Contents

Program ...................................................................................................................................................................... 3
Our sponsors ............................................................................................................................................................ 4
Welcome .................................................................................................................................................................... 5
Speaker biographies ............................................................................................................................................... 6

How many sheep are out there and why this matters ......................................................................................... 8
Mr Andrew Woods
Independent Commodity Services

What makes a profitable sheep flock? .................................................................................................................. 11
Mr Sandy McEachern
Holmes Sackett Pty Ltd

Producer case study: Pushing the boundaries of the merino - the composite approach .................................... 14
Mr Tim Mulholland
“Operina”, Norong, VIC

Biosecurity of the ovine persuasion .................................................................................................................. 17
Mrs Louise Pearce
Livestock Biosecurity Network
Dr Timothy Biffin
Riverina Local Land Services

Producer case study: Innovations - ram breeding and wool handling ................................................................. 19
Mr Michael Field
“Benagaroo Station”, Jugiong, NSW

Identifying optimal choices for livestock production and mitigation of photosensitisation in sheep grazing Biserrella pelecinus ............................................................................................................................................... 21
Dr Belinda Hackney
Graham Centre for Agricultural Innovation
Mr Mike O’Hare
“Greendale”, Beckhom, NSW
Photograph: Toni Nugent
Graham Centre Sheep Forum
10 July 2015 - CSU Convention Centre, Wagga Wagga

8.30-8.55am Registration and coffee
8.55-9.00am Welcome and outline of the day
Ms Toni Nugent
(Industry Partnerships and Communications Manager, Graham Centre)
9.00-9.40am How many sheep are out there and why this matters
Mr Andrew Woods (Independent Commodity Services)
9.40-10.00am What makes a profitable sheep flock?
Mr Sandy McEachern (Holmes Sackett Pty Ltd)
10.00-10.20am Producer case study: Pushing the boundaries of the merino - the composite approach
Mr Tim Mulholland (“Operina”, Norong, VIC)
10.20-10.40am Panel session (all session speakers)
10.40-11.15am MORNING TEA
11.15-11.35am Biosecurity of the ovine persuasion
Mrs Louise Pearce (Livestock Biosecurity Network) and
Dr Timothy Biffin (Riverina Local Land Services)
11.50-12.10pm Producer case study: Innovations - ram breeding and wool handling
Mr Michael Field (“Benagaroo Station”, Jugiong, NSW)
12.10-12.30pm Identifying optimal choices for livestock production and mitigation of photosensitisation in sheep grazing *Biserrula pelecinus*
Dr Belinda Hackney (Graham Centre) and
Mr Mike O’Hare (“Greendale”, Beckhom, NSW)
12.30-12.50pm Panel session (all session speakers)
12.50-1.00pm Forum summary, wrap-up and evaluation
Ms Toni Nugent
(Industry Partnerships and Communications Manager, Graham Centre) and
Associate Professor Michael Friend (Acting Director, Graham Centre)
1.00pm LUNCH
Sponsors
Welcome to our 2015 Sheep Forum

Our Sheep Forum in the past has highlighted cutting-edge research in progress or recently completed. This year we change tack to step back and look at the big picture issues surrounding running a profitable sheep enterprise. The steering committee for the forum decided this was appropriate as many producers are either looking at getting back into sheep or changing their enterprise, so it is timely to consider the macro factors that affect the profitability of running a sheep enterprise.

Producers are faced with a number of choices in running a sheep enterprise, and it is tempting to think running a particular type of enterprise can be far more profitable than another. Understanding the big picture of supply and demand for sheep products is critical in understanding long-term price trends, hence Andrew Wood’s presentation is important in setting the context.

But how do you then capitalise on this to ensure you run an efficient business that maximises production per hectare while controlling costs to maximise profit? Sandy McEachern will provide a timely reminder of the big levers that drive profit in a sheep business.

Of course, the best laid plans can be laid to waste if a biosecurity breach occurs within the enterprise, and Louise Pearce and Tim Biffin will cover the major disease issues to be aware of and how to protect your business from them.

No Graham Centre forum would be complete without producer perspectives; Tim Mulholland and Michael Field will share their experiences in innovating to improve the profitability of their sheep enterprises.

It would be remiss not to present any of the Graham Centre’s latest research. Belinda Hackney will update on the latest research findings from using hard-seeded legumes for sheep systems in the mixed farming zone, with Mike O’Hare sharing his experience with using them on his farm.

We look forward to some robust discussion about the drivers, opportunities, challenges and research needs facing our sheep industry.

Regards,

Associate Professor Michael Friend,
Acting Director, Graham Centre for Agricultural Innovation
Mr Andrew Woods
Andrew has a background in farming. He was raised in the Riverina on “Mulberrygong”, a property near Hay. After completing a degree in Agricultural Science at the University of Sydney, he spent eight years farming in both northern and southern New South Wales (NSW). A move to wool broking in 1991 saw an interest in market analysis burgeon. Following a stint in Adelaide with Elders in the mid-1990s, he and his family moved to Wagga Wagga in 1997 to start Independent Commodity Services (ICS), with the help of Holmes Sackett and Associates. ICS (comprising Andrew and Carmel Woods) services a wide section of the wool industry ranging from growers through brokers to traders and exporters, in Australia and internationally. Andrew is the market analyst at ICS.

Mr Sandy McEachern
Sandy is a Director of Holmes Sackett Pty Ltd. Holmes Sackett provides farm management advice to producers throughout southern and eastern Australia. The service includes budgeting, business planning, capital expenditure programs and technical advice on production systems, farm business benchmarking and publications.

Sandy has a Bachelor of Applied Science – Wool and Pastoral Science from the University of NSW and a Graduate Diploma in Applied Finance and Investment from the Securities Institute of Australia. He commenced employment with Holmes Sackett in 2002 and has been a partner in the business since 2007.

Mr Tim Mulholland
Tim and his family live on “Operina”, a 2,400 acre property situated on the Wakool River between Swan Hill, Victoria and Moulamein, NSW. “Operina” consists of 800 acres that is lasered and under pivot irrigation, 1,000 acres of oldman saltbush and the balance being dryland and pasture cropping. Tim also owns a 6,500 acre dryland grazing property “Yerrinbool” near Hay, NSW, running 2,000 self replacing poll merinos, 75 self replacing beef cows, 200 acres rice and 500 acres dryland cropping.

Mrs Louise Pearce
Louise is the Livestock Biosecurity Network’s (LBN) Southern NSW Regional Officer. The LBN is a national network that was established in 2013 by the three peak industry councils; Sheepmeat Council of Australia, Cattle Council of Australia and WoolProducers of Australia.

Louise works closely with new and existing farming networks, raising awareness of biosecurity risks and the need to be prepared through the implementation of on-farm biosecurity plans.

