Sheep CRC ASBV Case Studies

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GRANT & ANNETTE BURBIDGE
TARCUTTA, NSW

* Index and ASBVs are used to select AI sires for the ram breeding nucleus.

* Index and ASBV values are also used to select rams for the commercial flock.

* Visual asssessment for fleece rot and flystrike susceptibility are also important selection criteria.

A focus on the key profit drivers of fine wool production and a strong commitment to genetic improvement has delivered Grant and Annette Burbidge a profitable self-replacing Merino flock.

Operating across four properties, covering 1680 hectares between Tarcutta and Tumbarumba, on the South West Slopes of NSW, the Burbidge's join 12,000 ewes annually. Eight hundred ewes make up a ram breeding nucleus which has the single purpose of multiplying industry leading genetics for use in their commercial flock.

"We started breeding our rams many years ago," Grant said. "We believed that the genetic gain from producing rams within our own flock was as good or better than buying rams from other sources. It is also cost effective."

Whilst that might sound easy, breeding high quality rams for use in the commercial operation has taken a dedicated focus on the breeding objective for many years.

"Fibre diameter and clean fleece weight are the major profit drivers in our business," Grant said. "We focus on those first and foremost, but it's also important that we keep an eye on staple strength and worm egg count, which depending on the season, can also play a major role."

The Burbidge's have always leaned heavily towards objective benchmarking in their breeding and selection decisions, and have used Australian Sheep Breeding Values (ASBVs) as their key genetic merit selection tool since being able to see that MERINOSELECT offered advantages over the within flock analysis that they had previously used.

"Prior to MERINOSELECT we used within flock breeding values provided by the then NSW Department of Agriculture to select our rams," Grant recalls. "When MERINOSELECT became more robust it gave us the ability to compare a much wider range of genetics to our own."

It is the pool of genetics in the MERINOSELECT database that Grant now selects artificial insemination (AI) sires from to join to a proportion of the nucleus ewes each year.

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"This year we joined 420 ewes to strategically selected AI sires," Grant said. "This is more than usual, but we are trying to increase the genetic diversity in the flock and bring in as much industry leading genetics as we can."

When selecting AI sires, Grant's strategy is simple. He looks for the top rams on the Merino 14% + SS index.

"I use the index as a drafting gate and then focus in on the individual traits. Fibre diameter, clean fleece weight, staple strength and worm egg count, in that order."

"We are looking to use the best possible genetics that meet our breeding objective. Only rams that have ASBVs are considered for use in the nucleus" Grant said.

The highest performing rams bred each year based on the Merino 14% + SS index, whilst taking into account individual traits, are retained for use in the nucleus alongside the AI sires, with the next best 50 to 60 being used in the commercial flock.

"In total we use about 150 rams every year," said Grant. "Every year all rams are measured for fibre diameter and clean fleece weight and culled on performance. Each ram has to compete to maintain his position in the flock."

Whilst ASBVs are an important part of the selection in the Burbidge's enterprise, visual traits remain important. With an average annual rainfall of 800mm, fleece rot and flystrike can play a major role in determining the success of the operation.

"We never preventatively treat rams and adult ewes for body strike," Grant said. "Any animal that is body struck is automatically culled."

Fleece rot scoring, based on the Visual Sheep Scores booklet, is also undertaken on all young rams with any poor performing rams being culled. Recently Grant has also started scoring breech wrinkle on lambs. Whilst currently this information is not used in making selection decisions, if it can be shown to be of economic importance, it may be used down the track to further reduce the susceptibility of the flock to breech strike.

This intense selection of rams entering the commercial flock has led to substantial gains being made in the productivity of the enterprise.

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"Our wool clip from adult ewes has dropped from around 19 micron 10 to 12 years ago to 18 micron today, whilst our clean fleece weights have stayed the same."

Andrew Woods, Independent Commodity Services, assists the Burbidge's with pricing for their annual clip and provides strategic and tactical advice as to selling and risk management. Andrew estimates the reduction in fibre diameter whilst maintaining clean fleece weight has led to an increase in profitability in the order of $2.42 per head per year, when averaged over the last 10 years of wool prices.

