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Sheep Industry Business Innovation (SIBI) newsletter
Newsletter of the Department of Agriculture and Food, Western Australia

Contents
Attention to detail drives Sears’ increased lambing percentages: a SIBI case study
V&V Walsh appoints a supply chain manager
2016 SIBI Agribusiness Survey
No free lunch for animal science students
Lamb Survival Initiative – sign up now for 2017!
Sensors for ewe pregnancy and sheep reproduction
SIBI staff profile: Beth Paganoni

Contact
If you have any suggestions for how we can improve this newsletter we’d love to hear from you at sibi@agric.wa.gov.au.

Supporting your success
Attention to detail drives Sears’ increased lambing percentages

A SIBI Case Study
Property: Wakeford Farm, Marchagee
Owner: Harley Sears

Property size: 3520 hectares (1820ha arable) plus some additional agisted hectares
Average annual rainfall: 350 millimetres
Stock: 2400 sheep (1754 mated ewes in 2016)
Crop: 500ha share crop cereal-lupins (50/50) program plus 270ha of lupins in seven smaller paddocks specifically for fattening lambs once weaned (October/November). These smaller paddocks are not harvested.

Entrepreneur Harley Sears has brought his business acumen to his Midlands sheep enterprise, achieving commendable marking results in a remarkably short time.

His success was recognised in 2012, when he was an inaugural inductee into the Department of Agriculture and Food’s 100%+ Club and has been a member ever since.

The Club acknowledges producers achieving a whole-farm average marking percentage of more than 100 per cent.

In 2016, Harley’s overall flock scanned an average of 165pc lambs (155pc in the maidens). He scanned up to 177pc in the crossbreds and marked 142pc over the whole flock.

Harley bought his 3 200 hectare Marchagee property in 1994 and immediately set about turning it into a profitable patch.

His long-time business dealings in the mining, turf farming and rural investment sectors give him a unique view of his sheep farming enterprise.

With his main income provided off-farm, Harley likes to micro-manage his prime lamb enterprise. In doing so, he has achieved high lambing percentages, especially for Merinos.

Following a stint of share farming in the mid-90s, Harley took back full control of his farm in 2002 and introduced Merinos for wool production.
In 2006, he began to breed out the historically traditional Merino type in favour of a plain-bodied sheep, also known as a Multi-Purpose Merino (MPM).

Now with his sights firmly set on the prime lamb market, Harley generally runs blue, red and yellow tag MPM ewes, with about 60pc of which are joined to Poll Dorset rams and 40pc to MPM rams for replacements.

Joining occurs in a six to seven week period from mid-January, with lambing from mid-June.

Following weaning, lambs are trucked off the farm in late January in groups of 400-450 to WAMMCO who accept Harley's heavier type lambs, at an ideal 26kg carcass weight.

A newborn Poll Dorset-Merino cross lamb at Harley Sears' Marchagee farm

The setup

When Harley first bought the block and began to travel to and from his home in Perth, he invested more than $500 000 in fencing, roadways, tree planting and water supplies on the property.

Plentiful ground water has seen a system of five large tanks installed at the highest points on the property, supplied by one small bore. These tanks gravity feed water to many concrete troughs around the farm.

More than 60 000 rivergums were also planted around the perimeter of each paddock and laneways installed, creating shade and shelter belts for stock.

In his quest to produce quality prime lamb for the market, and on the advice of a number of other farm contacts, Harley recognised the need to introduce quality genetics.

He sourced MPM rams from Hill Padua MPM Stud at Three Springs (Anthony Thomas) and Poll Dorset rams from Fearnley Poll Dorset stud at Dandaragan (Bruce Cook).

Rams are purchased on the basis of their fat and growth ASBV’s, with wool also becoming more valuable to the operation with an average of 20 micron over the flock.
An example of one of the farm’s MPM ewes with its Poll Dorset-Merino cross lambs.