Prior to joining LBN, Louise worked with Animal Health Australia (AHA), primarily in the areas of biosecurity, emergency animal disease preparedness and as project officer for the AHA Livestock Industry Forum.

Dr Timothy Biffin
As District Veterinarian for the Wagga Wagga Local Land Services Region, Tim’s direct exposure to producers is through on-farm disease investigations, animal production related field days, on-farm biosecurity planning, animal health certifications for export or property sale, or even just animal health advice over the phone. These efforts, in conjunction with some behind-the-scenes paperwork and liaisons are performed with the focus on maintaining and improving animal health and welfare, and subsequently maintaining and improving the current livestock market access of the Riverina.

After graduation from North Queensland, Tim worked in private veterinary practice in both Queensland and Victoria, before being drawn to the public veterinary practice by the idea of working for the ‘greater good’. He enjoys this component of his work as his daily roles are never focused on the individual animal or herd as it was in general practice, but the general population (people included). Tim hopes that through his work he is able to provide support, action projects and local strategies, in conjunction with producers, to improve the livestock industry of the Riverina and NSW.
Mr Michael Field

Michael and his family live at Benangaroo Station, Jugiong. Since 2007, Michael has been Managing Director of TA Field Estates Pty Ltd and Wahroonga Pty Ltd. He is also a current Director of MerinoLink. TA Field Estates comprises four large rural properties across NSW; “Benangaroo” at Jugiong, “Congi” at Walcha, “Mobinbry’” at North Star, and “Wyvern” at Carrathool. The company specialises in wool and merino sheep production spread over three main micron categories (16.5 – 17, 17.5 – 18.5, 18 – 20) over the three wool producing properties.

Dr Belinda Hackney

Belinda has 18 years experience as a research and extension agronomist. For the past 10 years, Belinda has worked extensively on developing new pasture-crop rotation strategies using hard-seeded pasture legumes in conjunction with Murdoch University and Department of Agriculture and Food Western Australia colleagues. During this time she also completed her PhD on strategic allocation of resource inputs for increased pasture production and economic return in variable landscape pastures. Belinda’s current project is funded by Meat and Livestock Australia and Australian Wool Innovation, and is evaluating the agronomic and livestock implications of incorporating hard-seeded legumes into mixed farming systems.

Mr Mike O’Hare

Mike is a Wagga Wagga “Aggie” who only ever wanted to return to the family farm. Mike and his wife Veila run a mixed farming enterprise (50% cropping and 50% pasture, running shedding sheep) at Beckom, NSW (476mm annual rainfall). Mike’s current rotation is canola, wheat, pasture, pasture. Mike has 90% of the farm now planted to hard-seeded annual legumes (50% Biserrula and 50% Bladder / Gland Clover mix).
How many sheep are out there and why this matters

Mr Andrew Woods
Independent Commodity Services
T: 02 6921 5887 E: ic-s@ic-s.com.au

Take home messages:
• the Australian flock size is the foundation piece of data required for estimating the supply of sheep meat and wool
• surveys of the Australian flock allow us to estimate the collective supply of sheep meat and wool, providing great value to the industry
• change in supply is a major driver of sheep meat prices and fine wool micron premiums
• understanding the key driver of price allows better decisions to be taken at the farm, supply chain and industry levels.

In markets, there is the supply side and the demand side. Farmers tend to focus on what is occurring on the demand side, especially in the wool industry, and marketers play to this appetite. By way of example, in the 1980s the Australian Wool Corporation estimated that International Wool Secretariat (IWS) economists overestimated the world use of wool by one full Australian clip.

However, the first step in marketing is to know what you have to sell, now and in the future. Farmers know what they have to sell individually, but the supply side is driven by what is available collectively. Production is not so difficult to estimate at a farm level, but it requires some resources to work out what supply can be expected at the industry level.

This paper endeavours to illustrate how measurement of the Australian flock can be used to help understand past market behaviour and in the development of plans for the future, both at the farm, supply chain and policy level.

Understanding the flock size

In the sheep industry, surveys are carried out by the Australian Bureau of Statistics (ABS) (annual – available 7-11 months after collection), ABARES (annual – available nine months after the end of the financial year) and Australian Wool Innovation (AWI) / Meat and Livestock Australia (MLA) (three times per year). It is argued that the industry would be better served with some tweaking of these surveys so they become more complementary and fill some gaps in the data we have for the Australian flock without significantly increasing respondent burden.

We have no real excuse for having incomplete information about sheep and wool production in Australia. In fact, it is an imperative given our dominant position in the international trade of wool and, along with New Zealand (NZ), in the trade of sheep meat.

Table 1. Australian Flock estimates - early 2015 (million head).

<table>
<thead>
<tr>
<th>Source</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABS</td>
<td>75.50</td>
<td>71.60</td>
<td>-</td>
</tr>
<tr>
<td>ABARES</td>
<td>72.70</td>
<td>70.70</td>
<td>72.10</td>
</tr>
<tr>
<td>AWPFC</td>
<td>75.50</td>
<td>71.60</td>
<td>69.10</td>
</tr>
<tr>
<td>MLA</td>
<td>71.63</td>
<td>71.00</td>
<td>71.51</td>
</tr>
</tbody>
</table>

Source: ICS

While the flock estimates vary, it is consistency in the process of estimating the flock size that is important. In discussing the principle of variable quality data and decision-making processes, Pannell (2015) concluded that a consistent and well thought through process can make good use of variable quality data. This principle can be used in both the process of collating estimates of the Australian sheep flock, and in using these estimates in well thought through models of the flock.
Why is it useful to understand the changes occurring in our flock size?

Let’s start with lamb prices

Change in supply plays a large role in year-to-year variations in the trade lamb (NSW saleyard price). Figure 2 compares the year-on-year change in lamb supply (horizontal axis) with the year-on-year change in trade lamb price (vertical axis, lagged by 2 months), for the past two decades. The change in supply accounts for 70% of the change in price between years. So, for the purpose of simply understanding why lamb prices have changed or for price forecasting, an understanding of lamb supply in Australia is critical.

Figure 2. Change in lamb supply and price.

Source: ABS and MLA

What about mutton prices?

Figure 3 compares the annual change in mutton price (NSW saleyard price) and the change in sheep meat (lamb and mutton slaughtered) from the mid-1990s onwards. The correlation is slightly weaker than for lamb, but is still strong. Note that it is the variation in the combined lamb and mutton volumes that influences the mutton price.

Figure 3. Change in sheep meat supply and mutton price.

Source: ABS and MLA

And for wool?

If we dig down into wool production data and look at the change in supply by micron category, some real insights into merino micron premiums and discounts can be gained.

Figure 4 shows the change in the rolling 12-month supply of 16 micron wool and the rolling year-on-year change in the 16 micron basis (premium) to the median merino micron category for the past decade.

