

Balmoral

Merino Sire Evaluation

Site Report

Within-Site Results
June 2019

2017 Drop
Post Weaning and Adult Assessments

Conducted by



Under the auspices of



With support from



Foreword

The Balmoral Sire Evaluation Trials aim to evaluate and promote leading sires suited to fine wool production in Western Victoria.

This goal is achieved by informing participants, their clients and interested woolgrowers about the events surrounding the trials, and through producing and distributing annual reports and periodic newsletters. To further promote the evaluation, displays have been on show at the Australian Sheep & Wool Show now held in Bendigo, Balmoral Show and Hamilton Sheepvention.

Since 1999 successful annual open days have been held at “The Mountain Dam”, “Kerrsville”, “White Oaks”, “Arundale”, “Tuloona”, “Mokanger”, “Yiddinga”, “Wando Estate”, “Mepungah”, “Tuloona” and “Koorinal” to allow progeny inspections and to discuss the sire evaluation program with interested woolgrowers.

In 1998 a small group of stud breeders met to form what is now known as the Balmoral Sire Evaluation Group. The Sire Evaluation Trials commenced in 1998 and as of this year there will be 21 progeny drops: 1998 - 2019. All trials are run for a minimum of 2 years. The site planning and direction is provided by the Balmoral Sire Evaluation Management Committee.

Evaluations have been held on privately owned host properties around the Balmoral district progressing to a new property mostly every two years. Host properties run Merino fine wool ewes with genetics suitable for the district’s environment.

- 1998 & 1999 “The Mountain Dam”, Balmoral
- 2000 & 2002 “Kerrsville”, Balmoral
- 2002 & 2003 “White Oaks”, Balmoral
- 2004 & 2005 “Arundale”, Balmoral
- 2006 & 2007 “Tuloona”, Harrow
- 2008 & 2009 “Mokanger, Cavendish
- 2010 & 2011 “Yiddinga”, Edenhope
- 2012 & 2013 “Wando Estate”, Casterton
- 2014 “Mepungah”, Wannon
- 2015 & 2016 “Tuloona”, Harrow
- 2017 & 2018 “Koorinal”, Coleraine
- 2019 “Jigsaw Farms”, Hensley Park

Thank you to our hosts, sponsors, committee and participants for enabling this valuable assessment of Merino genetics.

Mark Bunge
Chairman
Balmoral Breeders

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Disclaimer

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2017 Drop Adult Assessment

The information in this Site Report provides an update of the assessment of the 2017 drop, including the Post Weaning and Adult assessments of the sire's progeny performance for measured and visually assessed traits.

The Post Weaning fleece and visual assessments were made at 7 months with 7 months of wool growth and the Adult fleece and visual assessments were made at 17 months of age with 10 months of wool growth. The Post Weaning shearing was carried out at 7 months of age with 7 months of wool growth. Adult shearing was then carried out at 18 months of age, with 11 months of wool growth.

The Post Weaning and Adult assessments included both the ewe and wether progeny.

Site Committee

Mark Bunge	Hugh Jarvis	Mark Williams	Hamish Dickson
Anthony Close	Andrew Howells	Sean Harvey	Daniel Rogers
Michael Craig	David Whyte	Dale Bruns	Elise Kealy
Liz Mecham	Jim Farran	Rosey Leeming	Jonno Hicks
Tom Silcock	Russell Macgugan	Ian Murray	Tom Sweeny
Nick Falkenberg	Tony Kealy	Scott Davis	Hugh Jarvis
Simon Close	Michael Close	Marina VanAken	Mark Wootton
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Visual Trait Assessment and Site Breeding Objective

Visual trait assessment

Classer's Grade: Stephen Charmers

Trait Scores: Stephen Charmers and Kevin Beaton

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.

The goal is to select sheep that are productive and well grown, with sound conformation and carrying heavy fine wool fleeces of good character, colour and nourishment suitable for the western Victorian environment.

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.

2017 Drop Owner and Contact Details (A-M)

Owner's table continued on following page.

Breeder's flock, Sire name Sire ID #, Breed †	Contact Details
Anderson Poll, 120096 (Link) 609147-2012-120096, Poll Merino	Lynley Anderson Brookvale, RMB 512, Kojonup WA 6395 P: (08) 9832 8055, M: 0429 328055, E: info@andersonrams.com.au
Centre Plus Poll, 407445 601250-2014-407445, Poll Merino	Robert Mortimer Devondale, Tullamore NSW 2874 P: (02) 6892 8259, M: 0429 928292, E: robert@centreplus.com.au
Connewarran, 015024 (Link) 504704-2015-015024, Merino	Hamish Weatherly Connewarran, PO Box 21, Mortlake VIC 3272 P: (03) 5599 7276, M: 0423 073328, E: hamishweatherly@hotmail.com
Hazeldean, 12.4030 (Link) 500383-2012-004030, Merino	Jim Litchfield Hazeldean Pty Ltd, Cooma NSW 2630 P: (02) 6453 5555, M: 0417 676561, E: admin@hazeldean.com.au
Kerin Poll, 151911 (Link) 601413-2015-151911, Poll Merino	Nigel Kerin Karuga Park, 1142 Bournemouth Rd, Yeoval NSW 2868 M: 0427 46 4070, E: kerinag@bigpond.com
Kurra-Wirra, 150583 504173-2015-150583, Merino	Anthony Close Kurra Wirra, 770 Moree-Culla Rd, Culla VIC 3315 P: (03) 5570 4238, M: 0437 085217, E: anthony@kurrawirra.com.au
Lachlan Merinos, 150280 505022-2015-150280, Merino	Glenn and Margot Rubie Meadowbank, 94 Warroo Bridge Road, Forbes NSW 2871 P: (02) 6857 2118, M: 0428 572117, E: lachlanmerinos@activ8.net.au
Merinotech WA Poll, 122041 609040-2012-122041, Poll Merino	Ian Robertson Merinotech (WA) Ltd, RMB 311, Kojonup WA 6395 P: (08) 9833 6251, E: yarrakfarm311@gmail.com
Moorundie Poll, NE73 (Link) 601502-2015-150073, Poll Merino	Peter Wallis PO Box 32, Pinnaroo SA 5304 P: (08) 8576 6141, M: 0428 766126, E: peter@glenleaparkmerinos.com.au
Mumblebone, 130850 (Link) 500063-2013-130850, Merino	Chad Taylor Marapana, 456 Wuuluman Road, Wellington NSW 2820 P: (02) 6845 3620, M: 0458 453608, E: chad@mumblebone.com.au
Mumblebone, 151723 500063-2015-151723, Merino	Chad Taylor Marapana, 456 Wuuluman Road, Wellington NSW 2820 P: (02) 6845 3620, M: 0458 453608, E: chad@mumblebone.com.au
Nerstane, 140053 503298-2014-140053, Merino	John, Hamish and Jock McLaren Nerstane, Woolbrook NSW 2354 P: (02) 6777 5881, M: 0429 775891, E: info@nerstane.com.au
Ridgway Poll, 140721 (Link) 601116-2014-140721, Poll Merino	Brad & Ray Schroeder PO Box 59, Pinnaroo SA 5304 P: (08) 8577 8485, M: 0427 778485, E: ray@gunallo.com.au
The Mountain Dam Poll, WYA037 601563-2016-WYA037, Poll Merino	Tom Silcock The Mountain Dam, 429 Silcocks Road, Telangatuk East VIC 3401 P: (03) 5388 2288, M: 0419 882239, E: tom@themountaindam.com.au
Tuckwood Poll, 131026 (Link) 601053-2013-131026, Poll Merino	Geoff Tucker PMB 21, Millicent SA 5280 P: (08) 8734 2050, M: 0427 342050, E: geomag@activ8.net.au

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

(Unreg) Sire bred in an unregistered flock.

† 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.

2017 Drop Owner and Contact Details (N-Z)

Breeders flock, Sire name Sire ID #, Breed †	Contact Details
Tuckwood Poll, 141025 601053-2014-141025, Poll Merino	Geoff Tucker PMB 21, Millicent SA 5280 P: (08) 8734 2050, M: 0427 342050, E: geomag@activ8.net.au
Turkey Lane, 150077 (Link) 509069-2015-150077, Merino	John Symons PO Box 49, Parndana SA 5220 P: (08) 8559 2234, M: 0428 592234, E: j.symons@bigpond.com
Wallaloo Park Poll, 140261 601332-2014-140261, Poll Merino	Trent Carter 80 Bolangum Inn Road, Marnoo VIC 3387 P: (03) 5359 2290, M: 0427 776114, E: trent_carter@hotmail.com
Woodyarrup, 140149 500412-2014-140149, Merino	Craig and Lachlan Dewar PO Box 61, Broomehill WA 6318 P: (08) 9824 1257, M: 0429 100239, E: craig@woodyarrup.com.au
Yiddinga, 154995 509242-2015-154995, Merino	Jim Farran 220 Edenhope-Penola Road, Edenhope VIC 3318 P: (03) 5585 1888, M: 0408 310107, E: j.farran@bigpond.com

(Link) Sire evaluated to provide links between years and sites so that the all site results can be combined into a single report, e.g.

Merino Superior Sires.

(Unreg) Sire bred in an unregistered flock.

† 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

Sire Codes and Pedigrees

Sire Code	Breeders flock, Sire number	Sheep Genetics ID	Sire of Sire
1	Anderson Poll, 120096 (Link)	609147-2012-120096, Poll Merino	Anderson Poll, 100502
2	Centre Plus Poll, 407445	601250-2014-407445, Poll Merino	Centre Plus Poll, 207058
3	Connewarran, 015024 (Link)	504704-2015-015024, Merino	Connewarran, 062097
4	Hazeldean, 12.4030 (Link)	500383-2012-004030, Merino	Nerstane, 080121
5	Kerin Poll, 151911 (Link)	601413-2015-151911, Poll Merino	Moorundie Park, 130306
6	Kurra-Wirra, 150583	504173-2015-150583, Merino	Pemcaw Poll, 122024
7	Lachlan Merinos, 150280	505022-2015-150280, Merino	Kamora Park Poll, 091028
8	Merinotech WA Poll, 122041	609040-2012-122041, Poll Merino	Merinotech WA Poll, 066533
9	Moorundie Poll, NE73 (Link)	601502-2015-150073, Poll Merino	Moorundie Poll, 110020
10	Mumblebone, 130850 (Link)	500063-2013-130850, Merino	Mumblebone, 100186
11	Mumblebone, 151723	500063-2015-151723, Merino	Trigger Vale, 130604
12	Nerstane, 140053	503298-2014-140053, Merino	Willandra Poll, 120026
13	Ridgway Poll, 140721 (Link)	601116-2014-140721, Poll Merino	Leahcim Poll, 100858
14	The Mountain Dam Poll, WYA037	601563-2016-WYA037, Poll Merino	Woodyarrup, 120175
15	Tuckwood Poll, 131026 (Link)	601053-2013-131026, Poll Merino	Toland Poll, 081375
16	Tuckwood Poll, 141025	601053-2014-141025, Poll Merino	Leahcim Poll, 101259
17	Turkey Lane, 150077 (Link)	509069-2015-150077, Merino	Centre Plus Poll, 107255
18	Wallaloo Park Poll, 140261	601332-2014-140261, Poll Merino	Wallaloo Park Poll, 121357
19	Woodyarrup, 140149	500412-2014-140149, Merino	Woodyarrup, 120175
20	Yiddinga, 154995	509242-2015-154995, Merino	Yiddinga, 130374

Host property and location

"Koorungal" is located 21km north of Coleraine and receives 685mm winter dominated rain fall per year. It is owned and managed by the Bunge family.

Ewe Base

The ewe base is a traditional super fine wool flock that has focussed on decreasing fiber diameter and maintaining fleece weight with a small reduction in WEC. Basically a "fibre production" index. The mature flock averages 17.µm and cuts 57kg/ha of clean wool (5.3kg head/ 70% yield) and weighing 52kg body weight.