**Hands on management**

Harley commutes every week to the farm from his Perth base for two or three days. He also employs an on-site husband and wife manager team who check the sheep very regularly, sometimes twice daily during lambing, with the property never left unmanned, no matter what time of the year it is.

Ewes are pregnancy scanned after 90 days, split into single and twin-bearing mobs for individual management come lambing, wet and dried following lambing and returned back into larger mobs in the lead-up to joining.

Harley’s flock is maintained at a condition score of three plus throughout the year.

“Running sheep for the prime lamb market has slowly become more intense on my farm,” he said.

“We never have a bother with ewes walking away from lambs when trail feeding lupins. They are so used to us and our quiet management style – they’re like pets. We don’t have any dogs either, just 11 alpacas that are fantastic guards during lambing.”

Shearing happens six-monthly at Wakeford Farm. The entire flock is ‘put over the board’ in late October and then again in late April to produce 50-60 millimetre fleeces.

The fact that the Watheroo National Park borders Harley’s property on two sides also means a concentrated effort is made to keep ferals at bay. Alpacas are found in every mob of sheep alongside an annual fox baiting program.

Since 1992, Harley Sears, Marchagee, has planted more than 60 000 river gums around the perimeter of his paddocks to provide shelter and shade for his sheep.
Feed: the value of lupins

Lambs are weaned and shorn in early October, and put onto 270ha of standing lupin crops (seven paddocks) with a vitamin E supplement every eight weeks, following some deficiency deaths a few years ago.

The farm’s sandplain soil structure helps the lupin crops to thrive alongside natural ryegrass pastures which are encouraged to grow through the lupin crops and provide extra fodder.

During the season, following the lupin crop rotation such paddocks tend to grass-up very well and provide prime feed for lambing ewes the following two seasons.

Lupins are rotated through these paddocks every three years.

“Standing lupin crops have worked wonders for our big lambs just off shears. At this stage it’s a trial and I'm trying to get a proof of concept going here,” Harley said.

Lupins are trail fed to lambing ewes from late autumn until late July in some cases, depending on the season.

Rams are prepped with lupins for six weeks prior to joining and the ewes two weeks prior to, and one week into joining.

However this year (2016), Harley decided to continue supplementing feed with lupins twice a week, at 1kg/hd/feed, throughout the joining period. This could explain the 10pc improved scanning rate compared with previous years (165pc) and the best lamb marking rate so far at 142pc.

Harley’s flock also benefits from agistment on stubbles (cereals and lupins) on a neighbouring farm during summer.

A flourishing pasture off the back of one of last season’s 1.8 tonne a hectare lupin crops.

Weaner loss and dystocia

Harley said less than one per cent weaner losses occur at Wakeford Farm.

He lost 14 weaners to a vitamin E deficiency last year and thanks to early drenching with vitamin E only lost five or six in 2016.

Harley has also worked hard to eliminate dystocia from his paddocks.

In 2013 and 2014 the number of ewe deaths during lambing was about 70. In 2015 and 2016 it was down to approximately 50 with most of this number occurring in the Poll Dorset/Merino flocks and very few in the MPM flock.

Harley’s focus is to work at reducing this number each year.
Profit drivers

Wakeford Farm’s 2015 lamb marking percentage of 129pc was a step up of 4pc on the 2013 and 2014 season figures, with a greater increase during the 2016 season to 142pc.

In his quest to “just do better than the year before”, Harley has pinpointed a number of contributing factors to his success in keeping lambs on the ground.

Quite simply, he puts it down to the time of shearing every six months, the flocks’ genetic background (MPM Hill Padua) and the use of lupins as a prime feed source in smaller type paddocks, with alpacas, and excellent shade as protection from the elements.

“Although this is a small sheep enterprise you could double or triple our ewe numbers and with the right management still achieve these overall production figures”, Harley said.

Department of Agriculture and Food, Western Australia development officer Katherine Davies said genetics and nutrition were definitely a big part of Harley’s overall lambing success.