Over 12,000 ewes that's an overall increase of $29,000 per year.

"We will continue to drive towards lower micron whilst maintaining fleece weight as a way of ensuring our wool growing enterprise remains profitable," Grant said. "Genetics are one of the best tools we have to keep ahead of the ever declining terms of trade that all primary producers face."

To further improve the genetic gain of the flock, Grant is keen to start using DNA parentage tests when a more cost effective option becomes available.

"Currently we only have half pedigree, from the sires in the nucleus, so the accuracies of the ASBVs on our young rams is not as high as progeny with full pedigree as there is no information coming from the ewe side". Grant said. "In the future, full pedigree of our rams will allow us to select young sires with more confidence that they will reflect how their progeny perform".

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"Using the figures"

The Burbidge family use the 14% + Staple Strength (SS) Index when selecting rams. The index provided by MERINOSELECT is an important tool for screening rams. It combines the ASBVs for traits that the Burbidges are interested in – fleece weight, fibre diameter and staple strength – into one simple figure which can be used to rank the rams. The highest performing rams based on this index and taking into account other individual traits, are retained for use in the ram breeding nucleus each year. The next 50-60 rams ranked on this index are used in the commercial flock.

A ram's appearance is affected by the level of feeding, its age, whether it is a single or twin, if it was born to a good or bad season and if its dam was a maiden or adult. ASBVs and indexes made up of a combination of ASBVs remove these effects so that sheep producers can directly compare the genetic value of rams with greater confidence.

The pie chart below illustrates the traits which make up the Merino 14% + SS Index and the amount of emphasis that is placed on each of those traits in brackets.

Merino 14% + Staple Strength Index

- Clean Fleece Weight - CFW (8%)
- Fibre Diameter - FD (58%)
- Staple Strength - SS (31%)
- Body Weight - WT (3%)
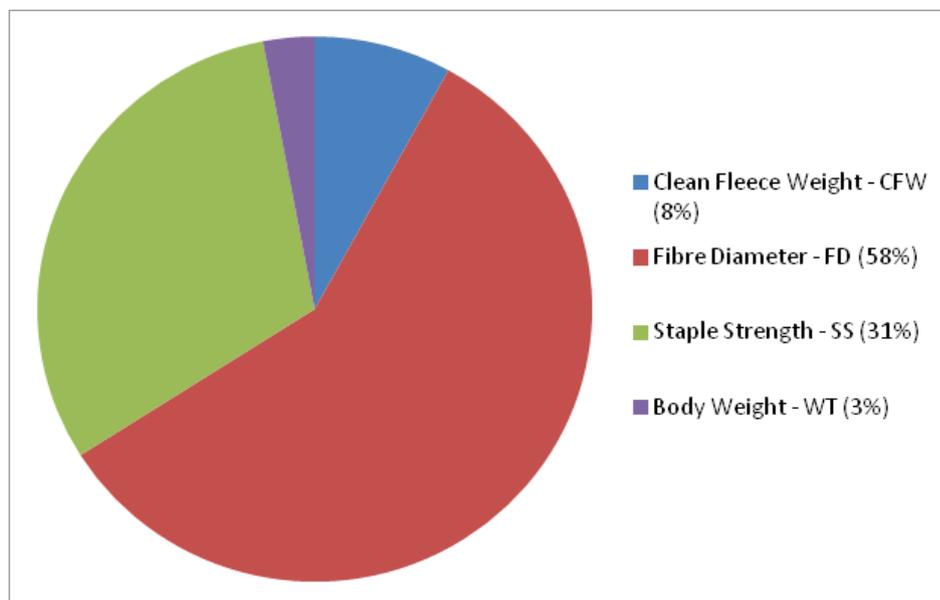
Over a ten year period, selecting rams on this index, the Burbidges can expect to achieve the following improvement in the traits of interest;

- Maintain fleece weight

- -1.2 micron reduction in fibre diameter

- 2.1 N/ktex improvement in staple strength

- Maintain number of lambs weaned