

MERINO SIRE EVALUATION EXPLAINED

The largest joining in the history of Merino Sire Evaluation took place in 2017 both in terms of the number of sires and the number of sites. One hundred and thirty-one sires were joined across nine sites with 19 new studs contributing 15% of sires.

This record number of joinings coincided with 14,795 downloads of Site Reports in 2017, indicating a strong level of interest in sire evaluation results. This builds upon important developments in sire evaluation, first among which was the recent AMSEA Historical Sire analysis.



Sire evaluation classing, September 2018, NSW DPI Trangie.

Merino Sire Evaluation was first established in 1989 to provide an independent comparison of the breeding performance of rams by evaluating their progeny relative to the progeny of other sires and in particular, link sires.

Thirty years later, the program evaluates progeny run across the 10 current sites under consistent protocols for a large number of traits that are important to commercial producers. The results are used by ram breeders to benchmark their genetics and by ram breeders and buyers alike to assist them select the genetics that are going to add the most profit to their enterprises.

SITES AND LINK SIRES

Sire evaluation sites are located throughout the major wool-growing regions of Australia with between 12 and 20 sires entered at each site. Sires are joined to ewes via artificial insemination (AI). Link sires are used at all sites to allow sires entered at different sites and in different years to be compared by removing the differences between sites, years and seasons, leaving only the genetics to be evaluated via the progeny.

EWES

The ewes at each site are selected on the basis of offering an even, classed line that is representative of sheep typically run in that environment. An equal number of ewes are joined through AI to each sire. The minimum number of ewes joined to each sire is 50, with some sites choosing to join more.



2017 drop sire evaluation MLP project F1 ewes, NSW DPI Trangie.

PROGENY

Evaluation of a sire's progeny is the key to sire evaluation. Progeny are managed together under the same conditions throughout the period of the trial, with the exception that single and twin bearing ewes can be separated prior to lambing and managed accordingly up until weaning. Ewe and wether progeny can also be managed separately. All progeny are evaluated with no culling, except for welfare purposes.



2018 drop sire evaluation MLP project F1 progeny, NSW DPI Trangie.

EVALUATION

Progeny can be evaluated at many stages in the trial. These include post lambing, early post weaning (120-210 days), post weaning (210-300 days), yearling (300-400 days), hogget (400-540 days) and adult (>540 days). Many sites complete evaluations at two or more stages.

Evaluation involves both measured traits and visual assessment. The measurement of traits is conducted by experienced site committee members and specialised service providers. Visual assessment (including classing for Tops and Culls) is completed by independent sheep classers and involves evaluating a comprehensive list of visual traits for wool quality, breech and conformation characteristics, as well as providing an overall classer's grade. All data collection and classing is carried out in a randomised, blind manner so the data collector and classer is not aware which sire's progeny they are assessing.

RESULTS AND REPORTING

AMSEA Site Reports are published for each site which provide information on traits including:

- measured wool, growth and carcase traits
- wool quality, breech and conformation traits
- internal parasite resistance
- growth and carcase traits

The reports present results as Adjusted Sire Means for each sire, which adjust the raw data for effects such as being born or raised a single or a twin, as well as Flock Breeding Values (FBVs). Site Reports can be downloaded from either of the *Sites* or *Reports* pages of the Merino Superior Sires website www.merinosuperiorsires.com.au

Also available from the www.merinosuperiorsires.com.au website is the Merino Superior Sires Report. Merino Superior Sires is the annual publication that reports Australian Sheep Breeding Values (ASBVs) which are generated using data from Merino Sire Evaluation as well as other data that has been submitted to MERINOSELECT. Merino Superior Sires also publishes visual classing results, contact details for sire owners and breeders and the leading rams in a summarised Top 50 report for each Index. Merino Superior Sires is produced annually with the support of AWI. The latest edition, Number 24, was produced in October 2018.



