An Introduction to MERINOSELECT

MERINOSELECT provides practical information for Merino breeders and wool growers on the genetic potential of their sheep. Sheep are ranked for various production characteristics using Australian Sheep Breeding Values (ASBVs).

MERINOSELECT ASBVs are used with visual selection methods to select sheep that match your breeding objectives. ASBVs are available for a comprehensive range of traits, and are an important tool in improving your flocks genetic gain and overall productivity. ASBVs provide objective comparisons between sheep, allowing for smart risk management when purchasing genetics to improve your flock.

MERINOSELECT ASBVs are directly comparable across flocks, providing breeders with the opportunity to benchmark their animals' performance against industry. This simplifies identification of the best sheep to meet your breeding objective.

Breeding decisions can be targeted more effectively if MERINOSELECT ASBVs and indexes are used to help identify sheep with better genes. This applies to decisions made by ram breeders in their own breeding enterprises, and to purchase decisions made by wool growers and commercial sheep producers.

How does MERINOSELECT work and when should I use it?

MERINOSELECT provides an easily accessible and searchable database of sheep (sires, dams, male progeny and female progeny) with their genetic merit expressed as ASBVs. This allows you greater flexibility in selecting rams or ewes for your enterprise, by comparing their ASBVs for the key traits in your breeding objective.

KEY BENEFITS

MERINOSELECT can help you identify sheep in terms of their genetic potential and the value they can bring to your business.

ASBVs are available for a comprehensive range of production and product quality traits for wool quantity and quality, growth, carcase merit, reproduction and worm resistance, so you can select animals with the traits you want.

MERINOSELECT is flexible and allows you to develop a measurement program that suits your breeding goals. It provides access to data on superior sheep and the opportunity for better genetic selection.

Merinos with superior ASBVs make more money for the commercial producer.

MERINOSELECT information is calculated from an analysis of pedigree and performance information contained in the MERINOSELECT database.

The database initially hosted around one million individual Merino sheep. The database has been drawn from the Merino Benchmark, Merino Genetic Services, CSIRO Select Breeding Services, Australian Merino Sire Evaluation Association (AMSEA) Central Test Sire Evaluation databases and other independent providers.

What will I need to participate?

MERINOSELECT data can be recorded on-farm and sent to a data manager or by using an on-farm computer software. The computer software allows the breeder to enter, store and transfer all measured trait data and to import, store and report ASBVs generated by MERINOSELECT.

Links to appropriate software providers can be found at the Sheep Genetics website www.sheepgenetics.org.au

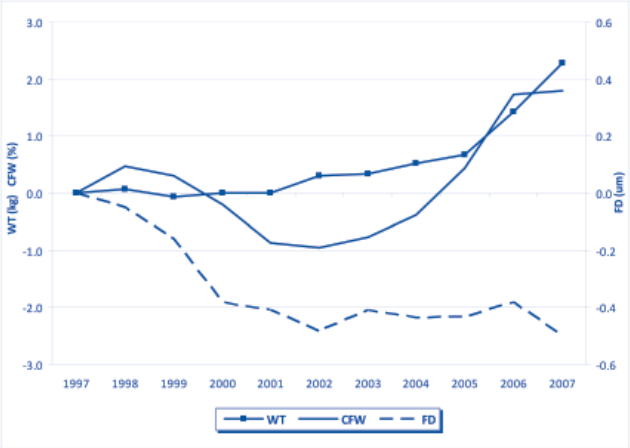
What ASBVs are available in MERINOSELECT?

MERINOSELECT produces ASBVs for a range of commercially relevant traits covering reproduction, maternal ability, growth, carcase and wool attributes and internal parasite (worm) resistance.

Within each trait group, measurements can be taken at different stages of the animal's life, for greater flexibility. For example, an animals fleece weight records could be recorded at yearling (12 months), hogget (15 months) or adult age.

Changes in flock ASBVs can be tracked over years and genetic trends produced for each trait (see Figure 1). Similarly, the genetic change in a flock can be compared against all other MERINOSELECT flocks. This is useful for monitoring genetic progress and fine-tuning breeding programs.

