MerinoLink Limited Standard Sire Evaluation

Within Flock Analysis
Site Report

2017 Drop

Yearling, Hogget & Adult Assessments

Location – Ravenswood, Yass

Conducted by

Merino LINK
Engagement - Education
Exploration - Exchange

under the auspices of

The Australian Merino Sire Evaluation Association

AUSTRALIAN MERINO SIRE EVALUATION ASSOCIATION
MERINO
Superior Sires

8th September 2019

MerinoLink Sire Evaluation Sponsors and Supporters – 2017 drop

Acknowledgements

Mal Peake, Ravenswood (Cavan Station), Yass
Matt Crozier, Cavan Station, Yass
Will Wragg, Cavan Station, Yass
Joe Walden, Cavan Station, Yass
Adele Offley, Moses & Son, Young
Craig Wilson, Craig Wilson & Associates, Wagga Wagga
Ben Patrick, Yarrawonga Merino Stud, Harden
Rachael Gawne, SMC Pty Ltd, Young
Sally Martin, SMC Pty Ltd, Young
Imogen Hickey, CSU 4th Year Student, Wagga Wagga
Jodi Davis, Wagga Wagga
Allan Casey, Orange
Samantha Moorfield, CSU 4th Year Stud,Wagga Wagga
Louise Fletcher, CSU 4th Year Stud, Wagga Wagga

The Australian Merino Sire Evaluation Association has approved the format used in this report. Australian Flock Breeding Values reported here are based on analysis conducted by Animal Genetic Breeding Unit (AGBU), Armidale.

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Foreword

MerinoLink Limited - Central Test Sire Evaluation

MerinoLink Limited run a number of sire evaluation sites located on the South West Slopes following the success of the South West Slopes Merino Breeders (2003, 2005 and 2008) and Bluechip Livestock (2011 x 2 and 2012) sire evaluations and young sire programs.

The MerinoLink Sire Evaluation site at Ravenswood, Yass is an accredited Central Test Sire Evaluation (CSTE) site. It conforms to the requirement of the Australian Merino Sire Evaluation Association (AMSEA).

The 2017 drop is the first (1st) joining at Ravenswood and complements the previous sire evaluations in 2014, 2015 and 2016 run at Jugiong.

We would like to thank and acknowledge the dedication of Mal Peake and Matt Crozier for hosting the sire evaluation. Your commitment to Merino breeding is greatly appreciated.

The classing for the first visual assessments was conducted by Ben Patrick, Peter Westblade Scholarship recipient 2014. The second visual assessment was carried out by Allan Casey, former NSW DPI sheep breeding specialist and Joe Waldon, Peter Westblade Scholarship recipient 2018. We would like to fully acknowledge the professional contribution to the visual assessments by Ben, Allan and Joe. All classing is done randomly and without any knowledge of the progenies sire.

The 16 Merino sires being evaluated includes two link sires that are also being assessed in the Merino Lifetime Productivity Project funded by Australian Wool Innovation. The linkage will allow a greater pool of data to be collected across sites.

We trust that everyone has achieved something out of this program and we look forward to providing leading genetic evaluation tools into the future.

Sally Martin, Site Manager

Site Contacts

Name	Phone	Role
Mal Peake	0408 426 103	Host Property
Matt Crozier	0427 486 805	Host Property
Will Wragg	0428 396 698	Host Property
Sally Martin	0400 782 477	Site Coordinator; Data Management; Reporting
Craig Wilson	0428 250 982	Committee member
Rick Baldwin	0429 833 837	Committee member
Rachael Gawne	0428 212 801	Data collection; Peter Westblade Scholarship (2017)
Oli Cay	0429 323 890	Monaro Farming Systems representative
Joe Walden	0427 016 427	Peter Westblade Scholarship (2018)
Richard Keniry	0427 878 541	MerinoLink Chair and AMSEA Representative

For further information on this report please contact:
Sally Martin, Sally Martin Consulting Pty Ltd; 288 Maimuru Road, YOUNG NSW 2594;
Mobile: 0400 782 477 Email: sallymartin777@gmail.com

Report authors:
Sally Martin[1] and Andrew Swan[2]
[1] Sally Martin Consulting, 288 Maimuru Road, YOUNG NSW 2594
[2] AGBU, UNE, Armidale, NSW 2351

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2017 Drop – Yearling & Adult Assessment - MerinoLink Limited Sire Evaluation

The information in this site evaluation report provides a comprehensive assessment of the 2017 drop at the Yearling, Hogget and Adult Assessments of the sire's progeny performance, both measured and visually assessed traits. **The information reported is based on a within flock analysis of the sire progeny being evaluated.**

The Yearling Assessment was carried out at 10 and 11 months of age with 10 and 11 months of wool growth. The Adult Assessment was carried out at 22 months of age with 12 months' wool growth.

Contents **Page**

Sire and owner details

Sire code	Breeders flock, Sire number Sire ID [#], Breed [†]	Contact name, address Phone, Fax, Email
1	**Adina, 110011** 504156-2011-110011, Merino	Ray & Jim Barron Adina, Peakview, Cooma NSW 2630 P: (02) 6454 3149, M: 0439 45 3015 E: jimmyb1@bordernet.com.au
2	**Bogo, 500300** 504792-2015-500300, Merino	Malcolm Peake Ravenswood, Boambolo Road, Yass NSW 2582 P: (02) 6227 1223, M: 0408 42 6103 E: info@bogomerinos.com.au
3	**Boudjah, 150516** 505049-2015-150516, Merino	Michael Green Boudjah, 174 Old Dangelong Rd, Cooma NSW 2630 P: (02) 6452 6651, M: 0407 22 5825 E: boudjah@bigpond.net.au
4*	**Bundilla Poll, 140055 (Link)** 601435-2014-140055, Poll Merino	Ross, Rick & Jill Baldwin Bundilla, 706 Tubbul Road, Young NSW 2594 P: (02) 6383 3802, M: 0429 83 3837 E: bundillamerinos@bigpond.com
5	**Centre Plus Poll, 307603** 601250-2013-307603, Poll Merino	Robert Mortimer Devondale, Tullamore NSW 2874 P: (02) 6892 8259, M: 0429 92 8292 E: robert@centreplus.com.au
6*	**Centre Plus Poll, 407185 (Link)** 601250-2014-407185, Poll Merino	Robert Mortimer Devondale, Tullamore NSW 2874 P: (02) 6892 8259, M: 0429 92 8292 E: robert@centreplus.com.au
7**	**Centre Plus WA Poll, 338205 (Link, Unreg)** 609182-2013-338205, Poll Merino	Simon Bell Lot 2 Ashe Rd, Kojonup WA 6395 P: (08) 9833 6212, M: 0419 934 404 E: simon@breedtech.com.au
8	**GRASS, 142000 (R5)** 503884-2014-142000, Merino	Graham Peart GRASS Merinos Pty Ltd, PO Box 216, Nambucca Heads NSW 2448 P: 0428 825 721, E: g.peart@icloud.com
9	**Greendale, 150018** 505069-2015-150018, Merino	Alan McGufficke Willarney, 850 Maffra Road, Cooma NSW 2630 P: (02) 6452 3605, M: 0429 44 8078 E: milliefarming@activ8.net.au
10*	**Hazeldean, 11.3542 (Hugh) (Link)** 500383-2011-003542, Merino	Jim Litchfield Hazeldean Pty Ltd, Cooma NSW 2630 P: (02) 6453 5555, M: 0417 67 6561 E: admin@hazeldean.com.au
11**	**Hazeldean, 12.4030 (Link)** 500383-2012-004030, Merino	Jim Litchfield Hazeldean Pty Ltd, Cooma NSW 2630 P: (02) 6453 5555, M: 0417 67 6561 E: admin@hazeldean.com.au
12**	**Hazeldean, 13.4936 (Link)** 500383-2013-004936, Merino	Jim Litchfield Hazeldean Pty Ltd, Cooma NSW 2630 P: (02) 6453 5555, M: 0417 67 6561 E: admin@hazeldean.com.au

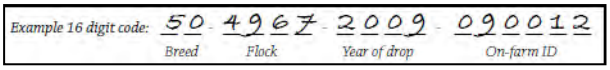
Sire code	Breeders flock, Sire number Sire ID #, Breed †	Contact name, address Phone, Fax, Email
13	**Nerstane, 150076** 503298-2015-150076, Merino	John, Hamish and Jock McLaren Nerstane, Woolbrook NSW 2354 P: (02) 6777 5881, M: 0429 77 5891 E: info@nerstane.com.au
14	**Pooginook, 125188** 500788-2012-125188, Merino	John Sutherland Pooginook, Jerilderie NSW 2716 P: (02) 6954 6145, M: 0428 95 3017 E: pooginook@parawaypastoral.com
15	**Rocklyn, 120182** 501039-2012-120182, Merino	Ralph Diprose Elon, Cowra Rd, Grenfell NSW 2810 P: (02) 6343 6331, M: 0488 43 6332 E: rkdiprose@gmail.com
16	**Woodpark Poll, 150106** 601151-2015-150106, Poll Merino	Stephen and Carol Huggins Eurolie, Hay NSW 2711 P: (02) 6993 4616, M: 0429 93 4616 E: info@woodparkmerino.com.au

Graph and Table Key

* Link sire: 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.*

** Common sires (in addition to Link Sires) between this CTSE site and other sites.

\# 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.

Fleece weighing late June 2019 – Adult trait measurement

Management Report

1. Location

- Ravenswood, 535 Boambolo Road, Yass NSW 2582 - Located in the NSW Southern Tablelands, approx. 18Kms south of Yass.
- Owned by Cavan Station and managed by Mal Peake and Matt Crozier.

2. Selection and mating

- 800 Bogo blood medium framed ewes with free growing soft handling wools were selected and classed to be free from visual and conformation faults.
- The ewes were mated by Artificial Insemination to the 16 sires.
- The ewes were randomly allocated across age groups to each sire.
- The insemination program was conducted on 28th February and 1st March 2017.
- The insemination program was conducted by Livestock Breeding Service – Yass & Jerilderie.
- 50 ewes were allocated to each sire entered.

3. Pregnancy and lambing

- Pregnancy scanning took place on 24th May 2017.
- Ewes were managed as one contemporary group from AI until 10 days before lambing when the ewes were divided into 5 mobs (singles and twins) and lambed down.
- Adequate pasture and a supplementary feeding program ensured that nutritional requirements were met during all stages of pregnancy.
- Lambs were tagged (visual and electronic) and DNA sampled within three weeks of lambing and all mobs were brought together and boxed into one contemporary group of ewes and lambs.

4. Weaning and seasonal conditions

- The lambs were marked on 1st September 2017.
- The lambs were weaned on 9th November 2017.
- Overall the seasonal conditions have been average to poor over the duration of the sire evaluation, involving significant supplementary feeding.

5. Visual Assessments

- The 1st stage visual assessment was carried out by Ben Patrick, Peter Westblade Scholarship recipient 2014.
- The 2nd stage visual assessment was carried out by Allan Casey, former NSW DPI Sheep Specialist and Joe Walden, Peter Westblade Scholarship recipient 2018.

6. Rainfall – Cavan Station

	2017	2018	2019
Jan	14	49	52
Feb	57	121	16
Mar	71	8	72
Apr	31	20	0
May	64	21	56
Jun	3	51	31
Jul	26	12	15
Aug	69	31	17
Sep	15	40	
Oct	70	17	
Nov	93	83	
Dec	108	79	
Totals	**621**	**532**	**~259**

2018 MerinoLink Field Day displaying the 2017 drop Sire Evaluation Progeny – June 2018

Assessment and management program

Activity	Date/s	Age (months)	Wool (months)
Selection of ewes & allocation of ewes for mating	14.02.2017		
Artificial Insemination	28.02.2017 01.03.2017		
Pregnancy scanning	24.05.2017		
Separated into sire lambing groups	14.07.2017		
Lambing: start – finish	28 to 08.07.2017		
Lambing mobs boxed to 1 management group	18.08.2017	14-21 days	
Tagging/pigment scores (age in days)	18.08.2017	14-21 days	
Marked and scored for breech traits	01.09.2017	35 days	
Weaning (age in days)	09.11.2017	104 days	
Pre-assessment (even-up) shearing	n/a		
Crutching • Post Weaning (PW)	13.02.2018	6.5	6.5
Fat and eye muscle scanning • Hogget (H)	16.08.2018	12.5	
Fleece sampling assessment • Yearling (Y) • Adult (A)	21.05.2018 01.04.2019	10 21	10 10
Staple length assessment • Yearling (Y) • Adult (A)	21.05.2018 01.04.2019	10 21	10 10
Classer's Grade assessment • Yearling (Y) • Adult (A)	21.05.2018 01.04.2019	10 21	10 10
Pre shearing scoring assessment • Yearling (Y) • Adult (A)	21.05.2018 01.04.2019	10 21	10 10
Assessment shearing • Yearling (Y) • Adult (A)	25.06.2018 01.04 & 07.06.19	11 21 & 23	11 10 & 12
Post shearing scoring assessment • Yearling (Y) • Adult (A)	25.06.2018 01.04 & 07.06.19	11 21 & 23	0 0
Body weigh assessment • Weaning (W) • Post Weaning (PW) • Yearling (Y) • Hogget (H) • Hogget (H) • Adult (A) • Adult (A)	09.11.2017 14.02.2018 27.06.2018 16.08.2018 26.11.2018 01.04.2019 (ewes) 07.06.2019 (wths)	3.5 6.5 11 12.5 16 21 23	
Worm egg count sampling • Hogget (H)	16.11.2018	16	
Sire's Progeny Group Evenness assessment	Has not been carried out at time of publication.		
Vaccination	Marking, weaning, post shearings, annual booster		
Drench	As required based on worm egg counts		
Field day or public display of sheep	• 21st June 2018 • 7th June 2019 (Entrant viewing only)		

Visual Trait Assessment and Site Breeding Objective

Visual trait assessment

1st Stage Assessment (Yearling) and 2nd Stage Assessment (Adult)

Assessment	1st Stage Assessment	2nd Stage Assessment
Breech Scores:	Sally Martin	
Classer's Grade:	Ben Patrick	Allan Casey
Pre-Shearing Trait Scores:	Ben Patrick	Allan Casey & Joe Walden
Post Shearing Trait Scores:	Sally Martin	Sally Martin & Joe Walden

Site Breeding Objective used to assess the Classer's Grades – 2nd Stage Assessment

The Breeding Objective used to select the Classer's Tops (27%), Flock (53%) and Cull (20%) was based on a visual assessment where the animal performed well for growth (meet minimum body weight suitable for joining), were structurally sound with good wool quality traits including long soft handling wool and fleece weight. *(No reference was made to measured performance at the time of classing and was based on the visual presentation of all traits).*

Within Site Analysis

This report provides information within site on the performance of the progeny of the sires being evaluated. The ASBVs have not been taken into consideration in the within site analysis, however, will be used in the across site (MSS) analysis. The information presented is a reflection of one sires' performance, not the bloodline.