Joining

Laparoscopic insemination of 1150 ewes was conducted by Genstock Jerilderie on April 20th and 21st 2017 with ewes being in condition score 3.

Pregnancy and lambing

The ewes were pregnancy scanned on 26th June 2017. Ewes were split following pregnancy scanning into single, twin and triplet bearing ewes. Ewes completed lambing at Koorungal in late September 2017 in their pregnancy status mob .

The lambs were tagged, marked and scored for breech traits on the 16th October 2017. From then onwards pedigree match maker scanners were set up in the paddocks to determine sire and dam parentage by matching the ewe with its lamb as they walk past. After achieving 80% confirmed matches the balance was DNA tested to confirm parentage.

Weaning to Post Weaning Assessment

Lambs tracked well for growth rate and body weight gain from weaning until shearing in April.

The lambs were run on lucerne pasture until February and then supplemented with a pellet ration.

After shearing was completed we had a severe wind chill and rain event 3 days later which unfortunately caused some mortalities. This event also induced a high worm burden which enabled to collect the WEC samples on 28th May 2018.

Post Weaning to Adult Assessment

The sheep were drenched post WEC collection and put into a fresh paddock where they had excellent weight gain for the remainder of the season. Fat, muscle scanning and dag score were taken over spring. Final classing and fleece testing was done 5th February 2019. Shearing was done 14th March 2019.

Seasonal conditions

A good Autumn break and reasonable Spring finish in 2018 was considered an above average season.

Mark Bunge
Site Manager
Balmoral Breeders

Assessment and Management Program

Activity	Date/s	Age	Wool
Selection of ewes	February 2017		
Allocation of ewes for mating	March 2017		
Pregnancy scanning	June 26, 2017		
Allocated to lambing paddocks	September 1, 2017		
Lambing: start – finish	September 16-23, 2017		
Lambing mobs boxed into singles and twins management groups	October 16, 2017		
Tagging, pigmentation and breech scoring	October 16, 2017		
Marking	October 16, 2017		
Liquid Nitrogen Breech Treatment	November 10, 2017		
Weaning	December 4, 2017	2 months	
Mid side fleece sampling (P)	April 27, 2018	7 months	7 months
Mid side fleece sampling (A)	February 5, 2019	17 months	10 months
Visual trait scoring (P)	April 27, 2018	7 months	7 months
Visual trait scoring (A)	February 5, 2019	17 months	10 months
Shearing (P)	April 27, 2018	7 months	7 months
Shearing (A)	March 14, 2019	18 months	11 months
Fat and eye muscle scanning (Y)	September 11, 2018	12 months	
Worm egg count (Y)	May 28, 2018	8.5 months	
Body weight (W)	December 4, 2017	2.5 months	
Body weight (P)	February 15, 2018	5 months	
Body weight (Y)	August 3, 2018	10.5 months	
Body weight (H)	November 1, 2018	13.5 months	
Body weight (A)	March 26, 2019	18.5 months	
Drench	December 20, 2017, May 28, 2018 and November 15, 2018.		
Fly treatment	November 15, 2018		
Supplementary Feeding	February – Mid April 2018		
Field day or public display	16 February 2018 and 22 February 2019. Annual displays at Balmoral Show, Sheepvention and Bendigo Sheep and Wool Show.		

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; 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, the number of progeny a sire has and management group.

Flock Breeding Values (FBVs)

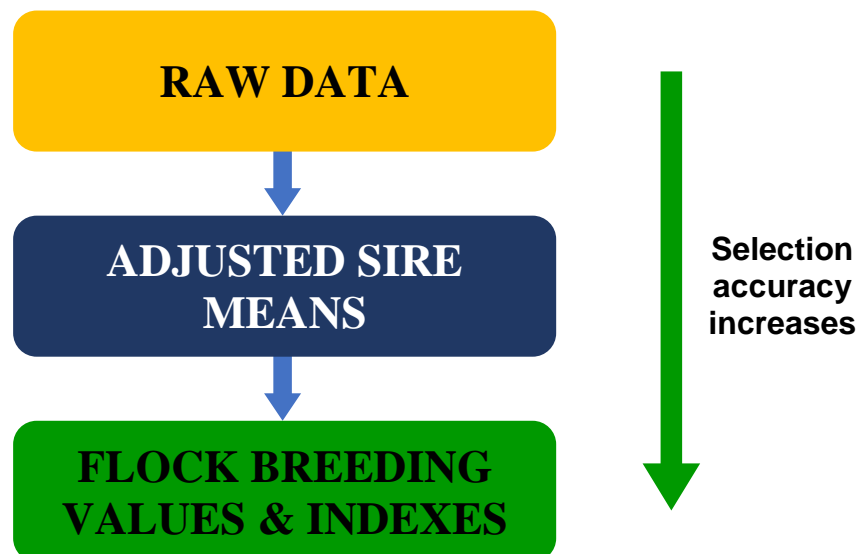
These results have been adjusted in the same way as Adjusted Sire Means, then further calculations have also been made to account for the level of heritability of a trait (some are more heritable than others) and correlations between traits.

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'.



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.
Adjusted Sire Means:	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, management group and the number of progeny a sire has, 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.
Flock Breeding Values:	<p>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.</p> <p>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.</p>
Traits: Abbreviation, trait and the (units reported)	<p>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).</p>
Age at assessment:	<p>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).</p>
Classer’s Visual Grade:	<p>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.</p> <p>Page 3 provides more detail on Classer’s Visual Grade and the site’s Breeding Objective.</p>

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, the number of progeny a sire has 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	Breeder's flock, Sire name	Number of Progeny	Adjusted Sire Means																	
			GFW kg		CFW kg		FD µm		FDCV %		SL mm		SS N/ktex		WT kg				EMD mm	FAT mm
			P [^]	A	P	A	P	A	P	A	P	A	P	A	W	P	Y	A	Y	Y
1	Anderson Poll, 120096	43	1.6	4.8	1.2	3.5	15.2	18.4	20.0	17.0	56.6	92.5	27.3	64.7	20.9	24.5	39.3	43.6	21.0	3.0
2	Centre Plus Poll, 407445	26	1.5	4.4	1.1	3.0	14.2	17.0	18.2	15.6	50.6	91.1	30.0	64.7	20.9	23.2	37.6	43.7	21.3	2.7
3	Connewarran, 015024	37	1.5	4.6	1.1	3.4	13.9	17.1	19.7	16.2	46.8	91.1	30.8	62.2	22.2	24.1	38.1	41.5	20.8	2.7
4	Hazeldean, 12.4030	36	1.7	5.1	1.3	3.7	14.2	17.7	19.1	17.4	55.4	98.8	33.7	62.8	21.6	23.0	35.6	38.8	20.6	2.6
5	Kerin Poll, 151911	36	1.4	4.8	1.0	3.4	14.2	17.3	19.2	17.1	48.6	90.9	27.0	64.5	22.3	24.6	39.3	42.9	20.6	2.7
6	Kurra-Wirra, 150583	34	1.6	4.7	1.1	3.3	14.2	17.3	19.2	16.2	47.4	90.4	28.8	65.0	21.9	24.2	38.5	42.7	20.6	2.7
7	Lachlan Merinos, 150280	39	1.4	4.5	1.0	3.1	14.4	17.6	19.2	16.5	49.3	90.4	30.8	67.2	20.5	22.4	37.3	41.7	20.4	2.7
8	Merinotech WA Poll, 122041	31	1.4	4.6	1.1	3.4	15.0	18.2	19.8	16.1	48.3	87.6	32.3	66.2	21.2	24.1	39.9	45.5	21.6	2.9
9	Moorundie Poll, NE73	30	1.5	4.9	1.1	3.5	14.5	17.6	20.4	18.5	47.5	88.9	32.2	64.2	22.0	23.9	40.1	44.3	21.1	2.7
10	Mumblebone, 130850	41	1.4	4.4	1.0	3.1	15.2	18.6	18.3	16.0	52.9	95.0	30.9	66.6	20.9	23.8	39.2	42.7	21.2	2.8
11	Mumblebone, 151723	40	1.4	4.2	1.0	3.1	14.7	17.9	18.8	16.9	52.0	97.6	32.4	63.9	20.5	23.0	37.1	42.7	21.7	3.0
12	Nerstane, 140053	29	1.5	4.5	1.1	3.2	14.0	17.4	20.8	17.1	44.9	83.2	27.1	65.7	21.6	23.7	37.2	41.9	20.5	2.8
13	Ridgway Poll, 140721	45	1.5	4.7	1.1	3.4	14.1	17.4	19.4	17.1	51.6	93.7	30.2	61.5	21.0	23.6	38.0	41.3	20.6	2.8
14	The Mountain Dam Poll, WYA037	36	1.4	4.7	1.1	3.4	14.6	17.8	20.6	17.1	52.6	95.1	29.3	63.5	20.4	23.0	38.7	42.6	21.2	2.7
15	Tuckwood Poll, 131026	43	1.4	4.4	1.0	3.2	14.3	17.7	19.3	16.3	52.0	96.7	29.1	64.3	20.9	23.6	38.6	44.6	21.4	2.8
16	Tuckwood Poll, 141025	25	1.6	4.3	1.2	3.2	14.3	17.4	19.5	16.7	52.4	93.8	28.6	64.3	22.2	25.2	38.6	41.7	20.9	2.9
17	Turkey Lane, 150077	46	1.5	4.6	1.1	3.2	13.9	17.0	19.0	16.6	54.0	95.6	30.3	64.6	20.7	23.2	38.3	43.7	21.3	3.1
18	Wallaloo Park Poll, 140261	47	1.3	4.0	0.9	2.8	14.2	17.5	19.4	17.0	48.3	89.3	23.6	62.1	20.1	23.4	37.9	42.9	21.4	2.9
19	Woodyarrup, 140149	31	1.7	5.2	1.2	3.8	14.5	17.6	20.5	16.9	48.0	88.9	27.0	64.8	23.9	27.3	42.8	45.4	20.4	2.7
20	Yiddinga, 154995	22	1.6	4.6	1.2	3.4	14.8	17.7	19.6	16.0	50.9	89.3	31.0	65.1	20.3	22.3	38.1	41.7	21.3	2.8
	Progeny group average	36	1.5	4.6	1.1	3.3	14.4	17.6	19.5	16.7	50.5	92.0	29.6	64.4	21.3	23.8	38.5	42.8	21.0	2.8
			kg		kg	µm		%		mm		N/ktex		kg		mm		mm		mm

^ 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).

* Progeny No is the total progeny number for each sire at weaning.

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.

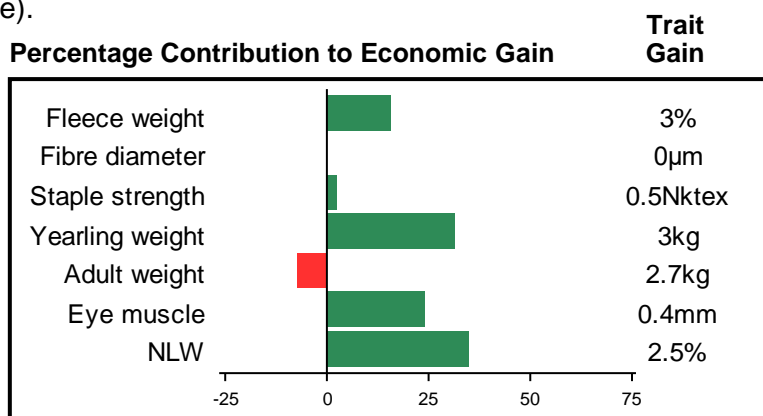
It is recommended that the performance of individual Flock Breeding Values and visually assessed traits is used in conjunction with an index as selection indexes assist in making balanced selection decisions.

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 are not collected as part of standard sire evaluation trials. 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).

