South Australia

Merino Sire Evaluation

Site Report

Within-Site Results
July 2019

2018 Drop

Yearling Assessment

Conducted by

South Australian Merino Sire Evaluation Trial Committee

Under the auspices of

AUSTRALIAN MERINO SIRE EVALUATION ASSOCIATION
MERINO
Superior Sires

With support from

merinosa

awi Australian Wool Innovation Limited

Foreword

South Australia Merino Sire Evaluation

The South Australian Merino Sire Evaluation Trial (SAMSET) was established in 2017 at Keyneton Station, in the eastern Mount Lofty Ranges. Keyneton Station importantly offered to be the host site for the first Merino Sire Evaluation Trial in SA, to be run on a commercial property, and continued to host the 2018-Drop progeny for the SA site.

There was significant interest in the site from both SA and interstate ram breeders, with the quality of rams entered of very high calibre. This will make an important contribution to genetic improvement for the South Australian merino industry.

Supported by Merino SA, the trial is an accredited sire evaluation site run under the rigorous design, recording and data evaluation protocols of the Australian Merino Sire Evaluation Association (AMSEA). AMSEA trials provide the opportunity for objective comparisons to be made between rams from different studs by evaluating their progeny for sheep type, structure, wool production and carcase traits. The progeny are all run together in the same environmental conditions that typify SA Merino production, with all male progeny marked.

As a non-profit site, our sponsors provide a very important contribution, and we would like to acknowledge their generous support of the SA Merino Sire Evaluation Site. We would also like to thank those individuals and/or businesses, including Merino SA and many industry service providers, whom have volunteered their time, service and/or product in helping the site run as smoothly as possible throughout the year.

Roger Fiebig Chairman
South Australia Site Committee

Disclaimer

Australian Merino Sire Evaluation Association Incorporated (AMSEA) is funded by Australian Wool Innovation Limited (AWI) which gratefully acknowledges the funds provided by the Australian Government to support research, development and marketing of Australian wool. AMSEA sponsors, woolgrower entry fees and site committee in-kind contributions also contribute to AMSEA funding. This publication should only be used as a general aid and is not a substitute for specific advice. To the extent permitted by law, AWI and AMSEA exclude all liability for loss or damage arising from the use of the information in this publication. © 2019 Australian Wool Innovation Limited and Australian Merino Sire Evaluation Association Incorporated. All rights reserved.

The Australian Merino Sire Evaluation Association has approved the format used in this report.

Contents

2018 Drop Yearling Assessment

The information in this Site Report provides an update of the assessment of the 2018 drop, including the Yearling assessments of the sire's progeny performance for measured and visually assessed traits.

The Yearling wool and visual assessments were made at 11 months of age with 7.5 months of wool growth.

Site Committee

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2018 Drop Owner and Contact Details

Breeders flock, Sire name Sire ID #, Breed †	Contact Details
Challara Poll, 140394 601285-2014-140394, Poll Merino	**Ron & Peter Wilkinson** 821 Koonah Rd, Dangaragan WA 6507 P: (08) 9652 9340, M: 0427 427691, E: challara2000@outlook.com
Collinsville Poll, 160608 600105-2016-160608, Poll Merino	**Tim Dalla** PO Box 26, Hallett SA 5419 M: 0488 773329, E: tim@collinsville.com.au
Flairdale Poll, 150078 (Link) 600015-2015-150078, Poll Merino	**Wayne & Matt Lehmann** PO Box 323, Tailem Bend SA 5260 P: (08) 8598 7006, M: 0408 896877, E: flairdale@internode.on.net
Gunallo Poll, 160473 600880-2016-160473, Poll Merino	**Brad & Ray Schroeder** PO Box 59, Pinnaroo SA 5304 P: (08) 8577 8485, M: 0427 778485, E: ray@gunallo.com.au
Hazeldean, 003368 500383-2015-003368, Merino	**Jim Litchfield** Hazeldean Pty Ltd, Cooma NSW 2630 P: (02) 6453 5555, M: 0417 676561, E: admin@hazeldean.com.au
Hilton Heath Poll, 150817 600781-2015-150817, Poll Merino	**Roger Fiebig** PO Box 277, Mt Pleasant SA 5235 P: (08) 8569 3031, M: 0407 568786, E: fiebighh@activ8.net.au
Kelvale Poll, 160088 600416-2016-160088, Poll Merino	**Stephen Kellock** PO Box 304, Keith SA 5267 P: (08) 8755 1761, M: 0427 438138, E: admin@kelvalepollmerinos.com.au
Leahcim Poll, 132624 (Link) 600815-2013-132624, Poll Merino	**Andrew and Rosemary Michael** PO Box 31, Snowtown SA 5520 P: (08) 8865 2085, M: 0418 828431, E: leahcimgenetics@bigpond.com
Lucernbrae Poll, 160010 601208-2016-160010, Poll Merino	**Paech Judy** 876 Bremer Valley Road, Callington SA 5254 P: (08) 8538 5092, M: 0415 701493, E: lucernbrae@internode.on.net
Malleetech Poll, 166048 609533-2016-166048, Poll Merino	**David Smith** 976 Geranium South Road, Geranium SA 5301 P: (08) 8577 2216, M: 0427 587722, E: david@malleetech.com
Mumblebone, 160418 500063-2016-160418, Merino	**Chad Taylor** Marapana, 456 Wuuluman Road, Wellington NSW 2820 P: (02) 6845 3620, M: 0458 453608, E: chad@mumblebone.com.au
Nyowee Poll, 14L770 600065-2014-14L770, Poll Merino	**Barrie & Ian Michael** PO Box 147, Balaklava SA 5461 P: (08) 8863 1277, M: 0409 692891
Radnor Poll, 120604 600899-2012-120604, Poll Merino	**Stephen Koehler** 1917 Langhorne Creek Rd, Langhorne Creek SA 5255 M: 0407 099465, E: bkradnor74@gmail.com
Roemahkita Poll, 160256 601127-2016-160256, Poll Merino	**Joe & Tracey Dahutz** PO Box 15, Cummins SA 5631 P: (08) 8676 4243, M: 0428 295706, E: roemahkita@bigpond.com
Tuckwood Poll, 161069 601053-2016-161069, Poll Merino	**Geoff Tucker** PMB 21, Millicent SA 5280 P: (08) 8734 2050, M: 0427 342050, E: geomag@activ8.net.au
Wallaloo Park Poll, 161514 (Link) 601332-2016-161514, Poll Merino	**Trent Carter** 80 Bolangum Inn Road, Marnoo VIC 3387 P: (03) 5359 2290, M: 0427 776114, E: trent_carter@hotmail.com

(Link) Sire evaluated to provide links between years and sites so that the all site results can be combined into a single report, eg, *Merino Superior Sires.*

† Breed of flock in which the sire was born

\# The 16 digit Sire ID is a unique number for all sheep.
- 2 for the breed of the flock, e.g.Merino (50), Poll Merino 60), Dohne (51)
- 4 for flock code, AASMB Registered flock code or unregistered code.
- 4 for year of drop & 6 for tag# used in the breeder's records.

Manager's Report

Host Property and Ewe Base

Keyneton Station, Keyneton were the inaugural host of the 2017 Drop and have continued to host the 2018 Drop progeny for the SA site. Keyneton Station is located in the eastern Mount Lofty Ranges and receives an average 500mm rainfall in a winter dominant pattern, although Keyneton only recorded 351mm in 2018. The Keyneton Station ewes are 65-70kg and produce 19-20 micron wool. The ewes mated for the 2018 trial were sourced from primarily 2½ year old age group and were classed prior to joining to ensure an even line.

2018 Drop Summary

The site evaluated 16 entered rams including 3 link sires in 2018. 60 ewes were joined to each sire via AI in mid-January 2018, over two days which recorded a maximum temperature of 41.3°C and 43.1°C respectively (Nuriootpa Weather Station 14km west of Keyneton). At day 45 and then followed up at day 70, the ewes were scanned as pregnant with a resulting conception rate of 51% from the AI program. The break to the season was late at Keyneton, occurring early-June 2018. This was followed by below average Spring and Summer rainfall. As a result, the ewes were fed in containment lot through late Summer and Autumn during mid to late pregnancy. In mid-May the ewes were divided into twin and single mobs. Both mobs were placed on improved perennial pastures. The twin mob continued to have access to self feeders leading up to and through lambing. When the break finally occurred in early-June, the conditions were cold resulting in slow pasture growth.

The first cohort of lambs born from the 16 rams occurred in June 2018. Lamb marking took place on the 9th & 10th July 2018 with visual traits fibre pigmentation, non-fibre pigmentation, recessive black, random spot, breech cover and breech wrinkle recorded. Sire pedigree was established by DNA testing. There were 466 progeny generated across the 16 rams. The average breech cover was visually assessed as 2.5 (from a range of 1-5, as per the Visual Sheep Scores publication), and the average breech wrinkle was visually assessed as 1.7 (from a range of 1-5, as per the Visual Sheep Scores publication). This indicates the lambs were reasonably plain.

At 17 weeks of age the lambs were weaned. Weaning weights were assessed, with single lambs weighing an average of 37.1kg and twin lambs an average of 34.5kg, giving a total average weaning weight of 36.0kg live weight. Lambs were drenched and weaned on to vetch and oat pastures, and were tip shorn in early October to reduce potential grass seed issues. The 2018 growing season was a very tough one at Keyneton, with a late break in early June followed by well below half the average Spring rainfall and no Summer rainfall. The 2019 season has also been tough with only 18mm rainfall in Autumn, which is also well below the average. As a result, lambs were fed Johnson's pellets and barley from December 2018, and were still on this feeding regime after shearing in mid-June, equating to a full 6 months of supplementary feeding due to the drought conditions.

On May 13th 2019, major phenotyping was recorded on the 2018 Drop progeny including:

- Mid-side fleece sampling: yield, fibre diameter, fibre diameter coefficient of variation, fibre diameter standard deviation, curvature, comfort, staple strength and staple length.
- Visual classing: fleece rot, wool colour, wool character, dust penetration, staple structure, face cover, jaw, legs/feet, dag, and selection grade.
- Carcase scanning: body weight, fat, and eye muscle depth.

Shearing was undertaken on 11th June 2019, and post shearing visual traits were assessed on 14th June 2019. This completed the suite of wool measurements and visual assessments on the 2018 Drop including:

- Collection of greasy fleece weight.
- Post shearing visual classing: shoulder/back and body wrinkle.

Worm Egg Count was not collected on the 2018 Drop progeny as the average worm egg count did not go above the AMSEA testing threshold of 300 eggs per gram.

Joe Keynes
Keyneton
Station,
Keyneton, South Australia

Assessment and Management Program

Activity	Date/s	Age	Wool
Selection of ewes	December 2017		
Allocation of ewes for mating	18 & 19 January 2018		
Pregnancy scanning	9 March 2018 (Day 45) 17 April 2018 (Day 70)		
Allocated to lambing paddocks	12 June 2018		
Lambing: start – finish	12-19 June 2018		
Lambing mobs boxed to one management group	10 July 2018		
Tagging, pigmentation and breech scoring	9 July 2018 (Twins) 10 July 2018 (Singles)	4 weeks	
Marking	9 July 2018 (Twins) 10 July 2018 (Singles)	4 weeks	
Even up Shearing	2 October 2018	3.5 months	
Weaning	29 October 2018	4.5 months	
Mid side fleece sampling (Y)	13 May 2019	11 months	7.5 months
Visual trait scoring (Y)	13 May 2019	11 months	7.5 months
Fat and eye muscle scanning (Y)	13 May 2019	11 months	
Shearing (Y)	11 June 2019	12 months	8.5 months
Worm egg count	WEC not measured		
Body Weight (W) Body Weight (Y)	29 October 2018 13 May 2019	4.5 months 11 months	
Drench	14 October 2018 (only at weaning)		
Fly treatment	Progeny are mulesed.		
Supplementary Feeding	Lambs were fed Johnson's pellets and barley from December 2018 through to late June 2019		
Field day or public display	Field day held 4 June 2019		

Visual Trait Assessment and Site Breeding Objective

Visual trait assessment
Classer's Grade: Bill Walker
Trait Scores: Bill Walker/ Michelle Cousins

Site Breeding Objective used to assess the Visual Classer's Grades
The Breeding Objective used by the classer/s when selecting the Classers Tops, Flock and Cull grades is described below. The Breeding Objective for both measured and visual assessed traits was developed by the site committee in consultation with the classer prior to the grading.

