

Yardstick

2015 Drop Hogget Assessment

Within-Site Results

Conducted by

The Federation of Performance Sheep Breeders WA (inc)

under the auspices of

The Australian Merino Sire Evaluation Association



Department of
Agriculture and Food



November 2016

Disclaimer

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

YARDSTICK Central Test Sire Evaluation

YARDSTICK is an accredited Central Test Sire Evaluation (CTSE) site evaluation. It conforms to the requirements of the Australian Merino Sire Evaluation Association (AMSEA).

The Federation of Performance Sheep Breeders WA (Inc.) runs the YARDSTICK Sire Evaluation site. The site committee are listed in the table below.

YARDSTICK has the following background.

- A total of 19 evaluations have been run by YARDSTICK (1993-2011 drop)
- These evaluations have taken place at Romilly Hills, Dale River WA (1993-2005 drop) and the Great Southern Agricultural Research Institute (GSARI), Department of Agriculture and Food, Katanning (2006-2011 drop).
- Thanks must go to the staff of the Mount Barker Research Facility and the Katanning Research Facility for the management of the trial.

November, 2016

Current members of the Site Committee

Name	Phone	Position on committee
Richard Coole		President
Bill Sandilands		Vice President
Bob Hall		Secretary
Mark Allington		Treasurer
Brett Jones		Committee member
Ian Robertson		Committee member
Cameron Clifton		Committee member
Dougal Young		Committee member
Michael Campbell		Committee member
Meghan Cornelius		Committee member

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The information in this Site Report provides an assessment of the 2015 drop, including the Hogget assessment of the sire's progeny performance for measured and visually assessed traits.

The Hogget fleece and visual assessments of the progeny was made at 15 months of age with 11 months of wool growth.

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Sire and Owner Details

Breeders flock, Sire name Sire ID #, Breed †	Owner Details
Anderson, 110330 (Unreg) 609147-2011-110330, Poll Merino	Lynley Anderson Brookvale, RMB 512, Kojonup WA 6395 P: (08) 9832 8055, E: lynleya@westnet.com.au
AWI Breech Strike Flock, 112817 (Unreg) 509223-2011-112817, Merino	Johan Greeff Department of Agriculture and Food , 10 Dore Street, Katanning WA P: (08) 9821 3215, F: (08) 9821 3334, E: Jgreeff@agric.wa.gov.au
Billandri Poll, 121391 (Link) 600571-2012-121391, Poll Merino	Bill Sandilands Billandri, Kendenup WA 6323 P: (08) 9851 4030, F: (08) 9851 4264, E: csandilands@bordnet.com.au
Billandri Poll, 130087 (Link) 600571-2013-130087, Poll Merino	Bill Sandilands Billandri, Kendenup WA 6323 P: (08) 9851 4030, F: (08) 9851 4264, E: csandilands@bordnet.com.au
Boolading Poll, 110303 (Unreg) 609039-2011-110303, Poll Merino	Lachlan Ewen PO Box 53, Darkan WA 6392 P: (08) 9736 1389, F: (08) 9736 1390, E: derby.grove@westnet.com.au
Borondi, 130322 601476-2013-130322, Poll Merino	Cam Clifton RMB 18, Wagin WA 6315 P: (08) 9861 2044, E: cjclifton@westnet.com.au
Centre Plus WA Poll, 338205 (Unreg) 609182-2013-338205, Poll Merino	Simon Bell Lot 2 Ashe Rd, Kojonup WA 6395 P: (08) 9833 6212, F: (08) 9833 6306, E: breedtech@wn.com.au
Coromandel Poll, 07E007 (Link) 600553-2007-070007, Poll Merino	Graeme Baldwin 20 Lencaster Road, Jerramumup WA 6337 P: (08) 9835 1228, F: (08) 9835 1007, E: glbaldy@bigpond.net.au
Cranmore Poll, 112771 600139-2011-112771, Poll Merino	Kristin Lefroy RSM 427, Moora WA 6510 P: (08) 9654 9066, F: (08) 9654 9067, E: kristinleeroy@cranmore.com.au
Edale, 10Z266K 504358-2010-0Z266K, Merino	Philip Gardiner 555 Cattady Road, Moora WA 6510 P: (08) 9651 1700, F: (08) 9651 1766, E: edale@wn.com.au
Hazeldean, 003542 (Link) 500383-2011-003542, Merino	Jim Litchfield Hazeldean Pty Ltd, Cooma NSW 2630 P: (02) 6453 5555, F: (02) 6453 5526, E: admin@hazeldean.com.au
Merinotech WA Poll, 122281 (Unreg) 609040-2012-122281, Poll Merino	Ian Robertson Merinotech (WA) Ltd, RMB 311, Kojonup WA 6395 P: (08) 9833 6251, F: (08) 9833 6255, E: yarrak311@optusnet.com.au
Merinotech WA Poll, 95.5403 (Historical, Unreg) 609040-1995-955403, Poll Merino	Ian Robertson Merinotech (WA) Ltd, RMB 311, Kojonup WA 6395 P: (08) 9833 6251, F: (08) 9833 6255, E: yarrak311@optusnet.com.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.

- # Sire ID provides a unique number for all sheep. A sire ID has 16 digits.
- 2 for the breed of the flock, e.g., Merino (50), Poll Merino (60), Dohne (51), SAMM (48), Afrino (AF)
 - 4 for flock code, AASMB Registered flock code or unregistered code.
 - 4 for year of drop.
 - 6 for tag number used in the breeder's records.

† Breed of flock in which the sire was born

1. Location

Yardstick was located at the Department of Agriculture and Food WA's Mount Barker Research Facility (MBRF) when it started in February 2015. Yardstick was then relocated to the Department of Agriculture and Food WA's Katanning Research Facility (KRF) in April 2016 when the Mount Barker Research Facility was leased out.

These Research Facilities are well set up for the task having excellent handling facilities, many small paddocks for sheep identification, appropriate sheep to be used access to RFID tags and equipment, and an experienced staff.

At KRF the land is mostly duplex soil types with light soils over clay at 400-600mm depth. Base fertiliser dressings for pastures are 100kg/ha of either plain superphosphate or 3:1 super potash on the lighter land. At MBRF the land is mostly sandy gravel with some marri gravelly loams. No top dressing was required as phosphorus levels are acceptable.

Staff comprises of:

Steve Bell	Farm Manager (KRF & MBRF)
Geoff Cox	Senior Technical officer (KRF)
Nicola Stanwyck	Technical officer (KRF)
Victoria Scanlan	Technical officer (KRF)
Gavin Donnison	Technical officer (KRF)
Russell Quartermaine	Technical Officer (KRF)
Daniel Cox	Technical officer (KRF)
Vince Lambert	Senior Technical officer (MBRF)
Ryan O'Neil	Technical officer (MBRF)

2. Selection and mating

- Research station ewes were selected from the station flock in December 2014 to be allocated to rams at random.
- Mating took place on the 4th & 11th February 2015. 13 sires were mated to 650 ewes (50 per sire group). This was carried out by the GENSTOCK A.I. team. Frozen semen was used by laproscopic AI.

3. Pregnancy and lambing

- Pregnancy scanning took place on the 31 March 2015.
- Ewes were put on plots in mating groups on the 17 June 2015.
- Lambing spanned from the 4 July to the 17 July 2015. 539 lambs were tagged at birth with 55 lambs not making it to marking.

4. Weaning and seasonal conditions

- Lambs were marked on the 6 August 2015. Being a Department of Agriculture and Food WA's Research Facility, the lambs were not mulesed.
- Lambs were weaned on the 20 October 2015.
- A wet finish to 2015 resulted in good pasture's to carry the sheep forward over the summer grazing period, however warm and wet conditions resulted in fly waves and subsequent fly strike. Animals were monitored regularly and any animals struck were treated according to general animal management protocols.

5. Assessments

- Genstock Animal Breeding Services conducted the pregnancy scanning at MBRF.
- Visual scoring at the lamb marking stage was carried out by Bob Hall and Bill Sandilands.
- Tamesha Gardner of Stocksmart conducted the fat and eye muscle depth scanning at yearling stage at KRF.
- Mid-side fleece samples were taken by Bob Hall, assisted by entrants, at the hogget stage at KRF.
- Wool testing was performed by Wayne Marshall – The Micron-Man.
- Visual classing at hogget stage was carried out by Preston Clarke from Elders. Preston has carried out this task for many years.

