Sheep Updates 2005 - Part 3

Rob Davidson  
*WAMMCO International*

David Pethick  
*Murdock University*

C. F. Engelke  
*University of Western Australia*

B. D. Siebert  
*University of Adelaide*

K. Gregg  
*Murdock University*

*See next page for additional authors*

Follow this and additional works at: [https://researchlibrary.agric.wa.gov.au/sheep_conf](https://researchlibrary.agric.wa.gov.au/sheep_conf)


**Recommended Citation**

Please cite papers individually

This conference proceeding is brought to you for free and open access by the Animal production and livestock research at Research Library. It has been accepted for inclusion in Sheep Updates by an authorized administrator of Research Library. For more information, please contact jennifer.heathcote@agric.wa.gov.au, sandra.papenfus@agric.wa.gov.au, paul.orange@dpird.wa.gov.au.
Authors

This conference proceeding is available at Research Library: https://researchlibrary.agric.wa.gov.au/sheep_conf/17
Benefits of VIAscan® to producers and WAMMCO

Rob Davidson, Supply Development Manager, WAMMCO International
David Pethick, School of Veterinary and Biomedical Studies, Murdoch University

ABSTRACT

VIAscan® is an objective grading tool that utilises Video Image Analysis (VIA) technology to quickly and accurately assess lamb and beef carcase characteristics.

INTRODUCTION

The VIAscan® Sheep Carcase System was developed by Systems Intellect Pty Ltd and VQA Australasia as part of the Australian Meat Research Corporation’s Objective Carcase Measurement Program (1) and has subsequently been sold to and is now marketed by SASTEK Pty Ltd. The VIAscan® Sheep Carcase System uses video image analysis to objectively predict the lean meat yield (weight of lean tissue presented as percentage of the carcase weight) of lamb carcases on the chain at slaughter speed in abattoirs.

REVIEW

Financial assistance via a WA Government Centre of Excellence Award in recognition of the contributions of Murdoch University, Department of Agriculture WA and CSIRO to the Australian Sheep Industry Cooperative Research Centre, has lead to a VIAscan® sheep carcase system and a Dual Energy X-ray Absorptiometry system being purchased for use in WA. The VIAscan® system has been installed at WAMMCO, Katanning.

The VIAscan® Sheep Carcase System consists of a booth, artificial light, a high quality digital camera and a computer program that analyses the images and extracts carcase measurements (2). As the carcase enters the booth, the gambrel triggers a switch and an image is taken. Before the image is analysed, the computer calibrates itself against a series of different coloured tiles surrounding the image. The computer traces the outer edge of the carcase, measures the surface colour at 6 selected positions (2 x chump, 2 x loin and 2 x shoulder regions (3)), makes a series of maximum and minimum measurements along the whole carcase, works out the groin angle (indication of confirmation) and makes 186 dimensional measurements before it predicts the lean meat yield of the carcase.

The Australian VIAscan sheep carcase system uses algorithms to predict lean meat yield based on a study of 360 lamb (Merino, first and second cross) carcases. Images of the carcases were taken to allow dimensional and colour measurements before the carcases were dissected to lean, fat and bone. The accuracy of the algorithms is based on residual standard deviation (a means of describing the error around a prediction equation) and 67% of the time the VIAscan® system will predict yields to be within ± 2% of the actual yield and 96% of the time within ± 4% of the actual yield which is significantly more accurate than other forms on-line of carcase measurement.

Producers

VIAscan® has the potential to benefit producers by providing increased feedback on their carcases and in time, will reward the producers, when payment options are established for carcases with higher lean meat yields. Producers must understand the variation in percentage carcase lean meat yield is largely a function of fat depth. If you are producing trade weight lambs (18 - 22 kg), 15 – 20% of the carcase weight is fat. However, the percentage of fat of heavy export lambs (26 - 30 kg) can be higher than 30% (Tom Bull pers comm.). The key is to understand LAMBPLAN Estimated Breeding Values (EBVs). Best results are obtained when rams have been carefully selected to match your ewe base and to meet your target carcase weight. Selecting sires with a high growth EBV (+ve Post
weaning weight), well muscled EBV (+ve Post weaning eye muscle depth) and lean EBV (-ve Post weaning fat) will produce fast growing, lean, well muscled lambs with a high lean meat yield.

**Processors**

The installation of VIAscan® into a processing facility provides improved production efficiencies. When fully calibrated, the VIAscan® system removes human error and the need for subjective grading and allows the carcases to be sorted and delivered into chillers in homogeneous lines to better meet customer specifications. It will identify the highest yielding carcases that can be selected for further processing to meet the needs of the highest paying markets. As variation in lean meat yield between carcases is vitally important in determining the efficiency of a processing operation, the increased feedback to producers should improve their knowledge base. The subsequent carcases produced should vary less in yield, require less processing and hence improve the rate of throughput (4).

WAMMCO is in the process of validating the VIAscan® system through a series of boneout trials to compare the actual verses predicted lean meat yield of crossbred lambs. Although the sample size is small, at this stage VIAscan® is over predicting the lean meat yield. WAMMCO and SASTEK together with industry partners are investigating broadening the types of lambs upon which the Australian yield predictions algorithms are based. A higher proportion of second cross lambs of lighter carcase weight (15 – 18.5 kg) has led a large New Zealand processor to spend the last 3 seasons boning out and measuring carcases to form algorithms that will accurately predict New Zealand style carcases (Murray Behrent pers comm.). The processor intends to start paying producers on lean meat yield from the beginning of the 2005/6 season (5).