Figure 1: Genetic Trend for body weight, fibre diameter and clean fleece weight (across all MERINOSELECT clients).



<u>Fleece weight ASBVs</u> are available at yearling, hogget and adult ages. A positive ASBV means a genetically heavier-cutting animal. Both greasy and clean fleece weight ASBVs are available.

<u>Fibre diameter ASBVs</u> describes animals' genes for finer or coarser wool. Yearling, hogget and adult fibre diameter ASBVs are available. A lower ASBV means a genetically finer-wool animal.

<u>Wool quality ASBVs</u> include coefficient of variation of fibre diameter, staple strength, staple length and curvature for yearling, hogget and adult ages.

<u>Reproduction ASBVs</u> describe animals' genetics for number of lambs born and number of lambs weaned.

<u>Worm egg count (WEC) ASBVs</u> describes an animals' genes for carrying worm burdens. This is a combination of genetically being less likely to pick up worms and better able to dispose of them.

<u>Liveweight ASBVs</u> indicate an animal's genetic merit for growth. Weight ASBVs are available at birth, weaning (100 days), post-weaning (225 days), yearling, hogget and adult ages. A positive ASBV means the animal is genetically faster growing.

<u>Fat depth ASBVs</u> describe the fat depth of an animal at a constant weight. A negative ASBV means a genetically leaner animal.

<u>Eye muscle depth ASBVs</u> describe an animal's genes for eye muscle depth at a constant weight, a positive ASBV means a genetically heavier-muscled animal that will have slightly more of its lean tissue in higher-priced cuts.

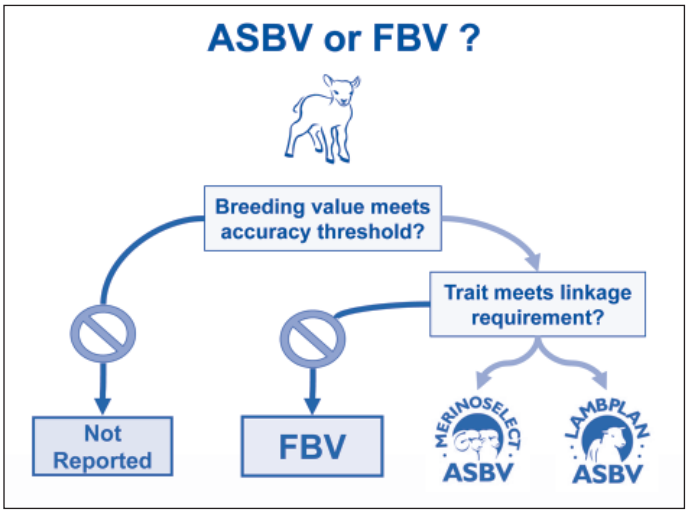
<u>Maternal weaning weight ASBVs</u> are a combination of a ewe's ability to provide a better maternal environment and have higher milking potential. The genetic merit of each animal up to weaning is divided between the direct effect of its own genetics and the effect of its mother's genes.

Accurate and consistent sheep identification and measurement is essential for genetic evaluation. To achieve the data quality required to maintain the integrity of MERINOSELECT ASBVs, an independent person must collect or conduct some of the trait measurements. This is an accredited ultrasound scanner for fat and muscle measurements or an accredited wool laboratory or in-shed equipment for wool characteristics. A link to accredited scanners and laboratories can be found at the website www.sheepgenetics.org.au

ASBVs and FBVs

MERINOSELECT reports two different levels of breeding values. These are Australian Sheep Breeding Values (ASBVs) and Flock Breeding Values (FBVs). ASBVs require a minimum standard for across flock linkage and accuracies and are reported with accuracy values. FBVs are within flock breeding values which have not met the minimum accuracy and linkage standards, and are not published with accuracy. Figure 2 below outlines the differences in ASBVs and FBVs.

Figure 2: Differences in acquiring an ASBV or an FBV.