Publication of results in both Merino Superior Sires (MSS) and MERINOSELECT will be presented as across flock Australian Sheep Breeding Values (ASBV's) and will included additional data collected on farm, at other sire evaluation sites and the Information Nucleus Flock sites (Resource Flock).

Table 1a. **Sire means for measured traits – wool 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.

Ram Code	Breeders flock, Ram number	No. of Progeny	Ram averages for measured traits (adjusted sire means)												
			GFW kg		CFW kg		FD um		FDCV %		Curv deg/mm	SL mm		SS N/ktex	
			Y[2]	A	Y	A	Y	A	Y	A	Y	Y	A	Y	A
1	Adina, 110011	24	4.7	6.7	3.3	4.8	16.2	17.1	18.6	17.0	91.3	78.8	91.1	31.9	41.4
2	Bogo, 500300	21	5.1	6.3	3.6	4.7	16.5	17.5	17.4	15.5	86.0	84.2	89.6	36.2	50.7
3	Boudjah, 150516	30	4.9	6.5	3.3	4.8	16.8	17.6	19.3	18.0	88.1	72.4	89.3	36.1	51.8
4*	Bundilla Poll, 140055	40	4.9	6.4	3.5	4.8	17.0	18.3	18.2	16.4	89.9	79.0	96.5	32.9	45.1
5	Centre Plus Poll, 307603	39	4.9	5.7	3.3	4.0	16.8	18.2	17.8	16.0	88.0	84.8	99.0	37.5	52.3
6*	Centre Plus Poll, 407185	31	4.9	6.3	3.3	4.5	16.7	17.5	17.3	16.3	86.5	84.4	94.2	33.0	43.7
7	Centre Plus WA Poll, 338205	40	5.0	6.3	3.3	4.3	16.3	17.5	17.6	16.1	90.7	82.8	94.0	33.9	47.4
8	GRASS, 142000 (R5)	34	5.2	6.6	3.8	5.1	17.6	19.0	18.7	16.8	84.0	83.1	93.2	38.7	54.7
9	Greendale, 150018	37	5.2	6.9	3.6	5.0	16.2	17.3	17.4	15.8	89.0	82.3	93.3	39.1	53.3
10*	Hazeldean, 11.3542 (Hugh)	36	5.0	6.7	3.5	4.9	16.4	17.8	18.8	16.6	87.1	79.6	93.2	37.6	47.6
11	Hazeldean, 12.4030	28	5.0	6.9	3.5	5.2	17.1	18.3	18.1	17.0	81.5	90.7	100.7	37.2	51.0
12	Hazeldean, 13.4936	35	5.1	7.0	3.6	5.2	16.6	17.8	18.4	17.2	84.8	82.4	97.7	34.1	47.6
13	Nerstane, 150076	46	5.0	6.3	3.6	4.8	17.3	18.2	18.3	16.9	87.5	80.3	91.4	36.9	49.8
14	Pooginook, 125188	35	5.2	6.9	3.7	5.2	17.7	19.3	19.3	16.9	83.4	82.7	97.5	38.9	57.2
15	Rocklyn, 120182	15	4.9	6.8	3.5	5.0	17.3	18.4	19.0	17.0	82.0	84.1	95.9	39.3	51.8
16	Woodpark Poll, 150106	11	5.0	5.8	3.6	4.4	16.4	16.7	18.8	17.7	87.6	81.9	95.3	26.2	43.3
	Average performance	**31**	**5.0**	**6.5**	**3.5**	**4.8**	**16.8**	**17.9**	**18.3**	**16.7**	**86.7**	**82.1**	**94.5**	**35.6**	**49.3**
			kg		**kg**		**um**		**%**		**deg/mm**	**mm**		**N/ktex**	

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

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

Table 1b. **Sire means for measured traits – growth and carcase 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. The **Progeny group average** listed at the bottom of the table is the actual mean of the progeny group.

Ram Code	Breeders flock, Ram number	No. of Progeny	Ram averages for measured traits (adjusted sire means)						
			Weight kg					Fat mm	EMD mm
			W[2]	P	Y	H	A	H	H
1	Adina, 110011	24	30.4	35.2	39.4	49.3	50.7	2.2	22.7
2	Bogo, 500300	21	30.6	36.5	42.5	56.2	52.5	2.3	21.2
3	Boudjah, 150516	30	31.9	36.6	39.2	49.5	50.3	1.8	22.8
4*	Bundilla Poll, 140055	40	32.5	38.4	44.2	56.7	55.7	2.2	22.6
5	Centre Plus Poll, 307603	39	30.6	36.8	40.1	51.5	56.0	2.4	23.1
6*	Centre Plus Poll, 407185	31	30.8	37.3	43.9	57.3	57.1	2.9	23.1
7	Centre Plus WA Poll, 338205	40	32.1	39.1	44.4	57.0	57.1	2.6	22.2
8	GRASS, 142000 (R5)	34	28.9	33.3	37.4	47.1	49.3	2.2	21.7
9	Greendale, 150018	37	29.9	34.7	39.3	50.6	51.4	1.8	21.3
10*	Hazeldean, 11.3542 (Hugh)	36	30.1	36.3	40.9	51.4	51.4	2.3	22.8
11	Hazeldean, 12.4030	28	30.0	36.4	41.7	52.5	53.3	2.2	21.6
12	Hazeldean, 13.4936	35	31.8	38.0	41.6	52.3	51.1	2.2	21.5
13	Nerstane, 150076	46	29.4	34.9	41.3	53.8	53.1	2.4	21.5
14	Pooginook, 125188	35	32.7	36.6	41.9	55.2	54.8	2.6	22.2
15	Rocklyn, 120182	15	31.0	35.6	41.1	53.2	53.1	2.3	20.7
16	Woodpark Poll, 150106	11	30.1	38.2	43.5	52.6	54.3	2.4	22.8
	Average performance	**31**	**30.8 kg**	**36.5 kg**	**41.4 kg**	**52.9 kg**	**53.2 kg**	**2.3 mm**	**22.1 mm**

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

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

AMSEA Index Options

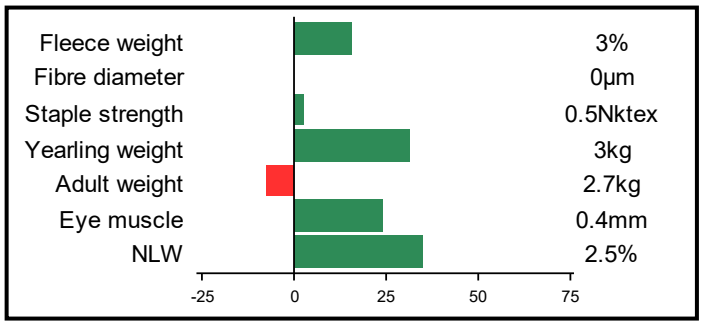
A breeding index combines multiple measured traits into a single value that reflects a certain emphasis on these traits. It is important that you use an index that best matches the breeding objective and production system of the flock you are selecting for. It is recommended that the performance of individual 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+. 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 was established by AMSEA and is now available as custom MERINOSELECT index. Below 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).

Percentage Contribution to Economic Gain | **Trait Gain**

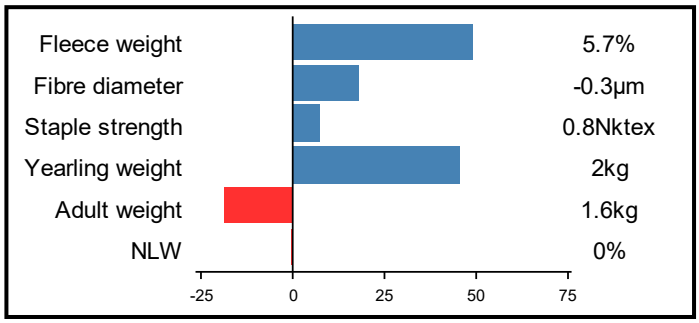
Dual Purpose Plus (DP+)

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



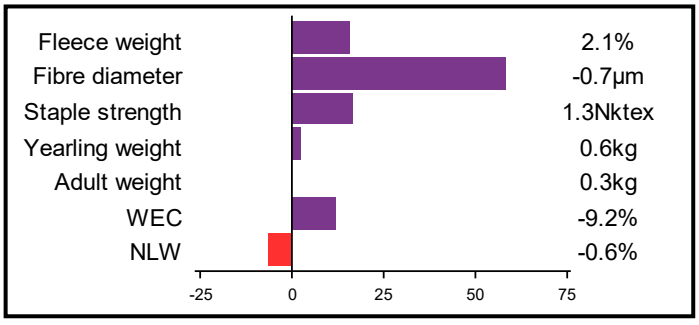
Merino Production Plus (MP+)

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



Fibre Production Plus (FP+)

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



Wool Production Plus (WP+)

Based on the MP+ production system with a greater emphasis on increasing fleece weight, while maintaining fibre diameter and a moderate emphasis on increasing body weight.

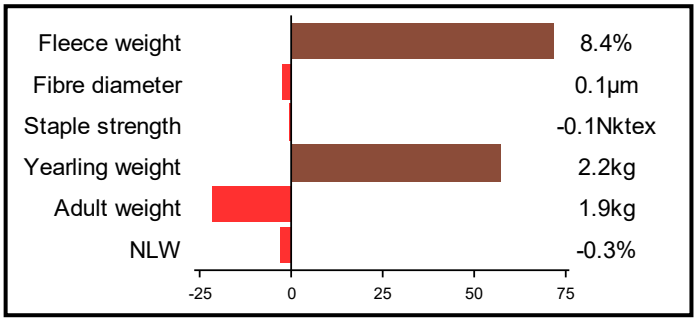


Table 2. **AMSEA Index values and classer's grade**

The highest performing 3 sires for each trait (i.e. trait leaders) are highlighted by shading. Each sire is listed for Classer's Grade and the same four indexes at all site evaluations. The index values reported are based on Flock Breeding Values (within flock) measured trait performance with varying emphasis on fleece weight, fibre diameter, body weight, staple strength and worm egg count. See 'Index Options' on page 12 for more information on the indexes presented in the table below. **AMSEA Indexes are the same as MERINOSELECT Indexes apart from NLW (Number of Lambs Weaned) which is given a zero FBV value in AMSEA calculations.**

Ram code	Breeders flock, Ram number	Sire DNA Horn/ Poll	No of Progeny	AMSEA Indexes values				Classer's Grade[1]			
				Fibre Production Plus	Merino Production Plus	Dual Purpose Plus	Wool Production Plus	Tops % (dev)		Culls % (dev)	
								Y[2]	A	Y	A
1	Adina, 110011	HH	24	90	80	94	83	-2	2	2	16
2	Bogo, 500300	PH	21	115	123	96	116	5	10	-4	-11
3	Boudjah, 150516	HH	30	103	89	102	86	1	-1	4	5
4*	Bundilla Poll, 140055	PP	40	85	99	116	106	0	22	-9	-21
5	Centre Plus Poll, 307603	PP	39	76	68	87	64	-12	-6	9	-4
6*	Centre Plus Poll, 407185	PP	31	92	98	113	100	9	-17	-9	-6
7	Centre Plus WA Poll, 338205	PP	40	93	101	107	97	-3	0	-2	-4
8	GRASS, 142000 (R5)	HH	34	93	85	74	91	-21	-4	1	5
9	Greendale, 150018	PH	37	130	121	95	110	0	-11	7	-5
10*	Hazeldean, 11.3542 (Hugh)	PH	36	103	102	110	100	4	-17	3	1
11	Hazeldean, 12.4030	HH	28	109	106	108	108	16	19	2	-10
12	Hazeldean, 13.4936	PH	35	110	112	104	113	16	-7	-6	16
13	Nerstane, 150076	HH	46	96	101	87	105	-9	4	7	-2
14	Pooginook, 125188	HH	35	105	119	107	122	1	18	7	1
15	Rocklyn, 120182	HH	15	107	106	93	108	12	-5	-18	-12
16	Woodpark Poll, 150106	PP	11	92	88	107	92	-16	-6	8	31
Average performance			**31**	**100**	**100**	**100**	**100**	**26**	**20**	**19**	**27**

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

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

2 Y = Yearling (300 to 400 days). A = Adult (540 days and older).

n/a If accuracy thresholds are not met results are not reported. This is usually due to low progeny numbers; in this evaluation it is due to low AI conception.

Figure 1a, 1b, 1c and 1d. Combined measured traits and visual trait performance

Summary graph: visual and measured performance

Each sire meeting the AMSEA index accuracy threshold assessed at Yearling Assessment is located on Figure 1a, 1b, 1c and 1d and describes the performance for combined measured traits and combined visual assessment. A different graph is provided for each of the four production indexes reported. In each graph, the combined measured traits are based on the AMSEA index and the visual trait performance is a combination of Classer's Grade performance (Tops and Culls). More information is found in "Calculation of combined performance" (page 29).

Sires that are above average performers for combined measured traits and Classer's Grade are located in the top right-hand quarter.

