final report

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Optimising Red Meat Productivity

A Producer Initiated Research and Development Project (PIRD)

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Contents

1 Background

1.1 The Group - SEPLA

The South East Prime Livestock Achievers group (SEPLA) was established in 2002 with young producers from the Mid South East of South Australia, to provide a comfortable environment in which they could develop their skills, knowledge and attitudes through a strategically planned program.

The group remains a dynamic group of forward thinking red meat producers striving to drive research and adoption of new technologies to their benefit and the Industry's.

SEPLA provides information and learning activities for its members to further improve their knowledge and business performance. Trials and research are integrated to enhance learning, and to give group members an insight into on-farm adoption of new technology.

The trust and openness developed within the group allows new ideas and concepts to be cultivated and to enhance learning and technology transfer.

1.2 The Project – Optimising Red Meat Productivity

"To increase the kilograms of red meat produced per hectare, in an economically and environmentally sustainable manner".

During the study period, seven businesses ran trials on their properties.

These producers aimed to increase the current level of red meat production per hectare by 30 to 50%, through a range of methods including meeting the nutrient requirements of lambs through targeted supplementation, changing finishing systems, grazing management, alternative pasture varieties, and fertiliser management.

On each property their 'new system' was designed to increase their current levels of red meat production, and most were compared against production from their pre-existing systems.

2 Project Objectives

- To increase the current amount of kg of red meat produced per hectare by 30 to 50%, based on current individual benchmarking figures or derived using the cost of production calculator

- To increase the knowledge of the group in the areas of cost of production, pasture growth and utilisation, pasture varieties, grazing techniques and sustainability.

3 Methodology

Seven prime lamb enterprises were involved from across the South East of South Australia; from Coonalpyn in the Upper South East, to Millicent in the Lower South East, and with a variation in annual rainfall from about 400mm in the north, to about 750mm in the south. Across these sites, four strategies were tested to achieve the objective of improving red meat productivity.

3.1 Meeting the Nutrient Requirements of Lambs

Trent and Aaron Long at Coonalpyn finished lambs on crop stubbles and lucerne and used feed tests to determine supplementary rations to meet he nutrient requirements of the lambs.

Nick and Janelle Edwards at Avenue Range supplementary fed lambs grazing lucerne pastures with oats and straw to better balance the ratio of energy to protein consumed from the lucerne pasture. Supplementation was informed with the aid of regular feed tests performed on the lucerne. These lambs were compared with unsupplemented lambs grazing an adjoining, similar lucerne pasture.

To better understand the seasonal change in nutrient quality of lucerne and chicory pastures on the property, the Edwards also used feed tests to monitor both pastures samples across spring, summer and autumn to identify differences with the intent of informing future management practices for the two different pasture types.

Nathan and Penny Craig at Apsley in western Victoria compared supplementary feeding regimes using barley grain to raise the level of nutrition provided to lambs being finished on either hayed-off ryegrass and clover pastures, or dryland lucerne that was undersown with oats. The provision of barley was targeted to increase energy intake to appropriately meet the requirements of the lambs on both pasture types.

Bill and Karen Agnew at Furner examined how they could use feed test information for pastures to develop a finishing system to more closely match the lambs' nutritional requirements and finish them before the pastures lose their value.

The Agnew's also examined the growth rates of lambs finished on bean stubbles in order to determine what initial starting weight and body condition was required for lambs to be finished adequately on the beans.

3.2 Intensive Grazing Management of Perennial Pastures

Mark Buckett at Stewart's Range (via Naracoorte) compared a traditionally stocked and managed annual grass and sub-clover pasture containing a small proportion of perennial phalaris, with a rotationally grazed perennial grass and sub-clover pasture.

Breeding ewes were grazed on both pastures throughout the trial, and stocking rates were determined initially from historical figures, and revised throughout the trial to higher levels as Mark's confidence in successfully managing the systems increased.

3.3 Alternate Finishing Systems

Peter and Elke Hocking at Lucindale compared their traditional system of using bean stubbles to finish lambs over summer, with a new system based on the utilisation of an irrigated seed-producing stand of white clover following harvest.

3.4 Fertilising Irrigated Pastures

Neil and Elizabeth Teate at Naracoorte, tested two fertiliser regimes on an existing centre pivot irrigated pasture to determine profitable lamb finishing strategies to better utilise their investment in the infrastructure. Based on the result of soil tests, one half of a 28 ha pivot sown to perennial ryegrass was fertilised with the 'normal' phosphorus application rate of 135 kg/ha of single super (~12 kg phosphorus plus 15 kg sulphur per ha), and the other half received urea at a rate of 65kg/ha (~30 kg nitrogen per ha). Lambs were subsequently finished on the pivot over an 86 day period from December to the end of March.

4 Results and Discussion

4.1 Meeting the Nutrient Requirements of Lambs

Trent and Aaron Long

The Long's achieved a range of lamb growth rates across the duration of their feeding trials, from a high of 322 g/day for lambs fed lucerne pastures that were supplemented with grain and hay on the basis of feed test results to balance the ration, to lows of 69 g/d for lambs grazing forage sorghum supplemented with hay (further results provided in Appendix 1).

The benefit of being able to balance the nutrient requirements of the lambs with the nutrition provided by lucerne pastures and supplementary grain and hay with the aid of feed test results has proven to be a major positive outcome. By comparison, their previous range of practices often supplied periods of insufficient and excess 'nutrition' during the finishing period as the sheep progressed from grain stubbles supplemented ad lib by vetch hay, barley, and lupins, to lucerne pastures with ad lib grain and hay. The poor value of sorghum as a finishing fodder was highlighted during the trials, and has been dropped from their enterprise.

Being informed on the nutritional value of the feeds on hand prior to feeding, and using a nutrition calculator to determine an optimum diet before moving onto the feed will continue to provide cost and time savings.