**Responsibilities to the prime lamb industry**

It is known that the degree of subcutaneous and intramuscular fat in the carcase influences lean meat yield and so, the primary method of increasing lean meat yield is to drastically reduce the overall carcase fatness or increase total muscle. Either approach will lead to reduced intramuscular fat content and so potentially reduced cooking and eating quality characteristics. Further negative effects of very lean carcases could be an increase in the likelihood of very rapid chilling and so the cold shortening of product. Given this, minimum fat characteristics are currently being determined to guard against possible negative effects of leanness. In addition, electrical stimulation and chiller management is being used to prevent cold shortening.

Payment systems based on carcase lean meat yields must be carefully designed so they don’t have a negative impact on the prime lamb industry. For example, increasing the size of shoulders can improve carcase lean meat yield. However, breeding for larger shoulders can led to birthing problems on farm and producing a carcase with more meat in some of the lower valued markets.

**CONCLUSION**

VIAscan® offers the meat industry an objective grading tool, capable of replacing manual meat grading and providing a better estimate of carcase characteristics and value than obtained simply using carcase weight and fat score alone.

**KEY WORDS**

VIAscan®, lean meat yield

**ACKNOWLEDGMENTS**

The authors acknowledge and appreciate the input by Ian Ross (Meat and Livestock Australia), Alan Benn (SASTEK), Danny Meehan (SASTEK) and Tom Bull (Sonning Genetics).

**Paper reviewed by:** Dr Keith Croker Department of Agriculture WA

**REFERENCES**
Healthy fats in lamb: how WA lambs compare with others

C.F. Engelke\textsuperscript{ab}, B.D. Siebert\textsuperscript{c}, K.Gregg\textsuperscript{d}, A-D. G. Wright\textsuperscript{b} and P. E. Vercoe\textsuperscript{a}  
\textsuperscript{(a)Animal Biology, University of Western Australia, Western Australia; \textsuperscript{b}CSIRO Livestock Industries, Floreat Park, Western Australia; \textsuperscript{c}Department of Animal Science, University of Adelaide, South Australia; \textsuperscript{d}Centre for High-Throughput Agricultural Genetic Analysis, Murdoch University, Western Australia).}

ABSTRACT

Lamb is one of the best dietary sources of the fats cis-9 trans-11 conjugated linoleic acid (CLA). CLA is formed first in the rumen, and, second, by the desaturation of trans vaccenic acid (TVA) in the tissues. We compared CLA and TVA levels in WA lambs from a pasture-based system, to levels reported in lambs from other countries and pork and chicken. WA lambs had more CLA (up to 1.4% CLA in total fatty acids) than pork or chicken and compared favourably to lambs from other countries. These results may encourage an increase in lamb consumption. They may also make CLA a target in lamb production.

INTRODUCTION

Meat and milk from ruminants are the major dietary sources of the fatty acid, cis-9 trans-11 conjugated linoleic acid (CLA), and lamb is the richest source of CLA among the ruminant meats (Chin \textit{et al.} 1992). CLA has been associated with health benefits for humans because they have exhibited anti-carcinogenic and anti-atherogenic activities and enhanced immune function in animal and cell culture studies (Knight \textit{et al.} 2004). Currently, ruminant products do not contain sufficient CLA to provide the daily intake required to gain the health benefits of CLA demonstrated in nutritional trials (Ip \textit{et al.} 1994).

CLA is produced during the biohydrogenation of dietary fatty acids in the rumen and is absorbed from the small intestine into the tissues. However, the predominant origin of CLA in tissues is from endogenous synthesis by the desaturation of trans-11 18:1 (TVA), another fatty acid produced during biohydrogenation in the rumen.

Grass-fed ruminants have higher CLA and TVA levels in their meat and milk than grain or concentrate-fed ruminants (Grininari and Bauman 1999). In Australia, the common use of pasture-based systems for raising lambs favours the production of lamb high in CLA and TVA.

We have determined the levels of CLA and TVA in the intramuscular lipids and subcutaneous adipose tissue of WA lambs grazing pasture (Engelke \textit{et al.} 2004; C.F.Engelke, unpubl. data). Here, we compare our results to the CLA and TVA levels reported in lambs from other countries produced in
similar systems, or that are representative of the country’s common production systems. In addition, we compare the CLA levels in lamb to those in pork and chicken.

**REVIEW**

Intramuscular CLA levels in WA lambs were similar to levels in lambs from most other countries, except lambs from England, which had the highest intramuscular CLA (Table 1). The diet of the lambs from England comprised dehydrated grass pellets, high in linolenic acid (64% of total dietary fatty acids; Daniel et al. 2004). The range of CLA levels in WA lambs was 0.8-0.94% of total fatty acids (TFA) in intramuscular lipids and 0.8-1.4% of TFA in subcutaneous adipose tissue.

High levels of total C18:1 trans fatty acids, which include TVA, were reported in the lambs from the Portuguese study. The lambs in the Portuguese study were fed pasture plus a supplement, which was high in linolenic acid (Santos-Silva et al. 2003). High levels of linolenic and linoleic acids in the diet result in the formation of high levels of CLA and TVA in the rumen, and a greater chance that these fatty acids will escape full hydrogenation.