6. Rainfall

Month	Mount Barker Research Facility (mm/month)					Katanning Research Facility (mm/month)				
	2012	2013	2014	2015	2016	2012	2013	2014	2015	2016
January	15.4	10.2	2.4	6.0	121.8	13.6	29.6	13.8	1.6	93.2
February	7.8	2.6	9.8	28.6	12.0	13.8	2.2	0.0	1.6	1.2
March	8.8	56.0	10.8	42.6	49.6	4.4	58.4	1.4	18.8	11.0
April	28.6	41.8	31.0	134.4	85.0	12.4	7.0	20.0	58.2	36.8
May	64.4	69.0	103.0	50.0	58.4	50.2	62.6	93.0	29.6	56.0
June	173.4	32.2	40.4	64.4	101.8	76.6	19.2	27.4	68.6	34.6
July	51.0	73.2	111.6	114.4	84.6	26.6	59.0	81.2	56.6	41.8
August	61.4	71.8	52.6	71.8	149.8	42.0	76.4	69.2	40.0	78.6
September	75.2	122.8	77.4	36.6	81.4	52.6	107.6	52.6	18.8	29.4
October	23.2	52.2	24.4	21.8	48.6	10.8	27.8	49.0	12.8	25.4
November	65.8	28.6	31.0	23.0	18.2	26.4	3.0	19.8	11.8	8.2
December	61.6	22.8	15.0	56.8		77.2	1.2	4.8	33.2	
Total	636.6	583.2	509.4	650.4	811.2	406.6	454.0	432.2	351.6	416.2

* Source: DAFWA weather stations (Katanning and Mount Barker) from <https://www.agric.wa.gov.au/weather-stations>

7. Feeding

- There was no supplementary feeding of the progeny at Mount Barker or Katanning in 2016 due to the good season and pasture being abundant.

Assessment and Management Program

Activity		Date/s	Age	Wool
Selection of ewes		December 2014		
Allocation of ewes for mating and AI		February 2015		
Pregnancy scanning		31 March 2015		
Allocated to lambing paddocks		17 June 2015		
Lambing: start – finish (tagged at birth)		4 – 17 July 2015		
Pigmentation and breech scoring		6 August 2015	26 days	
Marking		6 August 2015	26 days	
Weaning		20 October 2015	102 days	
Even up shearing		15 December 2015	5 months	5 months
Fat and eye muscle scanning	Y	27 June 2016	11 months	6 months
Mid side fleece sampling	H	6 September 2016	14 months	8 months
Visual trait scoring	H	6 September 2016	14 months	8 months
Shearing	H	27 October 2016	15 months	10 months
Worm egg count sampling		Not measured		
Body weighing	W	20 October 2015	102 days	
	P	4 March 2016	8 months	
	Y	27 June 2016	11 months	
	H	27 October 2016	15 months	
Drench		January 2016 with Zolvix		

Visual Trait Assessment and Site Breeding Objective

Visual trait assessment

Hogget Assessment

Visual Classer's Grade and Trait Scores: Mr Preston Clarke, Elders

Site Breeding Objective used to assess the Visual Classer's Grades

The sheep are to be well grown and structurally sound. There needs to be a balance between wool and body size in order to provide the typical dual purpose West Australian Merino type. Typically, when run commercially it will be expected that the body weight will be 10 times the greasy fleece weight. Visually, the wool should be of medium length, of attractive crimp, bright and white, uniform over the body and with no evidence of fleece rot. Head and hock cover is of little importance.

Sire Codes and Pedigrees

Sire code	Breeders flock, Sire number	Sheep Genetics ID	Sire of Sire
1	AWI Breech Strike Flock, 112817	509223-2011-112817	509223-2009-093621
2	Anderson, 110330	609147-2011-110330	609167-2006-060017
3	Billandri Poll, 121391	600571-2012-121391	600571-2010-100011
4	Billandri Poll, 130087	600571-2013-130087	509605-2009-090122
5	Boolading Poll, 110303	609039-2011-110303	609039-2009-091257
6	Borondi, 130322	601476-2013-130322	601287-2008-080168
7	Centre Plus WA Poll, 338205	609182-2013-338205	601250-2009-907538 (Centre Plus Poll, 907538)
8	Coromandel Poll, 07E007	600553-2007-070007	600478-2004-041575
9	Cranmore Poll, 112771	600139-2011-112771	Unknown
10	Edale, 10Z266K	504358-2010-0Z266K	504358-2007-71STBS
11	Hazeldean, 003542	500383-2011-003542	601050-2002-020603 (Stockman Poll, Jim)
12	Merinotech WA Poll, 122281	609040-2012-122281	609040-2010-100115 (Merinotech WA Poll, 100115)
13	Merinotech WA Poll, 95.5403 (Hist)	609040-1995-955403	600571-1991-910192 (Billandri Poll, 910192)

(Hist) Historical Sires evaluated under AMSEA's R&D project to validate the system of linkage in MERINOSELECT that has operated over the past 15-20 years. These sires were generally widely used 15-20 years ago and were selected for the R&D program based on their high ASBV accuracies.

Index Options

A breeding index combines multiple measured traits 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 measured and visually assessed traits is used in conjunction with an index as selection indexes assist in making balanced selection decisions.

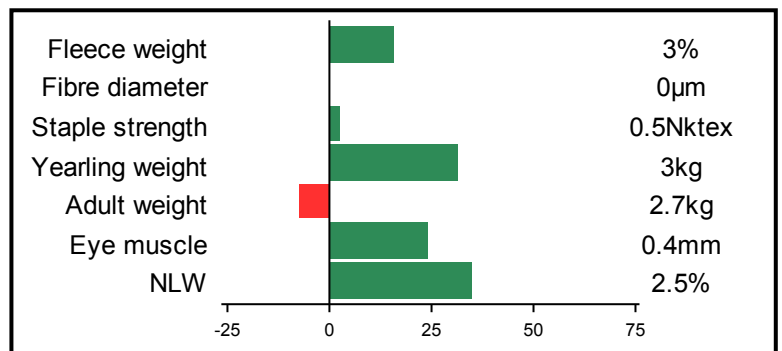
Site Reports present 4 indexes, DP+; MP+; FP+ and WP+. The first 3 of these indexes are the same as MERINOSELECT indexes of that name but account for the fact that direct reproduction records have not been captured by AMSEA sire evaluation. The WP+ index is unique to AMSEA.

Provided is 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 uses 35% of their selection emphasis on traits that are not in the index (such as visually assessed performance).

Dual Purpose Plus (DP+)

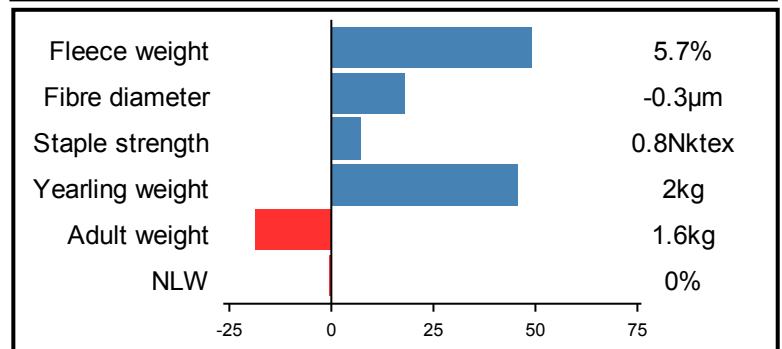
Based on a meat focused production system where surplus progeny are sold as lambs and a portion of ewes are joined to terminal sires. Large increase in body weight and carcass traits. Moderate increase in fleece weight. Maintain fibre diameter and staple strength. Moderate increase in reproduction.

Percentage Contribution to Economic Gain **Trait Gain**



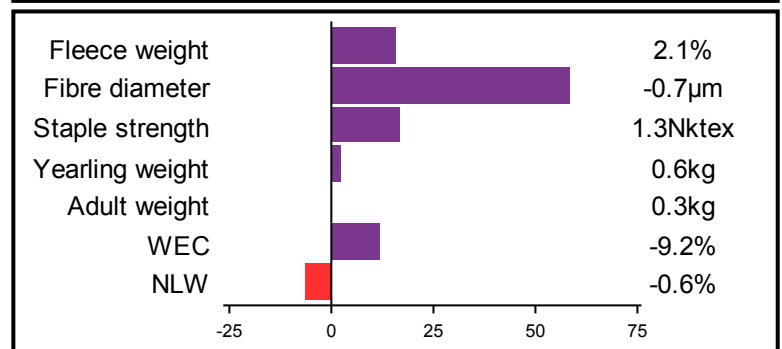
Merino Production Plus (MP+)

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.

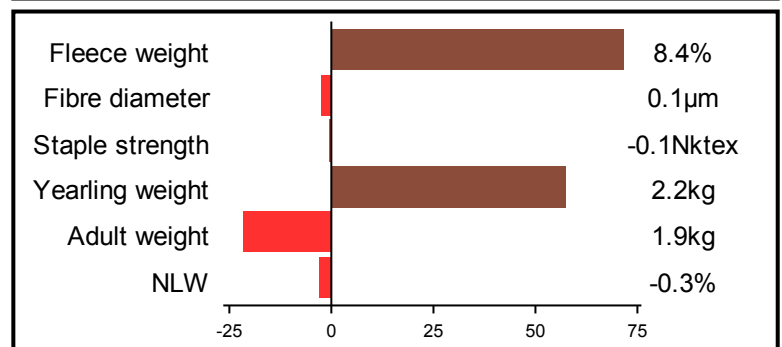


Table 1. AMSEA Index Values and Classer's Visual Grade

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 9) 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 at all site evaluations.

