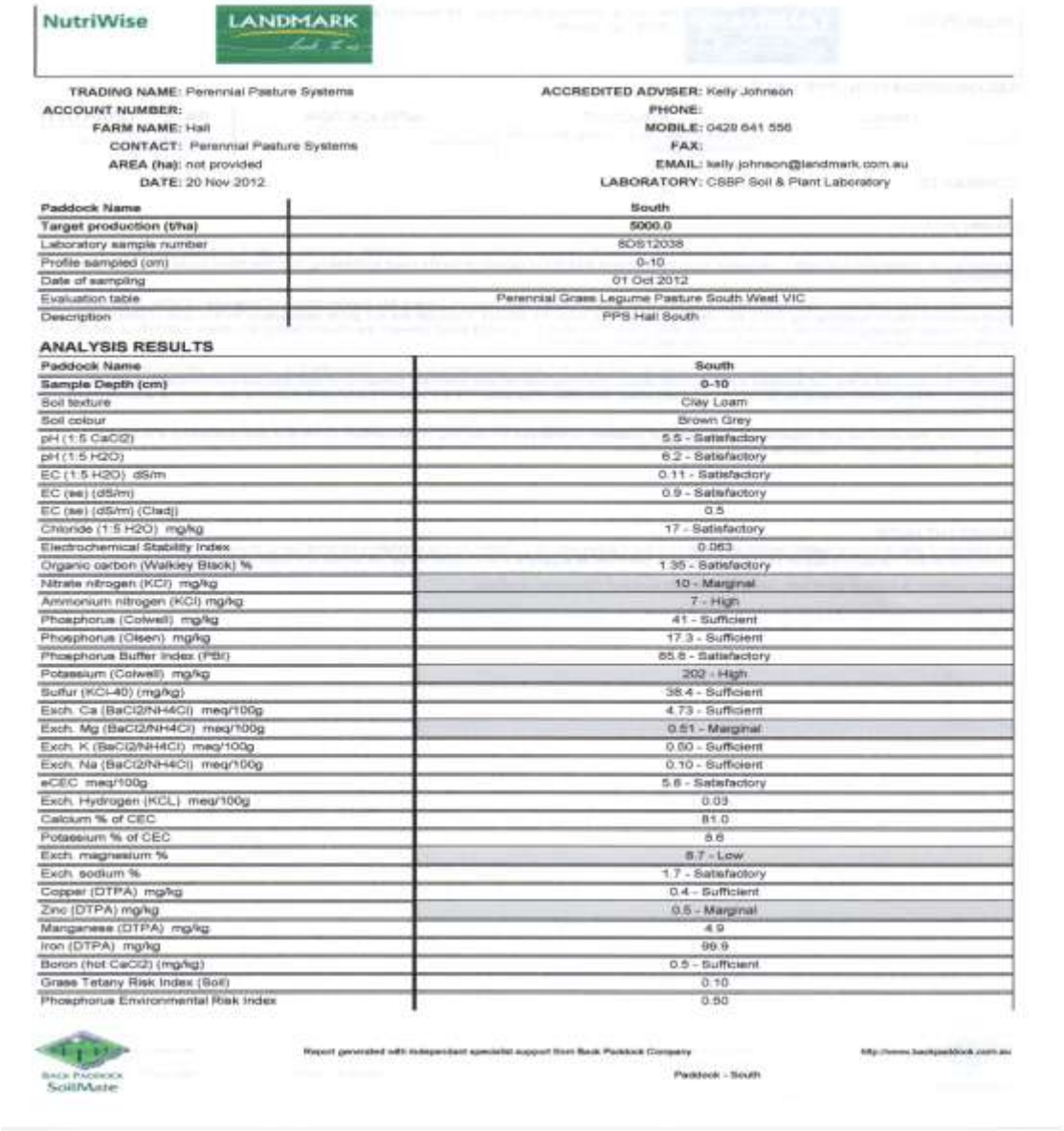
Rainfall comparison

Monthly rainfall records for Joel were not available, so the official records for Stawell 20 km West of Joel were used in this report. Annual records for a farm at Joel were accessed and are presented as a comparison to the Stawell results in graph 27.



Graph 28: Annual rainfall comparison Stawell & Joel Joel 2009-2012

Soil test results September 2012 – Northern paddock not tested due to the presence of fertiliser demonstration strips.
Joel Southern paddock soil test results September 2012



NutriWise

LANDMARK

TRADING NAME: Perennial Pasture Systems
ACCOUNT NUMBER:
FARM NAME: Hall
CONTACT: Perennial Pasture Systems
AREA (ha): not provided
DATE: 20 Nov 2012

ACCREDITED ADVISER: Kelly Johnson
PHONE:
MOBILE: 0429 641 556
FAX:
EMAIL: kelly.johnson@landmark.com.au
LABORATORY: CSBP Soil & Plant Laboratory

Paddock Name	South
Target production (t/ha)	5000.0
Laboratory sample number	SOS12038
Profile sampled (cm)	0-10
Date of sampling	01 Oct 2012
Evaluation table	Perennial Grass Legume Pasture South West VIC
Description	PPS Hall South

ANALYSIS RESULTS

Paddock Name	South
Sample Depth (cm)	0-10
Soil texture	Clay Loam
Soil colour	Brown Grey
pH (1:5 CaCl2)	5.5 - Satisfactory
pH (1:5 H2O)	6.2 - Satisfactory
EC (1:5 H2O) dS/m	0.11 - Satisfactory
EC (se) (dS/m)	0.9 - Satisfactory
EC (se) (dS/m) (Clad)	0.5
Chloride (1:5 H2O) mg/kg	17 - Satisfactory
Electrochemical Stability Index	0.063
Organic carbon (Walkley Black) %	1.35 - Satisfactory
Nitrate nitrogen (KCl) mg/kg	10 - Marginal
Ammonium nitrogen (KCl) mg/kg	7 - High
Phosphorus (Colwell) mg/kg	41 - Sufficient
Phosphorus (Olsen) mg/kg	17.3 - Sufficient
Phosphorus Buffer Index (PBI)	65.8 - Satisfactory
Potassium (Colwell) mg/kg	202 - High
Sulfur (KCl-40) (mg/kg)	38.4 - Sufficient
Exch. Ca (BaCl2/NH4Cl) meq/100g	4.73 - Sufficient
Exch. Mg (BaCl2/NH4Cl) meq/100g	0.51 - Marginal
Exch. K (BaCl2/NH4Cl) meq/100g	0.50 - Sufficient
Exch. Na (BaCl2/NH4Cl) meq/100g	0.10 - Sufficient
eCEC meq/100g	5.8 - Satisfactory
Exch. Hydrogen (KCL) meq/100g	0.03
Calcium % of CEC	81.0
Potassium % of CEC	8.6
Exch. magnesium %	8.7 - Low
Exch. sodium %	1.7 - Satisfactory
Copper (DTPA) mg/kg	0.4 - Sufficient
Zinc (DTPA) mg/kg	0.5 - Marginal
Manganese (DTPA) mg/kg	4.9
Iron (DTPA) mg/kg	99.9
Boron (hot CaCl2) (mg/kg)	0.5 - Sufficient
Grass Tetany Risk Index (Soil)	0.10
Phosphorus Environmental Risk Index	0.50