> "*Our aim from being involved in the trial was to re-evaluate our finishing system for our lambs. Our lambs are August drop, weaned in November and sold from January to April. The previous way to finish our lambs was for them to graze cropping stubbles (quite often hay stubbles followed by bean stubbles and then barley stubbles) whilst being fed vetch hay and having access to a barley/lupin grain mix in self feeders ad lib. The lambs would then change over to Lucerne pastures and continue on the grain and hay feeding regime.*"

> "*We had suspected that the intensive grain feeding of our lambs on cropping stubbles and then finishing on lucerne had previously been excessive due to the high quality lucerne the lambs were grazing, but it had seemed to work very well for the past 5-10 years that Dad and Grandpa had done this practice but was very time consuming and costly (due to growing barley and unprofitable lupin crops JUST to feed lambs). After discussion with Penny Craig, we became involved in the project to learn more about matching feed to animal requirements*."

Nick and Janelle Edwards

In their supplementation trial, supplemented and unsupplemented groups of lambs were grazed on similar stands of lucerne. Regular feed tests of the lucerne were performed and the lambs in the

supplemented group were provided with oats and straw to better balance the protein and energy supply to more closely reflect the nutritional needs of the lambs.

The result was that the supplemented group grew at 288 g/hd/day compared to 186 g/hd/day for the unsupplemented group that received only barley straw – an increase of 55%. Consequently the treated group averaged 2.4 kg per head more than the control group over the supplementation period.

This difference was valued at $4,000 more for the lambs sold from the supplemented group due to 1.5 times more lambs reaching a marketable condition from this group (152 vs 104). Supplementation came at a cost of only $800.

> "*We expected a productivity gain but were surprised by how much better the treatment lambs went, as it was difficult to know exactly what they would do based on the lack of good industry information*."

In addition to the feeding trial, the Edwards' efforts have provided a useful insight to the comparative seasonal nutritional value of chicory and lucerne when grown under the same conditions. Over three years, samples collected from both species at the same time have shown a wide variation in quality between collection dates. For example, crude protein in lucerne samples varied from 15% to 33% CP (average = 24%), and chicory from 18% to 32% (average = 24%); with very similar results for both species (further results provided in Appendix 1).

The interesting difference comes with energy. For the lucerne samples, metabolisable energy varied from 8.4 MJ to 11.9 MJ, with an average across all samples of 10.4 MJ. By comparison, chicory has covered the range from 9.9 MJ to 12.1 MJ, with an average of 11.1 MJ; 0.7 MJ higher than lucerne on average.

When these data are applied in a growth modelling tool (Grazfeed), it suggests that chicory fed lambs are likely to gain weight at least 10% faster than lucerne fed lambs. However, the lamb growth model tends to overestimate the growth potential of lambs on lucerne. This is because of the often highly soluble nature of the protein in lucerne that tends to limit digestive efficiency and hence lamb growth rate. In the paddock this frequently translates as lambs growing at less than 200 g/day when their potential gain is suggested to be 300 g/day+. Hence the common and well proven recommendation is to provide a grain supplement, such as oats or barley to lambs grazing lucerne.

In fact, this phenomenon was observed by Nick and Janelle in their feeding trial. When they used oats and straw to supplement their lambs grazing lucerne pastures, lamb growth rates were about 100 g/hd/day higher than unsupplemented lambs.

With chicory being more widely acknowledged as a viable alternative or complementary to lucerne in a mixed pasture, and with chicory's range extending to more acid soils than lucerne does at present, the implications for lamb finishing using chicory as a pasture are substantial. These implications may be further bolstered since it is also currently thought that chicory does not require the same 'balancing grain supplement' that is required for lucerne fed lambs to achieve their high potential growth rates (for example http://www.dpi.nsw.gov.au/agriculture/field/pastures-and-rangelands/species-varieties/factsheets/chicory/part-e).

Nathan and Penny Craig

Nathan and Penny were able to demonstrate the superior inherent nutritional value of dryland lucerne undersown with oats compared to a hayed-off ryegrass and clover pasture during summer in Western Victoria.

However, it appears that the Craig's trial was affected by poor adaptation of the lambs to the barley (grain) supplement, and although the lambs on the dryland lucerne achieved daily growth rates that were 155 g/head/d higher than the hayed-off ryegrass pasture, growth rates were generally poorer than anticipated. It was suspected that sub-clinical acidosis was an influencing factor.

	Summer Finishing System	
	Hayed-off Ryegrass/clover pasture + 200 g/d barley (grain)	Lucerne undersown with oats + 200 g/d barley (grain)
Number of lambs	255	236
Daily weight gain per head	-55 g/d	100 g/d
Weight gain per ha	-306 kg	520 kg
Net financial return per ha	**- $581**	**$988**

Bill and Karen Agnew

In most years, Bill and Karen's lambs run out of good quality pasture before they are finished to a satisfactory market specification, hence their initial trial focussed upon using information about the quality of the pasture on offer to develop a supplementation regime that would better match the lambs requirements as they were finished. Using the feed test information, it was evident that during the trial year, that pasture quality remained very high for the duration, and thus lambs achieved finishing weights without the need for additional supplements. For the investment in the feed test information, the savings pay off was the knowledge that unnecessary supplementation was not required. Pasture on offer averaged 30% crude protein and 10.5 MJ of metabolisable energy (ME) in mid-September, and 26% protein and 10.5 MJ of ME at the end of October.

The Agnew's bean stubble trial was aimed at evaluating whether there was an ideal starting weight for their unfinished 'carry-over' to be placed on the beans and to then achieve a slaughter specification in an adequate timeframe. During the trial, the lambs achieved a daily weight gain of 191 g/head/day for the 67 days that they had access to the bean stubble, and achieved a 0.8 unit gain in condition score in the first 40 days.