Breeding Objective

Rams will be capable of producing progeny with 18-21 micron fleece at 12 months with at least 4kg of wool from 8 months growth from an easy-care plain bodied sheep. In addition, progeny should be capable of achieving 22-25kg carcase weight at 10-12 months of age. Ewe progeny will be fertile and capable of high natural conception rates when first mated at 18 months.

In regard to Classer's Visual Grades the expectation is at the start of grading that there will be a ratio of 25% Top, 50% Flock and 25% Cull. However, the sheep performance relative to the above breeding objective determines the final proportion allocated to each grade.

Sire Codes and Pedigrees

Sire Code	Breeders flock, Sire number	Sheep Genetics ID	Sire of Sire
1	Challara Poll, 140394	601285-2014-140394	Challara Poll, 120274
2	Collinsville Poll, 160608	600105-2016-160608	Collinsville Poll, 140262
3	Flairdale Poll, 150078 (Link)	600015-2015-150078	Collinsville Poll, 130242
4	Gunallo Poll, 160473	600880-2016-160473	Moorundie Poll, 140008
5	Hazeldean, 003368	500383-2015-003368	Centre Plus Poll, 907538
6	Hilton Heath Poll, 150817	600781-2015-150817	Nyowee Poll, 00L715
7	Kelvale Poll, 160088	600416-2016-160088	Kelvale Poll, 140017
8	Leahcim Poll, 132624 (Link)	600815-2013-132624	Leahcim Poll, 110490
9	Lucernbrae Poll, 160010	601208-2016-160010	Unknown
10	Malleetech Poll, 166048	609533-2016-166048	Malleetech Poll, 122020
11	Mumblebone, 160418	500063-2016-160418	Leahcim Poll, 123153
12	Nyowee Poll, 14L770	600065-2014-14L770	Nyowee Poll, 356250
13	Radnor Poll, 120604	600899-2012-120604	Orrie Cowie Poll, 097603
14	Roemahkita Poll, 160256	601127-2016-160256	Poll Boonoke, 140948
15	Tuckwood Poll, 161069	601053-2016-161069	Tuckwood Poll, 141056
16	Wallaloo Park Poll, 161514 (Link)	601332-2016-161514	Trigger Vale, 140477

Explaining the Different Types of Results Reported

Raw Data » Adjusted Sire Means » Flock Breeding Values.

Merino Sire Evaluation produces a variety of result types which are all connected. The types of data produced include **Raw Data**, **Adjusted Sire Means**, **Flock Breeding Values** and **Indexes**. Initial measurements taken during sire evaluation assessments are used as the first level of results (Raw Data), then adjustments are made to increase the selection accuracy and better enable the comparison of results and sires (Adjusted Sire Means and Flock Breeding Values and Indexes).

Where possible, AMSEA publishes **Adjusted Sire Means**, **Flock Breeding Values** and **Indexes** in Site Reports as they offer a higher level of accuracy**.** Visual Traits are reported as **Raw Data**; this is because Adjusted Sire Means and Flock Breeding Values are not currently available for those traits.

Raw Data
Raw data is unadjusted results as measured in the yard, paddock or wool testing facility.

Adjusted Sire Means
These are raw data results that have been adjusted for the effect of sex, birth type/rear type, age of dam, dam source, age at measurement and management group.

Flock Breeding Values (FBVs)
These results have been adjusted in the same way as Adjusted Sire Means, then further calculations have also been made to account for the level of heritability of a trait (some are more heritable than others), correlations between traits and the number of progeny a sire has.

FBVs are within site and within drop. As such they do not include data from other sources as is the case with Australian Sheep Breeding Values (ASBVs), which are reported in Merino Superior Sires.

Indexes
A breeding index is the combination of breeding values into a single value that reflects a certain emphasis on those traits.

For more information about each Index see the page in this report titled ‘Index Options’.

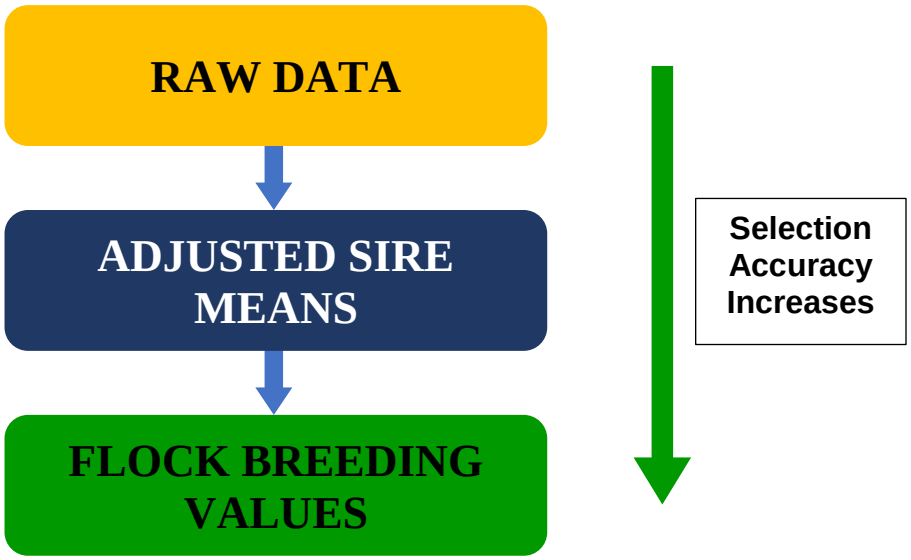


Table 1. Adjusted Sire Means for Measured Traits

Adjusted Sire Means are the average performance of all the progeny of a sire adjusted for all available information on sex, birth type, rear type, age of dam, age of measurement and management group, in order to improve the accuracy. No account is made for trait heritability and genetic correlations between traits that can improve the breeding value accuracy, as is the case in Tables 2, 3 and 4.

The highest performing sires for each trait (trait leaders) are highlighted by shading. The **Progeny group average** listed at the bottom of the table is the actual mean of the progeny group which includes both ewes and wethers.

Sire Code	Breeders flock, Sire name	Number of Progeny*	Adjusted Sire Means									
			GFW kg Y^	CFW kg Y	FD µm Y	FDCV % Y	SL mm Y	SS N/ktex Y	WT kg W	WT kg Y	FAT mm Y	EMD mm Y
1	Challara Poll, 140394	39	3.2	1.9	16.1	17.0	77.7	35.2	36.7	41.3	2.7	25.1
2	Collinsville Poll, 160608	21	3.0	1.8	15.7	18.7	62.5	40.8	35.8	34.6	2.5	23.9
3	Flairdale Poll, 150078	21	2.8	1.6	15.4	19.3	66.9	35.2	34.2	36.6	2.4	23.0
4	Gunallo Poll, 160473	28	3.1	1.8	15.9	18.6	72.7	31.8	34.5	38.5	2.7	23.8
5	Hazeldean, 003368	35	3.5	1.9	15.4	17.6	71.7	31.4	37.1	46.2	2.8	25.6
6	Hilton Heath Poll, 150817	26	3.7	2.2	16.9	17.8	74.1	35.9	36.5	47.2	2.9	25.5
7	Kelvale Poll, 160088	37	3.1	1.9	16.4	17.2	78.8	40.0	34.4	43.2	2.9	26.0
8	Leahcim Poll, 132624	25	3.1	1.8	15.9	17.8	71.6	32.7	36.0	42.3	2.9	25.8
9	Lucernbrae Poll, 160010	13	2.9	1.6	15.8	18.9	66.3	35.9	36.5	38.6	2.6	24.0
10	Malleetech Poll, 166048	25	3.0	1.7	15.9	17.3	66.8	35.6	34.3	37.8	2.7	24.4
11	Mumblebone, 160418	31	2.9	1.6	15.7	18.4	65.3	29.7	37.3	41.8	2.9	25.8
12	Nyowee Poll, 14L770	7	*Unreported due to insufficient progeny numbers.*									
13	Radnor Poll, 120604	27	2.9	1.7	15.9	19.4	60.7	33.6	37.6	38.0	2.4	23.6
14	Roemahkita Poll, 160256	40	3.1	1.8	15.1	18.6	67.0	31.1	35.8	41.9	2.6	24.3
15	Tuckwood Poll, 161069	24	3.3	1.9	15.7	17.9	72.0	33.7	37.5	42.1	2.8	24.0
16	Wallaloo Park Poll, 161514	31	3.1	1.7	16.2	17.1	77.3	35.2	37.7	41.8	2.7	25.2
	Progeny group average	**27**	**3.1** kg	**1.8** kg	**15.9** µm	**18.0** %	**70.5** mm	**34.7** N/ktex	**36.0** kg	**40.7** kg	**2.7** mm	**24.8** mm

*Number of progeny is as at the time of classing.

^ W = Weaning (42 to 120 days); P = Post Weaning (210 to 300 days); Y = Yearling (300 to 400 days); H = Hogget (400 to 540 days); A = Adult (540 days and older).

Index Options

A breeding index combines multiple Flock Breeding Values into a single value that reflects a certain emphasis on these traits. It is important that you use an index that best matches the breeding objective and production system of the flock you are selecting for.

It is recommended that the performance of individual Flock Breeding Values and visually assessed traits is used in conjunction with an index as selection indexes assist in making balanced selection decisions.

The indexes on the following page are the DP+; MP+; FP+ and WP+. The first 3 of these indexes are the same as MERINOSELECT indexes of that name but account for the fact that direct reproduction records have not yet been recorded on the progeny. The WP+ index is unique to AMSEA.

Charts shown display the percentage contribution that each trait makes to economic gain in a commercial flock that uses an index for sire selection. Additionally, included for each index are the likely within-flock responses from using an index for 10 years. These responses are based on a ram breeding flock with a standard breeding program, no introduction of outside genetics and applying 35% of their selection emphasis on traits that are not in the index (such as visually assessed performance).

Dual Purpose Plus (DP+)
Based on a meat focused production system where surplus progeny are sold as lambs and a portion of ewes are joined to terminal sires. Large increase in body weight and carcase traits. Moderate increase in fleece weight. Maintain fibre diameter and staple strength. Moderate increase in reproduction.

Merino Production Plus (MP+)
Based on a balanced wool and meat production system where surplus progeny are sold as hoggets. Balanced emphasis on increasing fleece weight and reduction in fibre diameter. Moderate increase in body weight, with little change in reproduction.

Fibre Production Plus (FP+)
Based on a wool production system where wethers are retained, operating in an environment where worms cause economic losses. Large reduction in fibre diameter. Moderate increase in staple strength. Small reduction in WEC (if measured in the breeding program). Small increase in fleece weight. Little change in body weight and reproduction.

Wool Production Plus (WP+)
Based on the MP+ production system with a greater emphasis on increasing fleece weight, while maintaining fibre diameter and a moderate emphasis on increasing body weight.