Separate management of single and twin bearing ewes, as well as small mob sizes in small paddocks with plenty of shelter go a long way to increasing overall lamb survival.

“The MPM and Poll Dorset breeds are renowned for their vigour,” she said.

“The combination of Harley’s attention to detail and close management of ewe condition score throughout the reproductive cycle, including supplementation with lupins, has ensured that ewes are in optimum condition during pregnancy and lactation, giving lambs a good chance to survive and thrive.

“Harley’s intent focus on the business' breeding objectives, benchmarking and close tracking of his flock’s every move also undoubtedly contributes to his overall lambing outcomes.”

For further information about the 100%+ Club visit agric.wa.gov.au and search for ‘100%+ Club’.

Plentiful pastures guarantee profitable production at Marchagee.
### Some figures

**2014 scanning figures**

<table>
<thead>
<tr>
<th>Head per mob</th>
<th>Dry</th>
<th>Single</th>
<th>Twins</th>
<th>%</th>
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<tbody>
<tr>
<td>297 (MPM)</td>
<td>10</td>
<td>132</td>
<td>155</td>
<td>148</td>
</tr>
<tr>
<td>300 (MPM maiden)</td>
<td>10</td>
<td>117</td>
<td>173</td>
<td>154</td>
</tr>
<tr>
<td>79 (PD-MPM cross)</td>
<td>4</td>
<td>75</td>
<td>Not scanned</td>
<td>---</td>
</tr>
<tr>
<td>405 (PD-MPM cross)</td>
<td>26</td>
<td>193</td>
<td>186</td>
<td>140</td>
</tr>
<tr>
<td>326 (PD-MPM cross)</td>
<td>11</td>
<td>122</td>
<td>193</td>
<td>156</td>
</tr>
<tr>
<td>199 (PD-MPM cross)</td>
<td>6</td>
<td>69</td>
<td>124</td>
<td>159</td>
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<tr>
<td>210 (PD-MPM cross)</td>
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<td>80</td>
<td>121</td>
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<td><strong>TOTAL 1 816</strong></td>
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**2014 lamb marking numbers**

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<th>Mob</th>
<th>%</th>
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<tbody>
<tr>
<td>MPM</td>
<td>135</td>
</tr>
<tr>
<td>MPM maiden</td>
<td>124 (96 single, 150 twins)</td>
</tr>
<tr>
<td>PD-MPM cross</td>
<td>122</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td>125</td>
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**2015 scanning figures**

<table>
<thead>
<tr>
<th>Head per mob</th>
<th>Dry</th>
<th>Single</th>
<th>Twins</th>
<th>%</th>
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<tbody>
<tr>
<td>313 (MPM)</td>
<td>2</td>
<td>77</td>
<td>234</td>
<td>174</td>
</tr>
<tr>
<td>303 (MPM maiden)</td>
<td>13</td>
<td>158</td>
<td>132</td>
<td>139</td>
</tr>
<tr>
<td>849 (PD-MPM cross)</td>
<td>34</td>
<td>298</td>
<td>517</td>
<td>157</td>
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<td>302 (PD-MPM cross)</td>
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<td>99</td>
<td>176</td>
<td>149</td>
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<td><strong>TOTAL 1 767</strong></td>
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### 2015 lamb marking numbers

<table>
<thead>
<tr>
<th>Mob</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>MPM</td>
<td>144</td>
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<tr>
<td>MPM maiden</td>
<td>114</td>
</tr>
<tr>
<td>PD-MPM cross</td>
<td>129</td>
</tr>
<tr>
<td>Overall</td>
<td>129</td>
</tr>
</tbody>
</table>