	2nd Feb	**14th Mar**	**10th Apr**
Condition Score	1.5	2.3	Not measured
Weight (kg)	36.1	43.8	50.0
	2nd Feb to 14th Mar	14th Mar to 10th Apr	2nd Feb to 10th Apr
Average Total Gain (kg)	7.5	5.5	12.8
Average Daily Gain (g/d)	193	203	191

During the trial, it emerged that the bulk of the carry over lambs in the flock were ewes, with only 11% wethers. This was new information for Bill and Karen.

The trial suggested that for these lambs, there were poor relationships between starting liveweight and daily growth rates and total weight gained (see graphs in Appendix 1). This tends to suggest that irrespective of the starting weight of the lambs before they went onto the beans, lambs had similar growth rates for the duration of the feeding period, and gained similar amounts of weight.

Consequently, rather than starting with a set minimum liveweight, a more suitable starting point to determine which lambs to put onto beans stubbles in the future, therefore, may be to determine what specifications are required for the finished lambs to reach, establishing the 'carrying capacity' of the bean stubbles, and stocking the stubbles appropriately in order to ensure that lambs placed on the stubbles can reach the desired specification.

4.2 Intensive Grazing Management of Perennial Pastures

Mark Buckett

Following the introduction of an intensive rotational grazing system at the trial site, Mark has been able to closely observe both pasture and animal responses to the changes that have been implemented.

The key results at this site are a 44-100% higher stocking rates, 78% more lambs weaned and an average 23% increase in the weight of lamb weaned from the Intensive Rotation paddock than the Normal Stocking paddock (100 kg liveweight/ha). Pasture composition has not changed significantly between the two paddocks, with the main changes in these animal production measurements coming about as a consequence of the adoption of rotational grazing in the Innovation paddock.

Moreover, Mark also achieved a 44% increase in stocking rate in the Normal paddock as a direct result of better and timelier management of the sheep and the pasture.

This trial has been a very clear and outstanding demonstration of the potential for improved management and rotational grazing to achieve significant increases in animal productivity and business profit.

	Control – 'Normal' Stocking		Intensive Rotation		Estimated $/ha gain
Year	Stocking rate	Kg/lamb/ha	Stocking rate	Kg/lamb/ha	
2008	9 DSE	288	13 DSE	354	$94 (@ $3.16/kg dressed)
2009	11 DSE	471	16 DSE	587	$208 (@ $4.00/kg dressed)
2010	13 DSE	599	18 DSE	718	$230 (@ $4.20/kg dressed)

The strong results from this site have had a real impact on SEPLA members, with most indicating they will look more closely into rotational grazing on their own properties in the future.

4.3 Alternate Finishing Systems

Peter and Elke Hocking

The Hocking's made use of the valuable opportunity provided by the PIRD to examine how they could make further use of their investment in an irrigated small seeds enterprise; that is a white clover stand situated underneath a centre pivot irrigator. Following harvest of the seed, the opportunity existed to test the use of the established white clover stand to finish lambs, and this was compared to their traditional system based on finishing lambs on bean stubbles.

Results from the trial demonstrated that significant value was able to be extracted from their investment in the pivot for the small seeds crop by being able to achieve per ha margins that exceeded their traditional bean stubble finishing system, by $123/ha (27%).

	# of lambs	$/head	$/kg Cwt	Kg Lwt	Kg Cwt	Kg gain during finishing	Days on feed	Kg Lwt/ha	Kg cwt/ha	$/ha
White Clover Pivot	1,110	$89	$3.80	53	23.5	14.9	93	344	153	$578
Bean Stubble	1,149	$101	$3.90	57	26	12.8	77	253	116	$455

Both finishing systems supported similar daily growth rates by lambs (160 v. 166 g/d for the white clover and bean stubble, respectively).

Feed testing of the white clover pasture has provided surprising results for the producers; the underlying nutrient content of the white clover (at 11.3 MJ of metabolisable energy and 24% protein) suggested that substantially higher lamb growth rates than the 160 g/d observed are possible on this forage.

Upon reflection, this likely indicates that issues such as excess soluble protein may be limiting feed conversion efficiency, and a supplementary feeding strategy that addresses this apparent imbalance is could benefit lamb growth rates and profitability further.

4.4 Fertilising Irrigated Pastures

Neil and Elizabeth Teate

The Teates have noted that in recent years the apparent productivity of lambs finished on their irrigated perennial ryegrass pasture has been below what they expect may be possible, and have suspected declining soil fertility as a potential cause.

Two fertiliser treatments were tested in the PIRD activity; a) alternative treatment - urea applied at 65 kg/ha (30 kg N/ha), and b) normal practice (control) - single super applied at 135 kg/ha (12 kg/ha P and 15 kg/ha S).

	Fertiliser applied	
	30kg Nitrogen /ha	12 kg Phosphorus /ha (& 15kg Sulphur)
Number of lambs finished	574	618
Average weight of lambs	50.5 kg	50.1 kg
Total liveweight finished	29,009 kg	30,958 kg
Liveweight per ha	2,072 kg/ha	2,211 kg/ha
$ per ha returned (@ $1.90/kg live)	**$3,937**	**$4,201**
Fertiliser cost per ha	$37	$39
Net return per ha*	**$3,900**	**$4,162**

**Note: Excludes operating costs of the pivot*

The aim of the alternative (urea) treatment was to examine if urea could be used tactically to increase feed supply and quality, and thus the productivity of the lambs on the pastures.

The results (above) were not able to distinguish an advantage to the urea treatment under the trial conditions.

Feed test results provided some explanation of the observed higher level of performance of lambs on the control (single super) pasture, with metabolisable energy levels 0.8 to 1.1 MJ higher on the control pasture (7.8 v. 8.6, and 11.8 v. 12.9 MJ, respectively during January and February), and crude protein levels 3.6 to 3.7 % higher on the control pasture (11.6 v. 15.2, and 26 v. 29.7%, respectively during January and February). Interestingly, pasture quality was significantly higher on both areas during February compared to January (by about 4 MJ of metabolisable energy, and 14% crude protein).