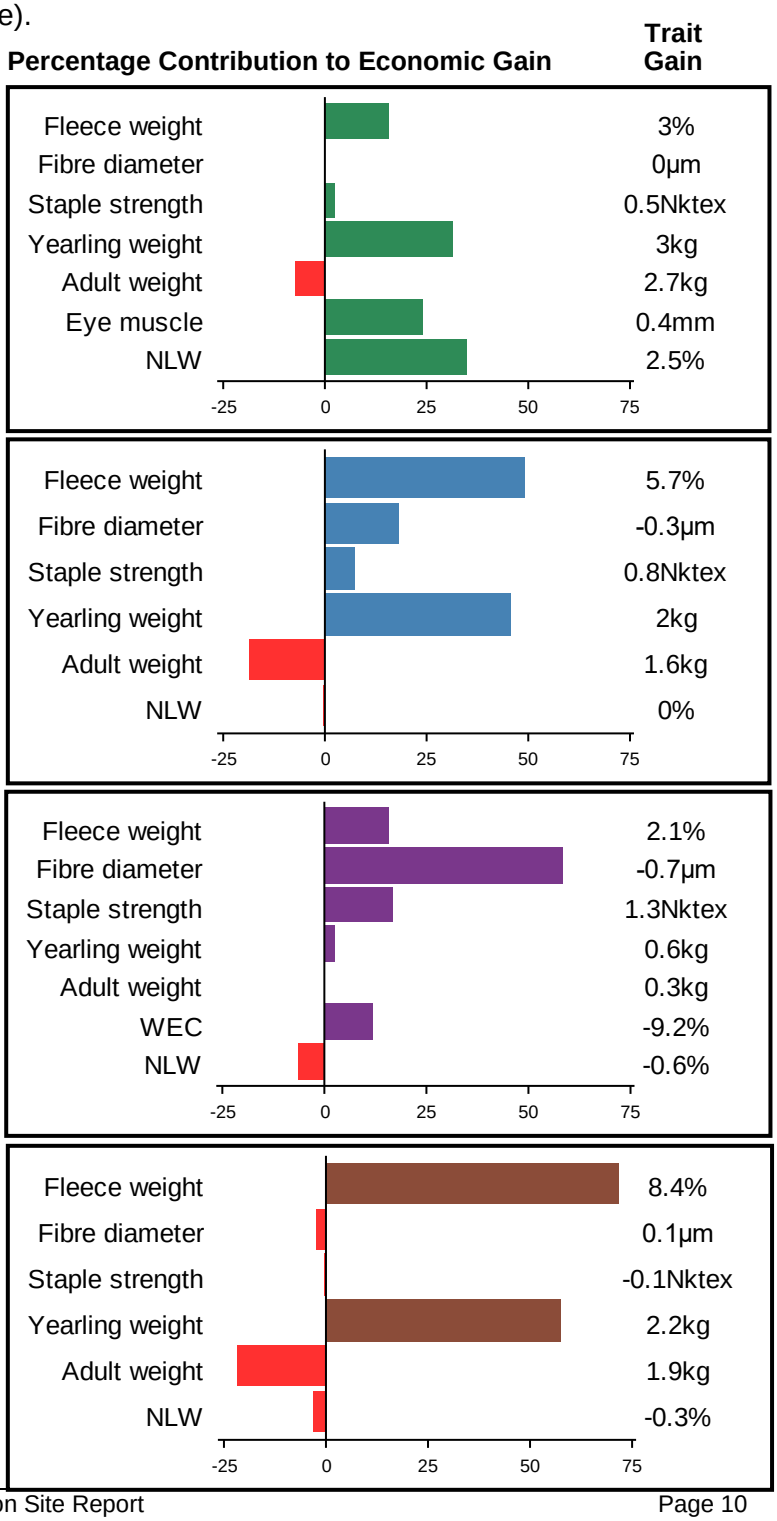


Table 2. AMSEA Index Values and Classer's Visual Grade

The index values reported are based on measured traits FBV performance with varying emphasis on fleece weight, fibre diameter, body weight, staple strength and worm egg count. See 'Index Options' (page 10) for more information on the indexes presented in the table below.

The highest performing sires for each trait (trait leaders) are highlighted by shading. Each sire is listed for Classer's Visual Grade and the same four indexes are reported at all site evaluations.

Sire Code	Breeders flock, Sire name	Number of Progeny*	AMSEA Index Values				Classer's Visual Grade[1]	
			Dual Purpose Plus	Merino Production Plus	Fibre Production Plus	Wool Production Plus	Tops % Y^	Culls % Y
1	Challara Poll, 140394	39	110	105	102	107	10	-7
2	Collinsville Poll, 160608	21	63	95	108	89	-11	17
3	Flairdale Poll, 150078	21	52	78	93	73	-17	15
4	Gunallo Poll, 160473	28	65	82	87	87	-7	7
5	Hazeldean, 003368	35	155	138	122	138	16	-11
6	Hilton Heath Poll, 150817	26	152	139	112	149	21	-10
7	Kelvale Poll, 160088	37	141	121	114	119	25	-11
8	Leahcim Poll, 132624	25	122	107	102	109	-9	-5
9	Lucernbrae Poll, 160010	13	79	87	n/a	85	-3	-2
10	Malleetech Poll, 166048	25	74	79	90	76	-17	6
11	Mumblebone, 160418	31	107	77	80	79	-7	8
12	Nyowee Poll, 14L770	7	*Unreported due to insufficient progeny numbers.*				*Insufficient progeny.*	
13	Radnor Poll, 120604	27	59	76	83	77	-11	19
14	Roemahkita Poll, 160256	40	106	115	111	113	6	-3
15	Tuckwood Poll, 161069	24	100	111	107	110	8	-8
16	Wallaloo Park Poll, 161514	31	106	93	94	94	-9	-6
	Average performance	**27**	**100**	**100**	**100**	**100**	**20**	**25**

*Number of progeny is as at the time of classing.

^ W = Weaning (42 to 120 days); P = Post Weaning (210 to 300 days); Y = Yearling (300 to 400 days); H = Hogget (400 to 540 days); A = Adult (540 days and older).

[1]Classer's Visual Grade is expressed as the percentage deviation of average Tops% and Culls%.

Sire codes listed in the Tables are used to locate sire performance in the following figures.

Figure 1a. Combined measured traits (DP+ index) and combined visually assessed traits for the site objective.

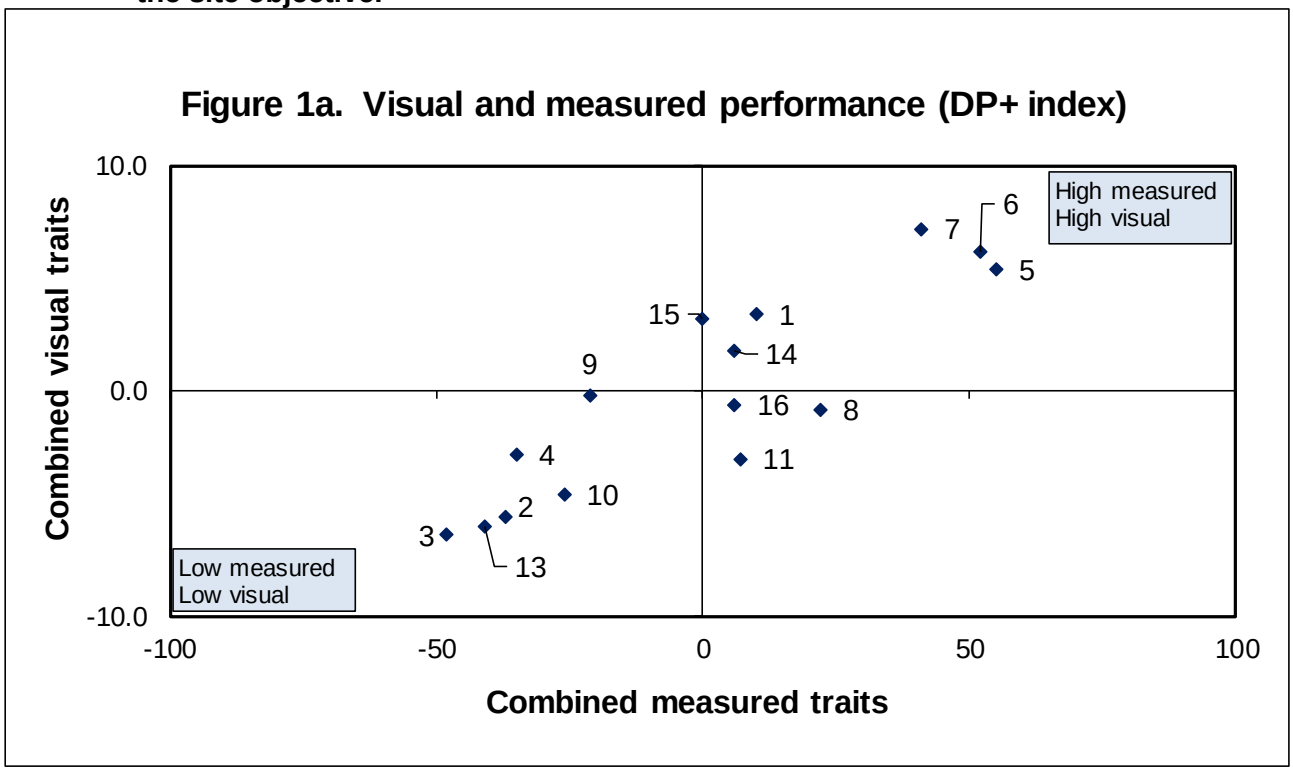


Figure 1b. Combined measured traits (MP+ index) and combined visually assessed traits for the site objective.

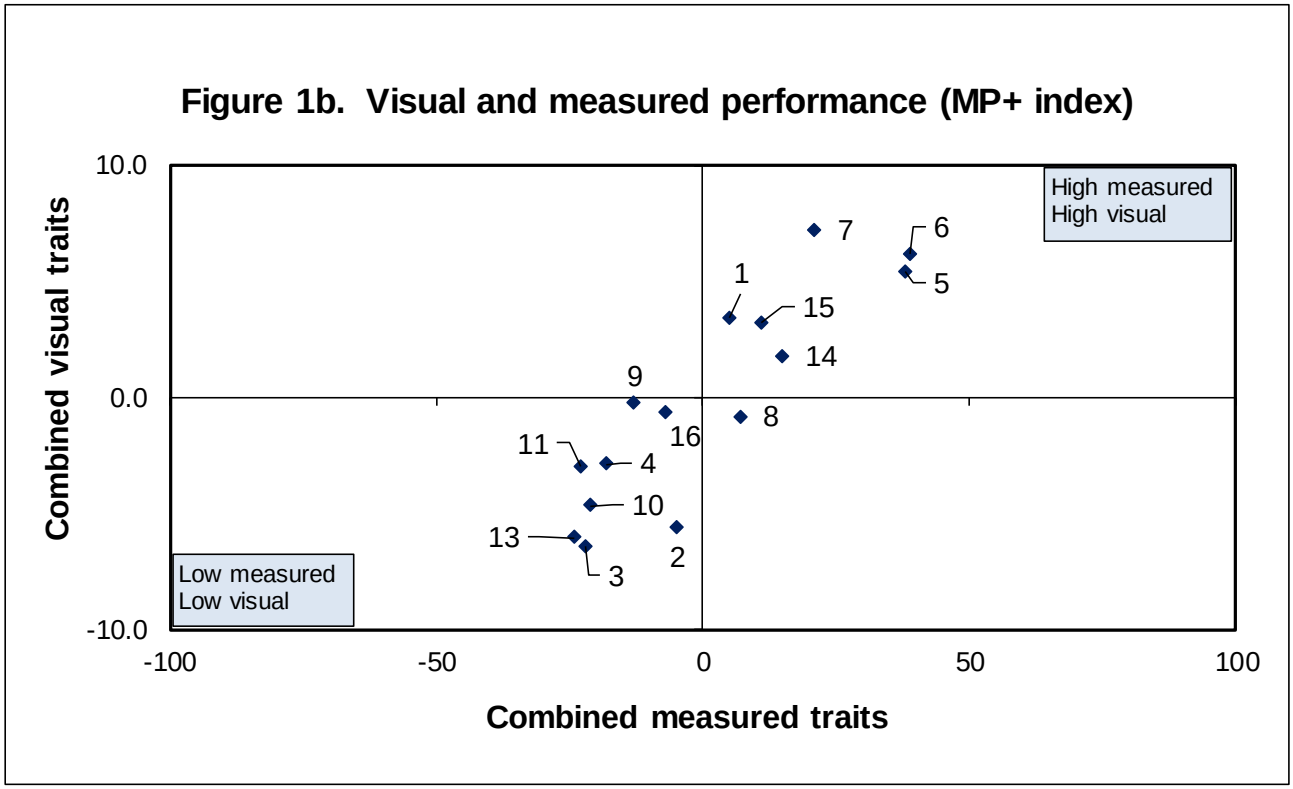


Figure 1c. Combined measured traits (FP+ index) and combined visually assessed traits for the site objective.