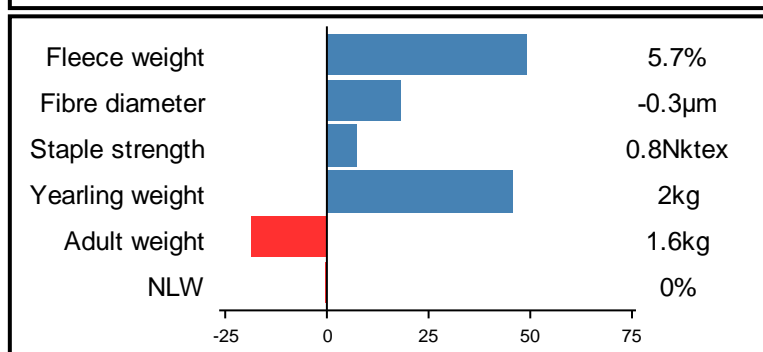
Dual Purpose Plus (DP+)

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 carcass traits. Moderate increase in fleece weight. Maintain fibre diameter and staple strength. Moderate increase in reproduction.



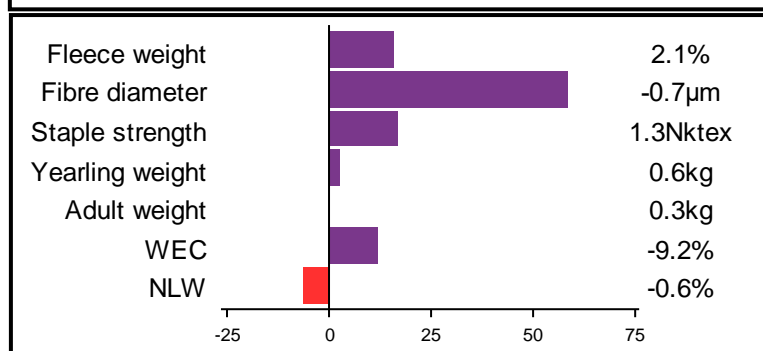
Merino Production Plus (MP+)

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.

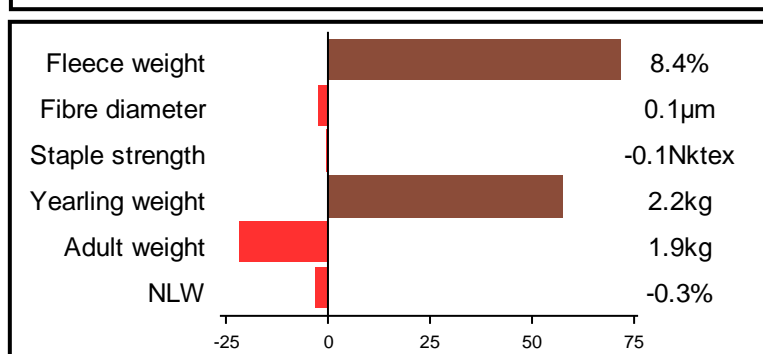


Table 2. AMSEA Index Values and Classer's Visual Grade

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 11) 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	Breeder's 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 % A [^]	Culls % A
1	Anderson Poll, 120096	43	105	100	99	110	-17	15
2	Centre Plus Poll, 407445	26	103	97	105	91	-14	3
3	Connewarran, 015024	37	91	101	98	98	-3	-8
4	Hazeldean, 12.4030	36	99	128	116	130	11	-15
5	Kerin Poll, 151911	36	103	105	101	103	17	5
6	Kurra-Wirra, 150583	34	103	115	110	112	36	-15
7	Lachlan Merinos, 150280	39	73	81	90	76	5	12
8	Merinotech WA Poll, 122041	31	117	99	96	101	-9	-9
9	Moorundie Poll, NE73	30	106	109	105	110	-3	23
10	Mumblebone, 130850	41	96	87	84	88	0	-16
11	Mumblebone, 151723	40	97	81	89	83	8	-13
12	Nerstane, 140053	29	87	94	100	91	-13	-5
13	Ridgway Poll, 140721	45	96	102	105	102	0	13
14	The Mountain Dam Poll, WYA037	36	107	101	96	106	4	-11
15	Tuckwood Poll, 131026	43	102	93	86	92	3	-17
16	Tuckwood Poll, 141025	25	97	105	101	106	-7	-1
17	Turkey Lane, 150077	46	113	105	113	99	-12	0
18	Wallaloo Park Poll, 140261	47	80	55	70	56	-3	12
19	Woodyarrup, 140149	31	132	146	129	150	-4	7
20	Yiddinga, 154995	22	92	94	99	95	1	21
	Average performance	36	100	100	100	100	25	34

[^] 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).

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

* Progeny No is the total progeny number for each sire at weaning.

Combined Measured Traits and Visual Performance

The following figures use the same sire codes as Table 2 to locate sire performance for a variety of trait combinations. The blue boxes describe the high and low quadrants of results for the traits, as does any text accompanying the figure.

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

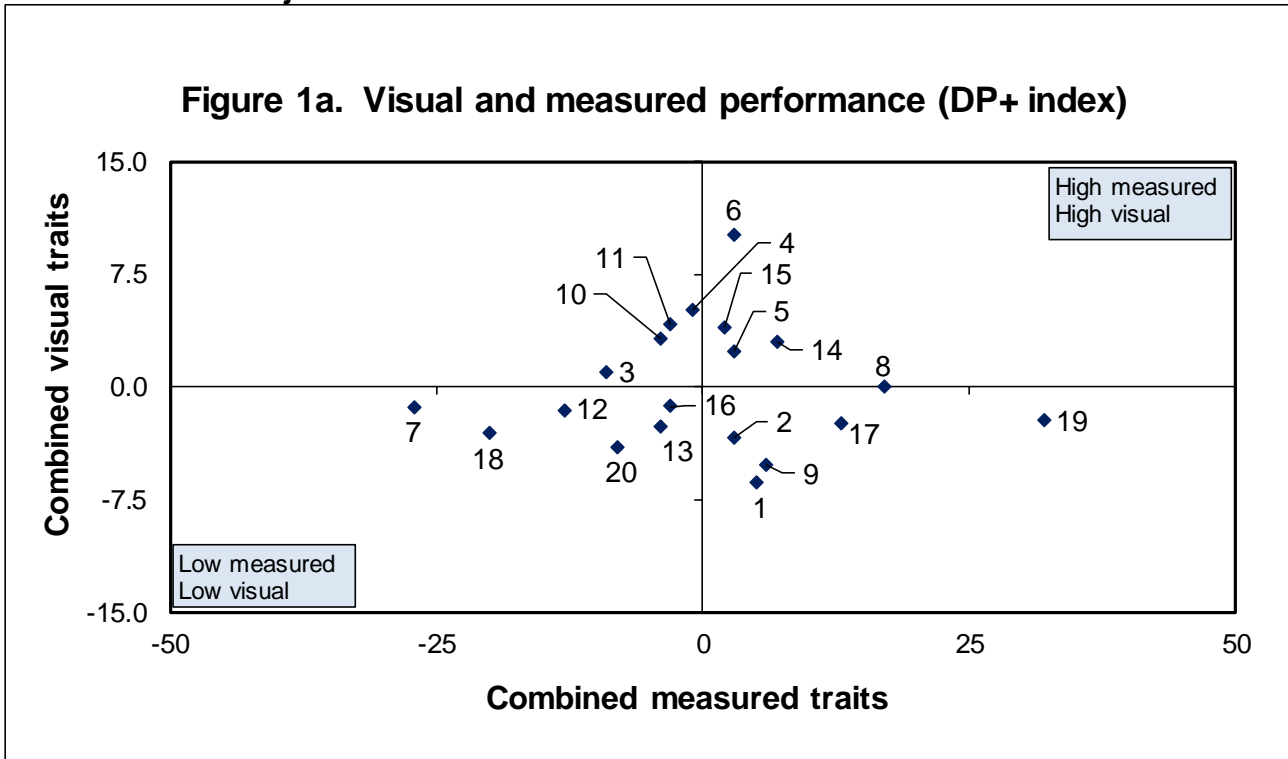


Figure 1b. Combined measured traits (MP+ index) and combined visually assessed traits for the site objective.

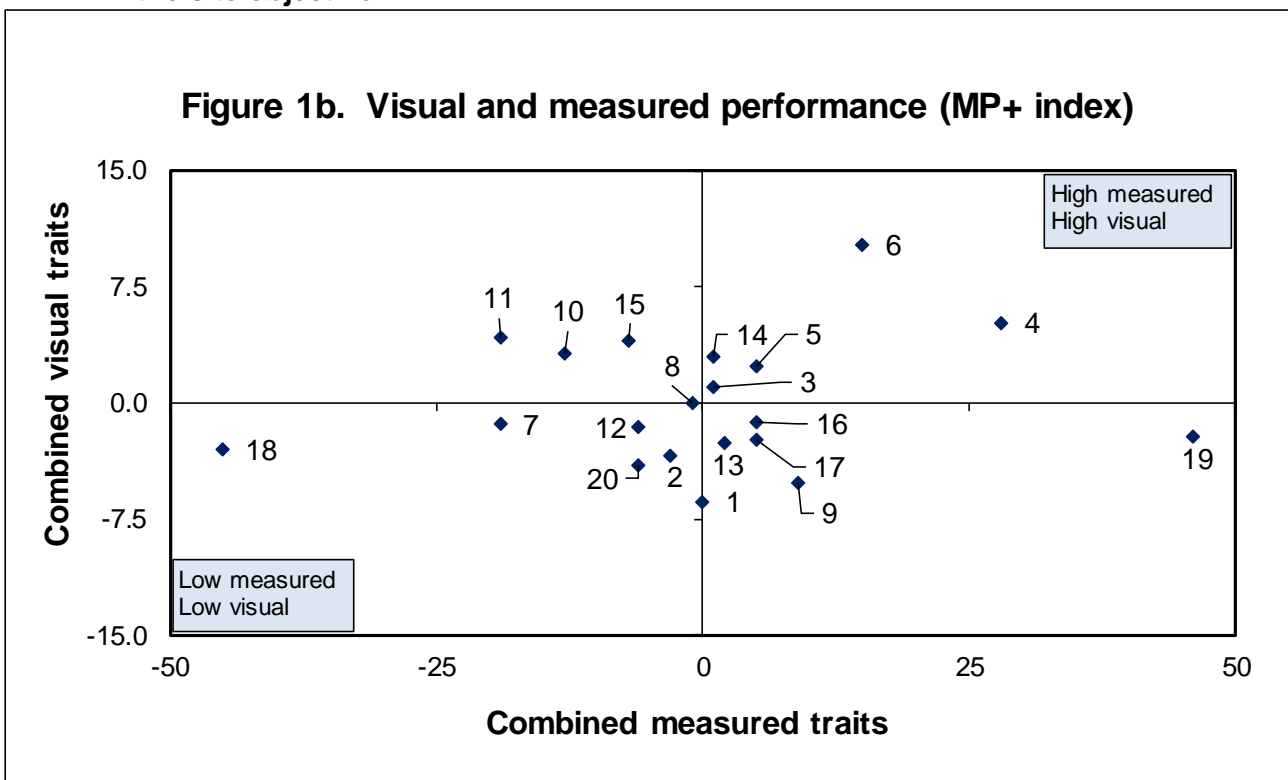


Figure 1c. Combined measured traits (FP+ index) and combined visually assessed traits for the site objective.