Sire code	Breeders flock, Sire number	Sheep Genetics ID	Sire of Sire
1	Adina, 110011	504156-2011-110011	Unknown
2	Bogo, 500300	504792-2015-500300	504792-2013-130209 (Bogo)
3	Boudjah, 150516	505049-2015-150516	Unknown
4*	Bundilla Poll, 140055	601435-2014-140055	504081-2011-110107 (Bundilla)
5	Centre Plus Poll, 307603	601250-2013-307603	601250-2009-907538 (Centre Plus)
6*	Centre Plus Poll, 407185	601250-2014-407185	601250-2012-207058 (Centre Plus)
7	Centre Plus WA Poll, 338205	609182-2013-338205	601250-2009-907538 (Centre Plus
8	GRASS, 142000 (R5)	503884-2014-142000	503884-2012-122176 (GRASS)
9	Greendale, 150018	505069-2015-150018	500383-2011-003542 (Hazeldean)
10*	Hazeldean, 11.3542 (Hugh)	500383-2011-003542	601050-2002-020603 (Stockman Poll)
11	Hazeldean, 12.4030	500383-2012-004030	503298-2008-080121 (Nerstane)
12	Hazeldean, 13.4936	500383-2013-004936	500383-2011-003542 (Hazeldean)
13	Nerstane, 150076	503298-2015-150076	504389-2012-120239 (East Strathglen)
14	Pooginook, 125188	500788-2012-125188	500788-2011-NAM003 (Pooginook)
15	Rocklyn, 120182	501039-2012-120182	504166-2009-090014 (Roseville Park)
16	Woodpark Poll, 150106	601151-2015-150106	601151-2012-120342 (Woodpark Poll)

* Link sire: 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.*

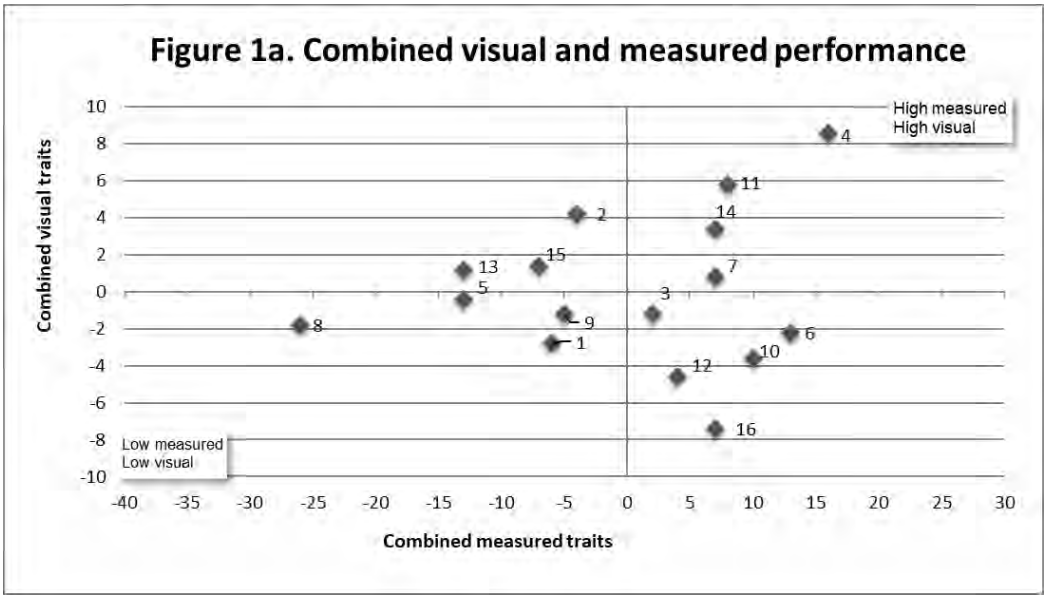


Figure 1a is based on an **AMSEA Dual Purpose Plus (DP+) index** – (Based on a meat focused production system where surplus progeny are sold as lambs and a portion of ewes are joined to terminal sires).

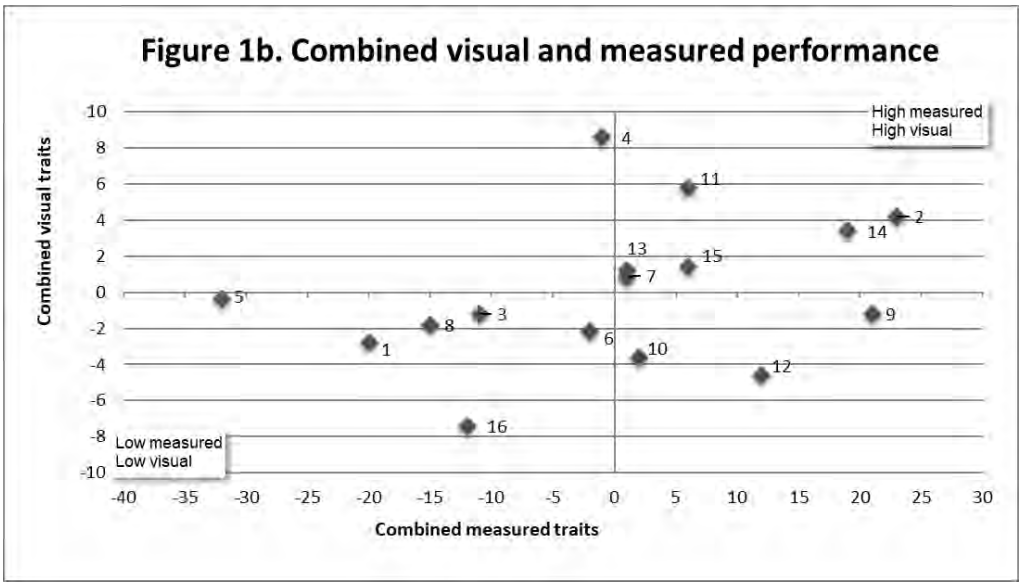


Figure 1b is based on an **AMSEA Merino Production Plus (MP+) index** – (Based on a balanced wool and meat production system where surplus progeny are sold as hoggets).

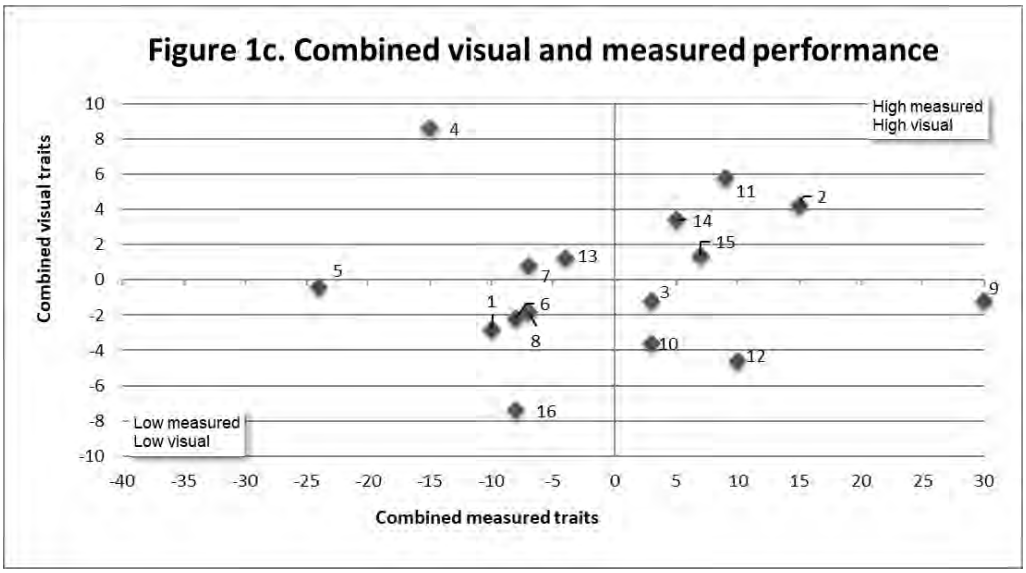


Figure 1c is based on an **AMSEA Fibre Production Plus (FP+) index -** (Based on a wool focussed production system where wethers are retained, operating in an environment where worms cause economic losses).

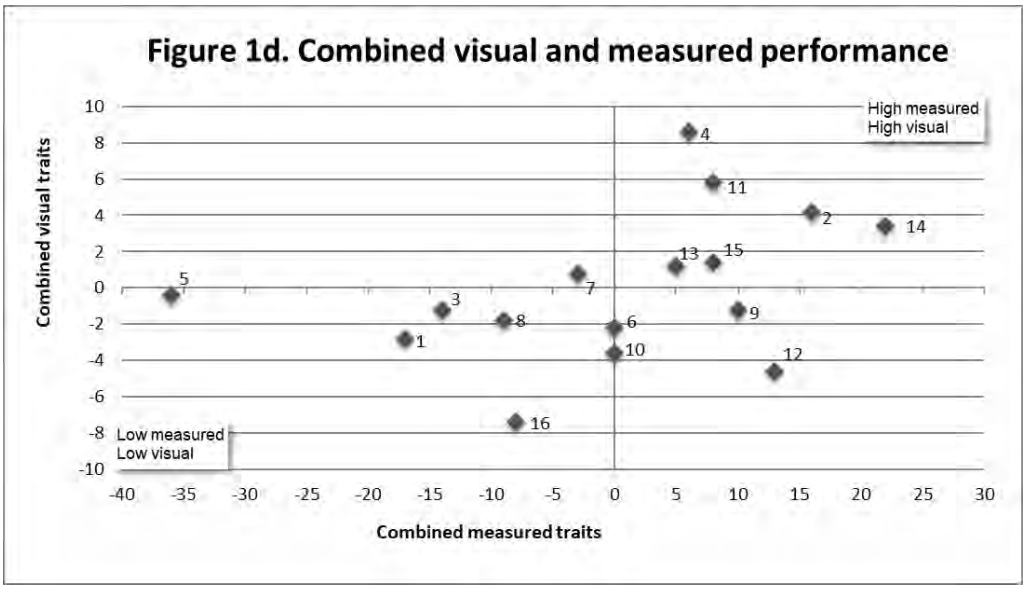


Figure 1d is based on an **AMSEA Wool Production Plus (WP+) index -** (Based on the MP+ production system with a greater emphasis on increasing fleece weight, while maintaining fibre diameter and a moderate emphasis on increasing body weight).

Figures 2 to 8 Summary Graphs

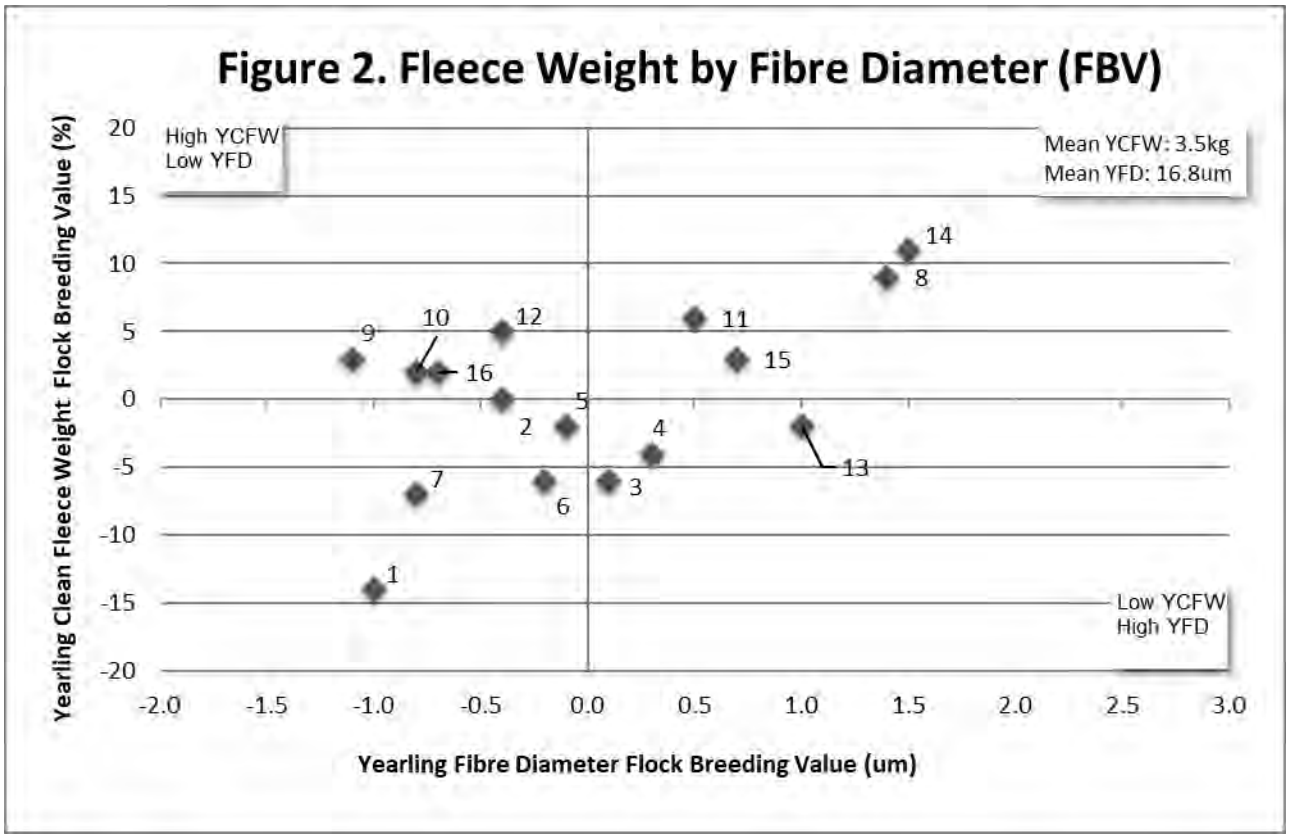


Figure 2. Yearling Fleece weight by fibre diameter (FBV's) – describes performance for clean fleece weight on the side axis and fibre diameter on the bottom axis. Sires that are above average for yearling clean fleece weight and below average yearling fibre diameter are located in the top left-hand quadrant.

