MerinoLink Limited Standard Sire Evaluation

Within Flock Analysis
Site Report

> # 2019 Drop
> ## Post Weaning Assessments
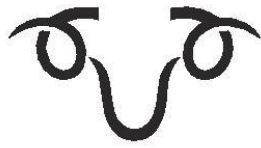> ## Location – Ravenswood, Yass

Conducted by

under the auspices of

The Australian Merino Sire Evaluation Association

20th May 2020

MerinoLink Sire Evaluation Sponsors and Supporters – 2019 drop

Bogo Merinos
Performance Genetics

Riverina Wool Testers
Wagga Wagga

Sally martin
CONSULTING

Practical Systems
Improving the business of farming

Acknowledgements

Mal Peake, Ravenswood (Cavan Station), Yass
Matt Crozier, Cavan Station, Yass
Will Wragge, Cavan Station, Yass
Joe Walden, Cavan Station, Yass
Paul Jobbins, Cavan Station, Yass
Jason Southwell, Orange
Sally Martin, SMC Pty Ltd, Young
Rachael Gawne, SMC Pty Ltd, Young
Sam Moorfield, SMC Pty Ltd, Young

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visionary passionate about breeding profitable sheep and a strong supporter of
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The Scholarship exists to promote the practical skills associated with the sheep
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2019 Drop – Post Weaning Assessment - MerinoLink Limited Yass Sire Evaluation

The information in this site evaluation report provides a comprehensive assessment of the 2019 drop at the Post Weaning Assessment 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 Post Weaning Assessment was carried out at 8 months of age with 8 months of wool growth.

MerinoLink Limited – Merino Sire Evaluation (MSE) Site

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, sire evaluations on the South West Slopes have been run under MerinoLink Limited since 2014.

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

The 2019 drop is the second 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, Will Wragg and Matt Crozier for hosting the 2017 and 2019 sire evaluations. Your commitment to Merino breeding is greatly appreciated.

The classing for the first visual assessments of the 2019 drop was conducted by Jason Southwell of McMichael and Associates. We would like to fully acknowledge the professional contribution to the visual assessment by Jason. All classing is done randomly and without any knowledge of the progenies sire.

The 15 Merino sires being evaluated includes three link sires funded by Australian Wool Innovation.

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

Sally Martin, Site Manager

Site Committee Contacts

Name	Phone	Role
Sally Martin	0400 782 477	Site Manager; Data Management; Reporting
Alan McGufficke	0429 448 078	Committee member
Bea Litchfield	0427 933 103	Committee member
Craig Wilson	0428 250 982	Committee member
Greg Sheather	0448 103 884	Committee member
Joe Walden	0427 016 427	Peter Westblade Scholarship (2018); Host Property (Yass)
Mal Peake	0408 426 103	Host Property (Yass)
Matt Crozier	0427 486 805	Host Property (Yass)
Michael Field	0427 286 951	Committee member
Richard Keniry	0427 878 541	MerinoLink Chair and AMSEA Representative
Rick Baldwin	0429 833 837	Committee member
Rob Chudleigh	0429 856 259	Host Property (Boorowa)
Sam Moorfield	0448 336 437	Data collection; Sally Martin Consulting Pty Ltd
Will Wragge	0428 396 698	Host Property (Yass)

Sire and Owner Details

Sire code	Breeders flock, Sire number Sire ID #, Breed †	Contact name, address Phone, Fax, Email
1	**Bogo, 170003** 504792-2017-170003, Merino	Malcolm Peake Ravenswood, Boambolo Road, Yass NSW 2582 P: (02) 6227 1223, M: 0408 42 6103, E: info@bogomerinos.com.au
2**	**Bogo, 170018 (Link)** 504792-2017-170018, Merino	Malcolm Peake Ravenswood, Boambolo Road, Yass NSW 2582 P: (02) 6227 1223, M: 0408 42 6103, E: info@bogomerinos.com.au
3	**Bundilla Poll, 171495** 601435-2017-171495, 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
4	**Centre Plus Poll, 507333** 601250-2015-507333, Poll Merino	Robert Mortimer Devondale, Tullamore NSW 2874 P: (02) 6892 8259, M: 0429 92 8292, E: robert@centreplus.com.au
5**	**Hazeldean, 000113 (Link)** 500383-2016-000113, Merino	Jim Litchfield Hazeldean Pty Ltd, Cooma NSW 2630 P: (02) 6453 5555, M: 0417 67 6561, E: admin@hazeldean.com.au
6**	**Hilltop, 160156 (HT156) (Link)** 504483-2016-160156, Merino	Adam Mort 'Tallawangra', 176 Yarrabin Road, Mudgee NSW 2850 P: (02) 6373 3514, M: 0410 68 7595, E: amort2360@gmail.com
7*	**Langdene, 140700 (Link)** 503863-2014-140700, Merino	Garry Cox Langdene, 1127 Dubbo Road, Dunedoo NSW 2844 P: (02) 6375 1972, M: 0427 45 6125, E: garry@langdene.com.au
8*	**Miramoona, 140012 (Link)** 503471-2014-140012, Merino	Kim Barnet Miramoona, Walcha NSW 2354 P: (02) 6777 2885, M: 0429 77 2885, E: barnet@miramoona.com
9*	**Moorundie Poll, NE73 (Link)** 601502-2015-150073, Poll Merino	Peter Wallis PO Box 32, Pinnaroo SA 5304 P: (08) 8576 6141, M: 0428 76 6126, E: peter@glenleaparkmerinos.com.au
10	**One Oak Poll, W17002** 600408-2017-W17002, Poll Merino	Alistair and Natasha Wells One Oak Poll, Liddle Lane, Jerilderie NSW 2716 P: (03) 5886 7117, M: 0427 86 7117
11	**Pooginook Poll, 170364** 601442-2017-170364, Poll Merino	John Sutherland Pooginook , Jerilderie NSW 2716 P: (02) 6954 6145, M: 0428 95 3017, E: pooginook@parawaypastoral.com
12	**Rocklyn, 170184** 501039-2017-170184, Merino	Ralph Diprose Elon, Cowra Rd, Grenfell NSW 2810 P: (02) 6343 6331, M: 0488 43 6332, E: rkdiprose@gmail.com

Sire code	Breeders flock, Sire number Sire ID #, Breed †	Contact name, address Phone, Fax, Email
13	**Tallawong Merinos, 170511** 505011-2017-170511, Merino	Frank Kaveney Murrumville, 2587 Dog Trap Road, Yass NSW 2582 M: 0427 27 5701, E: tallawong.merinos@bigpond.com
14**	**Wattle Dale, 170625 (Link)** 503358-2017-170625, Merino	Dave Vandenberghe PO Box 11, Scaddan WA 6447 P: (08) 9078 6049, M: 0427 78 6049, E: wattledale@vandenberghepartners.com.au
15	**Woodpark Poll, 160058** 601151-2016-160058, 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 all site results can be combined into a single report, e.g., *Merino Superior Sires.*

**   Common sires (in addition to Link Sires) between this MSE 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.

Example 16 digit code: 50 . 4967 . 2009 . 090012
Breed   Flock   Year of drop   On-farm ID

†   Breed of flock in which the sire was born.

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 Matt Crozier, Mal Peake and Will Wragge.
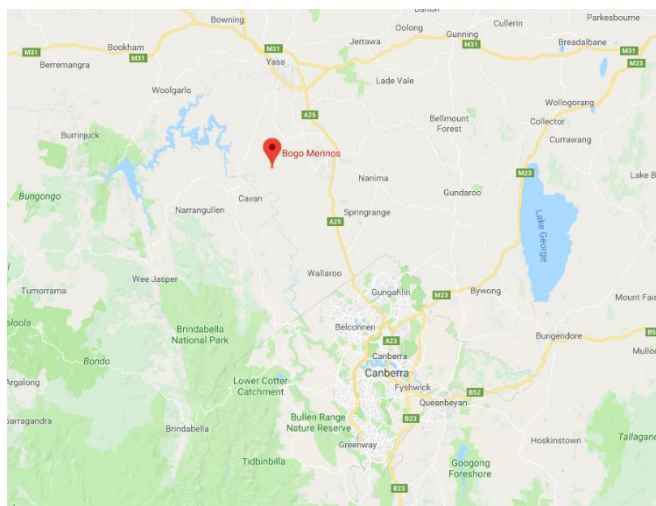
2. Selection and mating
- 900 Bogo blood medium framed ewes with free growing soft handling wools were selected and classed to be free from visual and conformation faults.
- The ewes were mated by Artificial Insemination to the 15 sires.
- The ewes were randomly allocated across age groups to each sire.
- The insemination program was conducted on 28th February and 1st March 2019.
- The insemination program was conducted by David Osborne, APIAM.
- 60 ewes were allocated to each sire entered.

3. Pregnancy and lambing
- Pregnancy scanning took place on 20th May 2019.
- 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) within three weeks of lambing and all mobs were brought together and boxed into one contemporary group of ewes and lambs.
- Lambs were DNA sampled at weaning.

4. **Weaning and seasonal conditions**
   - The lambs were marked on 28th August 2019.
   - The lambs were weaned on 6th November 2019.
   - Overall, the seasonal conditions have been poor over the duration of the sire evaluation involving significant supplementary feeding until recently.