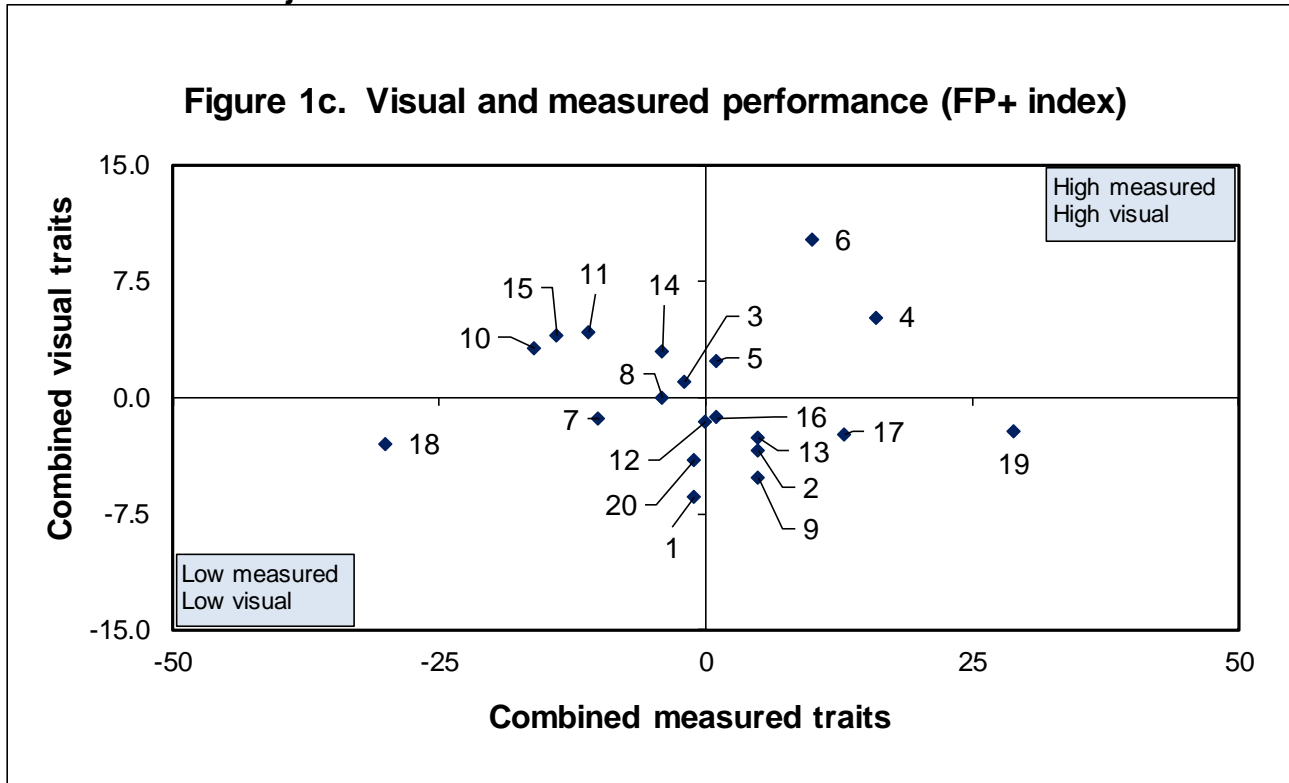


Figure 1d. Combined measured traits (WP+ index) and combined visually assessed traits for the site objective.

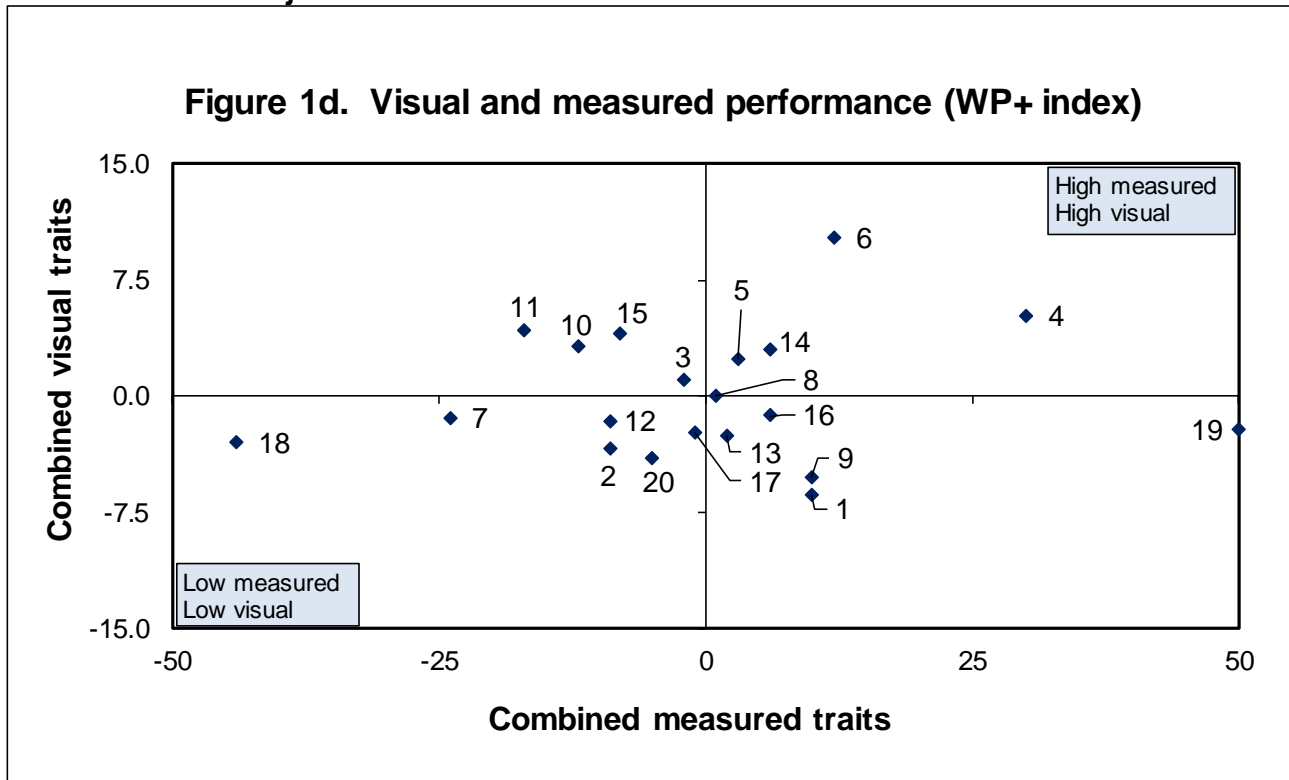


Table 3. Wool Measured Traits plus Classer's Visual Grade

Sire Code	Breeders flock, Sire name	Number of Progeny	Flock Breeding Values (deviations)														Classer's Visual Grade ¹	
			GFW %		CFW %		FD µm		FDCV %		SL mm		SS N/ktex		CURV deg/mm		Tops %	Culls %
			P [^]	A	P	A	P	A	P	A	P	A	P	A	P	A	A	A
1	Anderson Poll, 120096	43	17	9	16	10	1.7	1.5	0.4	0.6	8.0	2.2	-1.9	0.4	-3.6	-1.7	-17	15
2	Centre Plus Poll, 407445	26	-4	-6	-7	-10	-0.5	-1.0	-1.6	-1.6	0.0	-1.8	0.1	0.5	4.5	8.5	-14	3
3	Connewarran, 015024	37	2	-1	3	-1	-1.0	-1.0	0.1	-0.1	-5.4	-2.9	1.1	-3.5	6.6	3.8	-3	-8
4	Hazeldean, 12.4030	36	30	18	37	20	-0.4	0.2	-0.2	0.4	7.7	11.3	5.3	-0.3	-7.3	-10.8	11	-15
5	Kerin Poll, 151911	36	-13	3	-11	4	-0.4	-0.5	-0.3	0.0	-3.2	-2.2	-3.2	-0.7	1.7	2.3	17	5
6	Kurra-Wirra, 150583	34	11	4	4	2	-0.4	-0.5	-0.3	-0.7	-4.5	-3.5	-0.7	0.9	6.6	7.2	36	-15
7	Lachlan Merinos, 150280	39	-12	-6	-18	-10	-0.1	-0.3	-0.3	-0.2	-2.0	-3.4	2.0	3.4	-1.1	0.2	5	12
8	Merinotech WA Poll, 122041	31	-7	1	-4	2	1.2	1.0	0.1	-0.5	-4.4	-6.0	3.7	3.0	9.6	6.9	-9	-9
9	Moorundie Poll, NE73	30	5	6	8	7	0.2	0.3	1.4	1.9	-3.6	-4.1	3.5	1.6	-3.8	-6.3	-3	23
10	Mumblebone, 130850	41	-11	-9	-13	-11	1.6	1.3	-1.8	-1.6	4.2	4.0	2.2	2.9	2.2	1.4	0	-16
11	Mumblebone, 151723	40	-9	-12	-7	-7	0.6	0.6	-0.7	0.1	3.9	7.7	3.2	-1.0	-7.8	-6.9	8	-13
12	Nerstane, 140053	29	-6	-4	-9	-5	-0.8	-0.4	1.6	0.6	-9.7	-12.8	-2.5	1.6	9.0	9.3	-13	-5
13	Ridgway Poll, 140721	45	-1	4	0	6	-0.7	-0.6	-0.1	0.7	1.7	2.0	0.2	-3.8	-7.6	-5.7	0	13
14	The Mountain Dam Poll, WYA037	36	-2	7	0	9	0.4	0.6	1.6	1.0	3.3	6.7	-1.0	-1.3	-1.9	-4.6	4	-11
15	Tuckwood Poll, 131026	43	-12	-9	-11	-7	-0.2	0.0	-0.5	-0.7	3.2	5.0	-0.4	-0.5	-3.4	-3.5	3	-17
16	Tuckwood Poll, 141025	25	9	-8	16	-5	-0.3	-0.3	0.0	0.1	3.1	3.2	-1.3	-1.2	-3.9	-2.1	-7	-1
17	Turkey Lane, 150077	46	3	0	-2	-5	-1.1	-1.1	-0.6	-0.5	4.9	6.5	1.3	0.6	4.3	4.1	-12	0
18	Wallaloo Park Poll, 140261	47	-30	-20	-38	-25	-0.4	-0.3	-0.1	0.1	-3.6	-5.3	-9.1	-4.1	3.3	5.1	-3	12
19	Woodyarrup, 140149	31	25	21	28	23	0.2	0.2	1.4	0.6	-3.5	-3.3	-3.4	0.4	-7.1	-8.7	-4	7
20	Yiddinga, 154995	22	4	3	7	3	0.4	0.2	0.0	-0.1	0.0	-3.3	0.7	1.1	-0.3	1.4	1	21

[^] 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).

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

* Progeny No is the total progeny number for each sire at weaning.

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				EMD mm	FAT mm	WEC %	Tops %	Culls %
			W	P	Y	A	Y	Y	P	A	A
1	Anderson Poll, 120096	43	-0.3	1.7	2.2	1.3	0.1	0.5	-65	-17	15
2	Centre Plus Poll, 407445	26	-0.7	-0.5	-0.3	1.8	0.4	-0.2	-15	-14	3
3	Connewarran, 015024	37	1.6	0.4	-1.9	-3.0	-0.4	-0.1	60	-3	-8
4	Hazeldean, 12.4030	36	-0.1	-2.4	-3.3	-4.4	-0.4	-0.5	19	11	-15
5	Kerin Poll, 151911	36	1.9	1.9	1.6	1.2	-0.5	-0.4	39	17	5
6	Kurra-Wirra, 150583	34	0.7	0.4	1.2	1.2	-0.6	-0.6	4	36	-15
7	Lachlan Merinos, 150280	39	-1.6	-3.2	-4.4	-4.0	-1.1	-0.6	42	5	12
8	Merinotech WA Poll, 122041	31	0.2	0.9	2.7	3.8	1.0	0.5	5	-9	-9
9	Moorundie Poll, NE73	30	1.1	-0.2	0.0	0.2	0.0	-0.2	9	-3	23
10	Mumblebone, 130850	41	-0.7	0.4	1.8	0.9	0.5	0.0	-4	0	-16
11	Mumblebone, 151723	40	-1.4	-1.6	-2.5	-0.2	1.4	1.3	-36	8	-13
12	Nerstane, 140053	29	0.4	-0.6	-1.8	-1.3	-0.7	-0.2	-15	-13	-5
13	Ridgway Poll, 140721	45	-0.5	-0.4	-0.6	-2.2	-0.7	-0.2	-1	0	13
14	The Mountain Dam Poll, WYA037	36	-1.6	-1.5	0.7	0.6	0.3	-0.2	18	4	-11
15	Tuckwood Poll, 131026	43	-0.7	-0.5	0.1	2.3	0.7	0.0	92	3	-17
16	Tuckwood Poll, 141025	25	1.6	2.4	0.5	-0.9	-0.1	0.3	-7	-7	-1
17	Turkey Lane, 150077	46	-1.3	-1.5	0.0	1.5	0.7	1.4	-23	-12	0
18	Wallaloo Park Poll, 140261	47	-2.0	-0.4	-1.2	-0.2	0.6	0.1	-1	-3	12
19	Woodyarrup, 140149	31	5.2	7.7	7.8	5.3	-0.9	-0.6	-31	-4	7
20	Yiddinga, 154995	22	-2.0	-3.1	-2.6	-3.9	-0.1	-0.3	0	1	21

[^] 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).