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 % P	Culls % P
AWI Breech Strike Flock, 112817	38	101	98	100	96	-15	-5
Anderson, 110330	36	126	115	105	117	1	-2
Billandri Poll, 121391	26	84	95	100	93	-5	2
Billandri Poll, 130087	24	97	108	107	110	-4	4
Boolading Poll, 110303	41	101	110	100	115	-9	4
Borondi, 130322	30	107	97	99	94	-4	-15
Centre Plus WA Poll, 338205	4	<i>Insufficient Progeny to Report Results</i>					
Coromandel Poll, 07E007	31	99	101	99	103	19	-2
Cranmore Poll, 112771	39	89	84	83	88	-16	-4
Edale, 10Z266K	36	88	96	98	100	-11	14
Hazeldean, 003542	33	99	114	116	109	28	2
Merinotech WA Poll, 122281	53	118	83	88	80	22	-17
Merinotech WA Poll, 95.5403 (Hist)	26	86	96	101	99	-8	12
Average performance	32	100	100	100	100	24	16

(Hist) Historical Sires evaluated under AMSEA's R&D project to validate the system of linkage in MERINOSELECT that has operated over the past 15-20 years. These sires were generally widely used 15-20 years ago and were selected for the R&D program based on their high ASBV accuracies.

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

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

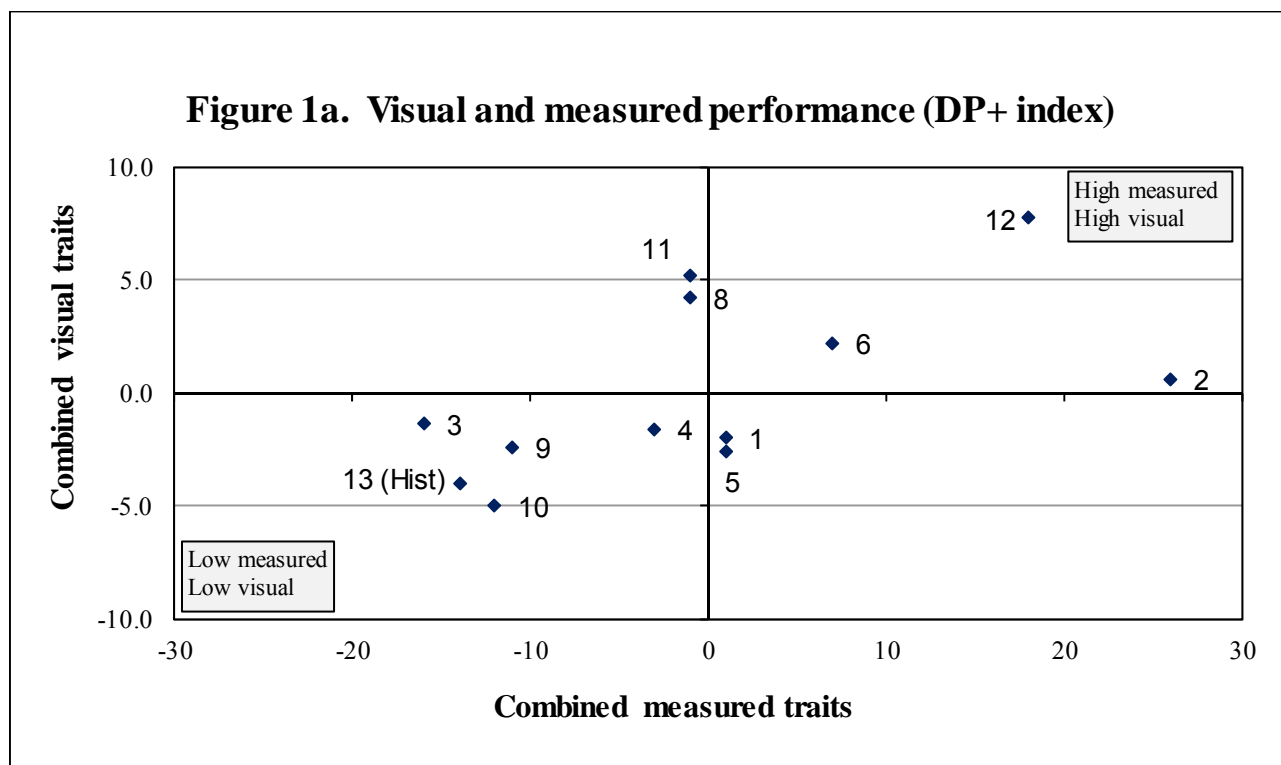


Figure 1b. Combined measured traits (MP+ index) and combined visually assessed traits for the site objective.

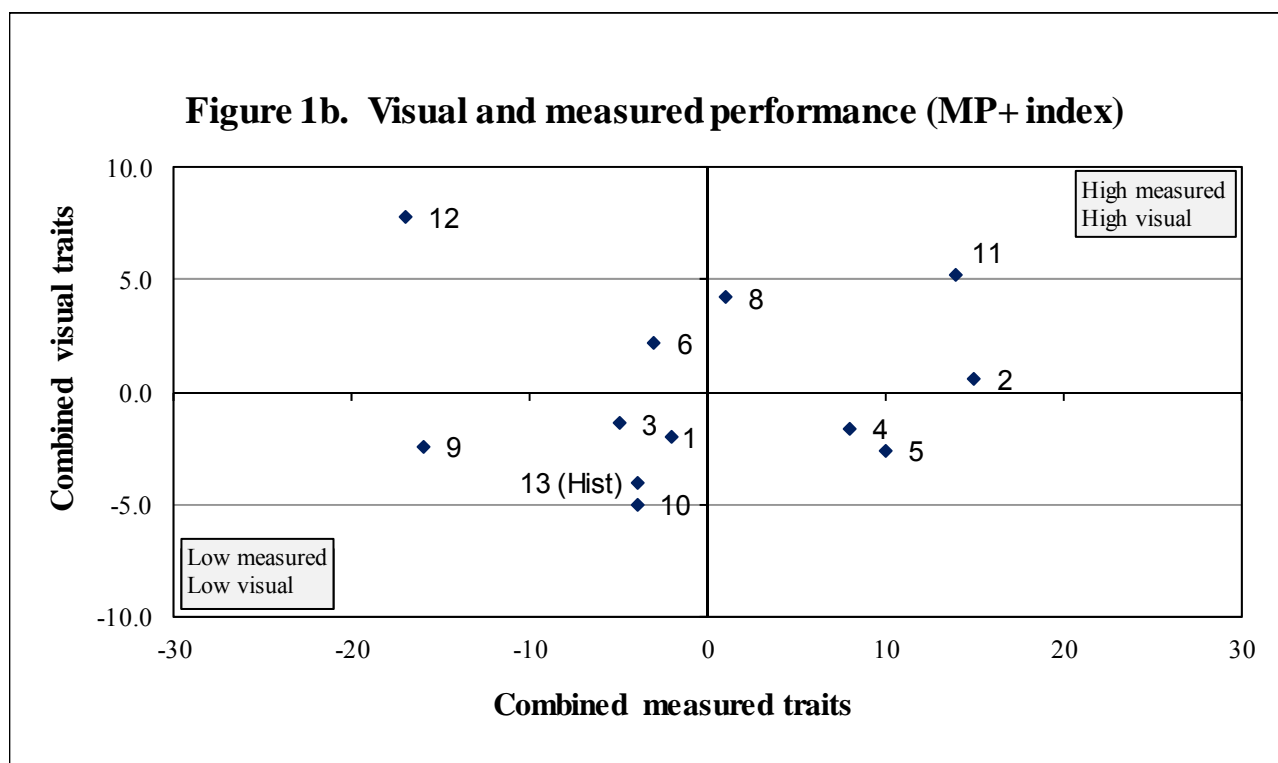


Figure 1c. Combined measured traits (FP+ index) and combined visually assessed traits for the site objective.