### 2016 scanning figures

<table>
<thead>
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<th>Head per mob</th>
<th>Dry</th>
<th>Single</th>
<th>Twins</th>
<th>%</th>
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<tbody>
<tr>
<td>277 (PD-MPM cross)</td>
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<td>81</td>
<td>191</td>
<td>167</td>
</tr>
<tr>
<td>285 (PD-MPM cross)</td>
<td>4</td>
<td>107</td>
<td>174</td>
<td>159</td>
</tr>
<tr>
<td>231 (PD-MPM cross)</td>
<td>2</td>
<td>48</td>
<td>181</td>
<td>177</td>
</tr>
<tr>
<td>383 (PD-MPM cross)</td>
<td>5</td>
<td>96</td>
<td>282</td>
<td>172</td>
</tr>
<tr>
<td>327 (MPM maiden)</td>
<td>9</td>
<td>130</td>
<td>188</td>
<td>155</td>
</tr>
<tr>
<td>251 (PD-MPM cross)</td>
<td>10</td>
<td>77</td>
<td>164</td>
<td>161</td>
</tr>
</tbody>
</table>

**TOTAL 1 754**

The 231-strong mobs were a mix of yellow, purple and green tag ewes with only 0.86pc dry. The 327-strong mob of maidens scanned 2.75pc dry. The dry rate for 1754 joined ewes was two per cent and the scanning rate was 165pc.

### 2016 lamb marking numbers

<table>
<thead>
<tr>
<th>Mob</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>XB</td>
<td>144</td>
</tr>
<tr>
<td>MPM maiden</td>
<td>133</td>
</tr>
<tr>
<td>Overall</td>
<td>142</td>
</tr>
</tbody>
</table>

There were a total of 2 485 lambs from 1 754 ewes joined. We re-mate dry ewes immediately after scanning and usually get 4 to 5 wet ewes from 70-odd dries, however this year we had 18 wet ewes from the total of 35 dries producing 24 lambs, thus reducing our overall dry rate to only 17 ewes from 1754 mated (<1%).

Mixed age MPM ewes and their Poll Dorset-Merino cross lambs at Wakeford Farm, Marchagee.
V&V Walsh appoints a supply chain manager

In response to opportunities emerging in China and other markets, Director Peter Walsh has proudly announced that V&V Walsh have created the new position of Supply Chain Manager, to be based at their Bunbury facility. This is an exciting development for the company that follows on from their success earlier this year, when granted a licence to supply chilled red meat into China.

Dale Miles commenced in this role in November of this year, to work within the business under the stewardship of the V&V Walsh senior management team. Dale has a degree in agricultural economics and broad experience in business, agriculture and supply chains, starting in 2001. His most recent previous appointment was as a Market Analyst with the Northern Beef Futures team at Department of Agriculture and Food, Western Australia (DAFWA) where he was involved in the development of domestic and export opportunities for Western Australian beef supply chains. Dale has also worked in Corporate and Agribusiness banking roles as well as holding a senior management position for Greening Australia and previously having his own livestock farming interests.

The role promises to be both challenging and diverse operating across all levels of the value chain. This is an encouraging appointment for the WA sheep industry as increasing the annual supply volumes of lamb available for slaughter in WA will be one of the key focuses of the task ahead. This will require production to be increased strategically across the State at an industry level where Dale plans to develop strategies in partnership with sheep producers, industry groups and the production team from V&V Walsh to build the confidence for growth and diversification across the WA sheep industry.

The supply chain manager function will link the V&V Walsh marketing strategy to the producer end of the value chain through improved collaboration and information distribution.

Work completed over the last 2 years by supply chain consultants John Gattorna and meat industry consultant Phil Green, in conjunction with V&V Walsh; with support from DAFWA’s Terry Burnage, will be used as an informing study to develop some of these dynamic alignment strategies across the value chain.
Other work already commenced by V&V Walsh includes the development of Asian style recipes using western style cuts and showcasing this in China, Hong Kong and Taiwan in the form of high value meals. Logistic solutions that provide appropriate cold chains for chilled product will also be a key challenge.

