LAMBPLAN ASBV

MERINOSELECT ASBV

A Pocket Guide to

ASBVs

Australian Sheep Breeding Values

SHEEP GENETICS

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- LAMBPLAN & MERINOSELECT -

Delivered through Sheep Genetics, LAMBPLAN and MERINOSELECT are the national genetic evaluation services for the Australian sheep industry. They provide a common genetic language in the form of Australian Sheep Breeding Values (ASBVs) to stud and commercial sheep producers.

LAMBPLAN and MERINOSELECT receive information from ram breeders on their sheep to calculate a breeding value for each animal. Both have searchable databases which are publicly available on the Sheep Genetics website. Here subscribers and visitors can source and compare sheep based on their ASBVs.

www.sheepgenetics.org.au

What is an Australian Sheep Breeding Value (ASBV)?

An ASBV is an estimate of the genetic potential a sheep will pass on to its progeny. ASBVs are available for a range of economically important traits and are designed to be used in conjunction with visual selection. The appearance and performance of an animal is a combination of its genes and the environment in which it is raised (e.g. the amount and quality of feed, single or twin birth type). ASBVs account for these environmental effects, allowing the comparison of sheep based on the genes they will pass on to their progeny. It is important to remember when selecting sheep you are choosing the genes, not the environment.

The LAMBPLAN and MERINOSELECT ASBV logos are your guarantee for across-flock breeding values describing an animal's genetic merit. Always look for these when making your selection decisions.

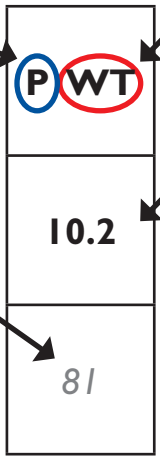
- How to Interpret ASBVs -

1. AGE STAGE

The first letter is the age stage.
W = Weaning (6-16 weeks)
P = Post weaning (7-10 months)
Y = Yearling (10-13 months)
H = Hogget (13-18 months)
A = Adult (>18 months)

4. ASBV ACCURACY (%)

This is a reflection of the amount of information available on each animal for each trait. As the amount of information increases the accuracy increases. The higher the accuracy, the closer the ASBV is to the true breeding value of the animal.



2. TRAIT NAME

The trait is expressed as an abbreviation of the trait name. This example is weight (WT).

3. ASBV

ASBVs are expressed as either positive or negative deviations from an average. This example for post weaning weight (PWT) is 10.2kg. As rams contribute half the genetics of their progeny (the ewe the other half), the resulting progeny will on average be 5.1kg heavier at post weaning than an animal with a PWT ASVB of 0.

- What is a Selection Index? -

Selecting animals involves balancing several key traits. To make selection easier traits can be combined into a selection index. A selection index combines ASBVs for several traits to give a single value. This reflects the performance of the sheep relative to the breeding objective of the particular index.

LAMBPLAN and MERINOSELECT offer a range of selection indexes, details of which can be found at www.sheepgenetics.org.au.

Index types include:

$Value Indexes: A dollar index indicates the value of an animal based on its suitability for a particular market. The value is given in real dollar figures and expressed as $/ewe joined/yr. For example a dollar index of 105 indicates that a ram will produce $5 extra value for every ewe joined compared to a ram with an $ index of 100. Therefore over four years, if a ram produces 200 progeny, the extra value produced by that ram will be $5 x 200 = $1,000.

Desired Gains Indexes: Work on a proportional gain of a combination of traits. For example the Carcase Plus index puts 60% emphasis on increasing growth, 20% on decreasing fat and 20% on increased eye muscle depth.

- Using Selection Indexes -

When using an index it is important that the aim of the index matches your flock's breeding objective, putting emphasis on your economically important traits. Below are ASBVs and index values for two sheep in the Sheep Genetics database. Note the index value is the same for both animals, however, they have significantly different ASBVs for **PEMD** and **PFAT**. While indexes are useful tools, it is important to always consider individual trait ASBVs to ensure you are selecting genetics that will have the desired effect on your flock.