The differences in CLA and TVA levels between lambs are most likely a reflection of dietary differences, rates of biohydrogenation in the rumen, and/or genetic differences, which can affect the enzyme that desaturates TVA to CLA in tissues.

Lamb tissues were higher in CLA than pork and chicken, the non-ruminant meats. This is because pigs and chicken do not have a rumen in which fatty acids are biohydrogenated.

Table 1. The levels of CLA and TVA in intramuscular lipids and subcutaneous tissues of lamb, and chicken and pork, reported in studies from various countries. The origin, breed (months) and diet of the lambs are outlined. Fatty acids are presented as % of total fatty acids. Standards errors from other studies are presented only where they had been calculated specifically for the data we present in this review.

<table>
<thead>
<tr>
<th>Production system</th>
<th>WA</th>
<th>NZ&lt;sup&gt;a&lt;/sup&gt;</th>
<th>England&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Portugal&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Italy&lt;sup&gt;d&lt;/sup&gt;</th>
<th>Pork&lt;sup&gt;e&lt;/sup&gt;</th>
<th>Chicken&lt;sup&gt;e&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diet</td>
<td>Pasture</td>
<td>Pasture</td>
<td>GP&lt;sup&gt;*&lt;/sup&gt;</td>
<td>Pasture + suppl&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Lucerne hay + conc&lt;sup&gt;**&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>7</td>
<td>7</td>
<td>5.5</td>
<td>5-6</td>
<td>4-5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Breed</td>
<td>Merino x Dorset</td>
<td>Romney</td>
<td>Mule x Charolais</td>
<td>Merino</td>
<td>Mixed***</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Intramuscular lipids</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CLA</td>
<td>0.61 ±0.11</td>
<td>0.60,0.82 ±0.06</td>
<td>1.29</td>
<td>0.59 ±0.04</td>
<td>0.34</td>
<td>0.06 ±0.00</td>
<td>0.09 ±0.00</td>
</tr>
<tr>
<td>TVA</td>
<td>1.48 ±0.02</td>
<td>3.19,3.83 ±0.28</td>
<td>2.25</td>
<td>3.02±0.39</td>
<td>2.94&lt;sup&gt;f&lt;/sup&gt;</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Subcutaneous adipose tissue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CLA</td>
<td>1.00 ±0.06</td>
<td>-</td>
<td>1.35</td>
<td>0.53 ±0.04</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TVA</td>
<td>2.60 ±0.19</td>
<td>-</td>
<td>3.69</td>
<td>5.51±0.39</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<sup>a</sup>Knight et al. (2004; the two means represent the two sample groups of this study: (1) lambs produced from ewes with high CLA and TVA in their milk or (2) low CLA and TVA in their milk), <sup>b</sup>Daniel et al. (2004), <sup>c</sup>Santos-Silva et al. (2003), <sup>d</sup>Maranesi et al. (2005), <sup>e</sup>Chin et al. (1992).

<sup>*</sup>Grass pellets; <sup>a</sup>supplement; <sup>**</sup>concentrate; <sup>***</sup>Appenninica, Beillese, Beillese x Suffolk, Ile de France x Suffolk, Suffolk.

<sup>f</sup>Total trans 18:1 fatty acids

**CONCLUSION**

WA lamb has similar levels of CLA to lambs in most other countries, except England, and the ranges of CLA and TVA in WA lambs indicate there is potential to increase these levels. If the health benefits of CLA are realised in humans, consumer demand for lamb could increase dramatically. The daily required intake of CLA, determined in clinical trials using pure CLA supplements, would not be met by a serving of WA lamb. However, CLA levels in lamb could be increased. To achieve this, differences in CLA production between sheep breeds and the dietary regimes that maximise CLA and TVA production require investigation. This information would enable producers to increase the CLA in lamb through the selection of breeds that produce high CLA, feeding pastures high in linoleic and linolenic acid, and/or supplementing diets with oils or concentrates high in linoleic acid.
KEY WORDS
CLA, TVA, fatty acids, lamb

ACKNOWLEDGMENTS
Paper reviewed by: Dr Ian Williams, Animal Biology, University of Western Australia

REFERENCES
Shelf life of fresh lamb meat: lamb age & electrical stimulation

Dr. Robin Jacob

Department of Agriculture

South Perth

ABSTRACT

During retail display the colour of meat changes from red to brown and becomes unattractive to consumers over time (MacDougall 1986). To prevent this from happening supermarkets discount meat after 48 hours of display. Extending the retail shelf life of lamb meat to 60 hours by stabilising meat colour, would reduce the financial cost of discounting substantially.

An experiment was done to determine whether lamb age and electrical stimulation affect the rate at which meat colour changes from red to brown. Results showed that for first cross lambs finished on spring pasture, sucker lamb meat was lighter in colour than carry over lamb meat. However lamb age and electrical stimulation had little effect on meat colour over the length of the display period. The variability in lamb age from suckers to carry over and the current adoption of electrical stimulation by the lamb meat industry are not likely to alter strategies for extending shelf life of lamb meat, when cut for display 1 day after slaughter.