The role has been co-funded by direct investment from V&V Walsh, DAFWA’s Sheep Industry Business Innovation project and Meat & Livestock Australia’s Donor Company for a period of two years.

We wish Dale well in this role as his success will be a major boost to the WA sheep meat industry. Dale can be contacted on:

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F: +61 (0)8 9791 4077
E: dmiles@vvwalsh.com.au

2016 SIBI Agribusiness Survey

Agribusiness consultants play a major role in the decision making process undertaken by many producers, either by keeping them informed of the modern management practices and/or providing them with options for development of their business. In recognition of this important role, the SIBI project has undertaken a survey to get feedback on several important questions about the WA sheep industry.

Over November and December 2016, the Sheep Industry Business Innovation (SIBI) project invited Western Australian farm business, sheep and cropping consultants to participate in a survey regarding the sheep industry and sheep management practices. Thirty eight (roughly 50% of) invitees, representing 853 combined years’ experience in the agricultural industry, generously contributed their thoughts. Here is an early snapshot of the results.

2016 Agribusiness Survey - preliminary results
Health of the sheep industry

- 6% of agribusiness have witnessed clients reducing their sheep flock or getting out of sheep, however 50% say that flocks are maintaining and 44% have clients with increasing flocks

Service delivery of respondents

- More than 80% of respondents promote good sheep management processes such as condition scoring, renovating pastures, utilising pasture through high stocking rates, pregnancy scanning and managing ewes to nutritional requirements to many or most of their clients
- 81% of agribusiness are quite or very willing to advise their clients to compare the profitability of sheep and cropping, and to invest in infrastructure to improve sheep management

Needs of the industry

- Respondents indicate that the three top barriers to producers increasing their flock or getting back in to sheep to be the (real or perceived) long-term profitability of the sheep enterprise, the labour intensive nature of sheep enterprise and impact on lifestyle, and the risk of maintaining a higher stocking rate in variable years

SIBI role in the growth of the industry

- In reference to the range of services that SIBI provide, 95% of respondents believe that supporting producers to improve their production skills is quite or very important. More than 80% of respondents believe that increasing the use of genetic technologies and ASBVs, and improving producers business and benchmarking skills are also quite or very important activities for SIBI to be involved in
- 71% get sheep management information from DAFWA and 74% recommend DAFWA information and tools to clients
- 70% are familiar with the SIBI Project, with 27% of these with a good understanding of SIBI’s objectives

Among the respondents were 20 farm business consultants, seven sheep production specialists, seven finance specialists, three crop specialists and one unspecified.

The results of this survey will help the SIBI management team ensure activities are well targeted to ensure maximum benefit for the WA sheep industry.
No free lunch for animal science students

Murdoch University’s Animal Science students participated in a mapping the chain exercise using a burger, chips and latte with guidance from the University of Queensland’s Associate Professor Kim Bryceson.

There was no free lunch for animal science undergraduates recently when the group was asked to map out the intricacies of the number of agrifood supply chains behind their burgers, chips and lattes.

Third and fourth year undergraduates, along with Murdoch University postgraduate students, were enthusiastic when learning the concepts of agrifood chains during the inaugural introductory workshop provided by DAFWA’s Sheep Industry Business Innovation (SIBI) project.

The ‘Introduction to agribusiness and agrifood chains’ workshop was made possible by DAFWA’s Royalties for Regions-funded SIBI project, as well as a University of Queensland partnership between the Business School Executive Education and School of Agriculture and Food Sciences.

The one-day workshop was delivered by the University of Queensland’s Associate Professor Kim Bryceson who is well known for her work on supply chain modelling and risk assessment.

Kim said the students responded well to the theoretical content and case studies, and applied themselves to the practical session, which involved mapping out the agrifood supply chains behind the sale of burgers, chips and lattes.

SIBI Senior Development Officer Justin Hardy said Murdoch’s School of Veterinary and Life Sciences Researcher and Lecturer, Dr Serina Hancock, commented that the material delivered
through the inaugural workshop was a relevant inclusion to their Animal Science course.

