



Sheep CRC Practical Wisdom Case Studies

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JIVET—Juvenile In Vitro Embryo Transfer

CASE STUDY

Andrew Michael, Leahcim Poll Merinos, SA

The JIVET program is super-charging the speed of genetic gain in Andrew Michael's flock. It has already delivered stud lambs years in advance of those from his conventionally joined flock, thanks to a combination of visual appraisal, traditional measurement techniques, and the latest DNA testing and embryo collection methods.

About Andrew Michael

Andrew Michael is the principal of the Leahcim Poll Merino Stud based at Snowtown, SA, but with sheep spread across three properties encompassing vastly different environmental conditions.

Mr Michael says the key to breeding sheep that can perform in these different environments and deliver against the profit drivers for his business, is to understand their genetic make-up. He has done this through over 30 years of data collection for ASBVs and more recently through the Sheep CRC's DNA testing programs.

"Understanding fat and muscle traits are important because I want to transform the Merino to being an animal that can perform in every environment, as well as being more productive in terms of fleece weight, wool production and number of lambs weaned," Mr Michael said.

"The major benefit that genomics has delivered for us is that we can make breeding decisions much earlier and with a lot of confidence. Before we even scan the rams, we have an idea of what genetic groups they should go into and what these rams can offer in terms of hard to measure traits."

In the JIVET program, Mr Michael is using genomic technology to make those selection decisions even earlier, with superior breeding stock now being identified within weeks of birth; advanced embryo technology is then used to collect eggs from ewe lambs at approximately six to eight weeks of age; with joining occurring in a test tube before the lambs are carried to term in surrogate mothers.

"For the first time we can do rapid genetic evaluation and do it very accurately, and this dramatically shortens the generation interval," Mr Michael said. "The dollar returns are staggering—we estimate the superior genetics will deliver an \$8 increase in returns from every ewe lamb every year compared to a figure of just over \$2/ewe per year for our conventional program."

Take home messages

- Embryos are harvested from ewe lambs at 6–10 weeks of age—there are no long term impacts on natural reproductive performance.
- Eggs and semen from top ram lambs are fertilised in vitro then carried to term by recipient commercial ewes.
- In the space of six months a new drop of high performance lambs are on the ground—traditional breeding methods would have taken up to 2 years.

Further information

The JIVET program was implemented with assistance from the Sheep CRC and SHEEP GENETICS, with design support from Greg Popplewell, Total Genetic Resource Management, and Stephen Lee, University of Adelaide.

- www.leahcim.com.au
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