As a consequence of this learning experience, the Teates were not able to justify changing their fertiliser practice under the prevailing circumstances.

5 Success in Achieving Project Objectives

1. Increasing the current amount of kg of red meat produced per hectare by 30 to 50%

Of the four approaches tested to improve productivity, three were able to readily demonstrate achievement of the goal of a 30% to 50% increase, as indicated in the preceding **Results and Discussion**.

In summary …

- Trent and Aaron Long - fine-tuned their grain supplemented, dryland lucerne finishing system, which was able to achieve lamb growth rates in excess of 300 g/d
- Nick and Janelle Edwards - increased lamb growth rates by 55% and achieving 150% increase in lambs achieving sale condition
- Nathan and Penny Craig - were able to turn weight losses for summer fed lambs into weight gains; a 155 g/day per lamb difference (280% increase)
- Bill and Karen Agnew – using feed tests, were able to make savings by not incurring the additional cost of supplementing lambs unnecessarily, and established that bean stubbles can adequately support 200g/d growth rates of carry-over (predominantly) ewe lambs to achieve ‘finished’ specifications less than 10 weeks
- Mark Buckett – averaged 100 kg per hectare increase in the liveweight of lamb weaned from perennial pastures as a result of increases in both ‘normal’ and ‘intensive’ stocking rates, by up to 100%
- Peter and Elke Hocking - increased weight gain by 32% for lambs finished on post-harvest, irrigated white clover seed paddock compared to bean stubbles elsewhere on the property
- Neil and Liz Teate - established that lamb production was not affected by different fertiliser regimes, and that at the time of the trial, lamb returns were insufficient and input costs were too high to continue finishing lambs on the irrigated perennial pasture

2. Increasing the knowledge of the group in the areas of cost of production, pasture growth and utilisation, pasture varieties, grazing techniques and sustainability.

This outcome was met with outstanding results achieved and evidence of practice change recorded as a result of the direct participation by the producers involved in the trials. Further evidence is provided in the following section.

6 What Was Learnt and Resulting Changes

Aaron & Trent Long

"We gained fantastic results from being involved in the trial. We were able to identify that our then current finishing system for our lambs was too labour intensive and was wasting money from feeding high quality hay and mixed grain rations on already high quality stubbles and Lucerne pastures. Through feed testing our lucerne paddocks a few days prior to the lambs going into the paddock, we were then able to design a feed/buffer ration for the lambs, that was quite often low quality hay or cereal straw and change up to higher quality hay as the season progressed and lucerne was less plentiful."

"We now feed test lucerne pastures, hay, straw and barley (if needed) and have a feed calculator to calculate what we need to feed the lambs to match their requirements. Our labour has more than halved as we are no longer mixing grain and filling up feeders or running bales of hay out the lambs every day. We have also fenced all of our lucerne paddocks into smaller paddocks 10-15 ha for rotationally grazing. We are still to develop a system to take straw/hay between paddocks, as we are sometimes wasting ½ bales due to lambs moving to the next paddock in the rotation before the bale is finished, and then the bale is weather damaged when they return to the same paddock again. In 2009 we stopped grazing any cropping stubbles, so lambs had only lucerne to finish on. Our next step is to look at supplementary feeding of trace elements to our livestock to match individual paddocks nutrient levels."

Nick & Janelle Edwards

"We learnt that lucerne and chicory can be quite variable feeds and that oats are certainly a viable and highly successful supplement to provide for lambs grazing lucerne, allowing our lambs to achieve close to their potential growth rates. A significant feature of our results not captured in the growth data is how much better the lambs in the oat grain-treated group looked. Whilst not very objective, it was apparent just from the look of the control and treated groups of lambs in adjacent pens at weighing that the oat grain-treated lambs were better finished. In fact, these particular lambs were purchased by a buyer who drafts on his eye rather than liveweight and he commented on how much better finished the treated group looked. This was reflected in him selecting 50% more animals from this group as well as them subsequently being shown to have been heavier."

"Since our successful feeding trial we have sown more lucerne and chicory. We have also invested in more grain feeders and are continuing to develop a labour and cost efficient system for feeding oats to our lambs on lucerne. Whilst barley grain might be a better option in a nutritional sense we have also reinforced that oats are a far safer feed to use and better fit into a low input system. Our lamb finishing system is set up to run up to three mobs of 200-250 lambs on lucerne. Paddocks have been subdivided to provide enough lucerne for a week of grazing and self feeders are regulated to provide a week's worth of feed. This means we can move the mobs and fill the feeders once per week with no worries that if they run out of grain early they will require careful re-introduction to the grain. At the moment we are also growing our own oats, but may change to buying it in the future."

Penny & Nathan Craig

"We learnt there is a large value in having lucerne to finish lambs. We also learnt that supplementation can help improve the lamb growth rate to balance out the protein and fibre of the lucerne. Barley was in this case not an appropriate supplement for small lambs."

"In the future the choice of supplementation will be considered along with the age/weight of the lambs, exposure to the grain being used and the nutritional value of the grain. We will continue with the use of "finishing" pastures such as lucerne to finish lambs. "

Bill & Karen Agnew

"It was a surprise to learn that the majority of our carry-over lambs were ewes. We do find though that they come up to specification well when they are finished on the beans, and in carcass competitions our best results are almost always from the ewes".

"From being involved in the PIRD, we have recently sown some new pastures with chicory as an alternative to lucerne. In the past the lucerne hasn't persisted on our heavier country, perhaps because we have had problems with crickets in the past, but the chicory is doing very well; it is persisting, and the lambs are also doing really well on it. We chose the chicory after seeing it do well on other places involved in the PIRD".

