



MERINO GENETIC FUTURE KEY REPORT

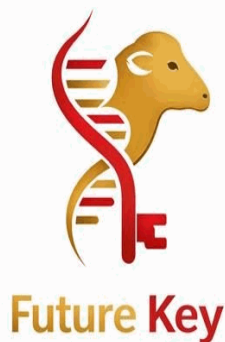
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MB CATHCART

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The SA Merino Genomically Enhanced Future Values

What is a Genomic Breed Evaluation?

The SA Merino Breed Evaluation includes **genomic information (SNPs)** together with pedigree and performance records to estimate future values. These are called **Genomically Enhanced Future Values**. The SA Merino is the first small stock breed in Africa to use this technology. Animals that have been genomically tested through the SA Stud Book Genomic Selection Service are identified by the genomic logo in this report.

Why is genomically testing of animals important? It provides extra information about an animal's genetic potential. For **young animals**, this means their future values can be estimated **more accurately**, even before they have produced many progeny. This is especially valuable for traits that are difficult to measure or take a long time to evaluate, such as:

- Fertility
- Maternal Ability
- Longevity

This allows breeders to identify genetically superior animals at an earlier age and make better breeding decisions.



Parentage Verification

Genomic testing can also confirm whether an animal's sire and dam are correctly recorded.

The test compares around **20 000 DNA markers**, making it extremely accurate. The report shows the verification result for:

- ☐ Parent was not genomically tested. Parentage is not verified.
- ☒ Both animal and parent have genomic tests, and the parentage is verified.
- ☒ The genomic test indicates that there is a conflict in the parentage, *i.e.* the parentage is not correct.

Why can a parentage conflict occur? There are usually two possible reasons:

1. The wrong parent was recorded If another possible parent has also been tested, the genomic evaluation may identify the correct sire or dam.

If the breeder can confirm that the suggested parent was available at mating, the pedigree should be corrected through the Breed Society on LOGIX.

2. The wrong DNA sample was submitted Occasionally the incorrect biological sample is collected or labelled. Because DNA testing is very accurate, the animal should be sampled and tested again if this is suspected.

Why is correct parentage so important? Accurate pedigrees lead to more accurate future values. Correct parentage benefits your breeding programme, the SA Merino breed and the SA Merino Genomic Evaluation. For older animals with many recorded offspring, correcting parentage may have little effect on their future values. For young animals, however, correct parentage can make a significant difference because much of their future value is based on information from their parents.

Understanding Your DNA Results Every animal receives one copy of each gene from its sire and one from its dam. Sometimes both copies are the same and sometimes they are different. Some genes are **dominant**, meaning one version masks the other. For example, an animal that carries both the **polled** and **horned** genes will usually be **polled**, because the polled gene is dominant. Most economically important traits, however, are controlled by **many genes working together** to express the trait, rather than by a single gene.

Percentage Homozygosity Measures how similar the DNA inherited from the sire and dam is. It is calculated as the percentage of DNA markers (SNPs) that are the same from both parents. This gives an indication of the animal's **genetic diversity**. In general:

- Lower homozygosity indicates **greater genetic diversity**.
- Higher homozygosity indicates the animal is **more genetically alike across its DNA**, which may be associated with increased inbreeding.

Important Information

SA Stud Book/LOGIX distances itself from any errors which are beyond its control and cannot be held liable for any such errors. SA Stud Book/LOGIX only publishes the information at its disposal and assumes that sampling on the farm, handling of the samples and the actions in the laboratory were performed correctly.

Use www.sasmallstock.com, SA Stud Book's search engine, to view genetic profiles of specific animals or to search animals according to specifications.

General Information

How to use this Report: This report shows the **genetic strengths and weaknesses** of your flock for production and reproduction traits. It helps you see whether your breeding decisions are improving your flock over time and whether you are breeding in the right direction.

Future Key : This shows where your flock ranks genetically within the SA Merino breed on a scale of **1 to 9**, using information from the South African Merino Genomic Evaluation. In general, **the higher the Future Key, the higher the genetic potential of your flock.**

Future Value : This indicates an animal's genetic ability for a specific trait. In simple terms, it predicts what the animal is likely to pass on to its offspring.

Future Values are compared with the average of animals born about **five years ago** (the base year), where the average of the base year is set to **zero**.

For most traits, **higher Future Values are better**, including:

- Weaning Weight (Direct and Maternal)
- Body Weight (where the production environment can support larger animals)
- Clean Fleece Weight
- Staple Length
- Total Weight Weaned

For a few traits, **lower values are preferred**:

- **Fibre Diameter:** Lower values indicate finer wool.
- **Age at First Lambing:** Lower values mean ewes lamb at a younger age.
- **Inter-lambing Period:** Lower values mean ewes lamb more frequently.

Future Value Index : These **Indices** makes it easy to compare animals. The breed average is always **100**:

- **Above 100** means the animal is genetically better than the breed average.
- For **Fibre Diameter**, the opposite applies: **Below 100** indicates finer wool, which is more desirable.

Future Selection Indices : These **Selection Indices** combine several important traits into a single value, making it easier to identify the best all-round breeding

animals. Because not all traits contribute equally to profitability, each trait is given an economic weighting according to its importance in a profitable Merino production system. These indices therefore provide a quick indication of the **overall genetic value** of an animal and help breeders select sheep that are expected to produce more profitable offspring.