The change in supply accounts for about two-thirds of the change in premium. So, an understanding of supply is critical to understanding fine wool premiums, which are important for setting genetic objectives in merino breeding.

How often have you heard in the past couple of years that demand has collapsed for fine merino wool? Perhaps it has shrunk, it is hard to tell when supply has risen by so much, but that would account for only one third of the fine wool premium story in recent years.

Figure 4. Change in 16 micron supply and premium wool.

Source: AWEX

How does the flock size vary?

The main way flock size changes is by varying the sale of adult sheep. Figure 5 compares the sales of adult sheep to abattoirs (a full 12 months of sales expressed as a proportion of the flock size and called the sheep offtake), with the change in flock size for the same period, from the mid-1970s onwards.

The sheep offtake accounts for about half the change in flock size, compared to nil correlation between the lamb offtake and change in flock size. The same mechanism applies to the New Zealand flock.

Figure 5. Change in flock size and sheep offtake (1975-2014).

Source: ABS and AWPFC
This correlation between the change in flock size and sheep offtake can be turned into a quick and cheap indicator showing whether the flock is under pressure to increase or decrease.

Figure 6 shows the flock size since 1980 and the sheep offtake (a running 12 month total of sheep sales expressed as a proportion of the flock size), with the periods when the sheep offtake was less than 10.5% shaded. In this simple model, the shaded areas tend to correlate with periods of expansion in the national flock.

Figure 6. Sheep offtake and flock size.

So what does this all mean?

The year-on-year change in supply plays a large role in determining the year-on-year change in lamb and mutton prices, and fine wool premiums. The change in supply of these commodities is underpinned by change in the flock size, which is mainly determined by the level of adult sheep sold to abattoirs.

The flock size is the headline number from flock surveys that is most publicised. However, a good understanding of the flock also requires measurement of other attributes including breed, class of stock, age groups, weaning rates, clean fleece weights and death rates.

References
Woods, A (2014). Where to for fine wool supply and premiums? Mecardo website
What makes a profitable sheep flock?

Mr Sandy McEachern
Holmes Sackett Pty Ltd
T: 02 6925 1758 E: sandy@holmessackett.com.au

There seem to be innumerable recommendations for sheep producers on what they need to do in order to become more profitable. Consistent recommendations across the industry cannot be found for genetics, pasture species, fertiliser requirements, addition or subtraction of micro nutrients or even required plant and equipment. Some variation is based on vested interest, some because it does not matter and some because the actual answer is just not known. It is ultimately a very confusing environment.

The aim of this paper is to convey the core things that really do matter without waging into war on the things that are far less influential.

Holmes Sackett benchmarking data reveals significant variation in profitability within sheep enterprises, between farms every year. The data predominantly comes from southern and eastern Australia (Figure 1). Even still, there is wide variation in climatic conditions between farms – from rangelands environments to high rainfall (summer or winter dominant) areas.

Figure 1. Holmes Sackett benchmarking data comes from most regions in southern and eastern Australia.

Source: AgInsights (2015)

The database also reveals that in any one of these regions there will be producers just as profitable as any other region, but they will be twice as profitable as the average within their region on a long-term basis (over 10 years).

For every enterprise, Holmes Sackett calculates and reports somewhere between 40 and 60 comparative performance indicators on prices, costs and production. In addition, it calculates, but does not report as many again. So there is a lot of data and analysis done, and much of it simply tells us that we did not need to bother, which is also important to know.

In any given year, and to a lesser degree over long-term data, there is a significant amount of variation within what could be termed key performance indicators (KPIs). Table 1 highlights this variation from the 2013-14 benchmarking data. This variation is repeated annually.

It will seem almost unbelievable to some that producers at either end of the scale could be so profitable. How could a flock with 17 micron fleece have been in the top 20% at a time when the industry is pretty sure there is no future for fine wool and that fleece weight, body weight and fertility are the more important drivers of profit? How could a flock weaning 71% lambs be in the top 20% most profitable lamb flocks? How could a prime lamb flock that takes lambs out to 24kg dressed weight make it into the top 20%, when there is a flock in there where the estimated dressed weight of lambs when sold was 9kg? Maybe it means anything goes!

Take home messages:

- a profitable sheep enterprise locally is likely to have $1,200-$1,500 tied up annually in sheep and the costs associated with running those sheep for the year
- to get the most out of this investment, producers will get pasture utilisation and animal health right so sheep are fit to produce
- in the management of this enterprise producers will have control of their costs, ensuring they spend as much as they need to on the things that matter (pastures and animal health), and not one dollar more than they need to on the other things that are necessary (people, vehicles and repairs and maintenance).

Photograph: TA Field Estate Pty Ltd
Table 1. The range in some common key performance indicators of the most profitable sheep flocks (top 20%) in the 2013-14 benchmarked year (Holmes Sackett, 2015).

<table>
<thead>
<tr>
<th></th>
<th>Wool flocks</th>
<th>Lamb flocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rainfall</td>
<td>370-850 mm</td>
<td>350-750 mm</td>
</tr>
<tr>
<td>Lambs weaned per ewe joined</td>
<td>53-109%</td>
<td>71-128%</td>
</tr>
<tr>
<td>Stocking rate</td>
<td>0.4-3.6 DSE/ha/100mm</td>
<td>0.4-3.0 DSE/ha/100mm</td>
</tr>
<tr>
<td>Fibre diameter</td>
<td>17-21µm</td>
<td>18-34µm</td>
</tr>
<tr>
<td>Lamb sale weights</td>
<td>9-24 kg Dwt</td>
<td></td>
</tr>
</tbody>
</table>

A significant amount of the variation in these KPIs within any one year is caused by geography, seasonal conditions, and sometimes market conditions. Longer-term data, where the variations are captured over a range of seasons and markets, smooths out some but not all the variation within the top 20%.

For those who measure and benchmark based on verbal communications and visual observations, it is easy to understand why there might be little correlation between conclusions drawn and the facts with regards to the main drivers of profit over the long-term.

A common goal

Whilst long-term data smooths out some of the variation, it does not eliminate it and so the list of commonalities for the most profitable 20% of producers becomes quite small.

There is, however, one common trait management shares which ultimately gets them the profits. They are profit focused. Not production focused, not price focused, not cost focused. Maximum long-term profits are found by the combination of all three of these areas.

Aren’t all producers profit focused? No, this is definitely not the case. The litmus test is what you are not prepared to change in order to become more profitable. The more ‘sacred cows’ in the answer, the less profit focused management is.

Outcomes shared by profit focused producers

When management is profit focused, they realise all the information is needed to make an informed decision (i.e. production, costs and prices) not just one part of the jigsaw.