Report generated with independent specialist support from Back Paddock Company

http://www.backpaddock.com.au

BACK PADDOCK SoilMate

Paddock - South

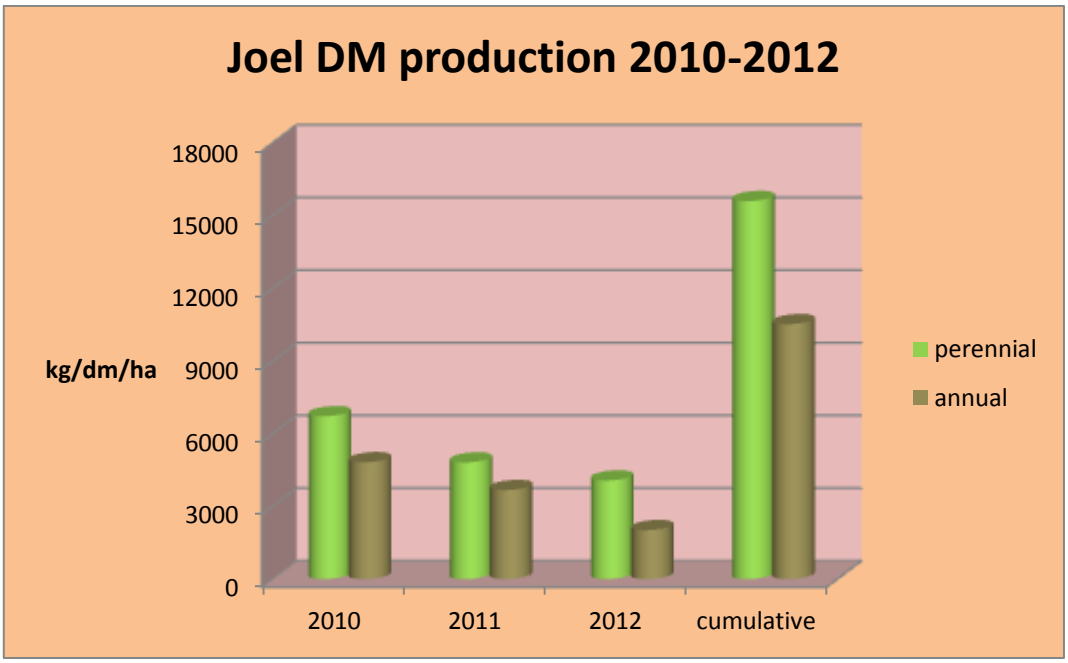
	2009	2012
pH (1:5 $_{CaCl2}$)	5.1	5.5
Phosphorus (P) mg/kg (Colwell)	46	41(sufficient)
Potassium (K) mg/kg (Colwell)	312	201(high)
Sulphur mg/kg (KCL 40)	10.3	38.4(sufficient)
Organic Carbon %C	0.18	1.35
Aluminium meq/100g	0.40	0.0

Table 16: Changes in soil test results 2009 - 2012

Dry Matter Production 2012

	Joel Cocksfoot	Joel Annual
Date of plant cut	Yield kg per Ha DM	Yield kg per Ha DM
Cut 1 24/9/12	1607	915
Cut 2 23/11/12	2462	1106
Total Dry Matter	***4069***	***2021***

Table 17: Joel 2012 dry matter production

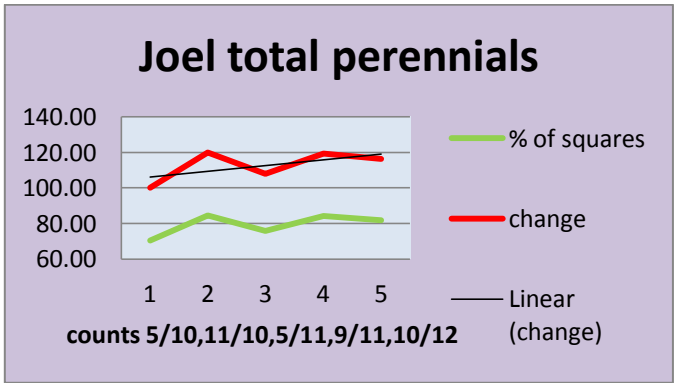


Graph 29: Cumulative dry matter production at the Joel site

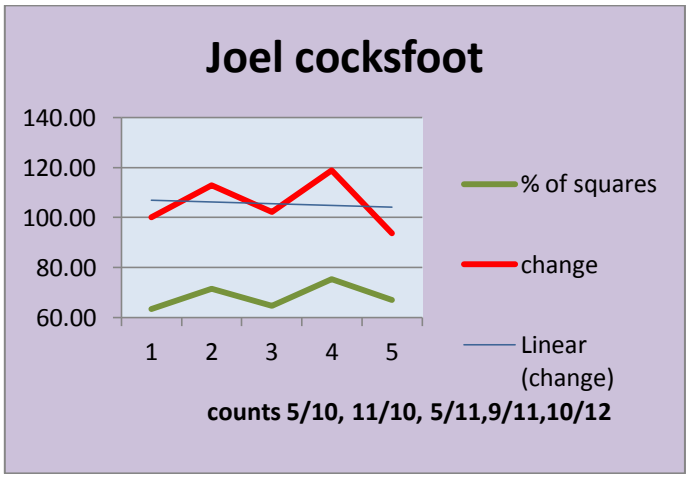
Trial Measurements

Plant persistence counts

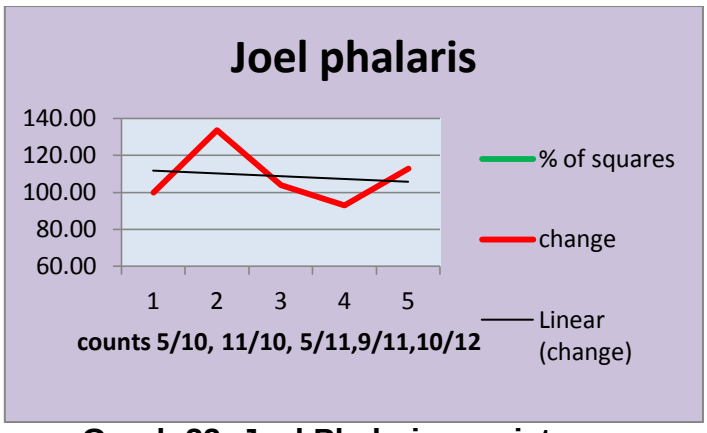
Plant counts were conducted in accordance with the recommendations of project consultant Andrew Speirs (see pages 13 - 14).



Graph 30: Joel combined sown perennial persistence



Graph 31: Joel Cocksfoot persistence



Graph 32: Joel Phalaris persistence

The perennial plants showed no significant decrease in persistence over three years, the results show increases in total plant density due to crowning of plants.

Plant composition

As noted in the introduction for the Joel site there are differences in the paddocks due to the topography of the area. The Northern part is on a slope rising from the Six Mile Creek flats while the Southern part runs off the slope to a black soil flat.
While the differences between the paddocks were not considered to be important when the trial was set up, they have proven to have had a significant effect on the composition of the perennial grasses.
While both paddocks have a greater density of cocksfoot plants there have been significant changes in the ratio of the species between the paddocks over the duration of the trial.

Ratio of Cocksfoot plants to phalaris plants

Date	Northern Paddock	Southern Paddock
20/10/2010	**2.75:1**	**2.00:1**
4/10/2012	**3.64:1**	**1.54:1**

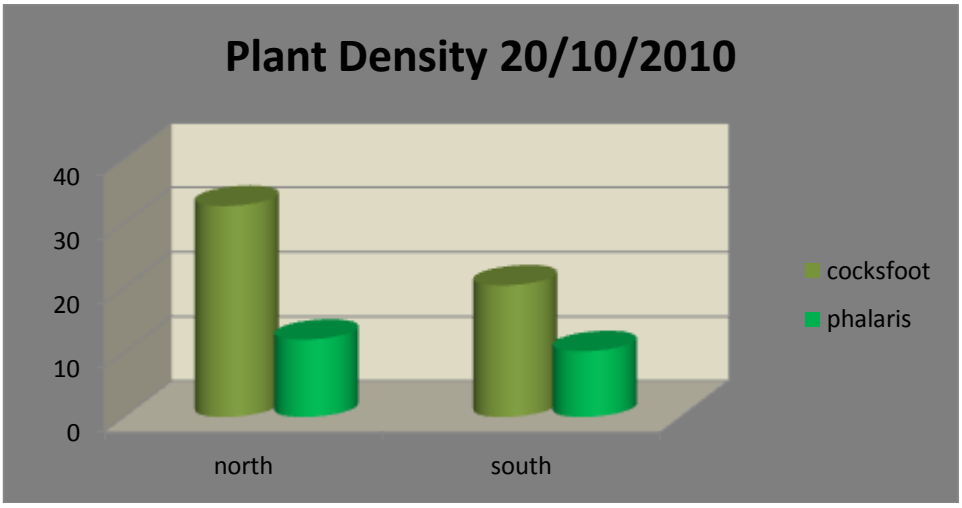
Table 18: Joel plant composition ratio

Table 18 represents the average of the pastures but site inspections showed that the phalaris has become dominant on the black soil flat which makes up a small part of the Southern paddock.

These results have borne out the decision to sow the grass varieties as a mix as it has shown the variation in conditions for a successful perennial pasture over a relatively small area. These differences have had a big impact on the attitude of people who have observed the site's progress. They reinforce the EverGraze message of "the right plant for the right place". The results show that serious consideration needs to be given to all of a paddock's attributes including soil type, fertility and drainage prior to species selection.