5. **Visual Assessments**
   - The 1st stage visual assessment was carried out by Jason Southwell of McMichael and Associates and Sally Martin, Sally Martin Consulting Pty Ltd.

6. **Rainfall – Cavan Station**

	2017	2018	2019	2020
Jan	14	49	52	10
Feb	57	121	16	83
Mar	71	8	72	106
Apr	31	20	0	109
May	64	21	56	
Jun	3	51	31	
Jul	26	12	15	
Aug	69	31	17	
Sep	15	40	32	
Oct	70	17	10	
Nov	93	83	17	
Dec	108	79	4	
Totals	621	532	322	~308

Foundation Ewes – Late February 2019 – Prior to the AI Program

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Assessment and Management Program

Activity	Date/s	Age (months)	Wool (months)
Allocation to sire	14.02.2019		
Artificial Insemination	28.02.2019 01.03.2019		
Pregnancy scanning	20.05.2019		
Split ewes into lambing groups – put in lambing paddocks	14.07.2019		
Lambing: start – finish	28.07.2019 03.08.2019		
Lambing mobs boxed to one management group	28.08.2019		
Lamb marking; tagging; pigment scores; breech trait scores	28.08.2019	1	
Weaning; DNA sampling	06.11.2019	3.4	
Crutching • Post Weaning (PW)	26.03.2020	8.1	8.1
Fleece sampling assessment • Post Weaning (PW)	31.03.2020	8.2	8.2
Staple length assessment • Post Weaning (PW)	31.03.2020	8.2	8.2
Classer's Grade assessment • Post Weaning (PW)	31.03.2020	8.2	8.2
Pre shearing scoring assessment • Post Weaning (PW)	31.03.2020	8.2	8.2
Assessment shearing • Post Weaning (PW)	01.04.2020	8.3	8.3
Post shearing scoring assessment • Post Weaning (PW)	08.04.2020	8.5	0.2
Body weigh assessment • Weaning (W) • Post Weaning (PW)	06.11.2019 13.02.2020	3.5 6.7	
• Sire's Progeny Group Evenness assessment	Has not been carried out at time of publication.		
Vaccination	Marking, weaning, post shearing		
Drench	As required based on worm egg counts		
External parasites	No treatment has been required		
Field Day or public display	Due to COVID-19 no field day or open day will be planned until March 2021 *(save the date 17th and 18th March 2020)*		

Visual trait assessment

1st Stage Assessment (Post Weaning)

Assessment	1st Stage Assessment
Breech Scores:	Sally Martin
Classer's Grade:	Jason Southwell
Pre-Shearing Trait Scores:	Jason Southwell & Sally Martin
Post Shearing Trait Scores:	Sally Martin & Sam Moorfield

Site Breeding Objective used to assess the Classer's Grades – 1st Stage Assessment

The Breeding Objective used to select the Classer's Tops (14%), Flock (60%) and Cull (26%) 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).

Sire Codes and Pedigrees

Sire code	Breeders flock, Sire number	Sheep Genetics ID	Sire of Sire
1	Bogo, 170003	504792-2017-170003, Merino	601151-2015-150106
2	Bogo, 170018 (Link)	504792-2017-170018, Merino	601489-2013-135034
3	Bundilla Poll, 171495	601435-2017-171495, Poll Merino	601495-2015-150009
4	Centre Plus Poll, 507333	601250-2015-507333, Poll Merino	601250-2013-307083
5	Hazeldean, 000113 (Link)	500383-2016-000113, Merino	601250-2009-907538
6	Hilltop, 160156 (HT156) (Link)	504483-2016-160156, Merino	503534-2014-140961
7*	Langdene, 140700 (Link)	503863-2014-140700, Merino	503863-2008-086138
8*	Miramoona, 140012 (Link)	503471-2014-140012, Merino	609147-2012-120096
9*	Moorundie Poll, NE73 (Link)	601502-2015-150073, Poll Merino	601502-2011-110020
10	One Oak Poll, W17002	600408-2017-W17002, Poll Merino	600408-2014-LB1404
11	Pooginook Poll, 170364	601442-2017-170364, Poll Merino	601815-2015-150088
12	Rocklyn, 170184	501039-2017-170184, Merino	601250-2013-307574
13	Tallawong Merinos, 170511	505011-2017-170511, Merino	500383-2011-003542
14	Wattle Dale, 170625 (Link)	503358-2017-170625, Merino	500383-2011-003542
15	Woodpark Poll, 160058	601151-2016-160058, Poll Merino	601151-2014-140204

2019 Drop
Marking – 28th August 2019

2019 Drop
Weaning – 6th November 2019

Explaining the Different Types of Results Reported

Raw Data » **Adjusted Sire Means** » **Flock Breeding Values.**

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

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

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

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

Flock Breeding Values (FBVs)
These results have been adjusted in the same way as Adjusted Sire Means, then further calculations have also been made to account for the level of heritability of a trait (some are more heritable than others), correlations between traits and the number of progeny a sire has.
FBVs are within site and within drop. As such they do not include data from other sources as is the case with Australian Sheep Breeding Values (ASBVs), which are reported in Merino Superior Sires.

Indexes
A breeding index is the combination of breeding values into a single value that reflects a certain emphasis on those traits.
For more information about each Index see the page in this report titled 'Index Options'.

RAW DATA

↓

ADJUSTED SIRE MEANS

↓

FLOCK BREEDING VALUES

Selection Accuracy Increases ↓
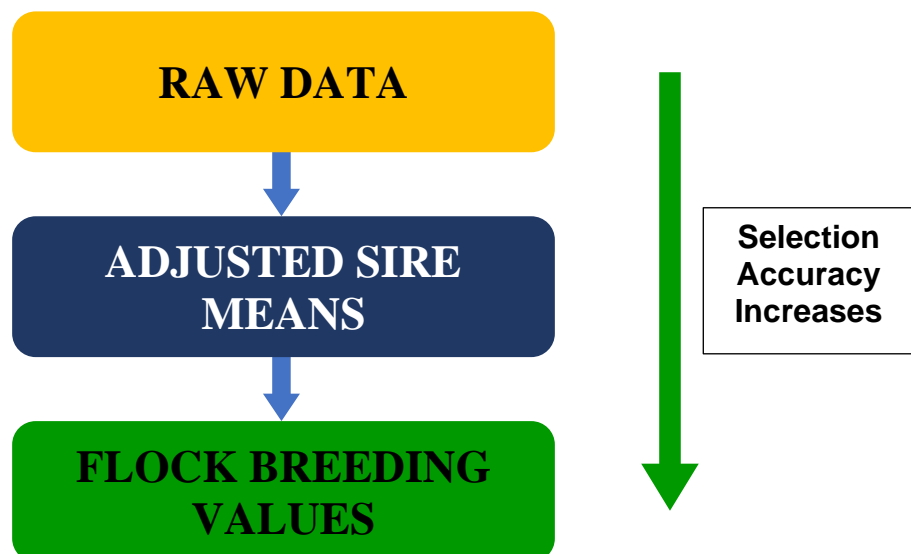
Understanding the Results – Measured Traits and Classer's Visual Grade				
Breeders flock, Sire number:	Identity of the breeder's flock and the sire's number or name.			
Number of progeny:	The number of progeny a sire had at the most recent measured analysis. Average number of progeny is included in Table 1 and 2.			
Adjusted Sire Means:	The average performance of all the progeny of a sire adjusted for all available information on sex, birth type, rear type, age of dam, age of measurement, management group and number of progeny per sire, in order to improve the accuracy. No account is made for trait heritability and genetic correlations between traits that can improve the breeding value accuracy, as is the case in Tables 2, 3 and 4.			
Flock Breeding Values:	Flock Breeding Values (FBVs) are Estimated Breeding Values (EBVs) calculated by Sheep Genetics for the sires evaluated in this report. Only data from this site evaluation is used in the calculation of these FBVs. FBVs describe the relative breeding value (genetic performance) of the sires (in this case based on the performance of their progeny). A sire's progeny will express half of their sire's FBV. FBVs do not necessarily reflect the sire's observed performance, which is a combination of both genetic and environmental influences. FBVs are an estimate of the genetic component of the sheep's performance. The highest performing sires for each trait (trait leaders) are highlighted by shading. Curvature is the possible exception when for many breeders the optimum score is in the middle of the range therefore trait leaders have not been highlighted.			
Traits: Abbreviation, trait and the (units reported)	GFW:	Greasy fleece weight (percentage)	SL:	Staple length (mm) at the mid-side
	CFW:	Clean fleece weight (percentage)	SS:	Staple strength (N/ktex) at the mid-side
	FD:	Average fibre diameter (micron)	EMD:	Eye muscle depth (mm) at the 'C' site
	WT:	Body weight (kilograms).	FAT:	Fat depth (mm) at the 'C' site
	FDCV:	Fibre diameter coefficient of variation (percentage)	WEC:	Worm egg count (% deviation in worm burden of sire's progeny)
	CURV:	Fibre curvature (degrees)		
Age at assessment:	M = Marking	14 to 42 days (2 - 7 weeks)	Y = Yearling	300 to 400 days (10 to 13 months)
	W = Weaning	42 to 120 days (6 weeks to 4 months)	H = Hogget	400 to 540 days (13 to 18 months)
	E = Early Post Weaning	20 to 210 days (4 to 7 months)	A = Adult	540 days or older (18 months and older)
	P = Post Weaning	210 to 300 days (7 to 10 months)		
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 and 2. Page 8 provides more detail on Classer's Visual Grade and the site's Breeding Objective.			