A large data set, with substantial amounts of contiguous data, across a wide geographic spread of farms, across a lot of years and working with benchmarking groups reveals a few key outcomes that profit focused sheep producers obtain; optimum feed utilisation, sheep that are fit to produce, and controlled costs.

Optimum feed utilisation

The variation in the stocking rates per hectare per 100 millimetres of rainfall received in Table 1 are mainly caused by geography and variation in annual rainfall within a year. Below 450mm and above 800mm, stocking rate correlations to rainfall fall away because of increased chance that rainfall is ineffectual (i.e. too little when it is hot and dry, too much when it is already wet and cold).

In addition to this, every farm has variation regarding land classes. A property in a high rainfall area of Tasmania where 30% of the area is bush (only fit for adult wethers for a small part of the year) will never achieve the same stocking rate per hectare per 100mm of rainfall as a neighbour that is 100% arable.

Within localities (and mostly found within benchmarking groups), the more profitable farms produce more product per hectare per 100mm of rainfall (adjusted for land classes available), and the primary driver of that is most often livestock numbers run.

In turn it is usually the nature of the production system that allows them to achieve higher stock numbers (lambing dates and target markets), rather than growing more grass, which allows them to produce more per hectare per 100mm of rainfall.

In some respects, growing more grass is actually a privilege earned by running a more profitable system. A more profitable system gives profits to spend on growing more grass, but the system definitely comes first. Production systems that do not optimally utilise the feed grown find it hard to invest substantially in growing more grass.

Different sheep production systems will have different optimums. Within a locality, stocking rate per hectare will be a pretty good guide to where that optimum is.

In some systems cost of production starts to rise at a lower level of production than others (Figure 2). This is driven by marginal costs to get the extra production rising faster than the overhead costs are dispersed. Systems that allow more efficient pasture utilisation are a major driver of this variation between systems.

Figure 2. Different production systems have different cost of production curves.

Source: Holmes Sackett Pty Ltd

Sheep that are fit to produce

Parasites, disease, and livestock condition are all harder to manage under higher stocking rates. The more profitable producers are not lucky enough to be immune from parasites and disease but they all successfully manage these whilst running higher stocking rates.

This requires strategic controls, timely and effective treatments, and a keen awareness of livestock feed requirements at any given time.
Fit to produce does not mean that pasture is available at levels, which means sheep will not be susceptible because if pasture is available at all times, it often means utilisation is below optimum. Being able to distinguish between the right stocking rate and one that leaves pasture grown unutilised is important, and being able to manage the higher stocking rate is essential. It is made easier by the production system chosen.

Cost control
Per hectare expenditure of the most profitable producers is often similar to others generating average levels of profit, however where the money is spent can be significantly different.

Money spent on pastures, supplementary feed and livestock health is often comparable or higher per hectare for the more profitable producers.

Money spent on people and the associated costs of having people (vehicles, fuel, etc) is often similar or lower per hectare.

Money spent on infrastructure repairs and maintenance is usually similar to the average.

Cost control is not always spending less, it is about ensuring spending is well targeted.

Capital invested and returns
Running a profitable livestock enterprise is a capital intensive business. Based on benchmarking data and local rainfall, the more profitable sheep enterprise locally will have approximately $800-$1,000 per grazed hectare invested in sheep.

They will spend about $400-$500 per hectare to run those sheep for the year (all costs including an owner wage and depreciation but no finance costs).

The profits made from sheep will be in the order of $250-$350 per hectare.

What does this mean?
Choosing the best way forward for a sheep enterprise should start with an analysis of where the enterprise is at and why it is where it is. Comparisons of the whole picture (prices, production and costs) are necessary to determine what opportunities are available and which to take.

The first and most critical requirement is to be convinced the pasture grown is being utilised as effectively as it can be. Pasture budgeting and comparisons of prices, production and costs per hectare achieved by other farms are the key tools for this.

Reference
Mr Tim Mulholland  
“Operina”, Norong, VIC  
T: 03 5034 3535 E: tmul45@yahoo.com.au

Background
Tim grew up on a family farm in Central Otago, South Island, NZ, about halfway between Queenstown and Dunedin. He spent his early years working between the family shearing run, hay baling business and the family farm. At age 20 he spent three years shearing around the world in the United Kingdom, Australia and NZ. In 1986 Tim settled in Australia permanently, shearing 11 months of the year in Western Australia (WA), QLD and NSW, where he met his wife Tamara near Moulamein. In 1988 they began share-farming with Tamara’s parents on their property “Operina”, a 2,500-acre mixed irrigation rice farm. They also ran a mobile crutching business throughout the Riverina on properties such as Barratta, Blue Gate, Pooginoook, Tupra, Wonga and Zara, so got a bird’s eye view of the merino industry. They were running 2,000 Wonga-Charinga bloodline ewes and 80 cows for vealer production on their home property. It was their vealer operation that led them down the composite path. Their policy was to buy in British cows (Herefords, Shorthorns and Angus) and join them to European bulls (Simmental, Limousin and Saler). The bulls were early maturing, heavy muscled, thick set type with no estimated breeding values. They produced great calves and usually topped the market but at times gave them grief at calving.

Tim’s philosophy: dead calves have poor weight gain.
In 1990, the prime lamb industry had hit rock bottom in NZ, providing Tim and Tamara an opportunity to purchase their own property. When stocking their property they drew on their crossbreeding experience with cattle, asking the local agent if he knew of any F1 cows, preferably British x European, and ideally Angus x Saler as both are known for their calving ease and maternal traits.

After receiving a call from the head stud stock agent saying they were on the right path, they flew to the Risington Cattle Company in the North Island, NZ, who had just become a satellite herd for the Leachman Cattle Company in Montana, United States. Leachman’s is a family run global seed stock operation based on the MARC 11 composite that was developed at the Meat and Animal Research Centre in Clay Centre, Nebraska.

The Meat and Animal Research Centre (MARC) is a 20,000 acre farm and its goals are sustainable and profitable animal production to feed the world. The Centre runs about 8,000 cows and 3,000 sheep, consisting of almost all breeds in the world, and collecting all the data and performance of these breeds. At MARC they began measuring the performance of the different crosses and their progeny.

Dr Hugh Gregory and Dr Larry Cundiff developed the four-way cross, Hereford / Angus (British) and Gelbvieh / Simmental (European) to be the most profitable form of beef production when factoring in live calves, kilograms of calf weaned, longevity of cows to stay in the herd, and meat yield and quality to hit the right specifications. Leachman Cattle Company bought the marketing rights to the MARC 11 and renamed it the Stabiliser™.

British cattle bring marbling and doing ability, while European cattle bring higher yields and milking ability. Bulls were selected for low birth and high growth rates on a moderate frame score 5.5 to 7, and cows had to be feed efficient to conceive as yearlings and calve down as two-year-olds. They were aiming for a 500kg cow to wean a 300kg calf at seven months.