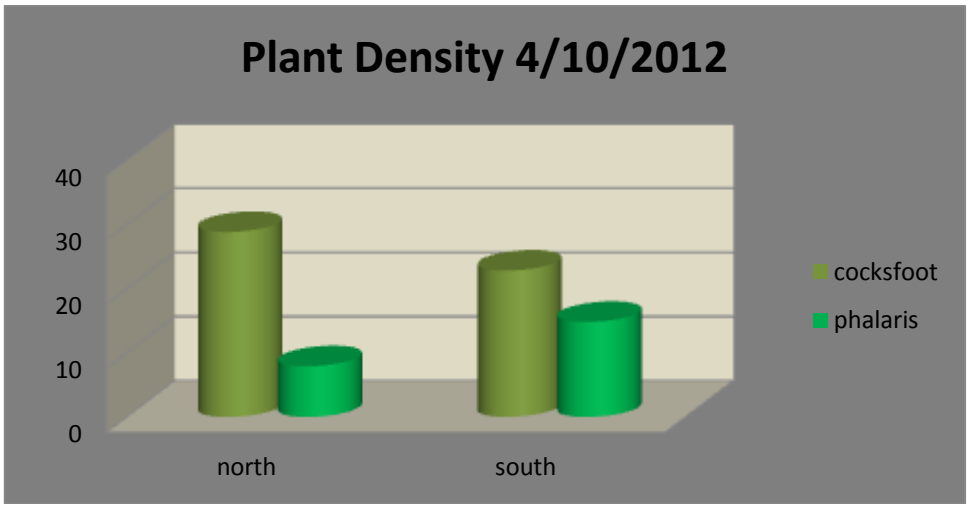
Cocksfoot dominance in the Northern paddock

Plant composition



Graph 33: plant density 2010

Plant density measured by average presence of plants in grid squares (max 40)



Graph 34: plant density 2012

Plant density measured by average presence of plants in grid squares (max 40)

Phalaris dominance in part of the Southern paddock

Feed quality analysis

The late spring rains in 2010 allowed the grasses to continue growth into early summer. A feedtest was carried out on the November and December plant cuts to ascertain any differences between the feed quality of the different varieties in early summer.

	Yield kg DM per Ha	Digestibility	Metabolisable Energy MJ/kg	Crude Protein %	Total Energy MJ	Total Protein kg
Cut 4 9/11/2010	1869	56.9	8.2	14.7	15326	275
Cut 5 16/12/2010	1898	53.1	7.5	11.9	14235	226
					29561	

Table 19: Joel cocksfoot / phalaris feedtest results 2010

The results show a drop in digestibility in December but it is still high enough to provide good feed quality. The crude protein level also dropped but was still at an adequate level for weaner sheep with a bodyweight >25kg in December.

Feedtest comparison between sites 2010

Date	Paddock	Digestibility	Crude Protein
9/11/2010	Elmhurst Phalaris	53.5	17.5
	Elmhurst Fescue	53.3	16.0
	Jallukar Phalaris	55.0	11.6
	Jallukar Brome	49.9	12.0
	Joel cocksfoot/phalaris	56.9	14.7
16/12/2010	Elmhurst Phalaris	53.4	17.1
	Elmhurst Fescue	46.3	15.7
	Jallukar Phalaris	45.4	11.4
	Jallukar Brome	51.5	11.4
	Joel cocksfoot/phalaris	53.1	11.9

Table 20: Comparison of Digestibility & Crude Protein at PPS PDS sites Nov-Dec 2010

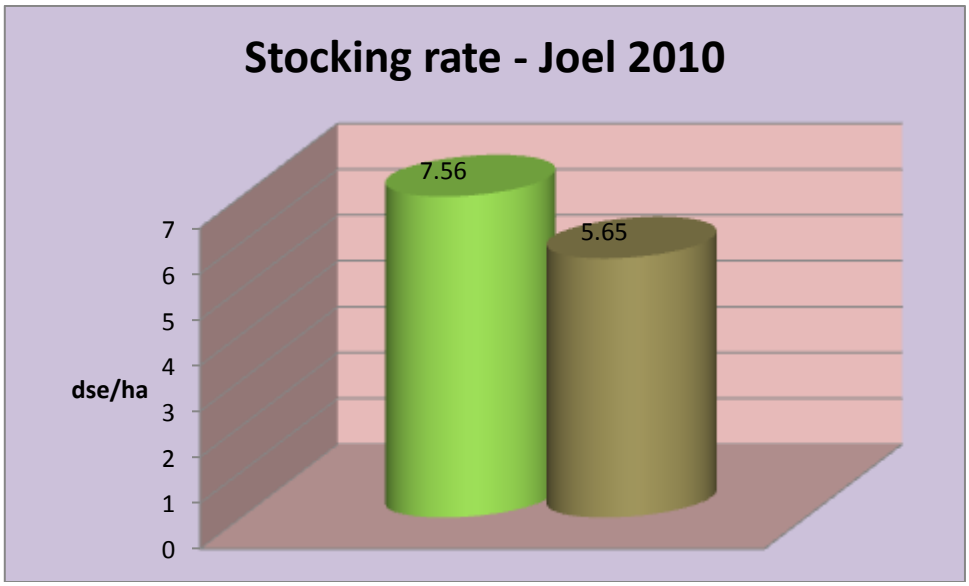
Care should be taken in comparing results between sites due to soil, climatic and rainfall differences.

Animal Production

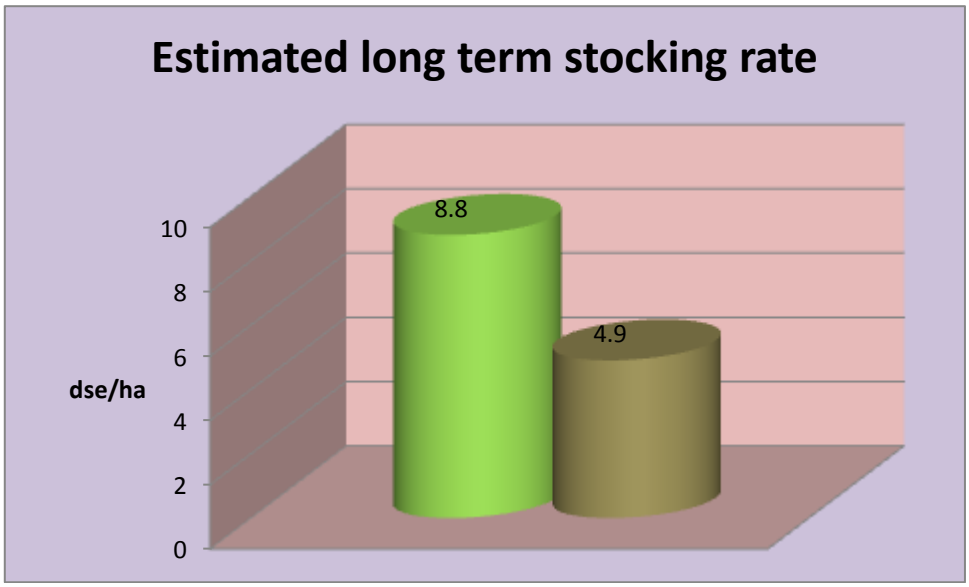
Only one full year of stocking rates were collected from the Joel site for two reasons.

(1) Stocking rate is not the main profit driver for this farm as it is a mixed enterprise of cropping, lamb production and hay. The animal enterprise profit is driven by the early turn off of quality lambs and the price premiums attached.

(2) The stocking rate was compromised by the addition of the fertiliser demonstration strips at the site and the requirement to lock up the site in late winter and early spring in 2010 & 2011.



Graph 35: Joel stocking rates



Graph 36: long term estimate of stocking rates at the site.
Ref: Pasture growth model - Tom Morgan agronomist DPI Ararat (2005).

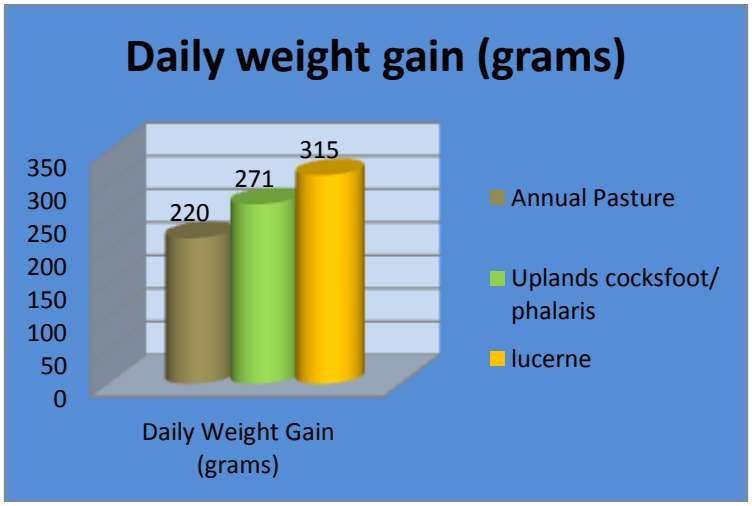
2011

During 2011 additional animal measurements were taken at all three PPS PDS sites. Measurements of weaned lambs were also taken at the Joel site during winter 2012. (Farm data from Justin & Ken Hall).

