MerinoLink Limited Sire Evaluation

Central Test Sire Evaluation
Within Flock Analysis

2015 Drop
Yearling & Hogget Assessments

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

4th November 2016

MerinoLink Sire Evaluation Sponsors and Supporters – 2015 drop

Acknowledgements

Dean Bourlet, Wynwood, Jugiong
Mandy Bourlet, Wynwood, Jugiong
Adele Offley, Moses & Son, Young
Simon Coddington, Moses & Son, Young
Craig Wilson, Craig Wilson & Associates, Wagga
Jess Smith, Sally Martin Consulting, Young
Mick Corkhill, Grassy Creek Merino Stud, Reids Flat
Ben Patrick, Yarrawonga Merino Stud, Harden
Lexi Cesnik, Sally Martin Consulting, Young

Foreword

MerinoLink Limited - Central Test Sire Evaluation

MerinoLink Limited run the sire evaluation site 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 is an accredited Central Test Sire Evaluation (CSTE) site. It conforms to the requirement of the Australian merino Sire Evaluation Association (AMSEA).

We would like to thank and acknowledge the dedication of Dean and Mandy Bourlet for hosting the sire evaluation. Your enthusiasm and commitment to Merino breeding is appreciated and infectious.

The classing for the first visual assessments was conducted by Mr Mick Corkhill, Grassy Creek Merino Stud and Ben Patrick, Yarrawonga Merino Stud. We would like to fully acknowledge both Mick's and Ben's professional contribution to the visual assessments.

The 17 Merino sires being evaluated includes a historical sire, 1989 drop, as part of the AMSEA Historical Sire Program (funded by Australian Wool Innovation). The Historical Sire program aims to evaluate sires that have been previously entered in sire evaluation sites between 15 and 20 years ago. The progeny will be fully evaluated alongside the current industry sires.

Whilst providing a very interesting comparison between leading sire of the 80's and 90's with those of today, the main purpose of the Historical Sire Program is to provide further validation and confidence in the system of linkage that is used by MERINOSELECT to directly compare animals across drops.

Results from the Historical Sire program will be published by AMSEA at the conclusion of the program in addition to individual sire performance results for historical sires being published in the MerinoLink Sire Evaluation Site Reports and the annual Merino Superior Sires.

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, MerinoLink CEO

Site Contacts

Name	Phone	Role
Dean Bourlet	0429 866 258	Host Property
Craig Wilson	0428 250 982	MerinoLink Board Director *(Service Provider)*
Sally Martin	0400 782 477	Site Coordinator; Data Management; Reporting; MerinoLink Board Director *(Service Provider)*; MerinoLink CEO
Richard Keniry	0427 878 541	MerinoLink Board Director *(Commercial Breeder)*
Marty Moses	0417 691 308	MerinoLink Board Director *(Service Provider)*
Carol Huggins	0429 934 616	MerinoLink Board Director *(Ram Breeder)*
Steve Jarvis	0427 853 528	MerinoLink Board Director *(Commercial Breeder)*
Robert Mortimer	02-6892 8259	MerinoLink Board Director *(Ram Breeder)*
Mal Peake	0408 426 103	MerinoLink Board Director *(Ram Breeder)*
Rick Baldwin	0429 833 837	MerinoLink Board Director *(Ram Breeder)*
David Davidson	0429 847 345	MerinoLink Board Director *(Commercial Breeder)*

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2015 Drop, Yearling & Hogget Assessment, MerinoLink Limited Sire Evaluation

The information in this site evaluation report provides a comprehensive assessment of the 2015 drop at Yearling and Hogget 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 months of age with 10 months of wool growth, the Hogget Assessment was carried out at 16 months of age and 6 months' wool growth. The Adult Assessment is planned to be carried out at 22 months of age with 12 months' wool growth.

Contents

Sire and owner details

Sire and owner details

Sire code	Breeders flock, Sire number Sire ID #, Breed †	Contact name, address Phone, Fax, Email
1* (Link)	Billandri Poll, 121391 600571-2012-121391 Poll Merino	Bill and Geoff Sandiland, Billandri, Kendenup WA 6323 P: (08) 9851 4030 F: (08) 9851 4264 E: csandilands@bordernet.com.au
2	Bundilla, 120013 504081-2012-120013 Poll Merino	Rick Baldwin, Bundilla, 706 Tubbul Road, Young NSW 2594 P: (02) 6383 3802 F: (02) 6383 3837 E: bundillamerinos@bigpond.com
3^** Historic	Centre Plus Poll 000183 601250-1989-000183 Poll Merino	Robert Mortimer, Devondale, Tullamore NSW 2874 P: (02) 6892 8259 F: (02) 6892 8292 E: robert@centreplus.com.au
4	Centre Plus Poll, 307564 601250-2013-307564 Poll Merino	Robert Mortimer, Devondale, Tullamore NSW 2874 P: (02) 6892 8259 F: (02) 6892 8292 E: robert@centreplus.com.au
5**	Hazeldean, 003542 500383-2011-003542 Merino	Jim Litchfield, Hazeldean, Cooma NSW 2630 P: (02) 6453 5555 F: (02) 6453 2226 E: litchfield@hazeldean.com.au
6**	Kerin Poll, 130980 601413-2013-130980 Poll Merino	Nigel Kerin, Karuga Park, 1142 Bournewood Road, Yeoval NSW 2868 P: (02)6846 4070 E: kerinag@bigpond.com
7**	Mumblebone, 130389 500063-2013-130389 Merino	Chad Taylor, Marrapana 456 Wuuluman Road, Wellington NSW 2820 P: (02) 6845m 3620 F: (02) 6845 3608 E: chad@mumblebone.com.au
8**	Mumblebone, 130850 500063-2013-130850 Merino	Chad Taylor, Marrapana 456 Wuuluman Road, Wellington NSW 2820 P: (02) 6845m 3620 F: (02) 6845 3608 E: chad@mumblebone.com.au
9	Pastora Poll, 130011 601090-2013-130011 Poll Merino	Tim Westblade, Pastora, Lochart NSW 2656 M: 0429 205 423 E: trwesty@bigpond.com
10	Pastora Poll, 131634 601090-2013-131634 Poll Merino	Tim Westblade, Pastora, Lochart NSW 2656 M: 0429 205 423 E: trwesty@bigpond.com
11	Pooginook Poll, 130083 601442-2013-130083 Poll Merino	John Sutherland, Paraway Pastoral Company, Jerilderie NSW 2716 P: (02) 6954 6145 F: (02) 6954 6168 E: pooginook@parawaypastoral.com
12	Rocklyn, 130022 501039-2013-130022 Merino	Ralph Diprose, Elon, Cowra Road, Grenfell NSW 2810 P: (02)6343 6331 F: (02) 6343 6331 E: rkdiprose@gmail.com
13**	Roseville Park, 140019 504166-2014-14001 Merino	Matthew Coddington, Glenwood, 39R Dilladerry Rd, Dubbo NSW 2830 P: (02) 6887 7286 F: (02) 6887 7103 E: rpmerinos@bigpond.com
14	Centre Plus Poll (WA) 337919 609182-2013-337919 Poll Merino	Dave Vanenberghe, PO BOX 11 Scaddan WA 6447 P: (08) 9078 6049 M: 0427 786 049 E: riverlandwest@westnet.com.au
15	Wattle Dale 130115 503358-2013-130115 Merino	Dave Vanenberghe, PO BOX 11 Scaddan WA 6447 P: (08) 9078 6049 M: 0427 786 049 E: riverlandwest@westnet.com.au
16* (Link)	Willandra Poll, 120026 601610-2012-120026 Poll Merino	Ross Wells, Willandra, 477 North Coree Road, Jerilderie NSW 2711 P: (03) 5886 1223 F: (03) 5886 1605 E: rossirene@reachnet.com.au
17	Woodpark Poll, 130431 601151-2013-130431 Poll Merino	Stephen and Carol Huggins, Eurolie, HAY NSW 2711 P: (02) 6993 4616 F: (02) 6993 4122 E: woodparkpoll@bigpond.com

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.