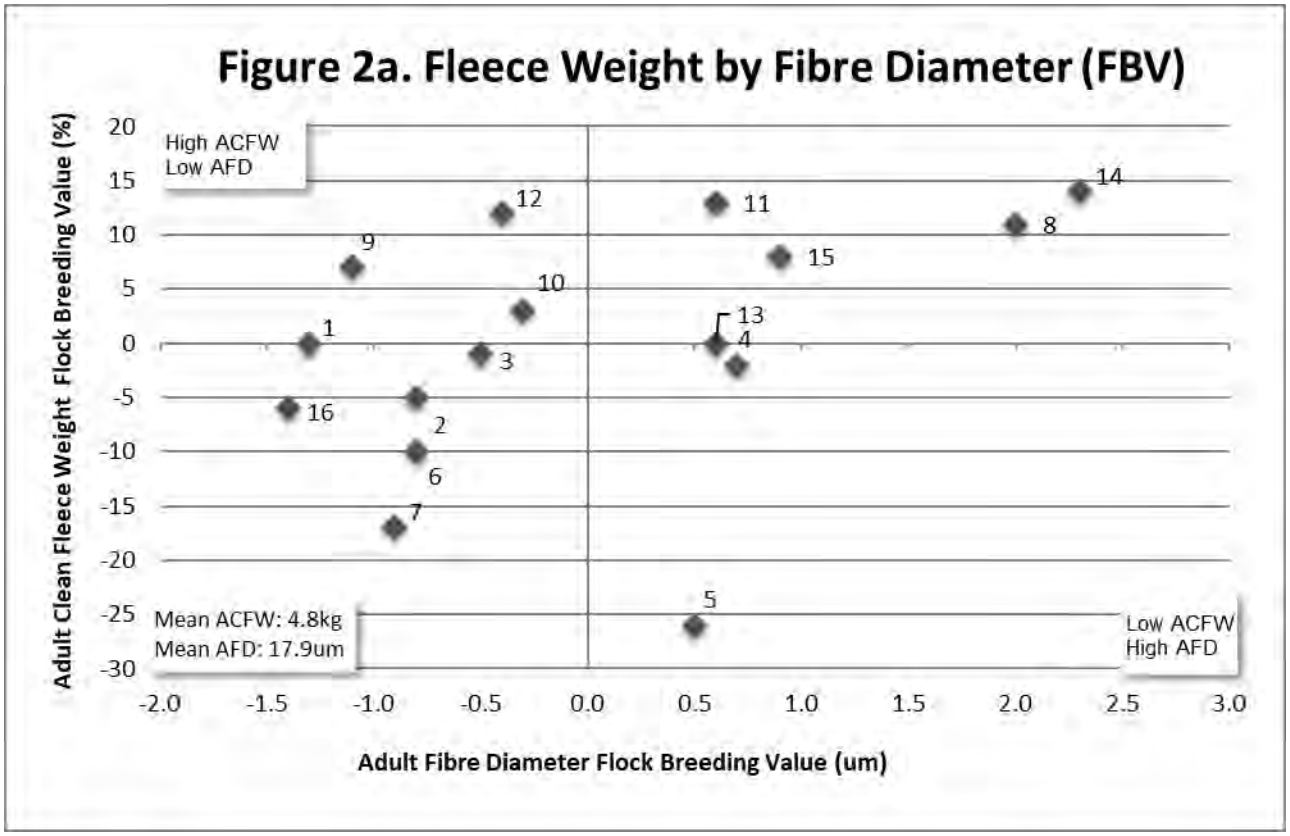


Figure 2a. Adult Fleece weight by fibre diameter (FBV's) – describes performance for clean fleece weight on the side axis and fibre diameter on the bottom axis. Sires that are above average for adult clean fleece weight and below average adult fibre diameter are located in the top left-hand quadrant.

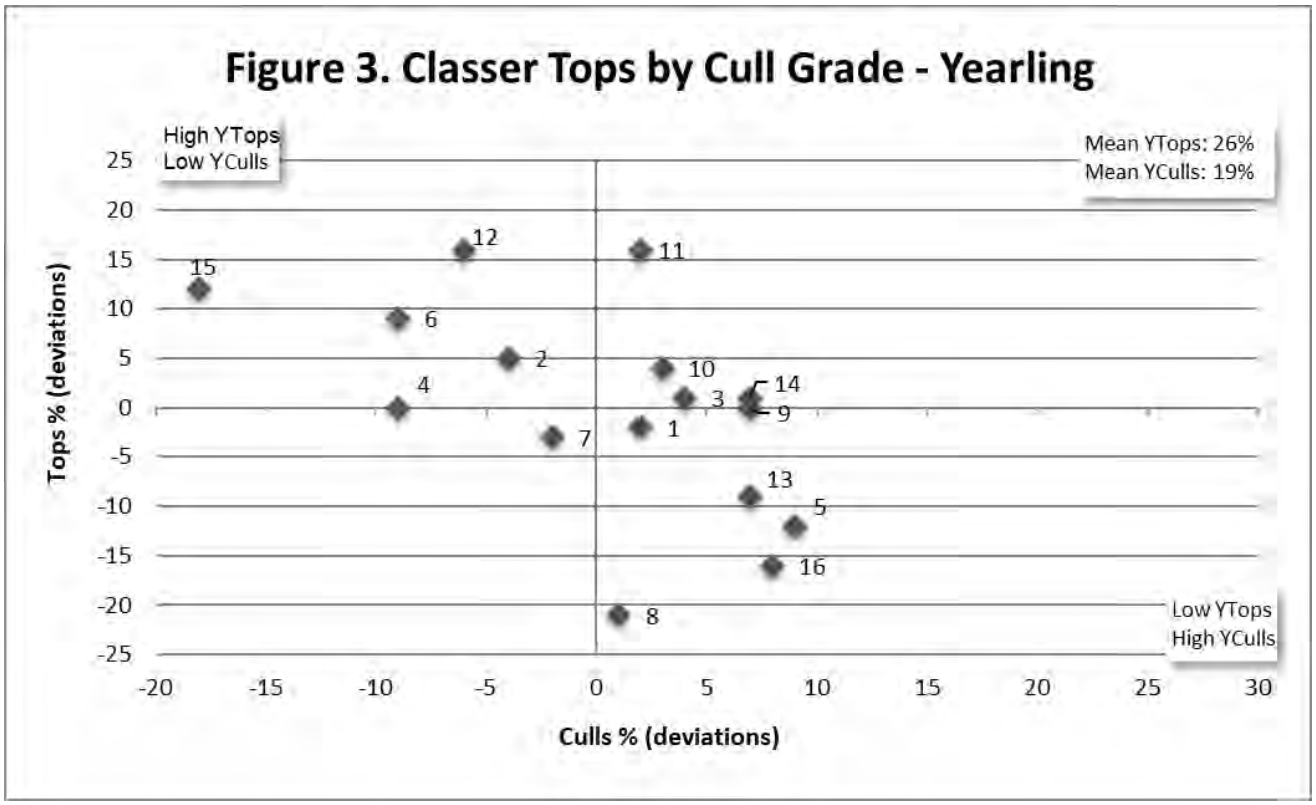


Figure 3. Yearling Classer's Tops by Cull Grade – describes performance for Classer's Tops Grade on the side axis and Cull Grade on the bottom axis. Sires that have above average Tops and below average Culls are in the top left-hand quadrant. Classer's Tops (19%), Flock (55%) and Cull (26%) is based a visual assessment where the progeny performed well for growth, structurally sound with good wool quality traits including long soft handling wool and fleece weight.

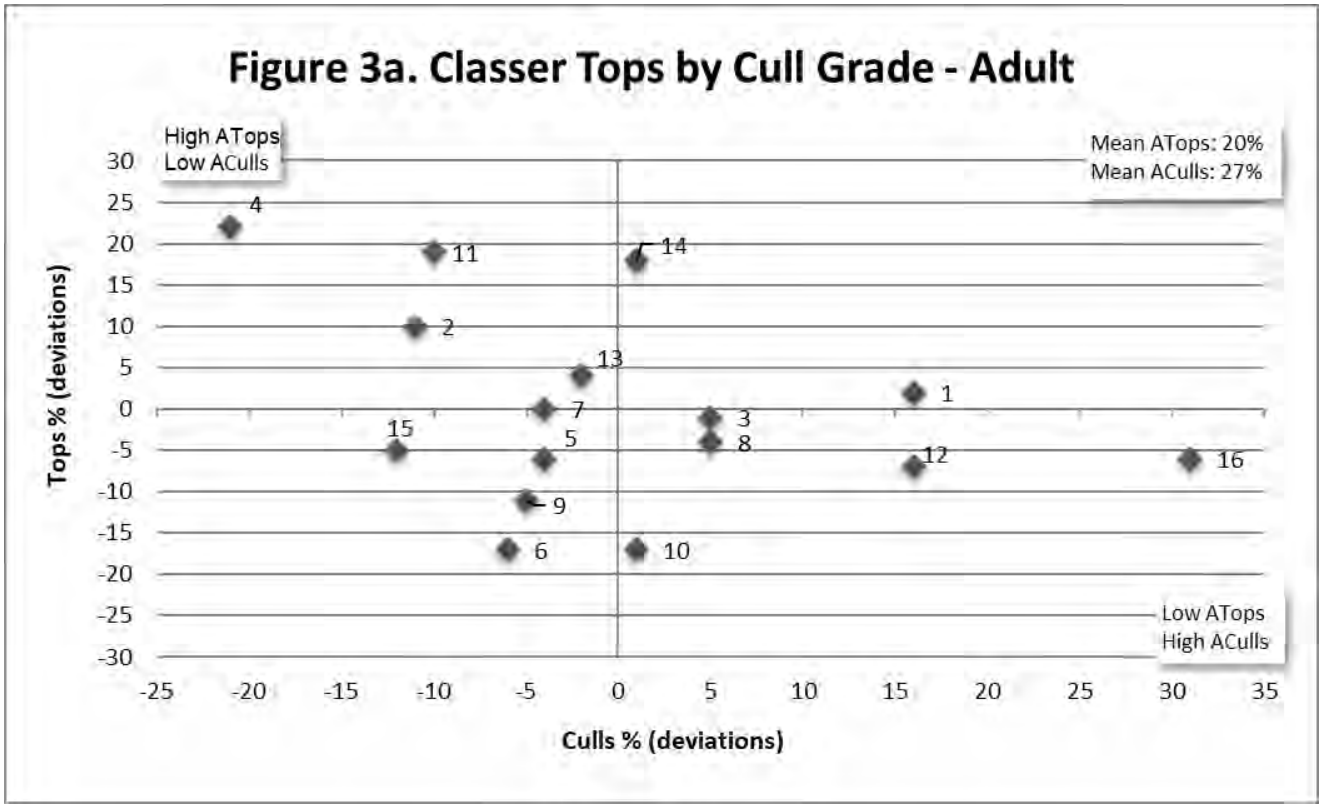


Figure 3a. Adult Classer's Tops by Cull Grade – describes performance for Classer's Tops Grade on the side axis and Cull Grade on the bottom axis. Sires that have above average Tops and below average Culls are in the top left-hand quadrant. Classer's Tops (20%), Flock (53%) and Cull (27%) is based a visual assessment where the progeny performed well for growth, structurally sound with good wool quality traits including long soft handling wool and fleece weight.

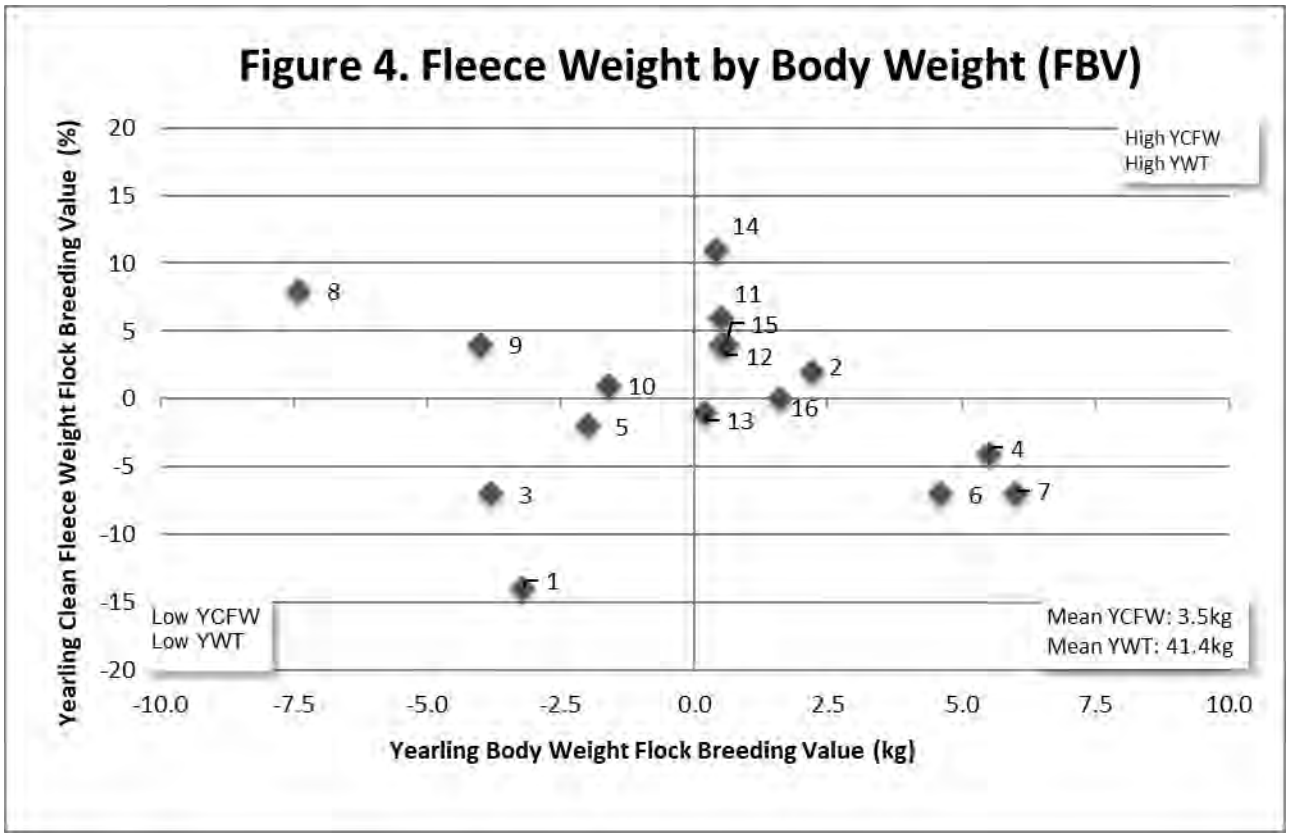


Figure 4. Yearling Fleece weight by body weight (FBV's) – describes performance for clean fleece weight on the side axis and body weight on the bottom axis. Sires that are above average for yearling clean fleece weight and above average for yearling body weight are located in the top right-hand quadrant.