Table 1. Adjusted Sire Means for Measured Traits

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

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

Ram Code	Breeders flock, Ram number	No. of Progeny	GFW kg	CFW kg	FD um	FDCV %	Curv deg/mm	SL mm	SS N/ktex	WT kg		Fat mm	EMD mm
			P^	P	P	P	P	P	P	W	P	Y	Y
1	Bogo, 170003	48	3.0	1.9	15.7	19.4	89.6	62.5	28.0	33.0	39.0		
2	Bogo, 170018	54	3.0	1.9	16.7	17.7	88.2	70.7	30.0	33.5	40.0		
3	Bundilla Poll, 171495	43	3.3	2.1	16.1	18.5	91.8	64.2	23.0	35.5	41.2		
4	Centre Plus Poll, 507333	42	3.1	1.9	16.0	16.8	87.2	72.4	31.3	32.5	40.6		
5	Hazeldean, 000113	46	3.4	2.1	15.3	17.4	89.9	69.6	31.1	33.1	40.3		
6	Hilltop, 160156 (HT156)	60	3.1	2.0	15.8	16.5	92.4	70.7	32.8	33.9	40.6		
7*	Langdene, 140700	50	3.2	1.9	15.8	18.7	93.3	66.1	25.0	33.1	40.0		
8*	Miramoona, 140012	39	3.2	2.1	16.6	17.8	84.4	78.6	33.3	34.3	39.7		
9*	Moorundie Poll, NE73	50	3.4	2.1	15.9	19.2	86.2	71.0	26.8	35.1	39.5		
10	One Oak Poll, W17002	47	3.1	2.0	16.6	17.9	90.0	67.5	27.1	34.2	41.3		
11	Pooginook Poll, 170364	39	3.0	1.9	16.4	18.0	87.3	71.8	28.6	34.0	40.8		
12	Rocklyn, 170184	48	3.5	2.1	16.4	16.6	88.3	76.3	33.7	33.8	41.8		
13	Tallawong Merinos, 170511	39	3.1	2.0	15.5	18.4	88.6	67.6	28.3	33.1	37.2		
14	Wattle Dale, 170625	48	3.4	2.0	15.8	18.3	91.0	71.6	28.6	33.6	39.0		
15	Woodpark Poll, 160058	51	3.2	2.0	15.5	18.8	89.8	66.3	24.4	34.3	40.5		
	Average performance	**47**	**3.2** kg	**2.0** kg	**16.0** um	**18.0** %	**89.2** deg/mm	**69.8** mm	**28.8** N/ktex	**33.8** kg	**40.1** kg	mm	mm

Fat depth had not been measured at the time of writing this report.

Eye muscle depth had not been measured at the time of writing this report.

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

^ 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).

* Progeny No is the total progeny number for each sire at weaning, including both ewes and wethers.
These Adjusted Sire Means were calculated using available data from both the ewe and wether progeny only of the sires.

MERINOSELECT indexes

A guide from Sheep Genetics

Why use a selection index?

Indexes are an important tool to drive genetic improvement in ram breeding programs. Each index combines multiple measured traits, or breeding values, into a single value that reflects a certain production emphasis on these traits. A range of traits are included which are of economic or functional importance. Collectively, these traits make up the "breeding objective" of the index which aims to improve profitability in commercial sheep enterprises.

Indexes are useful because they balance genetic improvement appropriately across a range of traits with the emphasis of each individual trait determined by it's relative importance to a selection approach for a particular style of production system.

> " **Appropriately designed indexes are central to the goal of breeding more profitable sheep.**

However, it is recommended that the performance of individual measured and visually assessed traits also be used in conjunction with indexes.

Choosing the right index

This report includes four indexes based on four commercial production systems, these are outlined in the figure below.

The Sheep Genetics website gives further index descriptions and explains that there are 'base' and 'plus' levels for each index with the latter including the breeding values of additional traits. Sires reported within this document have accurate breeding values for these additional traits and so the plus indexes are reported; DP+, MP+, FP+ and WP+.

Dual Purpose (DP+)	**Merino Production (MP+)**
Income is a balance of wool from breeding ewes and meat production from lambs by Merino and terminal sires.	**Income is a balance of wool and surplus Merino sheep sales with balanced improvement of fleece weight and fibre diameter.**
Fibre Production (FP+)	**Wool Production (WP+)**
Income is mainly from the wool clip with a focus on superior wool quality through improving fibre diameter, CV and staple strength.	**Income is a balance of wool and surplus Merino sheep sales with greater emphasis on increasing fleece weight.**

> " **When selecting on these indexes the long-term responses will vary depending on the traits measured, available pedigree, use of genomics, flock structure and selection emphasis on the index.**

The changes in individual traits from using an index depend on the information you record in your flock. If you want to improve, or even just maintain a trait, you must record it to ensure breeding values are sufficiently accurate for the index to do its job.

For detailed explanations and further information on indexes visit:

www.sheepgenetics.org.au

Sheep Genetics have resources available for both ram breeders and ram buyers.

Table 2. AMSEA Index Values and Classer's Grade

The index values reported are based on measured traits Flock Breeding Value (FBV) performance with varying emphasis on fleece weight, fibre diameter, body weight, staple strength and worm egg count. See 'Index Options' (page 14) for more information on the indexes presented in the table below.

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

Ram code	Breeders flock, Ram number	Sire DNA Horn/ Poll	No of Progeny	AMSEA Indexes values[2]				Classer's Grade[1]	
				Dual Purpose Plus	Merino Production Plus	Fibre Production Plus	Wool Production Plus	Tops % (dev) P^	Culls % (dev) P
1	Bogo, 170003	PH	48	The DP+ index is not reported at this stage due to not meeting the accuracy threshold	93	97	92	-5	9
2	Bogo, 170018	PP	54		82	84	86	0	1
3	Bundilla Poll, 171495	PP	43		96	90	103	-5	14
4	Centre Plus Poll, 507333	PP	42		101	105	96	6	2
5	Hazeldean, 000113	PH	46		125	126	117	3	-9
6	Hilltop, 160156 (HT156)	PH	60		111	114	102	3	4
7*	Langdene, 140700	HH	50		92	93	93	-9	-1
8*	Miramoona, 140012	PH	39		99	97	101	0	-15
9*	Moorundie Poll, NE73	PP	50		102	98	107	3	2
10	One Oak Poll, W17002	PH	47		91	87	96	-10	-2
11	Pooginook Poll, 170364	PP	39		88	88	91	1	-10
12	Rocklyn, 170184	PH	48		119	114	117	3	-9
13	Tallawong Merinos, 170511	PP	39		94	101	90	-8	20
14	Wattle Dale, 170625	PH	48		105	104	105	14	-11
15	Woodpark Poll, 160058	PP	51		102	101	104	5	5
Average performance			47		100	100	100	14	26

* 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%, these grades are from both the ewe and wether progeny.

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

* Progeny No is the total progeny number for each sire at weaning, including both ewes and wethers.

[2] Indexes are calculated using all the available data collected on both the ewe and wether progeny of the sires.

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)
			P^	P	P	W	P	P	P
1	Bogo, 170003	48	-9	-7	-0.6	-1.0	-1.7	-5	9
2	Bogo, 170018	54	-14	-9	1.4	-0.1	0.0	0	1
3	Bundilla Poll, 171495	43	5	5	0.1	1.8	1.7	-5	14
4	Centre Plus Poll, 507333	42	-7	-10	0.0	-1.1	0.6	6	2
5	Hazeldean, 000113	46	11	11	-1.4	-0.8	0.0	3	-9
6	Hilltop, 160156 (HT156)	60	-6	-3	-0.4	0.2	0.8	3	4
7*	Langdene, 140700	50	-3	-7	-0.4	-0.8	-0.3	-9	-1
8*	Miramoona, 140012	39	3	6	1.2	0.4	-0.3	0	-15
9*	Moorundie Poll, NE73	50	12	12	-0.2	1.2	-0.8	3	2
10	One Oak Poll, W17002	47	-6	-2	1.1	0.8	1.8	-10	-2
11	Pooginook Poll, 170364	39	-11	-8	0.8	0.4	1.0	1	-10
12	Rocklyn, 170184	48	15	8	0.7	0.4	2.3	3	-9
13	Tallawong Merinos, 170511	39	-4	-3	-1.0	-1.4	-4.0	-8	20
14	Wattle Dale, 170625	48	13	4	-0.4	-0.5	-1.5	14	-11
15	Woodpark Poll, 160058	51	1	5	-1.0	0.6	0.5	5	5

* Link sire: Sire evaluated to provide links between site evaluations and sites so that 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).

Flock breeding values are calculated using all the available data on both the ewe and wether progeny of the sires.