AIMS

The aim of this experiment was to determine if lamb age and electrical stimulation had any effect on the colour and stability of colour during retail display of lamb meat cut 1 day after slaughter.

METHOD

Twenty sucker lambs (May 2004 drop) and 20 carry over lambs (May 2003 drop) were sourced from the one property at Badgingarra. Both age groups were; first cross Poll Dorset sire by Merino dam, finished on annual pasture in the late stages of flowering, delivered as one consignment and slaughtered on the one day at Hillside abattoir, Narrogin. The liveweight of the sucker and carry over lambs were 42.3 kg and 42.8 kg (means) respectively with the standard error of difference (SED) between these means being 0.71 kg. Treatments were arranged in a 2x2 factorial design with lambs within each age group being allocated to electrical simulation treatments randomly.

RESULTS

As expected sucker meat was lighter and less intense in colour but had the same hue (colour type) compared to carry over meat. Sucker meat contained significantly (P<0.01) less myoglobin and less vitamin A than carry over lamb meat. The vitamin E concentration was similar for both ages although was lower for suckers in the shortloin (P<0.05). The mean myoglobin concentration of sucker meat was 7.0 mg/g versus 8.0 mg/g (SED=0.4) for carry over meat. Muscle type had a large effect on meat colour (Figure 1). Electrical stimulation caused meat to be redder in colour when first cut (Figure 2), particularly for the shortloin, but had no effect on colour subsequently.
CONCLUSION

Although sucker meat was slightly lighter in colour than carry over meat lamb, age did not affect meat colour stability. Electrical stimulation may cause lamb meat to appear redder in colour initially, however further work is required to determine the effect of electrical stimulation on aged meat.

KEY WORDS

Colour stability, lamb, meat.

ACKNOWLEDGMENTS

The authors gratefully acknowledge the financial support of the Sheep CRC for this project. Also the valuable assistance of staff at Hillside abattoir without which this project would not have occurred.

Paper reviewed by: Kelly Pearce
REFERENCES
Pastures from Space - An evaluation of adoption of by Australian woolgrowers

Russell Barnett, Australian Venture Consultants
Joanne Sneddon, University of Western Australia

ABSTRACT
This study evaluates the adoption of the Pastures from Space (http://www.pasturesfromspace.csiro.au/) pasture growth rate (PGR) technology, a tool for the management of pastures and livestock on woolgrowers’ properties. The evaluation is based on surveys of participants in field-trials of the technology conducted in 2004. The surveys measured a range of factors impacting upon the use of the technology. The results of this study highlight the need for a deeper understanding of the ‘felt needs’ of specific market niches for technology such as Pastures from Space in order that a product solution and marketing strategies can be developed to increase the likelihood of broader market penetration.

AIMS
The purpose of this study was to evaluate adoption by Australian woolgrowers of the Pastures from Space PGR technology, a tool for the management of pastures and livestock on their properties.

METHOD
The evaluation of the adoption of Pastures from Space PGR technology (the technology) by Australian woolgrowers was based on surveys of participants in a field trial of the technology that was conducted during the 2004 season. The total sample group included enterprise operators that had previously used the technology at the farm-level, new subscribers to the farm-level technology and users of regional-level technology only.

Separate survey instruments were administered and analysed for the three respondent groups – new subscribers to the farm-level technology (subscribers), previous users of farm-level technology actively involved in its development (collaborators) and users of regional-level technology whom did not accept the offer to subscribe to the farm-level service. The surveys measured various factors relevant to assessing adoption behaviour including: specific enterprise characteristics, perceived usefulness and ease of use of the technology, perceived compatibility and relative advantage provided by the technology, technology usage behaviour in relation to both frequency of use and use in specific enterprise management decisions and whether expectations relating to the technology had been met.

RESULTS
Survey results suggest that the technology is most likely to be adopted by enterprises that are around 1200 to 1700 hectares in size and that derive a significant portion of their income, at least 40 percent, from wool or prime lamb production. However, this may simply be the result of the technology having been historically promoted primarily as a tool for the wool industry. The fact that both the subscribers and users of regional data derive on average 10% and 15% of their respective incomes from beef cattle goes someway toward supporting the notion that the data provided by the technology, at a farm or regional-level, may be applicable to any grazing industry.

Respondents whom chose to subscribe to the farm-level PGR technology did so under the perception that it would allow them to more accurately measure pasture growth rate, leading to better decisions on pasture and feed management and as a result, a more profitable enterprise. The vast majority of respondents whom chose not to subscribe to the farm-level technology did so for reasons not directly related to the technology itself such as unavailability or lack of validation of data in their region, lack of information on the technology and infrastructure restrictions.

The indication that 62% of users of regional technology monitor biomass or PGR by other means on at least a monthly basis suggests that there is greater opportunity for the technology to be more broadly adopted. Nineteen per cent of regional user respondents were third party service providers such as instructors, consultants and agronomists, suggesting that the farm-level technology may potentially have application in a product that is designed as an advisory tool.
The technology was most likely to be used to support farm management decisions relating to feed budgeting, enterprise planning, pasture management, poor performing paddocks, stocking rate and stock movement. There is little evidence to suggest that prior training in pasture management techniques is a major driver of adoption for the technology. However, it may impact on effective utilisation of the technology.