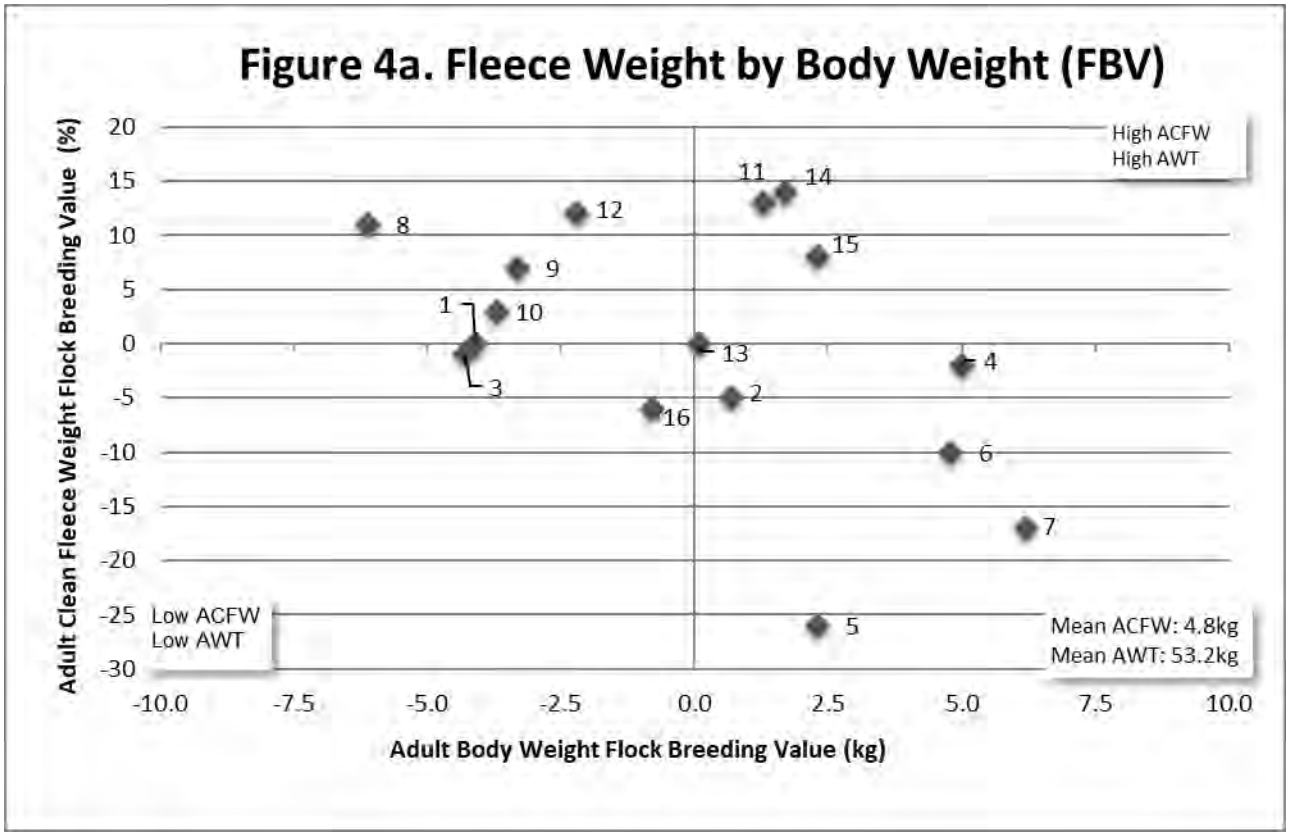


Figure 4a. Adult Fleece weight by body weight (FBV's) – describes performance for clean fleece weight on the side axis and body weight on the bottom axis. Sires that are above average for adult clean fleece weight and above average for adult body weight are located in the top right-hand quadrant.

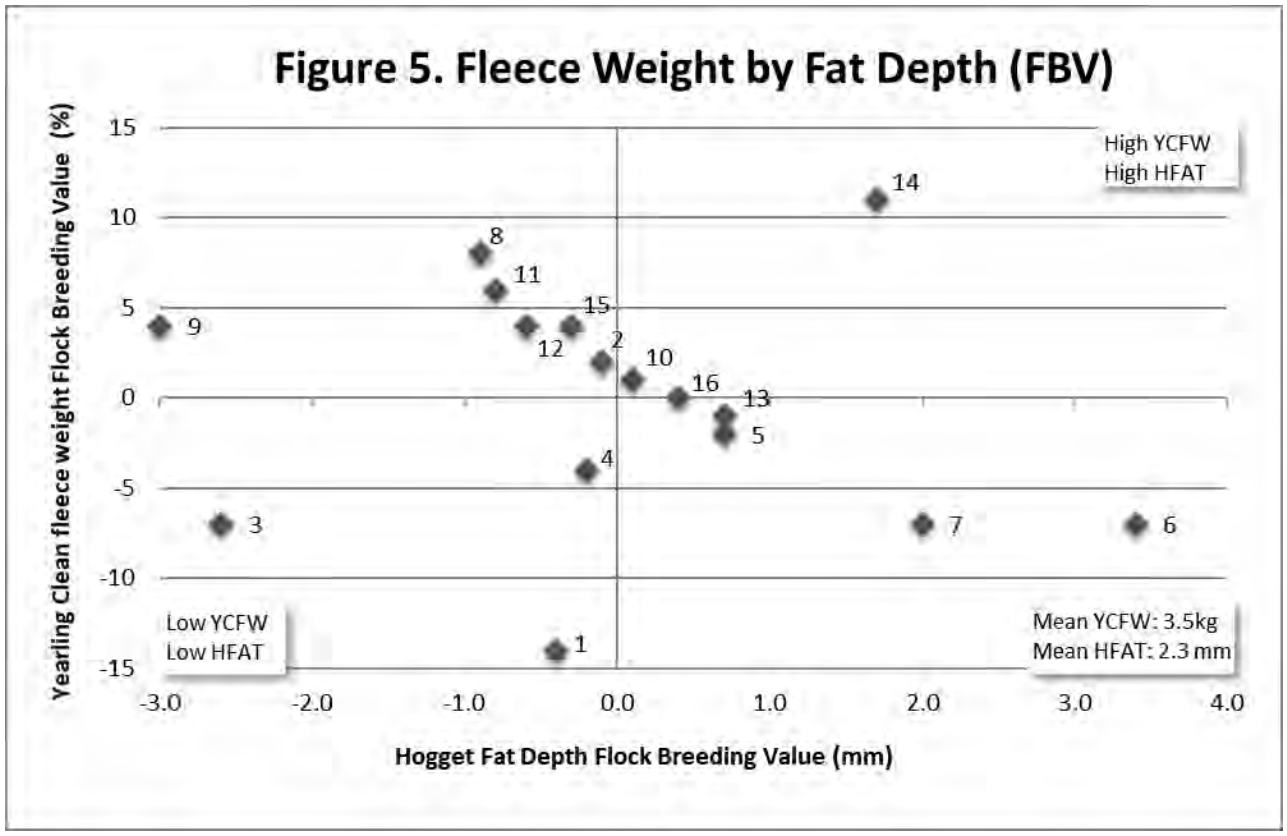


Figure 5. Yearling Fleece weight by fat depth (FBVs) – describes the performance for clean fleece weight on the side axis and fat depth on the bottom axis. Sires that are above average for yearling clean fleece weight and above average for hogget fat depth are located in the top right-hand quadrant.

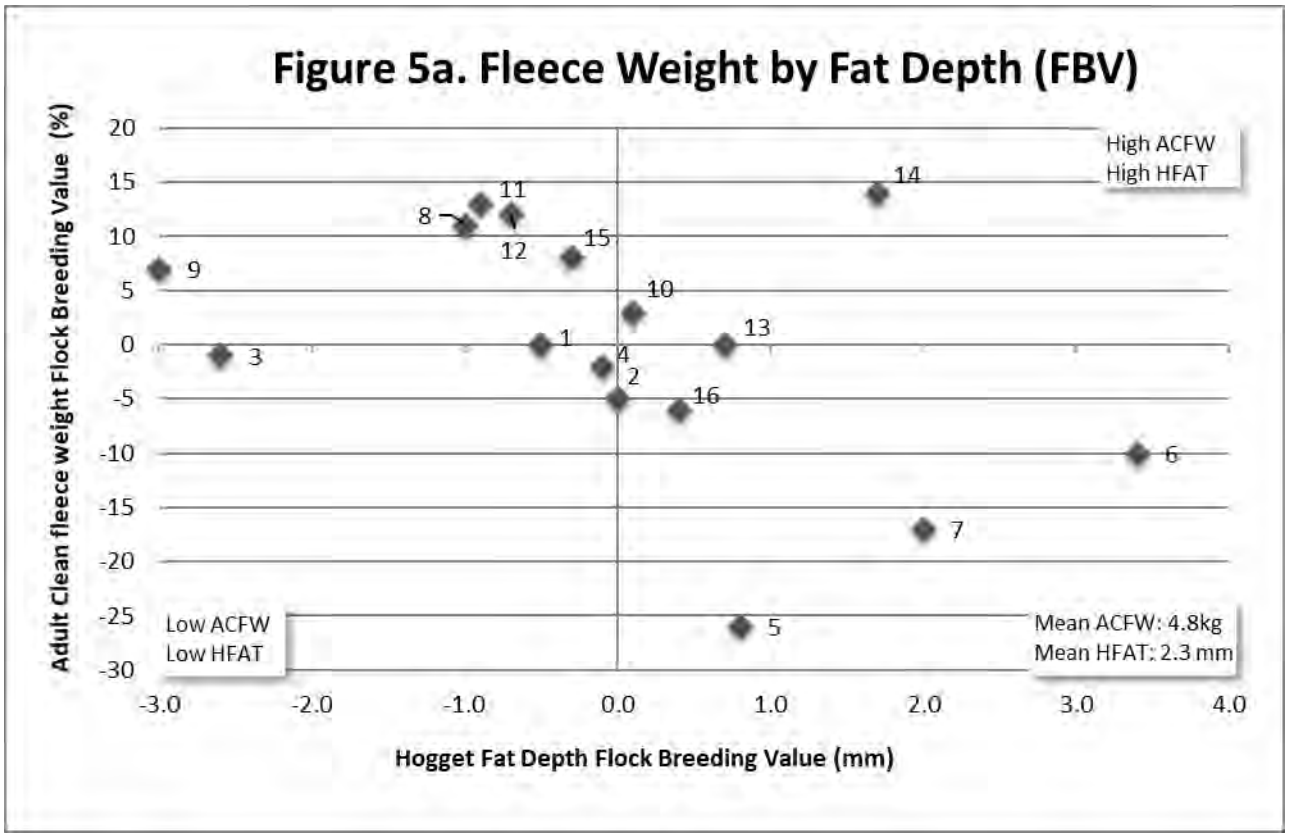


Figure 5. Adult Fleece weight by fat depth (FBVs) – describes the performance for clean fleece weight on the side axis and fat depth on the bottom axis. Sires that are above average for adult clean fleece weight and above average for hogget fat depth are located in the top right-hand quadrant.

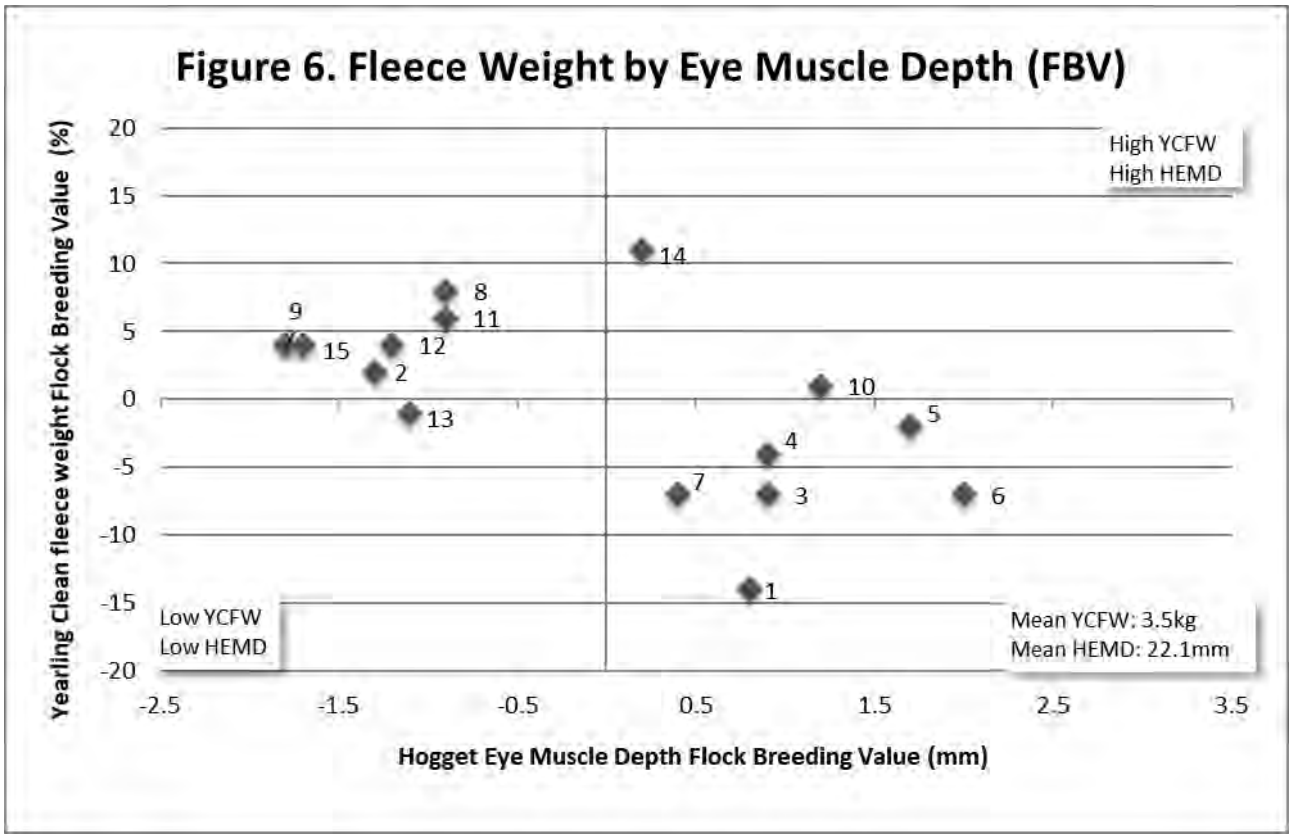


Figure 6. Yearling Fleece weight by eye muscle depth (FBVs) – describes performance for clean fleece weight on the side axis and eye muscle depth on the bottom axis. Sires that are above average for yearling clean fleece weight and above average for hogget eye muscle depth are located in the top right-hand quadrant.

