



An Introduction to LAMBPLAN



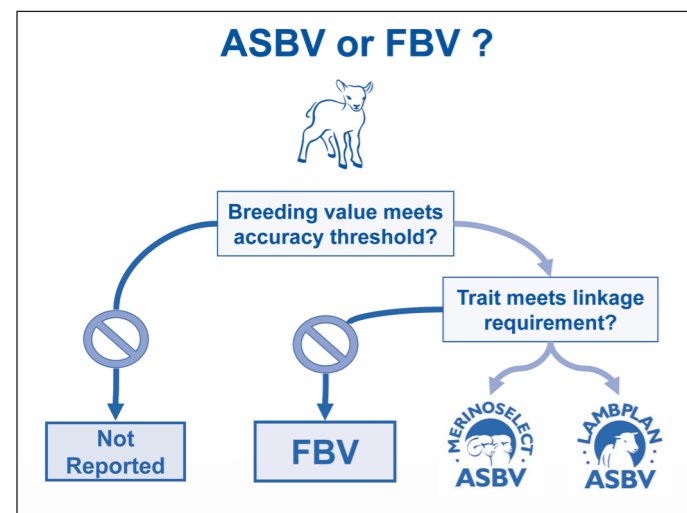
To produce sound estimations of breeding values, the heritabilities of the traits must be considered.

Typical heritabilities of performance traits are about 20-40% for weight and growth; about 20 - 35% for fat and eye-muscle depth; and about 10% for reproductive traits.

ASBVs and FBVs

LAMBPLAN reports two different levels of breeding values; Australian Sheep Breeding Values (ASBVs) and Flock Breeding Values (FBVs).

ASBVs require a minimum standard for across flock linkage and are reported with accuracies. FBVs are within flock breeding values and are not published with an accuracy figure. The figure below outlines the differences in ASBVs and FBVs.



Proving ASBVs in the field

By using the appropriate ASBVs, demonstrated improvements can be made. A trial conducted in central NSW joined 2000 crossbred ewes to groups of terminal sires. The following table shows the percentage of lambs which had reached 43kg or more at 16 weeks of age.

The trial demonstrates that rams with high post

Sire Group	Av PWT ASBV	% of Progeny 43kg+
High PWT	8.9	46.6%
Mid PWT	4.4	18.0%
Low PWT	1.6	11.6%

Source: SheepCRC and NSW DPI.

weaning weight (PWT) ASBVs produced significantly more lambs which reached the 43kg target.

Lambs sired by the high PWT group of rams grew 50g/head/day quicker than those sired by the low PWT group.

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Established in 1989, LAMBPLAN provides practical information for terminal, maternal and dual purpose sheep producers on the genetic potential of their sheep. Sheep are ranked according to various production characteristics using Australian Sheep Breeding Values (ASBVs).

ASBVs allow you to evaluate a ram's genetic potential for a range of traits that directly impact on the profitability of your lamb and sheep production business.

ASBVs are directly comparable across flocks within a breed, and across flock and across breed in the terminal sire group of breeds. This provides ram breeders with the opportunity to benchmark their animals' performance against industry.

LAMBPLAN provides flexibility enabling ram breeders to concentrate on the traits considered important to their breeding objective and the requirements of their clients.

For example, using LAMBPLAN, a lamb producer wanting to increase the weight and decrease fatness in their trade or export lambs, can select rams that have genes to best meet these objectives. Similarly a 1st cross ewe breeder can select a ram that will produce daughters that have higher fertility and produce heavier lambs at weaning.

A ram contributes half of the total genetics of lambs and breeding ewes, so the potential increase in genetic gain from directly selecting for specific economically important traits is high.

LAMBPLAN ASBVs describe genetic differences in production traits in sheep in simple, practical terms. LAMBPLAN delivers ASBVs for growth traits, fat and muscle depth; wool weight and quality traits; reproduction and maternal traits, and internal parasite (worm) resistance.

KEY BENEFITS

LAMBPLAN enables sheep breeders to reduce the risk associated with ram selection, improve the rate of genetic gain of their flocks, more reliably meet market specifications and improve overall productivity.

Only LAMBPLAN provides a benchmarking system that allows breeders to track the level of improvement in the genetic make-up of their flock.

LAMBPLAN provides flexibility enabling ram breeders to concentrate on the traits considered important to their breeding objective and the requirements of their clients.

Commercial buyers can use LAMBPLAN ASBVs to objectively compare rams and identify those which best suit their production system and market targets.

When should I use LAMBPLAN?

LAMBPLAN is a valuable tool for both ram breeders and commercial lamb and sheep producers.

Ram breeders use LAMBPLAN to objectively benchmark their animals' performance with other ram breeding flocks. More accurate sire selection enables ram breeders to achieve higher rates of genetic gain.