Early turn off of lambs is one of the main profit drivers for the Hall's livestock operation and it was decided to measure winter growth rate of lambs to ascertain the production differences between the PPS Uplands Cocksfoot/phalaris pasture and the adjoining degraded annual grass paddock, which consists mainly of brome & silver grass and is typical of degraded pastures in the region. Production from a winter active lucerne paddock was added as an additional comparison.

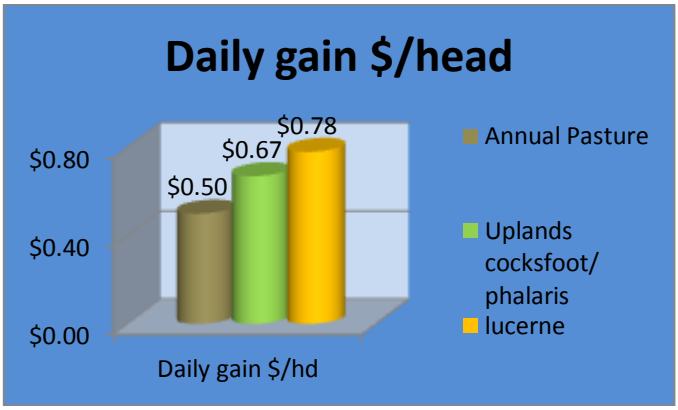
The white Suffolk X Merino/Poll Dorset lambs were drenched and vaccinated then weighed into the paddocks on 12/8/2012. The lambs were stocked at rates that did not limit feed availability, so we did not measure stocking rate differences although it should be noted that the perennial pasture had a stocking rate 25% higher than the annual pasture in 2010 and a long term estimate of a 44% higher stocking rate.

The lambs were removed from the paddocks on 13/9/2012 for drafting prior to the first turn off of lambs. The average daily weight gain for the late winter period of 32 days can be seen in Graph 37, below. It shows a 23% production increase for the upgraded perennial pasture and a 43% increase for the lucerne over the degraded annual pasture. These results clearly show the productivity benefits of perennial pastures for the Hall's lamb operation at Joel.

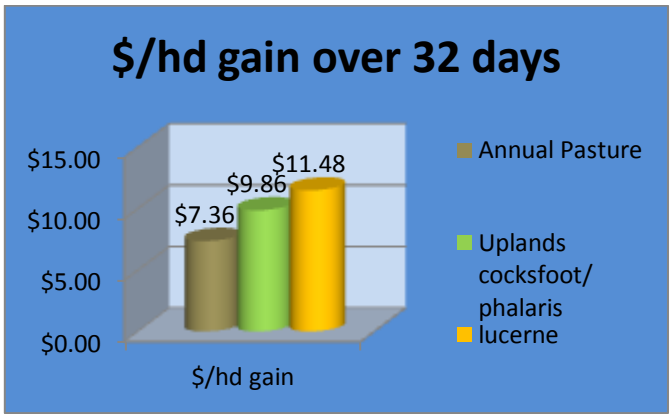


Graph 37: Daily weight gain of lambs at Joel site 2011

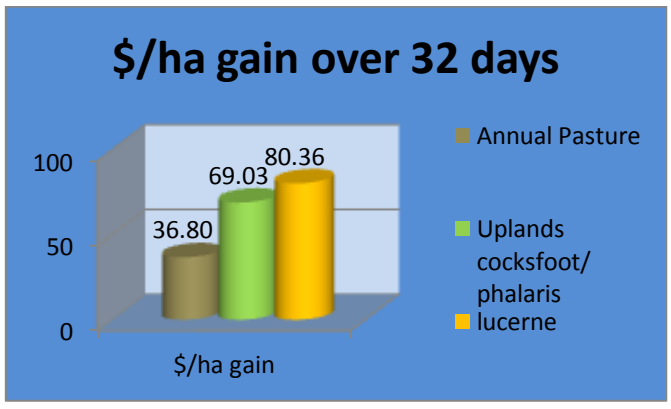
Economic comparison between pastures 2011



Graph 38: shows the daily gain in $ per lamb at the Joel site during the animal trial period. (Trade lamb price 520 c/kg, estimated 46% dressing weight)



Graph 39: shows the $ per lamb gain over the total 32 days spent in the different pastures. (12 August – 13 September 2011)



Graph 40: shows the estimated $ per ha gain over the total 32 days spent in the different pastures. (12 August – 13 September 2011)

2012

During 2012 lamb weights were recorded for a two week period in the 20 ha southern perennial pasture. 75 lambs were put into paddock on the 2nd of October and sold on the 16th of October.

date		Average Weight Kg	Total lamb Weight - kg
2/10/12	Into pasture	49.0	3674
9/10/12	Weighed	52.2	3937
16/10/12	Weighed & sold	56.0	4200

Table 21: Lamb weights 2/10/12 to 16/10/12

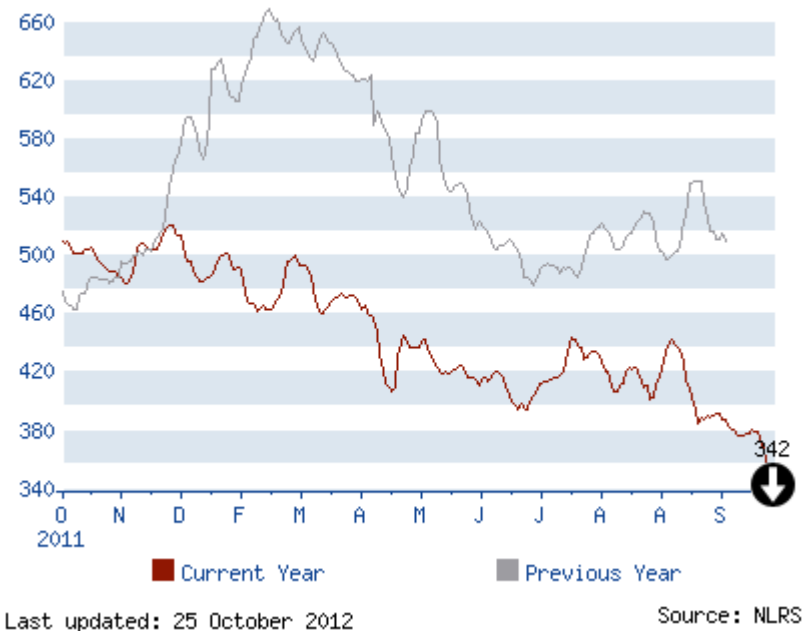
The two week period gave a 7kg/head gain (average 500 grams/hd/day)

date	$ per head value	$ per mob value	$ per ha value
2/10/12	$98.65	$7398.75	$369.93
16/10/12	$110.89	$8316.75	$415.84

Table 22: Lamb values 2/10/12 to 16/10/12

The two week period gave a $12.24 gain per head & a $45.90 gain per ha. Assumptions lamb price $3.80 per kg DW. Dressing weight percentage 46% Skin value $13

Trade Lamb Price graph
(source Weekly Times 25/10/12)



Graph 41: trade lamb price graph 25/10/12

Conclusions

The experience with Uplands Cocksfoot at Joel and other sites mentioned in this report (see pages 81 - 84) gives PPS confidence that it is a variety well suited to the Southern Wimmera region. Its ability to become partially dormant through extended dry periods should aid its persistence in this region where dry conditions are a regular occurrence. Uplands has the ability to withstand close grazing pressure by sheep which again should aid its persistence.

Uplands has a higher level of digestibility and nutritive value than the summer active Cocksfoot variety Currie, which has been used as a pasture variety in the region. Currie did persist well in pastures in the region although this was partially due to its low digestibility which resulted in sheep avoiding grazing it.

Cocksfoot pastures are more tolerant of acid soils than phalaris, and other varieties, and this may also be a factor in its suitability to some of the soils in the region. An Uplands pasture would require less critical management than a phalaris or fescue pasture and although PPS is encouraging producers to improve management skills, this attribute may be an advantage in some situations.

Uplands grows fairly slowly in its year of establishment which means that it can be sown with phalaris as they have similar growth patterns in their first year and they don't outcompete each other. This reinforces the importance of good weed control in the year of establishment.

