SCANNING FOR AGE OF FOETUS

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Scanning for the age of the lamb foetus can help determine the lambing date, which may lead to a better managed lambing and improved lamb survival, according to research funded by AWI.

The study found that scanning to measure the lamb foetus's head size – the 'bi-parietal diameter' (BPD) – accurately predicted the foetal age of the lamb, which enables the prediction of when the ewe became pregnant and therefore when she is likely to lamb.

The AWI-funded research was undertaken by researchers at CSIRO and the University of New England (UNE), led by Senior Research Scientist Dr Kim Bunter at the Animal Genetics and Breeding Unit at UNE.

"The study found that, using a single scanning event with an experienced operator who understands the change in BPD size with foetal age, around 80% of ewes would be correctly allocated to three lambing groups," Dr Bunter said.

"Furthermore, no ewe assigned to an early lambing group, via predictions based on foetal aging, lambed in the tail end of the lambing time, or vice-versa. This confirms that an appropriate method of scanning to discriminate between early and late lambing ewes is 100% accurate. There is a little more noise in the middle, because gestation length is also variable.

"There's no way that producers can get this type of information in the field by observing matings, and the current alternative for breeders is to mother up at lambing which can be time intensive and difficult. Scanning is therefore an opportunity for producers to obtain, in a once-only task, some very useful data about their flock, particularly for larger scale flocks like Merinos which often aren't mothered up at lambing."

WHAT ARE THE BENEFITS FOR WOOLGROWERS?

Combined with scanning for fertility and litter size, additional scanning for foetal age can prove to be a cost effective and profitable practice.

"By accurately estimating their pregnant ewes' lambing dates, the farmer can divide their ewe flock by date of lambing, and feed and manage them accordingly, which could help reduce ewe and lamb mortality," Dr Bunter said. This could be of most value in droughts.

"Farmers could also better optimise their weaning process so that they are weaning groups of lambs at more appropriate ages."

Foetal aging not only provides a tool for management purposes, but could also be useful for ram breeders who have not mothered up at lambing.

"Many early in life traits are affected by age, and unless mothering up is performed or lambing date can be predicted, age will be unknown. Combining foetal aging with scanning for multiples can provide information on both birth type and birth date, for more accurate comparison of young animals."

Foetal aging could also help split lambs into early and late ages for submission to Sheep Genetics to improve data quality.

However, Dr Bunter warns that scanning for foetal aging requires more knowledge and more training than scanning for fertility and litter-size.

"So the industry has to either train more people who have the right equipment to do the foetal scanning, or develop scanning software that can automate the measuring of the foetal head."

HOW DID THE PROJECT ORIGINATE?

Dr Bunter said that when she moved into sheep production research a few years ago, she met one of the original developers of scanning in Australia, Dr Doug Fowler, who started with CSIRO in the '80s, and who is now a co-investigator on this project.

Dr Fowler informed Dr Bunter that he could do foetal aging and he showed her data that showed foetal aging of cattle was accurate.

"The foetus of cattle is of course a lot bigger than sheep and there tends to be only one of them," Dr Bunter said. "So we needed to show in this project that we could successfully do foetal aging with sheep, and that it wouldn't matter if there were singles or multiples, or if there were different genotypes of ewes or lambs involved."

HOW WAS THE PROJECT UNDERTAKEN?

The Merino Lifetime Productivity (MLP) flock near Armidale – having about a thousand artificially inseminated ewes – provided a good resource for the scanning project to demonstrate the variation that a scan operator would see in foetal size and gestation length.

Dr Bunter said results were not strongly associated with ewe age or litter size. "This showed us that a scanning operator should be able to go into the field and do the scanning without having to correct the data afterwards for other things."

The researchers also created a resource population of ewes, divided into three groups of naturally mated ewes of a couple of genotypes: Merino by Merino, cross bred ewes by White Suffolk rams, and Merino by White Suffolk rams.

"The site manager Dr Jen Smith of CSIRO, who is a co-investigator on our scanning project, and her team went through those flocks daily and looked for ewes with evidence of having been joined, and then the ewes were later mothered up at lambing, and we could tell when they actually lambed, and what their litter size was."

One of the surprises of this exercise was some lack of accuracy of raddle marks. There were about 5% of ewes that were joined but showed no sign of raddle mark, and there were also ewes that were already pregnant but were remarked.

"That was a bit of a surprise," Dr Bunter said. "I guess it was a good illustration that even though raddle marking can be useful, it has its own errors, the same as mothering up has errors, and the same as scanning has errors." **B**

More information
Hear more from Dr Bunter in Episode 38 of AWI's The Yarn podcast at **www.wool.com/podcast**