The majority of subscribers felt that the technology was easy to use, provided clear, understandable and flexible interaction and was easy to become skilful at using. This suggests that ease of use should not be a barrier to driving adoption amongst technology enthusiasts. The majority of subscribers felt that the farm-level technology was useful for improving management performance, providing greater control of the farm business, allowing for more speedy accomplishment of tasks and providing a clear advantage over their previous source of pasture management information. The majority of both subscribers and collaborators were satisfied with farm-level technology and had their expectations regarding the technology met.

It would appear from the results that subscribers were less certain of the specific benefits of the technology compared to the collaborators. Given the collaborators historic use of the technology, this suggests that an extended experience with the technology may be necessary for the benefits to become clear.

CONCLUSION

The implications of the findings have been assessed using Roger’s Diffusion of Innovations model and Moore’s new technology marketing theories (see figure 1, below).

![Figure 1 Technology Adoption Cycle](image)

The findings suggest that the subscriber and collaborator respondent group are representative of the Innovator, or technology enthusiast, sector of the potential market for the technology. Users of the regional technology whom chose not to subscribe to farm-level Pastures from Space data are representative of the early adopter, or visionary, sector of the potential market for the technology. The Pastures from Space technology is yet to make the transition from the innovator/technology enthusiast sector of the market.

To drive adoption of the farm-level technology into the early adopter sector, it is likely that some product design issues will need to be addressed for the technology. Purchase decisions in this sector are driven by an innovative product solution to an identified problem rather than a ‘neat’ technology. To do this a more detailed understanding of the ‘felt-need’ of this market sector for a better pasture management product is necessary. This will require broader market sampling and more detailed market research, as it is only from a deeper understanding of the felt-need that a marketable product solution can be developed. There is also merit in investigating the application of the technology in an advisory tool product.

Driving adoption into the majority market will require a deeper understanding of the ‘felt needs’ of specific market niches within the early majority market sector and the relationships between the ‘felt
needs’ of those market niches, such that a product development and marketing strategy can be developed that increases the likelihood of broader market penetration among the early majority.

KEY WORDS
Technology, adoption, diffusion, ‘felt-need’

ACKNOWLEDGMENTS
Paper reviewed by: Dr Steve Gherardi, Department of Agriculture Western Australia

REFERENCES
Your clients can learn from ASHEEP’s example

Sandra Brown, Department of Agriculture Western Australia, Esperance

ABSTRACT
Late in 2002 sheep producers met to discuss the possibility of forming a group. ASHEEP (Association for Sheep Husbandry, Excellence, Evaluation and Production) were concerned about the lack of younger producers entering the sheep industry and about what research was being done on their behalf. This paper explains why these producers felt the need for a new group, what their objectives were, achievements to date, group benefits, future opportunities and areas for improvement. Sheep producers and industry personnel from other communities will benefit from lessons learnt by ASHEEP.

INTRODUCTION
South East sheep producers were worried about the lack of sheep research carried out locally. They wanted direct access to funders so that they could direct practical research into the area. At this stage, wool prices were looking reasonable and meat prices were high. People were moving back into sheep again, although these South East producers were concerned about the lack of younger producers moving into, or returning to sheep production. They agreed that technology was an important part of getting younger producers interested in sheep. Younger producers had limited stock handling experience, and needed basic information that was accessible and easy to understand.

REVIEW
Concerned producers met during 2002 to discuss the possibility of forming a sheep industry group. This new group would have a broad base so that it did not clash with other local groups such as the Esperance Wool Exporters, Prime Merino Lamb Alliance, Esperance Regional Wool Improvement Group, Value Adding Meat Group, or the Esperance Prime Lamb Group. Each of these smaller groups had a specific issue to focus on. In comparison ASHEEP (Association for Sheep Husbandry, Excellence, Evaluation and Production) would represent the broader sheep industry in the region.

Initially a steering committee of six farmers, one consultant and one Department of Agriculture Officer was formed. Their aim was to create a group structure, select a name, develop a mission statement and constitution, incorporate the group, determine the catchment area and decide on membership fees. The steering committee prioritised the first round of projects and activities. They also identified three focus farms. At the first AGM the ASHEEP committee then officially took over the running of ASHEEP. Most committee members were in the steering committee, which eased the transition.

Objectives
➢ To incorporate all facets of sheep production – lamb, sheep meat, wool, live export, etc.
➢ Define and set production goals – similar to the ‘3 Tonne Club’ for wheat growers.
➢ To identify appropriate research, development and extension targets.
➢ Demonstrate a sustainable and profitable role for sheep in regional farming systems.
➢ Incorporate the latest technology with ‘best practice’.
➢ Educate and enthuse a new generation of producers through demonstration and involvement.
➢ Maintain the broadest possible membership across the region to best identify new opportunities.
➢ Liaise with researchers, funders and industry.

Benefits and Opportunities
The most important benefit from the ASHEEP perspective is that members have input into local research, development and extension. Not only do local producers have a say, but researchers can also promote their ideas to an interested audience. Researchers and event coordinators from outside the region now have a point of contact. Members have been approached for demonstration sites, input into national and state projects, and inspiration for regional sheep update topics.

ASHEEP have links with other groups, for example both ASHEEP and the Fitzgerald Biosphere Group (based in Jerramungup) are running MLA funded ‘Wean More Lambs’ Demonstrations.
ASHEEP have registered their interest with SCRIPT (South Coast Regional Initiative Planning Team) for future funding and research opportunities in sustainable production systems.