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

* Progeny No is the total progeny number for each sire at weaning.

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.

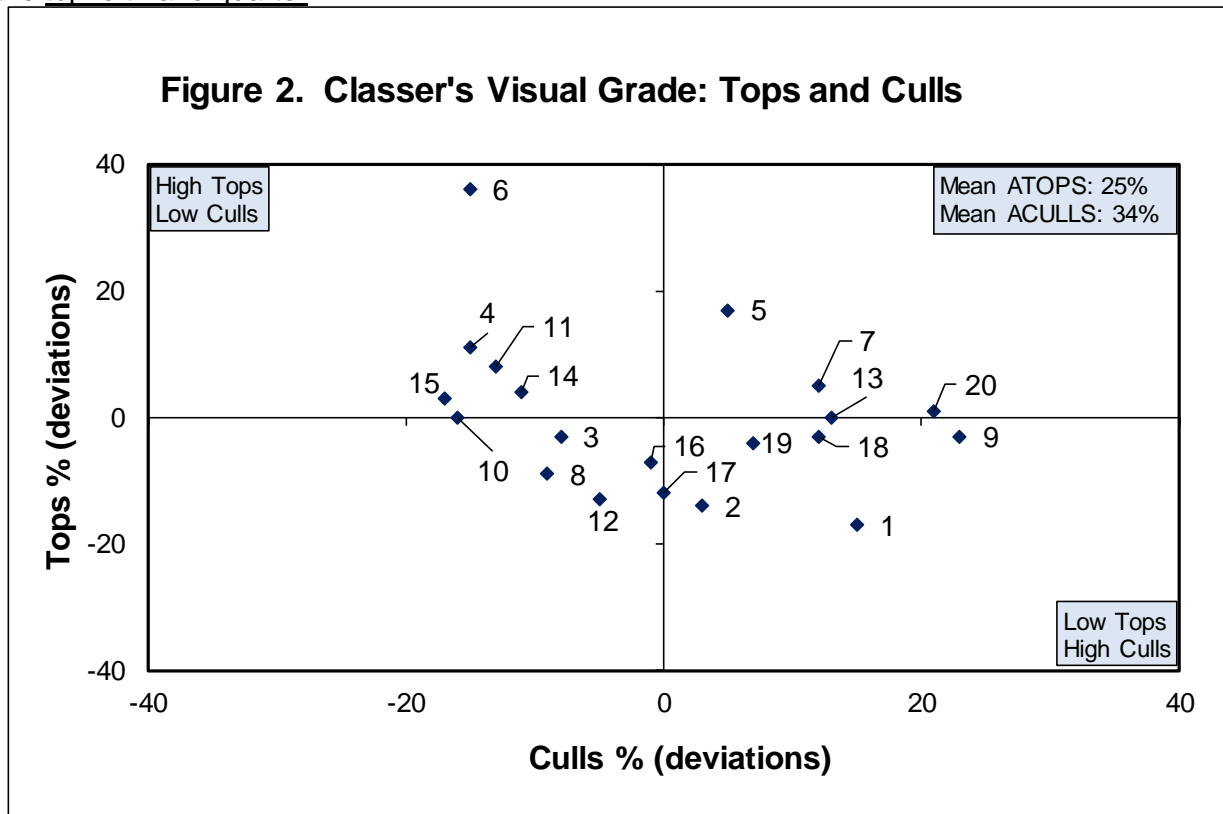
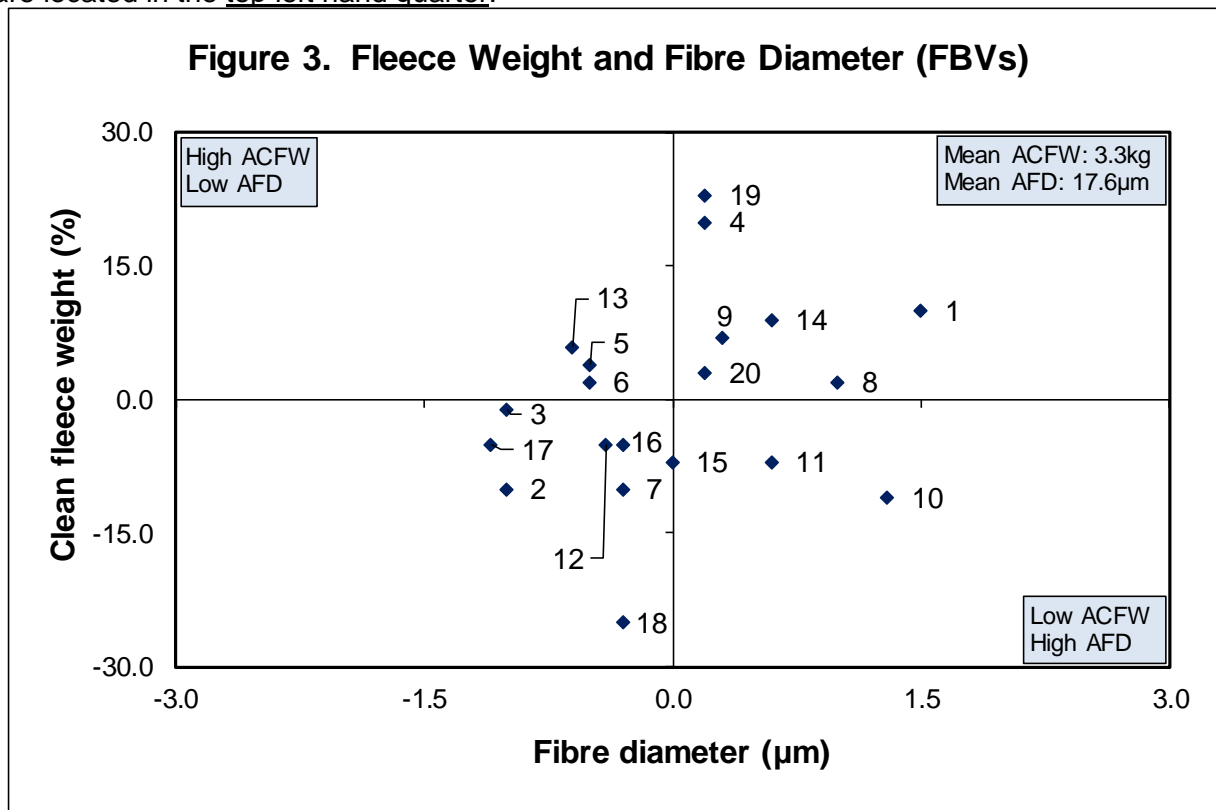


Figure 3. Fleece Weight and Fibre Diameter (FBVs)

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.



Summary Graphs

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.

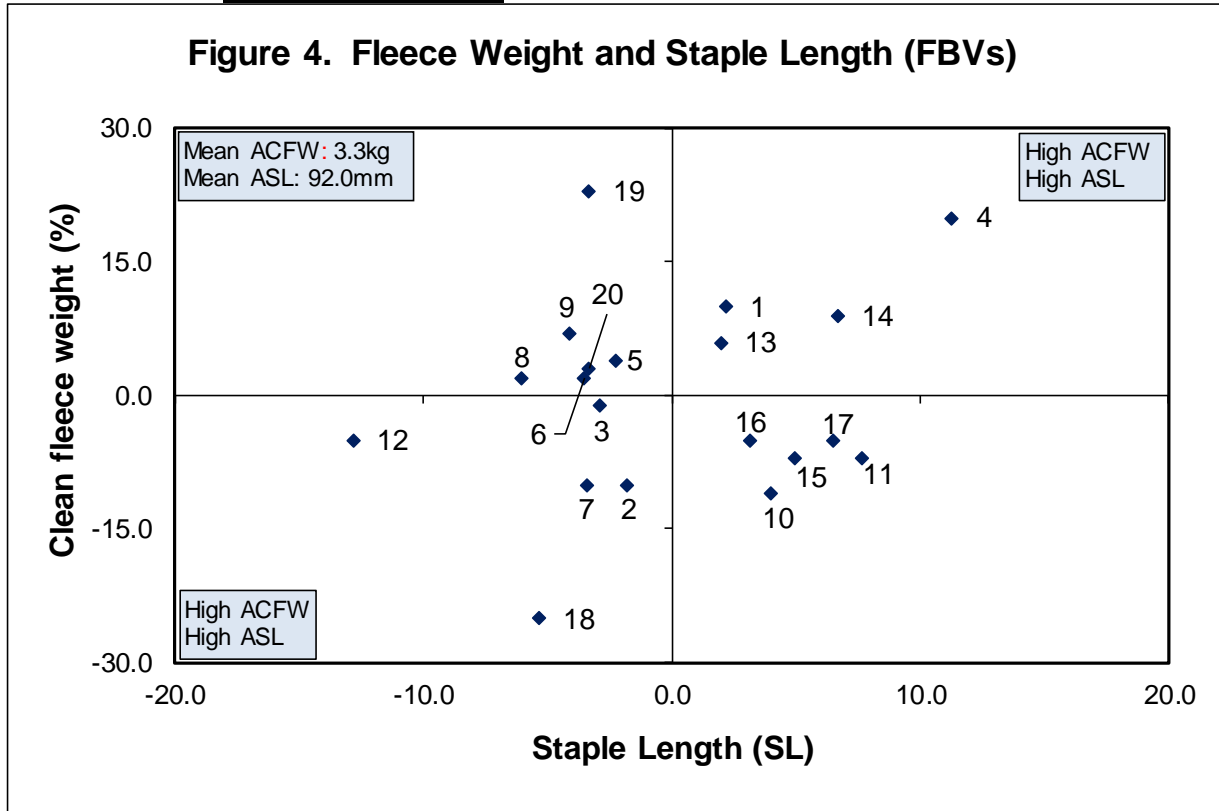
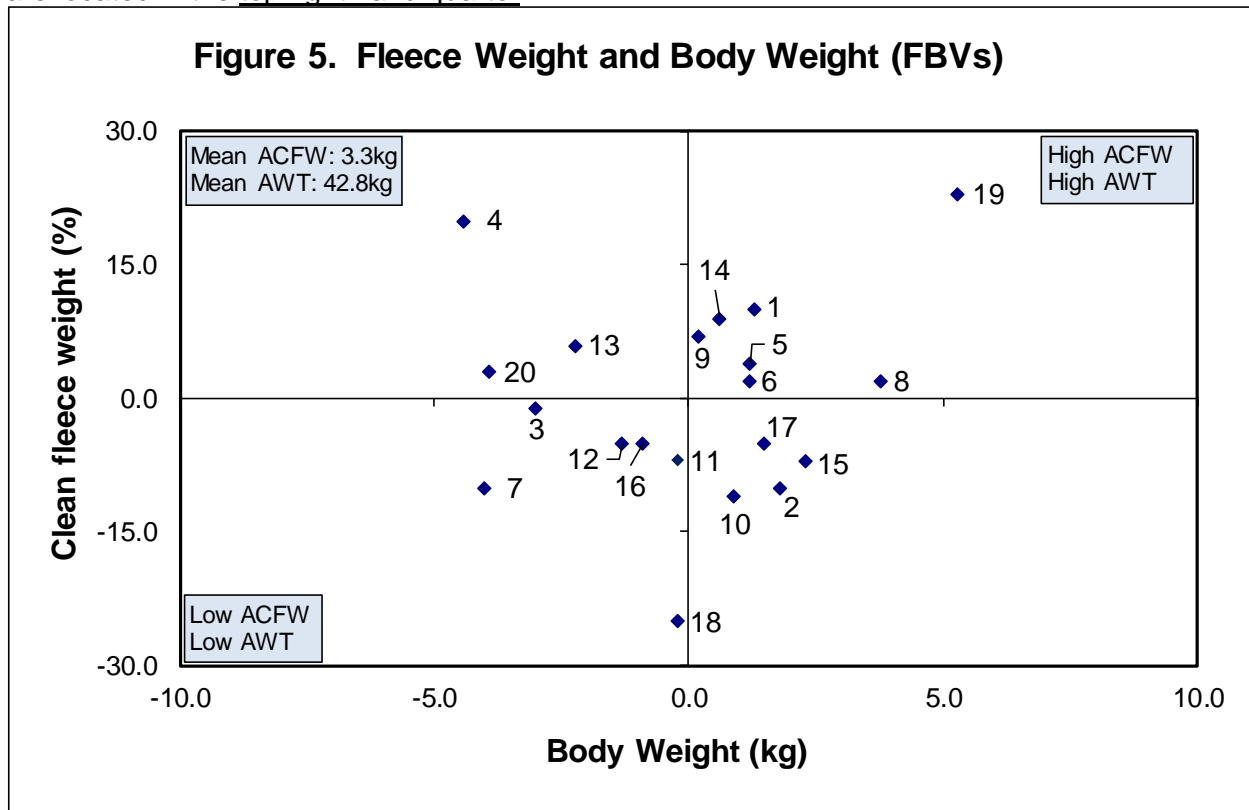