PPS does not see Uplands Cocksfoot as an alternative variety to phalaris where phalaris can be successfully established and maintained.

PPS considers that Uplands has a place either in a mix with phalaris or as the perennial grass variety in a grass legume pasture establishment in the lighter grey loam soils on the Southern Wimmera plains.

The success of Uplands in the limited trial work in light, low fertility soils such as the Tottington PPS/EverGraze site (see page 82) suggests that Uplands may be well suited to these areas which cover a large part of central Victoria.

The attributes shown by Uplands in PPS investigations suggest that it may be a variety that would be suited to planting in hill country in central Victoria and could significantly add to the productive capacity of these areas as well as improving ground cover during the summer period. More trial work is needed to back this assertion.

PPS considers that Uplands Hispanic Cocksfoot is a valuable variety well suited to the drier areas of the Southern Wimmera and Central Victorian regions and expects its use as a perennial variety to increase in coming years.

Site host comments

Ken & Justin Hall

South Glengowan Joel Joel

November 2012

BENIFITS OF PASTURE TRIAL – Ken & Justin Hall

To improve production without purchasing more land.

Run more livestock to the hectare.

Lambs have cleaner skins later into summer without shearing.

Sell lambs earlier to obtain higher prices.

The advantage of super spreading on good pastures with quicker returns on investment.

PPS has doubled my sown down pasture area each year.

Our long term plan is to have farm pasture area resown and maintained to highest standard.

Site host Ken Hall with guest speaker Dale Cameron from JBS Australia at the 2010 PPS Annual Conference

Further investigation
Uplands Hispanic Cocksfoot

The initial promise of Uplands Cocksfoot as a suitable perennial pasture variety for the Southern Wimmera and central highlands area of Victoria prompted PPS to further investigate its use. As Uplands was only released in Victoria in 2010 there is limited information on the variety in this region.

Natte Yallock
PPS accessed information from trials near Natte Yallock in central Victoria where Uplands performed well in both production and persistence traits in a comparison with Porto, Yarck, Sendace, Megatas and Kara Cocksfoots.

Uplands and Sendace were the only varieties which were still viable pastures after three years at the trial site. Uplands had greater DM production than Sendace at the site.

Lake Lonsdale
PPS is also monitoring pastures on the property of current PPS Secretary Matt Kindred at Lake Lonsdale west of Stawell. Matt sowed pastures on a red sandy loam soil formed as an ancient lunette on the western side of Lake Lonsdale. The pastures were established following a major bushfire in 2006, which burnt about half of Matt's property. (Note lunette is a French word for a half moon shape and is used to describe the soil formation formed by soil blown from lake beds when they form in a crescent shape in the lake vicinity).

A pasture with Yarck Cocksfoot was sown in 2009 while an adjacent paddock was sown with Uplands Cocksfoot in 2010. PPS is monitoring the pastures as a long term comparison between the cocksfoot varieties. Initial results suggest that the Yarck is slightly outperforming the Uplands in production but does not appear to be persisting as well. The next few years should provide useful information on the longevity on both varieties. The pastures formed part of the PPS spring field day inspections in 2012.

Matt Kindred presenting results from the adjacent cocksfoot pastures at the PPS spring field day in October 2012.

Jallukar
As noted previously is this report the Brome pasture at the Jallukar PPS PDS site was sprayed out at the end of 2011 to allow for a new pasture to be established. PPS decided that it is a suitable site for Uplands Cocksfoot and it was sown in autumn 2012 to a mix of Uplands Cocksfoot and Yellow Serradella.

Tottington
In 2010 PPS established an EverGraze Supporting Site at Tottington, 20 km south of St Arnaud. While the trial was set up to investigate methods of perennial pasture establishment in the tough conditions in the area, it has also had the benefit of a variety comparison as part of the trial site.

The Tottington site has a light gravelly loam soil and is in an area where rainfall restricts the length of the growing season. It is a difficult region to establish perennial pastures.

The perennial grasses at the site were sown in 2011 and after reasonable conditions for initial establishment the pasture suffered from a very dry spring followed by a very dry autumn in 2012. The spring of 2012 also had below average rainfall. These conditions caused severe plant stress on the phalaris pasture which makes up the majority of the site and caused plant losses.

As well as the phalaris sowing, there was an area sown to different perennial grass varieties as a comparison. One of the significant observations has been the resilience of the Uplands Cocksfoot in the comparison area. It has survived the tough conditions with little or no plant loss; PPS has started plant counts on the Uplands area and will continue to monitor its persistence at Tottington.

Tottington PPS EverGraze site

May 2012 Phalaris under moisture stress

Early September 2012 Uplands Cocksfoot after heavy grazing

PPS Pasture Variety Trials

In 2011 PPS established four pasture variety trial sites funded by the Woolworths Fresh Food Future project and a Landcare grant. Two sites are in the Southern part of the region at Dobie and Eversley and the other two are in the Northern part at Greens Creek and Lake Lonsdale. Uplands Cocksfoot is included at all sites.

Tasmania

Uplands Cocksfoot was developed in Tasmania and PPS conducted further investigation in to the variety as part of the PPS Annual Study Tour in 2011.

PPS spent a day with plant researcher Eric Hall who took the PPS group through the Tasmanian Institute of Agricultural Research (TIAR) plant breeding research centre in Launceston before hosting a pasture tour through central Tasmania.

The pasture tour included an introduction to Bob Reid from Tasglobal Seeds who collected the original seeds in Spain for the Uplands variety. PPS were also able to inspect the oldest Uplands Cocksfoot trial pasture in Australia which was twelve years old at the time. The pasture is situated near Ross which has a similar average rainfall (494mm) to Stawell, which is near the location of the Joel site. Ross also has lower daily temperatures than Stawell and the persistence of the Uplands at the Ross confirmed its claim of being a resilient long term pasture. The day of the tour was very cold and wet and confirmed the tough climatic conditions for pastures (and for people doing pasture inspections) in central Tasmania.

PPS annual Study tour Tasmania August 2011

PPS at TIAR plant research centre Launceston Tasmania

PPS at Ross Tasmania with Eric Hall (far left) & Bob Reid (far right)

PPS had further contact with Bob Reid in September 2012 when he visited Victoria to be the guest speaker at the PPS 4th Annual Conference Dinner. Bob was invited to speak on his career as a plant hunter and also attended the Annual Conference.

On the day prior to the conference PPS took Bob on an inspection of the Tottington EverGraze site, the Joel PDS site and the Cocksfoot pastures at Matt Kindred's Lake Lonsdale property. Bob was able to inspect Uplands pastures in the Southern Wimmera environment and expressed confidence in its ability to persist in the region.

Further investigation
Uplands Hispanic Cocksfoot continued

As part of his talk at the conference dinner Bob told of his discovery of the Cocksfoot plant that was to become Uplands and expressed his excitement in seeing the variety successfully established at the PPS sites. After the PPS dinner Joel site host Ken Hall asked Bob for some extra comments on his Uplands story and it is reproduced below.

Uplands Cocksfoot – Bob Reid September 2012

Uplands Hispanica Cocksfoot was collected near Zamora, in north-central Spain (41 32N 05 47W), on the 3rd July 1993. It was an incredibly hot day with a maximum temperature in excess of 40 degrees centigrade and the entire countryside was shimmering in the heat. I noticed a big patch of grass about 50metres off the main highway that had been protected from grazing by an old fence. That in itself was unusual as fences are not common in that part of Spain.

I was able to park my vehicle on the roadside and head for the patch. Most of it was made up of Dactylis glomerata var.hispanica but almost no seed was to be seen. I quite literally looked at a hundred seed stalks and fortunately found about 10 seeds. The seeds were brought back to Tasmania (along with about another 200 other samples) and sown by the end of August in pots at the Mt.Pleasant Laboratories (Launceston).

The plants were grown to maturity, seed produced and prepared for a field trial, which started in May 1994. The plants were grown in a comparative trial of approximately 200 Cocksfoot accessions and after the end of the third season it was apparent that the parents of Uplands were outstanding in both production and resilience. After 4 recurrent phenotypic selections the final cultivar was agreed upon and Plant Breeding Rights were applied for.

The cultivar was released to Tasglobal Seeds and entered the commercial market in 2005. In the interim, Uplands was widely tested over the driest areas of Central Tasmania and proved to be of exceptional hardiness. (The original plants sown in 1995 at the driest site in Tasmania are all still in place).

Uplands is clearly finding a place right across Central Victoria and into the Southern Highlands of NSW. Let's hope it does and that it adds to the bank balance of all the farmers who use it!