Future opportunities include visiting other businesses, groups and research sites, for example the WA Evergreen Group. There could also be opportunities for study tours in the eastern states or overseas. This is something ASHEEP has not explored yet.

Areas for improvement

As with any new group, there are issues to resolve before the group can establish and run smoothly. For example the executive committee is made up of nine farmers, a vet, consultant and DAWA officer. Due to heavy seasonal work commitments much of the background work is carried out by a small number on the committee. For the new Chairman, it will be an opportunity to assign portfolios or established projects to committee members to take responsibility for. This creates more ownership, and allows that committee member to do the best job possible for that portfolio.

ASHEEP currently has 90 members that are charged an annual membership fee. Extra family members or staff members are charged a reduced fee, and all have voting rights. Membership covers the administration and field day costs, but does not cover new project costs. Project funding through external funding bodies is crucial for ASHEEP to survive. However this requires members to manage the funding, although there are plenty of members to host the trial or demonstration.

Greater communication is needed between executive and members, local agribusiness and ASHEEP, and national funding bodies. For members at least, this is partially addressed by regular newsletters and one to two page issue driven faxouts. Ties with local agribusiness have been improved by involving local nutritionists or stock agents on the committee; however there is still a lot of room for improvement. Communication on a community level also needs to improve to prevent clashes with local sheep events. Finally, ASHEEP need to utilise tele and video conference facilities for out of town committee members, i.e. over 200km away. This will allow regular participation in decision making.

Current Achievements

In two and a half years ASHEEP has already managed an impressive list of achievements including:

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>Sheep CRC funding to run electronic identification farm demonstration. Purchased Harrington Racewell Sheep Handler based at Reichstein's farm. Sheep CRC part funded the project, the remainder funded by a committee member to be paid back over next four years.</td>
</tr>
<tr>
<td>2003-04</td>
<td>Funding and support by Department of Agriculture, AWI and MLA to create the ‘Lambing Planner’. More than 13,000 copies were distributed Australia wide. Version 2 is now out.</td>
</tr>
<tr>
<td>2004</td>
<td>Funding for Weaver Planner – working with DAWA, MLA and AWI. Currently in conceptual stage.</td>
</tr>
<tr>
<td>April 04</td>
<td>Second AGM included a predation forum, OJD update, Cormo Express update by Dr C. Parker, DAFF, and bus trip to two focus farms. Information from the day used in future funding proposals</td>
</tr>
<tr>
<td>Sep 04</td>
<td>Western Field Trip – visited three members' properties</td>
</tr>
<tr>
<td>Nov 04</td>
<td>Applied for funding for a 'Wean More Lambs' demonstration through MLA. This has recently been approved and is located on one of our focus farms.</td>
</tr>
<tr>
<td>Oct 05</td>
<td>Investigated the possibility of a Pastoral Lamb Alliance with pastoralists</td>
</tr>
<tr>
<td>April 05</td>
<td>AGM held at MLA ‘Prime Time for Prime Lamb’ day in Esperance. Speakers visited three members’ farms.</td>
</tr>
</tbody>
</table>

Future Direction

ASHEEP want to focus on pasture and perennials. Members can currently tap into local research by agronomists and researchers; however members are keen on including a grazing component. This is an area ASHEEP are hoping to develop with researchers.

For the group there are a number of issues to work through. These include continuing to make membership packages attractive, attracting quality speakers and research to the south east, and creating more member case studies to learn from each other.

CONCLUSION
ASHEEP has had a very positive start, made easier with a dedicated committee. ASHEEP are trying to improve the sheep industry in the South East, although their objectives could be applied to any sheep production group in WA. The key to ASHEEP’s success are enthusiastic producers and industry support. Improving communication is an ongoing issue for the group. ASHEEP hope to focus more on pastures and perennials in the next five years.

KEY WORDS

ASHEEP, Sheep, Producer Group

Paper reviewed by: Sandy White
**Lifetime Wool** - Farmers’ attitudes affect their adoption of recommended ewe management

G. Rose, Department of Agriculture Western Australia, Katanning WA 6317  
C. Kabore, Kazresearch, Lower Templestowe Vic 3107  
J. Dart, Clear Horizons, Hastings Vic 3915

**ABSTRACT**

The Lifetime Wool Project is developing guidelines for the management of the nutrition of ewes to meet production targets. In the past, adoption of new pasture and livestock assessment skills in Australia has been low. However, a study of farmers attending Lifetime Wool workshops or involved in the paddock-scale research sites strongly suggests that some farmers are already making significant changes in response to Lifetime Wool messages. Further, the studies suggest that the farmers most likely to change can be identified by their attitude to risk and willingness to change. A national telephone survey has been developed to assess the proportion of wool producers with these attitudes, and their distribution across southern Australia. This information is thought to be critical for the design and successful delivery of the extension activities scheduled to start in 2006-7.

**AIMS**

Pasture and livestock assessment skills can be used to improve the management of grazing systems, but their adoption is low (1). The adoption of new innovations is influenced by a farmer’s attitude towards risk and change (3). The individual characteristics that influence the rate that farmers will adopt new innovations can be used to define/segment the target audience (2) for extension messages. Segmentation of the audience may allow more efficient and effective communication of new innovations because extension messages can be tailored to the different target groups (2).