Mark Buckett

"Running the trial has given me a real feel for how this system would work across the whole farm; there is no better way of learning than actually gaining first-hand experience. I was unsure of how the trial rotation would work when the ewes lambed and whether we would still be able to move them, but it has been fine. When lambs are a couple of days old, the ewes move into the fresh paddock by themselves. The three-wire electric fence works well."

"I will consider subdividing our existing paddocks using portable electric fencing, installing some lift-up gates along the fence lines so when ewes lamb I can lift the fences and let them move themselves gradually into the next paddock."

Peter & Elke Hocking

"More than anything, the trial gave us a good understanding of the possibilities of our system. Making use of the white clover pivot after the seed has been harvested allows us to finish lambs out of season to capture price premiums, and they can be finished before the cold winter weather sets in when we notice that lamb growth rates really drop off. We now want to turn lambs off as fast as possible, and in doing so we have also been able to focus more on production in terms of kg of meat produced per hectare rather than kg per head to maximise the per hectare production of our system."

"We have installed two more pivots for white clover seed production and we will use all three to finish lambs for the out of season market. Another major change has been that we have stopped producing 'late lambs'. We have struggled in the past to finish these lambs as they are prone to interrupted growth as a result of a significant feed gap on the property during the period between when the pasture dries off in early summer, and until the pivots become available for grazing in late summer."

Neil and Elizabeth Teate

'Based on the results of the trial, it wasn't obvious that there was any benefit from either of the fertiliser treatments, and in this particular year, it wasn't economic to keep finishing lambs under irrigation.'

'We also use bean stubbles to finish lambs, so until the economics change, we will tend to make use of the beans in preference to the pivot"

7 Producer and Industry Benefits

Aaron & Trent Long

How will these make a difference to your bottom line?

"Time and money spent on labour are significantly reduced as mentioned above. Hay and grain that would normally be fed to lambs can now be sold. We are no longer wasting profitable cropping paddocks growing unprofitable lupin crops purely to feed to our lambs. Our lambs finish a little later than when intensively feeding in the old system but not enough to outweigh the savings made."

Are there any environmental benefits of the outcomes of your activity?

"Benefits are full stubble retention on our cropping paddocks and better utilisation of lucerne paddocks through rotational grazing."

Nick & Janelle Edwards

How will these make a difference to your bottom line?

"A quick back of the envelope calculation of the costs and returns of our oat supplementation system indicated that a $4,000 gain in value of lambs supplemented with oats over only about 4 weeks came at a cost of only about $800 (ignoring capital costs of feeders, fencing, etc and labour costs). As we expand this feeding system to more groups of lambs we are convinced that we are well ahead financially. This also does not take into account the benefits of finishing these lambs more quickly, enabling more lambs overall to be finished through our lucerne. It also does not take into account the fact that by finishing our cross bred lambs more quickly we are likely to be able to either buy in store lambs for finishing or put some of our merino lambs through the system to either finish (wethers for the June/July period when few cross bred lambs are traditionally available) or grow more quickly (ewes to bring up to earlier mating weights)."

Are there any environmental benefits of the outcomes of your activity?

"Probably the major environmental benefit from this work is the adherence to a strict rotational grazing policy on our lucerne to maintain ground cover and persistence of our lucerne stands. We have also recently set up a small opportunity feedlot as an alternative finishing system that can also be used in the future to protect our paddocks from soil erosion."

Penny & Nathan Craig

How will these make a difference to your bottom line?

"By improving growth rate of lambs they will be turned off quicker and with a lower feed requirement per lamb therefore reducing cost and increase returns from this enterprise."

Are there any environmental benefits of the outcomes of your activity?

"There will be a greater utilisation of perennial pasture stands, predominately lucerne."

Bill & Karen Agnew

How will these make a difference to your bottom line?
"Being able to finish lambs on beans, and now the chicory will allow us to benefit from the late season prices that are often better than process during the earlier part of the season".

Are there any environmental benefits of the outcomes of your activity?
"Counting beans and then stocking the stubbles in a way that makes sure the lambs don't run out of feed before they are finished will make a difference to the soils in these stubble paddocks".

Mark Buckett

How will these make a difference to your bottom line?

"The higher weight of lamb produced on a per hectare basis has had a direct impact on the dollars per hectare returned."

Are there any environmental benefits of the outcomes of your activity?

"I've found that the pasture is utilized better, with more even grazing in the high rotation paddock whilst maintaining ground cover. A further benefit is that no erosion sites have developed in areas where sheep usually camp. I think it also has improved water utilization."

Peter & Elke Hocking

How will these make a difference to your bottom line?
"Capturing out of season premiums is an obvious benefit for us, and we are using benchmarking each year to keep an eye on our progress from year to year. A great benefit of our involvement in the PIRD has been that we are improving our decision making; making better management decisions, and timing our operations more productively and profitably."

Are there any environmental benefits of the outcomes of your activity?
"Counting the number of beans remaining in the stubble paddocks prior to turning the lambs in now makes it clearer how many lambs to put on the beans to make sure that they can be finished before the beans run out. This has an obvious benefit of protecting the soil by ensuring that the stubbles are not overgrazed, but also not having to carry unfinished lambs over the dry period and try to recover them on better feed when the pivot becomes available. These growth checked lambs don't grow on well. We have also installed new types of irrigation down tubes on the new pivots and they are reducing water wastage and so will improve water use efficiency."