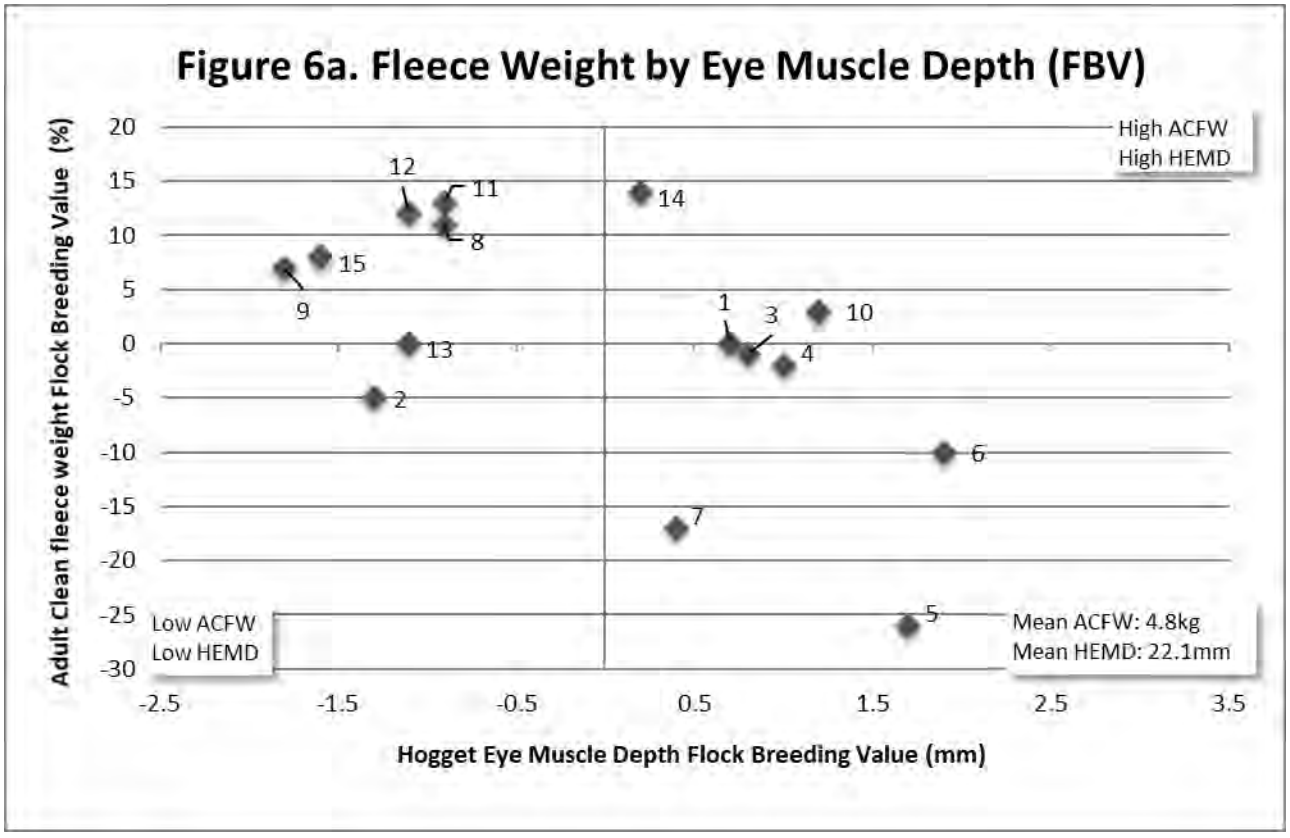


Figure 6. Adult Fleece weight by eye muscle depth (FBVs) – describes performance for clean fleece weight on the side axis and eye muscle depth on the bottom axis. Sires that are above average for adult clean fleece weight and above average for hogget eye muscle depth are located in the top right-hand quadrant.

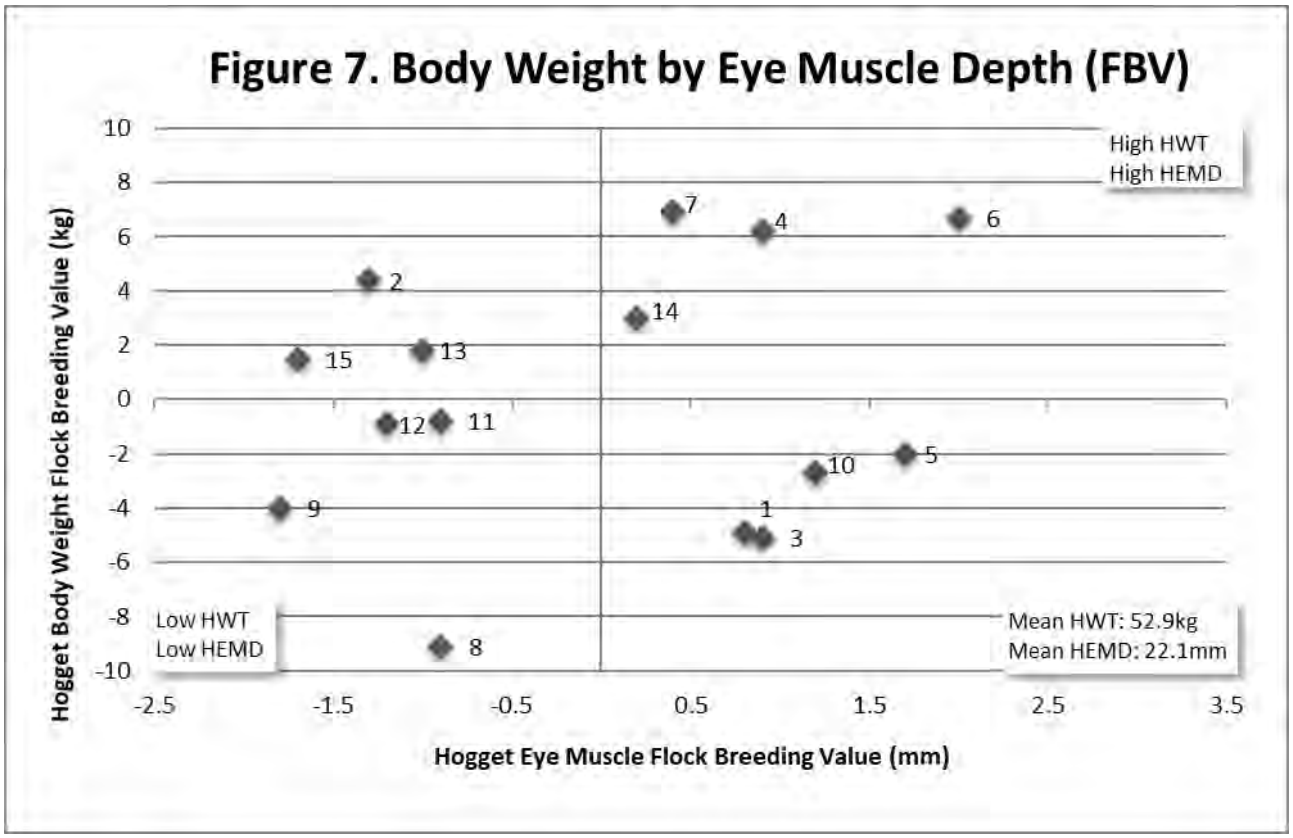


Figure 7. Hogget Body weight by eye muscle depth (FBV's) – describes performance for body weight on the side axis and eye muscle depth on the bottom axis. Sire that are above average for hogget body weight and above average for hogget eye muscle depth are located in the top right-hand quadrant.

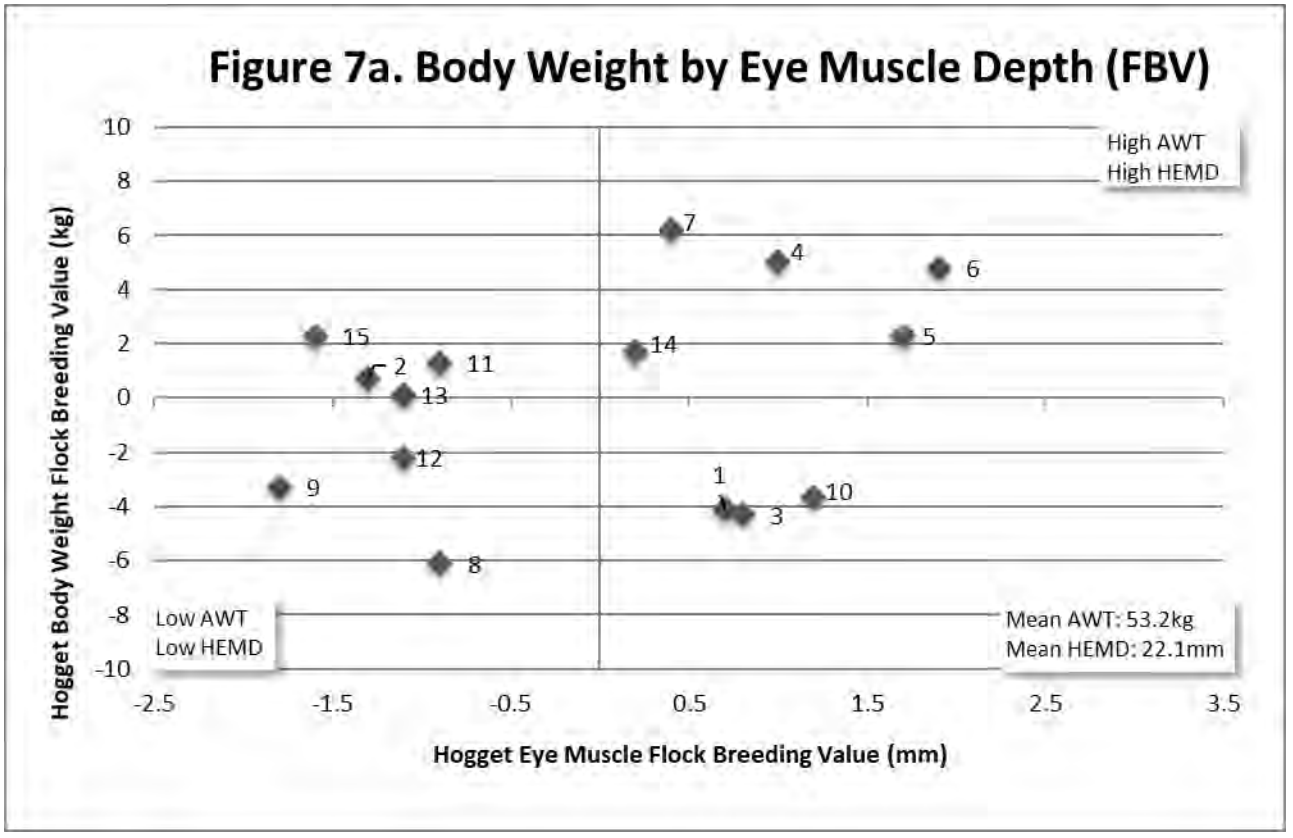


Figure 7. Adult Body weight by eye muscle depth (FBV's) – describes performance for body weight on the side axis and eye muscle depth on the bottom axis. Sire that are above average for adult body weight and above average for hogget eye muscle depth are located in the top right-hand quadrant.

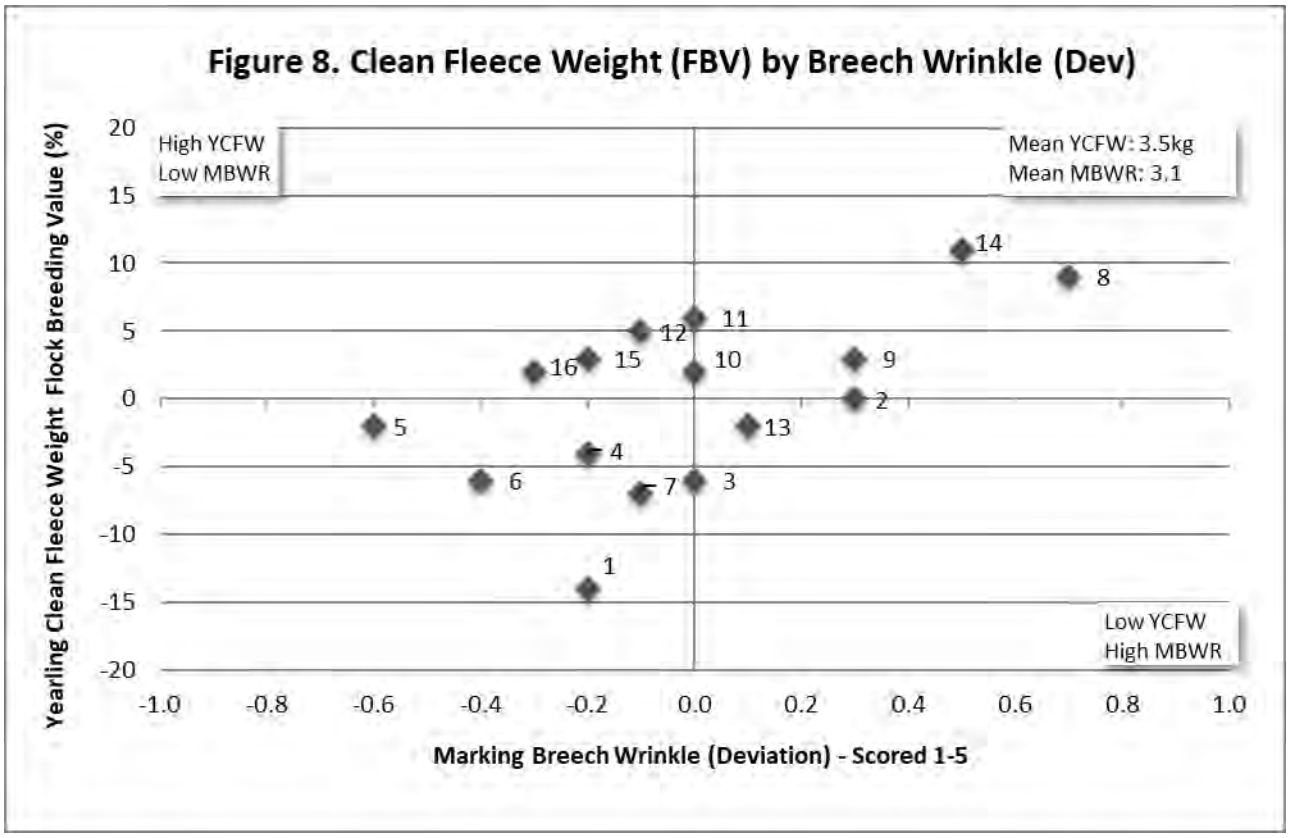


Figure 8. Yearling Clean Fleece weight (FBV) by Marking Breech Wrinkle Score (deviation) – describes performance for clean fleece weight on the side axis and marking breech wrinkle score on the bottom axis. Sire that are above average for adult clean fleece weight and below average for marking breech wrinkle score are located in the top left-hand quadrant.