Table 4. Other Measured Traits

Ram code	Breeders flock, Ram number	No. of prog.	Flock Breeding Values (deviations)						
			FDCV % Y^	SL mm Y^	SS *N/ktex* Y^	Curv deg/mm Y^	Fat mm H	EMD mm H	WEC% Y
1	Bogo, 170003	48	2.3	-11.7	-1.5	0.8			
2	Bogo, 170018	54	-0.5	1.6	2.1	-1.8			
3	Bundilla Poll, 171495	43	0.8	-8.6	-8.9	4.2			
4	Centre Plus Poll, 507333	42	-2.0	4.2	4.1	-3.0	Fat depth had not been collected at the time of the report publication	Eye Muscle depth had not been collected at the time of the report publication	Worm Egg Count had not been collected at the time of the report publication
5	Hazeldean, 000113	46	-0.8	-0.5	3.4	1.3			
6	Hilltop, 160156 (HT156)	60	-2.5	1.2	6.6	5.8			
7*	Langdene, 140700	50	1.2	-5.9	-6.0	7.0			
8*	Miramoona, 140012	39	-0.4	13.5	6.8	-8.3			
9*	Moorundie Poll, NE73	50	2.1	2.2	-3.3	-5.5			
10	One Oak Poll, W17002	47	-0.2	-3.5	-2.5	1.4			
11	Pooginook Poll, 170364	39	-0.1	3.1	-0.3	-3.1			
12	Rocklyn, 170184	48	-2.3	10.6	7.9	-1.5			
13	Tallawong Merinos, 170511	39	0.6	-3.5	-0.8	-1.2			
14	Wattle Dale, 170625	48	0.5	2.8	-0.3	2.8			
15	Woodpark Poll, 160058	51	1.3	-5.7	-7.2	1.1			

*   Link sire: Sire evaluated to provide links between site evaluations and sites so that 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).

Flock breeding values are calculated using all the available data on both the ewe and wether progeny of the sires.

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

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

Figure 1a Combine measured traits AMSEA Dual Purpose Plus (DP+) index and combined visually assessed traits for the site objective.

Figure 1a was unable to be generated due to the DP+ indexes for the majority of the sire's not meeting the accuracy threshold to be published.

Figure 1b Combine measured traits AMSEA Merino Production Plus (MP+) index and combined visually assessed traits for the site objective.
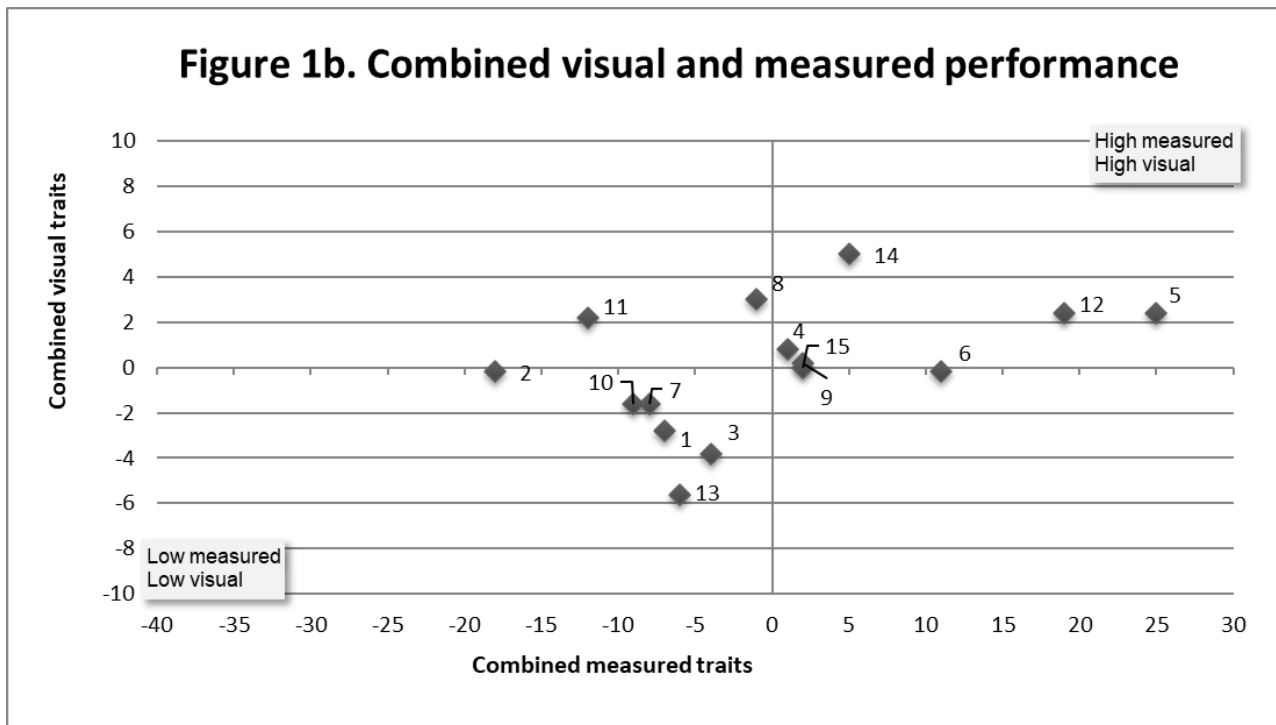
2019 Drop- Weaning Weight, DNA Sampling, Weaning – 6th November 2019

Figure 1c Combine measured traits AMSEA Fibre Production Plus (FP+) index and combined visually assessed traits for the site objective.

Figure 1c. Combined visual and measured performance
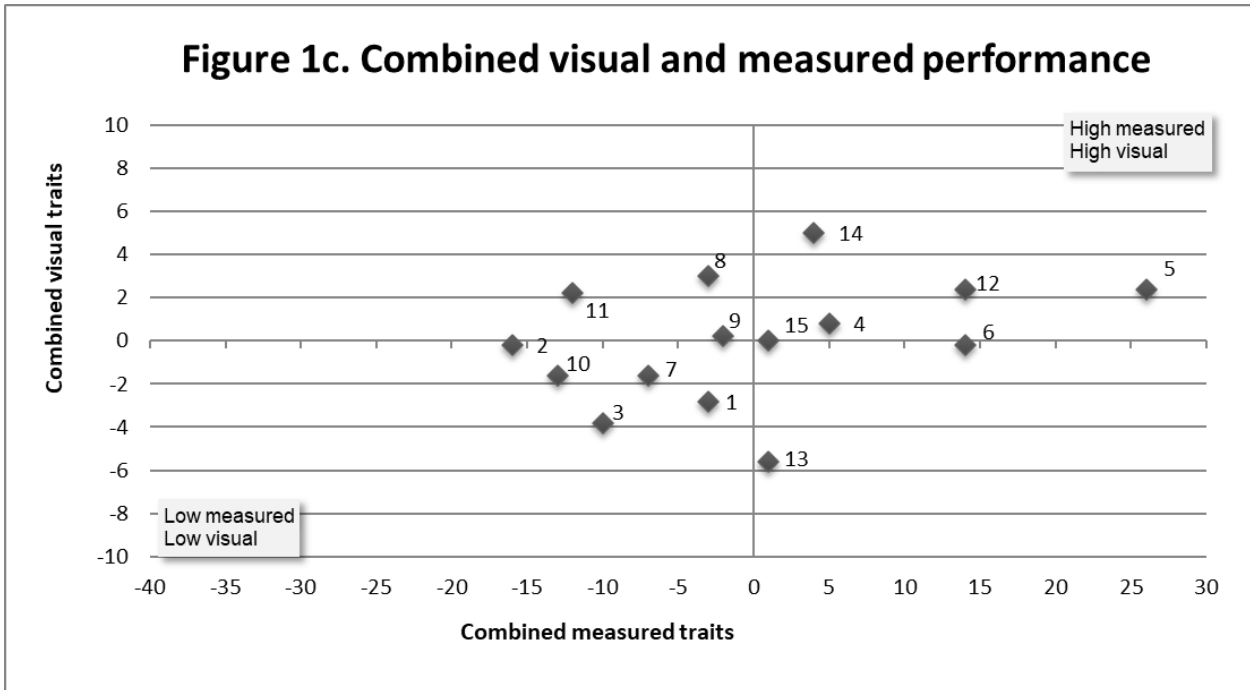
Figure 1d Combine measured traits AMSEA Wool Production Plus (WP+) index and combined visually assessed traits for the site objective.