8 Field Days

Three open days were held at Mark Buckett's intensive rotational grazing site;

- August 2008 - 10 participants
- November 2008 - 22 participants
- November 27, 2009 - 9 participants

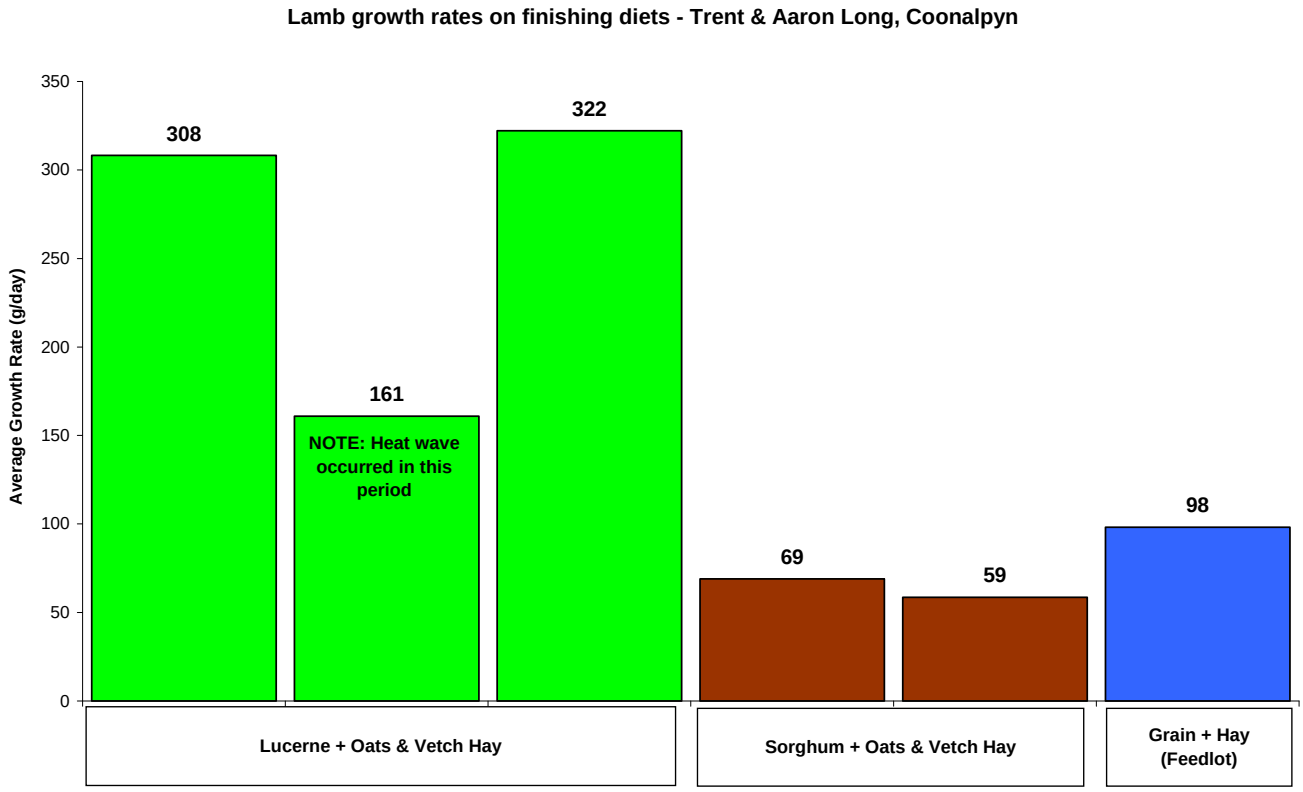
In addition, Mark was invited to be a guest speaker at the South East Pasture Field Day at Lucindale in February 2010. The field day attracted 104 participants including;

- 65 producers
- 14 private consultants/agronomists

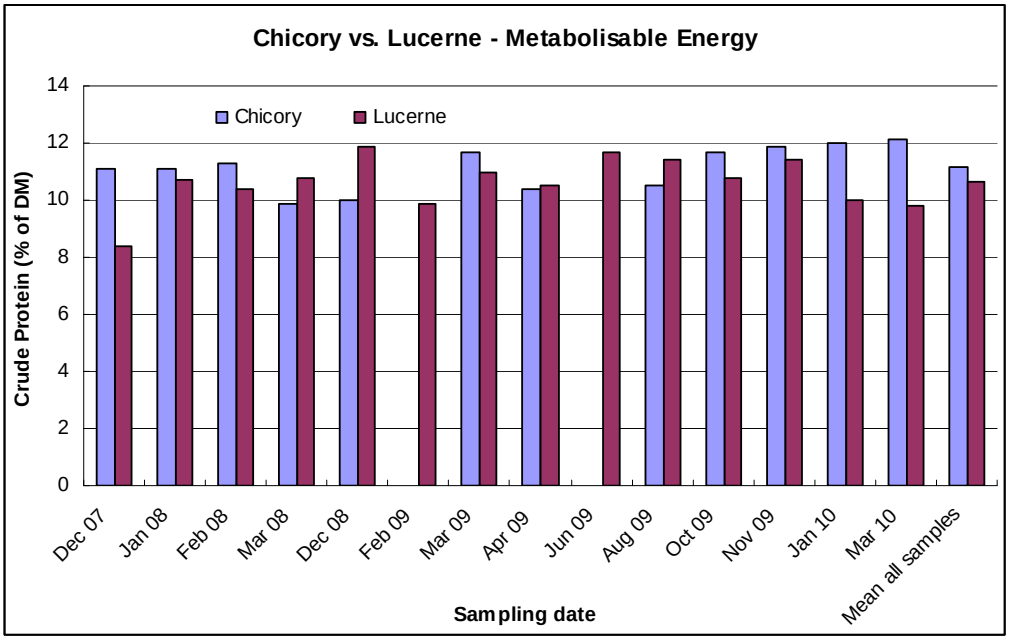
- 11 state agency staff
- 3 students
- 11 general public
- 1 NRM board staff member