To be at the top of this list the cow has to calve easily, milk well and have high growth rates.

Estimated breeding values
To be part of this global program, Tim had to tag and weigh calves at birth, weaning (200 days), yearling (400 days) and 18 months (600 days). Condition scoring of cows at weaning was also done. They were selecting for high performing cows that weaned heavy calves and got back into calf, while holding their body condition. It was not that long ago that joining heifers as yearlings was considered radical and using yearling bulls as risky. Under good management and selection pressure for the right traits, it works well.
“Operina” sheep business

Selection criteria for “Operina” Merino ewes

- all lambs, singles and twins, are weaned at 35kg at 100 days, requiring a gain of 350 grams per day
- early puberty; conceive at seven months (45kg+ and Condition Score 3+)
- lamb at 12 months of age, in line with the rest of the flock, to ensure ewe lamb progeny are ready to join at seven months
- targeting 80% conception
- second joining of ewes (and all aged ewes) at a weight of 70kg at CS 3+
- ewe to wean her own bodyweight in lambs (e.g. 70kg to wean two 35kg lambs = 70kg of lambs = 100% of her bodyweight).

Wool

- ewes to cut 10% of their bodyweight of unskirted fleece wool (e.g. 70kg ewe cuts 7kg).
- shearing at six months of age.
- current clip – 3.5kg at 65mm; target – 4kg at 70mm by 2020, and 4.5kgs at 75mm by 2025.
- lms wool 17 micron (weaners) and 18.5-19/20 micron (ewes).
- skin testing for density and length. Soft Rolling Skin (SRS); current sires – 80-95; target is 120-140.

It’s about understanding antagonistic traits and keeping them in balance. When you take the composite approach you can select for multiple traits at once by selecting breeds or bloodlines for different traits.

The composite approach

Like the British and European types in the cattle industry, Tim and Tamara have the traditional (staple density) and SRS (staple length) types. They had density covered with 20 years breeding of Wongas then Charingas, and introduced SRS Keri Keri rams to give them milking ability, survivability and staple length. Used over the Charinga ewes, these rams gave them F1 progeny.

The next step was the introduction of SRS Australian Meat Merino rams with infusions of Finn – Dorper White Suffolks. Using this cross gave them early puberty, fat and eye muscle, temperament and staple length. They used this cross over their Charinga ewes, also giving them F1s. These two lines of F1s were crosses with each other from home bred rams from each different cross. All rams are bred from ewes that conceive at seven months of age.

The Mulhollands have also used some F1 Afrino, bringing more early puberty, hardiness, meat traits and high yielding wool.

After three years of crossing all three lines of F1s they had stabilised the traits they were looking for, namely density, length, early puberty, fat and eye muscle, and milking ability. From here they used artificial insemination and selected rams using ASBV for high indexing traits. Leachim rams fitted the Mulhollands’ system nicely, having a lot of depth of recording and selection figures for meat and wool.

Current (2014) scanning results are 167% ewes and 80% ewe lambs.

Nutrition

Moving their mindset from being wool producers to growing grass, the Mulhollands looked to the dairy industry for inspiration. They started to grow tetraploid ryegrass and sub clover on irrigation, aiming for 12 tonne per hectare of dry matter. Tetraploids give an extra month’s grazing, allowing ewes to reach correct bodyweight and condition score for joining.

They are looking to map all their cut and fill areas on lasered irrigation, increasing phosphorus and gypsum on the cut areas, a practice taken from local rice farmers. Their target is an Olsen P level of 20. Once adequate phosphorus levels have been reached, Tim is hoping to look more at the cation exchange levels to target better stock health, pasture utilisation and digestibility.

Fixed water costs have tripled in the last 10 years, with temporary water increasing from $20 a megalitre two years ago to $180, but Tim says to stand still is to go backwards.

The Mulhollands have 1,000 acres of old man saltbush plantings that are grazed with self feeders supplying an energy source of crushed almond hulls and cereal grain. Young stock are grown out and lamb down on the saltbush plantings.

Their recent purchase of a 6,000 acre dryland property at Yerrinbool, between Maude and Hay, has good native bush country but needs more grasses to complement the bush. Multiple rearing ewes struggled to hold body condition in a poor finish to the 2014 season. 2014 scanning results at their Yerrinbool property were 165% and marked 135%.
Management

The Mulhollands’ calendar year starts at weaning, ensuring their twin rearing ewes return to CS3+ quickly. Scanning data shows that ewes that scan as multiples have a 75% likelihood of twinning again. All ewes that scan twins are ear marked and replacements bred from them and ewes that conceive at seven months. All rams are bred from ewes that conceive at seven months. Regulin has been used on rams for the last two years to help mimic an autumn joining. This reduced the number of ewes scanning empty (8-9% down to 3-4%). Regulin also improves semen quality and reduces those few ewes slipping on their first cycle and not rejoining in time. It also helps to compress the joining period. The Mulhollands are aiming for a 34-day joining period, with a longer-term goal of 28 days. The tighter the lambing, the easier it is for more ewe lambs to conceive at seven months plus other management practices such as lambmarking.

Summary

Tim acknowledges that ewe lamb joining is not for everyone. For the Mulhollands, on irrigation where they now have to compete against cotton, rice, dairy, corporate, multinationals and superannuation companies, it helps to keep them in front with a lower-risk way of farming. For people in station country it could be used as a drought recovery plan. After a drought breaks and producers are under-stocked it can be a lot cheaper option than trying to buy in quality stock. While it is not for everyone, if producers have the genetics it can be done on a seasonal basis.

Photograph: Tim Mulholland
Farm biosecurity is a set of measures designed to protect a property from the entry and spread of pests and diseases. Farm biosecurity is the responsibility of all producers, and all people visiting or working on their property. Almost anything moved onto a property can be a potential source of introduction for pests, weeds or disease for livestock and plants. An awareness of the biosecurity risks that may arise as a result of the introduction of stock, people, equipment or other farm inputs is the first step towards actions to mitigate these risks.

Every livestock producer should have their own biosecurity plan to help protect their livelihoods from the threats posed by disease, pests and weeds.

Biosecurity practices and requirements continue through the supply chain, beyond when animals or products leave the farm gate. The ongoing commitment to these practices keeps the high level of industry biosecurity we have in Australia.

The single biggest threat to the sheep industry's sustainability would be an outbreak of an emergency animal disease, but endemic diseases to the Riverina (such as footrot, scabby mouth, Ovine Johnes Disease) reduce productivity and income, and have an impact on animal health and welfare. The biggest cost to the industry is losing markets, so good on-farm biosecurity goes a long way towards protecting markets. At the same time, biosecurity is important for protecting assets. A biosecurity plan costs very little, but the return is immediate, ongoing and cumulative.