For the SA Merino breed two future selection indices are developed:

Relative Economic Value (REV)

$$\text{EKW} = -3416.81 + 4.320 \text{ EBV}_{\text{BW}} + 112.61 \text{ EBV}_{\text{CFW}} + 1.10 \text{ EBV}_{\text{SL}} - 406.52 \text{ EBV}_{\text{FD}} + 8.9857 (19.5 + \text{EBV}_{\text{FD}})^2 + 9.405 \text{ EBV}_{\text{TW}}_{\text{W}}$$

Relative Reproduction Economic Value (REV-Rep)

$$\text{EKW-REP} = -3402.52 + 0.21 \text{ EBV}_{\text{BW}} + 112.87 \text{ EBV}_{\text{CFW}} + 1.10 \text{ EBV}_{\text{SL}} - 404.82 \text{ EBV}_{\text{FD}} + 8.9481(19.5 + \text{EBV}_{\text{FD}})^2 + 18.81 \text{ EBV}_{\text{TW}}_{\text{W}}$$

Abbreviations

WnD:	Wean Direct	WnMat:	Wean Maternal
BW:	Body Weight	CFW :	Clean Fleece Weight
FD:	Fibre Diameter	SL:	Staple Length
WOOL:	Fleece Score	CONF:	Conformation Score
COND:	Condition Score		
AFL:	Age First Lambing		
ILP:	Inter-lambing Period		
NLW:	Number of Lambs Weaned		
TWW:	Total Weight Weaned		
REV_R:	Reproduction Selection Index (Main SA Merino Selection Index)		
REV:	Relative Economic Value		

The active population is defined as lambs born in the past 36 months and their parents, regardless if they were measured or not, excluding those that are already cancelled on LOGIX.

The data used in this evaluation has been obtained from LOGIX, as supplied by breeders. Everything possible had been done to present the information correctly. SA Stud Book does not take any responsibility for the use and interpretation of the information from this publication.

SINGLE GENE TRAITS

DGAT1

A gene that increases butterfat production and butterfat- and protein percentages, while decreasing milk- and protein production.

FABP4

A gene that increases butterfat production, as well as increases fat thickness and related carcass traits.

Horned or Polled Status

The Relaxin Family Peptide Receptor 2 (RXFP2) gene located on Chromosome 10 is a good indicator for polled or horned status. There is evidence of sex-dependant differences of both additive and dominant effects in the expression of this trait. Currently prediction accuracy lies at about 70% due to other unknown genetic forces. These markers are in the process of being validated in the SA Merino breed.

The gene for polledness, is dominant :

- PP: The animal breeds pure for polled. This means that the animal received a polled gene from both its parents and can only transmit the polled gene to its offspring.
- PH: The animal is polled, but carries the horn gene, because the polled gene (P) is dominant over the horn gene (H). It can transmit either a polled or horned gene to its offspring.
- HH: The animal breeds pure for horns. It can only transmit horn genes to its offspring.
- The exact inheritance of 'Scurs' is still unknown.

Booroola Gene (FecB)

This mutation is located on Chromosome 6, in a gene that codes for bone morphogenic protein 1B (BMP1B). This mutation has an additive effect, meaning that a heterozygous carrier has on average +0.7 larger litter size, with homozygous carriers have a +0.8 larger litter size in comparison to the homozygous wild type animals. Although this mutation leads

to higher litter sizes, it has been shown to negatively affect lamb survival and lowers the birth weight of the lambs born.

Lacuane Locus (FecL)

This recessive mutation is located on chromosome 11. Only animals homozygous for the mutation show an increase in ovulation rates.

Double-Muscling (Myostatin Gene)

Myostatin plays an inhibitory role in muscle-development. It controls the rate at which muscle fibres grow and allows for normal deposition of fat tissue. Wild-type animals exhibit normal growth and have standard carcass characteristics. Carriers of the myostatin will have excessive muscle growth which will change the conformation of the animal's body, results in higher carcass 'compactness', increases muscle depth and results in lower fat tissue levels. Decreased fat levels have a negative effect on reproduction as double-muscled animals may not have enough reserves to breed or wean heavy lambs.

Callipyge Gene

This is similar to the myostatin gene but the effects on the animal are localised to only the pelvic limbs and loin. The result is postnatal (after birth) hypertrophy of muscles that results in 35% higher muscle mass of the buttocks. It negatively affects muscles tenderness and results in a poor eating quality meat. The appearance of this mutation only occurs if the animal inherits the mutation from the father and gets the wild type from the mother. Homozygotic carriers will appear normal.

Yellow Fat Carcass (Beta-Carotene)

This is a simple recessive trait that results in the fat of the carcass to be yellow in colour. This is due to the accumulation of carotenoids, sourced from the diet, in the fatty tissue.

Scrapie (*Transmissible Spongiform Encephalopathy*)

This is a fatal, degenerative disease that affects the nervous systems of sheep. Affected animals will show changes in behaviour such as increased nervousness which can be seen as excitable/nervous/aggressive moods. Progressive changes will include body tremors, stumbling and increased inability to stand. Animals will also have irritated skin which they try to scratch using fence posts, their horns, through nibbling or with a hind foot that results in excessive wool loss and/or damage to the skin. All this results in substantial weight loss and eventual death. Wild type animals have the lowest susceptibility (highest resistance). Heterozygous and homozygous animals of the mutant variants have lower resistance and are more prone to developing scrapie.

Batten Disease (*Ovine veroid lipofuscinosis*)

An unwanted, lethal recessive gene where affected lambs suffer from brain atrophy, retinal degradation and experience muscle tremors. Symptoms appear at 9 – 12 months of age and death often occurs at about 24 months of age.

Lentivirus Resistance

A retrovirus causing a progressive wasting disease. Especially the lungs, joints, udder and animal's nervous system are targeted. No treatment or vaccine are currently available. A mutation on the TMEM154 gene has been identified to confer resistance to Lentivirus. Animals with the EE wild-type variant are the most susceptible. Carriers of the K-mutation have low to no Lentivirus infections.