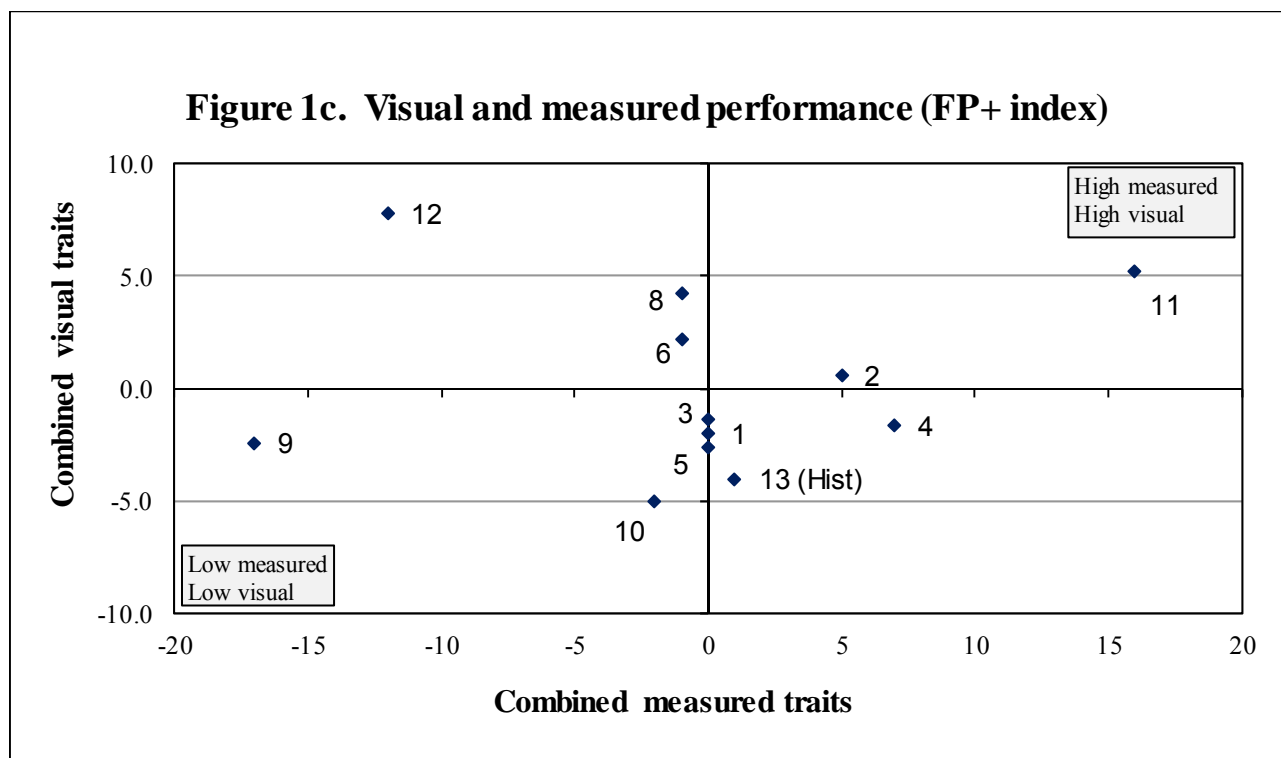
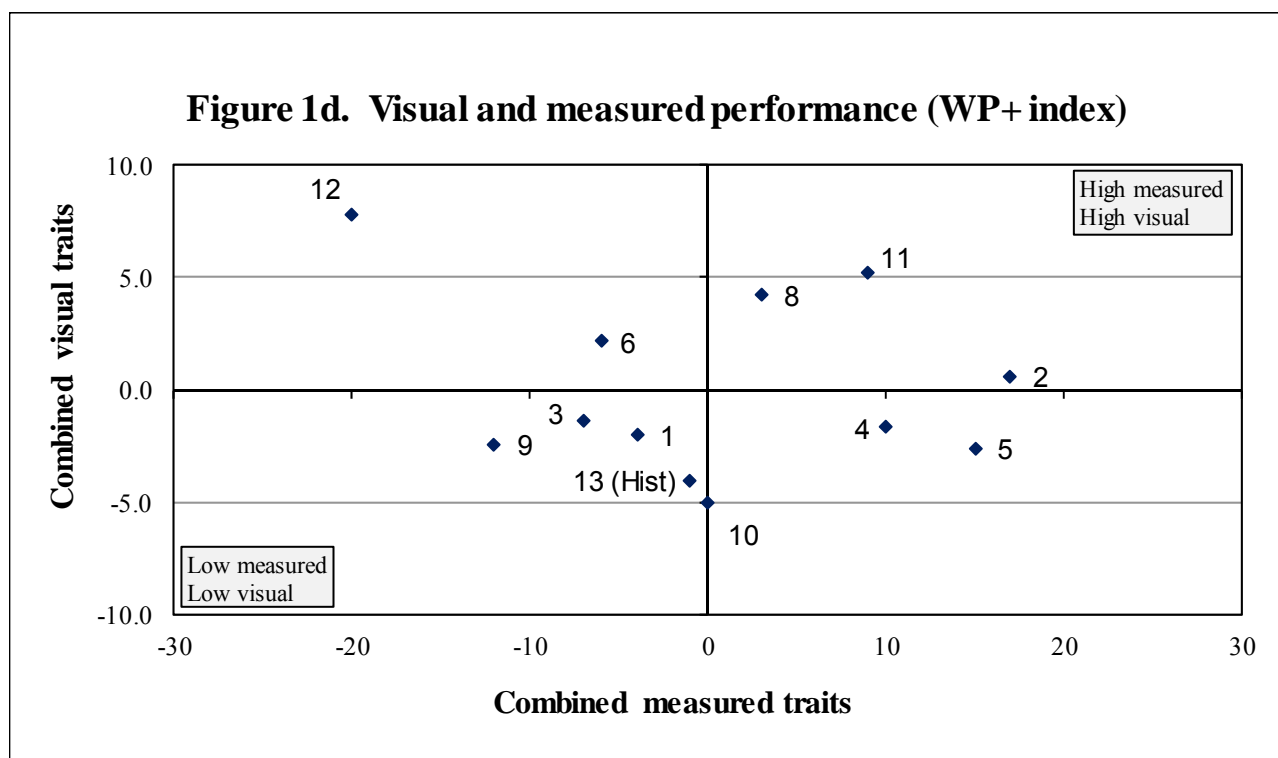


Figure 1d. Combined measured traits (WP+ index) and combined visually assessed traits for the site objective.



Figures 2 and 3. Summary Graphs – FW and FD, Tops and Culls

Figure 2. Fleece weight by 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.

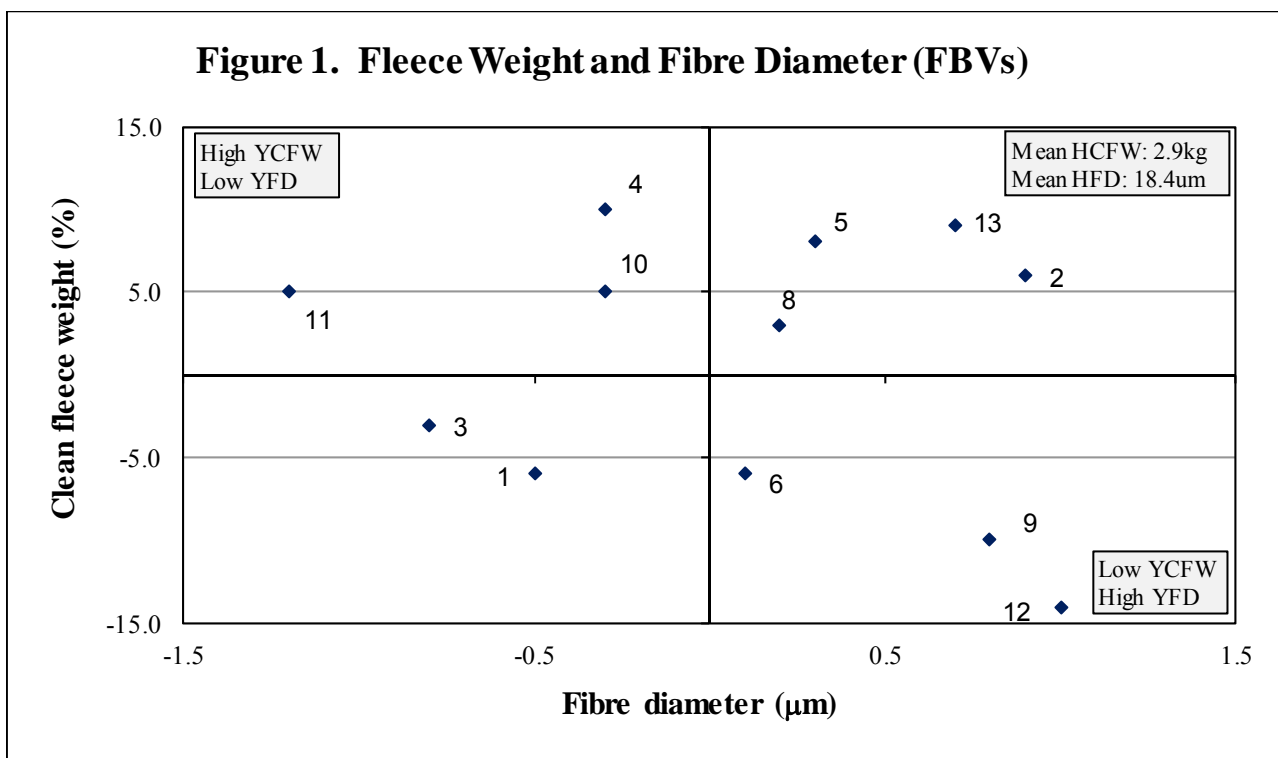


Figure 3. Classer’s Visual Grade - Tops by Cull

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.