This paper explores the evaluation process used in Lifetime Wool (LTW) to define the different levels of current practice with respect to the management of ewes. In addition, the paper explores the critical characteristics of farmers who are more likely to change practice in response to LTW messages.

**METHOD**

The LTW project aims to provide new guidelines for ewe and pasture management to allow wool producers to achieve production targets. However, in light of the low rate of adoption of this type of innovation in the past, the project also aims to evaluate how successful the new guidelines are at stimulating change and willingness to change among wool producers in southern Australia. Hence, workshops were held in Victoria (n = 7), Western Australia (n = 5) and South Australia (n=1) with 209 farmers to document the range of methods used by farmers to monitor their pastures and ewes during the year. In addition, semi-structured face-to-face interviews were done with the 12 farmers who have hosted the plot or paddock-scale experiments on their properties (five in Victoria, six in Western Australia and one in South Australia). The aim of the in-depth interviews was to document the knowledge, attitudes and aspirations of this segment of farmers as well as any changes they had made as a result of becoming involved in the project. It was assumed that these farmers represented the main target audience for future LTW messages because they had already shown a keen interest and willingness to co-invest in the project.

The results from the workshops were used to define a global assessment scale of levels, or 'platforms', that displayed the range of livestock and pasture assessment skills used by farmers. The results of the in-depth interviews were used to position the farmers on the management platforms and document the changes made between platforms.

**RESULTS**

Only 5% of the 209 farmers surveyed at the LTW workshops condition scored or weighed their ewes at joining, lambing and weaning with a view to achieving production targets. A further 35% condition
scored their ewes opportunistically when they were in the yards. The other 60% assessed their ewes visually. The range of ewe monitoring practices was used to build the global assessment scale shown as levels or platforms in Table 1.

**Table 1: The 4 levels or platforms of current practice with respect to the management of ewes defined by surveys completed by 209 attendees at Lifetime Wool (LTW) workshops. ‘A’ represents the level of practice of the 12 LTW collaborators before they became involved in the project and ‘B’ shows the level of practice after exposure to the results of LTW experimentation. ‘n’ indicates the number of collaborators involved in each change.**

<table>
<thead>
<tr>
<th>Practice level</th>
<th>Approach to monitoring ewes</th>
<th>Changes in practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level I</td>
<td>Visual assessments in paddock.</td>
<td><img src="A" alt="Diagram" /> n=3 → <img src="B" alt="Diagram" /> A</td>
</tr>
<tr>
<td>Level II</td>
<td>Visual assessments in paddock and condition score or weigh a sample when they are in the yards.</td>
<td><img src="A" alt="Diagram" /> n=2</td>
</tr>
<tr>
<td>Level III</td>
<td>Formally condition score or weigh a sample of each mob and manage to average mob targets for joining/lambing/weaning.</td>
<td><img src="B" alt="Diagram" /> n=1</td>
</tr>
<tr>
<td>Level IV</td>
<td>Formally condition score or weigh and draft all ewes, manage mobs according to condition to meet set targets for joining/lambing/weaning.</td>
<td><img src="A" alt="Diagram" /> n=1 → B</td>
</tr>
</tbody>
</table>

Table 1 shows that eight out of 12 farmer collaborators changed their ewe monitoring practice after becoming involved in LTW. These farmers are now monitoring ewes at a level recommended by the project (level III and IV). Three of the four farmers that were at level I remained at level I.

The in-depth interviews revealed three broad categories of attitudes in the LTW collaborators. The first category included farmers who were ‘risk adverse and conservative’. These collaborators thought that the research done on their property did not represent commercial reality. They also tended to be those that did not change practice and remained at level I. The second category included farmers willing to take a ‘calculated risk’. They were positive about the project’s message but wanted to see more results such as economic analysis before making any changes. The third category comprised risk-takers who believed in the messages so far and were willing to change based on the results they’d seen on their property. The collaborators that changed the way they monitor their ewes tended to be in the risk-taker and calculated-risk-taker categories.

**CONCLUSION**

This study of farmers attending LTW workshops or involved in the paddock-scale research sites strongly suggests that some farmers are already making significant changes in response to LTW messages. Further, the studies suggest that the farmers most likely to change can be identified by their attitude to risk and willingness to change. A national telephone survey has been developed to assess the proportion of wool producers with these attitudes and their distribution across southern Australia.

**KEY WORDS**

Farmer attitudes, livestock and pasture management, audience segmentation, Lifetime Wool

**ACKNOWLEDGMENTS**
Thanks to all of the farmers involved in the workshops and the LTW collaborators and AWI for funding.

**Paper reviewed by:**  Chris Oldham

**REFERENCES**


Sustainable certification of Australian Merino, what will the customers be looking for?
Stuart Adams, i-merino / iZWool International Pty Ltd

ABSTRACT
The increasing awareness of western consumers to environmental and animal welfare issues is influencing the criteria large apparel brands are imposing on the development of new apparel products. Most large US companies now have a social compliance executive responsible for scrutinising existing and new products ranges. This executive sets the strategy for future products and reviews new product development, the slightest hint of controversy is likely to see a product dropped.