McArdle's Syndrome

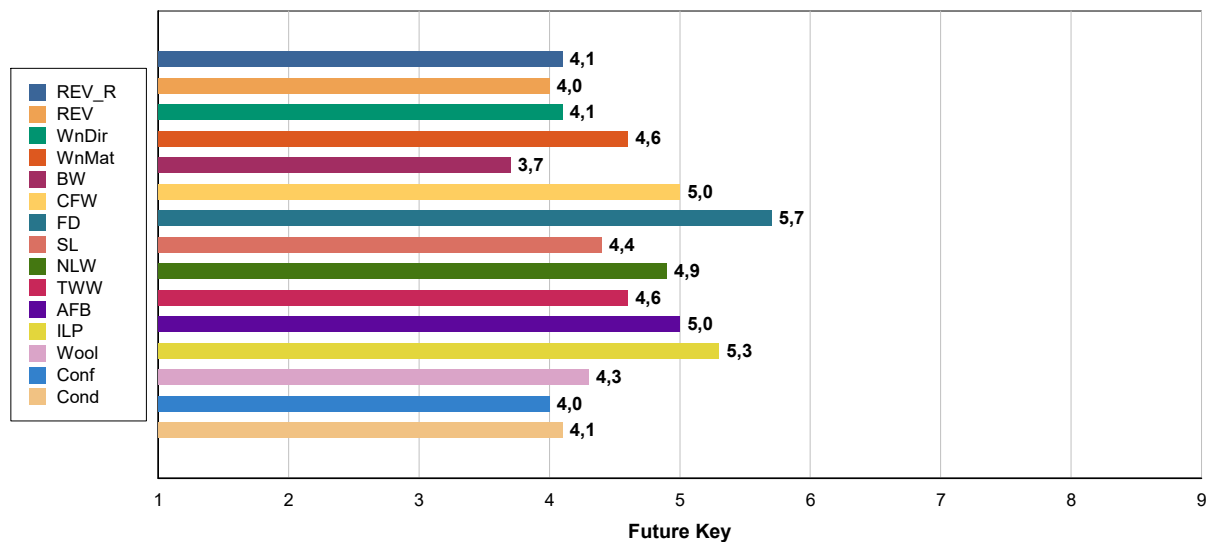
A lethal, recessive gene that results in lambs being unable to metabolize glycogen due to the absence of a functional myophosphorylase gene. Visible symptoms include low muscle tone (hypotonia), muscle cramps weakness, and progressive respiratory failure. Urine will appear brownish-red after periods of activity. Symptoms will become more evident as the lamb grows.

Future Key Profile

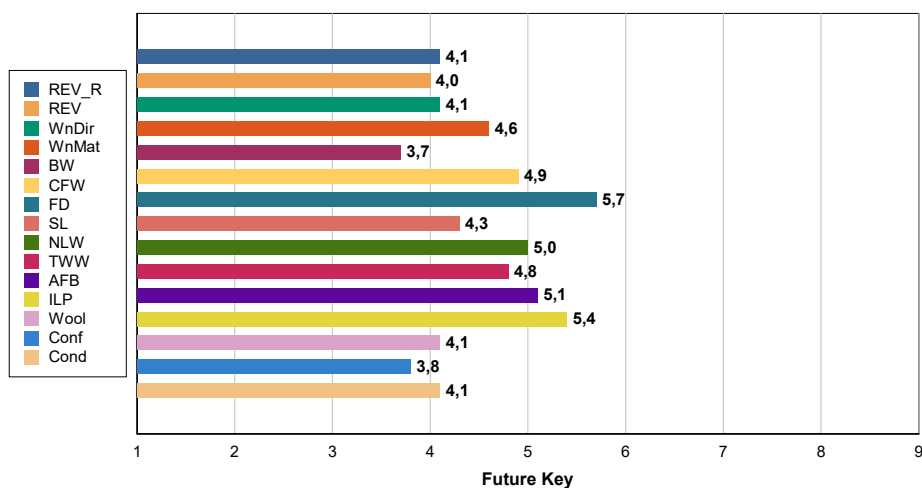
Future Key	Future Key Index
1	< 58
2	58 - 69
3	70 - 81
4	82 - 93
5	94 - 105
6	106 - 117
7	118 - 129
8	130 - 141
9	> 141

All Active Animals

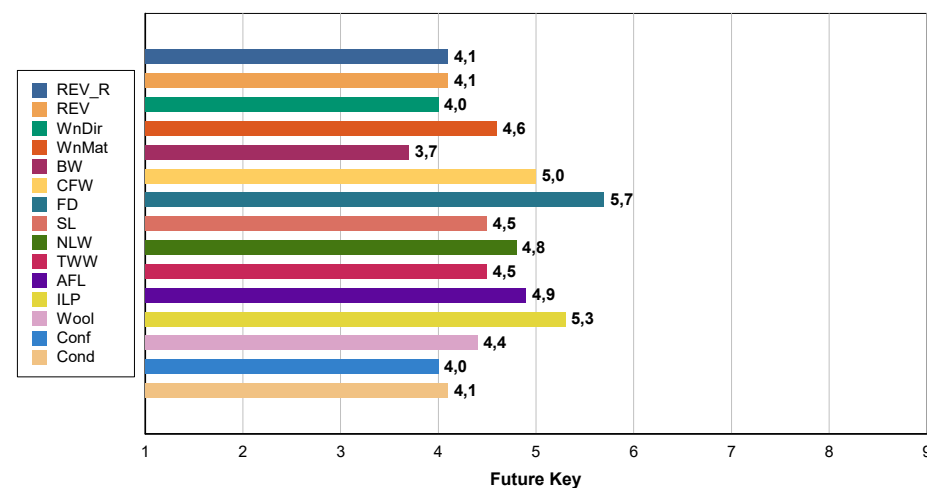
Number : 128



All Active Rams



All Active Ewes



Genetic Windows

Average Future Indices

(Lambs born in the last 24 months and their Parents)