“Serina said the information gave the students a greater awareness of the intricacies of the supply chain, driven by increasing global consumer demand for consistent and traceable quality meat products,” Justin said.

Murdoch University is now in the process of developing a unit which incorporates information on agrifood supply chain management as part of its Animal Science course.

Justin said the workshop also provided an ideal introduction towards a one-week residential program to be held in the wheatbelt in January.

“The Sheep Meat Value Chain program is designed as a custom training program for individuals who wish to pursue a career in agrifood,” Justin said.

“It will be held in Katanning from 16 to 20 January 2017 and registrations are open to participants from all Western Australian universities.

“The residential program has received great interest and we have already received a good response in terms of enquires and enrolments,” he said.
Lamb Survival Initiative (LSI) aims to provide the support required for producers to achieve 100%+ marking rates.

Increasing returns from prime lambs and sheep sales means that reproduction rates and lamb survival are more important than ever.

With just over 6% of Western Australia’s (WA) Merino sheep producers and 9% of dedicated prime lamb producers achieving marking rates of over 100%, less than 500 producers in WA achieve 100%+ lamb marking in any given year!

Lamb Survival Initiative is a dedicated program run by the Department of Agriculture and Food WA and made possible by Royalties for Regions. It aims to provide the support required for producers to achieve 100%+ marking rates.

The program works through grower groups and encourages producers to set achievable targets and benchmark their marking rates across regions and the state.

The program is free and provides dedicated support by professional sheep specialists throughout the season.

Register your interest with your grower group now for the 2017 season.

In order to build producer confidence and skills to lift marking rates to 100%+, the program focuses on:

- pregnancy scanning for multiples on a significant proportion of their adult ewes
- recording and submitting data on the reproductive rate, marking rate and weaning rate achieved in the scanned ewe flock/s so that it can be benchmarked against other producers
- attending at least one training course or workshop which focuses on reproduction.
- working closely with industry professional on issues with the reproduction rates of their flock.

2015 was the first year of the Lamb Survival Initiative involving five grower groups spread throughout the southern region of WA.
These groups included Facey Group (Wickepin), West Arthur Trials Group (Darkan), Southern DIRT (Kojonup), the Gillamii Centre (Cranbrook) and ASHEEP (Esperance) with a total of 33 grower participants.

Lifetime Ewe Management accredited facilitators were selected by the groups to provide in-depth information on reproduction. Facilitators met either on-farm with each producer or organised group meetings to go through issues such as condition scoring, feed budgeting and husbandry practices for increasing lamb survival.

Important information collected around the reproductive cycle included:

- ewe condition score at rams out and pregnancy scanning
- scanning rate (number of lambs scanned per 100 ewes joined)
- marking rate (number of lambs marked per 100 ewes joined)
- weaning rate (number of lambs weaned per 100 ewes joined)
- weaning weights (where facilities available)
- feed on offer (FOO) at lambing and details of supplementary feeding.

This information enabled producers to gain valuable understanding on where lambs were being lost throughout the reproductive cycle.

As shown in figure 1, ASHEEP maintained its average condition score (CS) between rams out and pregnancy scanning, while Gillamii Centre and Facey Group decreased very slightly and West Arthur and Southern DIRT increased very slightly.

![Average ewe CS](image)

Figure 1 Difference in condition score (CS) between rams out and pregnancy scanning in 2015

FOO was an issue in the Facey Group and West Arthur areas in 2015, with both Narrogin and Wickepin receiving only decile 1 rainfall for the 2015 growing season.

Figure 2 shows that for 2015, in areas where paddock feed availability were low; ewes were supplemented with larger amounts of feed, mostly in the form of barley, lupins, hay and pellets.
Reproductive rates included the number of lambs scanned, marked and weaned per 100 ewes joined (Figure 3).