Ken Hall, Joel site host, & Bob Reid, Tasglobal Seeds, at the Joel PPS PDS site September 2012

Future Research at the site

Fertiliser Demonstration Strips
In April 2011 PPS initiated a fertiliser demonstration at the Joel pasture site. The fertiliser strips are in the northern paddock and are not replicated.

Aims:

(1) To ascertain whether the pasture production was being limited by any of the nutrient deficiencies that are common in the region.

(2) To evaluate alternative fertilisers that are being marketed in the region.

(3) To demonstrate to PPS members a simple evaluation method for fertiliser responses.

(4) To provide information to PPS members on fertiliser responses and economics through evaluation of the trial results.

(5) To encourage PPS members to set up fertiliser evaluation trials on their own paddocks to ascertain responses to different products.

(6) To add value to paddock inspections and field days at the site.

Methods:
The demonstration strips run in an east/west direction across the width of the paddock. Strips are approx 200 metres long and 17 metres wide and correspond with sections of the laneway fence where a 3 steel post section measures 16-17 metres. The strips have an area of 0.36ha.
As the demonstration is set out as a simple method of evaluation, there are no replicated strips. The strips are marked by coloured sheep ear tags on the east fence line indicating the outside border of each strip. The centre point of each strip has been GPS recorded.
Evaluation:
The demonstration paddock will be destocked for a 6 week period during winter and early spring to remove any effects of preferential grazing. The trial strips will then be evaluated visually to ascertain any variation on production. Extra evaluation methods such as plant cuts, tissue testing or feedtests may be carried out if deemed necessary. The evaluation period is expected to be three years.
Findings:
2011 - The dry conditions in late winter and early spring in 2011 did not allow any evaluation of the site.
2012 - Small differences were noted with the use of a pasture meter which suggested a response to the quick release phosphorus fertilisers, which is not unexpected in this region. No response to molybdenum was noted. There was also no noted response to the alternative fertilisers but it is claimed that the response to those will take three to five years.

Joel Fertiliser Demonstration Site

Row	2011 Treatment	2011 Rate kg/ha	2012 Treatment	2012 Rate kg/ha
Yellow	Super moly 0.05%	120	Single Super	120
Blue	Single Super	120	Single Super	120
Purple	Triple Super	120	MAP	120
Red	Triple Super	60	MAP	60
Black	Super Potash 1:1	180	Single Super	120
White	Gypsum	500	Gypsum	500
Yellow*2	Southern Soil custom blend	228	Southern Soil custom blend	237
Blue*2	Bioprill pasture k	80	Bioprill Crop M + zn	110
Red*2	Quinfert Granular RPR	100	Quinfert Granular RPR	110
Black*2	Quinfert fine RPR	100	nil	n/a
Yellow/Red	nil	n/a	Southern Soil super seven	100
Yellow/blue	nil	n/a	Nasol Double Compost	270

Table 23: Joel fertiliser demonstration strips

Ken and Justin Hall assisting with fertiliser demonstration set up

Acknowledgements Joel Site

PPS acknowledges the cooperation and assistance of

Ken & Justin hall - site managers

The Hall family – South Glengowan Farm operators

Hugh Russell, Harberger Farm Supplies - agronomist for South Glengowan

Michael Grant Stephen Pasture seeds Ballarat – Uplands seed supply

Andrew Speirs MS&A - consultant agronomist for PPS PDS sites

Debbie Shea -assistance with plant measurements

Fertiliser demonstration strips at the Joel site September 2012

PPS Annual Conference tour at the Joel site in September 2010

PPS Spring Field Day September 2012

PPS secretary Matt Kindred (second from left) presenting results from pasture establishment on his Lake Lonsdale property.

Pasture inspections at spring field days

REGION - The Perennial Pasture Systems group (PPS) held a spring field day earlier this month.

The field day started with inspections of perennial phalaris and cocksfoot pastures at Matt Kindred's Lake Lonsdale property.

These pastures established in the last three years showed the successes and some of the problems in establishing perennial pastures in the light sandy soils west of Stawell.

The field day then headed to the two northern PPS plant variety sites at Lake Lonsdale and Greens Creek.

The trial sites reflected how difficult it has been to establish pastures in the southern Wimmera this year due to the dry autumn and the difficulties in getting adequate weed control.

Despite the issues experienced in getting the trial sites up and going, PPS is confident that they will produce useful results.

The field day ended at the Joel PPS MLA producer demonstration scheme site where Uplands Hispanic Cocksfoot is showing that is going to be a valuable perennial grass variety in the tough conditions experienced in this region.

Fertiliser demonstration strips set up at the site were also inspected.

A barbecue provided by the Joel Hall committee and sponsored by Michael Joss from Beaufort Rural and Hardware completed the day.

PPS has also been busy collecting plant cuts and counts from its trial sites and results will be presented through upcoming newsletters and field days.

The next PPS event on November 23 will be an inspection of the subsoil lucerne trail site at Jallukar which is supported by funding from the A W Howard Trust.

Dr Peter Sale from La Trobe University will be the guest speaker followed by the end of year barbecue at Simon and Yvette Brady's Jallukar Park.

For information on PPS contact project manager, Rob Shea 0438 521357

Report from Ararat & Stawell papers on the PPS Spring Field Day 13/9/12 which included inspection of the Joel PDS site.

Communication of results

The project has been continuously reported to PPS members, MLA and other interested people throughout the trial in conjunction with the wider PPS project. This communication has taken various forms which are summarised below.

PPS newsletters

The four page PPS newsletter is produced quarterly and one hundred and eleven copies are posted to PPS members and sponsors. The newsletter is also sent by email to another one hundred and twenty four people who have shown interest in the PPS project. These include Dept of Primary Industry and Catchment Management Authority staff, CSIRO pasture scientists and pasture industry contacts. Copies are also sent to others groups who have links with PPS including Evergreen in Western Australia, Victorian No Till Farmers Association, Yarram Landcare Pasture Group, and the Holbrook Landcare Group. Email copies are sent to nine MLA contacts.
Progressive results and observations from the three PPS PDS sites have been regularly reported in the newsletter and this will continue as PPS continues to monitor the progress of the pastures at the sites.

Field Days

PPS has used the sites for field day activity throughout the duration of the PDS project and plans to continue to do so into the future. All three sites were visited as part of the PPS annual conference bus tours in 2009 and 2010.
The Jallukar site was also visited as part of the 2011 PPS annual conference bus tour, when the opportunity was taken to have a final inspection of the Brome pasture prior to it being sprayed out and replaced as explained in the site report. The Jallukar site was visited as part of the PPS end of year farm walk in November 2012 to inspect the new Uplands Hispanic Cocksfoot establishment.
The Joel site was inspected as part of the PPS Spring field day in October 2012.

Site Progress Reports

Progress reports on the PDS sites were included in the PPS Project Manager's report at the 2011 and 2012 PPS Annual Conferences. Several photos of the sites were included in slide show presentations. Both conferences were attended by approximately sixty people.

Personal communication

The host farmers are enthusiastic members of PPS and have communicated the progress of their sites to other district farmers.
The Joel site is highly visible from a main road and this has helped to maintain interest in its progress by other district farmers.

PPS membership includes several agronomists and Department of Primary Industry people and they have been active in utilising the results from the PDS sites in their own advice to the region's farmers.

Other Group Visits

The sites have been inspected by groups other than PPS.

The Jallukar site was visited by the Balmoral Bestwool/Bestlamb group in July 2009. All sites were inspected by the Yarram Landcare Network Pasture Group as part of a two day tour of the PPS sites in October 2011. 21 members of the Yarram group participated in the tour.

All sites were visited by Wimmera CMA staff as part of a tour of PPS sites in February 2012.

Members of the Yarram Landcare Network Pasture Group with PPS members at "Millbanks" Elmhurst October 2011

Media articles

Articles on the PPS project, including information on the PDS sites, appear regularly in the Ararat Advertiser and the Stawell Times-News. PPS articles have also been included in the Weekly Times, Stock & Land, Ballarat Courier, Yarram Standard, Hamilton Spectator and the Wimmera Mail Times.

An article on PPS Past President Simon Brady appeared in the Stock and Land on 6/10/2011 which included information on the Jallukar PDS site as well as comments on the PPS MLA PDS project.

Other Publications

PPS contributes regular articles which include information on the PDS sites to the quarterly newsletters of Project Platypus and the Upper Hopkins Landcare Network.