Number : 128

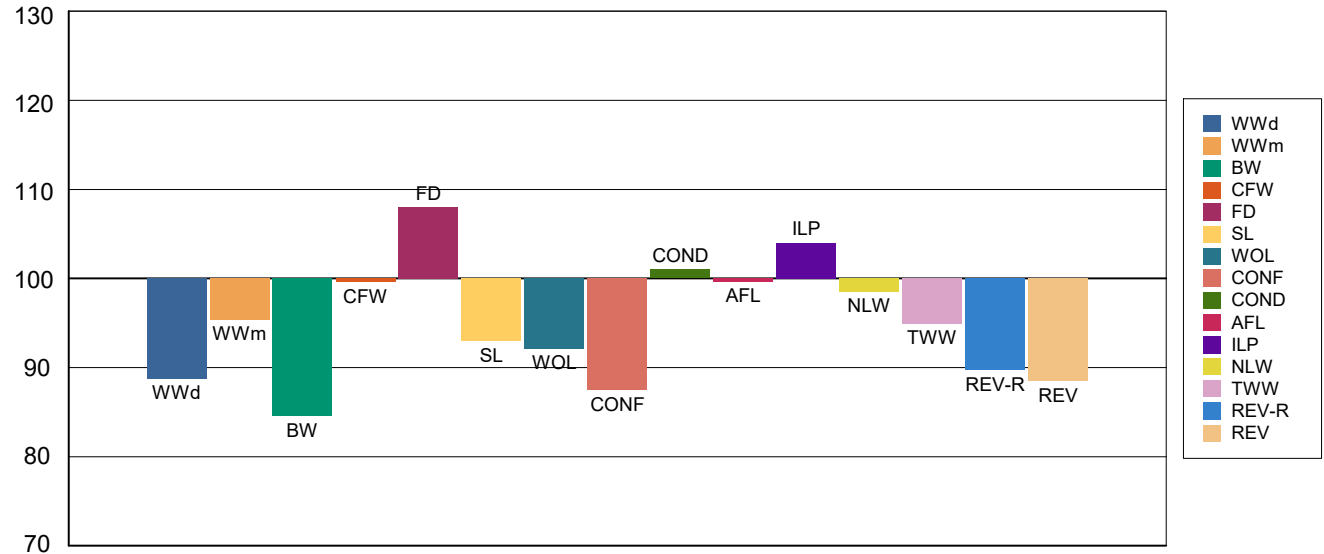
Genetic Linkage

(Based on the youngest measured generation)

Level	Nr of Link Rams

A link ram should have at least 20 measured progeny in your flock and at least another 20 measured progeny in at least one more flock.

Try to use at least 5 link rams in a 5 year period to obtain strong genetic linkage within the breed.



Abbrev	Trait	Interpretation of Index	
		<100 (Worse)	>100 (Better)
WWD	Weang Weight Direct	Lower	Higher
WWM	Wean Maternal	Less	More
BW	Bodyweight	Lower	Higher
CFW	Clean Fleece Weight	Lighter	Heavier
FD	Fibre Diameter	Finer	Stronger
SL	Staple Length	Shorter	Longer
WOL	Wool Score	Lower	Higher
CONF	Conformation Score	Lower	Higher
COND	Condition Score	Worse	Better
AFL	Age 1st Lambing	Later	Earlier
ILP	Interlambing Period	Longer	Shorter
NLW	Number of Lambs Weaned	Less	More
TWW	Total Weight Weaned	Lighter	Heavier
REV_R	Reproduction REV	Poorer	Better
REV	Economic Value	Poorer	Better

- ❖ The **Genetic Windows** allow a quick overview of the genetic status of the flock compared to the breed.
- ❖ The values presented here, are the **average Future Indices and Future Selection Indices** of all the lambs born in the past 24 months and their parents in the flock and the breed.
- ❖ An Index of 100 is equal to the average of the lambs born in the past 24 months and their parents in the breed.
- ❖ The future indices for AFL and ILP are presented in such a way that an index of above 100 indicates animals that have lower (better) EBVs for these traits.
- ❖ Please use the table for interpretation of the breeding values and selection indices.

Genetic Windows

Sires of Lambs born in the last 24 Months

Number :

130
120
110
100
90
80
70

Dams of Progeny born in last 24 Months

Number :

130
120
110
100
90
80
70

Lambs born in the last 24 Months

Number :

130
120
110
100
90
80
70

Average Values

Average Future Values

Averages of all lambs born in the past 24 months and their parents

Trait	Flock			Breed		
	All	Rams	Ewes	All	Rams	Ewes
Future Values for Production Traits						
Weaning Weight Direct	-0.53	-0.47	-0.56	0.44	0.47	0.42
Weaning Weight Mat	-0.09	-0.08	-0.09	0.07	0.08	0.07
Body Weight	-1.31	-1.33	-1.30	0.70	0.99	0.60
Clean Fleece Weight	0.08	0.04	0.09	0.08	0.12	0.07
Fibre Diameter	0.48	0.47	0.48	-0.15	-0.18	-0.14
Staple Length	-1.32	-1.63	-1.16	1.14	1.46	1.01
Wool	-0.08	-0.13	-0.05	0.10	0.14	0.09
Conformation	-0.17	-0.21	-0.15	0.17	0.24	0.14
Condition	-0.09	-0.09	-0.09	0.12	0.15	0.10
Future Values for Fertility						
Age at First Lambing	-1.28	-2.57	-0.61	-1.56	-1.76	-1.45
Inter-lambing Period	-1.50	-1.67	-1.41	-0.33	-0.47	-0.26
Number Lambs Weaned	-0.16	0.24	-0.37	0.14	0.22	0.10
Total Weight Weaned	-0.17	0.02	-0.27	0.21	0.22	0.20
Future Selection Indices						
REV	-24.6	-26.5	-23.6	32.3	40.1	29.4
REV-Reproduction	-20.7	-20.8	-20.7	31.6	38.7	28.9
Inbreeding						
Inbreeding (%)	1.56	1.56	1.56	2.40	2.42	2.38
Number of Animals						
Number of Animals	133	47	86	96526	35355	61171

Average Future Indices

Average Future Indices of all active measured animals, where breed average of active measured animals = 100.