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

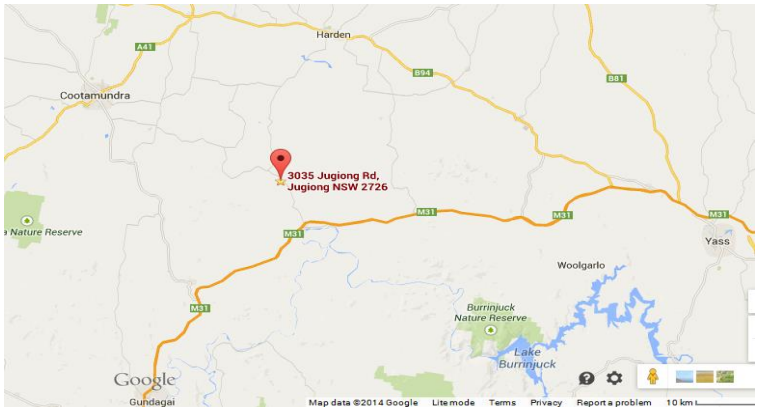
† Breed of flock in which the sire was born.

^ Historical Sire evaluated under AMSEA's R&D project to validate the system of linkage in MERINOSELECT that has operated over the past 15-20 years. These sires were generally widely used 15-20 years ago and were selected for the R&D program based on their high ASBV accuracies. They demonstrate the progress the industry has made over that period.

2015 drop – September 2015

2015 drop – October 2016

1. Location



"Wynwood", 3035 Jugiong Road, Jugiong is located 30km from Harden on the Jugiong/Harden Road or 6km from Jugiong.

"Wynwood" is a commercial farming operation operated by Dean and Mandy Bourlet.

2. Selection and mating

- 900 medium framed ewes with free growing soft handling wools and low wrinkle score were selected and classed to be free from visual and conformation faults.
- The ewes were mated by Artificial Insemination to 17 sires.
- The ewes were randomly allocated to each sire.
- The insemination program was conducted on 12th and 13th February, 2015.
- The insemination program was conducted by Allstock, Dubbo.
- 50 ewes were allocated to each sire entered.

3. Pregnancy and lambing

- Pregnancy scanning took place on 13th May 2015.
- Ewes were managed as one contemporary group until 10 days before lambing.
- Adequate pasture and a supplementary feeding program ensured that nutritional requirements were met during all stages of pregnancy.
- Sire groups lambed down in separate paddocks.
- Lambs were tagged (visual and electronic) and weighed within two weeks of lambing and groups brought together and boxed into one contemporary group of ewes and lambs.

4. Weaning and seasonal conditions

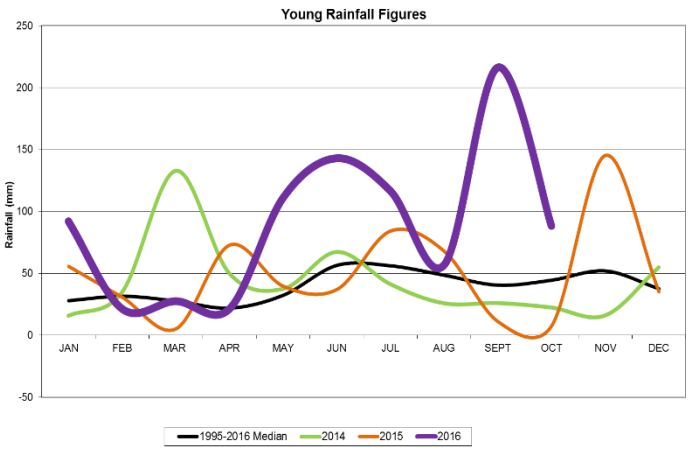
- The lambs were marked and visually scored on 4th September 2015.
- The lambs were weaned onto improved and native pastures on 23rd October, 2015.

5. Visual Assessments

- The 1st stage visual assessment was carried out by Mick Corkhill and Ben Patrick.

6. Rainfall – Young (closest weather station)

	2012	2013	2014	2015	2016	Median
Jan	30.2	7.0	16.0	55.6	92.2	28.1
Feb	168.6	42.6	35.0	30.6	21.6	56.6
Mar	162.6	60.6	132.8	5.2	27.8	56.2
Apr	15.2	12.2	50.0	72.8	21.6	48.6
May	37.0	28.0	37.6	39.6	111.2	40.6
Jun	56.6	108.8	67.4	37.0	143.0	44.6
Jul	62.4	58.2	41.4	84.2	116.6	52.1
Aug	45.2	36.8	26.0	67.8	57.0	37.1
Sep	35.8	27.8	26.2	11.0	216.2	28.1
Oct	14.0	20.0	22.6	7.6	88.4	31.7
Nov	41.6	26.8	16.2	145.2		27.8
Dec	43.0	16.0	55.0	35.2		22.1
Totals	**712.2**	**444.8**	**526.2**	**526.2**		**614.5**



*Source: BOM - Median 1995-2016.

Assessment and management program

Activity	Date/s	Age (months)	Wool (months)
Selection of ewes & allocation of ewes for mating	07.01.2015		
Artificial Insemination	11.02.2015 12.02.2015		
Pregnancy scanning	13.05.2015		
Separated into sire lambing groups	30.07.2015		
Lambing: start – finish	08 to 15.07.2015		
Lambing mobs boxed to 1 management group	01.08.2015	14-21 days	
Tagging/pigment scores (age in days)	01.08.2015	14-21 days	
Marked and scored for breech traits	04.09.2015	55 days	
Weaning (age in days)	23.10.2015	104 days	
Pre-assessment (even-up) shearing	NA		
Crutching • Post Weaning (PW)	02.02.2015	6.5	6.5
Fat and eye muscle scanning • Hogget (H)	18.10.2016	16	
Fleece sampling assessment • Yearling (Y) • Hogget (A)	26.04.2016	10	10
Staple length assessment • Yearling (Y)	26.04.2016	10	10
Classer's Grade assessment • Yearling (Y) • Hogget (A)	26.04.2016	10	10
Pre shearing scoring assessment • Yearling (Y) • Hogget (A)	26.04.2016	10	10
Assessment shearing • Yearling (Y) • Hogget (A)	27.04.2016	10	10
Post shearing scoring assessment • Yearling (Y) • Hogget (A)	28.04.2016	10	0
Body weigh assessment • Weaning (W) • Post Weaning (PW) • Yearling (Y) • Hogget (H)	23.10.2015 21.01.2016 26.04.2016 18.10.2016	4 7 10 16	
Worm egg count sampling • Yearling (Y)	Little challenge to date; still to be measured.		
Sire's Progeny Group Evenness assessment			
Vaccination	Marking, weaning, post shearings		
Drench	As required based on worm egg counts		
Supplementary feeding: start – finish			
Field day or public display of sheep	21.01.2016 (pre 1st stage shearing)		

Visual Trait Assessment and site Breeding Objective

Visual trait assessment
1st Stage Assessment (Yearling)

Classer's Grade: Mick Corkhill
Trait Scores: Mick Corkhill and Ben Patrick
Breech Scores: Sally Martin

Site Breeding Objective used to assess the Classer's Grades – 1st Stage Assessment
The Breeding Objective used to select the Classer's Tops (11%), Flock (40%) and Cull (29%) 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).

Adele Offley, Moses & Son


Foundation ewes - Sire Allocation (pre AI)

YARRAWONGA

MERINO & POLL MERINO

Semen Sire Yarra 961 (PP)

On Property ram sale
Monday 12th September 2016
Cunningham Plains
Harden NSW

Steve and Liz Phillips
Phone: 02 6386 3128
Mobile: 0427 863 128

Ben Patrick
Mobile: 0428 984 699

E: yarrawongamerino@bigpond.com
W: www.yarrawongamerino.com.au

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

Summary graph: visual and measured performance

Each sire meeting the AMSEA index accuracy threshold assessed at Yearling and Hogget Assessment is located on Figure 1a, 1b and 1c and describes the performance for combined measured traits and combined visual assessment.