Figure 5. Fleece Weight and Body Weight (FBVs)

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.



Summary Graphs

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.

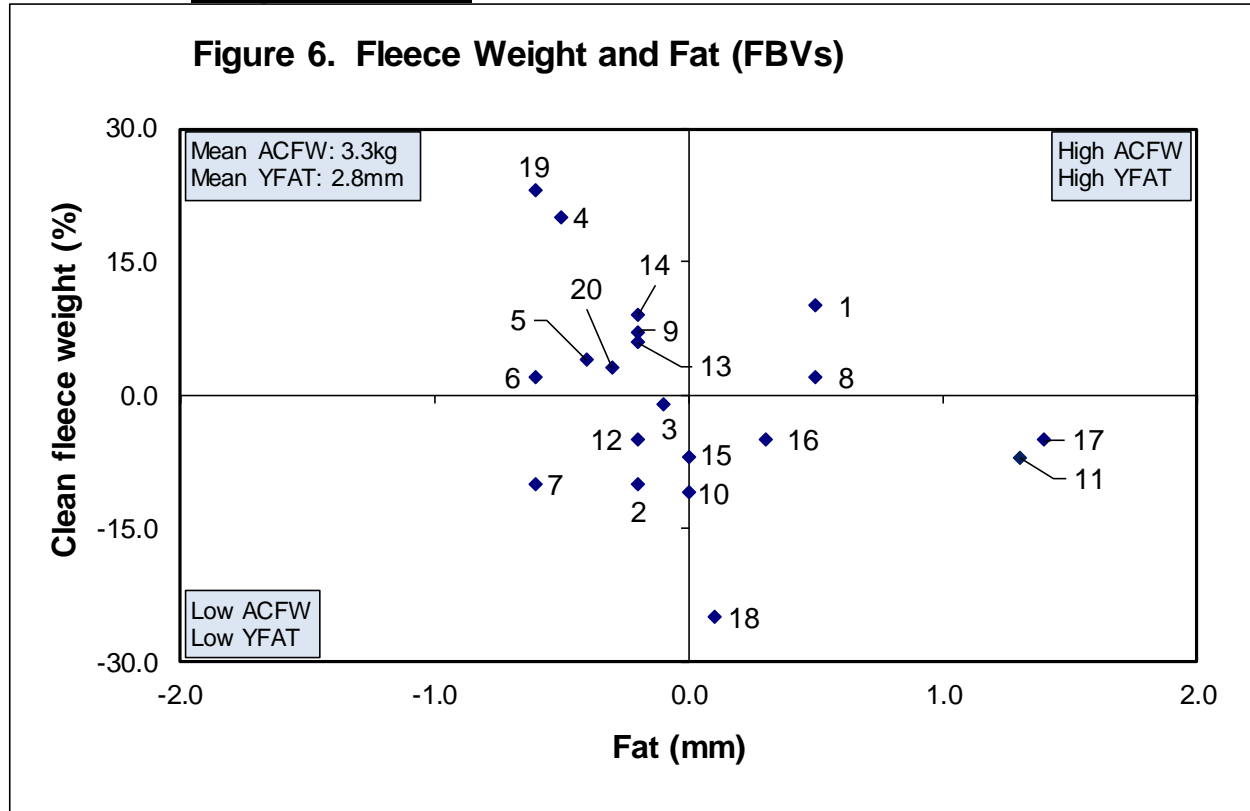
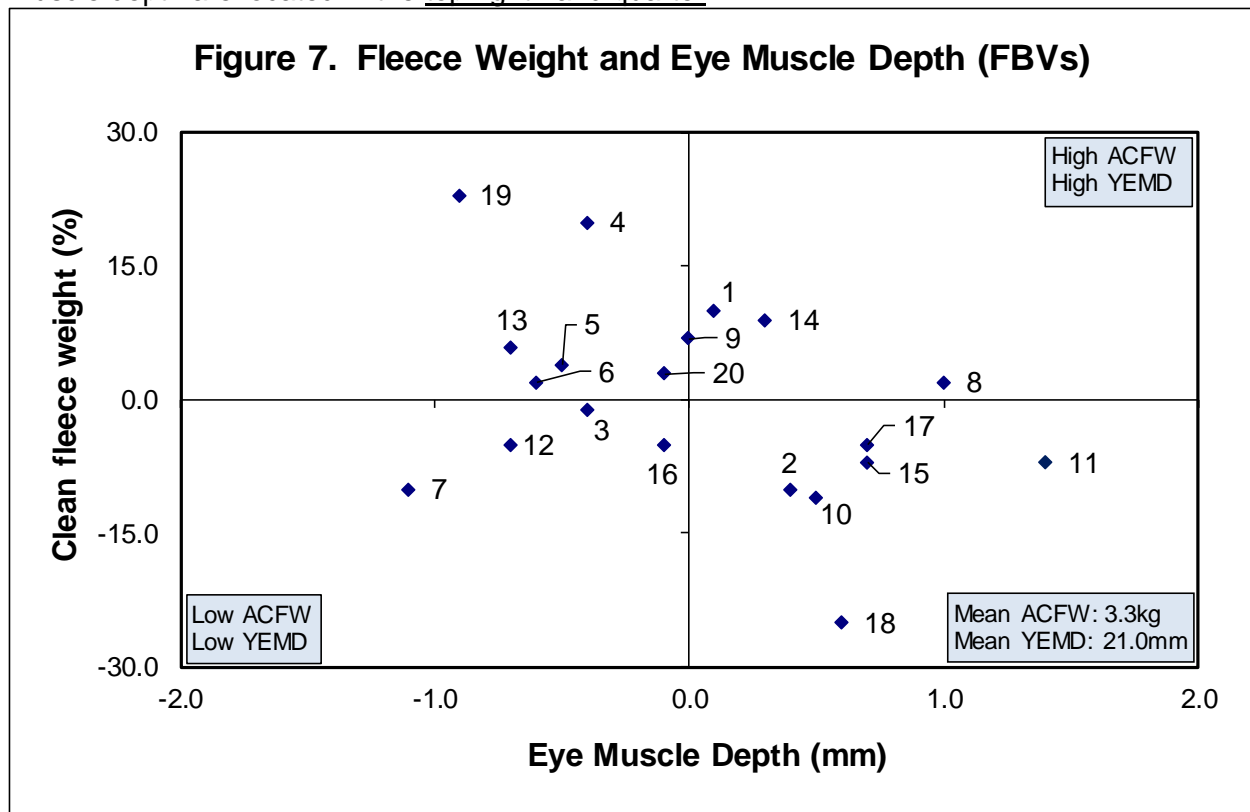


Figure 7. Fleece Weight and Eye Muscle Depth (FBVs)

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.



Summary Graphs

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.

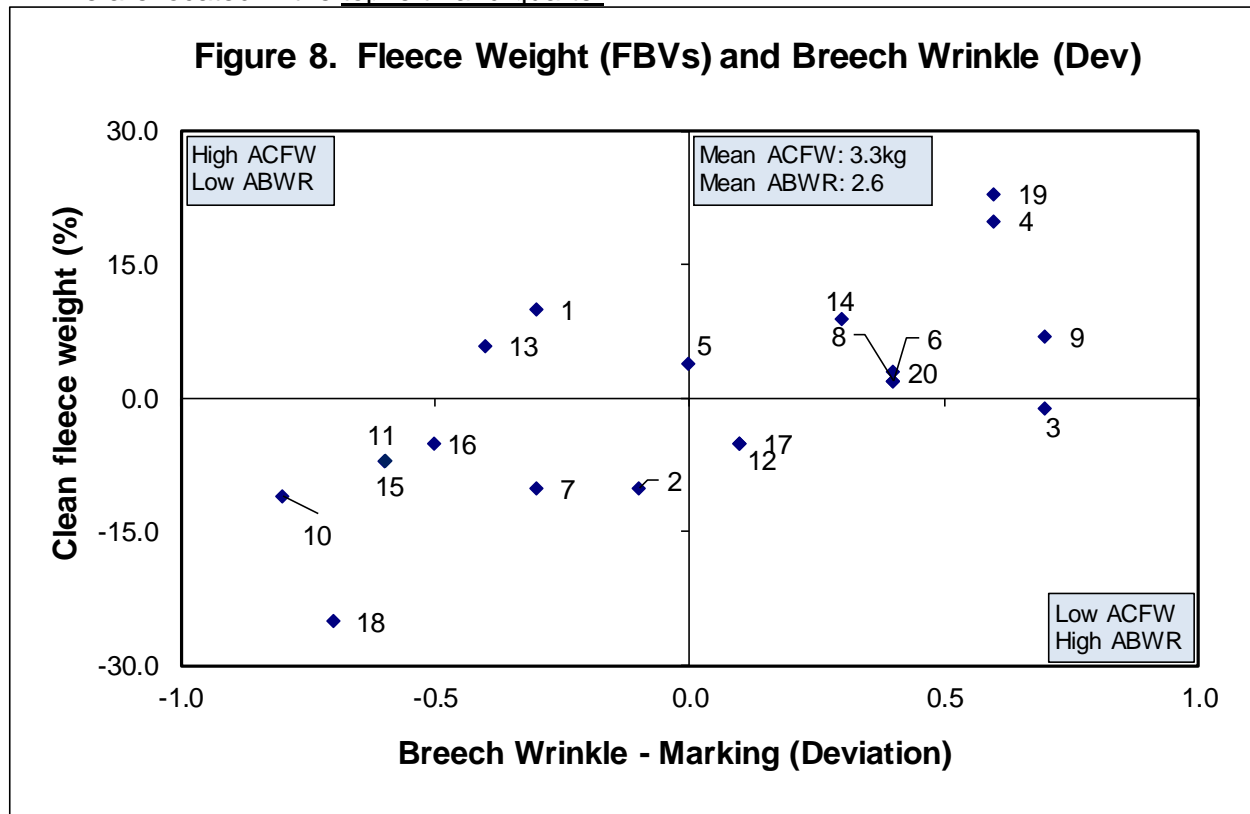
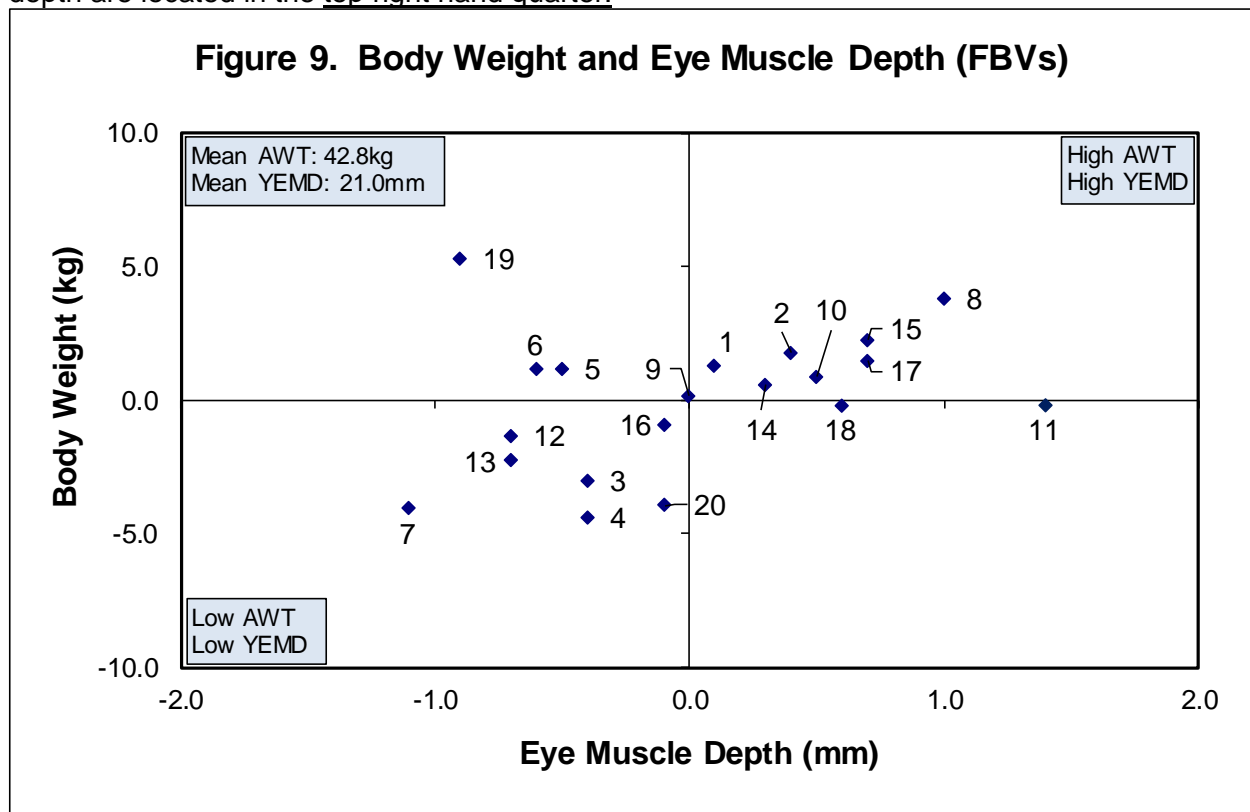


