



## Sheep CRC Practical Wisdom Notes

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## Genomic testing and artificial insemination helps increase LEQ index gains 138% faster than industry average – Melton Vale Poll Dorsets

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### Key points

- Melton Vale's rate of genetic gain is 138% higher than the terminal LAMBPLAN average
- Testing the top 20% of ram selection candidates can increase rates of LEQ index gain by 20%

### Introduction

The Melton Vale Poll Dorset stud is located in northern Tasmania. Melton Vale has been owned by the Heazelwood family since 1854 and managed by Bramwell Heazelwood since 1970. Each year Melton Vale breeds around 750 lambs from 550 ewes. They sell 200 rams at auction and on-property to other stud breeders and commercial lamb producers.

Melton Vale has been an active member of LAMBPLAN since 1992 and breed sheep that perform above the industry average for many Australian Sheep Breeding Value (ASBV) traits. Melton Vale has always placed a lot of emphasis on visual and structural correctness in their sheep. Since 1992, they have placed a high priority on objective measurement to generate ASBVs and select on the Carcase Plus index (Figure 1) with particular emphasis on low birth weights and high muscle. However, visual and structural correctness remain an important part of selection.

Research has shown that selection for lean growth alone, as promoted in the Carcase Plus index, leads to a decrease in intramuscular fat (IMF) and lower eating quality of lamb.

In 2014 the Melton Vale breeding objective was substantially adjusted to include research breeding values (RBVs) for eating quality traits. The newly released Lamb Eating Quality (LEQ) index includes; intra-muscular fat (IMF), lean meat yield (LMY) and shear force (SF5) in addition to traditional traits such as weight, eye-muscle depth and carcase fat. Mr Heazelwood now uses the LEQ index and also places emphasis on low birthweight.

### The 15K genomic test

The new selection indexes with eating quality traits have been developed by Animal Genetics and Breeding Unit (AGBU) and Sheep Genetics using results generated by the Sheep CRC Information Nucleus Flock and rely on genomic estimation of the eating quality traits – LMY, IMF, SF5. It is anticipated meat processors will begin to measure LMY and IMF in abattoirs and provide pricing signals based on meat eating quality, in the future.

Genomic testing is an important tool to use when selecting for later-in-life or hard-to-measure traits. Testing also increases variation in ASBVs within a cohort, which gives breeders the potential to increase rates of genetic gain. Genomic testing costs \$35 per animal.

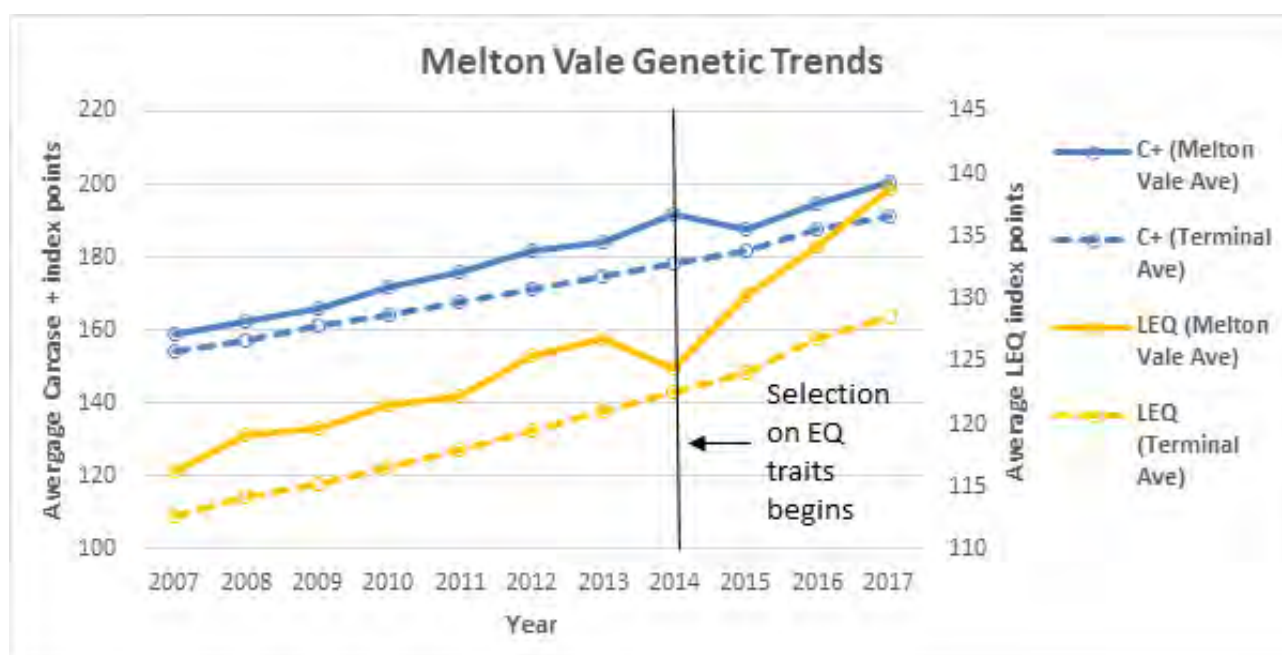


Figure 1: Genetic trends for Melton Vale Poll Dorset stud for Carcase + (main y-axis) and LEQ (secondary y-axis) selection indexes. Genotyping and selection for eating quality traits began in 2014 with the first lambs born under this breeding objective in 2015

### Genetic gains made using genomics and the new LEQ selection index

Prior to the 2014 mating (for the 2015) lambing, Melton Vale genomic tested 30 active sires and the highest ranking young male selection candidates. Because the LEQ index did not exist then, they based ram selection on the Carcase Plus Index whilst using IMF and SF5 RBVs to ensure positive outcomes for meat eating quality. They also focused on low birth weight and muscle ASBVs which is important to their breeding objective. Since the LEQ index was released, Mr Heazelwood has used the LEQ index as a key breeding objective. Figure 1 demonstrates the significant gains Melton Vale has made in the LEQ index increasing 14.3 LEQ index points over 3 years. This has been due to a combination of genomic testing and selection using RBVs and now the LEQ index. The rate of gain achieved is 138% higher than the terminal average rate of gain for LEQ. Melton Vale's improvement in average flock merit has shifted the stud from the top 40% to the top 10% of LAMBPLAN animals for LEQ index.

## Where to next for Melton Vale

As Melton Vale continues to improve the genetic merit of their flock, they will source semen from high indexing rams for artificial insemination, without sacrificing the structural integrity of the flock. They will also look to increase the number of ram selection candidates to genomic test to increase the variation of ASBVs for eating quality traits in their flock. In 2017, Mr Heazlewood genomic tested 250 rams born as part of a project with the breeder group Meat Elite. He will then use some ram lambs who rank highly in LEQ index to sire the 2018 drop. Mr Heazlewood is hoping increased genomic testing across the industry will help identify new Poll Dorset families that have the combination of high muscle and desirable eating quality ASBVs to increase diversity within his nucleus.

Modelling suggests that genotyping the top 20% of ram selection candidates based on initial measurements and ASBVs will increase genetic gain by up to 20% using the EQ or LEQ selection indexes.

Melton Vale will also be using the mating program Matesel in 2017 to maximise the genetic gain on LEQ whilst keeping future inbreeding to manageable levels.

## More information

**Sheep CRC website:** [www.sheepcrc.org.au](http://www.sheepcrc.org.au), then choose Genotyping tests

**Bramwell Heazelwood:** [meltonvale@bigpond.com](mailto:meltonvale@bigpond.com)