A different graph is provided for each of the three 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 25).

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*	Billandri Poll, 121391	600571-2012-121391	600571-2010-100011
2	Bundilla, 120013	504081-2012-120013	504081-2010-100027
3	Centre Plus Poll, 307564	601250-2013-307564	601250-2009-907538
4^	Centre Plus Poll, 9.183	601250-1989-000183	601250-1985-500279
5	Centre Plus WA Poll, 337919	609182-2013-337919	601250-2010-007257
6	Hazeldean, 003542	500383-2011-003542	601050-2002-020603
7	Kerin Poll, 130980	601413-2013-130980	601244-2007-070304
8	Mumblebone, 130389	500063-2013-130389	601365-2009-090399
9	Mumblebone, 130850	500063-2013-130850	500063-2010-100186
10	Pastora Poll, 130011	601090-2013-130011	
11	Pastora Poll, 131634	601090-2013-131634	601090-2011-113416
12	Pooginook Poll, 130083	601442-2013-130083	600815-2010-101508
13	Rocklyn, 130022	501039-2013-130022	501039-2011-110155
14	Roseville Park, 140019	504166-2014-140019	601050-2009-090853
15	Wattle Dale, 130115	503358-2013-130115	601250-2009-907538
16*	Willandra Poll, 120026	601610-2012-120026	600610-2010-100033 "The GP"
17	Woodpark Poll, 130431	601151-2013-130431	601151-2011-110178

* 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.*

^ Historical Sire evaluated under AMSEA's R&D project to validate the system of linkage in MERINOSELECT that has operated over the past 15-20 years. These sires were generally widely used 15-20 years ago and were selected for the R&D program based on their high ASBV accuracies. They demonstrate the progress the industry has made over that period.

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).

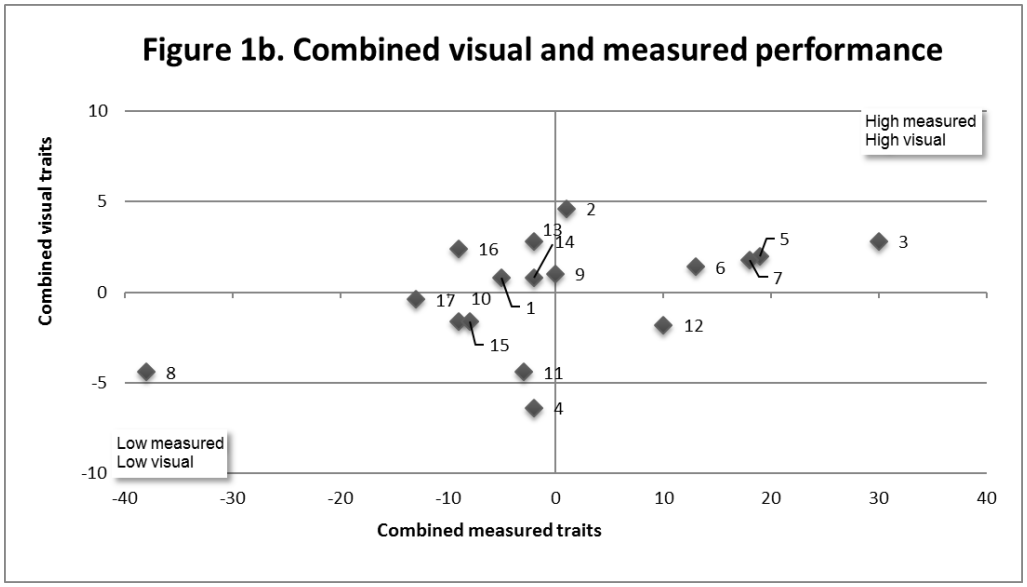


Figure 1b is based on an **AMSEA Merino Production Plus (MP+) index** – (Based on a balanced wool and meat production system where surplus progeny are sold as hoggets).

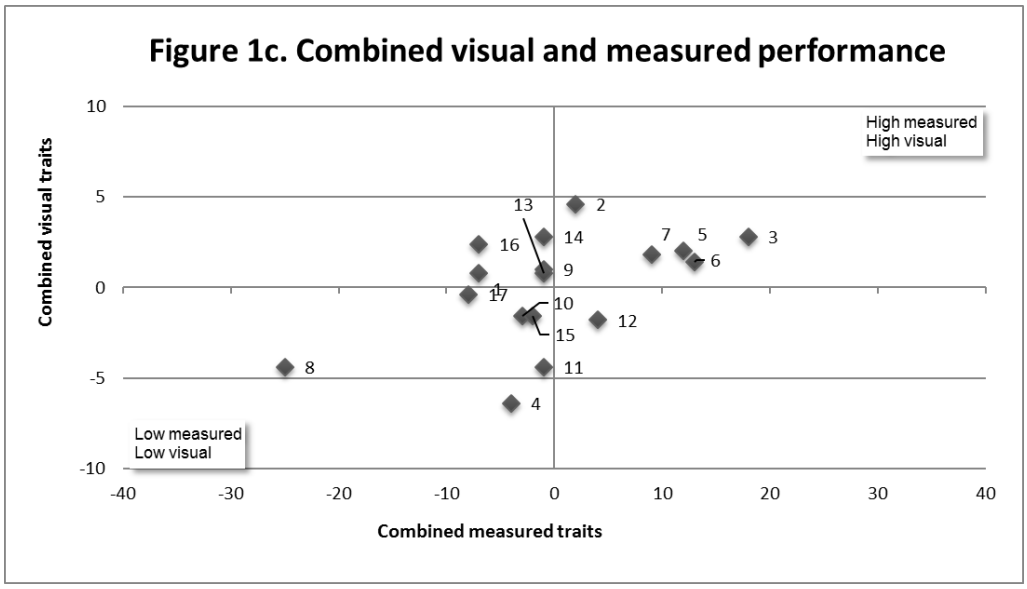


Figure 1c is based on an **AMSEA Fibre Production Plus (FP+) index** (Based on a wool focussed production system where wethers are retained, operating in an environment where worms cause economic losses).

Table 1. 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 three 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 24 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.**

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.
Merino Production Plus (MP+)	Based on a balanced wool and meat production system where surplus progeny are sold as hoggets.
Fibre Production Plus (FP+)	Based on a wool focussed production system where wethers are retained, operating in an environment where worms cause economic losses.
Wool Production Plus (WP+)	Based on the MP+ production system with a greater emphasis on increasing fleece weight, maintaining fibre diameter and increasing weight.

Ram code	Breeders flock, Ram number	No of Progeny	AMSEA Indexes values				Classer's Grade	
			Fibre Production Plus	Merino Production Plus	Dual Purpose Plus	Wool Production Plus	Tops % (dev) Y^	Culls % (dev) Y
1*	Billandri Poll, 121391	36	93	95	102	98	3	-1
2	Bundilla, 120013	33	102	101	108	100	7	-16
3	Centre Plus Poll, 307564	31	118	130	131	130	2	-12
4^	Centre Plus Poll, 9.183	27	96	98	97	101	-7	25
5	Centre Plus WA Poll, 337919	29	112	119	122	118	6	-4
6	Hazeldean, 003542	30	113	113	91	111	2	-5
7	Kerin Poll, 130980	45	109	118	111	121	0	-9
8	Mumblebone, 130389	40	75	62	85	65	-8	14
9	Mumblebone, 130850	38	99	100	111	99	0	-5
10	Pastora Poll, 130011	38	97	91	87	89	-1	7
11	Pastora Poll, 131634	15	99	97	96	95	-11	11
12	Pooginook Poll, 130083	34	104	110	109	113	-8	1
13	Rocklyn, 130022	29	99	98	93	98	6	2
14	Roseville Park, 140019	31	99	98	88	99	8	-6
15	Wattle Dale, 130115	27	98	92	78	88	-7	1
16*	Willandra Poll, 120026	36	93	91	93	91	0	-12
17	Woodpark Poll, 130431	29	92	87	100	86	6	8
Average performance		**32**	**100**	**100**	**100**	**100**	**11**	**29**

* 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). H = Hogget (400 to 540 days)

^ Historical Sire evaluated under AMSEA's R&D project to validate the system of linkage in MERINOSELECT that has operated over the past 15-20 years. These sires were generally widely used 15-20 years ago and were selected for the R&D program based on their high ASBV accuracies. They demonstrate the progress the industry has made over that period.