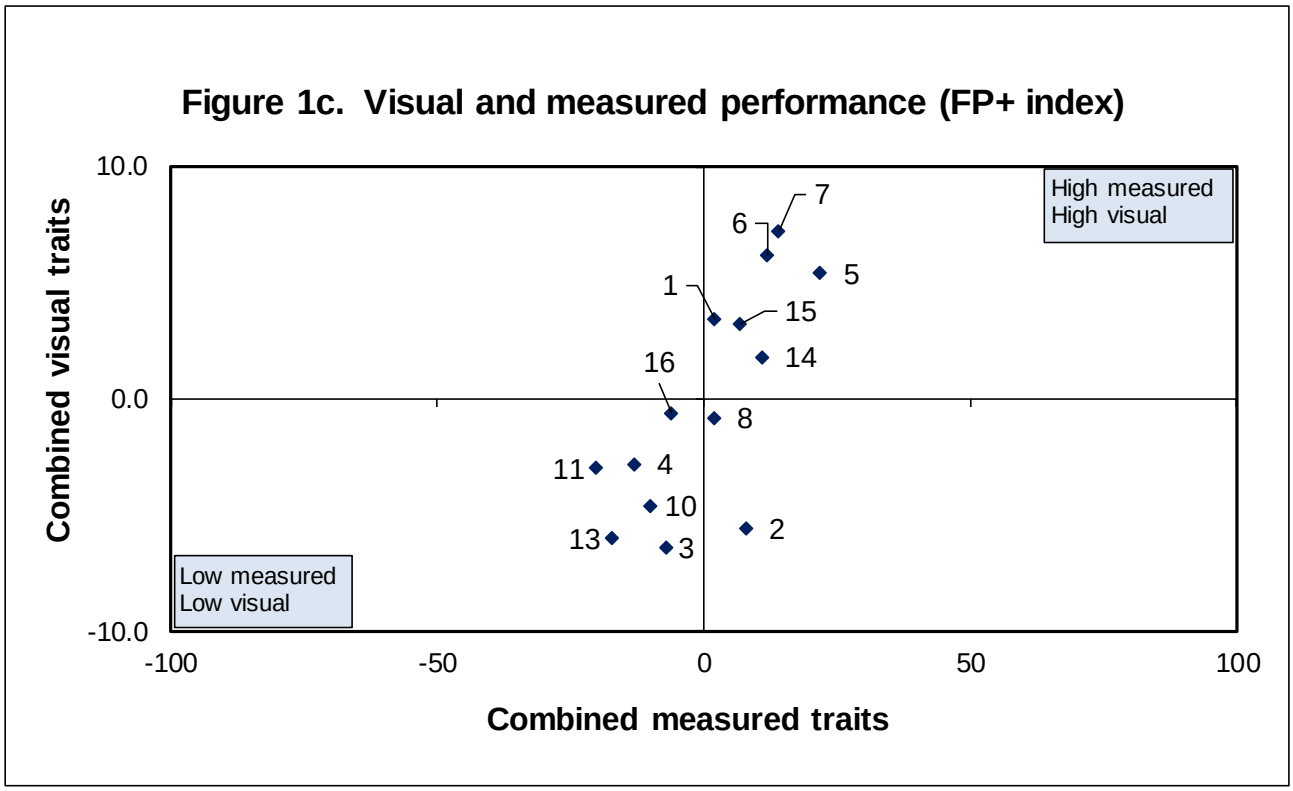
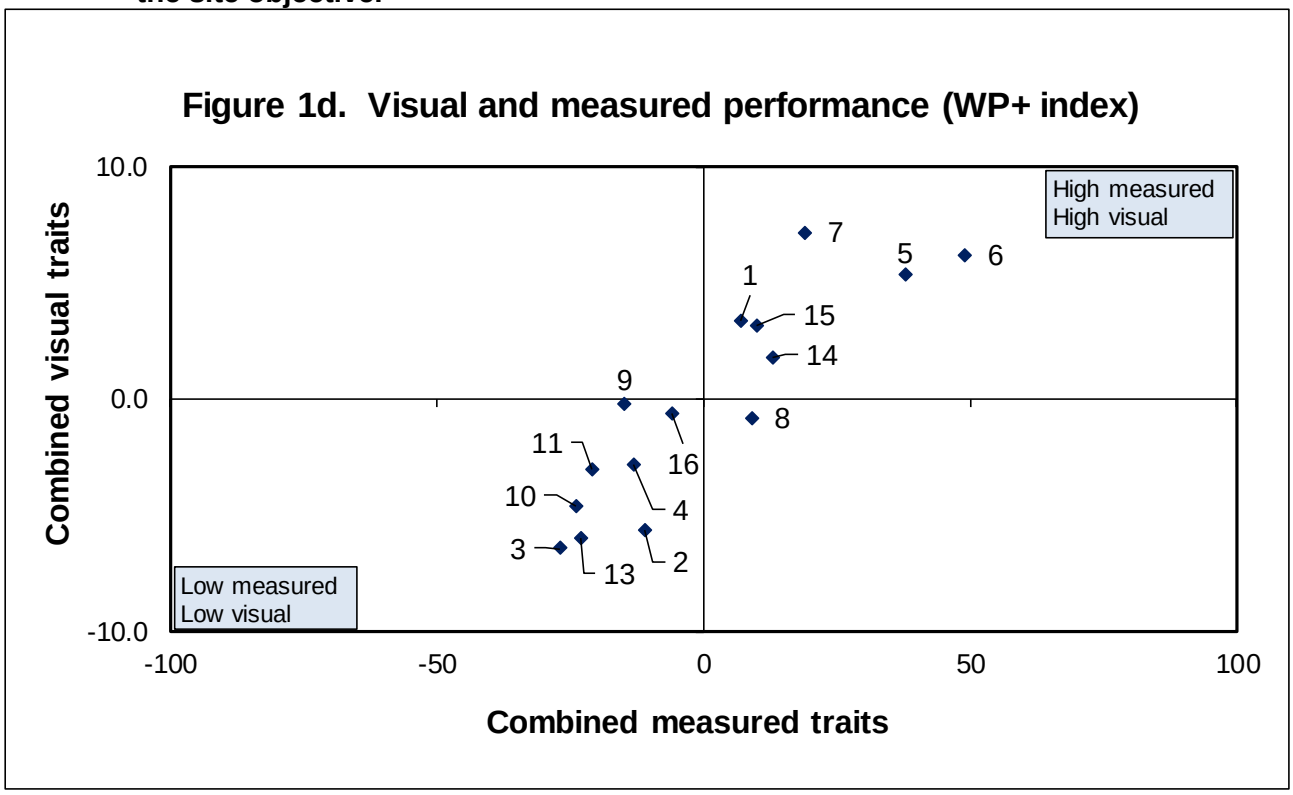


Figure 1d. Combined measured traits (WP+ index) and combined visually assessed traits for the site objective.



Summary Graphs

Figure 2. Classer's Visual Grade - Tops and Culls

The graph describes performance for Classer's Visual Tops Grade on the side axis and Culls Grade on the bottom axis. Sires that have above average Tops and below average Culls are in the top left hand quarter.

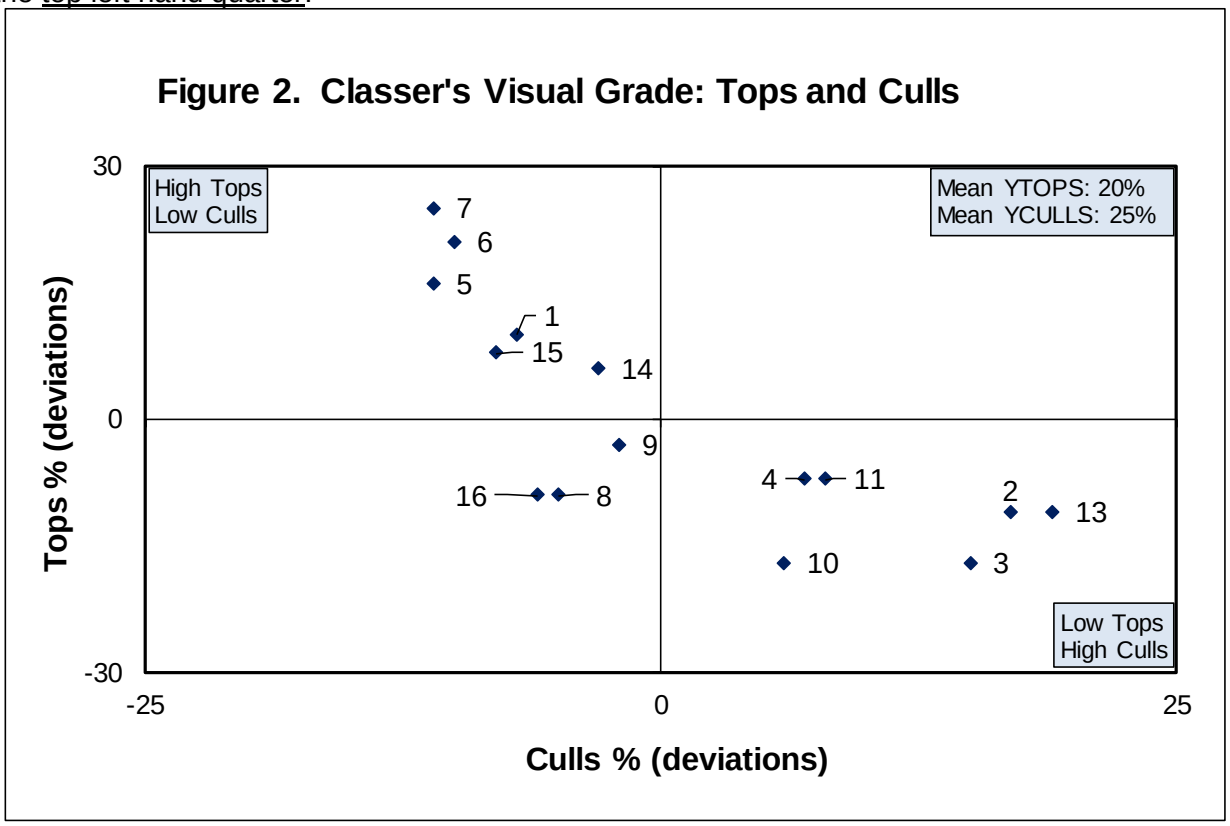


Figure 3. Fleece Weight and Fibre Diameter (FBVs)

The graph describes performance for fleece weight on the side axis and fibre diameter on the bottom axis. Sires that are above average for fleece weight and below average fibre diameter are located in the top left hand quarter.

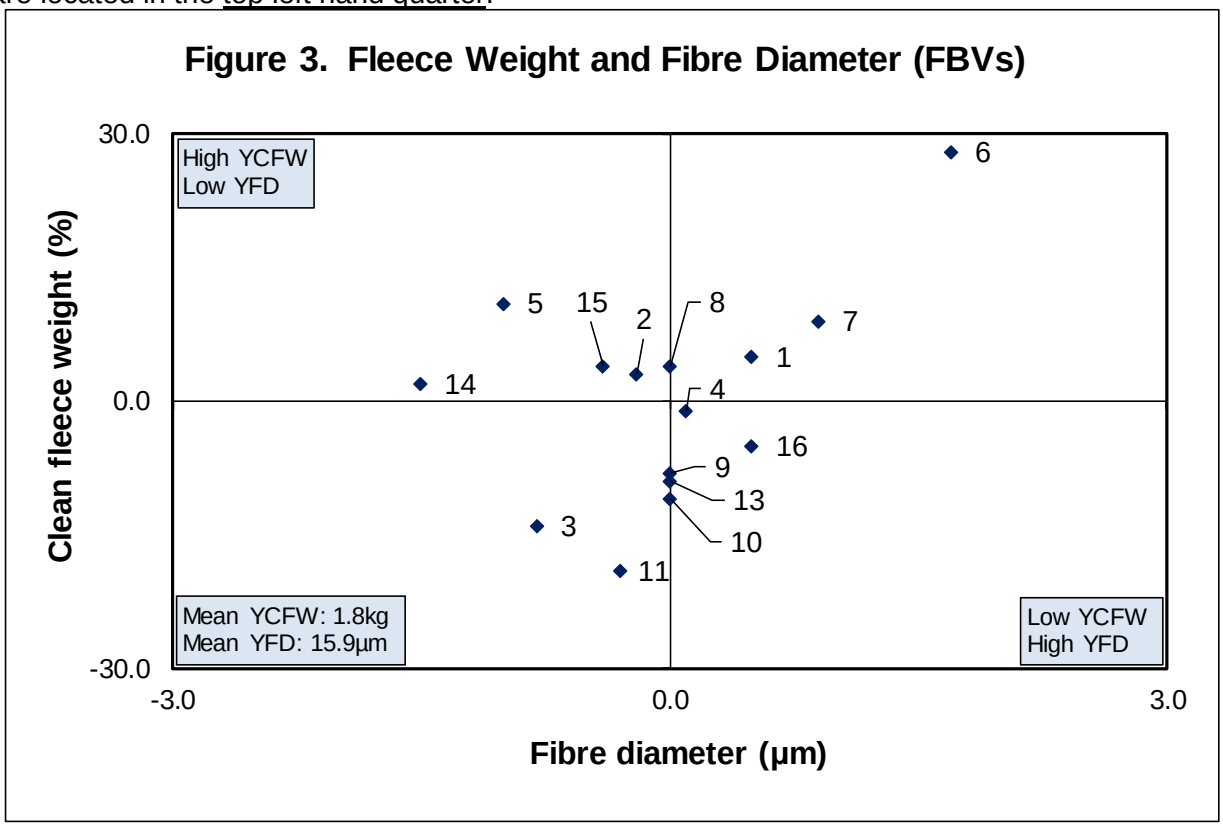


Figure 4. Fleece Weight and Staple Length (FBVs)
The graph describes performance for fleece weight on the side axis and staple length on the bottom axis. Sires that are above average for fleece weight and above average for staple length are located in the top right hand quarter.