You can see that the greatest lamb loss for each group occurred between pregnancy scanning and lamb marking.

This mortality may be either in-utero, during the birthing process or in the first 72 hours of life, where it has been found that 80% of lamb mortality occurs.

Please note that West Arthur group had incomplete data for weaning, therefore the average weaning rate for the group is higher, but otherwise would have been expected to follow the same trend as the other groups.

There are many strategies that can be put in place to increase lamb survival including monitoring the condition score of ewes, scanning for multiples foetuses and preferentially feeding twin bearing ewes, as well as providing shelter and limiting mob size at lambing.

While not all producers involved in the project had access to scales, weaning weights were collected by many of the participants with the results shown in figure 4.
Feedback from producers in the initiative indicated that further extension of information around weaner management as well as pasture production and management were highly desirable.

Inspired by the achievements in 2015, this year the following groups have participated: Facey Group, ASHEEP, the Gillamii Centre, Southern DIRT including two groups from Boyup Brook and Dandaragan.

Information from producers involved in the Lamb Survival Initiative for 2016 is currently being collected and collated, with extra information also being collected on the number of twins and singles conceived, marked and weaned in order to gain a greater understanding of lamb losses for single and twin born lambs.

Data from the 2016 Lamb Survival Initiative will be published once collation is completed.

If you would like to become involved in the 2017 season of the Lamb Survival Initiative, please contact Katherine Davies, Sheep Industry Development Officer, Northam on +61 (0)8 9690 2169. Or register with your grower group before Christmas.

Further information on increasing lamb survival can be found in the DAFWA website.
Sensors for ewe pregnancy and sheep reproduction

The use of sensors to monitor sheep is an exciting new technology that could be used to improve reproduction and reduce the labour expenses associated with livestock. Systems that require less labour through the use of sensors could also make the sheep industry more attractive to younger farmers. The SIBI team has recently invested in sensors to validate and research their potential applications. These sensors have the potential to establish location, as well as behaviours relating to ewe and lamb production and welfare, such as heart rate, steps per day and grazing behaviours. One of the applications that the team is investigating involves monitoring the interactions between ewes and lambs. This information can be used to determine rear type and maternal pedigree. Preliminary studies by La Trobe University using these sensors have demonstrated that maternal pedigree can be established with 100% accuracy within 24 hours of fitting the sensors to ewes and lambs. The application of sensors may therefore reduce the need for tagging lambs at birth or obtaining a blood sample via venepuncture for DNA to establish dam pedigree. This may provide a less painful and more practical, inexpensive means of identifying lambs to ewes for seed-stock and commercial sheep producers.

We recently applied the sensors to ewes (n=900) and lambs (n=985) from the breach-strike flock at Katanning prior to weaning. The sensors are attached to dog collars that clip easily around the necks of ewes and lambs. The sensors have a blue tooth function and can be programmed as beacons or receivers that send or receive signals. For example, the team can program the receivers to receive a signal every minute from all the beacons that are within 1m of it. The use of this blue-tooth function is to determine the number of proximity 'hits' between ewes and lambs. The number of proximity 'hits' is then used as a means of identifying lambs to ewes.

Collars off Katanning.MOV

Identifying lambs to ewes has been a key limitation to improving sheep reproduction genetically. For instance, there has been no genetic gain in the number of lambs weaned within the Merino flock during the last 15 years. This is because a majority of Merino breeding flocks have no or only partial records of pedigree (sire only). This is due in part to the challenge of collecting and managing large numbers of individual sheep records and the labour intensive nature of collecting maternal pedigree information.
(mothering up). This lack of information about maternal pedigree is a major limitation for obtaining accurate and hence reportable breeding values for reproductive traits that are collected later in life, for example the NLW trait (Number of Lambs Weaned). The NLW trait can only be measured via female progeny after they are mated. Therefore this SIBI initiative hopes that new technologies like sensors will help reduce the labour and expense of collecting pedigree information and improve the genetic progress of reproduction for our sheep industry.