2015 Drop – Lamb Marking (Early Sept 2015)

2015 Drop – Weaning (Late October 2015)

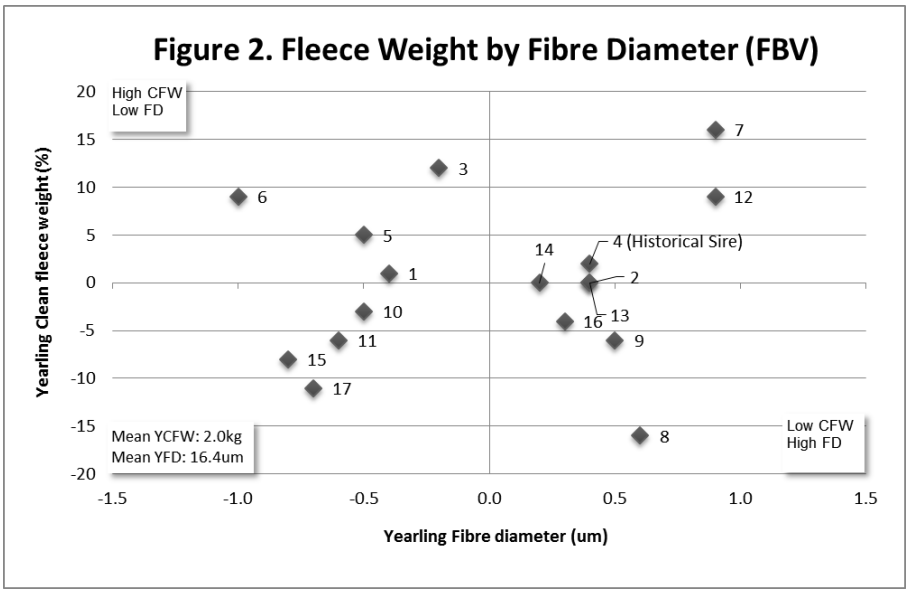


Figure 2 Fleece weight by fibre diameter FBVs (Hogget) – describes performance for clean fleece weight on the side axis and fibre diameter on the bottom axis. Sires that are above average for yearling clean fleece weight and below average yearling fibre diameter are located in the top left hand quadrant.

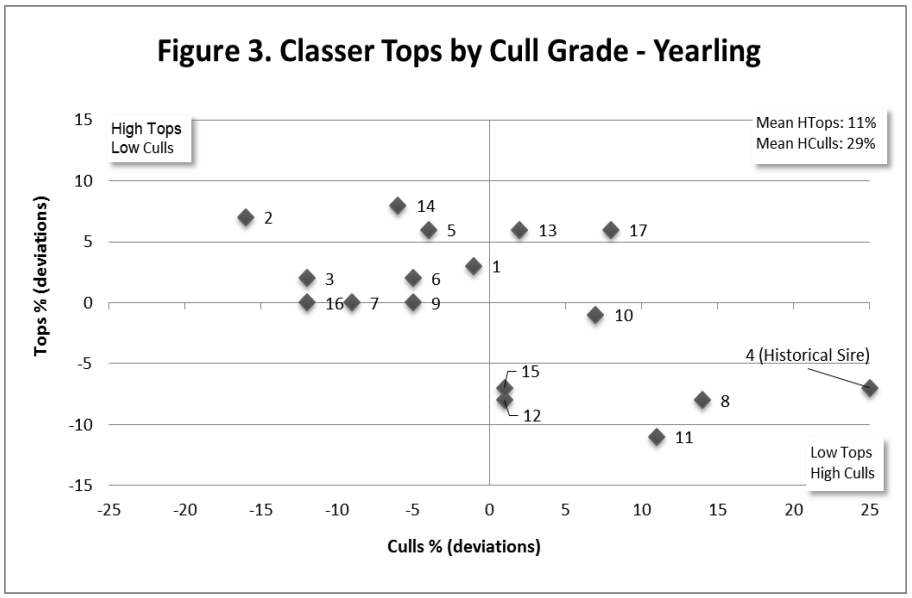


Figure 3 Classer's Tops by Cull Grade – describes performance for Classer's Tops Grade on the side axis and Cull Grade on the bottom axis. Sires that have above average Tops and below average Culls are in the top left hand quadrant. Classer's Tops (23%), Flock (47%) and Cull (30%) is based a visual assessment where the progeny performed well for growth, structurally sound with good wool quality traits including long soft handling wool and fleece weight.

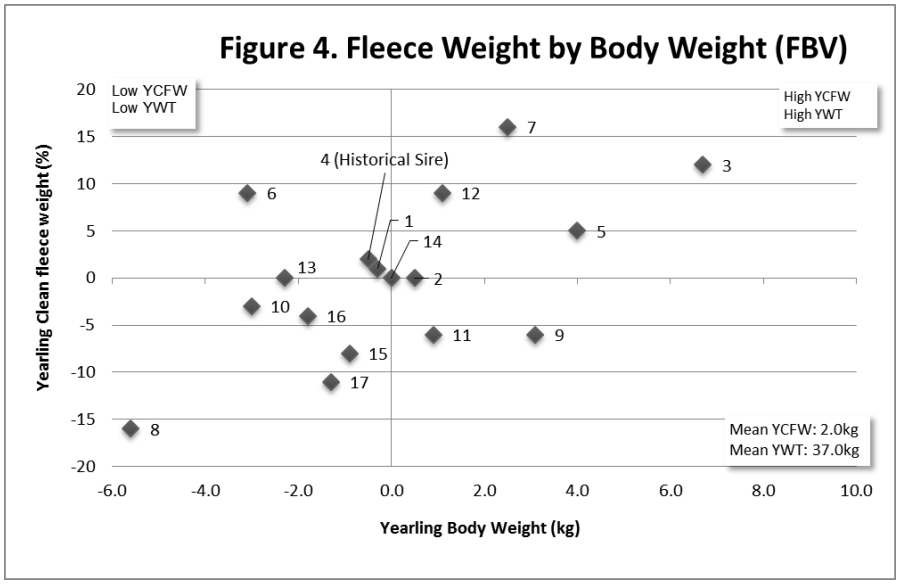


Figure 4. Fleece weight by body weight (FBV's) – describes performance for clean fleece weight on the side axis and body weight on the bottom axis. Sires that are above average for yearling clean fleece weight and above average for yearling body weight are located in the top right hand quadrant.