Take home messages:
- producers have an important role to play in protecting their property, region and livestock industry from biosecurity threats
- farm biosecurity plans are simple to implement and effective in protecting farms and producers’ future
- in many cases, one or two simple preventative measures can save a lot of future heartache.

Some examples of the benefits of biosecurity practices in the Riverina:

Preventing the introduction of Ovine brucellosis:
- view Sheep Health Statements (request these from the vendor)
- purchase Market Assurance Program (MAP) accredited rams
- physically inspect boundary fences
- consider your approach to stray animals (rams). This should be discussed with others, in particular neighbours
- palpate ram testicles (and strays if present).

Preventing the introduction of footrot:
- view Sheep Health Statements
- inspect stock prior to purchase (pick up some feet)
- quarantine and isolate introduced sheep for a minimum of 10 days and inspect them during this period (pick up some feet)
- notify the Local Land Services if you suspect footrot or identify any lameness.

Preventing the introduction of sheep lice:
- view Sheep Health Statements
- inspect stock prior to purchase (part some wool)
- quarantine and isolate introduced sheep for a minimum of 10 days and inspect them during this period (part some wool)
- seek Local Land Services assistance in diagnosis (if required)
- inspect boundary fences
- consider your approach to stray animals
- perform wool parting inspections whenever the opportunity presents (particularly for stray sheep).
Farm biosecurity essentials

Farm inputs: Anything moved onto a property can be a source of pests and disease. Monitor animals, plant materials, water, feed and fertiliser that enter the property.

Farm outputs: Producers have a responsibility to ensure things that leave their property are not a biosecurity risk to their community.

People, vehicles and equipment: If it can move, it can carry diseases, pests and weeds. People, vehicles and equipment pose a high biosecurity risk and should be managed accordingly.

Production practices: Reduce the risk of spreading pests and diseases by implementing simple biosecurity measures as part of everyday farm management practices.

Feral animals and weeds: Feral animals, plant pests and weeds are a widespread nuisance and can harm farm businesses, so need to be actively controlled.

Train, plan and record: Ensure staff are well trained, so the source and destination of animals or plants can be traced, and records of sales purchases, sales and movements kept.

An on-farm biosecurity plan should be viewed as the key tool to protecting the health status of farm animals and plants.

They should be simple and cover aspects of farming that are performed daily. External resources, such as the Livestock Biosecurity Network and Local Land Services, are free services to producers and should be used to form a farm biosecurity plan.

References

Allan, S (2014). Footrot in Sheep and Goats (Primefact 265) 3rd Ed. NSW Department of Primary Industries, Tamworth.


Mr Michael Field  
“Benagaroo Station”, Jugiong, NSW  
T: 0427 286 951 E: tafield@tafield.com.au

Background

TA Field Estates Pty Limited is a large-scale family-owned agricultural business running rural properties across New South Wales. Currently the holdings total over 72,000 hectares, plus 1,260ha of long-term lease country, covering a range of climatic and production zones (Figure 1). Enterprises include merino sheep, beef cattle, dryland cropping and water trading.

The business produces over 2,400 bales of wool ranging from 13.8-20 microns, 2,000 mixed age breeding cows and over 12,000 tonnes of grain including wheat, chickpeas, barley, triticale, sorghum and cotton.

The company takes a long-term view of its investments and focuses on running large-scale, efficient agricultural operations.

Figure 1. Location of TA Field Estates properties across NSW.

Contract ram breeding

For many years one of the strengths of the business was low cost wool growing, with big lines of wool and surplus sheep. The company knew they needed a large lift in easy productivity gains and in 2002, at the suggestion of an adviser, the company started to investigate the possibility of entering into a commercial arrangement with a couple of merino studs to produce rams for the business’ merino wool enterprise. At the time the company was purchasing grade rams from various studs with no say in their genetic make-up. The studs had the expertise in ram production, and there was value in reducing complications to the wool enterprise by outsourcing this aspect of the business.

Initially a couple of studs supplied rams to the business, but as changes occurred over time the arrangement changed to a single stud supplying all the rams for the merino enterprise. Currently all contract-bred rams are supplied by Hazeldean.

Rams are selected from a flock of 500-700 ewes from Rosevale stud depot at Hay, where the entire flock is classed by Craig Wilson, Craig Wilson and Associates.

In mid-October each year, TA Field Estates Pty Ltd, Jim Litchfield, Hazeldean and Craig Wilson discuss which rams to use over the selected stud ewes from Rosevale. Although this is a commercial arrangement, in reality it operates more as a partnership. All ram sires have at least one season prior to joining to the commercial ewe flock to ensure progeny testing. Ram sires are physically checked for soundness to ensure maximum performance during the breeding season.

Approximately 4-5 stud sires are selected each year using the MP+ Index. The MP+ indexes for the business’ key indices are fleece weight, fibre diameter and genetic fat, along with other parameters. The main objectives of the merino sheep enterprise are to reduce micron by two, increase clean weight by one kilogram over 10 years, while maintaining overall flock fertility.

The business aims to increase the marketing capacity of the flock, by continually entering commercial wether trials to highlight and monitor the flock’s performance. Long-term benchmarking data is currently not conclusive as to whether genetic improvement in the flock has been sped up. Fibre diameter reduction and wool cuts have all improved at a similar rate as before, but some management practices have also occurred that are masking the results.

Take home messages:
- knowing your cost of production, understanding production risk and potential contract default ramifications, and understanding decile charts are critical for using forward contracts
- continually benchmark to know how your business is performing with others. Remember agriculture is a business, not a lifestyle
- future planning for your business is essential (i.e. completing three-year forward-planning budgets and bringing in professionals if you do not have the confidence to do it yourself)
- ensure you have good labour efficiency and look after your employees (happy wife = happy life).

Innovations - ram breeding and wool handling

Photograph: TA Field Estate Pty Ltd
Challenges

One of the most important aspects of maintaining flock performance is access to high quality data regarding sheep genetics and productivity indexes. The data is supplied by studs and formatted by Sheep Genetics Australia (SGA), and it is vital this data is extremely accurate for successful decision making by producers.

It is important the SGA consults with commercial wool growers as to what they want included in the widely used industry indexes. Consultation is also needed if changes are to occur to the indexes so that industry is informed, in particular as to how the predicted outcomes of these changes will impact producers.

Wool handling at Wyvern Station

Wyvern Station, Carrathool (52,000ha) has been held in the family since 1946. At Wyvern over 1,100 bales of medium wool averaging 16-20 micron is produced each year. This property is the mainstay of the merino sheep enterprise for the company.

The country at Wyvern Station is predominantly red and grey clay, with occasional sandy ridges. It is flat with uniform fall towards the west and has Murrumbidgee River frontage along a 20-kilometre section of the southern boundary.