The increasing publicity given to animal rights campaigners is making the task of marketing merino fibre and fabrics more difficult. Without objective data to back up responsible environmental wool production and animal welfare standards, the animal rights campaigners will continue to have the upper hand. i-merino’s US customers are now looking for tangible proof that we are maintaining our environment and are considering the welfare of our animals, from farm gate throughout to retail.

INTRODUCTION
As an illustration of the demand for sustainable fibres, the total “Organic” market in the US was worth US$10.8 billion in 2003. The sentiment of buying organic food is gradually transferring to other product categories including textiles. Certified Organic cotton was worth over US$85million in sales during 2003 and was forecast to grow at 20% each year. US apparel companies including Nike, Timberland, Nordstrom and many others have committed themselves to sustainable fibres. Nike already includes 5% organic cotton in each t-shirt with the commitment of including up to 10% by 2010.

The PETA campaign against Australian wool has served the industry very well as it has made the major US companies more aware of Australian wool and they are now more than ever interested in getting closer to the “source” of merino wool production.

In February of 2005 a meeting was convened at CSIRO Textile and Fibre Technology in Geelong to discuss the path forward for developing criteria to certify Australian woolgrowers as sustainable. The outcome of the meeting was extremely positive with a review committee established and a joint application from Woolproducers, iZWool, CSIRO and AWI submitted to Department of Agriculture, Fisheries and Forestry for funding the development of such a certification.

REVIEW
i-merino has an ongoing commitment to promote merino wool as the most sustainable source of performance fibre in the world. Three fabrics in the i-merino range were awarded the European Union (EU) Ecolabel in December of 2003. The fabric range has opened the doors to discussing sensitive Corporate Social Responsibility (CSR) issues and the opportunities for incorporating certified sustainable merino wool fabrics into apparel ranges. CSR is generally understood to be the way a company achieves a balance or integration of economic, environmental, and social imperatives while at the same time addressing shareholder and stakeholder expectations.

Earlier this year i-merino identified 30 US companies who have an interest in using merino fabrics produced from a certified sustainable production chain. The majority of these companies have in place, or are developing, CSR policies. The size of the companies varied significantly, from multi billion dollar turnovers to multi million dollar turnovers. Several companies are now in the advanced sample stages for incorporating i-merino fabrics into their Fall 2006 collections.

The EU Ecolabel is becoming well recognised in Europe, it does not currently cover wool growing except that greasy wool must comply with chemical residue limits. The challenge for the Australian wool industry is to produce a wool product which carries integrity, performance, value and a certification which can be endorsed by organisations such as the EU Ecolabel.
The joint industry submission to DAFF proposes to develop a certification to include certifiable sustainable wool production practices that will compliment established wool processing standards such as the EU Ecolabel. As an example, sustainable certification may cover:

**Proposed on farm requirements (courtesy of the work completed by Dep of Ag WA, Draft of discussion paper “Recognition of Sustainable Agriculture” 2004)**
- Produce safe, quality food and fibre products.
- Maintain and improve soil and land capabilities.
- Maintain and improve on and off farm water quality.
- Use water resources with maximum efficiency to conserve supply.
- Reduce reliance on chemical inputs.
- Protect and enhance biodiversity.
- Control potential biosecurity hazards.
- Manage waste production.
- Achieve the highest standards of animal welfare.
- Maintain a safe work environment.
- Maintain and improve air quality.
- Optimise energy efficiency.

**Established EU Ecolabel merino wool processing requirements**
- Limitation of the use of substances harmful for the aquatic environment and health
- Processing additives, detergents shall be biodegradable.
- No chloro-phenols, cerium compounds, halogenated carriers.
- Limits on heavy metals and formaldehyde.
- No APEOs, SDBS, ‘quats’, EDTA in detergents, fabric softeners and complexing agents.
- Halogenated shrink resist substances shall only be applied to wool fibres in wool top slivers

**Established EU Ecolabel dyeing and finishing requirements**
- No use of chrome mordant dyes (2002).
- Limits on heavy metal impurities.
- Limits on discharges of metal complex dyes.
- No use of azo-dyes that cleave to toxic amines.
- Limits on sensitising dyes.
- No use of carcinogenic, mutagenic, toxic agents
- R50 - 53 (toxic to aquatic organisms)
- R40 - 49 (carcinogenic)
- R60 – 68 (mutagenic)

i-merino is investigating the most appropriate and credible global certifying organisations, including the EU Ecolabel, who can endorse a sustainable wool growing certification. Well recognised global certification organisations will not endorse criteria that is based on subjective assessment only. Traceable and objective assessment is fundamental to the transparency required for endorsement and consumer confidence in these organisations and their certifications.

**CONCLUSION**

*So what are the leading brands in North America looking for?*

A simple answer; a fabric that complies with their ideals, policy position, marketing strategy, customer expectations and most importantly, profit margins.

The solution to improving customer confidence in the Australian merino fibre is to take the initiative and implement sustainable certification standards including animal welfare criteria. Criteria which wool growers can profitably adopt, that compliment established wool processing standards and can be endorsed by leading global certification organisations who have credibility in the eyes of the consumer.
i-merino is already supplying EU Ecolabel certified merino fabrics to the US market at a 15% premium to a non-certified merino fabric. The price premium is being passed back throughout the production chain, including wool growers.

KEY WORDS
Certification, sustainable and customer

Paper reviewed by: Sarah Rankin