Figures 5, 6 & 7 Summary Graphs: Fleece weight by fat & eye muscle, body weight by eye muscle

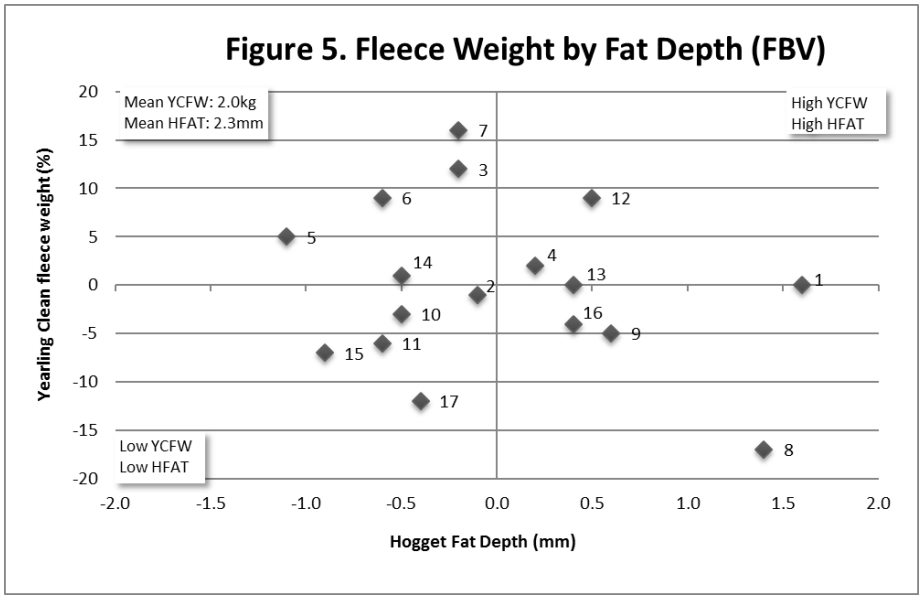


Figure 5. Fleece weight by fat depth (FBV's) – describes the performance for fleece weight on the side axis and fat depth on the bottom axis. Sires that are above average for yearling clean fleece weight and above average for hogget fat depth are located in the top right hand quadrant.

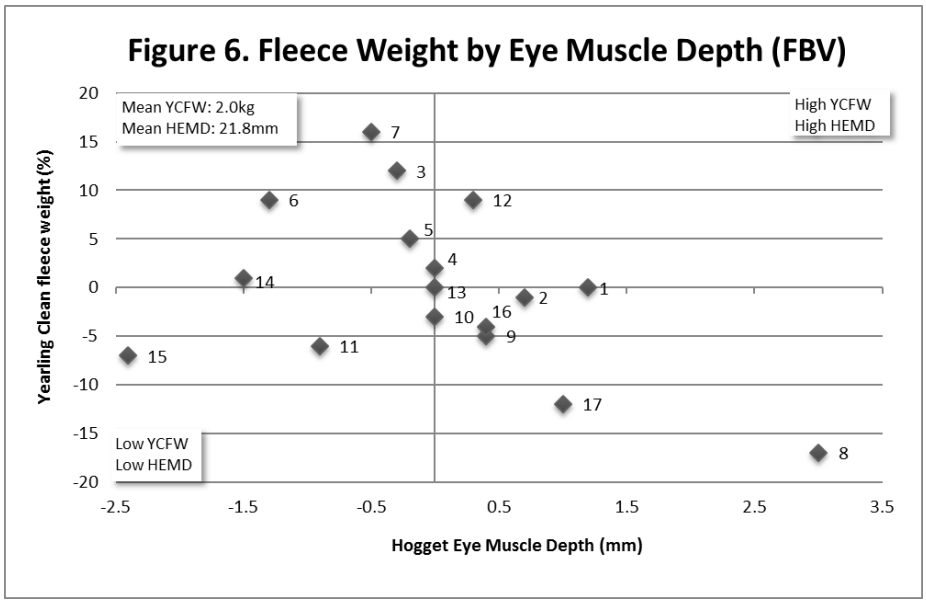


Figure 6. Fleece weight by eye muscle depth (FBV's) – describes performance for clean fleece weight on the side axis and eye muscle depth on the bottom axis. Sires that are above average for clean fleece weight and above average for hogget eye muscle depth are located in the top right hand quadrant.

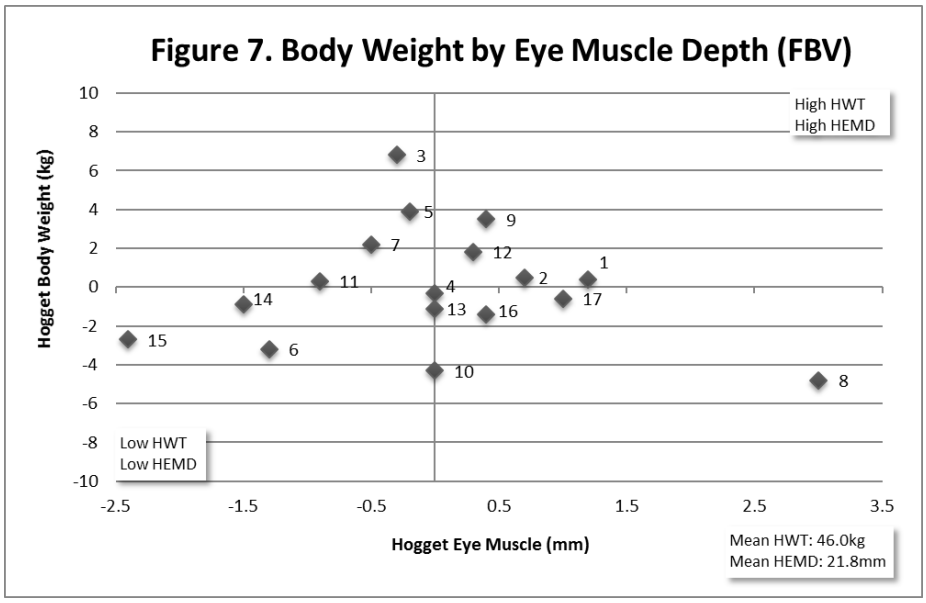


Figure 7. Body weight by eye muscle depth (FBV's) – describes performance for body weight on the side axis and eye muscle depth on the bottom axis. Sires that are above average for hogget body weight and above average for hogget eye muscle depth are located in the top right hand quadrant.

Understanding the results – measured trait performance

Measured trait performance and Classer's Grade – Tables 2 and 3 – pages 16 and 17.

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:	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 2. **Major measured traits and Classer's Grades**

Ram code	Breeders flock, Ram number	No. of prog.	Flock Breeding Values (deviations)							Classer's Grade[1]	
			GFW %	CFW %	FD um	WT *kg*				Tops % (dev)	Culls % (dev)
			Y^	Y	Y	W	P	Y	H	Y	Y
1*	Billandri Poll, 121391	36	1.0	0.0	-0.3	0.3	-0.1	-0.3	0.4	3	-1
2	Bundilla, 120013	33	0.0	-1.0	0.4	0.2	0.4	0.5	0.5	7	-16
3	Centre Plus Poll, 307564	31	12.0	12.0	-0.2	2.9	4.9	6.7	6.8	2	-12
4^	Centre Plus Poll, 9.183	27	3.0	2.0	0.4	-0.4	-0.8	-0.5	-0.3	-7	25
5	Centre Plus WA Poll, 337919	29	7.0	5.0	-0.5	1.4	3.0	4.0	3.9	6	-4
6	Hazeldean, 003542	30	8.0	9.0	-1.0	-1.1	-2.4	-3.1	-3.2	2	-5
7	Kerin Poll, 130980	45	13.0	16.0	0.9	1.0	1.9	2.3	2.2	0	-9
8	Mumblebone, 130389	40	-15.0	-17.0	0.7	-3.3	-4.5	-5.3	-4.8	-8	14
9	Mumblebone, 130850	38	-5.0	-5.0	0.6	1.1	2.6	3.3	3.5	0	-5
10	Pastora Poll, 130011	38	-3.0	-3.0	-0.5	-0.9	-2.2	-3.6	-4.3	-1	7
11	Pastora Poll, 131634	15	-6.0	-6.0	-0.7	0.3	0.7	0.8	0.3	-11	11
12	Pooginook Poll, 130083	34	7.0	9.0	0.9	0.8	1.0	1.3	1.8	-8	1
13	Rocklyn, 130022	29	-1.0	0.0	0.4	-0.7	-1.2	-1.7	-1.1	6	2
14	Roseville Park, 140019	31	0.0	1.0	0.2	0.5	0.4	-0.4	-0.9	8	-6
15	Wattle Dale, 130115	27	-7.0	-7.0	-0.9	-0.6	-1.3	-1.4	-2.7	-7	1
16*	Willandra Poll, 120026	36	-6.0	-4.0	0.3	-0.2	-1.1	-1.7	-1.4	0	-12
17	Woodpark Poll, 130431	29	-8.0	-12.0	-0.7	-1.2	-1.2	-0.9	-0.6	6	8
	Average performance	**32**	**3.0 kg**	**2.0 kg**	**16.4 um**	**24.9 kg**	**33.2 kg**	**37.0 kg**	**46.0 kg**	**11 %**	**29 %**

* 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). H = Hogget (400 to 540 days)

^ Historical Sire evaluated under AMSEA's R&D project to validate the system of linkage in MERINOSELECT that has operated over the past 15-20 years. These sires were generally widely used 15-20 years ago and were selected for the R&D program based on their high ASBV accuracies. They demonstrate the progress the industry has made over that period.