Figure 1d. Combined visual and measured performance
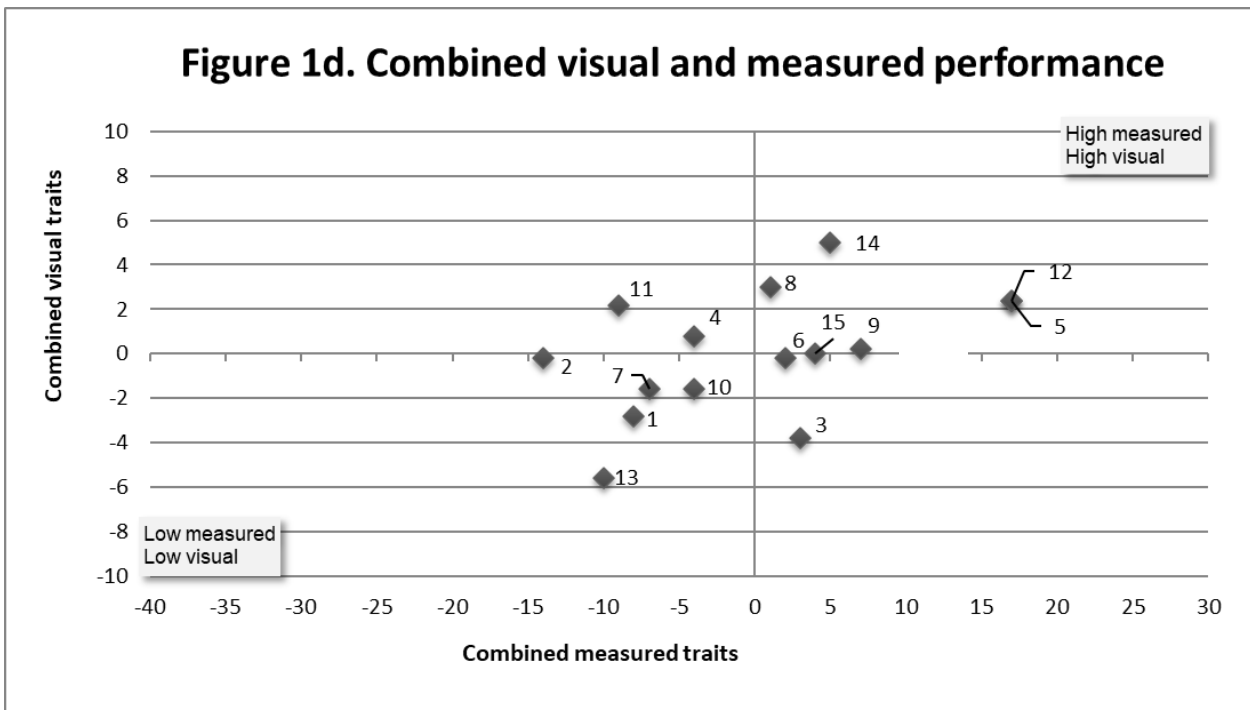
Figure 2. Classer's Tops and Cull Grade – describes performance for Classer's Tops Grade on the side axis and Culls Grade on the bottom axis. Sires that have above average Tops and below average Culls are in the <u>top left-hand quadrant.</u> Classer's Tops (14%), Flock (60%) and Cull (26%) is based 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.
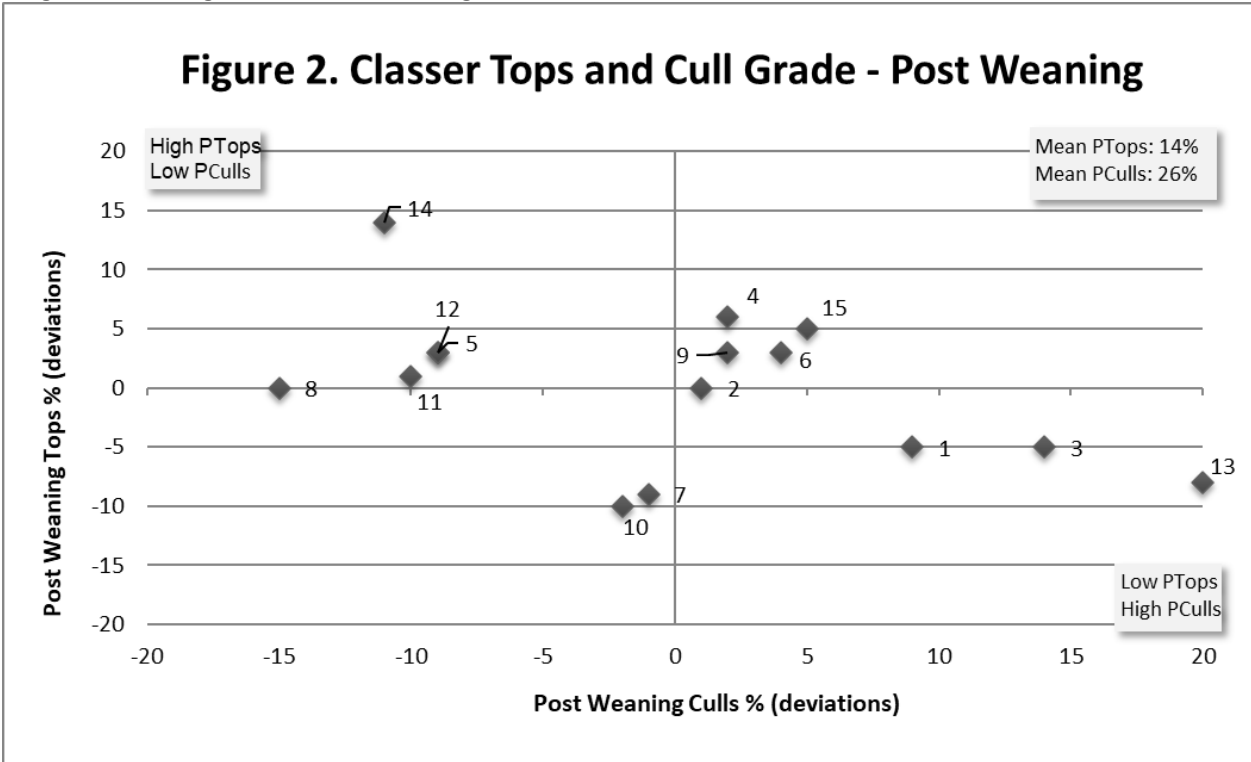
Figure 3. Fleece Weight and Fibre Diameter (FBV's) – describes performance for clean fleece weight on the side axis and fibre diameter on the bottom axis. Sires that are above average for post weaning clean fleece weight and below average post weaning fibre diameter are located in the <u>top left-hand quadrant.</u>
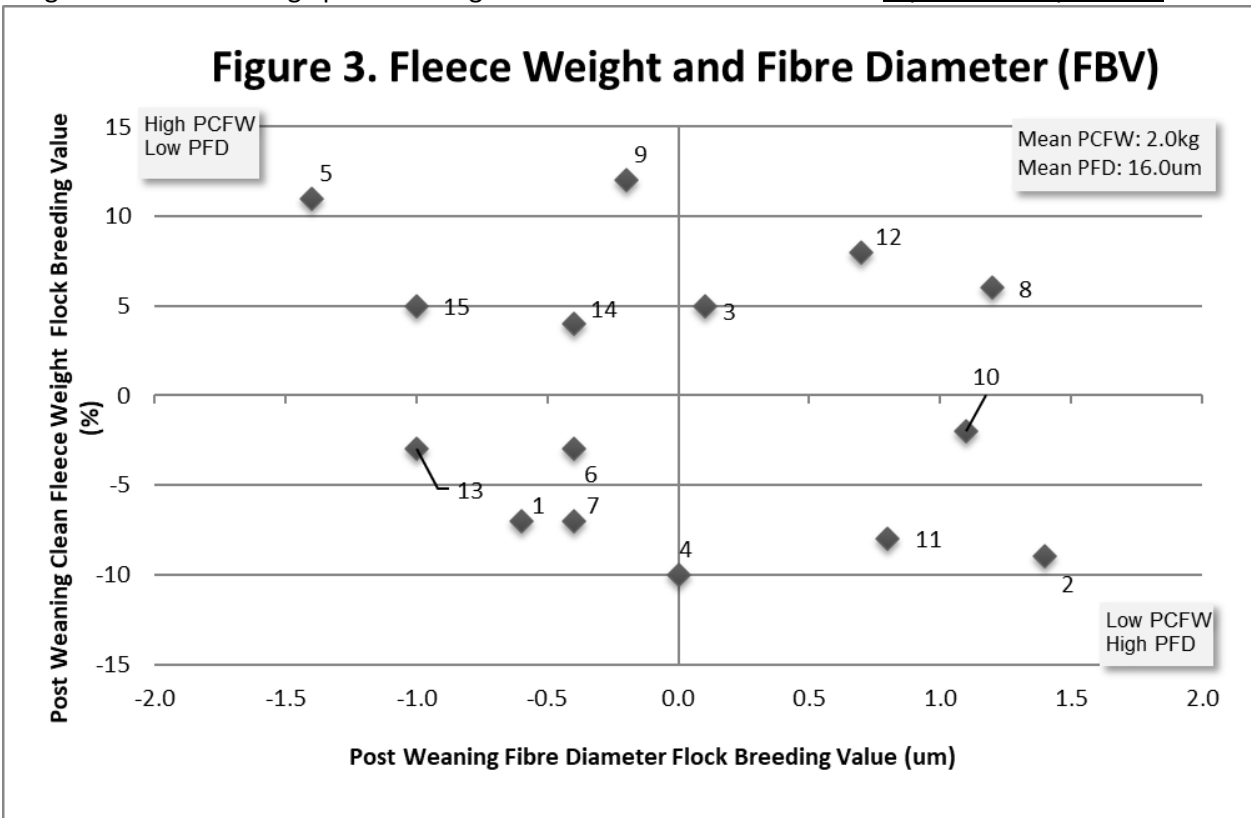