MERINOSELECT provides:

- breeders and commercial producers with information to identify sheep with high genetic merit for key production traits,
- better information to help market your seedstock,
- ASBVs for a comprehensive range of production and product quality traits for both wool and carcases,
- an information system which allows ram breeders to develop a measurement program that suits their breeding objectives,
- flexibility for additional traits as breeding businesses develop and respond to the needs of their customers,
- measured genetic trends: what progress is being made in your breeding program from year to year,
- across-flock evaluations: genetic comparison of sheep born in different flocks (provided there are genetic links between flocks) that allow you to benchmark your flock against other MERINOSELECT users.

What indexes are available?

An index ranks animals for their suitability to a particular production or breeding objective. Individual ASBVs are weighted according to their relative economic importance and are combined to produce a single figure to rank each animal. Selection of animals for a number of purposes is made easier through the use of MERINOSELECT selection indexes.

There are several indexes with different emphases on micron reduction, fleece weight, fleece quality, bodyweight and fertility traits. MERINOSELECT publishes reports using four standard indexes catering for different breeding objectives. These indexes are based around the following production systems:

1. Fine wool production. These indexes have been developed for Merino wool production of less than 19 micron (adult ewes). A proportion of wethers would be typically retained as wool growing adults. Options in this scenario include:

- Maintain or reduce fibre diameter
- Maintain or increase staple strength
- Maintain or reduce worm egg count

2. **Merino wool + surplus animals - (self-replacing ewe flock).** These indexes have been developed for the majority of Merino production systems in the 19-23 micron range (adult ewes). Wethers and surplus ewes would be typically sold as store or meat animals at yearling to hogget age. Options in this scenario include:

- Maintain diameter + increase fleece weight OR reduce diameter + increase fleece weight OR reduce diameter + maintain fleece weight
- Maintain or increase staple strength
- Maintain or reduce worm egg count
- Body weight and/or reproduction traits can be measured or ignored

3. **Dual purpose Merino wool + meat production.** These indexes have been developed where the production system is in the 19-23 micron range (adult ewes) and where a proportion of the breeding ewes (typically about 25%) are mated to a terminal sire to produce crossbred animals sold as prime lambs. Such indexes will place a higher emphasis on body weight and reproduction rate because of the higher value of meat animals. Options include:

- Maintain diameter + increase fleece weight OR reduce diameter + increase fleece weight OR reduce diameter + maintain fleece weight
- Body weight included in the selection process, while reproduction and carcase traits (fat depth and muscle depth) can be included if desired.

Specific indexes can be designed for individual production systems, depending on the needs of the producer. For the super-fine wool producer, micron and staple strength is of key importance and is a far higher priority than growth or carcase traits. If this is the case, a specific index for this production system can be designed around those objectives.

The use of these indexes will assist the producer in working towards the individual goals of their production system. Indexes are by no means the only basis for selection, but another tool MERINOSELECT can offer its clients to assist in the selection process.

What other services can MERINOSELECT provide?

Besides the core ASBVs and indexes, MERINOSELECT enables ready access to several advanced technical options such as:

Pedigree reporting — the MERINOSELECT database combines pedigree, performance and ASBV data with straightforward reporting and makes it easy to generate sale catalogues and flock books.

Commercial data collection and analysis — MERINOSELECT genetic evaluation can readily include data from commercial flocks for both meat and wool traits. Breeders can use this facility to progeny test sires or sire groups in clients' flocks. Commercial producers can use this for evaluation of alternative sire sources.

Web resources

Breeders that use MERINOSELECT have the option of displaying their animals in a web-based searchable database. This advanced feature allows commercial producers and stud breeders to search for animals that meet their specific market requirements. Also available on the website are sale catalogues and semen catalogues which can be customised with the animals photo and description.

The bottom line

MERINOSELECT assists the professional Merino breeder to identify animals that most suit their breeding and business goals, and provides better information for seedstock marketing.

Using sheep with appropriate ASBVs will deliver greater profit potential for the commercial producer.

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