The cover of the latest Merino Superior Sires available on www.merinosuperiorsires.com.au

MERINO SIRE EVALUATION PROVES ITS WORTH

HISTORICAL SIRE EVALUATION

Linkage is a critical element of Merino Sire Evaluation and allows sires to be compared across years and environments. This is done by entering the same sire across a number of sites and years to allow environmental differences to be accounted for in the genetic assessment.

To determine how well the system of linkage in MERINOSELECT is working and to assess productivity gains over the past 15-20 years, 16 industry leading 'historical' sires, first tested in the mid-1990s, were re-entered in Merino Sire Evaluation sites between 2013 and 2015 with progeny completing evaluations in 2017.

The project proposed that if linkage is working, the historical sires should have similar Australian Sheep Breeding Values (ASBVs) now to the breeding values they had when they were originally entered. The project also proposed that if there have been significant genetic gains, today's new sires should be outperforming those of 15-20 years ago.

AND THE RESULTS ARE IN...

When analysed using the new 'dummy identities', the 16 historical sires' average ASBVs were very close to the breeding values of the sires using

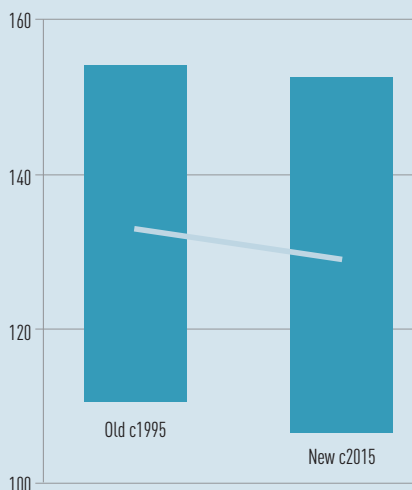


Figure 1: Merino Production Index; range of indexes and the average index of the 16 sires.

the data from 20 years earlier. That is, the results of the sires were repeatable 20 years apart. This shows that the evaluation methods are working, as is the technology of using Link Sires between sites and years over a 20-year time period.

SO WHAT ABOUT GENETIC GAIN OVER THE PERIOD?

When considering genetic gain, the historical sires showed a high level of superiority compared to other sires used in the 1990s, but are now well below average compared to current sires. This is illustrated by the fact that the historical sires were on average in the top 35% for the Merino Production Index in 1995, but are now in the bottom 15% compared to sires evaluated in 2015.

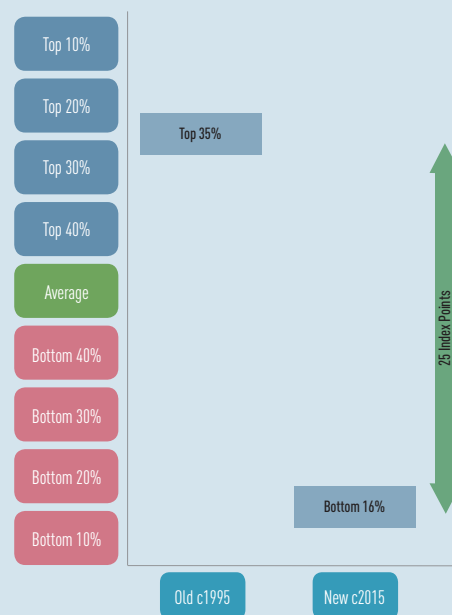


Figure 2: Merino Production Index

Fleece weights are up 11% compared to 1995, micron is down by 0.7 and body weight is up 3.3kg. This shows there has been considerable advancement in the productivity of the sires being entered into Merino Sire Evaluation over the 20-year period.

MORE INFORMATION
www.merinosuperiorsires.com.au

KEY MESSAGES FROM THE STUDY

1. Linkage across time is sufficiently high to ensure accurate estimation of genetic trends and users, or prospective users, of the technology can have confidence that the science behind the *across flock* and *across year* performance breeding values works well.
2. There is considerable genetic gain occurring in the sires entered into Merino Sire Evaluation.