Information on how to use the results in the table above can be found on page 15.

Table 3. **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^	Y^	Y^	Y^	H^	H^	Y^
1*	Billandri Poll, 121391	36	0.6	-1.3	-5.0	5.1	1.6	1.2	Trait not measured at time of publication
2	Bundilla, 120013	33	-0.9	2.7	3.7	-0.5	-0.1	0.7	
3	Centre Plus Poll, 307564	31	-0.6	3.0	-0.4	-0.2	-0.2	-0.3	
4^	Centre Plus Poll, 9.183	27	0.2	-6.7	0.2	4.4	0.2	0.0	
5	Centre Plus WA Poll, 337919	29	1.0	1.2	-1.1	-0.6	-1.1	-0.2	
6	Hazeldean, 003542	30	1.2	-4.4	-1.3	-0.2	-0.6	-1.3	
7	Kerin Poll, 130980	45	-0.1	9.2	3.3	-7.4	-0.2	-0.5	
8	Mumblebone, 130389	40	-1.4	5.8	-0.2	-3.4	1.4	3.0	
9	Mumblebone, 130850	38	-1.9	8.2	3.0	-2.5	0.6	0.4	
10	Pastora Poll, 130011	38	0.7	-4.4	-0.7	3.3	-0.5	0.0	
11	Pastora Poll, 131634	15	0.5	-2.4	-2.6	4.0	-0.6	-0.9	
12	Pooginook Poll, 130083	34	-0.3	10.8	4.0	-9.2	0.5	0.3	
13	Rocklyn, 130022	29	-0.5	2.7	2.6	-3.7	0.4	0.0	
14	Roseville Park, 140019	31	0.0	-1.5	0.7	-2.1	-0.5	-1.5	
15	Wattle Dale, 130115	27	0.4	-7.8	-2.1	6.3	-0.9	-2.4	
16*	Willandra Poll, 120026	36	0.4	-7.4	0.9	1.0	0.4	0.4	
17	Woodpark Poll, 130431	29	0.6	-7.6	-4.8	5.8	-0.4	1.0	
	Average performance	**32**	**18.8 %**	**78.9 mm**	**44.7 N/ktex**	**90.5 deg/mm**	**2.3 mm**	**21.8 mm**	**%**

[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).

^ Historical Sire evaluated under AMSEA's R&D project to validate the system of linkage in MERINOSELECT that has operated over the past 15-20 years. These sires were generally widely used 15-20 years ago and were selected for the R&D program based on their high ASBV accuracies. They demonstrate the progress the industry has made over that period.

Information on how to use the results in the table above can be found on page 15.

Understanding the results – scored performance traits

Scored trait performance – Tables 4a to 4d – pages 19 to 22. 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.merinosuperiorsire.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 4a. **Visual trait assessments – Wool quality**

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.

Breeders flock, Sire number	Wool Quality																						
	Fleece Rot						Wool Colour						Wool Character						Dust Penetration					
	Dev	1	2	3	4	5	Dev	1	2	3	4	5	Dev	1	2	3	4	5	Dev	1	2	3	4	5
Billandri Poll, 121391	-0.1	97	3	0	0	0	0.0	36	61	3	0	0	0.0	42	50	8	0	0	0.0	0	58	42	0	0
Bundilla, 120013	-0.1	97	3	0	0	0	0.1	24	73	3	0	0	-0.2	61	36	3	0	0	0.0	0	58	39	3	0
Centre Plus Poll, 307564	-0.1	97	3	0	0	0	0.3	23	61	16	0	0	-0.2	58	39	3	0	0	-0.1	0	61	39	0	0
Centre Plus Poll, 9.183	0.1	85	15	0	0	0	0.2	30	56	14	0	0	0.4	18	56	26	0	0	0.1	0	44	56	0	0
Centre Plus WA Poll, 337919	0.1	83	17	0	0	0	0.1	31	66	3	0	0	0.1	38	52	7	3	0	-0.1	0	66	34	0	0
Hazeldean, 003542	0.0	90	7	3	0	0	-0.2	53	47	0	0	0	-0.3	63	37	0	0	0	-0.2	0	77	20	3	0
Kerin Poll, 130980	0.1	84	16	0	0	0	0.1	24	73	3	0	0	0.1	22	76	2	0	0	0.1	0	49	49	2	0
Mumblebone, 130389	-0.1	98	2	0	0	0	-0.5	80	20	0	0	0	0.2	28	62	10	0	0	0.2	3	35	60	2	0
Mumblebone, 130850	-0.1	100	0	0	0	0	0.1	32	63	5	0	0	0.2	24	71	5	0	0	0.3	0	29	71	0	0
Pastora Poll, 130011	0.1	87	11	0	0	2	-0.2	58	42	0	0	0	0.3	32	45	18	5	0	-0.2	2	74	24	0	0
Pastora Poll, 131634	0.0	93	7	0	0	0	-0.1	40	60	0	0	0	0.3	20	73	0	7	0	0.1	0	40	60	0	0
Pooginook Poll, 130083	-0.1	97	3	0	0	0	0.2	18	79	3	0	0	0.1	29	68	3	0	0	0.2	0	32	68	0	0
Rocklyn, 130022	-0.1	97	3	0	0	0	-0.2	55	45	0	0	0	-0.1	52	45	3	0	0	0.1	0	45	52	3	0
Roseville Park, 140019	0.1	77	23	0	0	0	0.1	29	68	3	0	0	-0.1	48	45	7	0	0	-0.1	0	68	32	0	0
Wattle Dale, 130115	-0.1	100	0	0	0	0	0.0	41	56	3	0	0	-0.1	48	44	8	0	0	-0.1	3	56	41	0	0
Willandra Poll, 120026	0.0	94	6	0	0	0	-0.2	53	44	3	0	0	-0.4	81	17	2	0	0	-0.3	6	72	19	3	0
Woodpark Poll, 130431	0.0	90	7	3	0	0	0.2	23	70	7	0	0	-0.2	53	43	4	0	0	-0.1	0	67	27	6	0
Avg.	**1.1**	**92**	**8**	**0**	**0**	**0**	**1.7**	**38**	**58**	**4**	**0**	**0**	**1.7**	**42**	**50**	**6**	**2**	**0**	**2.5**	**1**	**55**	**43**	**1**	**0**

^ Historical Sire evaluated under AMSEA's R&D project to validate the system of linkage in MERINOSELECT that has operated over the past 15-20 years. These sires were generally widely used 15-20 years ago and were selected for the R&D program based on their high ASBV accuracies. They demonstrate the progress the industry has made over that period.

Information on how to use the results in the table above can be found on page 18.

Table 4b. Visual trait assessment – Wool quality and pigmentation

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 18. 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.