A new wool handling system, where the clip is unskirted, has been adopted at Wyvern Station, facilitated by the construction of a new 12-stand woolshed. This does not mean that quality is not considered. Shearing is overseen by a qualified wool classer for quality control. The bulk of the clip is pressed up into one or two main lines, with no skirting taking place. Approximately 2-3% of the shorn wool is removed for quality reasons (e.g. short, tender, colour).

The wool clip cannot be stencilled as it does not currently meet AWEX standards. Stencils can be branded on the bales of bellies, locks and other oddments. About 80% of the wool is forward sold.

Benefits

The introduction of this wool handling system has resulted in a 3-5% reduction in costs for the merino wool enterprise. Part of the cost saving is that there is no need for wool rollers, thus reducing labour costs.

The majority of the wool is sold on a net basis, with only freight and wool tax deducted from the transaction costs.

Challenges

As with every new innovation, there can be challenges when adopting new methods into a business.

The company had to ensure that roustabouts knew exactly what they were trying to achieve and get them ‘on side’ to ensure no stain enters the main lines. Sheep are shorn in September, crutched in March and lambing occurs in May-June, so sheep are not crutched within three months of their shearing. Also during the first year, not knowing all the processes involved, the company did not forward-sell enough wool and had to sell about 35% of the clip on the open market with no stencil. It was given a ‘D’ certificate and was at the mercy of the buyers. The long-term discount applied could be up to 8%, but may be higher depending on other factors such as VM, tensile strength and colour. They now ensure that all their forward contracts have at least a 5-10% tolerance to either over or under deliver.

On the labour front some shearing contractors do not like the method as it means they cannot provide consistent work for their full teams without the need for wool rollers.

Another industry-wide challenge is the desperate need for a new category able to accommodate wool handled in this manner. If the industry is to become more accepting of the method it will be essential that stained wool be kept out of bales. This type of preparation will not suit all producers, particularly those growing fine wools or smaller growers, but for broad and medium type wools, it is worthy of consideration.

Conclusions

Sheep wool enterprises have historically struggled over time with increased production costs and declining returns. Each business needs to look at their own enterprise to determine where efficiencies can be gained and costs can be cut without adversely impacting the overall business.

TA Field Estates Pty Limited continually investigates new ways of operating. In their merino sheep enterprise, contract ram breeding has allowed the company to outsource this part of the business leaving more time to focus on the core enterprise of wool production. The adoption of unskirted wool handling at shearing has significantly reduced input costs in the wool enterprise.
Identifying optimal choices for livestock production and mitigation of photosensitisation in sheep grazing *Biserrula pelecinus*

Dr Belinda Hackney¹ and Dr Jane Quinn¹,²
¹Graham Centre for Agricultural Innovation
²School of Animal and Veterinary Sciences, Charles Sturt University
T: 0427 102 703 Email: bhackney@csu.edu.au
T: 02 6933 4208 Email: jquinn@csu.edu.au

**Take home messages:**
- in a controlled experiment lactating merino ewes gained an average of 210g/head/day and their sucker lambs 265g/head/day on biserrula-based pasture, while ewes grazing naturalised volunteer pastures lost 75g/head/day and their lambs grew at less than half the rate of the lambs on biserrula, indicating that biserrula pastures present a useful quality fodder for lactating ewes
- mixed pastures significantly reduced the incidence of photosensitisation in non-pigmented animals grazing biserrula
- pigmented animals, even those who contained light pigmentation, showed little or no clinical signs of photosensitisation indicative that pigment can confer protection against photosensitisation.

Two Charles Sturt University (CSU) based research projects, ‘Pasture legumes in the mixed farming zone of Western Australia and New South Wales – shifting the baseline’ led by Dr Belinda Hackney (MLA/AWI funded) and ‘Understanding photosensitisation in livestock grazing the pasture legume Biserrula pelecinus’ (MLA funded) led by Dr Jane Quinn are collectively working towards quantifying and improving the production potential of sheep grazing biserrula-based pastures in southern New South Wales and Western Australia. These projects are evaluating productivity and developing management guidelines to mitigate against sporadic outbreaks of photosensitisation in animals grazing this important legume species. CSU researchers are working with colleagues in WA, specifically Professor John Howieson, Dr Brad Nutt and Dr Angelo Loi, founders of this species in Australia.

Biserrula is a resilient hard-seeded annual legume that is well suited for use in crop-pasture rotations as an on-demand break option due to its ability to regenerate without the need for renewed yearly sowing. This regeneration can occur, under the right climate conditions, from year two post sowing. Although second-year regeneration has not been found to be as vigorous in WA as in NSW, where energetic growth can occur in year two, longevity in the seedbank has been found to be extensive in both regions. In particular, in WA, strong regeneration has been recorded seven years after initial seed-set with no pasture phase in the intervening period. Therefore, utilising biserrula as an on-demand break option in a crop-pasture rotation system significantly reduces input costs by removing the need to re-sow pasture after the cropping phase, as well as allowing maximum flexibility in terms of altering the crop to pasture / crop to livestock ratio of an individual farm in a very short timeframe.

**On-farm trials**

Agronomically there are significant benefits to the inclusion of biserrula in mixed farming systems, however little information is currently available on the performance of livestock grazing biserrula pastures. During spring 2014, on-farm assessment of liveweight gain was measured in prime lambs on regenerating stands of biserrula at Beckom, 106km west of Wagga Wagga. Additionally, the performance of prime lambs and merino ewes with lambs at foot was assessed in a replicated grazing experiment at CSU, Wagga Wagga. The results of both investigations show greater liveweight gains on biserrula compared to animals grazing naturalised pasture in the same rainfall zones.

At Beckom, in early September, Wiltipoll x Australian White lambs averaging four weeks of age and their mothers were placed on a pasture containing a high proportion of biserrula (90%), pasture which was regenerating after a three-year cropping phase. Mean entry weight of the lambs was 10kg. Biserrula accounted for the vast majority of the feed on offer at the commencement of grazing, with the remainder of the pasture made up of annual ryegrass and barley grass. Average stocking rate over the duration of the grazing period (56 days) was 7.4 DSE/ha, while average lamb liveweight at point of sale 56 days later was 30.9kg, which equates to an average daily gain of 350g/head/day. Wether lambs grew faster than their female counterparts with an average 380g/head/day compared to 335g/head/day for ewe lambs.

**Experimental grazing trials**

Trial sites were established in the same year, 2014, on the CSU farm to investigate mitigation strategies to prevent the onset of photosensitisation in sheep grazing biserrula as well as comparing the two commercially available cultivars, Cashbah and Mauro, for photosensitising ability. The CSU experiment consisted of four replicates of the two varieties, which can be...
observed when grown in close proximity to one another, to be slightly different in some agronomic characteristics including early vigour, vertical growth characteristics, time to maturity and hard seed levels. No previous studies have compared animal performance or onset of photosensitisation on both varieties together, although both are being used in cropping / livestock production systems in WA and NSW.