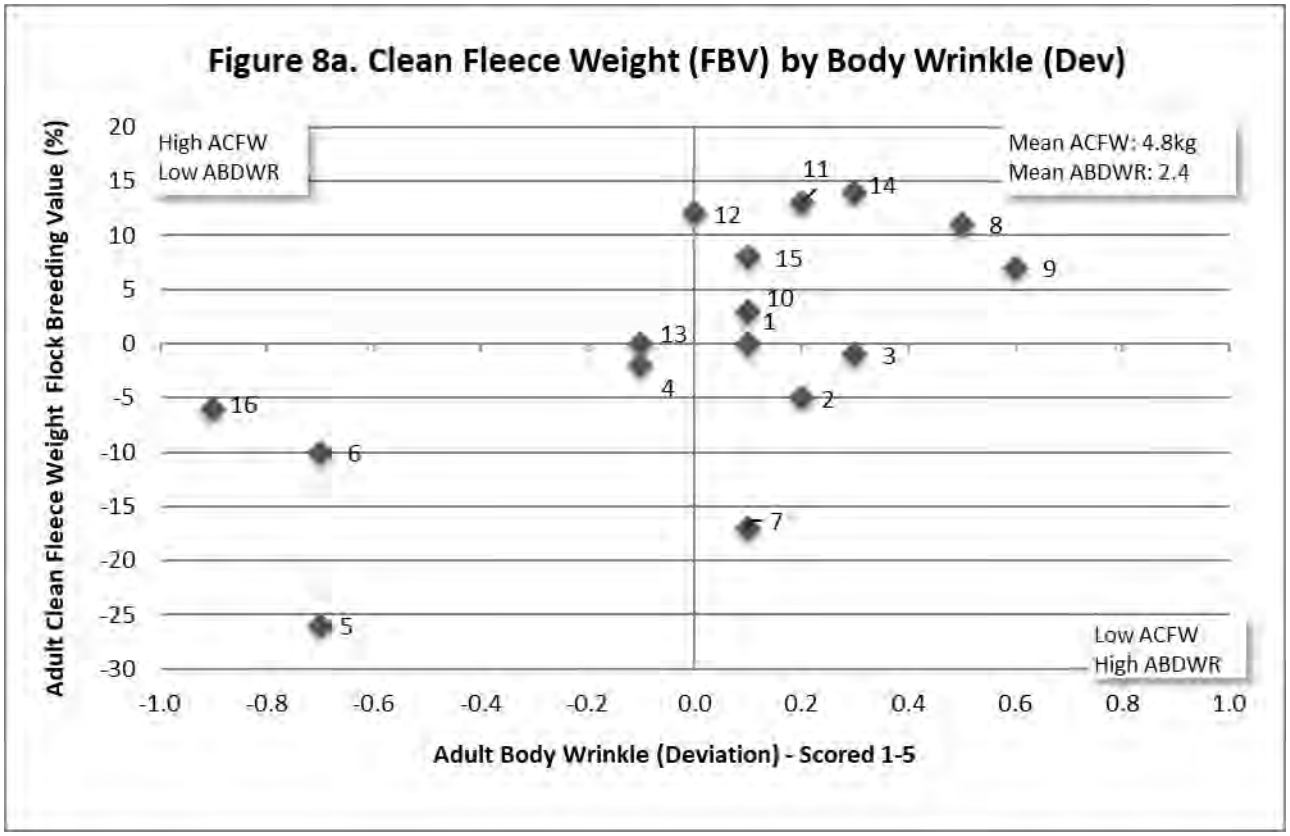


Figure 8. Adult Clean Fleece weight (FBV) by Adult Body Wrinkle Score (deviation) – describes performance for clean fleece weight on the side axis and body wrinkle score on the bottom axis. Sire that are above average for adult clean fleece weight and below average for adult body wrinkle score are located in the top left-hand quadrant.

View at Ravenswood, Yass (May 2018)

2017 Drop Dams prior to AI (Feb 2017)

2017 drop at weaning (Nov 2017)

2017 drop prior to first assessment (May 2018)

2017 drop fleece weighing (June 2019)

2017 drop fleece (June 2019)

2017 drop wether progeny (June 2019)

Understanding the results – measured trait performance

Measured trait performance and Classer's Grade – Tables 3 and 4

Sire code:	Allows a sire to be located on the summary graphs and some tables.	
Sire name:	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.	
Horn/Poll:	The Poll test has been developed by the Sheep CRC using measurements and DNA tests on animals in the Information Nucleus Flocks. The test is based on two genetic markers that are very close to the Poll gene. PP = Polled; PH = Half Poll; HH = Horned; blank = test failed	
Flock Breeding Values:	Flock Breeding Values (FBVs) are Estimated Breeding Values (EBVs) calculated by Sheep Genetics for the sire's 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 sires 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.	
Traits: Abbreviation, trait and the (units reported)	GFW: Greasy fleece weight (percentage). CFW: Clean fleece weight (percentage). FD: Average fibre diameter (micron). WT: Body weight (kilograms). FDCV: Fibre diameter coefficient of variation (percentage). SL: Staple length (mm) at the mid-side.	SS: Staple strength (N/ktex) at the mid-side. EMD: Eye muscle depth (mm) at the 'C' site. FAT: Fat depth (mm) at the 'C' site. CURV: Fibre curvature (degrees) WEC: Worm egg count (% deviation in worm burden of sire's progeny)
Age at assessment:	M = Marking - 42 to 70 days (6 to 10 weeks of age) W = Weaning - 42 to 120 days (6 weeks to 4 months of age) E = Early Post Weaning - 120 to 210 days (4 to 7 months of age) P = Post Weaning - 210 to 300 days (7 to 10 months of age) Y = Yearling - 300 to 400 days (10 to 13 months of age) H = Hogget - 400 to 540 days (13 to 18 months of age) A = Adult - 540 days or older (18 months and older)	
Classer's 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.	

Table 3. **Major measured traits and classer's grades**

Ram Code	Breeders flock, Ram number	No. of Progeny	Flock Breeding Values (deviations)											Classer's Grade[1]			
			GFW %		CFW %		FD um		WT *kg*					Tops % (dev)		Culls % (dev)	
			Y[2]	A	Y	A	Y	A	W	P	Y	H	A	Y	A	Y	A
1	Adina, 110011	24	-8.0	1.0	-8.0	0.0	-1.0	-1.3	-0.9	-1.9	-3.7	-5.3	-4.1	-2	2	2	16
2	Bogo, 500300	21	3.0	-6.0	5.0	-5.0	-0.5	-0.8	-0.2	-0.1	1.8	3.7	0.7	5	10	-4	-11
3	Boudjah, 150516	30	-5.0	-1.0	-9.0	-1.0	0.0	-0.5	1.0	0.4	-3.5	-4.9	-4.3	1	-1	4	5
4*	Bundilla Poll, 140055	40	-3.0	-5.0	2.0	-2.0	0.2	0.7	2.1	3.2	5.2	5.8	5.0	0	22	-9	-21
5	Centre Plus Poll, 307603	39	-9.0	-20.0	-14.0	-26.0	0.0	0.5	0.3	0.6	-1.4	-0.9	2.3	-12	-6	9	-4
6*	Centre Plus Poll, 407185	31	-5.0	-8.0	-8.0	-10.0	-0.3	-0.8	0.2	1.1	4.4	6.5	4.8	9	-17	-9	-6
7	Centre Plus WA Poll, 338205	40	-1.0	-9.0	-9.0	-17.0	-0.8	-0.9	2.2	4.1	5.9	6.9	6.2	-3	0	-2	-4
8	GRASS, 142000 (R5)	34	7.0	6.0	12.0	11.0	1.5	2.0	-2.5	-4.7	-7.0	-8.5	-6.1	-21	-4	1	5
9	Greendale, 150018	37	5.0	8.0	4.0	7.0	-1.1	-1.1	-1.5	-2.7	-4.0	-3.9	-3.3	0	-11	7	-5
10*	Hazeldean, 11.3542 (Hugh)	36	2.0	4.0	-1.0	3.0	-0.7	-0.3	-0.9	-1.0	-1.8	-2.9	-3.7	4	-17	3	1
11	Hazeldean, 12.4030	28	3.0	11.0	4.0	13.0	0.6	0.6	-0.7	0.2	0.6	-0.6	1.3	16	19	2	-10
12	Hazeldean, 13.4936	35	5.0	12.0	6.0	12.0	-0.4	-0.4	1.0	1.8	0.2	-1.4	-2.2	16	-7	-6	16
13	Nerstane, 150076	46	0.0	-4.0	4.0	0.0	0.9	0.6	-1.9	-2.4	0.2	1.6	0.1	-9	4	7	-2
14	Pooginook, 125188	35	9.0	12.0	11.0	14.0	1.6	2.3	1.9	0.4	0.6	3.0	1.7	1	18	7	1
15	Rocklyn, 120182	15	2.0	8.0	3.0	8.0	0.7	0.9	0.2	-0.3	0.5	1.3	2.3	12	-5	-18	-12
16	Woodpark Poll, 150106	11	-4.0	-8.0	-1.0	-6.0	-0.8	-1.4	-0.3	1.3	1.9	-0.6	-0.8	-16	-6	8	31

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

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

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

n/a If accuracy thresholds are not met results are not reported. This is usually due to low progeny numbers, in this evaluation it is due to low AI conception.

Information on how to use the results in the table above can be found on page 26.

Table 4. **Other measured traits**

Ram code	Breeders flock, Ram number	No. of prog.	Flock Breeding Values (deviations)										
			FDCV %		SL mm		SS *N/ktex*		Curv deg/mm		Fat mm	EMD mm	WEC%
			Y[2]	A	Y^	A	Y^	A	Y^	A	H	H	H
1	Adina, 110011	24	0.1	0.9	-5.0	-4.8	-5.5	-10.6	6.0	4.0	-0.5	0.7	29.0
2	Bogo, 500300	21	-1.4	-1.7	1.7	-5.8	1.2	3.3	0.0	3.4	0.0	-1.3	4.0
3	Boudjah, 150516	30	1.6	1.9	-13.4	-9.9	0.7	3.0	0.5	-2.1	-2.6	0.8	-32.0
4*	Bundilla Poll, 140055	40	-0.4	-0.7	-3.9	2.4	-4.4	-5.3	6.0	4.4	-0.1	1.0	35.0
5	Centre Plus Poll, 307603	39	-0.7	-1.5	5.0	7.8	2.6	4.1	1.2	2.1	0.8	1.7	-17.0
6*	Centre Plus Poll, 407185	31	-1.6	-0.6	4.1	0.3	-4.0	-8.2	0.2	1.4	3.4	1.9	-17.0
7	Centre Plus WA Poll, 338205	40	-1.1	-1.0	1.7	-0.9	-2.5	-4.2	7.7	9.7	2.0	0.4	26.0
8	GRASS, 142000 (R5)	34	0.9	0.1	-0.1	-1.9	4.7	7.4	-5.3	-3.2	-1.0	-0.9	-30.0
9	Greendale, 150018	37	-1.3	-1.4	-0.5	-1.2	5.2	6.1	3.3	3.4	-3.0	-1.8	8.0
10*	Hazeldean, 11.3542 (Hugh)	36	0.5	0.7	-3.5	-2.5	1.8	-2.4	0.5	-1.2	0.1	1.2	29.0
11	Hazeldean, 12.4030	28	-0.2	0.1	12.0	10.4	2.2	2.7	-8.4	-8.9	-0.9	-0.9	2.0
12	Hazeldean, 13.4936	35	0.3	0.7	1.1	4.6	-2.2	-2.3	-2.2	-2.9	-0.7	-1.1	33.0
13	Nerstane, 150076	46	-0.1	0.4	-2.8	-5.3	1.5	0.5	0.8	0.1	0.7	-1.1	-3.0
14	Pooginook, 125188	35	1.7	0.5	1.1	4.9	4.7	11.1	-6.2	-6.8	1.7	0.2	28.0
15	Rocklyn, 120182	15	0.8	0.7	2.6	2.6	3.4	2.8	-5.9	-4.9	-0.3	-1.6	-38.0
16	Woodpark Poll, 150106	11	0.8	1.0	0.0	-0.7	-9.3	-8.1	1.7	1.4	0.4	n/a	-21.0

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

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

n/a If accuracy thresholds are not met results are not reported. This is usually due to low progeny numbers, in this evaluation it is due to low AI conception.

Information on how to use the results in the table above can be found on page 26.