External Presentations

The PPS Project Manager has given presentations on the PPS project, including information on the PDS sites, to:

- the Victorian Lime Producers Annual Meeting in Melbourne, November 2011.
- the Upper Barwon Landcare Pasture Group at Winchelsea, August 2012.
- the Project Platypus "chicks in the sticks" group farm tour, October 2012. The presentation was done at the Elmhurst PDS site. Thirty one women attended the tour.

Jallukar site host Simon Brady gave presentations at the Tatyoon and Lake Bolac sheep fair seminars in July 2012. The presentations included information from the Jallukar PDS site. Approximately fifty people attended each seminar.

External Displays

PPS has prepared a series of posters for display at events. As part of this series, individual posters for each of the PPS PDS sites were made; they are reproduced on pages 94,95 & 96.

During 2012 they were displayed at:

- Project Platypus Agrifest
- Tatyoon sheep fair seminar in July.
- Lake Bolac sheep fair seminar in July.
- PPS 4th Annual Conference September

The host farmers also have a copy of their site poster and they are displayed in their woolsheds and offices.

PPS display at Project Platypus Agrifest March 2012

Communication to other groups.

PPS has formed links with other farm groups and exchanges newsletters, field day information and research results with them. This includes information on the PDS sites.

These groups are

- Evergreen Western Australia
- Holbrook Landcare Group NSW
- Yarram Landcare Network Pasture Group
- Victorian No Till Farmers Association
- Birchip Cropping Group

Website
PPS launched its website in November 2012 and it includes information from the PDS sites. The website address is *www.perennialpasturesystems.com.au*

MLA Recognition
Quarterly reports on the PPS PDS project have been provided to MLA.
PPS MLA PDS sites were visited by Richard Apps, MLA, in March 2010, which included Richard meeting with PPS Committee and attending a joint PPS/Grasslands Society of Southern Australia pasture seminar in Ararat, which was part of the MLA Pasture Update series.

MLA has been acknowledged in PPS newsletters, field days, seminars and media articles as providing support for the PPS PDS project.

An MLA banner was displayed at the PPS Annual Conference in 2011 and 2012.

MLA acknowledgement at the 3rd Annual PPS Conference in the Gum San Chinese Heritage Centre Great Hall Ararat September2011

Final Report
This final report will be distributed to MLA as required and copies will be printed for PPS records and to present to each of the host farmers in recognition of their contribution to the project.

A link to the final report will be included on the PPS website for members and other interested people to access.

Yarram Standard 12/10/11

Ararat trip: Yarram Yarram Landcare pasture group at the Greene's property, "Millbanks" at Elmhurst. The property is a beef and merino sheep operation with limited cropping. The group inspected the perennial pasture on the property and other properties around the Ararat area.

Farmers travel far to view pasture

FARMERS from Woodside to Seaspray travelled around the Ararat district last week to view perennial pastures trials.

The pasture tour was a major education and training component of the Yarram Yarram Landcare Network's, "Gippsland Plains Drought Tolerant Pasture" program. This project has been funded through the Federal Government's "Caring for Our Country" program via the Department of Agriculture, Fisheries and Forestry (DAFF).

Woodside beef farmers Don and Kay Belcher praise the efforts of Landcare project officers for putting the program together.

"Our Landcare project officer – Samantha Monks and her counterpart in Ararat – Rob Shea, put together a very comprehensive and busy program for us, which ran very smoothly. It was an amazing experience to meet with farmers with different climatic conditions and soil types to our area. They were all willing to share their knowledge and experiences with our group. Everyone was very friendly, we shared many cups of tea and long discussions about perennial pastures. It also gave us an opportunity to get to know others from our own area," they said.

Monks said, "It was a terrific opportunity to meet other farmers and learn about the management of an extensive range of pasture species in another district with similar rainfall to the drought pastures group. We also met other agronomists and animal health scientists on the tour."

Regional Landcare Facilitator for West Gippsland, Nick Dudley, said that the tour offered a unique opportunity for members of the drought pastures group to view pasture and forage systems in situ. "We visited eight properties in the area and inspected trial sites containing a range of pastures and fodder systems including lucerne, plaintain, phalaris, tall fescue, cocksfoot and short-term ryegrass.

The Perennial Pasture Systems (PPS) group, which hosted our group, is supported by some 65 farmers in the Ararat region, Nick said. "They conduct trials on farms throughout the region and provide regular updates to their members on trial assessments they complete on a monthly basis. The co-ordinator of their group, Rob Shea, is a former farmer from just out of Ararat with a wealth of pasture knowledge and a passion for exploring new ways and means of establishing sustainable grazing systems. Rob has always been keen to trial new cultivars and has worked alongside DPI and various seed companies in assessing a range of new releases.

"It was exciting to see how some producers in the Ararat area had increased their carrying capacity quite markedly through making informed decisions backed up by on ground research in the local area. In some cases producers had increased stocking rate from five to six dry sheep equivalents per hectare, up to 12 to 13," Nick added.

Woodside farmer Kevin Foat described the three day trip as very informative and enjoyable.

"I thoroughly enjoyed the three day trip to Ararat to look at perennial pastures. Some pastures have survived more than 50 years and it was great to see new pasture varieties of phalaris, tonic plantain and lucerne. It was a very well organised tour and everything went smoothly from 8am starts to 10 at night. Rob Shea from the PPS group gave us a highly informative commentary and guided tour of the area. We also visited the Chinese temple, Gum San and learnt about the history of the Ararat gold rush in 1857," Kevin said.

Gavin Missen, also from Woodside was pleased that he made the effort to attend the three day trip

[illegible] I went on the pasture tour to an area I'd never been to before. The farmers showed us their new pasture trials and told us how they manage to keep them in good order. I really enjoyed looking at the trial plots," Gavin said.

The "Gippsland Plains Drought Tolerant Pastures Demonstration (GPDTPD)" is a three-year sustainable farming project involving members of the Woodside and Merriman Creek Landcare groups. Sixteen producers have established trials to demonstrate the use of drought tolerant perennial pasture species and improved grazing management practices to increase productivity and soil health.

Now in its final year, GPDTPD participants have committed more than 500 hectares of farm land to new perennial pasture systems. Farmers understand the importance of well managed perennial pastures and how they can provide both economic and environmental benefits. Also, the use of deep-rooted or drought-tolerant species means that producers reduce the risk and cost of having to re-sow pastures after drought.

The group has also been nominated for the "Sustainable Farming Award Category" at the State Landcare Awards which will be announced in November this year.

Family trip: Woodside farmers Robert Wight and his father Don and mother Joan Wight attended the three day Ararat perinnial pasture excursion with many other farmers from Woodside to Seapray.

Article from the Yarram Standard in Gippsland Victoria on the Yarram Landcare Pasture Group visit to PPS in October 2011

Jallukar poster

PERENNIAL PASTURE SYSTEMS

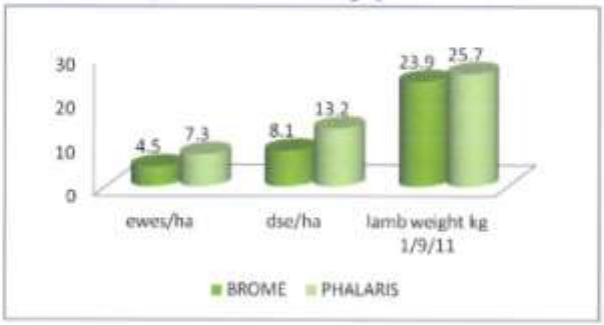
Jallukar PPS Phalaris & Grazing brome comparison
Animal production results winter 2011

Producers	Simon & Yvette Brady
Property	Jallukar Park—Pentlands Ck Rd - Pomonal
Brome Pasture	Gala grazing brome & Trikkalla & Urana sub clovers
Seeding rate	Approx 20 kg/ha brome + 4 kg/ha clover.
Phalaris Pasture	Holdfast GT & Australian phalaris Phalaris & Seaton Park & Trikkalla sub clovers
Seeding rate	4 kg/ha phalaris + 4 kg/ha sub clovers.
Date sown	20 May 2009
Method	Direct drilled with Agrow drill
Pre sowing management	2008 oat crop. 2009 2.5 t/ha lime applied. Pre sowing weed control

Measurements of lambing ewes were taken at the Jallukar site during lambing in winter 2011. (observations by Simon & Peter Brady).

All ewes were supplementary fed 2kg of oats per head per week from date of entry 29th of April to the 9th of July. (oats feedtest of 9.2Protein/10.1 energy).
Lambs were marked on July 4th we noted that ewes from the brome paddock had lost a condition score and lambs were not as solid.
There was insufficient feed in the brome after this stage but the phalaris was adequate to carry ewes.
Ewes and lambs were removed from the brome after marking and put onto an annual sown pasture to increase weight.
On July 30 ewes and lambs were drenched and returned to their appropriate paddocks
On the 20th August the brome ewes were boxed into the phalaris mob due to there being insufficient feed in the brome paddock.
Lamb weight was recorded on September 1st

The differences in stocking rate and lamb weights can be seen in the graph below.