Figure 4. Fleece Weight and Body Weight (FBV's) – describes performance for clean fleece weight on the side axis and body weight on the bottom axis. Sires that are above average for post weaning clean fleece weight and above average for post weaning body weight are located in the <u>top right-hand quadrant.</u>
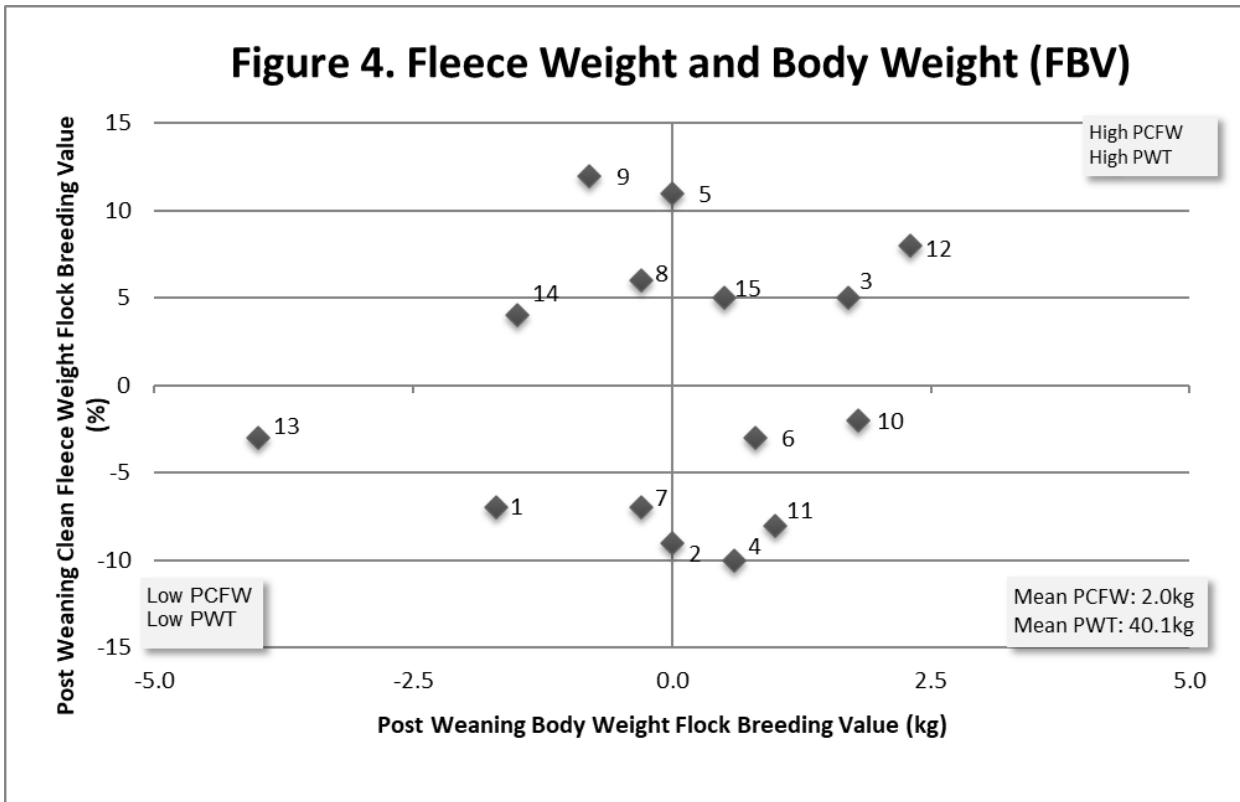
Figure 5. Fleece weight and Staple Length (FBV's) – describes performance for clean fleece weight on the side axis and body weight on the bottom axis. Sires that are above average for adult clean fleece weight and above average for adult body weight are located in the <u>top right-hand quadrant.</u>
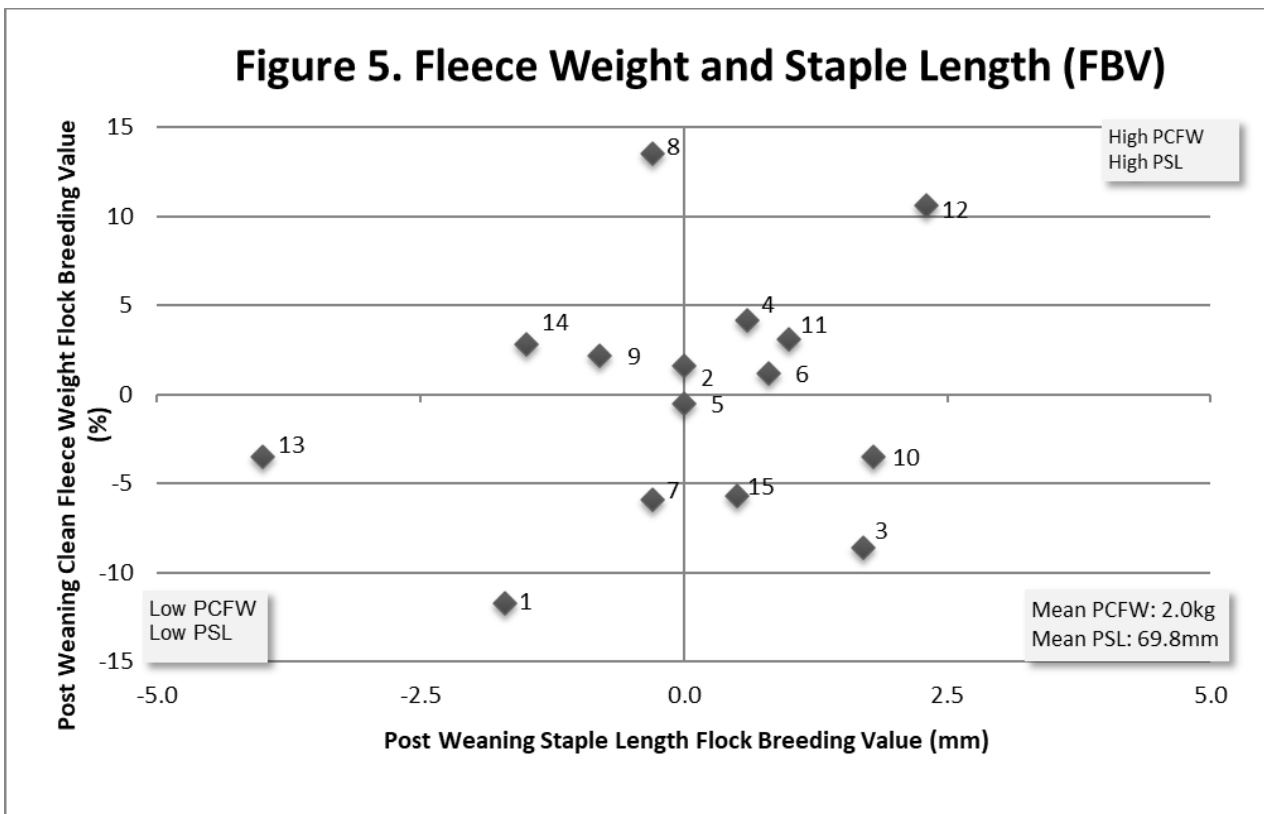
Figure 6. Fleece Weight and Fat Depth (FBVs) – describes the performance for clean fleece weight on the side axis and fat depth on the bottom axis. Sires that are above average for clean fleece weight and above average for fat depth are located in the top right-hand quadrant. *Fat depth had not been collected at the time of publication.*