Understanding the results – scored performance traits

Visual trait performance – Tables 5a, 5b, 5c and 5d – pages 30 to 34. The following description of trait scores is a summary of the detailed word and diagrammatical description of these scores in the Visual Sheep Scores booklet (free on application to AWI or downloadable 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 <5%) to **5** (80 to 100% of staple).
■ Staple weathering:	The deterioration due to light and water from **1** (least, <5% of staple) to **5** (most, 30 to 50%) reflect the depth and degree of deterioration.
■ Staple structure:	The size and diameter of each staple from **1** (<5mm) to **5** (30 to 50 mm)
■ 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 good) to **5** (very poor).
■ Body wrinkle:	The degree of body wrinkle from **1** (no wrinkle) to **5** (extensive wrinkle).
■ Jaw:	Under- or over-shot lower jaw (and teeth) relative to the top jaw. Three scores: **1** (very well aligned), **3** (marginally under or over) and **5** (heavily under or over).
■ Back/Shoulder:	Conformation of the back and shoulder from **1** (very good) to **5** (very poor).
■ Fibre pigmentation:	The percentage of dark fibres on any part of the sheep from **1** (0 pigmented fibres at any site) to **5** (76 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** (76 to 100% pigmented area on one or more bare skin sites, **and/or** 76 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.
■ 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 region from **1** (large) to **5** (no bare).
■ Breech wrinkle	Degree of wrinkle at the tail set and kind 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 traits**

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

	Wool Quality (Adult)																							
Ram	**Fleece Rot**						**Wool Colour**						**Wool Character**						**Dust Penetration**					
code	**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	0.2	26	35	9	4	26	0.1	22	35	17	17	9	-0.4	39	39	13	9	0	-0.3	13	57	26	4	0
2	-0.2	47	27	0	0	26	-0.9	63	16	16	5	0	0.4	4	32	53	11	0	0.2	6	37	47	5	5
3	0.5	39	15	0	0	46	-0.1	21	32	29	18	0	-0.1	36	21	32	11	0	-0.8	32	64	4	0	0
4*	-0.6	50	36	0	0	14	-0.1	25	17	50	8	0	0.0	31	33	17	17	2	0.3	6	36	33	25	0
5	-0.5	51	31	0	0	18	0.4	20	14	34	23	9	-0.3	46	17	34	3	0	0.2	9	40	31	14	6
6*	-0.2	34	41	4	0	21	0.4	17	10	48	17	8	-0.9	76	10	10	4	0	0.0	10	45	31	14	0
7	-0.4	51	26	3	0	20	0.3	11	29	37	17	6	0.0	31	23	34	12	0	0.5	3	37	31	20	9
8	0.5	22	34	0	10	34	0.0	22	22	44	12	0	1.2	0	9	41	44	6	-0.4	19	56	22	3	0
9	0.3	33	28	0	0	39	-0.7	52	24	21	3	0	0.1	24	27	39	10	0	0.1	3	52	33	12	0
10*	0.1	24	47	0	3	26	0.3	8	21	53	18	0	0.1	29	18	44	6	3	-0.3	3	76	21	0	0
11	-0.9	79	9	0	0	12	-0.2	33	21	29	12	5	0.1	29	17	46	4	4	0.0	5	58	25	12	0
12	0.7	27	21	4	3	45	0.4	7	30	36	21	6	-0.3	31	39	30	0	0	0.0	6	52	30	12	0
13	-0.8	60	28	0	0	12	-0.4	32	25	40	3	0	0.4	18	12	55	12	3	0.5	2	30	38	28	2
14	0.6	25	25	6	0	44	0.5	12	19	28	38	3	0.2	19	34	31	12	4	-0.2	3	75	16	6	0
15	0.5	16	46	0	0	38	-0.5	31	38	31	0	0	0.5	15	8	62	15	0	-0.2	8	69	8	15	0
16	*Visual traits not reported for sire due to low progeny numbers*																							
Avg.	**2.5**	**38**	**30**	**2**	**1**	**29**	**2.5**	**24**	**24**	**35**	**15**	**2**	**2.3**	**32**	**22**	**34**	**10**	**2**	**2.5**	**8**	**53**	**26**	**12**	**1**

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

Information on how to use the results in the table above can be found on page 29.

Table 5b. **Visual trait assessment – wool quality and pigmentation traits**

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. 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. For the majority of breeder's objectives, a negative deviation would be considered favourable and the larger the deviation the better. Four pigmentation traits are reported as described on page 20. These are Fibre pigmentation, Non-fibre pigmentation, Recessive "black" and Random "spot". 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 scored 5 are reported for recessive black and random spot.

	Wool Quality (Adult)												**Pigmentation (Marking)**											
Ram	**Staple Weathering**						**Staple Structure**						**Fibre pigmentation**						**Non-fibre pigmentation**						**Black**	**Spot**
code	**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	Staple Weathering was not scored at Adult Stage; refer to Dust Penetration Score						-0.3	39	61	0	0	0	-0.2	92	8	0	0	0	0	58	38	4	0	0	0	0
2							0.0	11	89	0	0	0	0.0	87	9	0	0	4	0	52	30	9	9	0	0	0
3							0.0	14	82	4	0	0	0.2	63	23	10	4	0	0	43	37	17	3	0	0	0
4*							0.2	9	72	19	0	0	0.2	71	17	5	2	5	0	29	37	24	5	5	0	0
5							-0.1	23	71	6	0	0	0.0	80	15	5	0	0	0	35	30	18	15	2	0	0
6*							-0.3	45	55	0	0	0	0.0	80	14	6	0	0	0	29	51	6	14	0	0	0
7							-0.2	29	71	0	0	0	0.3	60	28	10	0	2	1	15	28	32	10	15	0	2
8							0.2	3	81	16	0	0	-0.1	84	16	0	0	0	0	35	43	16	6	0	0	0
9							-0.1	27	70	3	0	0	0.0	83	12	3	0	2	-1	73	27	0	0	0	0	0
10*							-0.1	18	82	0	0	0	-0.2	95	5	0	0	0	-1	79	15	3	3	0	0	0
11							0.4	9	58	33	0	0	0.1	70	23	0	7	0	0	50	50	0	0	0	0	0
12							0.0	18	79	3	0	0	0.1	74	18	5	3	0	0	39	34	18	5	4	0	3
13							0.1	8	88	4	0	0	0.0	80	15	3	0	2	0	52	37	11	0	0	0	0
14							0.2	16	62	22	0	0	-0.2	94	6	0	0	0	-1	78	17	5	0	0	0	0
15							0.1	23	54	23	0	0	0.2	65	29	0	6	0	0	41	53	6	0	0	0	0
16							*Visual traits not reported for sire due to low progeny numbers*																			
Avg.							**1.9**	**21**	**70**	**9**	**0**	**0**	**1.3**	**79.0**	**16.0**	**3.0**	**1.0**	**1.0**	**1.8**	**48.0**	**35.0**	**11.0**	**4.0**	**2.0**		

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

Information on how to use the results in the table above can be found on page 29.

Table 5c. **Visual trait assessments – conformation traits**

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 favorable and the larger the deviation the better. Face cover is the possible exceptions when for many breeders the optimum score is in the middle of the range.

Ram	Conformation (Adult)																											
	Jaw						Legs and Feet						Shoulder and Back						Face Cover						Body Wrinkle					
code	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	0.0	100	0	0	0	0	0.2	70	9	17	4	0	-0.1	74	0	26	0	0	0.0	0	4	96	0	0	0.1	0	57	39	0	4
2	0.0	100	0	0	0	0	-0.2	84	16	0	0	0	0.1	68	0	26	0	6	0.1	0	0	95	5	0	0.2	0	47	47	6	0
3	0.0	100	0	0	0	0	-0.2	89	7	4	0	0	0.1	68	0	25	0	7	0.1	0	7	89	4	0	0.3	11	25	43	21	0
4*	0.0	100	0	0	0	0	-0.3	94	6	0	0	0	0.0	71	0	23	0	6	-0.1	0	22	78	0	0	-0.1	9	51	34	6	0
5	0.0	100	0	0	0	0	-0.1	86	6	6	2	0	-0.3	86	0	11	0	3	-0.1	0	23	77	0	0	-0.7	37	54	9	0	0
6*	0.0	100	0	0	0	0	0.0	79	10	7	0	4	-0.5	93	0	7	0	0	0.0	0	10	86	4	0	-0.7	34	62	4	0	0
7	0.0	100	0	0	0	0	0.3	69	6	20	2	3	-0.1	79	0	15	0	6	-0.4	0	46	54	0	0	0.1	9	44	38	6	3
8	0.0	100	0	0	0	0	-0.1	84	9	7	0	0	0.0	72	0	22	0	6	-0.1	0	16	84	0	0	0.5	0	31	47	19	3
9	0.0	100	0	0	0	0	-0.2	85	12	3	0	0	0.2	68	0	24	0	8	0.1	0	3	97	0	0	0.6	0	32	38	26	4
10*	0.0	100	0	0	0	0	-0.1	76	18	6	0	0	0.1	70	0	21	0	9	0.1	0	0	97	3	0	0.1	0	48	45	7	0
11	0.0	100	0	0	0	0	0.1	71	17	12	0	0	-0.1	75	0	21	0	4	0.0	0	12	88	0	0	0.2	4	46	33	17	0
12	0.0	100	0	0	0	0	-0.1	85	9	3	3	0	0.5	55	0	33	0	12	0.1	0	3	97	0	0	0.0	15	48	24	7	6
13	0.0	100	0	0	0	0	-0.1	78	18	4	0	0	0.1	72	0	18	0	10	0.1	0	0	100	0	0	-0.1	10	55	28	7	0
14	0.0	100	0	0	0	0	-0.1	84	7	9	0	0	0.1	72	0	19	0	9	0.0	0	12	84	4	0	0.3	16	16	50	16	2
15	0.0	100	0	0	0	0	-0.1	85	7	8	0	0	0.0	69	0	31	0	0	0.1	0	7	85	8	0	0.1	0	54	38	8	0
16	*Visual traits not reported for sire due to low progeny numbers*																													
Avg.	**1.0**	**100**	**0**	**0**	**0**	**0**	**1.4**	**80**	**10**	**8**	**2**	**0**	**1.7**	**73**	**0**	**22**	**0**	**5**	**2.9**	**0**	**10**	**88**	**2**	**0**	**2.4**	**12**	**46**	**32**	**9**	**1**

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

Information on how to use the results in the table above can be found on page 29.

Table 5d. **Visual trait assessments – breech traits**

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. Breech scores were recorded at lamb marking.

Ram Code	Breech																																	
	Marking Breech Cover						Marking Breech Wrinkle						Adult Dag						Adult Urine						Hogget Dag						Hogget Urine					
	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	Dev	1	2	3	4	5
1	0.3	0	21	38	29	12	-0.2	12	12	46	25	5	0.0	100	0	0	0	0	0.1	55	45	0	0	0	0.1	50	25	8	12	5	-0.3	55	45	0	0	0
2	-0.1	5	22	43	30	0	0.3	0	17	35	39	9	0.0	100	0	0	0	0	-0.2	82	18	0	0	0	0.0	57	19	10	14	0	0.2	23	62	15	0	0
3	0.4	4	20	20	43	13	0.0	0	23	47	23	7	0.0	96	4	0	0	0	-0.2	82	18	0	0	0	0.6	38	21	14	17	10	0.2	16	67	17	0	0
4*	-0.4	12	34	37	7	10	-0.2	5	27	41	24	3	0.0	97	0	3	0	0	0.0	71	19	10	0	0	-0.3	63	21	11	2	3	-0.1	43	43	14	0	0
5	-0.2	10	20	45	22	3	-0.6	10	38	42	8	2	0.0	100	0	0	0	0	-0.3	92	8	0	0	0	-0.1	61	18	11	2	8	0.1	43	28	29	0	0
6*	0.1	6	11	51	23	9	-0.4	9	26	51	11	3	0.0	100	0	0	0	0	0.0	62	38	0	0	0	-0.7	90	6	4	0	0	0.1	35	47	18	0	0
7	-0.4	18	28	28	22	4	-0.1	3	30	30	35	2	0.0	97	0	3	0	0	-0.1	78	22	0	0	0	0.0	59	15	8	18	0	0.1	32	50	18	0	0
8	-0.4	8	30	49	11	2	0.7	0	3	30	51	16	0.0	97	3	0	0	0	0.3	53	33	7	7	0	0.0	53	25	6	16	0	0.2	20	67	13	0	0
9	0.2	2	22	34	27	15	0.3	2	15	39	24	20	0.0	100	0	0	0	0	0.1	71	18	5	6	0	0.1	50	16	17	17	0	-0.1	42	47	11	0	0
10*	0.3	5	10	49	18	18	0.0	2	26	36	26	10	0.0	97	0	3	0	0	0.0	68	26	6	0	0	-0.1	56	14	25	5	0	-0.2	50	45	5	0	0
11	-0.3	3	33	47	17	0	0.0	0	20	53	17	10	0.0	92	8	0	0	0	0.2	58	25	17	0	0	0.0	56	19	19	0	6	0.3	31	38	25	6	0
12	0.2	3	21	39	21	16	-0.1	6	24	39	26	5	0.1	91	3	3	3	0	-0.1	73	27	0	0	0	-0.1	66	6	17	9	2	-0.2	53	41	6	0	0
13	0.2	5	17	37	30	11	0.1	4	24	26	39	7	0.0	98	2	0	0	0	0.0	68	32	0	0	0	0.0	59	13	13	13	2	-0.1	50	29	21	0	0
14	0.1	6	22	28	36	8	0.5	0	14	28	36	22	0.1	94	3	3	0	0	-0.3	92	8	0	0	0	0.6	41	15	15	11	18	-0.1	36	57	7	0	0
15	0.0	5	24	41	18	12	-0.2	0	29	59	6	6	0.0	100	0	0	0	0	0.1	57	43	0	0	0	0.4	57	14	0	8	21	0.1	25	62	13	0	0
16	*Visual traits not reported for sire due to low progeny numbers*																																			
Avg.	**3.1**	**6**	**23**	**38**	**23**	**10**	**3.1**	**4**	**22**	**40**	**26**	**8**	**1.0**	**97**	**2**	**1**	**0**	**0**	**1.3**	**70**	**27**	**3**	**0**	**0**	**1.9**	**58**	**16**	**12**	**9**	**5**	**1.8**	**38**	**47**	**15**	**0**	**0**

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

Information on how to use the results in the table above can be found on page 29.

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 CTSE 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 CTSE sites and across all evaluations at these sites. Link sires are therefore a vital component of the Central Test 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 and New Zealand.

Calculation – combined measured traits and combined visual trait performance

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

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

Example

Sires 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

This sire evaluation site is run

under the auspices of the

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