FK = Future Fey

Trait	Flock					
	All	FK	Rams	FK	Ewes	FK
Future Indices for Production Traits						
Weaning Weight Direct	88.8	4.1	89.5	4.1	88.4	4.0
Wean Weight Mat	95.4	4.6	95.7	4.6	95.2	4.6
Body Weight	84.6	3.7	84.4	3.7	84.7	3.7
Clean Fleece Weight	99.6	5.0	98.3	4.9	100.3	5.0
Fibre Diameter	108.0	5.7	107.9	5.7	108.0	5.7
Staple Length	93.0	4.4	92.1	4.3	93.5	4.5
Wool	92.1	4.3	89.8	4.1	93.4	4.4
Conformation	87.5	4.0	86.0	3.8	88.3	4.0
Condition	89.0	4.1	89.2	4.1	88.9	4.1
Future Indices for Fertility						
Age at First Breeding	99.7	5.0	101.2	5.1	98.9	4.9
Inter-lambing Period	104.0	5.3	104.6	5.4	103.7	5.3
Number Lambs Weaned	98.5	4.9	100.5	5.0	97.5	4.8
Total Weight Weaned	94.9	4.6	97.5	4.8	93.6	4.5
Future Selection Indices						
REV	88.5	4.0	88.1	4.0	88.7	4.1
REV-Reproduction	89.7	4.1	89.7	4.1	89.7	4.1
Inbreeding						
Inbreeding (%)	1.56		1.56		1.56	
Number of Animals						
Number of Animals	133		47		86	

Genetic Trends : Production Traits

Average Future Values per year of birth for animals in the breed and flock. Genetic trends are based on measured animals that were bred by the specific breeder.

Genetic Trends: Fertility Traits and Selection Indices

Average breeding values per year of birth for animals in the breed and flock. Genetic trends are based on measured animals that were bred by the specific breeder.

For AFL, ILP and FD flock genetic trends below breed averages are desirable

Genetic Trends: Breed and Flock

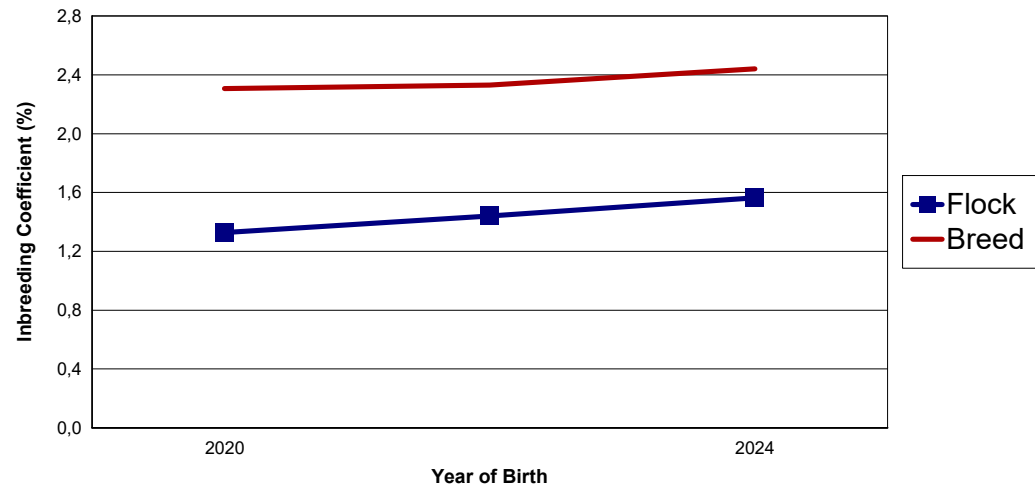
Average Future Values per year of birth for animals in the breed and flock. Genetic trends are based on measured animals that were bred by the specific breeder.