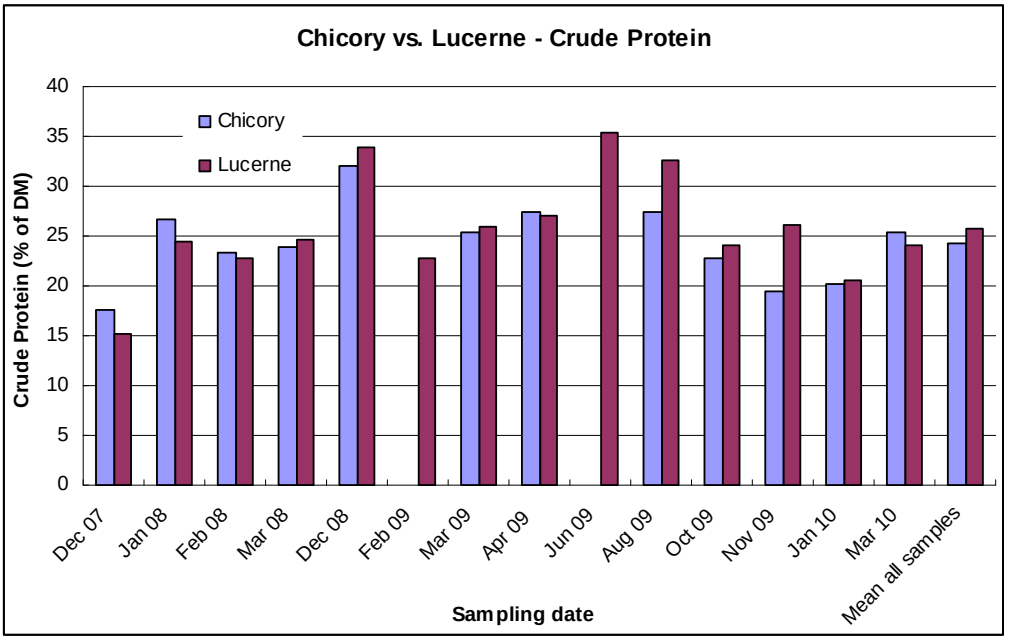
9 Appendix 1 – Additional Data

Aaron & Trent Long



Nick & Janelle Edwards





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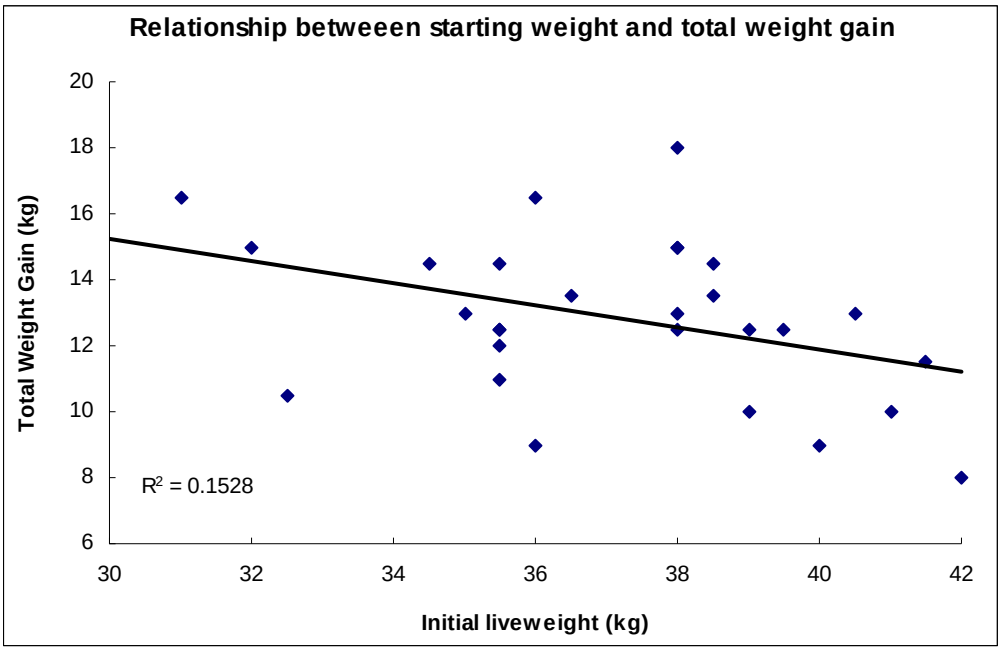

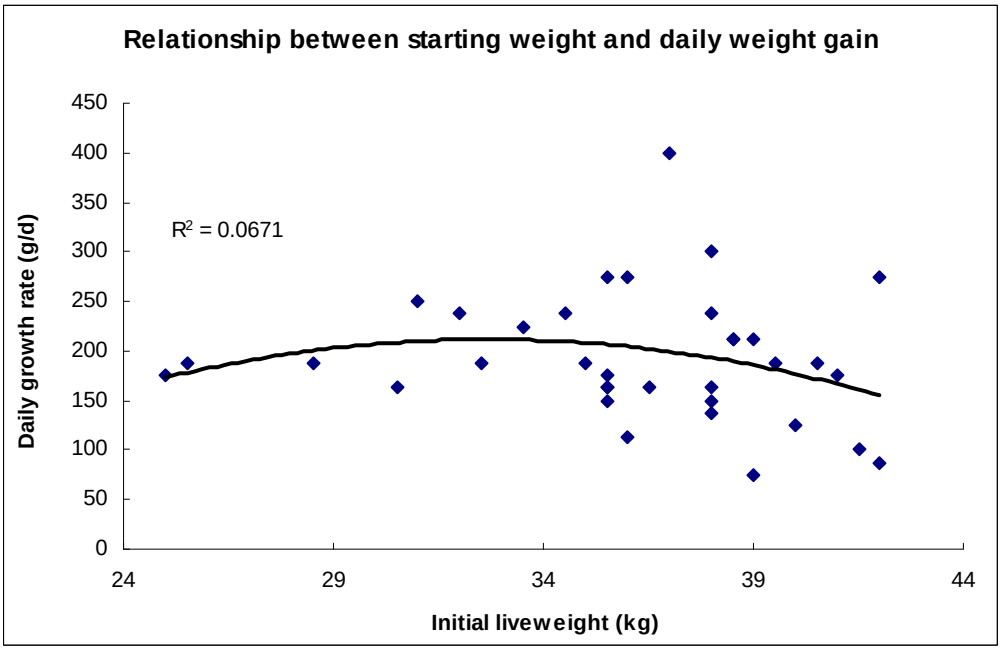

10 Appendix 2 - MEDIA

SEPLA's PIRD Press Release (Printed in The Stock Journal, September 2008)