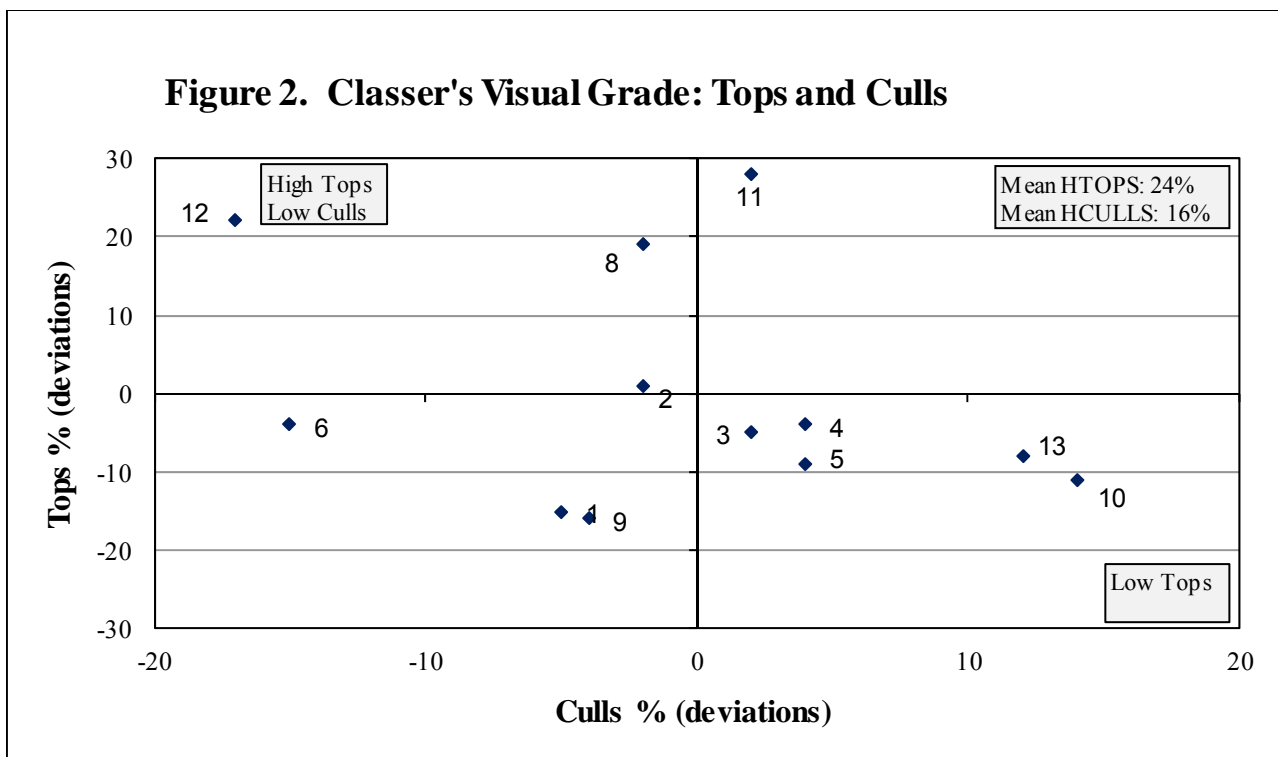


Figure 4. Fleece weight by body weight (FBVs)

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.

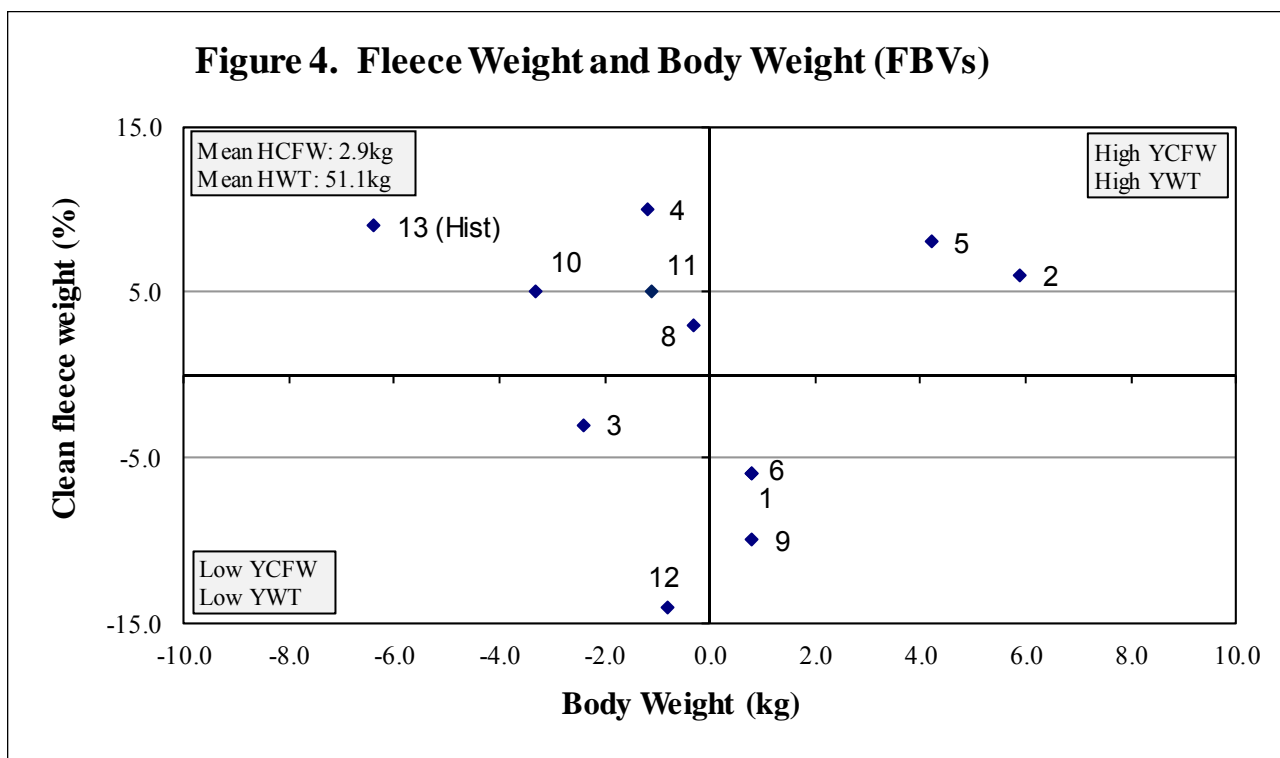


Figure 5. Fleece weight by fat (FBVs)

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.