In these trials, three classes of sheep were assessed simultaneously: lactating merino ewes, their lambs, and weaned prime lambs that were either pigmented or non-pigmented (prime sucker lambs of a white Suffolk cross and black Suffolk first cross). The rationale for use of the pigmented and non-pigmented lambs in this study was to assess the potential of pigmentation to mitigate against clinical signs of photosensitisation. Sheep were grazed for a period of six weeks commencing in late September through to the end of October with plots in the early stages of flowering at the commencement of the experiment, anecdotally the time when onset of photosensitisation is suggested to be most prevalent. In addition to sheep grazing the biserrula plots, the remainder of the merino ewe-lamb flock, grazing on naturalised pastures at CSU (predominantly annual ryegrass, barley grass, sub clover and volunteer legumes), to compare weight gain amongst the two Merino cohorts where photosensitisation was not likely (and indeed was not observed) in any animals grazing naturalised pastures in this study.

The unweaned Merino lambs gained an average 265g/head/day while their mothers gained 210g/head/day over the six-week spring grazing period. Weaned crossbred lambs gained an average 285g/head/day over the same period, with no statistical differences between weight gain observed on either variety (Mauro or Casbah).

Growth rates of merino stock on biserrula plots were in stark contrast to the same mob grazing naturalised pastures, where in the same period ewes lost weight (~75g/head/day) and lambs grew at a much slower rate (120g/head/day). In addition to these findings, further increased weight gain was observed in plots where other pasture species, predominantly annual ryegrass, was present. Where annual ryegrass was present at more than 10% of feed on offer, weight gains on these stands were, on average, up to 30g/head/day greater than the average weight gain from grazing biserrula alone. Although not a significant difference, this trend suggests the presence of other species in the pasture, even at relatively low levels, gives improved growth performance over and above that already observed on pure biserrula pasture alone.

Similar to findings from on-farm outbreaks, blood biochemistry showed no significant subclinical disease associated with grazing biserrula pastures. Therefore, it is suggested that the slightly enhanced weight gain observed on those pastures containing more than 10% volunteer species was not due to weight loss caused by subclinical disease in animals grazing pure biserrula stands, but some advantage conferred by the mixed nature of their diet. This is an interesting finding that warrants further investigation and suggests there may be merit in deliberately using biserrula in a mixed pasture rather than in a monoculture for improved livestock performance.

Photosensitisation

Neither the on-farm producer observations, nor the experimental trials at CSU were without incident of photosensitisation. At Beckom, 4% of lambs grazing biserrula pastures on-farm showed some mild signs of clinical photosensitisation (i.e. mild skin lesions primarily on the ears). However, similar to that observed in the CSU experimental trials their weight gain was not significantly different to that of their unaffected counterparts.

At CSU, the extent of photosensitisation varied coincidentally with the proportion of biserrula in the plots and presence or absence of skin pigmentation. Where proportions of biserrula were 95% or higher, the majority of non-pigmented (white) animals (up to 100% in some plots), both crossbreds and the merino ewes, were observed to show clinical signs of photosensitisation. These clinical signs ranged from transient and mild (reddening of eyes and swelling of ears without superficial skin lesions), to moderate (loss of superficial skin layers from the ears and muzzle). As the trial continued all affected animals showed resolution of these lesions as the proportion of senescing (non-photosensitising) biserrula residue available increased by the end of the trial period.

Interestingly, on the same plots only very mild changes were noted in the 50% of merino lambs, suggesting their lower intake may have conferred some protection against photosensitisation. In those plots with greater than 10% volunteer species, virtually no animals were affected, either pigmented or non-pigmented, and those few that were (<10% identified) showed only very mild clinical signs; again only white crossbred suckers or merino ewes were affected. Only one pigmented crossbred animal showed clinical signs of photosensitisation; this animal had the least pigment of any included in this study.

Together, this evidence suggests that presence of pigmentation in the skin of animals grazing biserrula, as well as an ability to moderate biserrula intake, whether that be via ingestion of milk or other pasture species, can act as significant mitigating factors against the clinical presentation of photosensitisation in sheep grazing this pasture species.

Our findings also suggest that biserrula can enhance growth rates for both meat and wool sheep breeds, above that observed on naturalised pasture alone, in the low to medium rainfall zone, and that biserrula mixed pastures are potentially the optimal grazing option. Exactly which mix will be optimal for any particular farming system will depend on a number of factors including annual rainfall, soil pH, weed suppression requirements within the cropping phase, choice of herbicides, and nature of stock to be produced. So the optimal biserrula pasture mix may differ from system to system. However, the hardy nature of this plant allows both establishment and good growth in years with very low rainfall, when other pasture species such as phalaris or subclover are problematic to establish, giving producers additional options in the most challenging production conditions in Australia.
In conclusion, this information should provide producers with additional strategies to improve weight gain in breeding and young stock in the low-medium rainfall zone, as well as improving production in finishing lambs, whilst avoiding as much as possible the detrimental effects of the primary photosensitisation associated with animals grazing Biserrula pelecinus.

References


Loi, A, Revell, C and Nutt, B (2005). Cashbah and Mauro Biserrula, persistent pasture legumes for Mediterranean farming systems. Farmnote. DAFWA, Department of Agriculture, University of Western Australia: 1-5.


Crutch, Weigh, Handle, Draft

The Te Pari Racewell HD3 Auto Drafting Handler is the ultimate precision sheep management tool for any sheep producer. This top of the line model can weigh and draft fully automatically by weight or EID and also undertake a range of other tasks such as dagging, capsule drenching and tagging.

The patented adjustable sensors allow you to set various catching positions for the sheep depending on their size and the task at hand.

The HD3 Auto Drafting Sheep Handler is the perfect tool to help you produce prime product while increasing profitability through management efficiency.

The Te Pari Racewell HD3 Auto Drafting Sheep Handler - Precision sheep management

CALL IN TODAY!

A 37-39 Moorong Street
P (02) 6937 9200
E enquire@riverina.coop
W www.riverina.coop
Cameron MacPherson
E cameron@riverina.coop
Contacts

Michael Friend  
Acting Director  
Phone: + 61 2 6933 2285  
Mobile: 0429 407 725  
Email: mfriend@csu.edu.au

Toni Nugent  
Industry Partnerships  
and Communications  
Manager  
Phone: + 61 2 6933 4402  
Mobile: 0418 974 775  
Email: tnugent@csu.edu.au

Graham Centre for Agricultural Innovation  
Locked Bag 588  
Wagga Wagga NSW 2678  
www.grahamcentre.net

© Charles Sturt University, 2015. JB F4311