Genetic Trends of the Breed																													
Birth Year	Weaning Weight			Body Weight		CFW		FD		SL		WOOL		CONF		COND		AFL		ILP		NLW		TWW		REV-Rep		REV	
	Number	Dir	Mat	Number	EBV	Number	EBV	Number	EBV	Number	EBV	Number	EBV	Number	EBV	Number	EBV	Number	EBV	Number	EBV	Number	EBV	Number	EBV	Number	EBV	Number	EBV
2014	24421	-0.75	-0.12	15627	-1.57	15246	-0.30	15395	0.07	15207	-3.46	11119	-0.31	11118	-0.38			4468	-1.53	3008	0.15	7865	-1.78	5536	-0.80	24421	-53.30	24421	-51.99
2015	24387	-0.65	-0.05	14841	-1.27	14618	-0.24	14669	0.12	14649	-2.64	10445	-0.25	10442	-0.30			4582	-1.76	3055	0.31	8096	-1.11	5290	-0.51	24387	-47.55	24387	-47.33
2016	25099	-0.36	-0.08	15344	-0.83	15193	-0.19	15232	0.07	15225	-1.92	10808	-0.16	10801	-0.19			4170	0.17	3043	0.66	7180	-0.94	4819	-0.37	25099	-33.38	25099	-33.08
2017	21288	-0.34	-0.05	12370	-0.59	12226	-0.13	12257	0.02	12251	-1.47	10448	-0.13	10448	-0.17	396	-0.10	4076	-0.86	2997	0.30	6707	-0.39	4517	-0.18	21288	-21.06	21288	-21.33
2018	23479	-0.19	-0.03	14040	-0.41	13793	-0.07	13970	0.08	13855	-0.74	13632	-0.10	13628	-0.12	2769	0.05	4509	-0.43	3186	0.40	7346	-0.18	4868	-0.16	23479	-15.51	23479	-15.42
2019	23716	-0.06	0.01	12804	-0.14	12534	-0.03	12696	0.00	12428	-0.20	11065	-0.04	11064	-0.04	6538	-0.02	4360	0.35	3342	0.45	6812	0.09	4577	0.01	23716	-5.49	23716	-5.66
2020	25173	0.00	0.00	14352	0.00	14254	0.00	14306	0.00	14288	0.00	11237	0.00	11227	0.00	7053	0.00	4845	0.00	3556	0.00	6826	0.00	4996	0.00	25173	1.08	25173	0.73
2021	21569	0.17	0.05	12191	0.39	12456	0.03	12535	-0.06	12678	0.52	9939	0.02	9930	0.05	6839	0.03	4602	-0.15	3172	-0.10	6683	0.22	4804	0.19	21569	12.19	21569	10.94
2022	25168	0.25	0.04	14842	0.43	14378	0.05	14903	-0.07	14900	0.94	11648	0.05	11644	0.10	7239	0.03	4737	-0.42	2610	-0.39	5947	0.31	4546	0.25	25168	15.55	25168	14.79
2023	23989	0.31	0.05	12878	0.65	12791	0.09	12835	-0.13	12946	1.38	8263	0.12	8263	0.15	6554	0.08	4059	0.21	1149	-0.70	4171	0.00	3218	0.21	23989	23.39	23989	22.98
2024	23216	0.43	0.07	11910	0.84	11759	0.10	11815	-0.19	11660	1.37	10056	0.12	9879	0.19	8492	0.12	1886	2.33	93	0.91	1412	0.19	1205	0.42	23216	25.07	23216	25.31
2025	16592	0.52	0.07	5883	1.03	5473	0.12	5860	-0.30	5861	1.51	5077	0.15	5077	0.25	4666	0.15	42	-5.00			5	-0.02			16592	30.51	16592	31.52

Genetic Trends of the Flock																														
Birth Year	Weaning Weight			Body Weight		CFW		FD		SL		WOOL		CONF		COND		AFL		ILP		NLW		TWW		REV-Rep		REV		
	Number	Dir	Mat	Number	EBV	Number	EBV	Number	EBV	Number	EBV	Number	EBV	Number	EBV	Number	EBV	Number	EBV	Number	EBV	Number	EBV	Number	EBV	Number	EBV	Number	EBV	

Inbreeding

Inbreeding in the Flock and Breed



Pedigree Information

	Number	%
Known Sires	128	96
Known Dams		0

Note : Inbreeding can be under-estimated if pedigree information is incomplete or incorrect

- The effects of inbreeding can be observed from 6.25% onwards. Inbreeding primarily leads to decreased fertility and low survivability of lambs.
- Inbreeding % is dependent on the accuracy of pedigree information. It is therefore highly recommended to record pedigrees as accurately and completely as possible and to not mate related animals.
- Incomplete or incorrect pedigree information can be reported to SA Stud Book.

Level and Rate of Inbreeding

Year of Birth	Level* (%)	Rate (% / year)
2020 - 2024	1.56	0.06
Recommended	< 6.25	< 0.1 - 0.2

*Of the last year of birth

Inbreeding Levels for Specific Matings

Progeny with Parents :	25%
Full Brother x Full Sister :	25%
Half Brother x Half Sister :	12.5%
One Common Grandparent :	6.25%
One Common Great-Grandparent :	3.125%

Percentiles of Future Values : All Active Animals

Percentile	Wean Direct	Wean Mat	Body Weight	CFW	FD	SL	NLW	TWW	AFL	ILP	WOOL	CONF	COND	REV	REV-REP
Gemid/Avg	0.36	0.05	0.44	0.05	-0.06	0.71	0.19	0.16	-2.71	-0.50	0.04	0.09	0.09	17.79	17.60
SA/SD	0.95	0.38	1.43	0.23	0.74	3.41	2.22	0.84	-11.03	-3.37	0.22	0.28	0.18	52.74	53.53
MIN	-5.64	-2.10	-6.62	-1.32	3.53	-16.21	-13.87	-4.67	63.14	21.60	-1.24	-1.47	-0.85	-156.46	-160.13
1%	-1.89	-0.92	-2.75	-0.47	1.76	-7.20	-5.87	-1.91	25.63	8.56	-0.41	-0.50	-0.35	-77.45	-81.88
5%	-1.13	-0.57	-1.73	-0.30	1.12	-4.49	-3.60	-1.19	12.68	5.47	-0.26	-0.31	-0.19	-50.18	-52.32
10%	-0.76	-0.40	-1.21	-0.21	0.81	-3.18	-2.56	-0.87	8.52	3.86	-0.21	-0.22	-0.12	-36.81	-38.33
20%	-0.36	-0.22	-0.71	-0.14	0.48	-2.11	-1.38	-0.51	4.73	2.04	-0.16	-0.13	-0.04	-26.60	-26.53
30%	-0.13	-0.13	-0.35	-0.10	0.28	-1.05	-0.61	-0.24	2.57	0.81	-0.11	-0.07	-0.01	-19.10	-17.86
40%	0.06	-0.06	-0.05	-0.04	0.16	-0.28	0.04	0.01	1.08	-0.13	-0.05	-0.01	0.03	-6.30	-5.52
50%	0.30	0.03	0.33	0.02	0.04	0.41	0.54	0.23	-0.60	-0.92	0.00	0.06	0.07	7.91	7.75
60%	0.54	0.12	0.71	0.09	-0.16	1.34	0.62	0.36	-2.62	-1.45	0.06	0.14	0.11	23.21	22.92
70%	0.81	0.23	1.14	0.16	-0.39	2.31	0.94	0.58	-5.83	-2.04	0.14	0.23	0.16	40.92	40.95
80%	1.13	0.35	1.65	0.24	-0.66	3.49	1.51	0.74	-13.68	-2.93	0.23	0.33	0.23	62.30	62.18
90%	1.59	0.53	2.34	0.36	-1.03	5.16	2.66	1.15	-18.59	-4.16	0.34	0.47	0.32	91.14	91.05
95%	1.98	0.69	2.91	0.45	-1.35	6.58	3.81	1.51	-20.17	-5.32	0.43	0.59	0.40	115.73	116.93
99%	2.75	1.00	3.97	0.66	-1.98	9.47	6.22	2.36	-29.61	-8.66	0.61	0.83	0.55	164.49	167.08
MAX	4.81	1.78	7.26	1.29	-3.57	27.80	12.65	4.67	-44.93	-17.91	1.15	1.45	1.01	323.26	322.91