Additionally, LAMBPLAN ASBVs provide your clients with valuable information to select rams to meet their market targets.

Commercial meat and wool producers should use LAMBPLAN information provided by ram breeders to assist their selection of commercial flock sires.



LAMBPLAN provides accurate and objective comparisons of the genetic merit of rams from different flocks.

1st and 2nd cross lamb breeders, dual purpose breeders, and purchasers of store and breeding stock can all benefit from using LAMBPLAN information to get the genetics that are most suitable for their production system and market targets.

Accessing LAMBPLAN Information

LAMBPLAN provides an easily accessible and searchable web database of sheep 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.

Go to www.sheepgenetics.org.au

Similarly, ram breeders who use LAMBPLAN can provide breeding values for their animals on offer.

What traits does LAMBPLAN evaluate?

LAMBPLAN is structured to allow ram breeders to measure and evaluate a wide range of commercially important production traits. Within each trait group, measurements can be taken at different stages of the animals' life, so you can choose when to measure each trait.

For example, an animal's body weight can be taken at birth, weaning (2-4 months), early post weaning (4-7 months), post weaning (6-10 months), yearling (10-13 months), hogget (13-18 months) and adult (18 months or older).

Breeders who evaluate carcase traits must use a Sheep Genetics accredited operator to take fat and eye muscle depth measurements. Similarly, breeder's evaluating fleece quality traits must use an OFFM accredited operator. Contact details of accredited operators can be found on the Sheep Genetics web site or by contacting Sheep Genetics.

ASBVs are available for the following production trait groups:

Liveweight ASBVs indicate an animal's genetic merit for growth. A more positive ASBV means the animal is genetically faster growing.

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

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

Reproduction ASBVs describe animals' genetics for number of lambs born and number of lambs weaned.

Worm egg count (WEC) ASBVs describe an animal's genes for carrying worm burdens. This is a combination of genetically being less likely to pick up worms and being able to cope immunologically with the worm burden.

Maternal weaning weight ASBVs are a combination of a ewe's ability to provide a better maternal environment and have higher milking potential.

Fleece weight ASBVs describe an animal's genetics for wool quantity. A ram with a more positive ASBV for fleece weight will produce heavier cutting progeny.

Fleece quality ASBVs are available for a range of fleece quality traits.

What do I need to participate?

Contact the Sheep Genetics office for a LAMBPLAN information package, which contains a subscription form and detail on the costs, requirements and benefits of LAMBPLAN.

LAMBPLAN data can be recorded in books and sent to a data manager or breeders can enter their own data into a computer software program on-farm. Details of software providers and data managers can be found on the Sheep Genetics website at www.sheepgenetics.org.au

HOW does LAMBPLAN actually work?

LAMBPLAN ASBVs are calculated from an analysis of pedigree and performance information contained in the LAMBPLAN database. The database holds information on over 1.4 million sheep from across Australia.

The skill in breeding sheep for any purpose relies on the ability of the breeder to select parent animals that have a desirable set of genes to contribute to the next generation.

ASBVs contribute by estimating the genetic merit of animals for key production traits. This information is presented in units of production relevant to each trait (e.g. kg, mm or %).

One of the keys to successful results from LAMBPLAN is the accuracy of the information that is collected.

ASBVs accurately identify the value of an animal's genes by utilising three sources of information:

- 1) Performance measurements (including performance of all relatives).
- 2) Knowledge of environmental factors affecting performance.
- 3) Knowledge of how strongly different traits are inherited (heritability).

1. Performance data

No-one can simply look at an animal and see what genes it carries. LAMBPLAN uses a range of performance information to help identify those animals with the best genes for your production system and market.

The animal's own performance.

The performance of an individual animal for a specific trait is partly due to the expression of its own genes. Traits such as live weight, eye muscle depth and fleece weight, etc, are measured using standardised methods.

Accurate and consistent animal identification, which is essential for genetic evaluation, is achieved through use of an industry standard ID format.

The animal's relatives' performance.

Related animals share genes. By comparing and contrasting the performance of related animals a more accurate genetic assessment can be made.

Related trait performance.

One set of genes may affect more than one trait. For example, the genes that affect birth weight also affect growth of the animal later in life.

2. Environmental factors.

No matter what trait you are interested in, there are factors other than an animal's genes that influence its level of performance. Environmental effects include birth date, age of dam, birth type and rearing type, weaning group and management groups at later ages. The adjustment of ASBVs for environmental factors helps to achieve an accurate picture of genetic value of an animal.

3. The heritability of the trait.

Not all of the performance differences expressed by an animal are passed on to its progeny when used in a breeding program. The degree to which differences are passed on - or inherited - is known as the heritability.