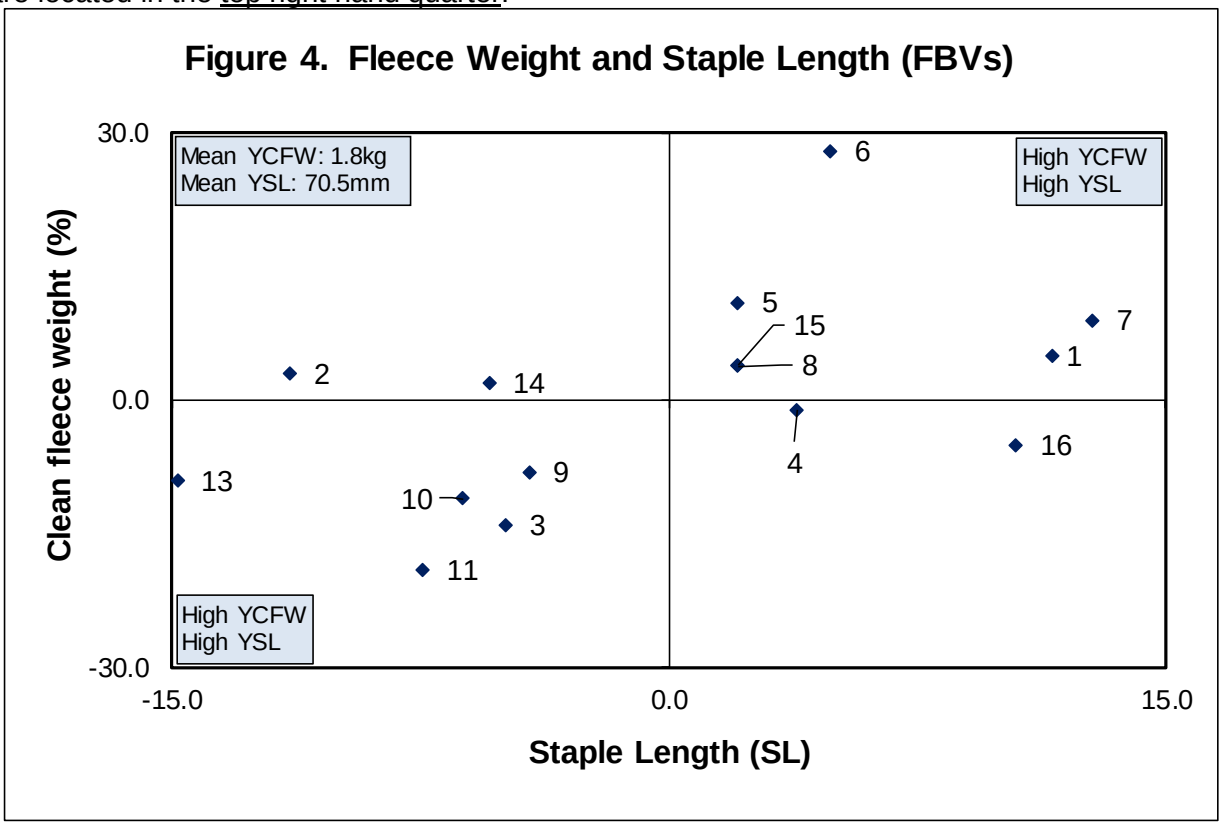


Figure 5. Fleece Weight and Body Weight (FBVs)
The graph describes performance for fleece weight on the side axis and body weight on the bottom axis. Sires that are above average for fleece weight and above average for body weight are located in the top right hand quarter.

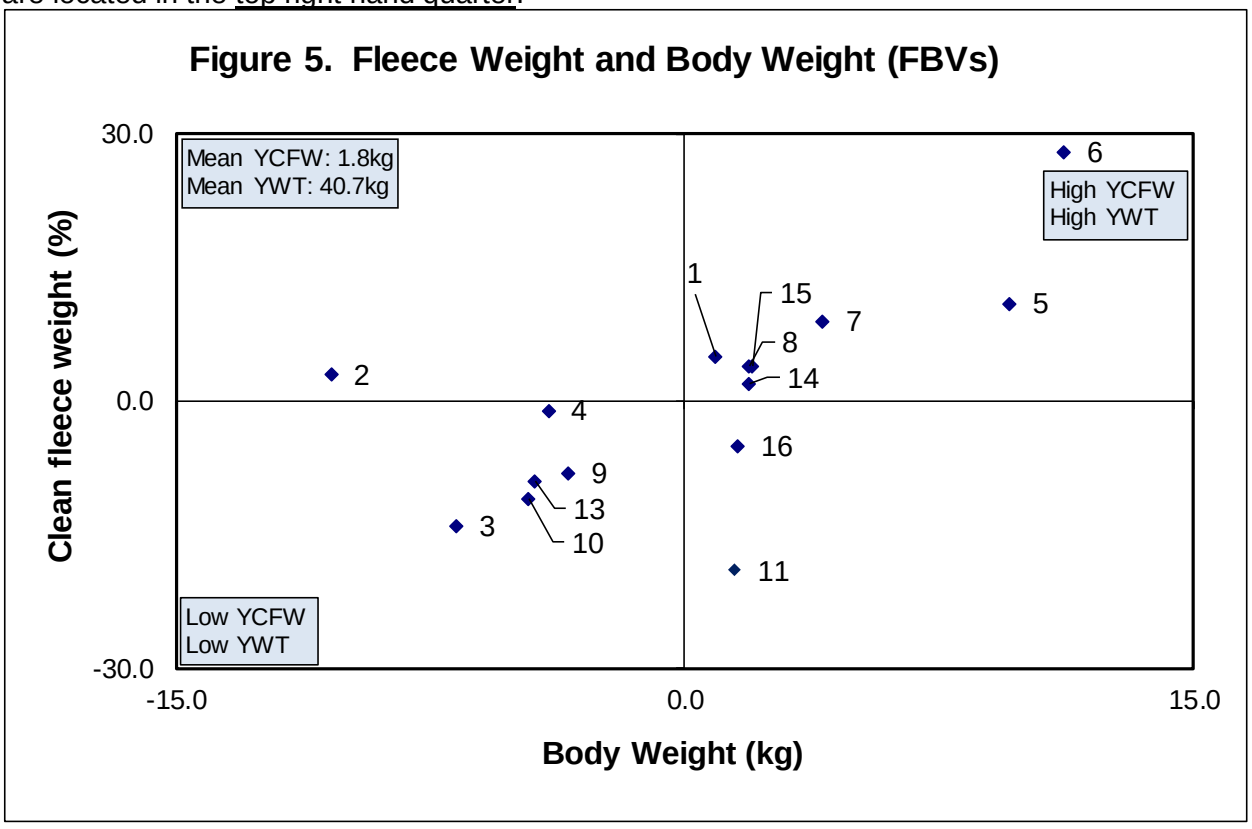


Figure 6. Fleece Weight and Fat (FBVs)
The graph describes performance for fleece weight on the side axis and fat depth on the bottom axis. Sires that are above average for fleece weight and above average for fat are located in the top right hand quarter.

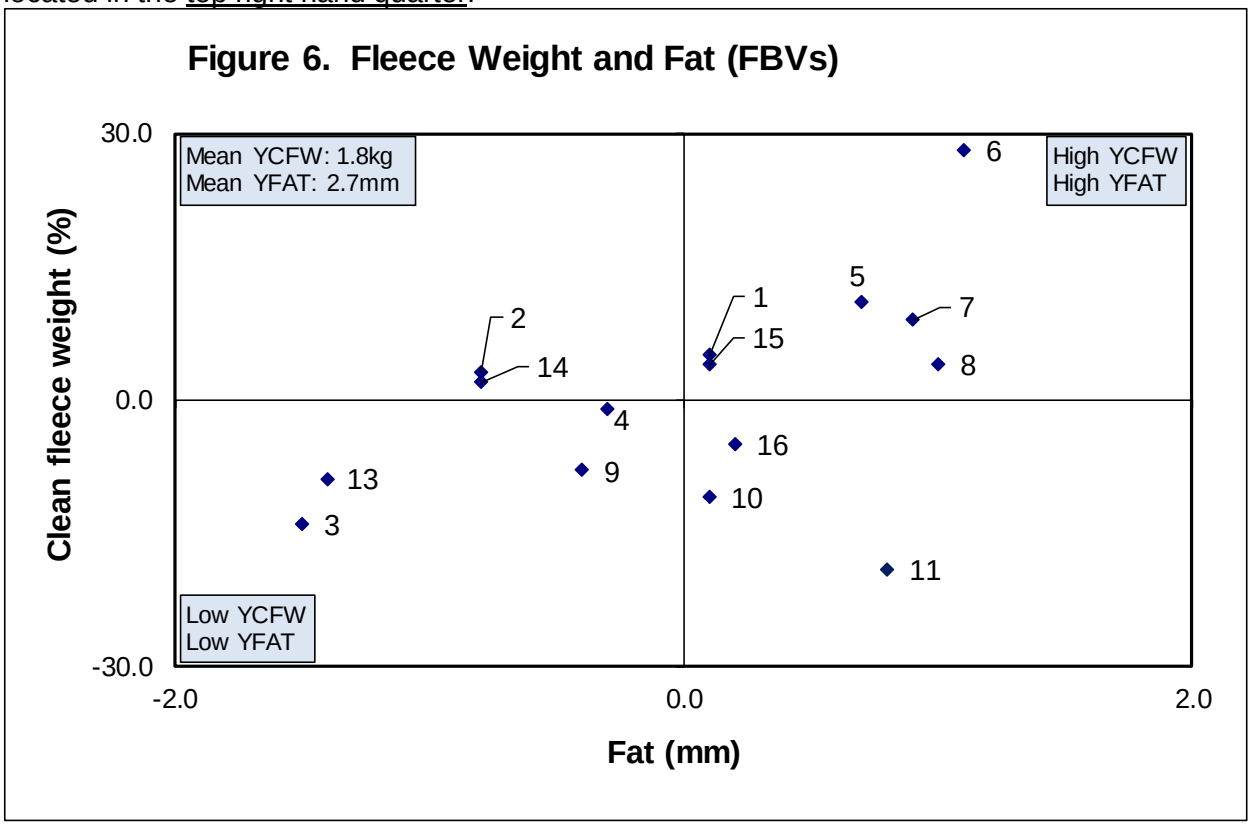


Figure 7. Fleece Weight and Eye Muscle Depth (FBVs)
The graph describes performance for fleece weight on the side axis and eye muscle depth on the bottom axis. Sires that are above average for fleece weight and above average for eye muscle depth are located in the top right hand quarter.

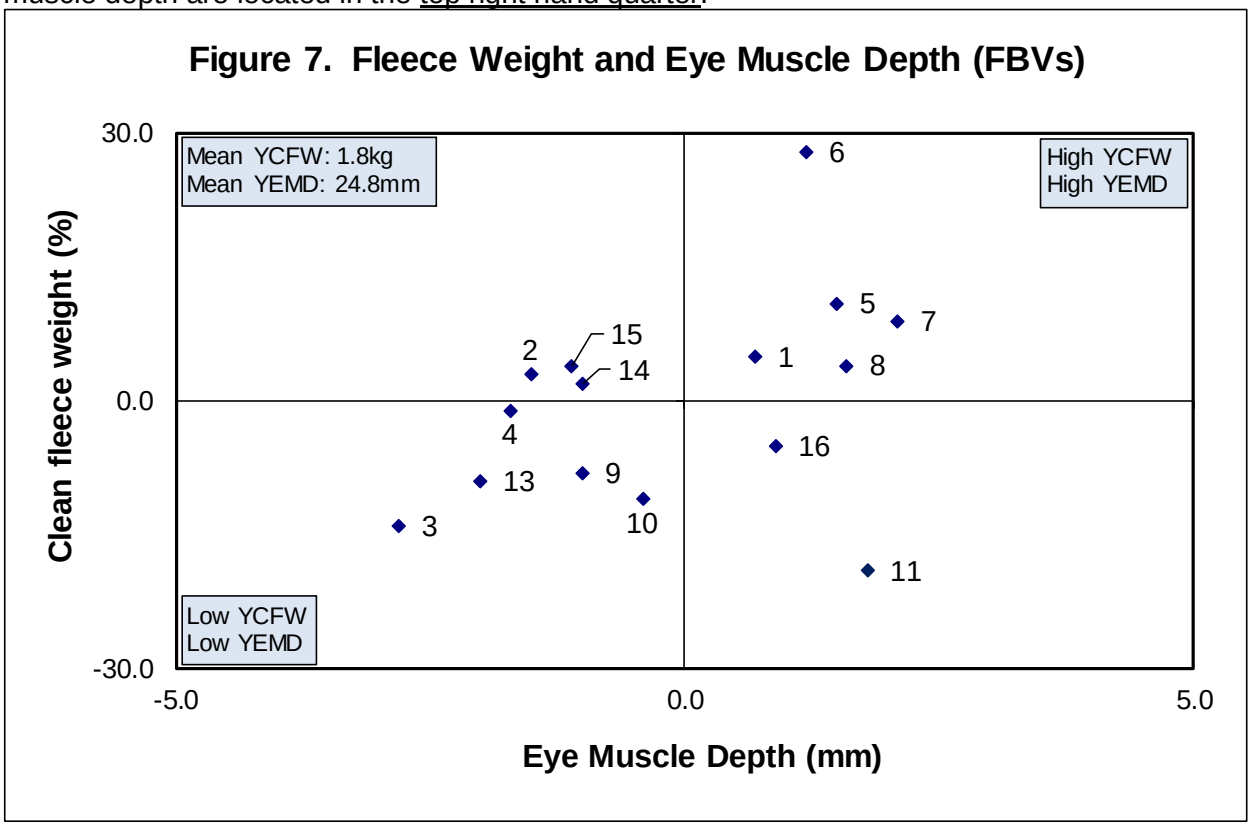


Figure 8. Fleece Weight (FBV) and Breech Wrinkle (Dev)
The graph describes performance for fleece weight on the side axis and breech wrinkle on the bottom axis. Sires that are above average for fleece weight and below average for breech wrinkle are located in the top left hand quarter.