SD = Standard Deviation = Indicates the distribution around the average

Percentiles of Future Indices : All Active Animals

Percentile	Wean Dir	Wean Mat	Body Weight	CFW	FD	SL	NLW	TWW	AFL	ILP	WOOL	CONF	COND	REV	REV-REP
Gemid/Avg	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
SA/SD	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
MIN	43	36	44	42	147	50	32	34	24	24	36	37	47	62	62
1%	72	70	72	72	129	71	69	70	69	68	73	72	70	75	75
5%	80	80	80	81	120	80	80	81	83	79	81	81	80	82	82
10%	85	85	85	85	116	85	85	86	88	85	85	85	85	85	85
20%	90	91	90	90	110	90	91	91	92	91	90	90	91	90	90
30%	94	94	94	94	106	94	95	94	95	95	93	94	94	93	93
40%	97	97	97	97	103	97	98	97	96	98	97	97	97	96	96
50%	100	100	100	100	100	100	101	100	98	101	100	100	100	99	99
60%	103	103	103	103	97	103	103	103	100	104	103	103	103	102	102
70%	106	106	106	106	94	106	105	106	103	106	106	106	106	106	106
80%	110	110	110	110	90	110	108	109	108	109	110	110	110	110	110
90%	115	115	115	115	85	115	114	115	118	113	115	115	115	116	116
95%	120	120	120	120	81	120	120	119	122	118	120	120	120	121	121
99%	129	129	129	128	73	128	132	131	131	129	128	130	130	131	131
MAX	150	150	150	150	56	150	160	160	150	160	150	150	150	159	157

Top 15 REV_REP Sires Used in the Flock



Genotyped

*Inbreeding in red is high

FV = Future Value

Indices in top 10%
Above breed average
Indices in bottom 10%

Acc: Accuracy of the Future Value
Future values with accuracy less than 5% are not printed

Index: Expresses the Future Value around 100 where 100 is set as the average Future Value of lambs born in the past 24 months and their parents in the breed

Animal Information		Parents & Progeny				Selection Indices		Future Values - Weights			Future Values - Wool			Future Val - Fertility			Future Val - Appraisal					
Animal ID Regnr	% In- breeding	Sire ID Dam ID	Wean		Wool test		REV-R	REV	Weaning Dir	Weight Mat	Body Weight	CFW	FD	SL	NLW	TWW	Dam EPI	WOOL	CONF	COND		
			Prog	Nr	Prog	Nr																
			FV Index	FV Index	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc
		Active Breed Average :					31.62	32.34	0.44	0.07	0.70	0.08	-0.15	1.14	0.14	0.21		0.10	0.17	0.12		
1	1923 21 0176 92627363	1.54	---		1922 17 0114		5.94 95	-7.11 92	-0.09 94 38	-0.18 93 31	-0.63 90 36	0.02 97 37	0.30 106 39	-0.93 94 36	3.66 117 26	1.10 112 28	112 4	-0.26 84 36	-0.22 86 37	-0.07 90 31		
			Future Key :					5	4	5	4	4	5	6	5	6	6		4	4	4	
2	1922 20 0039 91683623	1.41	1832 17 0506		1922 16 0076		5.59 95	21.14 98	-0.02 95 60	0.06 100 50	0.90 102 60	0.24 107 62	0.00 102 65	1.43 101 61	-3.94 80 41	-1.26 80 44	102 4	0.55 122 58	0.42 111 58	0.09 99 52		
			Future Key :					5	5	5	5	5	6	5	5	3	3		7	6	5	
3	1794 22 0063 97453054	1.56	1794 19 0110		1794 19 0026		-15.61 91	-22.91 89	0.64 102 51	0.05 99 14	-0.16 93 33	-0.16 90 37	0.17 104 41	-1.19 93 35	0.58 102 5	0.71 107 5	101 1	-0.05 93 5	0.01 95 5	0.15 103 5		
			Future Key :					4	4	5	5	5	4	5	5	5	6		5	5	5	
4	1794 22 0128 97452650	1.62	1794 20 0584		1794 17 0126		-23.05 89	-24.47 89	-0.17 93 51	0.22 104 14	0.51 99 32	0.06 99 36	0.76 112 41	0.77 99 34	0.22 100 5	0.36 102 5	99 1	-0.16 89 5	-0.20 87 5	0.02 95 5		
			Future Key :					4	4	4	5	5	5	6	5	5	5	5		4	4	5
5	1864 21 0099 92892819	1.56	1864 19 0024		1864 19 0372		-31.84 88	-17.36 90	-1.07 83 53	-0.28 90 44	-0.84 88 52	0.38 113 54	0.91 114 57	4.55 110 53	-3.13 84 33	-1.93 71 36	104 5	0.35 113 49	0.27 105 49	-0.05 91 48		
			Future Key :					4	4	4	4	4	6	6	6	4	3		6	5	4	
6	1864 21 0079 92892132	1.54	---		1864 18 0534		-63.16 81	-64.46 80	-0.65 87 34	-0.11 95 28	-1.03 87 33	-0.22 87 36	0.60 110 41	-1.81 92 34	-0.26 98 22	-0.32 93 25	123 5	-0.21 86 30	-0.10 90 31	0.00 94 21		
			Future Key :					4	3	4	5	4	4	6	4	5	4		4	4	5	
Top Sires Flock Averages							-20.35	-19.19	-0.23	-0.04	-0.21	0.05	0.46	0.47	-0.48	-0.22		0.04	0.03	0.02		