Figure 9. Body Weight and Eye Muscle Depth (FBVs)

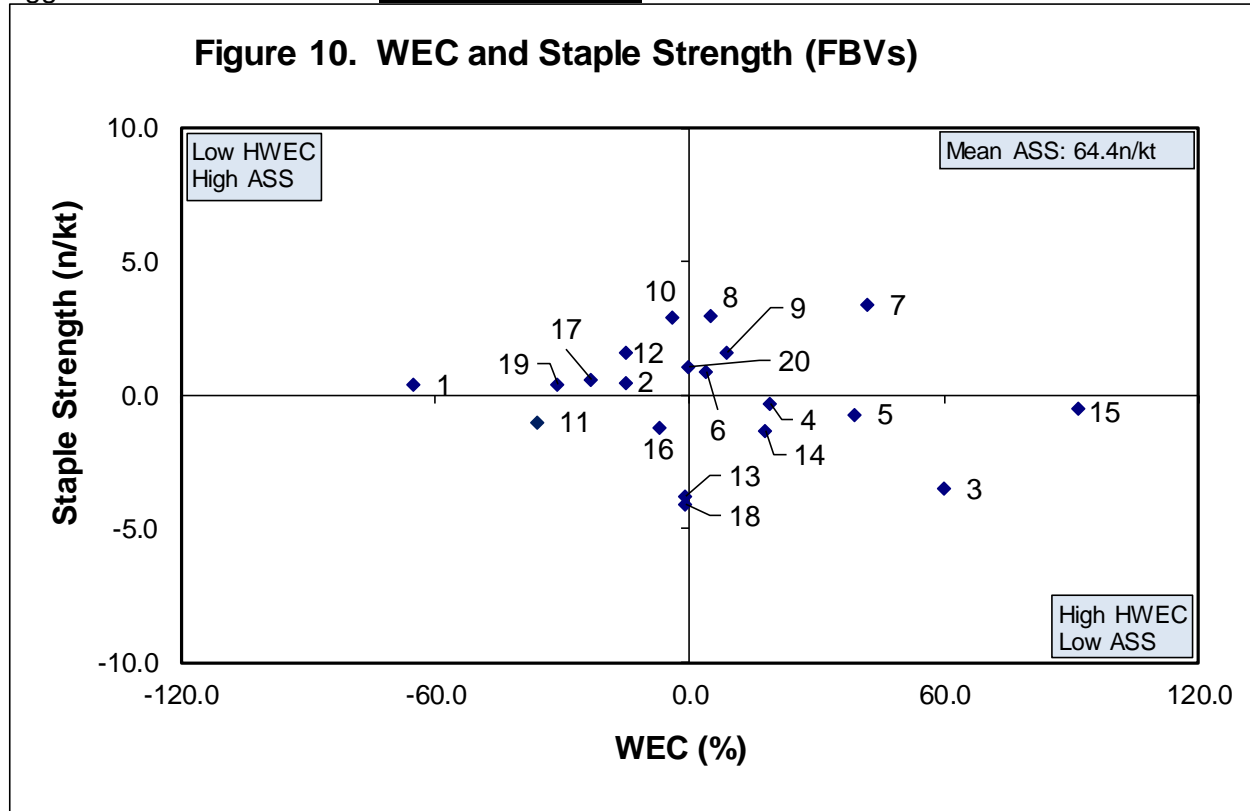
The graph describes performance for body weight on the side axis and eye muscle depth on the bottom axis. Sires that are above average for body weight and above average for eye muscle depth are located in the top right hand quarter.



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.



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 www.merinosuperiorsires.com.au" 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 - Adult																							
		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	Anderson Poll, 120096	0.3	32	11	30	16	11	0.4	0	62	30	8	0	0.4	11	46	41	2	0	0.4	0	51	49	0	0
2	Centre Plus Poll, 407445	-0.6	59	14	23	4	0	-0.2	32	50	18	0	0	-0.3	50	41	9	0	0	-0.2	23	68	9	0	0
3	Connewarran, 015024	0.4	21	21	37	5	16	-0.2	26	58	16	0	0	-0.4	53	42	5	0	0	-0.3	21	74	5	0	0
4	Hazeldean, 12.4030	0.1	36	23	23	0	18	0.0	18	59	23	0	0	0.3	18	45	32	5	0	0.1	13	55	32	0	0
5	Kerin Poll, 151911	0.0	30	15	50	0	5	0.1	10	70	15	5	0	0.0	25	65	5	5	0	0.0	15	65	20	0	0
6	Kurra-Wirra, 150583	-0.5	52	19	24	0	5	-0.2	33	57	5	0	5	-0.1	43	43	10	0	4	-0.2	19	76	5	0	0
7	Lachlan Merinos, 150280	-0.2	62	0	15	8	15	0.4	0	54	38	8	0	-0.4	46	54	0	0	0	-0.2	31	46	23	0	0
8	Merinotech WA Poll, 122041	0.1	41	9	14	36	0	0.0	23	50	23	0	4	0.0	23	64	13	0	0	0.2	5	59	36	0	0
9	Moorundie Poll, NE73	0.2	25	19	44	6	6	-0.1	13	75	12	0	0	0.0	25	62	13	0	0	0.0	6	75	19	0	0
10	Mumblebone, 130850	-0.5	52	18	21	9	0	0.1	0	79	21	0	0	0.2	15	61	21	3	0	0.2	0	67	33	0	0
11	Mumblebone, 151723	-0.4	50	12	33	5	0	-0.1	12	75	8	5	0	-0.3	38	58	4	0	0	0.1	4	75	21	0	0
12	Nerstane, 140053	0.7	6	41	12	29	12	0.0	0	94	0	6	0	0.3	18	53	24	5	0	-0.1	12	76	12	0	0
13	Ridgway Poll, 140721	0.3	44	4	16	12	24	0.1	8	64	28	0	0	-0.4	56	40	4	0	0	-0.1	16	72	12	0	0
14	The Mountain Dam Poll, WYA037	-0.1	29	24	41	6	0	0.0	24	53	18	5	0	0.3	29	29	35	7	0	0.2	0	71	29	0	0
15	Tuckwood Poll, 131026	-0.3	50	5	39	6	0	-0.3	28	61	11	0	0	0.4	5	67	22	6	0	0.1	0	83	17	0	0
16	Tuckwood Poll, 141025	0.5	30	0	35	25	10	-0.1	15	80	0	5	0	0.0	20	70	10	0	0	0.1	0	85	15	0	0
17	Turkey Lane, 150077	-0.3	53	7	28	6	6	0.1	22	44	31	3	0	0.0	31	50	19	0	0	0.0	19	53	28	0	0
18	Wallaloo Park Poll, 140261	-0.8	69	11	17	3	0	0.1	8	63	29	0	0	-0.3	46	51	3	0	0	-0.2	20	74	6	0	0
19	Woodyarrup, 140149	1.2	11	6	33	22	28	0.2	0	72	28	0	0	0.0	28	56	16	0	0	0.0	11	67	22	0	0
20	Yiddinga, 154995	-0.1	45	19	18	0	18	-0.2	9	91	0	0	0	0.6	9	27	64	0	0	0.1	0	82	18	0	0
	Average performance	2.3	40	14	28	10	8	2.1	14	66	18	2	0	1.9	29	51	17	3	0	2.1	10	69	21	0	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 are scored as 5 are reported for Recessive black and Random spot.