Figure 7. Fleece weight and 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 clean fleece weight and above average for eye muscle depth are located in the top right-hand quadrant. *Eye muscle depth had not been collected at the time of publication.*

Figure 8. Clean Fleece weight (FBV) and 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 clean fleece weight and below average for marking breech wrinkle score are located in the top left-hand quadrant.

Ravenswood – a view from the office

Figure 9. Clean Fleece weight (FBV) and 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 clean fleece weight and below average for body wrinkle score are located in the <u>top left-hand quadrant</u>.
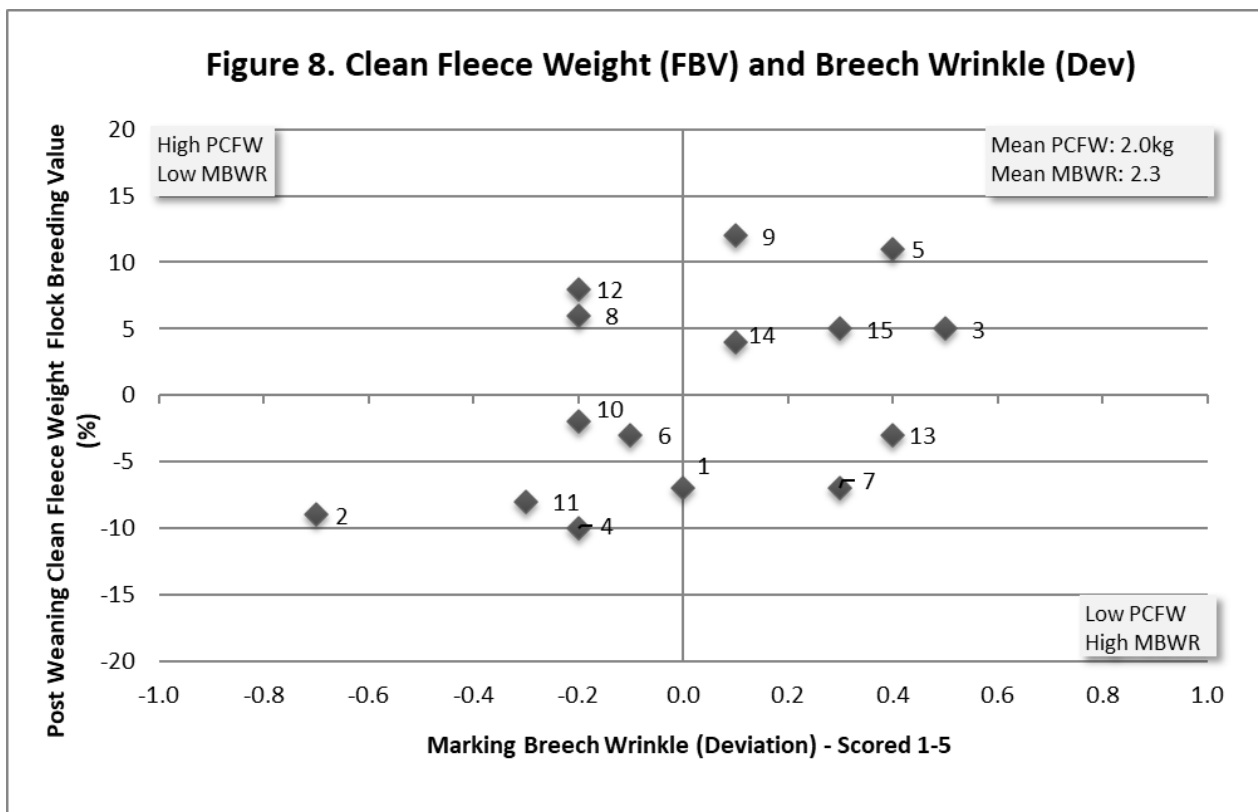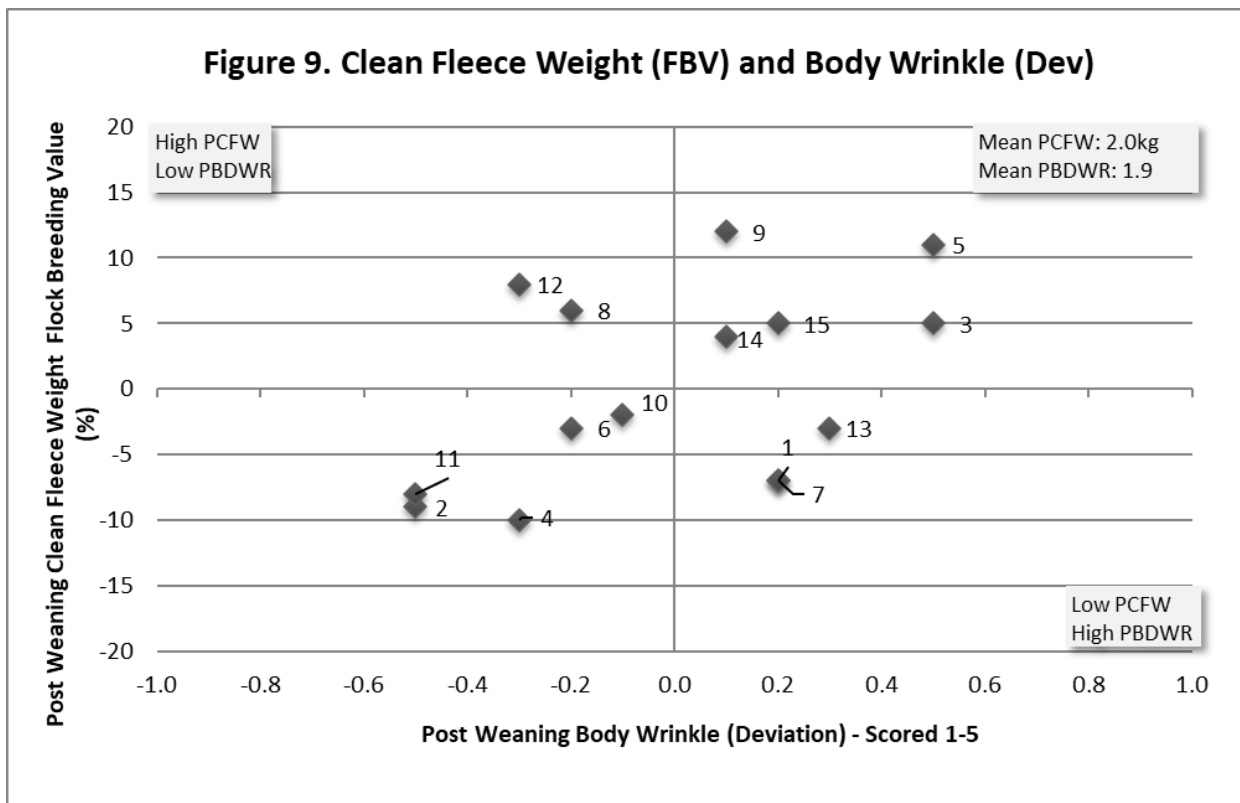

2019 Drop Wethers – prior to shearing 31st March 2020

The following description of trait scores is a summary of the detailed word and diagrammatical description of these scores in Version 3 (2019) of the Visual Sheep Scores booklet that is available free from 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** (bright white wool) to **5** (very intense yellow).
■	Wool character:	Definition and variation of crimp between and along the staple scored from **1** (very even & deep crimp) to **5** (no crimp evenness or depth, looks flat).
■	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, very fine bundles) to **5** (>30 mm, 'blocky' extremely large bundles).
■	Face cover:	Wool cover on the face scored from **1** (open face, no wool in front of ears) to **5** (heavy wool cover over the entire face).
■	Feet/Legs:	Conformation of feet and legs scored **1** (straight legs); 3 (significant hock angulation, slight in or outward leg/feet); **5** (Extreme hock angulation, legs/feet).
■	Body wrinkle:	The degree of body wrinkle from **1** (plain body, no wrinkle) to **5** (very heavy wrinkling and heavy skin folds).
■	Jaw:	Under- or over-shot lower jaw (and teeth) relative to the top jaw. Five scores: 1 (Heavily undershot jaw); 2 (marginally under shot); 3 (very well aligned); **4** (marginally overshot jaw), **5** (heavily over shot jaw).
■	Back/Shoulder:	Conformation of the back and shoulder 1 (shoulder blades sit squarely); 3 (shoulders position creates a ridge or trough, back dipped or arched); 5 (extreme high ridge or trough and back dip or arched).
■	Fibre pigmentation:	The percentage of dark fibres on any part of the sheep from **1** (No pigmented fibres at any site, 0%) 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** (No pigmentation at any site, 0%) 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.
■	Breech cover	Size of natural bare area around the breech from **1** (natural large bare area) to **5** (no bare area, complete wool cover).
■	Crutch cover	Size of natural bare area in the pubic and groin region from **1** (natural large bare area) to **5** (almost complete wool cover, no natural bare areas).
■	Breech wrinkle	Degree of wrinkle at the tail set and hind legs from **1** (no wrinkle) to **5** (extensive wrinkle).
■	Dag	Degree of dag adhering to the breech and legs from **1** (no dag) to **5** (extensive dag in breech and hind legs area).
■	Urine (ewes)	Degree of urine stained wool in the breech area, including the hind legs from **1** (no urine stain) to **5** (extensive urine stain in breech and hind leg area).

Table 5a. Visual trait assessments – Wool quality

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

Ram code	Wool Quality – Post Weaning																								
	Fleece Rot						Wool Colour						Wool Character						Dust Penetration					
	Dev	1	2	3	4	5	Dev	1	2	3	4	5	Dev	1	2	3	4	5	Dev	1	2	3	4	5
1	-0.3	83	11	0	4	2	0.0	6	66	21	4	3	0.2	2	70	26	2	0	0.1	0	6	62	32	0
2	-0.2	80	9	4	6	1	-0.2	11	67	20	2	0	0.2	4	65	31	0	0	0.1	0	17	48	35	0
3	0.6	51	7	14	19	9	0.2	7	49	30	14	0	0.2	4	70	19	7	0	0.1	0	9	58	33	0
4	0.2	62	14	10	12	2	0.3	5	52	24	12	7	-0.2	17	74	9	0	0	0.0	0	27	40	33	0
5	0.1	67	9	11	6	7	-0.1	17	52	24	7	0	-0.2	20	67	13	0	0	0.0	0	20	50	30	0
6	0.0	76	8	3	5	8	-0.3	25	56	14	3	2	-0.4	32	61	7	0	0	0.0	0	15	56	27	2
7*	-0.4	86	8	2	4	0	-0.1	8	63	29	0	0	-0.1	18	61	18	3	0	0.1	0	8	65	27	0
8*	-0.4	87	11	0	2	0	-0.3	11	84	5	0	0	0.2	2	63	32	3	0	0.1	0	16	47	34	3
9*	0.3	61	12	7	12	8	0.4	8	43	27	16	6	0.1	2	78	20	0	0	0.0	0	18	55	27	0
10	0.3	65	15	0	5	15	0.2	7	43	43	3	4	0.3	2	52	46	0	0	-0.2	0	17	78	5	0
11	0.0	79	3	3	10	5	0.0	5	67	21	5	2	-0.1	13	72	15	0	0	-0.2	0	31	49	20	0
12	0.0	72	9	2	13	4	0.0	11	57	21	11	0	0.0	6	83	9	2	0	0.3	0	10	43	47	0
13	0.0	77	0	5	15	3	-0.2	18	64	13	2	3	-0.1	15	72	13	0	0	-0.1	0	15	72	13	0
14	-0.2	74	13	6	4	3	-0.2	17	62	19	2	0	-0.1	21	64	11	4	0	-0.3	0	32	55	13	0
15	0.0	67	13	10	6	4	0.2	4	58	29	8	1	-0.1	19	65	12	4	0	0.1	0	13	56	31	0
Avg.	1.6	73	9	5	8	5	2.3	11	59	23	6	1	2.1	12	68	19	1	0	3.1	0	17	56	27	0

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

Wool quality scores were collected on both the ewe and wether progeny.