Ram ID	PWT (kg)	PEMD (mm)	PFAT (mm)	Index
Ram 1	7.6	-0.7	0.8	155
Ram 2	8.4	1.0	3.3	155

- ASBVs for Live Weight Traits -

Example Live Weight ASBVs

Trait Abbreviation	BWT (kg)	MWWT (mm)	WWT (kg)	PWT (kg)	YWT (kg)
ASBV	0.28	1.4	6.4	9.8	6
Accuracy (%)	*65*	*55*	*72*	*76*	*68*
Compared to a ram with an ASBV of 0, this ram's progeny will be:	0.14kg heavier at birth	Produce daughters who wean lambs 0.7kg heavier	3.2kg heavier at weaning	4.9kg heavier at post weaning	3kg heavier at yearling

- Live Weight ASBV Definitions -

BWT:	**Birth Weight (kg)** - Rams with more negative BWT ASBVs produce lambs which are lighter at birth. *(BWT ASBVs estimate the genetic difference between animals in live weight at birth)*
WT:	**Weight (kg)** - Rams with more positive WT ASBVs produce progeny that grow quicker and are heavier at a certain age. WT ASBVs are reported at weaning (WWT), post weaning (PWT), yearling (YWT), hogget (HWT) and adult (AWT) ages. *(WT ASBVs estimate the genetic difference between animals in live weight at a given age)*
MWWT:	**Maternal Weaning Weight (kg)** - Rams with more positive MWWT ASBVs will produce daughters that wean heavier lambs. *(MWWT ASBVs give an estimate of the female progeny's potential for milk production and ability to provide a better maternal environment)*

- ASBVs for Carcase Traits -

Example Carcase ASBVs

Trait Abbreviation	PFAT (mm)	PEMD (mm)
ASBV	-1.0	2.2
Accuracy (%)	*68*	*70*
Compared to a ram with an ASBV of 0, this ram's progeny will be:	0.5mm leaner at post weaning	1.1mm deeper in the eye muscle at post weaning

- Carcase ASBV Definitions -

FAT: **Fat Depth (mm)** - Rams with more negative FAT ASBVs produce progeny that are leaner. FAT is reported at post weaning (PFAT), yearling (YFAT) and hogget (HFAT) ages.

(FAT ASBVs estimates the genetic difference between animals in GR fat depth)

EMD: **Eye Muscle Depth (mm)** - Rams with more positive ASBVs for EMD will produce progeny that have more muscle, independent of weight, and a higher lean meat yield. EMD is reported at post weaning (PEMD), yearling (YEMD) and hogget (HEMD) ages.

(EMD ASBVs estimate the genetic difference between animals in eye muscle depth at the C site)

- ASBVs for Fleece Traits -

Example Fleece ASBVs

Trait Abbreviation	YCFW (%)	YFD (µm)	YFDCV (%)	YSS (N/Ktex)	YSL (mm)	YCURV (°/mm)
ASBV	18	-1.6	-1	4.0	8.6	4.8
Accuracy (%)	*65*	*76*	*67*	*62*	*72*	*76*
Compared to a ram with an ASBV of 0, this ram's progeny will have:	9% greater CFW at yearling	0.8 µm finer at yearling	0.5% less variation in micron at yearling	2 N/Ktex stronger wool at yearling	4.3mm longer wool at yearling	2.4 °/mm higher curvature as yearling

- Fleece ASBV Definitions -

CFW:	**Clean Fleece Weight (%)** - Rams with higher CFW ASBVs produce progeny which will cut more wool.
FD:	**Fibre Diameter (µm)** - Rams with more negative FD ASBVs produce progeny which are finer.
FDCV:	**Fibre Diameter Coefficient of Variation (%)** - Rams with lower FDCV ASBVs will produce progeny with lower variation in fibre diameter.
SS:	**Staple Strength (N/Ktex)** - Rams with more positive SS ASBVs will produce progeny with stronger wool.
SL:	**Staple Length (mm)** - Rams with more positive SL ASBVs will produce progeny with longer fibre length.
CURV:	**Curvature (°/mm)** - Rams with more positive CURV ASBVs will produce progeny which have more crimp.