Conclusions The grazing brome has persisted as well as the phalaris over the first two years of the trial but is has failed to crown out and expand its area. It has had poor winter growth, no response to summer rain and produced 26% less dry matter than the Phalaris in 2010 and 41% less in 2011. The animal production results through the winter show that the Phalaris paddock clearly outperformed the Brome paddock. Although the Brome Grass performance may be inhibited by a gravel seam that transgresses the paddock, its production in the better areas of the paddock is still inadequate to recommend that it is suited to this area. PPS has had discussions with the consultant agronomist for the site Andrew Speirs MS&A and it was decided to remove the brome paddock from the PPS trials at the completion 2012 measurements.

Pastures1/9/2012
Phalaris (left)
Brome (right)

PPS sites are supported by the MLA Producer Demonstration Site Program

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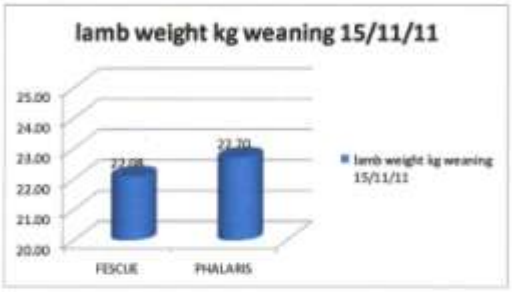
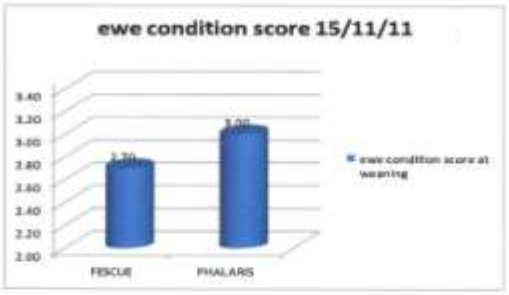
Elmhurst poster

PERENNIAL PASTURE SYSTEMS

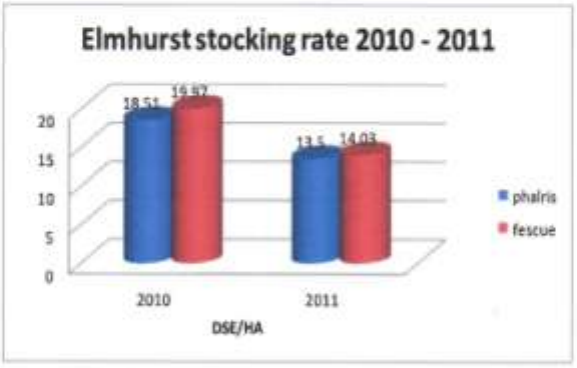
Elmhurst PPS site results 2011

Measurements of lambing ewes were taken at the Elmhurst site during lambing in winter 2012.
Both paddocks were stocked with 54 Merino ewes lambing to Merino rams at a stocking rate of 7.7 ewes per ha. The ewes entered the paddocks on the 28th of July just prior to lambing and measurements were taken at weaning on the 15th of November.
The ewes off the fescue paddock had a weaning rate of 96% and the ewes off the phalaris paddock had a weaning rate of 116%, although this is not of any significance as factors other than the paddock differences are involved.
The major differences showed up in the animal measurements with the lambs from the phalaris paddock weighing 0.62 kg more than the lambs off the fescue paddock and the ewes from the phalaris paddock having a body score 0.3 points better than the ewes off the fescue. The results from both paddocks show good lamb growth rates and show that the perennial pastures carried the lambing ewes in good condition through lambing and lactation. The differences between the paddocks are small but show a slight advantage to the phalaris.





The plant persistence counts show small changes in plant coverage, with the phalaris showing an increase due to the crowning of the plants and the fescue showing a slight decrease which is mainly a reflection of the growth habit of the fescue.
Both varieties are persisting well after two and a half years.
The stocking rate graph shows a slight advantage to the fescue in both 2010 and 2011, but both paddocks are carrying significantly higher rates than the district average.
Site manager Ben Greene commented "both paddocks are performing well but I am still concerned with the feed value of the fescue late in the season. I have seen nothing yet that convinces to change from sowing phalaris as our main perennial pasture variety".



Elmhurst site in spring of establishment year 2009
Fescue (left)
Phalaris (right)

PPS sites are supported by the MLA Producer Demonstration Site Program

Joel poster

PERENNIAL PASTURE SYSTEMS

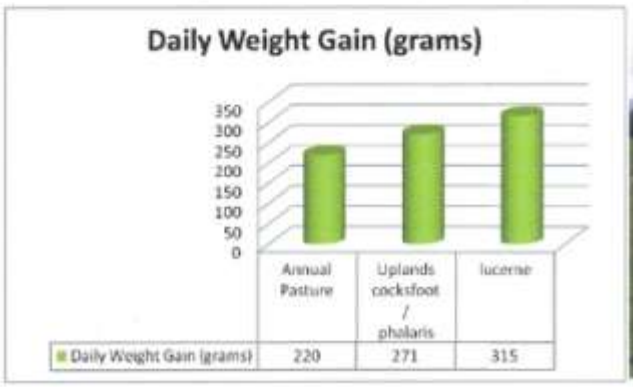
Joel PPS site animal production—Winter 2012

Producers	Ken,Cheryl & Justin Hall
Property	South Glengowan - Landsborough Rd - Joel Joel
Pasture	Uplands Spanish Cocksfoot & Holdfast GT & Australian II Phalaris & Seaton Park, Trikkalla & Urana sub clovers.
Seeding rate	2 kg/ha cocksfoot, 2 kg/ha phalaris, 6 kg/ha sub clover.
Date sown	15 May 2009
Method	Direct drilled with air seeder
Pre sowing management	2007/08 barley crops. 2.5 t/ha lime applied. pre sowing weed control roundup @800 ml/ha Sown with 80 kg/ha MAP

Measurements of weaned lambs were taken at the Joel site during winter 2011 (Observations by Justin & Ken Hall).

Early turn off of lambs is one of the main profit drivers for the Hall's livestock operation. It was decided to measure winter growth rate of lambs to measure the production differences between the PPS uplands cocksfoot/phalaris pasture and the adjoining degraded annual grass paddock, which consists mainly of brome & silver grass and is typical of degraded pastures in the region.
Production from a winter active lucerne paddock was added as an additional comparison

The white Suffolk X merino/Dorset lambs were drenched and vaccinated then weighed into the paddocks on 12/8/2011.
The lambs were stocked at rates that did not limit feed availability, so we did not measure stocking rate differences although it should be noted that the perennial pasture had a stocking rate 25% higher than the annual pasture in 2010.
The lambs were removed from the paddocks on 13/9/2011 for drafting prior to the first turn off of lambs.
The average daily weight gain for the late winter period of 32 days can be seen in the graph above.
It shows a 23% production increase for the upgraded perennial pasture and a 43% increase for the lucerne over the degraded annual pasture.
These results clearly show the benefits of perennial pastures for the Hall's lamb operation at Joel Joel.



PPS sites are supported by the MLA Producer Demonstration Site Program

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Joel annual pasture estimate 2010

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Appendix 1 ***Key Messages***

It was suggested by Gerald Martin consultant to MLA that PPS add an appendix to the SO901 report with a summary of key messages from the project.

Productive perennial pastures can achieve twice the regions average stocking whilst having positive environmental outcomes such as increased ground cover and more efficient water use.

PPS considers that phalaris is still the best option for perennial grass based pastures in the Upper Wimmera catchment and similar regions.

PPS considers that the recent availability of the Holdfast GT Phalaris variety is an important addition to the perennial grasses that can be established in the region.

Phalaris pastures need to be managed with rotational grazing to achieve maximum productivity and persistence.

PPS considers that Grazing Brome appears to be unsuited to the region.

Winter active Fescues can play a minor role in productive pasture systems in this region.

Winter active Fescue needs to be managed with heavy spring grazing to achieve the maximum benefit from it.

PPS considers that Uplands Hispanic Cocksfoot is a valuable variety well suited to the drier areas of the Southern Wimmera and Central Victorian regions.

Uplands Hispanic cocksfoot can be established as the sole grass in a pasture sowing or it can be established in combination with phalaris.