Breeders flock, Sire number	Wool Quality												Pigmentation													
	Staple Weathering						Staple Structure						Fibre pigmentation						Non-fibre pigmentation						Black	Spot
	Dev	1	2	3	4	5	Dev	1	2	3	4	5	Dev	1	2	3	4	5	Dev	1	2	3	4	5	5	5
Billandri Poll, 121391	0.0	0	42	58	0	0	0.0	19	67	14	0	0	0.0	100	0	0	0	0	0.3	33	41	10	13	3	0	0
Bundilla, 120013	0.0	0	45	55	0	0	0.0	21	64	15	0	0	0.0	100	0	0	0	0	-0.3	60	31	9	0	0	0	0
Centre Plus Poll, 307564	-0.1	0	52	48	0	0	0.0	19	74	7	0	0	0.0	100	0	0	0	0	0.6	19	42	26	10	3	0	3
Centre Plus Poll, 9.183	0.1	4	33	56	7	0	0.1	26	44	30	0	0	0.0	100	0	0	0	0	0.0	26	65	9	0	0	0	0
Centre Plus WA Poll, 337919	-0.1	0	59	41	0	0	-0.1	28	59	13	0	0	0.0	100	0	0	0	0	-0.3	56	41	0	3	0	0	0
Hazeldean, 003542	-0.2	0	70	27	3	0	-0.1	23	73	4	0	0	0.0	100	0	0	0	0	-0.3	65	29	3	3	0	0	0
Kerin Poll, 130980	0.1	0	31	69	0	0	0.1	18	64	18	0	0	0.0	100	0	0	0	0	-0.4	60	36	4	0	0	0	0
Mumblebone, 130389	0.2	2	28	65	5	0	-0.2	32	62	6	0	0	0.0	100	0	0	0	0	0.1	43	26	29	2	0	0	0
Mumblebone, 130850	0.3	0	21	76	3	0	-0.5	55	45	0	0	0	0.0	100	0	0	0	0	0.0	32	57	8	3	0	0	0
Pastora Poll, 130011	-0.1	3	55	37	5	0	0.5	0	66	32	2	0	0.0	100	0	0	0	0	-0.3	57	35	8	0	0	0	0
Pastora Poll, 131634	0.2	0	33	53	14	0	0.2	7	73	20	0	0	0.0	100	0	0	0	0	0.2	38	31	25	6	0	0	6
Pooginook Poll, 130083	0.2	0	29	68	3	0	0.0	24	62	14	0	0	0.0	100	0	0	0	0	0.1	24	61	15	0	0	0	0
Rocklyn, 130022	0.0	0	48	48	4	0	-0.2	34	62	4	0	0	0.0	100	0	0	0	0	0.6	4	61	32	3	0	0	0
Roseville Park, 140019	-0.1	0	52	48	0	0	0.2	10	71	19	0	0	0.0	100	0	0	0	0	0.1	39	42	13	3	3	0	0
Wattle Dale, 130115	0.0	7	33	56	4	0	0.1	33	33	30	4	0	0.0	100	0	0	0	0	0.2	32	45	16	7	0	0	0
Willandra Poll, 120026	-0.3	17	47	31	2	3	0.0	31	50	19	0	0	0.0	100	0	0	0	0	-0.2	53	37	10	0	0	0	0
Woodpark Poll, 130431	-0.1	3	57	33	7	0	-0.1	27	63	10	0	0	0.0	100	0	0	0	0	-0.3	53	41	6	0	0	0	0
Avg.	**2.6**	**3**	**43**	**51**	**3**	**0**	**1.9**	**24**	**61**	**15**	**0**	**0**	**1.0**	**100**	**0**	**0**	**0**	**0**	**1.8**	**41**	**42**	**13**	**3**	**1**	**0**	**0**

^ Historical Sire evaluated under AMSEA's R&D project to validate the system of linkage in MERINOSELECT that has operated over the past 15-20 years. These sires were generally widely used 15-20 years ago and were selected for the R&D program based on their high ASBV accuracies. They demonstrate the progress the industry has made over that period. Information on how to use the results in the table above can be found on page 18.

Table 4c. Visual trait assessments – Conformation

Traits are reported as a deviation (Dev) from the average trait score for all progeny. The percentage of a sire's progeny assessed for each score is also reported. For the majority of breeder's objectives a negative deviation would be considered favorable and the larger the deviation the better. Face cover and body wrinkle are possible exceptions when for many breeders the optimum score is in the middle of the range.

Breeders flock, Sire number	Conformation																											
	Jaw						Legs and Feet						Shoulder and Back						Face Cover						Body Wrinkle					
	Dev	1	2	3	4	5	Dev	1	2	3	4	5	Dev	1	2	3	4	5	Dev	1	2	3	4	5	Dev	1	2	3	4	5
Billandri Poll, 121391	0.0	100	0	0	0	0	-0.1	92	0	8	0	0	-0.1	97	0	3	0	0	0.1	0	0	86	14	0	0.1	17	64	11	8	0
Bundilla, 120013	0.0	100	0	0	0	0	-0.1	91	0	9	0	0	-0.1	100	0	0	0	0	-0.1	0	0	97	3	0	0.0	12	73	15	0	0
Centre Plus Poll, 307564	0.1	97	0	0	0	3	0.1	84	0	16	0	0	-0.1	97	0	3	0	0	-0.1	0	3	97	0	0	0.1	19	52	29	0	0
Centre Plus Poll, 9.183	0.0	100	0	0	0	0	-0.1	93	0	7	0	0	0.2	86	0	11	0	3	0.0	0	0	93	7	0	0.4	4	57	32	7	0
Centre Plus WA Poll, 337919	0.0	100	0	0	0	0	0.0	86	0	14	0	0	0.1	90	0	10	0	0	-0.1	0	3	90	7	0	0.2	10	66	17	7	0
Hazeldean, 003542	0.0	100	0	0	0	0	0.0	87	0	13	0	0	0.0	93	0	7	0	0	0.1	0	0	87	10	3	0.4	4	50	43	3	0
Kerin Poll, 130980	0.0	98	0	2	0	0	-0.2	96	0	4	0	0	0.1	89	0	11	0	0	-0.1	0	0	100	0	0	0.0	24	49	22	5	0
Mumblebone, 130389	0.0	98	0	2	0	0	0.3	72	0	28	0	0	-0.1	100	0	0	0	0	0.0	0	0	95	5	0	-0.5	55	42	3	0	0
Mumblebone, 130850	0.0	100	0	0	0	0	0.0	87	0	13	0	0	0.0	95	0	5	0	0	-0.1	0	3	92	5	0	-0.6	61	39	0	0	0
Pastora Poll, 130011	0.0	97	0	3	0	0	0.1	79	0	21	0	0	0.2	85	0	15	0	0	0.0	0	0	95	5	0	0.2	13	56	23	8	0
Pastora Poll, 131634	0.0	100	0	0	0	0	0.1	80	0	20	0	0	-0.1	100	0	0	0	0	-0.1	0	0	100	0	0	0.0	20	60	13	7	0
Pooginook Poll, 130083	0.0	97	0	3	0	0	-0.1	91	0	9	0	0	-0.1	97	0	3	0	0	0.1	0	0	82	18	0	-0.2	21	79	0	0	0
Rocklyn, 130022	0.0	100	0	0	0	0	-0.1	90	0	10	0	0	-0.1	97	0	3	0	0	0.2	0	0	79	17	4	-0.3	41	45	14	0	0
Roseville Park, 140019	0.0	97	0	3	0	0	0.0	87	0	13	0	0	0.0	94	0	6	0	0	-0.1	0	4	90	6	0	0.0	13	71	16	0	0
Wattle Dale, 130115	0.0	100	0	0	0	0	0.1	81	0	19	0	0	0.1	89	0	11	0	0	0.0	0	4	85	11	0	0.1	8	70	22	0	0
Willandra Poll, 120026	0.0	100	0	0	0	0	0.1	86	0	11	0	3	-0.1	100	0	0	0	0	0.2	0	0	75	22	3	0.0	25	53	17	5	0
Woodpark Poll, 130431	0.1	93	0	7	0	0	-0.2	97	0	3	0	0	0.1	90	0	10	0	0	0.0	0	0	90	10	0	0.0	20	60	13	7	0
Avg.	**1.0**	**99**	**0**	**1**	**0**	**0**	**1.3**	**87**	**0**	**13**	**0**	**0**	**1.1**	**94**	**0**	**6**	**0**	**0**	**3.1**	**0**	**1**	**90**	**8**	**1**	**2.0**	**21**	**58**	**17**	**4**	**0**

^ Historical Sire evaluated under AMSEA's R&D project to validate the system of linkage in MERINOSELECT that has operated over the past 15-20 years. These sires were generally widely used 15-20 years ago and were selected for the R&D program based on their high ASBV accuracies. They demonstrate the progress the industry has made over that period. Information on how to use the results in the table above can be found on page 18.