Sire Code	Breeder's flock, Sire name	Wool Quality - Adult										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	Anderson Poll, 120096	0.4	0	54	46	0	0	0.1	3	86	11	0	0	0.0	97	3	0	0	0	0.3	5	46	16	30	3	0	0
2	Centre Plus Poll, 407445	-0.3	32	59	9	0	0	-0.2	23	77	0	0	0	0.0	95	5	0	0	0	0.1	0	59	23	18	0	0	0
3	Connewarran, 015024	-0.3	26	68	6	0	0	0.0	6	89	5	0	0	-0.1	100	0	0	0	0	-0.2	11	63	21	5	0	0	0
4	Hazeldean, 12.4030	0.3	10	45	45	0	0	0.3	0	73	27	0	0	0.0	95	0	5	0	0	-0.1	5	68	18	9	0	0	0
5	Kerin Poll, 151911	-0.1	20	60	20	0	0	0.1	0	90	10	0	0	0.0	95	5	0	0	0	-0.3	10	70	20	0	0	0	0
6	Kurra-Wirra, 150583	-0.1	9	81	10	0	0	-0.1	14	86	0	0	0	0.1	90	5	0	5	0	0.3	0	48	38	10	4	0	0
7	Lachlan Merinos, 150280	-0.3	31	62	7	0	0	-0.1	15	85	0	0	0	0.1	92	0	8	0	0	-0.2	7	62	31	0	0	0	0
8	Merinotech WA Poll, 122041	0.2	9	59	32	0	0	0.1	5	86	9	0	0	-0.1	100	0	0	0	0	0.1	9	36	41	14	0	0	0
9	Moorundie Poll, NE73	0.0	12	69	19	0	0	0.1	7	81	6	6	0	0.3	88	0	6	6	0	0.2	0	62	25	0	13	0	0
10	Mumblebone, 130850	0.2	6	61	33	0	0	0.1	0	94	6	0	0	-0.1	100	0	0	0	0	0.1	6	52	30	9	3	0	0
11	Mumblebone, 151723	0.2	4	67	29	0	0	0.0	0	100	0	0	0	-0.1	100	0	0	0	0	-0.2	8	54	38	0	0	0	0
12	Nerstane, 140053	-0.1	24	59	17	0	0	0.2	0	82	18	0	0	-0.1	100	0	0	0	0	-0.4	17	59	24	0	0	0	6
13	Ridgway Poll, 140721	-0.2	20	72	8	0	0	0.0	4	96	0	0	0	-0.1	100	0	0	0	0	0.2	0	32	68	0	0	0	4
14	The Mountain Dam Poll, WYA037	0.2	0	76	24	0	0	0.1	6	82	12	0	0	-0.1	100	0	0	0	0	0.0	0	59	35	6	0	0	0
15	Tuckwood Poll, 131026	0.1	0	78	22	0	0	0.0	0	100	0	0	0	0.0	94	6	0	0	0	-0.2	5	67	22	6	0	0	0
16	Tuckwood Poll, 141025	0.1	0	85	15	0	0	-0.1	15	85	0	0	0	0.0	95	0	5	0	0	0.6	0	35	35	20	10	0	0
17	Turkey Lane, 150077	0.0	19	56	25	0	0	0.0	6	91	3	0	0	-0.1	100	0	0	0	0	0.1	0	50	41	9	0	0	0
18	Wallaloo Park Poll, 140261	-0.2	23	69	8	0	0	-0.3	26	74	0	0	0	0.0	97	0	3	0	0	-0.3	9	71	17	3	0	0	0
19	Woodyarrup, 140149	0.0	17	61	22	0	0	0.1	6	83	11	0	0	-0.1	100	0	0	0	0	-0.3	5	78	17	0	0	0	0
20	Yiddinga, 154995	0.0	9	73	18	0	0	-0.1	9	91	0	0	0	-0.1	100	0	0	0	0	0.2	9	27	55	9	0	0	0
	Average performance	2.1	13	66	21	0	0	2.0	7	87	6	0	0	1.1	97	1	1	1	0	2.4	5	55	31	7	2	-	-

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 - Adult																													
		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	Anderson Poll, 120096	0.0	100	0	0	0	0	-0.7	24	57	19	0	0	0.1	84	0	16	0	0	0.1	0	14	86	0	0	-0.2	22	51	24	3	0
2	Centre Plus Poll, 407445	0.0	100	0	0	0	0	0.6	9	14	36	27	14	0.0	86	0	14	0	0	0.0	0	23	77	0	0	0.2	10	36	45	9	0
3	Connewarran, 015024	0.0	100	0	0	0	0	-0.4	21	58	5	11	5	0.2	79	0	21	0	0	-0.1	0	26	74	0	0	0.5	0	37	42	21	0
4	Hazeldean, 12.4030	0.0	100	0	0	0	0	-0.3	13	55	18	14	0	0.0	86	0	14	0	0	0.0	0	23	77	0	0	0.4	0	32	59	9	0
5	Kerin Poll, 151911	0.0	100	0	0	0	0	0.1	5	35	45	10	5	-0.1	90	0	10	0	0	0.0	0	25	75	0	0	0.3	10	30	50	10	0
6	Kurra-Wirra, 150583	0.0	100	0	0	0	0	0.2	0	43	38	9	10	0.3	71	0	29	0	0	0.2	0	9	81	10	0	0.3	0	52	33	15	0
7	Lachlan Merinos, 150280	0.0	100	0	0	0	0	-0.3	23	46	16	0	15	-0.3	100	0	0	0	0	0.1	0	8	92	0	0	-0.2	23	54	15	8	0
8	Merinotech WA Poll, 122041	0.0	100	0	0	0	0	0.4	0	32	45	14	9	0.0	86	0	14	0	0	-0.2	0	41	59	0	0	0.5	9	18	55	18	0
9	Moorundie Poll, NE73	0.5	88	0	0	0	12	0.0	12	38	25	19	6	0.1	81	0	19	0	0	0.1	0	12	81	7	0	0.7	6	25	38	25	6
10	Mumblebone, 130850	0.0	100	0	0	0	0	-0.4	24	33	36	7	0	-0.1	90	0	10	0	0	-0.2	0	36	64	0	0	-0.9	55	45	0	0	0
11	Mumblebone, 151723	0.0	100	0	0	0	0	0.1	12	38	25	17	8	0.0	88	0	12	0	0	-0.3	0	50	50	0	0	-0.7	50	42	8	0	0
12	Nerstane, 140053	0.0	100	0	0	0	0	0.4	6	29	41	6	18	0.1	82	0	18	0	0	0.1	0	6	94	0	0	0.0	12	47	35	6	0
13	Ridgway Poll, 140721	0.0	100	0	0	0	0	0.3	4	36	36	12	12	0.1	88	0	8	0	4	0.1	0	16	76	8	0	-0.2	8	80	4	8	0
14	The Mountain Dam Poll, WYA037	0.0	100	0	0	0	0	0.2	6	35	29	24	6	0.0	88	0	12	0	0	0.0	0	24	76	0	0	0.2	7	50	31	12	0
15	Tuckwood Poll, 131026	0.1	94	0	6	0	0	-0.3	11	56	22	5	6	-0.3	100	0	0	0	0	-0.2	0	39	61	0	0	-0.6	41	47	12	0	0
16	Tuckwood Poll, 141025	0.0	100	0	0	0	0	0.0	5	45	40	5	5	-0.2	95	0	5	0	0	0.2	0	5	90	5	0	-0.6	35	60	5	0	0
17	Turkey Lane, 150077	0.0	100	0	0	0	0	0.4	3	22	50	22	3	0.0	88	0	12	0	0	-0.2	0	38	62	0	0	0.1	6	50	41	3	0
18	Wallaloo Park Poll, 140261	0.0	97	3	0	0	0	0.1	6	34	46	11	3	-0.2	97	0	3	0	0	0.1	0	14	83	3	0	-0.5	34	51	15	0	0
19	Woodyarrup, 140149	0.0	100	0	0	0	0	-0.1	5	50	33	6	6	0.0	89	0	11	0	0	0.1	0	17	78	5	0	0.4	0	39	50	11	0
20	Yiddinga, 154995	0.0	100	0	0	0	0	-0.2	10	45	36	9	0	0.1	82	0	18	0	0	0.0	0	18	82	0	0	0.5	19	18	27	36	0
	Average performance	1.0	99	0	0	0	1	2.6	10	40	32	11	7	1.3	88	0	12	0	0	2.8	0	22	76	2	0	2.3	17	43	29	11	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.

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	Breech Visual Traits																									Crutch Cover	Urine					
		Breech Cover Marking					Breech Wrinkle Marking					Breech Cover Adult					Breech Wrinkle Adult					Dag Adult											
		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	Anderson Poll, 120096	-0.1	0	16	58	26	0	-0.2	17	60	23	0	0	0.0	22	13	43	22	0	-0.3	41	54	2	3	0	0.3	5	38	30	27	0	Crutch Cover not scored.	Urine not scored.
2	Centre Plus Poll, 407445	-0.1	0	18	57	25	0	0.1	7	50	43	0	0	-0.2	13	32	41	14	0	-0.1	36	50	5	9	0	-0.4	32	45	5	18	0		
3	Connewarran, 015024	0.4	0	3	47	42	8	0.4	3	42	47	8	0	0.2	11	26	32	26	5	0.7	5	42	37	16	0	0.2	0	53	21	26	0		
4	Hazeldean, 12.4030	0.0	6	18	39	26	11	0.6	0	26	63	8	3	0.3	0	23	59	14	4	0.6	0	50	45	5	0	0.6	0	31	30	39	0		
5	Kerin Poll, 151911	-0.1	3	14	59	24	0	-0.3	30	46	22	2	0	0.2	5	25	45	25	0	0.0	30	50	20	0	0	0.5	0	30	40	30	0		
6	Kurra-Wirra, 150583	0.1	0	11	60	26	3	0.3	9	31	54	6	0	0.7	0	5	57	33	5	0.4	19	38	29	14	0	-0.1	14	43	24	19	0		
7	Lachlan Merinos, 150280	0.0	0	27	41	27	5	-0.1	12	61	27	0	0	-0.1	15	31	31	23	0	-0.3	46	46	8	0	0	0.2	13	29	29	29	0		
8	Merinotech WA Poll, 122041	0.1	0	13	48	39	0	-0.2	24	52	24	0	0	-0.7	39	35	17	9	0	0.4	22	35	30	13	0	-0.9	39	57	4	0	0		
9	Moorundie Poll, NE73	-0.6	7	43	43	7	0	0.1	13	47	37	3	0	0.3	0	31	38	31	0	0.7	12	38	19	31	0	-0.6	35	35	30	0	0		
10	Mumblebone, 130850	-0.3	2	23	66	9	0	-0.6	39	55	6	0	0	-0.5	26	35	32	7	0	-0.8	87	13	0	0	0	0.0	16	39	18	27	0		
11	Mumblebone, 151723	0.1	3	5	62	30	0	-0.4	28	57	15	0	0	-0.2	12	33	46	9	0	-0.6	67	33	0	0	0	0.1	5	43	35	17	0		
12	Nerstane, 140053	0.3	5	10	34	41	10	0.1	6	59	28	7	0	-0.2	24	17	41	18	0	0.1	24	53	18	5	0	-0.3	11	65	12	12	0		
13	Ridgway Poll, 140721	0.3	0	0	57	43	0	-0.2	23	53	21	3	0	0.5	4	16	36	44	0	-0.4	52	40	8	0	0	-0.3	11	62	15	12	0		
14	The Mountain Dam Poll, WYA037	0.0	0	10	68	22	0	0.3	6	38	51	5	0	0.2	7	19	56	12	6	0.3	6	69	19	6	0	0.2	0	41	41	18	0		
15	Tuckwood Poll, 131026	-0.1	0	14	65	21	0	0.1	9	51	40	0	0	-0.3	24	29	41	0	6	-0.6	71	24	5	0	0	0.1	11	39	28	22	0		
16	Tuckwood Poll, 141025	0.1	0	12	52	36	0	-0.2	20	60	20	0	0	-0.2	10	40	45	5	0	-0.5	65	30	5	0	0	0.3	5	35	35	25	0		
17	Turkey Lane, 150077	-0.4	4	37	43	13	3	0.1	4	61	35	0	0	-0.3	19	34	38	9	0	0.1	25	44	31	0	0	-0.2	13	59	12	16	0		
18	Wallaloo Park Poll, 140261	0.0	0	17	58	23	2	-0.8	58	40	2	0	0	-0.4	17	37	40	6	0	-0.7	74	26	0	0	0	-0.4	17	51	29	3	0		
19	Woodyarrup, 140149	0.3	0	9	44	41	6	0.4	4	34	59	3	0	0.4	5	11	56	28	0	0.6	0	56	33	11	0	0.7	5	20	25	50	0		
20	Yiddinga, 154995	0.2	4	0	61	26	9	0.7	0	22	65	13	0	0.4	0	28	36	36	0	0.4	18	27	55	0	0	0.0	19	36	18	27	0		
	Average performance	3.1	2	15	53	27	3	2.2	16	47	34	3	0	2.7	13	26	41	18	2	1.9	35	41	18	6	0	2.5	12	43	24	21	0	-	-

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 (0.6).

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. Four 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 – 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