(Fleece ASBVs estimate the genetic difference between animals for measurable wool characteristics. Fleece ASBVs are available at three age stages: Yearling (Y), Hogget (H) and Adult (A))

- ASBVs for Reproduction Traits -

Example Reproduction ASBVs

Trait Abbreviation	NLB (%)	NLW (%)	PSC (cm)
ASBV	2	3	1.2
Accuracy (%)	*42*	*43*	*55*
Compared to a ram with an ASBV of 0, this ram's progeny will:	Produce 1% more lambs	Wean 1.5% more lambs	Have 0.6cm greater scrotal circumference at post weaning

- Reproduction ASBV Definitions -

NLB:	**Number of Lambs Born (%)** - Rams with more positive NLB ASBVs will sire daughters that produce a higher percentage of lambs. *(NLB ASBVs estimate the genetic difference between animals for the number of lambs born at each lambing opportunity)*
NLW:	**Number of Lambs Weaned (%)** - Rams with more positive NLW ASBVs will sire daughters that wean a higher percentage of lambs. *(NLW ASBVs estimate the genetic difference between animals for the number of lambs weaned at each lambing opportunity)*
SC:	**Scrotal Circumference (cm)** - Rams with more positive SC ASBVs produce daughters which are more fertile. SC is reported at post weaning (PSC), yearling (YSC) and hogget (HSC) ages. *(SC ASBVs estimate the genetic difference between animals for scrotal circumference)*

- ASBVs for Worm Resistance Traits -

Example Worm Resistance ASBVs

Trait Abbreviation	PWEC (%)
ASBV	-20
Accuracy (%)	*60*
Compared to a ram with an ASBV of 0, this ram's progeny will be:	10% more resistant at post weaning

- Worm Resistance ASBV Definitions -

WEC:

Worm Egg Count (%) - Rams with more negative WEC ASBVs produce progeny who have a higher genetic potential to resist worm burdens. Lower WEC ASBVs are desirable. WEC ASBVs are available at weaning (WWEC), post weaning (PWEC), yearling (YWEC) and hogget (HWEC) ages.

(WEC ASBVs estimate an animal's genetic ability for carrying worm burdens. This is a combination of being genetically less likely to pick up worms, and being able to cope immunologically with the worm burden. WEC ASBVs are expressed as a percentage relative to a count of 500 eggs per gram)

- Sheep Genetics Traits and Ages of Evaluation -

Age stage	Age range evaluation [1]	Live weight (kg)	Muscle & fat depth (mm)	Fleece traits [2]	Scrotal circumference (cm)	Worm egg count (epg)	Type & structural traits [3]
Birth	Birth to 24hrs	✓					
Weaning	42-120 days (6-16 wks)	✓				✓	✓
Early post weaning	120-210 days (4-7 mths)	✓	✓		✓	✓	✓
Post weaning	210-300 days (7-10 mths)	✓	✓		✓	✓	✓
Yearling	300-400 days (10-13 mths)	✓	✓	✓	✓	✓	✓
Hogget	400-540 days (13-18 mths)	✓	✓	✓	✓	✓	✓
Adult	>540 days (>18 mths)	✓		✓			✓

[1] The average age of the sheep in the Management Group.

[2] Fleece traits: The minimum fleece growth at evaluation is six months for fleece weight (kg) and five months for fibre diameter (μm); coefficient of variation of fibre diameter (%); staple strength (N/ktex); staple length (mm), crimp frequency (crimps/cm) and the scored wool quality traits (fleece rot, fleece colour, fleece character and staple weathering).

[3] Scoring type and structural traits (face cover, neck/body development and feet/leg conformation). For more information refer to the *Visual Sheep Scores* guide.

- Reports -

Sheep Genetics publishes reports on the actual range of ASBVs for the LAMBPLAN terminal and maternal and MERINOSELECT databases. Percentile band reports allow you to view the top and bottom ASBVs for key traits and the ranges in between (e.g. top 10%, average, bottom 20%). This report allows the comparison of sheep among their breed or breed group.

In addition to the percentile band report Sheep Genetics produces a report for animals that are trait leaders in key production traits. An Elites report is also available; this ranks animals based on index.

To access these reports visit the Sheep Genetics website and follow the links to LAMBPLAN or MERINOSELECT, then click on reports.

- Contact Details -

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