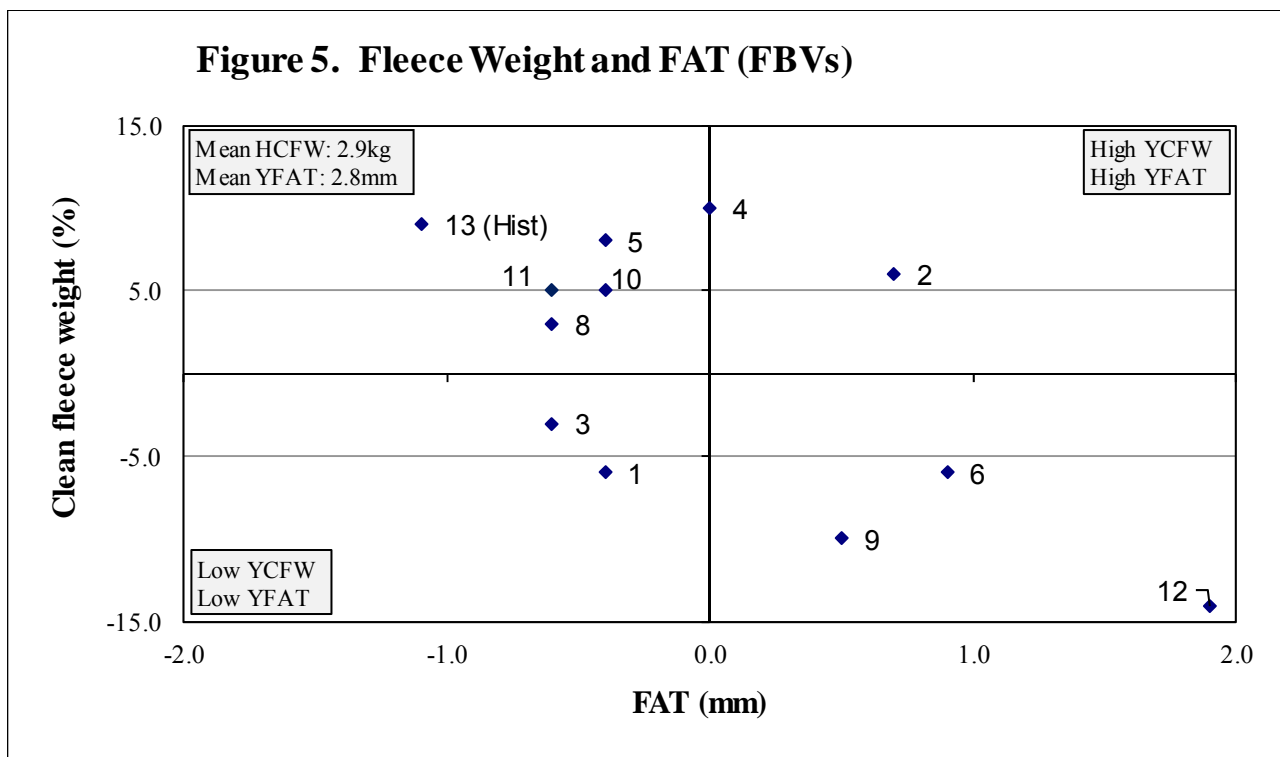


Figure 6. Fleece weight by eye muscle depth (FBVs)

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.

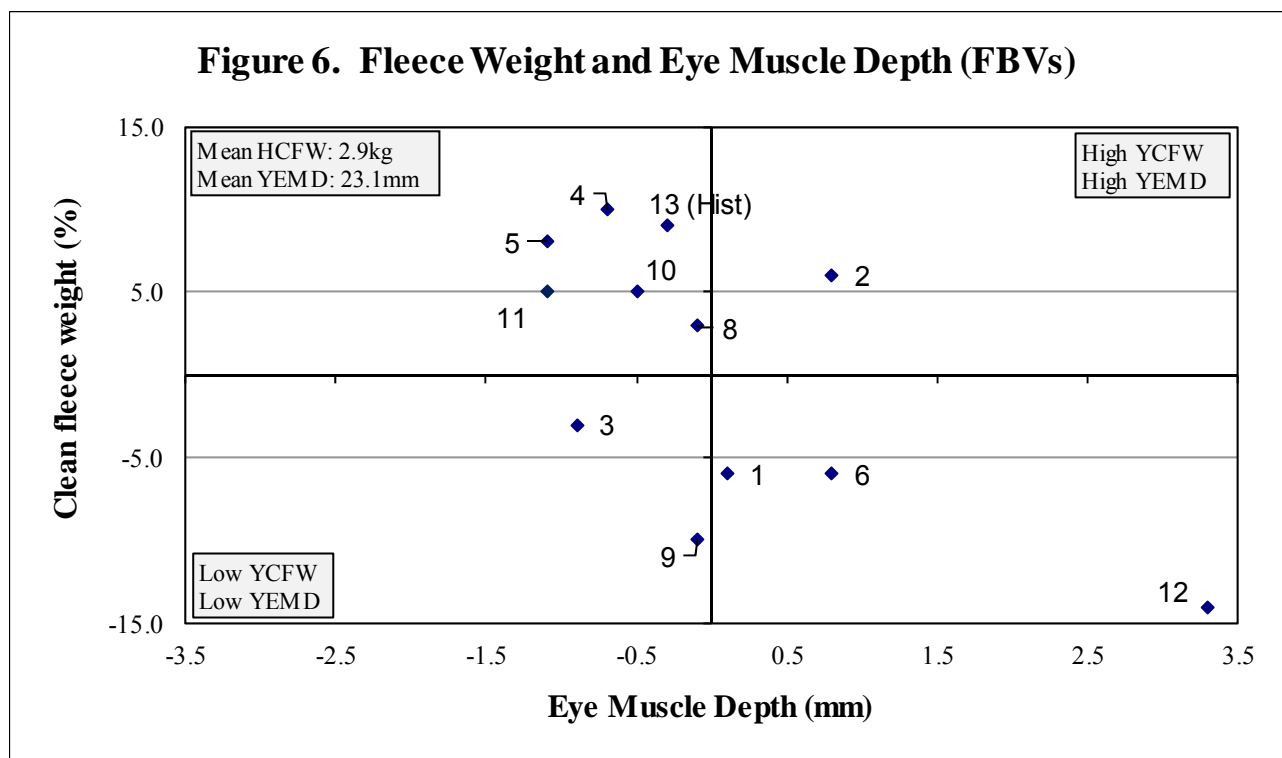
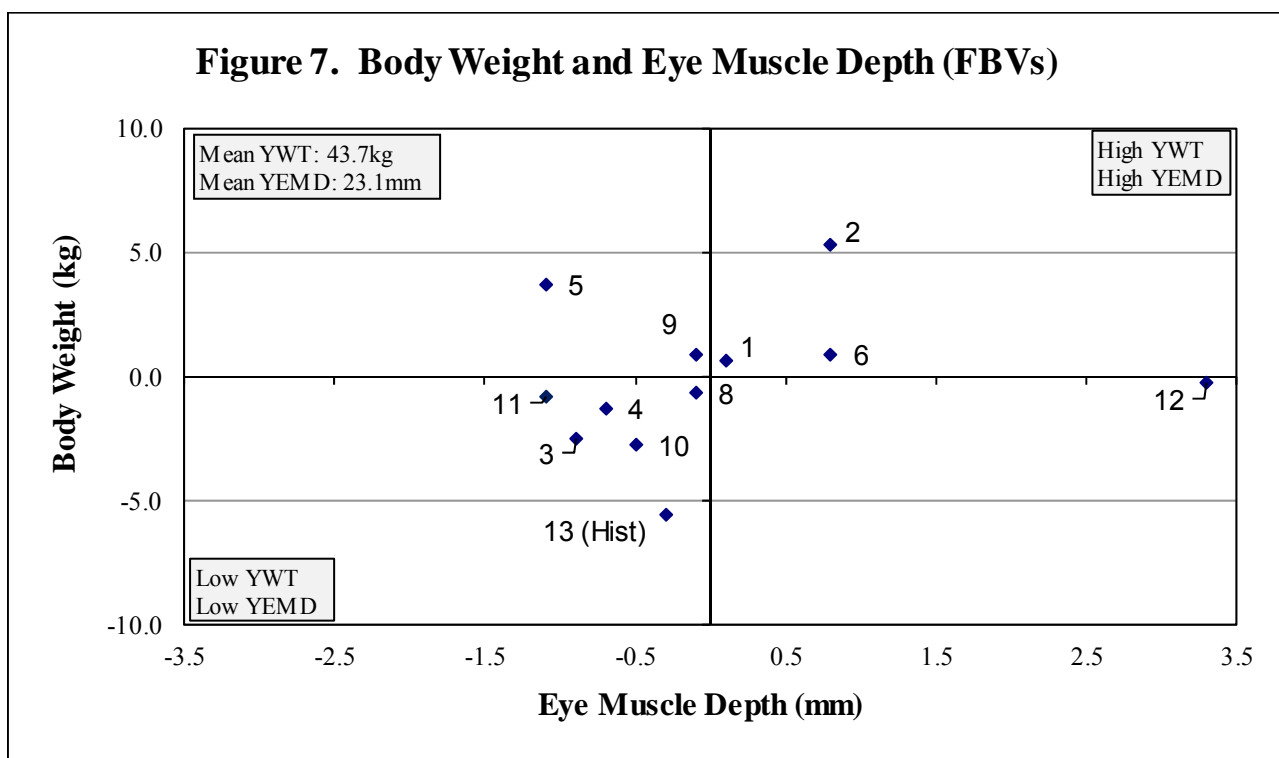


Figure 7. Body weight by eye muscle depth (FBVs)

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.



Understanding the Results

Measured trait performance and Classer's Visual Grade – Tables 2 and 3

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:	<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>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:	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 8 provides more detail on Classer's Visual Grade and the site's Breeding Objective.