Table 5b. Visual trait assessment – 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.

Ram code	Wool Quality – Post Weaning												Pigmentation - Marking												Black	Spot
	Staple Weathering						Staple Structure						Fibre pigmentation						Non-fibre pigmentation							
	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 Post Weaning Stage; refer to Dust Penetration Score						0.2	0	51	47	2	0	0.0	100	0	0	0	0	-0.4	57	41	2	0	0	0	0
2							0.1	0	57	41	2	0	0.0	100	0	0	0	0	-0.2	35	64	1	0	0	0	0
3							0.2	0	60	33	7	0	0.0	100	0	0	0	0	-0.2	44	49	7	0	0	0	0
4							-0.3	12	74	12	2	0	0.0	100	0	0	0	0	0.2	14	67	17	2	0	0	0
5							-0.1	9	61	30	0	0	0.0	100	0	0	0	0	0.5	13	52	20	13	2	0	0
6							-0.2	14	59	25	2	0	0.0	98	0	2	0	0	0.1	27	53	18	0	2	0	0
7*							-0.1	8	63	29	0	0	0.0	98	0	0	2	0	0.2	20	50	28	2	0	0	0
8*							0.1	0	58	39	3	0	0.1	95	2	0	3	0	0.3	15	54	28	3	0	0	0
9*							0.1	0	63	35	2	0	0.0	96	2	2	0	0	-0.3	54	40	4	2	0	0	0
10							0.4	0	39	54	7	0	0.0	98	2	0	0	0	0.0	30	49	21	0	0	0	0
11							-0.2	8	77	15	0	0	0.0	98	0	0	2	0	-0.2	35	62	3	0	0	0	0
12							-0.1	2	77	19	2	0	0.0	98	0	2	0	0	0.2	27	50	15	6	2	0	0
13							0.1	0	59	41	0	0	0.0	97	3	0	0	0	-0.3	56	33	11	0	0	0	0
14							-0.2	11	70	15	4	0	0.1	92	2	4	2	0	0.1	38	40	17	4	1	0	0
15							0.0	6	60	31	3	0	0.0	100	0	0	0	0	0.0	40	42	10	2	6	2	2
Avg.							2.3	5	62	31	2	0	1.0	98	0	1	1	0	1.9	34	50	13	2	1		

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

Wool quality scores were collected on both the ewe and wether progeny.

Table 5c. Visual trait assessments – Conformation

Traits are reported as a deviation (Dev) from the average trait score for all progeny. The percentage of a sire's progeny assessed for each score is also reported. No adjustments are made to the data to improve the accuracy of the results as is the case with sire means or breeding values. For the majority of breeder's objectives a negative deviation would be considered favourable and the larger the deviation the better. Jaw is the exception where Score 3 is ideal (well aligned) and a negative deviation demonstrates undershot jaws and a positive deviation, overshot jaws. Face cover is a possible exception when for many breeders the optimum score is in the middle of the range, therefore trait leaders have not been highlighted.

Ram	Conformation – Post Weaning																													
	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	0	4	96	0	0	0.0	9	0	89	0	2	0.2	72	0	28	0	0	0.0	0	6	94	0	0	0.2	21	52	25	2	0
2	-0.1	0	11	89	0	0	-0.2	22	0	72	0	6	-0.2	88	0	12	0	0	0.0	0	4	96	0	0	-0.5	57	39	4	0	0
3	0.0	0	2	98	0	0	0.1	5	0	95	0	0	0.1	77	0	23	0	0	-0.1	0	14	86	0	0	0.5	12	37	47	4	0
4	0.0	0	5	95	0	0	0.2	7	0	81	0	12	-0.4	98	0	2	0	0	-0.1	5	14	76	5	0	-0.3	48	45	7	0	0
5	0.0	0	7	93	0	0	0.3	9	0	76	0	15	0.1	73	0	27	0	0	-0.1	2	11	87	0	0	0.5	3	54	41	2	0
6	0.0	0	5	95	0	0	0.1	9	0	83	0	8	-0.1	86	0	14	0	0	0.0	0	5	93	2	0	-0.2	37	53	10	0	0
7*	0.0	0	2	98	0	0	0.1	8	0	84	0	8	0.0	80	0	20	0	0	0.0	0	6	94	0	0	0.2	27	37	33	3	0
8*	0.0	0	8	92	0	0	-0.1	11	0	89	0	0	-0.1	87	0	13	0	0	0.1	0	3	92	5	0	-0.2	39	50	11	0	0
9*	-0.1	0	14	86	0	0	-0.1	16	0	78	0	6	-0.1	86	0	14	0	0	0.0	0	10	86	4	0	0.1	21	57	22	0	0
10	0.0	0	2	98	0	0	-0.1	11	0	89	0	0	0.1	76	0	24	0	0	0.0	0	4	96	0	0	-0.1	41	39	17	3	0
11	0.0	0	8	92	0	0	-0.1	18	0	77	0	5	-0.1	87	0	13	0	0	-0.1	0	15	82	3	0	-0.5	62	36	2	0	0
12	0.0	0	4	96	0	0	0.1	9	0	87	0	4	-0.2	91	0	9	0	0	0.0	0	6	94	0	0	-0.3	47	45	8	0	0
13	0.1	0	0	100	0	0	0.0	15	0	77	0	8	0.3	64	0	36	0	0	0.2	0	2	85	10	3	0.3	10	56	31	3	0
14	0.0	0	2	98	0	0	-0.5	38	0	57	0	5	0.2	69	0	31	0	0	-0.1	0	19	81	0	0	0.1	13	67	20	0	0
15	0.0	0	2	98	0	0	0.1	8	0	88	0	4	0.2	69	0	31	0	0	0.0	0	12	88	0	0	0.2	23	40	35	2	0
Avg.	2.9	0	5	95	0	0	2.9	13	0	82	0	5	1.4	80	0	20	0	0	2.9	0	9	89	2	0	1.9	31	47	21	1	0

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

Wool quality scores were collected on both the ewe and wether progeny.

Table 5d. Visual trait assessments – Breech

Traits are reported as a deviation (Dev) from the average trait score for all progeny. The percentage of a sire's progeny assessed for each score is also reported. No adjustments are made to the data to improve the accuracy of the results as is the case with sire means or breeding values. For the majority of breeder's objectives, a negative deviation would be considered favourable and the larger the deviation the better. Breech scores were recorded at lamb marking.

Ram Code	Breech																								
	Marking Breech Cover						Marking Breech Wrinkle						Post Weaning Crutch Cover						Post Weaning 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
1	0.2	4	24	24	24	24	0.0	13	45	35	4	3												
2	0.2	5	22	24	18	31	-0.7	47	44	9	0	0												
3	0.1	4	19	33	21	23	0.5	3	33	51	8	5												
4	0.1	10	14	24	31	21	-0.2	27	43	24	6	0												
5	0.0	11	17	24	33	15	0.4	0	38	50	11	1												
6	-0.1	4	28	30	23	15	-0.1	21	49	22	8	0												
7*	0.2	2	14	36	28	20	0.3	10	37	37	11	5												
8*	-0.1	2	21	38	31	8	-0.2	19	58	17	6	0												
9*	-0.2	10	18	38	24	10	0.1	15	41	31	10	3												
10	0.1	8	13	32	30	17	-0.2	18	56	23	3	0												
11	-0.2	7	25	35	15	18	-0.3	30	46	14	10	0												
12	-0.5	10	38	25	17	10	-0.2	24	54	15	4	3												
13	0.2	4	10	38	33	15	0.4	5	41	37	14	3												
14	-0.1	4	23	29	38	6	0.1	9	46	33	12	0												
15	0.2	8	19	19	23	31	0.3	13	35	34	14	4												
Avg.	3.3	6	20	30	26	18	2.3	17	44	29	8	2												

Post Weaning Crutch Cover: Crutch cover was not assessed at post weaning stage assessment.

Post Weaning Urine: Urine was not assessed at post weaning stage assessment.

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

Wool quality scores were collected on both the ewe and wether progeny.

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 Merino Sire Evaluation (MSE) 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 MSE sites and across all evaluations at these sites. Link sires are therefore a vital component of the MSE.

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

Australian Merino Sire Evaluation Association