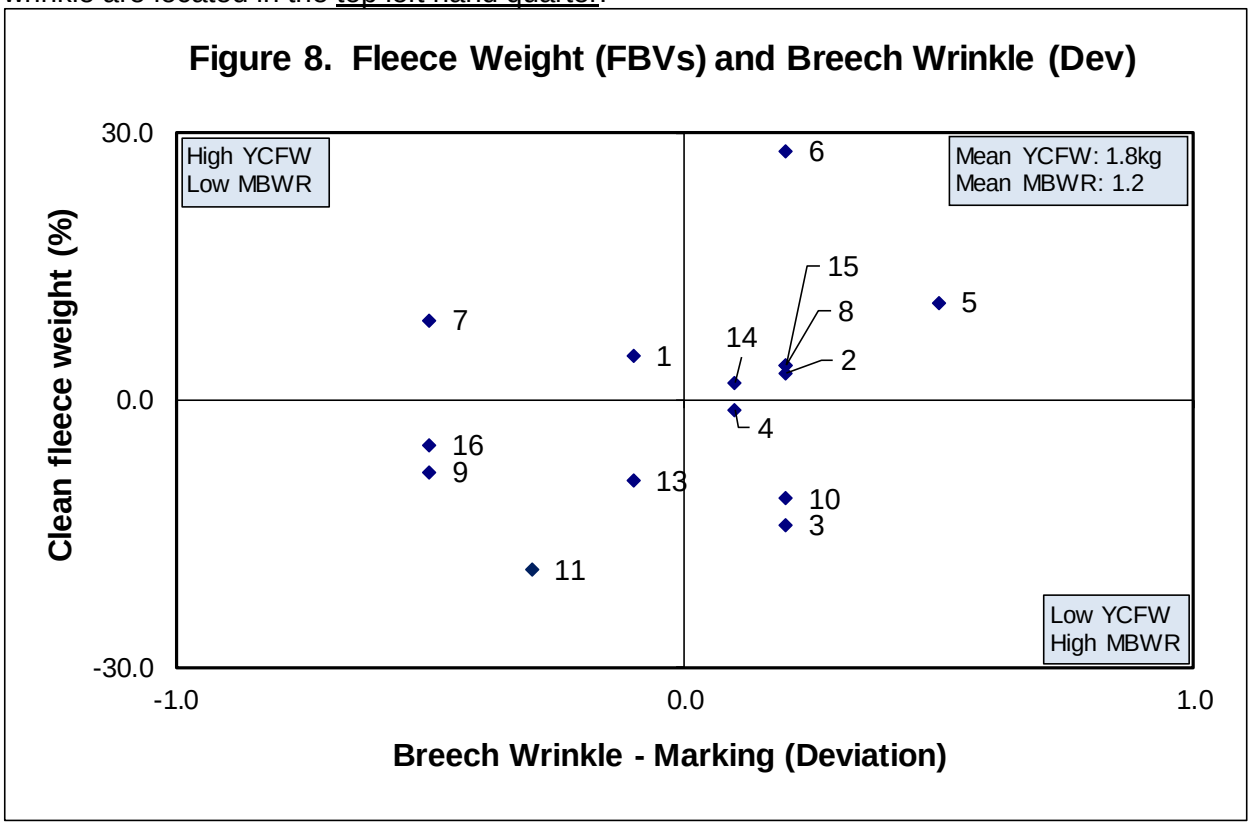
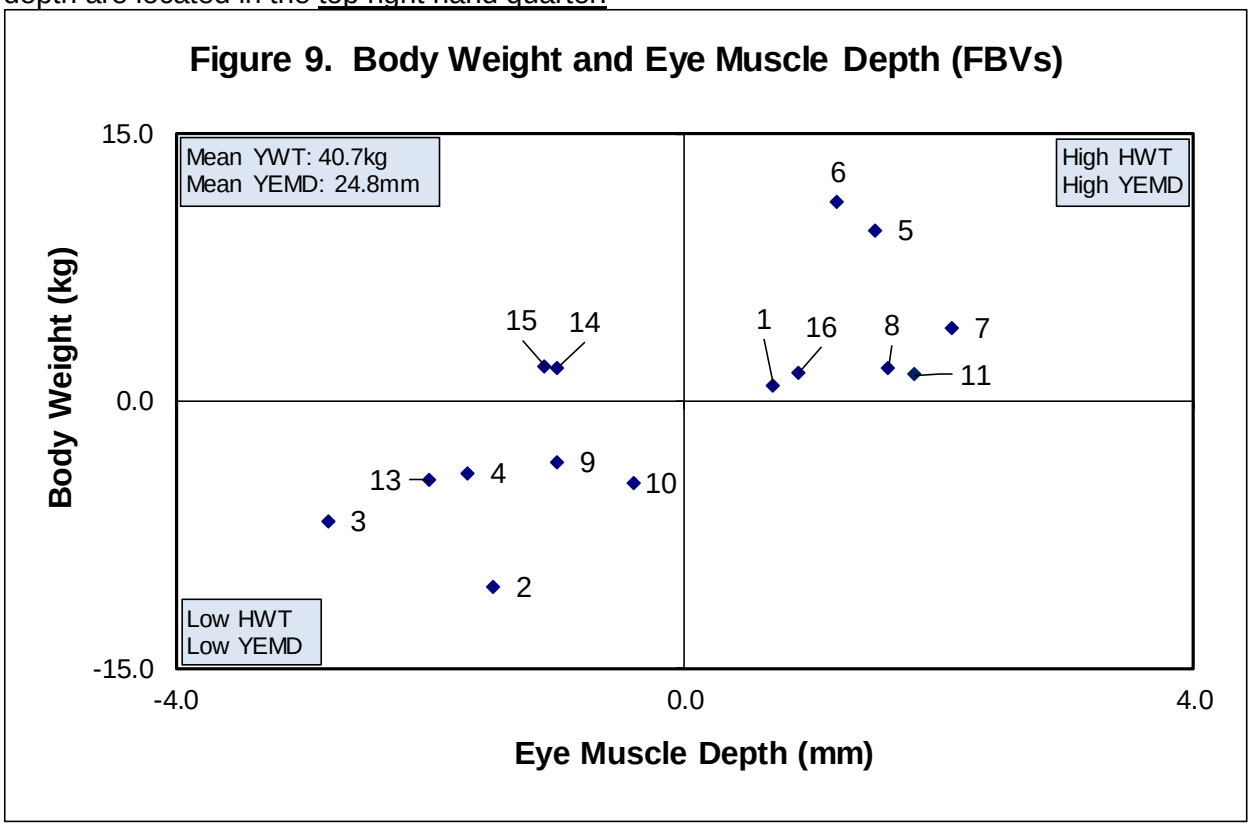


Figure 9. Body Weight and Eye Muscle Depth (FBVs)
The graph describes performance for body weight on the side axis and eye muscle depth on the bottom axis. Sires that are above average for body weight and above average for eye muscle depth are located in the top right hand quarter.



Summary Graphs

Figure 10. Staple Strength and Worm Egg Count (FBVs)
The graph describes performance for staple strength on the side axis and worm egg count on the bottom axis. Sires that are above average for staple strength and below average for worm egg count are located in the top left hand quarter.

Worm Egg Count (WEC) not measured

Understanding the Results – Measured Traits & Classer's Visual Grade

Breeders flock, Sire number:	Identity of the breeder's flock and the sire's number or name.
Number of progeny:	The number of progeny a sire had at the most recent measured analysis. Average number of progeny is included in Table 1.
Flock Breeding Values:	Flock Breeding Values (FBVs) are Estimated Breeding Values (EBVs) calculated by Sheep Genetics for the sires evaluated in this report. Only data from this site evaluation is used in the calculation of these FBVs. FBVs describe the relative breeding value (genetic performance) of the sires (in this case based on the performance of their progeny). A sire's progeny will express half of their sire's FBV. FBVs do not necessarily reflect the sire's observed performance, which is a combination of both genetic and environmental influences. FBVs are an estimate of the genetic component of the sheep's performance. The highest performing sires for each trait (trait leaders) are highlighted by shading. Curvature is the possible exception when for many breeders the optimum score is in the middle of the range therefore trait leaders have not been highlighted.
Traits: Abbreviation, trait and the (units reported)	GFW: Greasy fleece weight (percentage). CFW: Clean fleece weight (percentage). FD: Average fibre diameter (micron). WT: Body weight (kilograms). FDCV: Fibre diameter coefficient of variation (percentage). SL: Staple length (mm) at the mid-side. SS: Staple strength (N/ktex) at the mid-side. EMD: Eye muscle depth (mm) at the 'C' site. FAT: Fat depth (mm) at the 'C' site. CURV: Fibre curvature (degrees). WEC: Worm egg count (% deviation in worm burden of sire's progeny).
Age at assessment:	M = Marking - 42 to 70 days (6 – 10 weeks of age) W = Weaning - 42 to 120 days (6 weeks to 4 months of age). E = Early Post Weaning - 120 to 210 days (4 to 7 months of age). P = Post Weaning - 210 to 300 days (7 to 10 months of age). Y = Yearling - 300 to 400 days (10 to 13 months of age). H = Hogget - 400 to 540 days (13 to 18 months of age). A = Adult - 540 days or older (18 months and older).
Classer's Visual Grade:	A classer grades all progeny as either Tops, Flocks or Culls based on their visual assessment of all traits relative to the site's Breeding Objective. The percentage deviation from the average of Tops and Culls is presented in this report. Average percentage of Tops and Culls for the entire drop is included in Table 1. Page 7 provides more detail on Classer's Visual Grade and the site's Breeding Objective.

Table 3. Wool Measured Traits plus Classer's Visual Grade

Sire Code	Breeders flock, Sire name	Number of Progeny*	Flock Breeding Values (deviations)							Classer's Visual Grade[1]	
			GFW	CFW	FD	FDCV	SL	SS	CURV	Tops	Culls
			%	%	µm	%	mm	N/ktex	deg/mm	%	%
			Y^	Y	Y	Y	Y	Y	Y	Y	Y
1	Challara Poll, 140394	39	5	5	0.5	-1.5	11.6	1.4	-5.3	10	-7
2	Collinsville Poll, 160608	21	-3	3	-0.2	0.9	-11.4	7.7	-4.6	-11	17
3	Flairdale Poll, 150078	21	-10	-14	-0.8	1.6	-4.9	1.0	-2.0	-17	15
4	Gunallo Poll, 160473	28	0	-1	0.1	0.9	3.9	-3.7	-8.5	-7	7
5	Hazeldean, 003368	35	15	11	-1.0	-0.4	2.1	-5.0	7.0	16	-11
6	Hilton Heath Poll, 150817	26	24	28	1.7	0.0	4.9	1.3	6.7	21	-10
7	Kelvale Poll, 160088	37	0	9	0.9	-1.4	12.8	7.6	-10.6	25	-11
8	Leahcim Poll, 132624	25	2	4	0.0	-0.1	2.1	-2.8	-5.6	-9	-5
9	Lucernbrae Poll, 160010	13	-7	-8	0.0	0.8	-4.2	0.8	-4.7	-3	-2
10	Malleetech Poll, 166048	25	-8	-11	0.0	-1.0	-6.2	2.1	13.0	-17	6
11	Mumblebone, 160418	31	-13	-19	-0.3	0.5	-7.4	-6.7	4.9	-7	8
12	Nyowee Poll, 14L770	7	*Unreported due to insufficient progeny numbers.*							*Insufficient progeny.*	
13	Radnor Poll, 120604	27	-10	-9	0.0	1.9	-14.8	-1.0	9.4	-11	19
14	Roemahkita Poll, 160256	40	1	2	-1.5	1.0	-5.4	-5.8	-1.6	6	-3
15	Tuckwood Poll, 161069	24	7	4	-0.4	-0.1	2.1	-1.1	3.1	8	-8
16	Wallaloo Park Poll, 161514	31	-2	-5	0.5	-1.5	10.5	1.5	-2.4	-9	-6

*Number of progeny is as at the time of classing.