Table 2. Major Measured Traits and Classer's Visual Grade

Breeders flock, Sire name	Number of Progeny	Flock Breeding Values (deviations)						Classer's Visual Grade 1	
		GFW	CFW	FD	WT			Tops	Culls
		% H [^]	% H	µm H	W	Y	H	% H	% H
AWI Breech Strike Flock, 112817	38	-5	-6	-0.5	0.3	0.6	0.8	-15	-5
Anderson, 110330	36	7	6	0.9	2.7	5.3	5.9	1	-2
Billandri Poll, 121391	26	-3	-3	-0.8	-1.4	-2.5	-2.4	-5	2
Billandri Poll, 130087	24	9	10	-0.3	-0.7	-1.3	-1.2	-4	4
Boolading Poll, 110303	41	11	8	0.3	2.1	3.7	4.2	-9	4
Borondi, 130322	30	-8	-6	0.1	0.7	0.9	0.8	-4	-15
Centre Plus WA Poll, 338205	4	<i>Insufficient Progeny to Report Results</i>							
Coromandel Poll, 07E007	31	3	3	0.2	-0.5	-0.7	-0.3	19	-2
Cranmore Poll, 112771	39	-9	-10	0.8	0.4	0.9	0.8	-16	-4
Edale, 10Z266K	36	6	5	-0.3	-1.2	-2.8	-3.3	-11	14
Hazeldean, 003542	33	5	5	-1.2	0.6	-0.8	-1.1	28	2
Merinotech WA Poll, 122281	53	-15	-14	1.0	-1.0	-0.3	-0.8	22	-17
Merinotech WA Poll, 95.5403 (Hist)	26	9	9	0.7	-3.0	-5.6	-6.4	-8	12

(Hist) Historical Sires evaluated under AMSEA's R&D project to validate the system of linkage in MERINOSELECT that has operated over the past 15-20 years. These sires were generally widely used 15-20 years ago and were selected for the R&D program based on their high ASBV accuracies.

[^] 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 3. Other Measured Traits

Breeders flock, Sire name	Number of progeny	Flock Breeding Values (deviations)						WEC %
		FDCV % H^	SL mm H	SS N/ktex H	CURV deg/mm H	FAT mm Y	EMD mm Y	
AWI Brech Strike Flock, 112817	38	-0.5	-1.2	-0.6	3.5	-0.4	0.1	WEC not measured due to low egg counts
Anderson, 110330	36	-0.9	2.6	2.7	1.3	0.7	0.8	
Billandri Poll, 121391	26	0.4	-5.2	-2.1	6.9	-0.6	-0.9	
Billandri Poll, 130087	24	0.6	2.0	-2.3	-2.8	0.0	-0.7	
Boolading Poll, 110303	41	-0.3	3.6	-3.3	1.1	-0.4	-1.1	
Borondi, 130322	30	-1.3	0.6	2.5	0.2	0.9	0.8	
Centre Plus WA Poll, 338205	4	<i>Insufficient Progeny to Report Results</i>						
Coromandel Poll, 07E007	31	0.8	-2.7	-0.9	-1.9	-0.6	-0.1	
Cranmore Poll, 112771	39	0.9	4.0	-0.4	-3.4	0.5	-0.1	
Edale, 10Z266K	36	2.0	-1.7	-3.8	-2.9	-0.4	-0.5	
Hazeldean, 003542	33	0.4	-2.7	0.0	-4.5	-0.6	-1.1	
Merinotech WA Poll, 122281	53	-2.4	7.6	6.6	1.7	1.9	3.3	
Merinotech WA Poll, 95.5403 (Hist)	26	1.5	-7.7	2.6	-3.4	-1.1	-0.3	

(Hist) Historical Sires evaluated under AMSEA’s R&D project to validate the system of linkage in MERINOSELECT that has operated over the past 15-20 years. These sires were generally widely used 15-20 years ago and were selected for the R&D program based on their high ASBV accuracies.

^ 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)

Understanding the results

Visual trait performance – Tables 4a, 4b, 4c, 4d

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).
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■ 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.
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■ 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).
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■ 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 4a. 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.

Breeders flock, Sire name	Wool Quality																							
	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
AWI Breech Strike Flock, 112817	-0.2	74	18	5	3	0	0.2	3	18	61	18	0	0.3	6	21	42	26	5	0.2	2	53	45	0	0
Anderson, 110330	-0.1	78	8	4	5	5	0.3	0	19	65	11	5	0.2	0	22	59	19	0	-0.1	14	70	14	2	0
Billandri Poll, 121391	-0.2	69	23	4	0	4	0.2	3	12	73	12	0	0.1	0	31	54	15	0	0.4	0	54	38	8	0
Billandri Poll, 130087	0.2	54	17	25	0	4	-0.1	5	29	58	8	0	-0.2	8	38	42	12	0	-0.1	21	46	33	0	0
Boolading Poll, 110303	0.2	61	10	20	7	2	0.6	0	8	56	29	7	0.7	0	10	46	32	12	0.2	3	56	39	2	0
Borondi, 130322	-0.3	87	6	0	7	0	-0.1	0	43	47	10	0	-0.1	7	33	47	13	0	0.1	10	60	23	7	0
Centre Plus WA Poll, 338205	<i>Insufficient Progeny to Report Results</i>																							
Coromandel Poll, 07E007	-0.2	81	10	0	3	6	-0.2	0	52	42	3	3	-0.4	19	29	42	10	0	-0.2	26	52	22	0	0
Cranmore Poll, 112771	-0.4	85	10	2	0	3	-0.4	0	62	38	0	0	0.1	5	28	41	21	5	0.0	5	74	21	0	0
Edale, 10Z266K	0.5	44	22	17	14	3	0.1	3	19	67	11	0	0.2	6	33	25	28	8	0.2	5	56	33	6	0
Hazeldean, 003542	0.1	48	36	12	0	4	-0.4	3	55	42	0	0	-0.5	6	64	21	9	0	-0.2	15	73	12	0	0
Merinotech WA Poll, 122281	-0.4	89	5	6	0	0	-0.4	2	59	39	0	0	-0.2	9	35	46	6	4	-0.2	22	59	17	2	0
Merinotech WA Poll, 95.5403 (Hist)	0.7	46	0	35	19	0	0.5	0	15	50	27	8	0.1	4	35	38	19	4	0.2	15	42	31	12	0
Average performance	1.6	69	13	10	6	2	2.8	1	34	53	10	2	2.8	5	33	43	16	3	2.2	13	59	25	3	0

(Hist) Historical Sires evaluated under AMSEA’s R&D project to validate the system of linkage in MERINOSELECT that has operated over the past 15-20 years. These sires were generally widely used 15-20 years ago and were selected for the R&D program based on their high ASBV accuracies.

Table 4b. 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.

Breeders flock, Sire name	Wool Quality										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
AWI Breech Strike Flock, 112817	0.0	8	37	42	13	0	0.1	7	24	32	26	11	0.0	98	0	0	2	0	0.5	14	31	24	21	10	0	2
Anderson, 110330	-0.2	14	51	24	8	3	0.1	2	19	49	27	3	0.0	100	0	0	0	0	-0.9	71	20	7	2	0	0	0
Billandri Poll, 121391	0.1	0	50	35	12	3	-0.1	0	31	50	15	4	0.1	97	0	0	3	0	1.1	10	25	9	31	25	0	0
Billandri Poll, 130087	0.6	0	33	33	21	13	0.0	0	25	54	17	4	0.0	100	0	0	0	0	-0.3	52	15	22	11	0	0	7
Boolading Poll, 110303	0.3	5	37	29	27	2	0.8	0	5	27	51	17	0.0	100	0	0	0	0	0.6	28	14	14	28	16	0	0
Borondi, 130322	-0.3	6	57	37	0	0	-0.3	6	37	40	10	7	0.0	100	0	0	0	0	-0.4	45	33	12	6	4	0	0
Centre Plus WA Poll, 338205	<i>Insufficient Progeny to Report Results</i>										<i>Insufficient Progeny to Report Results</i>															
Coromandel Poll, 07E007	-0.3	16	58	13	10	3	-0.1	3	26	42	29	0	0.0	100	0	0	0	0	-0.7	74	6	15	2	3	0	0
Cranmore Poll, 112771	-0.1	3	56	31	10	0	0.7	0	13	23	46	18	0.1	98	0	0	0	2	-0.6	66	18	7	4	5	0	2
Edale, 10Z266K	0.3	0	33	42	25	0	0.3	0	22	36	33	9	0.0	100	0	0	0	0	-0.4	57	14	12	14	3	0	2
Hazeldean, 003542	0.1	0	48	33	19	0	-0.4	3	52	27	15	3	0.0	100	0	0	0	0	-0.7	65	21	7	5	2	0	0
Merinotech WA Poll, 122281	-0.6	22	61	13	4	0	-0.3	2	44	33	17	4	0.0	100	0	0	0	0	-0.8	77	11	4	7	1	0	2
Merinotech WA Poll, 95.5403 (Hist)	0.0	8	42	35	12	3	0.6	0	15	31	31	23	0.1	94	0	0	6	0	0.5	17	23	37	14	9	0	0
Average performance	2.6	6	49	28	14	3	3.0	4	30	34	24	8	1.0	99	0	0	1	0	2.3	44	20	13	11	12		

(Hist) Historical Sires evaluated under AMSEA’s R&D project to validate the system of linkage in MERINOSELECT that has operated over the past 15-20 years. These sires were generally widely used 15-20 years ago and were selected for the R&D program based on their high ASBV accuracies.

Table 4c. 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.