Increasing productivity by 30-50% is the aim of the South East Prime Livestock Achievers latest Meat & Livestock Australia funded Producer Initiated Research Development (PIRD) trial. With the rising cost of inputs and reducing commodity prices the group feels it is important to try new techniques and technologies to increase returns. Group chairman Nathan Craig believes the project is important to his business for "after a series of dry years the project has enabled us to focus on our profit drivers to ensure we achieve optimum production from our livestock enterprise".

Nathan Craig is the owner of one of the seven properties within the South East and boarder regions of Western Victoria involved in the project that will run over three financial years, 07/08, 08/09, 09/10.

The challenge of the project is to increase the current production of red meat per ha by 30 – 50% by altering a key aspect of their red meat enterprise. This has resulted in a range of methods being adopted by the different businesses, including changing their finishing systems, lambing times or stocking rates , using different grazing methods or applying different types or rates of fertiliser or other nutrients (Penny – not sure what these would be??). It is important in achieving their production aim that each of the projects is economically and environmentally sustainable.

Five of the properties have completed their trial work for the 07/08 year while another 2 are still continuing.

Of the five properties which have finished their trials for this year, all received positive outcome from their trials and are now planning alterations to their methodology to achieve even better results for the coming year.

At Nick and Janelle Edwards "The Washpool" property, an impressive trial aimed to improve lamb finishing by 30% by more closely matching their feed resources with the nutritional needs of the lamb. The Edwards' had been looking for ways to improve their Lucerne finishing system for some time, so the project has fitted well into their business by providing a catalyst for trying a few new ideas. In their trial, treatment and control groups were grazed on similar stands of Lucerne.

Regular feed tests of the lucerne were taken and the lambs in the treatment group were supplemented with oats and straw to better balance the protein and energy supply and more closely reflect the nutritional needs of the lambs. The result was that the treatment group grew at 288g/hd/day compared to 186g/hd/day for the control group that received barley straw only – an increase of 55%.

Consequently the treated group averaged 2.4kg per head more than the control group over the 29 days of strategic supplementation. This equated to an increase of over $4,000 in value of the lambs sold from the treatment group due to 1.5 times more lambs reaching a marketable condition from this group (152 vs 104) and came at a cost of only about $800.

Nick said "we expected a productivity gain but were surprised by how much better the treatment lambs went, as it was difficult to know exactly what they would do based on the lack of good industry information." Happy with this initial result the Edwards' feel they can achieve better results next year through refinement of the project.

With the initial results indicating the project aims are achievable, the group is excited by what could be achieved by the end of the project in 2010.
Further results on this project will be available at the SEPLA's Pasture Field Day on Tuesday 26th August, 2008.

Published in From the Ground Up*, Edition 46, Summer 2010, and The Stock Journal, 2nd December 2010

Lucerne versus Chicory – which one for summer finishing lambs??

Lucerne is well recognised for its value as a high quality, protein rich diet during the warmer months, but all too frequently lambs fail to perform to their potential. By comparison, chicory is gaining a reputation for providing a similar amount of feed during summer, but limited information is available to compare the potential feeding value when compared directly to lucerne grown under the same conditions

Nick and Janelle Edwards from Avenue Range, have been putting an effort into understanding the nutritional value of their pastures to finish carry-over lambs during summer, as part of a Meat and Livestock Australia funded Producer Initiated Research and Development trial (PIRD). Nick and Janelle are also members of South East Prime Livestock Achievers Group which has been leading the way for producers looking to optimise red meat production from perennial pasture systems.

Data collected from the trial site over the past few years shows that the two key nutrients in both plants, that is energy and protein, have varied widely between collection dates. For crude protein, lucerne has varied from 15% to 33% CP (average = 24%), and chicory from 18% to 32% (average = 24%); a very similar result for both species.

The interesting difference comes with energy. For the lucerne samples, metabolisable energy has varied from 8.4 MJ to 11.9 MJ, with an average across all samples of 10.4 MJ. By comparison, chicory has covered the range from 9.9 MJ to 12.1 MJ, with an average of 11.1 MJ; 0.7 MJ higher than lucerne on average.

So what does this mean in practice for summer finishing lambs? When this data is applied in a growth modelling tool, it suggests that chicory fed lambs are likely to gain weight at least 10% faster than lucerne fed lambs. However, the lamb growth model tends to overestimate the growth potential of lambs on lucerne. This is because of the often highly soluble nature of the protein in lucerne that tends to limit digestive efficiency and hence lamb growth rate.

In the paddock this frequently translates as lambs growing at less than 200 g/day when their potential gain is suggested to be 300 g/day+. Hence the common and well proven recommendation to provide a grain supplement, such as oats or barley to lambs grazing lucerne.

Whilst this information is interesting, the key point to consider is whether either or both of these pasture species have a place in your enterprise. Both are summer active species that provide valuable high quality feed in response to summer rain or irrigation, and both can be used to finish lambs successfully. Chicory and lucerne have a wide range of adaptation across the state; with chicory extending its range to more acid soils than normally tolerated by lucerne and both pasture species require good management to get the best out of them.

By Sean Miller, Rural Solutions SA

Lucerne is recognised as a suitable feed for lambs over summer but producers should consider the benefits that Chicory can provide.

F.T.G.U.46.

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