^ W = Weaning (42 to 120 days); P = Post Weaning (210 to 300 days); Y = Yearling (300 to 400 days); H = Hogget (400 to 540 days); A = Adult (540 days and older).

[1]Classer's Visual Grade is expressed as the percentage deviation of average Tops% and Culls%.

Table 4. Carcase and WEC Measured Traits plus Classer's Visual Grade

Sire Code	Breeders flock, Sire name	Number of Progeny*	Flock Breeding Values (deviations)					Classer's Visual Grade[1]	
			WT kg		FAT mm	EMD mm	WEC %	Tops %	Culls %
			W^	Y	Y	Y		Y	Y
1	Challara Poll, 140394	39	0.5	1.6	0.1	0.7		10	-7
2	Collinsville Poll, 160608	21	-0.9	-10.5	-0.8	-1.5		-11	17
3	Flairdale Poll, 150078	21	-1.6	-7.3	-1.5	-2.8		-17	15
4	Gunallo Poll, 160473	28	-1.3	-4.3	-0.3	-1.7		-7	7
5	Hazeldean, 003368	35	1.1	9.4	0.7	1.5		16	-11
6	Hilton Heath Poll, 150817	26	0.7	10.7	1.1	1.2		21	-10
7	Kelvale Poll, 160088	37	-0.9	4.2	0.9	2.1		25	-11
8	Leahcim Poll, 132624	25	0.1	2.1	1.0	1.6	WEC not measured	-9	-5
9	Lucernbrae Poll, 160010	13	0.2	-3.0	-0.4	-1.0		-3	-2
10	Malleetech Poll, 166048	25	-1.6	-4.5	0.1	-0.4		-17	6
11	Mumblebone, 160418	31	1.2	1.7	0.8	1.8		-7	8
12	Nyowee Poll, 14L770	7	*Unreported due to insufficient progeny numbers.*					*Insufficient progeny.*	
13	Radnor Poll, 120604	27	1.0	-4.3	-1.4	-2.0		-11	19
14	Roemahkita Poll, 160256	40	-0.2	2.0	-0.8	-1.0		6	-3
15	Tuckwood Poll, 161069	24	1.0	1.9	0.1	-1.1		8	-8
16	Wallaloo Park Poll, 161514	31	1.5	1.7	0.2	0.9		-9	-6

*Number of progeny is as at the time of classing.

^ W = Weaning (42 to 120 days); P = Post Weaning (210 to 300 days); Y = Yearling (300 to 400 days); H = Hogget (400 to 540 days); A = Adult (540 days and older).

[1]Classer's Visual Grade is expressed as the percentage deviation of average Tops% and Culls%.

Understanding the Results – Visual Trait Performance Results

The following description of trait scores is a summary of the detailed word and diagrammatical description of these scores in Version 2 (2013) of the Visual Sheep Scores booklet that is available free from AWI or at *www.merinosuperiorsires.com.au*

A deviation from the average trait score for all progeny is reported as well as the percentage of the sire's progeny recorded for each trait.

■ Fleece rot:	The severity of fleece rot from **1** (no fleece rot), **2 and 3** (bands of bacterial staining but no crusting), and **4 and 5** (bands of crusty fleece rot).
■ Wool colour:	Greasy wool colour scored from **1** (whitest) to **5** (yellow).
■ Wool character:	Definition and variation of crimp between and along the staple scored from **1** (well defined and regular) to **5** (undefined and large variation).
■ Dust penetration:	Degree of dust penetration from **1** (only tip <6%) to **5** (71 to 100% of staple).
■ Staple weathering:	The deterioration due to light and water from **1** (least, <6% of staple) to **5** (most, 71 to 100%) reflect the depth and degree of deterioration.
■ Staple structure:	The size and diameter of each staple from **1** (<6mm) to **5** (>30 mm).
■ Fibre pigmentation:	The percentage of dark fibres on any part of the sheep from **1** (0 pigmented fibres at any site) to **5** (71 to 100% pigmented fibres at one or more sites). This trait does not include random spot or recessive black.
■ Non-fibre pigmentation:	The percentage of pigmentation on the areas not shorn from **1** (0 pigmentation at any site) to **5** (71 to 100% pigmented area on one or more bare skin sites, **and/or** 71 to 100% of the total hoof area).
■ Recessive black: (Black)	Recessive black (black) is identified by relatively symmetrical markings on both sides of the face. There are two scores **1** (no recessive markings) and **5** (recessive markings). This trait does not include random spot or fibre pigmentation.
■ Random spot: (Spot)	Random spot (spot) is identified by rounded wool or hair spot/s, not symmetrical. There are two scores **1** (no spot/s) and **5** (spot/s). If both sides of the face or body are spotted the sheep should be scored as a recessive black.
■ Face cover:	Wool cover on the face scored from **1** (open face) to **5** (fully covered face).
■ Feet/Legs:	Conformation of feet and legs scored from **1** (very straight) to **5** (very angulated).
■ Body wrinkle:	The degree of body wrinkle from **1** (no wrinkle) to **5** (extensive wrinkle).
■ Jaw:	The alignment of the lower jaw and its teeth relative to the top jaw from **1** (very well aligned) to **5** (heavily undershot or overshot).
■ Back/Shoulder:	Conformation of the back and shoulder from **1** (very square) to **5** (very dipped or high).
■ Breech cover:	Size of natural bare area around the breech from **1** (large) to **5** (no bare).
■ Crutch cover:	Size of natural bare area in the pubic and groin from **1** (large) to **5** (no bare).
■ Breech wrinkle:	Degree of wrinkle at the tail set and hind legs from **1** (nil) to **5** (extensive).
■ Dag:	Degree of dag adhering to the breech and legs from **1** (nil) to **5** (extensive).
■ Urine:	Degree of urine stained wool in the breech area, including the hind legs from **1** (nil) to **5** (extensive).

Table 5a. Visual trait assessments – Wool Quality

Visually assessed traits reported were scored at their latest assessment with the exception of pigmentation which was scored at marking (Spot updated on an ongoing basis) and breech traits recorded at marking time (or later in unmulesed flocks with the exception of Dag and Urine). Traits are reported as a deviation (Dev) from the average trait score for all progeny. The percentage of a sire's progeny assessed for each score is also reported. No adjustments are made to the data to improve the accuracy of the results as is the case with sire means or breeding values. For the majority of breeder's objectives a negative deviation would be considered favourable and the larger the deviation the better.

Sire Code	Breeders flock, Sire name	Wool Quality - *Yearling*																						
		Fleece Rot						Wool Colour						Wool Character						Dust Penetration					
		Dev	1	2	3	4	5	Dev	1	2	3	4	5	Dev	1	2	3	4	5	Dev	1	2	3	4	5
1	Challara Poll, 140394	-0.1	92	5	3	0	0	0.0	0	37	63	0	0	0.0	5	37	45	13	0	0.3	0	24	61	15	0
2	Collinsville Poll, 160608	0.5	67	14	10	4	5	-0.1	0	43	57	0	0	0.1	0	29	71	0	0	-0.1	0	48	52	0	0
3	Flairdale Poll, 150078	0.0	86	10	4	0	0	0.1	0	29	67	4	0	-0.1	4	48	38	10	0	-0.2	0	62	29	9	0
4	Gunallo Poll, 160473	0.0	89	3	4	4	0	-0.2	0	54	43	3	0	-0.2	7	54	32	7	0	-0.1	0	46	54	0	0
5	Hazeldean, 003368	-0.1	94	3	0	0	3	-0.1	0	43	57	0	0	-0.1	5	49	37	9	0	0.3	0	20	66	14	0
6	Hilton Heath Poll, 150817	-0.2	100	0	0	0	0	0.2	0	15	85	0	0	0.6	0	8	59	33	0	0.3	0	19	70	11	0
7	Kelvale Poll, 160088	-0.2	100	0	0	0	0	-0.1	0	47	53	0	0	-0.2	0	53	47	0	0	0.2	0	28	61	11	0
8	Leahcim Poll, 132624	0.2	76	8	12	4	0	0.0	8	28	52	12	0	-0.2	4	52	44	0	0	0.2	0	36	44	20	0
9	Lucernbrae Poll, 160010	-0.1	92	8	0	0	0	-0.1	0	46	54	0	0	0.1	0	38	54	8	0	-0.1	0	54	38	8	0
10	Malleetech Poll, 166048	0.2	81	12	3	0	4	0.3	0	12	81	7	0	0.5	0	19	54	23	4	-0.2	0	58	38	4	0
11	Mumblebone, 160418	0.1	90	4	0	3	3	0.0	0	34	62	4	0	0.0	11	31	41	17	0	-0.1	0	52	41	7	0
12	Nyowee Poll, 14L770	*Unreported due to insufficient progeny numbers.*																							
13	Radnor Poll, 120604	0.1	78	19	3	0	0	0.1	0	26	70	4	0	-0.1	0	52	41	7	0	-0.4	0	78	19	3	0
14	Roemahkita Poll, 160256	-0.1	98	0	2	0	0	-0.1	0	40	60	0	0	-0.2	5	57	30	8	0	-0.1	0	48	45	7	0
15	Tuckwood Poll, 161069	-0.2	100	0	0	0	0	0.0	0	42	54	4	0	-0.1	4	46	46	4	0	-0.1	0	46	50	4	0
16	Wallaloo Park Poll, 161514	0.0	94	0	3	0	3	0.2	0	19	74	7	0	0.3	0	26	58	16	0	0.2	0	26	61	13	0
	Average performance	**1.2**	**89**	**6**	**3**	**1**	**1**	**2.7**	**0**	**36**	**61**	**3**	**0**	**2.6**	**4**	**40**	**46**	**10**	**0**	**2.7**	**0**	**42**	**49**	**9**	**0**

Table 5b. Visual trait assessments – Wool Quality and Pigmentation

For the majority of breeder's objectives a negative deviation for wool quality traits would be considered favourable and the larger the deviation the better. Staple Structure is the possible exception when for many breeders the optimum score is in the middle of the range therefore trait leaders have not been highlighted. Four pigmentation traits are reported. Fibre pigmentation and Non-fibre pigmentation are scored **1** to **5,** however Recessive black and Random spot are scored **1** (no pigmentation of this type) or **5** (when the trait is expressed). Only the percentage progeny for each sire that a score 5 is recorded, are reported for Recessive black and Random spot.