Top 60 REV_REP Measured Rams



Genotyped

*Inbreeding in red is high

FV - Future Value

Indices in top 10%
Above breed average
Indices in bottom 10%

Acc: Accuracy of the Future Value
Future values with accuracy less than 5% are not printed

Index: Expresses the Future Value around 100 where 100 is set as the average Future Value of lambs born in the pas 24 months and their parents in the breed

Animal Information		Parents & Progeny				Selection Indices		Future Values - Weights			Future Values - Wool			Future Val - Fertility			Future Val - Appraisal			
Animal ID Regnr	% In- brding	Sire ID Dam ID	Wean		Wool Test		REV-R	REV	Weaning Dir	Weight Mat	Body Weight	CFW	FD	SL	NLW	TWW	Dam EPI	WOOL	CONF	COND
			Prog	Nr	Prog	Nr														
			wean	flocks	tested	flocks	FV Index	FV Index	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc
		Active Breed Average :																		
1																				
		Future Key :																		
Top Flock Rams (with known parents) Average:																				

Young Rams



Genotyped

*Inbreeding in red is high

FV - Future Values

Indices in top 10%
Above breed average
Indices in bottom 10%

Acc: Accuracy of the Future Value
Future values with accuracy less than 5% are not printed

All young rams with a weaning weight but no wool data, younger than 7 months and both parents known.

Animal Information		Parents		Selection Indices		EBV - Weights			EBV - Wool			EBV - Fertility			EBV - Appraisal		
Animal ID Regnr	% In-breeding	Sire ID	Dam ID	REV-R	REV	Weaning Weight Dir	Weight Mat	Body Weight	CFW	FD	SL	NLW	TWW	Dam EPI	WOOL	CONF	COND
				FV Index	FV Index	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc
		Active Breed Average :															
1																	
		Future Key :															
Flock Rams (with known parents) Average: Number :																	

Top 15 REV_REP Ewes



Genotyped

*Inbreeding in red is high

FV - Future Value

Indices in top 10%
Above breed average
Indices in bottom 10%

Acc: Accuracy of the Future Value
Future Values with accuracy less than 5% are not printed

Ewes with weaning weights, older than 12 months and both parents known.

Animal Information		Parents		Progeny		Selection Indices		Future Values - Weights			Future Values - Wool			Future Val - Fertility			Future Val - Appraisal		
Animal ID	% In-brding	Sire ID	Dam	Generation	Prog Weaned	REV-R	REV	Weanling	Weight	Body	CFW	FD	SL	NLW	TWW	EPI	WOOL	CONF	COND
Regnr		Dam ID	EPI Times Lambd	1st	2nd	FV Index	FV Index	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	Times Lambd	FV Index Acc	FV Index Acc	FV Index Acc
Active Breed Average :																			
1																			
Future Key :																			
Top Flock Ewes (with known parents) Average:																			

Top 15 EPI Ewes



Genotyped

*Inbreeding in red is high

FV - Future Value

Indices in top 10%
Above breed average
Indices in bottom 10%

Acc: Accuracy of the Future Value
Future Values with accuracy below 5% are not printed

Ewes with weaning weight and an EPI value, older than 12 months and both parents known.

Animal Information		Parents		Progeny		Selection Indices		Future Values - Weights			Future Values - Wool			Future Val - Fertility			Future Val - Appraisal		
Animal ID Regnr	% In- brding	Sire ID Dam ID	Dams EPI Times Lamb	Generation Prog Weaned		REV-R	REV	Weaning Weight		Body Weight	CFW	FD	SL	NLW	TWW	EPI Times Lamb	WOOL	CONF	COND
				1st	2nd			Dir	Mat										
						FV Index	FV Index	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc	FV Index Acc		FV Index Acc	FV Index Acc	FV Index Acc
Active Breed Average :																			
1																			
Future Key :																			
Top Flock Ewes (with known parents) Average:																			

SINGLE-GENE STATUS OF GENOTYPED ANIMALS

0 = Doesn't carry the gene; 1 = Carries one copy of the gene; 2 = Carries both copies of the gene; - not available

Animal ID	Homozyg (%)	Polled/Horned	DGAT1	Booroola	Lacuane Locus	FABP4	Dubbele Muscling	Yellow Fat	Batten's Disease	Callipyge	McArdle Syndrome	Scrapie	Lentivirus Resistance
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Scrapie Resistance Levels

R1 = Highly Resistant.
 R2 = Resistant. Be careful when breeding with the animal.
 R3 = Slightly Resistant. Be very careful when breeding with the animal.
 R4 = Susceptible. Animal should not be used for breeding.
 R5 = Highly Susceptible. Animal should not be used for breeding.

Lentivirus Resistance Levels

R1 = Resistant.
 R2 = Moderately Resistant.
 R3 = Susceptible.

Recognition is given to GADI and the Western Cape Department of Agriculture for making their genotypes available which enabled the development of a Genomic Breed Evaluation for the Merino.