Breeders flock, Sire name	Conformation																													
	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
AWI Breech Strike Flock, 112817	0.0	97	0	3	0	0	-0.1	18	50	29	3	0	0.1	82	0	18	0	0	-0.2	63	37	0	0	0	-0.2	7	61	32	0	0
Anderson, 110330	0.0	97	3	0	0	0	-0.1	2	76	19	3	0	-0.1	91	0	9	0	0	-0.1	70	19	8	3	0	0.0	0	57	37	6	0
Billandri Poll, 121391	0.0	100	0	0	0	0	0.1	8	46	42	4	0	0.0	84	0	16	0	0	0.3	35	46	15	4	0	0.0	0	60	36	4	0
Billandri Poll, 130087	0.0	100	0	0	0	0	0.3	4	38	54	4	0	-0.1	92	0	8	0	0	0.2	38	50	12	0	0	-0.1	0	67	29	4	0
Boolading Poll, 110303	0.0	100	0	0	0	0	0.2	5	46	46	3	0	0.0	83	0	17	0	0	-0.3	83	15	2	0	0	0.5	0	29	49	22	0
Borondi, 130322	0.0	100	0	0	0	0	-0.3	16	67	17	0	0	-0.3	100	0	0	0	0	-0.3	73	27	0	0	0	-0.3	7	73	20	0	0
Centre Plus WA Poll, 338205	<i>Insufficient Progeny to Report Results</i>																													
Coromandel Poll, 07E007	0.0	100	0	0	0	0	-0.1	6	65	29	0	0	-0.2	93	0	7	0	0	0.1	52	39	6	3	0	-0.1	4	60	33	3	0
Cranmore Poll, 112771	0.0	97	3	0	0	0	0.1	5	54	38	3	0	0.2	76	0	24	0	0	-0.3	79	15	6	0	0	-0.3	3	76	18	3	0
Edale, 10Z266K	0.0	100	0	0	0	0	-0.2	6	83	11	0	0	-0.1	89	0	11	0	0	0.0	56	36	8	0	0	0.2	0	44	47	9	0
Hazeldean, 003542	0.0	100	0	0	0	0	0.0	0	73	27	0	0	0.1	78	0	22	0	0	0.4	30	55	9	3	3	0.2	0	34	66	0	0
Merinotech WA Poll, 122281	0.0	100	0	0	0	0	0.2	1	56	39	4	0	-0.2	96	0	4	0	0	0.0	48	52	0	0	0	-0.3	6	72	21	1	0
Merinotech WA Poll, 95.5403 (Hist)	0.0	100	0	0	0	0	0.2	4	46	42	8	0	-0.1	88	0	12	0	0	0.7	23	38	31	8	0	0.7	0	19	46	35	0
Average performance	1.0	100	0	0	0	0	2.3	6	61	30	3	0	1.3	85	0	15	0	0	1.5	58	33	8	1	0	2.5	2	56	35	7	0

(Hist) Historical Sires evaluated under AMSEA’s R&D project to validate the system of linkage in MERINOSELECT that has operated over the past 15-20 years. These sires were generally widely used 15-20 years ago and were selected for the R&D program based on their high ASBV accuracies.

Table 4d. 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.

Breeders flock, Sire name	Breech Visual Traits																													
	Breech Cover Marking						Breech Wrinkle Marking					Crutch Cover					Urine					Dag 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	Dev	1	2	3	4	5
AWI Breech Strike Flock, 112817	0.3	10	12	31	40	7	0.2	24	19	33	19	5													0.0	75	17	8	0	0
Anderson, 110330	0.8	0	10	22	56	12	0.3	15	37	22	22	4													0.0	69	22	9	0	0
Billandri Poll, 121391	0.1	0	28	50	16	6	-0.4	41	28	28	3	0													-0.1	73	23	4	0	0
Billandri Poll, 130087	-0.3	22	19	33	26	0	0.0	22	41	19	15	3	Crutch Cover						Urine						-0.1	79	17	4	0	0
Boolading Poll, 110303	0.1	5	30	30	26	9	0.0	23	40	16	21	0	not scored						not scored						0.5	48	29	14	9	0
Borondi, 130322	-0.1	9	30	33	24	4	-0.2	36	24	27	9	4													-0.1	80	17	3	0	0
Centre Plus WA Poll, 338205	<i>Insufficient Progeny to Report Results</i>																													
Coromandel Poll, 07E007	0.5	0	17	31	37	15	0.2	17	26	43	11	3													0.0	68	32	0	0	0
Cranmore Poll, 112771	-0.5	20	32	36	9	3	-0.6	41	45	5	9	0													-0.1	82	8	8	2	0
Edale, 10Z266K	-0.1	3	38	33	26	0	0.4	7	38	40	3	12													0.0	72	19	9	0	0
Hazeldean, 003542	0.6	0	12	37	37	14	0.5	10	30	35	16	9													-0.1	85	3	9	3	0
Merinotech WA Poll, 122281	-0.6	25	30	33	9	3	-0.6	44	39	14	1	2													-0.2	83	13	4	0	0
Merinotech WA Poll, 95.5403 (Hist)	0.8	0	5	42	31	22	1.2	0	14	26	43	17													0.3	54	23	23	0	0
Average performance	2.9	11	24	32	26	7	2.4	25	33	24	13	5													1.4	73	19	7	1	0

(Hist) Historical Sires evaluated under AMSEA’s R&D project to validate the system of linkage in MERINOSELECT that has operated over the past 15-20 years. These sires were generally widely used 15-20 years ago and were selected for the R&D program based on their high ASBV accuracies.

Table 5. Sire Means for Measured Traits

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 Table 1.

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. The **Progeny group average** listed at the bottom of the table is the actual mean of the progeny group.

Breeder's flock, Sire name	Number of Progeny	Sire means for measured traits (deviations from the site mean)										
		GFW	CFW	FD	FDCV	SL	SS	WT			FAT	EMD
		kg H [^]	kg H	µm H	% H	mm H	N/ktex H	W	Y	H	mm Y	mm Y
AWI Breech Strike Flock, 112817	38	-0.1	-0.1	-0.3	-0.2	-0.6	-0.6	0.2	0.7	0.8	-0.2	0.2
Anderson, 110330	36	0.3	0.1	0.6	-0.5	1.6	1.9	1.9	2.8	3.6	0.2	0.5
Billandri Poll, 121391	26	0.0	0.0	-0.4	0.3	-3.5	-1.6	-1.3	-1.5	-1.4	-0.2	-0.5
Billandri Poll, 130087	24	0.3	0.3	-0.2	0.4	1.4	-1.7	-0.3	-0.7	-0.2	0.1	-0.4
Boolading Poll, 110303	41	0.4	0.2	0.4	-0.4	2.7	-3.8	1.0	1.9	1.7	-0.1	-0.7
Borondi, 130322	30	-0.2	-0.1	0.0	-0.8	0.2	1.7	0.7	0.2	0.1	0.3	0.5
Centre Plus WA Poll, 338205	4	<i>Insufficient Progeny to Report Results</i>										
Coromandel Poll, 07E007	31	0.1	0.0	0.2	0.7	-3.0	-0.4	-0.5	-1.0	0.0	-0.2	0.0
Cranmore Poll, 112771	39	-0.4	-0.3	0.6	1.1	3.6	0.8	0.2	0.3	0.4	0.1	-0.3
Edale, 10Z266K	36	0.2	0.1	-0.1	1.4	-1.5	-2.1	-0.6	-1.9	-2.2	-0.1	-0.2
Hazeldean, 003542	33	0.2	0.2	-0.9	0.2	-2.2	0.9	0.7	0.1	-0.2	-0.1	-0.6
Merinotech WA Poll, 122281	53	-0.4	-0.3	0.6	-1.3	6.2	4.8	-0.9	-0.8	-1.4	0.4	2.0
Merinotech WA Poll, 95.5403 (Hist)	26	0.4	0.2	0.6	1.2	-7.5	2.9	-2.2	-3.7	-4.7	-0.3	0.1
Progeny group average	32	4.2	2.9	18.4	20.0	78.2	42.1	25.8	43.7	51.1	2.8	23.1
		kg	kg	µm	%	mm	N/ktex	kg			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)

(Hist) Historical Sires evaluated under AMSEA's R&D project to validate the system of linkage in MERINOSELECT that has operated over the past 15-20 years. These sires were generally widely used 15-20 years ago and were selected for the R&D program based on their high ASBV accuracies.

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:

$(\text{Classer's Visual Grade Tops\%} - \text{Culls\%})/5$, expressed as a deviation from $(\text{average Tops\%} - \text{average Culls\%})/5$.

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 = 119.70 – 100 = 19.7
Combined Visual = $((25.5 - 17.6)/5) - ((25.1 - 16.4)/5)$
 = $7.9/5 - 8.7/5 = 1.58 - 1.74 = -0.1$

Yardstick

2015 Drop
Hogget Assessment