Sire Code	Breeders flock, Sire name	Wool Quality - *Yearling*												Pigmentation - *Marking*											
		Staple Weathering						Staple Structure						Fibre pigmentation						Non-fibre pigmentation						Black	Spot
		Dev	1	2	3	4	5	Dev	1	2	3	4	5	Dev	1	2	3	4	5	Dev	1	2	3	4	5	5	5
1	Challara Poll, 140394	Staple Weathering not scored						-0.1	0	50	50	0	0	0.1	93	0	7	0	0	0.1	19	36	26	19	0	0	5
2	Collinsville Poll, 160608							0.2	0	24	76	0	0	-0.1	100	0	0	0	0	0.1	24	32	28	12	4	0	0
3	Flairdale Poll, 150078							0.1	0	33	67	0	0	0.1	96	0	0	0	4	0.3	12	50	9	21	8	0	4
4	Gunallo Poll, 160473							0.0	0	36	64	0	0	0.3	87	0	7	0	6	0.1	26	35	13	19	7	0	0
5	Hazeldean, 003368							0.0	0	43	57	0	0	0.1	92	0	5	0	3	1.3	5	22	15	20	38	0	10
6	Hilton Heath Poll, 150817							0.4	0	4	96	0	0	-0.1	100	0	0	0	0	-0.5	26	68	6	0	0	0	0
7	Kelvale Poll, 160088							-0.1	0	47	53	0	0	0.0	97	0	3	0	0	0.1	10	45	32	13	0	0	8
8	Leahcim Poll, 132624							-0.3	8	52	40	0	0	-0.1	100	0	0	0	0	-0.6	33	59	8	0	0	0	4
9	Lucernbrae Poll, 160010							0.1	0	31	69	0	0	0.1	93	0	7	0	0	-0.5	36	50	14	0	0	0	0
10	Malleetech Poll, 166048							0.0	0	35	65	0	0	-0.1	100	0	0	0	0	0.0	15	41	41	0	3	0	0
11	Mumblebone, 160418							-0.3	0	69	28	3	0	0.0	97	0	3	0	0	-0.4	34	44	16	3	3	0	3
12	Nyowee Poll, 14L770							*Insufficient progeny.*						*Unreported due to insufficient progeny numbers.*											
13	Radnor Poll, 120604							0.2	0	22	78	0	0	0.1	90	0	10	0	0	0.2	11	41	31	17	0	0	0
14	Roemahkita Poll, 160256							0.0	0	38	62	0	0	0.0	98	0	2	0	0	0.6	4	36	31	21	8	0	2
15	Tuckwood Poll, 161069							-0.2	0	62	38	0	0	-0.1	100	0	0	0	0	0.4	5	38	38	19	0	0	0
16	Wallaloo Park Poll, 161514							0.3	0	13	87	0	0	-0.1	100	0	0	0	0	-0.4	36	39	21	4	0	0	3
	Average performance							**2.6**	**0**	**39**	**61**	**0**	**0**	**1.1**	**96**	**0**	**3**	**0**	**1**	**2.3**	**21**	**43**	**20**	**10**	**6**	**-**	**-**

Table 5c. Visual trait assessments – Conformation

Traits are reported as a deviation (Dev) from the average trait score for all progeny. The percentage of a sire's progeny assessed for each score is also reported. No adjustments are made to the data to improve the accuracy of the results as is the case with sire means or breeding values.

For the majority of breeder's objectives a negative deviation would be considered favourable and the larger the deviation the better. Face cover is the possible exception when for many breeders the optimum score is in the middle of the range therefore trait leaders have not been highlighted.

Sire Code	Breeders flock, Sire name	Conformation - *Yearling*																											
		Jaw						Legs and Feet						Shoulder and Back						Face Cover						Body Wrinkle					
		Dev	1	2	3	4	5	Dev	1	2	3	4	5	Dev	1	2	3	4	5	Dev	1	2	3	4	5	Dev	1	2	3	4	5
1	Challara Poll, 140394	0.1	97	0	0	0	3	0.1	63	34	3	0	0	0.2	39	0	53	0	8	-0.3	13	79	8	0	0	-0.1	39	45	11	5	0
2	Collinsville Poll, 160608	0.0	100	0	0	0	0	-0.1	86	10	4	0	0	0.1	45	0	45	0	10	0.0	0	76	24	0	0	0.1	25	50	15	10	0
3	Flairdale Poll, 150078	0.0	100	0	0	0	0	0.0	67	33	0	0	0	0.1	45	0	45	0	10	0.1	14	43	33	10	0	0.0	25	50	25	0	0
4	Gunallo Poll, 160473	0.0	100	0	0	0	0	0.0	71	29	0	0	0	-0.4	63	0	37	0	0	0.2	3	57	29	11	0	0.1	33	26	37	4	0
5	Hazeldean, 003368	0.0	100	0	0	0	0	0.2	66	20	11	3	0	0.2	33	3	61	0	3	-0.2	6	89	2	3	0	0.6	14	36	36	11	3
6	Hilton Heath Poll, 150817	0.0	100	0	0	0	0	-0.1	81	19	0	0	0	0.1	42	0	54	0	4	0.2	0	63	30	7	0	0.8	15	15	46	19	5
7	Kelvale Poll, 160088	0.0	100	0	0	0	0	0.0	72	25	3	0	0	-0.5	67	0	33	0	0	-0.4	14	83	3	0	0	-0.7	75	19	6	0	0
8	Leahcim Poll, 132624	0.0	100	0	0	0	0	-0.1	88	8	4	0	0	-0.5	62	5	33	0	0	-0.2	16	68	12	4	0	-0.1	38	42	20	0	0
9	Lucernbrae Poll, 160010	0.1	92	8	0	0	0	-0.2	92	8	0	0	0	0.4	23	0	77	0	0	-0.2	7	85	8	0	0	-0.2	54	31	7	0	8
10	Malleetech Poll, 166048	0.0	100	0	0	0	0	0.1	65	35	0	0	0	-0.3	54	0	46	0	0	0.3	0	54	38	8	0	0.3	31	31	23	15	0
11	Mumblebone, 160418	0.0	100	0	0	0	0	-0.1	83	17	0	0	0	0.4	43	0	37	0	20	0.0	4	72	24	0	0	-0.2	40	40	20	0	0
12	Nyowee Poll, 14L770	*Unreported due to insufficient progeny numbers.*																													
13	Radnor Poll, 120604	0.0	100	0	0	0	0	-0.1	89	7	0	4	0	0.8	19	0	62	0	19	0.5	4	37	44	15	0	0.0	23	65	8	4	0
14	Roemahkita Poll, 160256	0.0	98	2	0	0	0	0.1	68	28	4	0	0	0.2	38	0	56	0	6	0.0	5	70	22	3	0	0.1	31	36	26	7	0
15	Tuckwood Poll, 161069	0.1	96	0	0	4	0	0.0	75	21	4	0	0	0.0	43	0	57	0	0	0.0	4	67	25	4	0	-0.1	43	30	22	5	0
16	Wallaloo Park Poll, 161514	0.0	100	0	0	0	0	-0.1	77	23	0	0	0	0.0	48	0	45	0	7	-0.2	10	74	16	0	0	-0.4	61	26	13	0	0
	Average performance	**1.0**	**99**	**1**	**0**	**0**	**0**	**1.3**	**76**	**20**	**4**	**0**	**0**	**2.2**	**46**	**0**	**48**	**0**	**6**	**2.2**	**6**	**67**	**23**	**4**	**0**	**2.0**	**37**	**37**	**21**	**5**	**0**

Table 5d. Visual trait assessments – Breech

Traits are reported as a deviation (Dev) from the average trait score for all progeny. The percentage of a sire's progeny assessed for each score is also reported. No adjustments are made to the data to improve the accuracy of the results as is the case with sire means or breeding values.

Sire Code	Breeders flock, Sire name	Breech Visual Traits																							
		Breech Cover *Marking*						Breech Wrinkle *Marking*						Dag *Yearling*						Urine *Yearling*					
		Dev	1	2	3	4	5	Dev	1	2	3	4	5	Dev	1	2	3	4	5	Dev	1	2	3	4	5
1	Challara Poll, 140394	-0.4	26	48	17	7	2	-0.1	64	17	14	5	0	-0.2	53	42	5	0	0	-0.1	50	50	0	0	0
2	Collinsville Poll, 160608	0.2	12	36	28	16	8	0.2	40	32	20	8	0	-0.2	48	52	0	0	0	0.1	43	43	14	0	0
3	Flairdale Poll, 150078	-0.6	46	29	17	8	0	0.2	33	46	17	4	0	-0.1	48	48	4	0	0	0.2	50	33	0	17	0
4	Gunallo Poll, 160473	0.1	13	32	42	10	3	0.1	58	13	16	13	0	0.1	36	54	10	0	0	0.1	45	36	19	0	0
5	Hazeldean, 003368	0.3	12	25	38	22	3	0.5	35	22	25	18	0	-0.1	43	54	0	3	0	0.2	33	53	14	0	0
6	Hilton Heath Poll, 150817	0.2	19	26	29	19	7	0.2	45	23	26	6	0	-0.1	44	52	0	4	0	-0.2	56	44	0	0	0
7	Kelvale Poll, 160088	0.1	8	45	34	11	2	-0.5	84	13	3	0	0	0.0	36	56	8	0	0	0.0	55	36	4	5	0
8	Leahcim Poll, 132624	0.0	15	41	30	11	3	0.2	44	30	19	7	0	-0.2	56	40	4	0	0	0.0	54	31	15	0	0
9	Lucernbrae Poll, 160010	0.2	21	29	14	29	7	-0.5	86	7	7	0	0	-0.1	42	58	0	0	0	0.5	13	62	25	0	0
10	Malleetech Poll, 166048	-0.5	33	37	22	8	0	0.2	52	15	22	11	0	0.0	50	35	12	3	0	0.1	27	73	0	0	0
11	Mumblebone, 160418	-0.2	38	19	22	19	2	-0.3	66	25	9	0	0	0.0	36	57	7	0	0	-0.1	47	53	0	0	0
12	Nyowee Poll, 14L770	*Unreported due to insufficient progeny numbers.*																							
13	Radnor Poll, 120604	-0.4	31	34	24	11	0	-0.1	55	28	14	3	0	0.1	41	44	15	0	0	0.0	38	62	0	0	0
14	Roemahkita Poll, 160256	0.2	8	42	25	22	3	0.1	55	18	22	5	0	0.0	38	52	10	0	0	-0.2	62	33	5	0	0
15	Tuckwood Poll, 161069	0.0	23	38	8	23	8	0.2	46	27	19	8	0	-0.1	46	46	8	0	0	-0.3	67	33	0	0	0
16	Wallaloo Park Poll, 161514	0.0	30	21	21	21	7	-0.5	88	3	6	3	0	0.3	26	52	22	0	0	0.1	31	62	7	0	0
	Average performance	**2.5**	**21**	**33**	**24**	**18**	**4**	**1.7**	**57**	**21**	**17**	**5**	**0**	**1.7**	**42**	**49**	**9**	**0**	**0**	**1.6**	**45**	**47**	**6**	**2**	**0**

For the majority of breeder's objectives, a negative deviation would be considered favourable and the larger the deviation the better.

Understanding the Results – Further Information

Accuracy of Flock Breeding Values

Flock Breeding Values (FBVs) are reported by Sheep Genetics (SG). FBVs express the expected performance of progeny of a sire relative to another sire in the evaluation when mated to the same standard of ewes. FBVs improve the accuracy of sire results because they account for the association between traits, adjustment for birth effects and the number of progeny a sire has in the analysis.

True Breeding Values would be achieved if the number of progeny evaluated for each sire were infinite. Because the number of progeny in the evaluation is not infinite, performance shown in this report is described as *Flock* Breeding Values.

Without progeny test information the correlation between the *Flock* and *True* Breeding Value of sires from different sources would be zero (0.0%). The correlation between *Flock* and *True* Breeding Value improves rapidly from 0.0% with no progeny to 77% with 10 progeny. The rate of improvement in correlation slows from 86% with 20 progeny, to 90% with 30 progeny and 92% with 40 progeny. With an infinite population the correlation is 100%. Note that the correlation used in the above example is for a trait such as fibre diameter with a high heritability (0.5).

A heritability of 0.5 indicates that half or 50% of the measured performance is passed onto offspring. A heritability of 0.35 indicates 35% is passed on. The FBVs that are shown in this report have already accounted for heritability and therefore describe the performance that can be expected from a sire's progeny.

Link Sires

Link sires provide the 'genetic link' between sire evaluation sites located across Australia to allow all sires entered in these site evaluations to have their performance reported relative to each other in Merino Superior Sires. Merino Superior Sires reports sires from across all effectively linked sire evaluation sites and across all evaluations at these sites. Link sires are therefore a vital component of the sire evaluation.

To be used as a link a sire must have at least 25 progeny assessed at 1st Assessment at one accredited site. Site reports provide valuable information not reported in Merino Superior Sires however Merino Superior Sires reports the performance of a large number of sires which can provide a wider perspective of the elite sires available across many flocks in Australia.

Calculation of Combined Information

Combined measured trait performance is calculated as Index – 100. Three different index options are provided to cater for breeders' different breeding objectives.

Combined visual trait performance is calculated as:
(Classer's Visual Grade Tops% – Culls%)/5,
expressed as a deviation from average
(average Tops% – average Culls%)/5.

Example
Sire's performance:

- AMSEA DP+ Index value = 119.7
- Tops% = 25.5 (average Tops% = 25.1)
- Culls% = 17.6 (average Culls% = 16.4)

Combined Measured = 119.7.0 – 100 = 19.7
Combined Visual = ((25.5 – 17.6)/5) – ((25.1 – 16.4)/5)
= 7.9/5 – 8.7/5
= 1.58 – 1.74 = -0.1