For more information contact Beth Paganoni on +61 (0)8 9368 3662 or email beth.paganoni@agric.wa.gov.au
Beth Paganoni grew up on a farm in East Broomehill. Despite the sale of the farm and moving to Fremantle, she never lost touch with the country and her farming background. Beth’s fondest memories were spending school holidays drenching condition score four AMS hoggets in a mist of thick flies, in 38 degree heat (this was long before the revelation that summer drenching increased worm resistance and her mum turned their laundry into a commercial worm-egg-count laboratory).

It was this background that led Beth to enrol at the University of Western Australia for her tertiary degree in wool science (1996-2000), where she developed a strong interest in the WA sheep industry. She landed her first job as a wool laboratory technician for Dr Johan Greeff at the Katanning Research Station. It was during this time that senior technician Geoff Cox taught her skills in navigating lambing rounds and changing ram crayons on mating plots. Her education in sheep reproduction continued with the Lifetime Wool project under the tutorship of Dr Chris Oldham. At the end of 2002 she received a scholarship from MLA to complete a Masters degree in fetal programming. She completed this in 2005, while still working on the Lifetime Wool Project with Dr Andrew Thompson in Hamilton, Victoria. Her time working on the Lifetime Wool project further developed her interests in reproduction, which led to Beth seconding to UWA to work for Professor Graeme Martin’s specialist reproduction team. Her role at UWA involved fundamental studies on the effects of lupin-feeding on the ovulation rate of Merino ewes and with Dr Carolina Vinoles Gil. The Latin pair was passionate pragmatists and targeted their on-farm research program to learn from successful sheep breeders such as Bill Sandilands, Craig Heggaton and Roger House. They patented a one-wave ovulatory model to study the specific effects of nutritional supplementation on ovulation rate, which assisted them in describing the causes of conflicting results from animal-house compared to on-farm conditions.
studies. Carolina returned to Uruguay towards the end of the project (2007). It was at this point that Beth decided to take a break from science to complete a diploma in life skills, which she is still working on part-time.

Half way through her diploma in 2010, Beth was contacted by Dr Andrew Thompson and Dr Mark Ferguson to re-join their team back at DAFWA, researching feed intake-efficiency, growth, methane production and reproduction in Merino sheep. She has just completed several collaborative projects in this space resulting in significant and relevant outcomes for sheep producers.

“Selecting for lower feed intake and residual feed intake will reduce methane and carbon dioxide production in Merino sheep eating high quality pellets.”

“Additionally, carbon dioxide can be used as an indicator trait for feed intake. Carbon dioxide is a good indicator trait because it has high genetic and phenotypic correlations with feed intake.”

“Carbon dioxide can be measured cheaply and quickly in portable accumulation chambers, providing a good alternative to expensive measurements of feed intake.”

“These results will help the Australian sheep industry breed sheep that need less feed, are more efficient and better for the environment.”

Beth is currently based in South Perth as a Research Officer for the livestock industry, working to increase the reproduction and performance of Western Australia’s sheep flock. More recently, Beth has become involved in the application of ActiGraph movement sensors to match lambs to ewes as an alternative to current expensive and labour-intensive methods of obtaining pedigree information. This is an exciting area of new technology that the SIBI program has invested in to potentially fast-track the genetic and reproductive progress of the state flock.

“Increasing the adoption of genetic technologies will increase the rate of genetic gain in our state flock, assisting our efforts to double the value of the sheep industry by 2025,” according to Beth.

The Department of Agriculture and Food, Western Australia (DAFWA) is proudly delivering the Sheep Industry Business Innovation (SIBI) project, funded by Royalties for Regions investment, to support the sheep industry to capitalise on growing markets for sheep products.

If you have any suggestions for how we can improve this newsletter we’d love to hear from you at sibi@agric.wa.gov.au.

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