Table 4d. Visual trait assessments – Breech

Traits are reported as a deviation (Dev) from the average trait score for all progeny. The percentage of a sire's progeny assessed for each score is also reported. For the majority of breeder's objectives a negative deviation would be considered favorable and the larger the deviation the better. Breech scores were recorded at lamb marking.

Breeders flock, Sire number	Breech																							
	Marking Breech Cover						Marking Breech Wrinkle						Marking Crutch Cover						Yearling Dag					
	Dev	1	2	3	4	5	Dev	1	2	3	4	5	Dev	1	2	3	4	5	Dev	1	2	3	4	5
Billandri Poll, 121391	-0.4	23	33	18	23	3	0.0	10	51	26	13	0	-0.4	23	33	18	23	3	Yearling Dag was not scored at classing, progeny had been crutched					
Bundilla, 120013	0.0	11	26	37	17	9	0.1	9	43	43	5	0	0.0	11	26	37	17	9						
Centre Plus Poll, 307564	-0.5	32	26	23	16	3	0.4	0	42	45	10	3	-0.5	32	26	23	16	3						
Centre Plus Poll, 9.183	-0.3	11	44	24	21	0	0.2	9	35	41	15	0	-0.3	11	44	24	21	0						
Centre Plus WA Poll, 337919	-0.2	12	41	19	25	3	0.3	3	38	53	3	3	-0.2	12	41	19	25	3						
Hazeldean, 003542	0.0	13	23	35	23	6	0.4	4	42	35	16	3	0.0	13	23	35	23	6						
Kerin Poll, 130980	0.3	4	22	31	36	7	0.1	13	40	33	11	3	0.3	4	22	31	36	7						
Mumblebone, 130389	0.1	14	17	33	29	7	-0.4	29	50	19	2	0	0.1	14	17	33	29	7						
Mumblebone, 130850	-0.1	18	30	15	32	5	-0.7	40	50	10	0	0	-0.1	18	30	15	32	5						
Pastora Poll, 130011	0.5	3	20	30	35	12	0.0	18	40	32	8	2	0.5	3	20	30	35	12						
Pastora Poll, 131634	0.0	25	25	19	6	25	-0.4	38	31	31	0	0	0.0	25	25	19	6	25						
Pooginook Poll, 130083	0.2	13	16	32	34	5	-0.4	23	53	24	0	0	0.2	13	16	32	34	5						
Rocklyn, 130022	-0.2	23	26	23	26	2	-0.2	13	61	23	3	0	-0.2	23	26	23	26	2						
Roseville Park, 140019	0.1	16	19	26	35	4	0.1	13	29	58	0	0	0.1	16	19	26	35	4						
Wattle Dale, 130115	0.0	6	26	45	19	4	0.5	4	32	42	16	6	0.0	6	26	45	19	4						
Willandra Poll, 120026	0.1	5	32	29	29	5	0.2	13	37	32	16	2	0.1	5	32	29	29	5						
Woodpark Poll, 130431	0.3	10	19	28	31	12	-0.2	12	59	25	4	0	0.3	10	19	28	31	12						
Avg.	**2.8**	**14**	**26**	**27**	**26**	**7**	**2.4**	**15**	**43**	**34**	**7**	**1**	**2.8**	**14**	**26**	**27**	**26**	**7**						

^ Historical Sire evaluated under AMSEA's R&D project to validate the system of linkage in MERINOSELECT that has operated over the past 15-20 years. These sires were generally widely used 15-20 years ago and were selected for the R&D program based on their high ASBV accuracies. They demonstrate the progress the industry has made over that period.

Information on how to use the results in the table above can be found on page 18.

Table 5. **Sire means for measured traits**

Sire means are the average performance of all the progeny of a sire. No account is made for factors that can improve the breeding value accuracy.

Breeders flock, Ram number	No. of prog	Ram averages for measured traits (deviations)												
		GFW %	CFW %	FD um	WT kg				Fat mm	EMD mm	FDCV %	Curv deg/mm	SL mm	SS N/ktex
		Y^	Y	Y	W	P	Y	H	H	H	Y	Y	Y	Y
Billandri Poll, 121391	36	0.1	0.1	-0.2	0.7	0.1	-0.9	-0.2	0.3	0.7	0.3	4.2	-0.7	-4.9
Bundilla, 120013	33	0.0	0.0	0.3	0.0	0.3	0.1	0.0	-0.1	0.5	-0.6	-0.3	2.1	3.5
Centre Plus Poll, 307564	31	0.3	0.2	-0.2	1.7	3.4	4.0	4.0	0.0	-0.2	-0.6	-0.2	1.8	-0.6
Centre Plus Poll, 9.183	27	0.1	0.0	0.4	-0.2	-0.8	0.0	0.0	0.1	0.0	0.0	3.4	-6.0	-0.7
Centre Plus WA Poll, 337919	29	0.1	0.0	-0.4	0.3	2.5	2.7	2.2	-0.2	0.0	0.8	-0.3	1.4	0.3
Hazeldean, 003542	30	0.2	0.1	-0.7	-0.2	-1.8	-2.0	-1.5	0.0	-0.7	0.6	0.4	-3.3	-0.5
Kerin Poll, 130980	45	0.3	0.2	0.5	0.3	1.5	1.2	1.0	0.0	-0.3	0.0	-4.5	6.5	3.6
Mumblebone, 130389	40	-0.4	-0.2	0.5	-2.3	-3.1	-3.4	-2.9	0.2	1.9	-1.0	-3.1	4.7	-1.6
Mumblebone, 130850	38	-0.1	-0.1	0.3	0.3	1.8	1.7	1.9	0.1	0.2	-1.2	-2.2	6.7	2.1
Pastora Poll, 130011	38	-0.1	0.0	-0.3	0.1	-1.2	-2.2	-3.2	-0.1	0.1	0.5	2.9	-2.7	-0.1
Pastora Poll, 131634	15	-0.2	-0.1	-0.5	-0.1	0.7	0.6	0.2	-0.1	-0.8	0.6	3.3	-1.3	-2.6
Pooginook Poll, 130083	34	0.1	0.1	0.5	0.6	0.4	1.0	1.5	0.1	0.2	-0.1	-6.6	8.4	4.8
Rocklyn, 130022	29	-0.1	0.0	0.2	-0.4	-0.9	-1.5	0.2	0.1	0.0	-0.4	-2.9	2.3	2.5
Roseville Park, 140019	31	0.0	0.0	0.1	0.6	0.4	-0.2	-0.3	-0.1	-1.0	0.0	-1.9	-1.8	0.6
Wattle Dale, 130115	27	-0.2	-0.1	-0.5	-0.3	-1.4	0.0	-1.7	-0.1	-1.7	0.2	4.6	-5.8	-2.4
Willandra Poll, 120026	36	-0.1	0.0	0.3	0.3	-1.0	-0.8	-0.6	0.1	0.3	0.3	-0.1	-6.3	0.9
Woodpark Poll, 130431	29	-0.1	-0.2	-0.4	-1.4	-1.0	-0.3	-0.6	-0.1	0.8	0.5	3.4	-6.2	-5.0
Average performance	**32**	**3.0 kg**	**2.0 kg**	**16.4 um**	**24.9 kg**	**33.2 kg**	**37.0 kg**	**46.0**	**2.3 mm**	**21.8 mm**	**18.8 %**	**90.5 deg/mm**	**78.9 mm**	**44.7 N/ktex**

[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).

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Index Options – indexes reported on page 12.

Breeding Objective index options provide the relative value of sires based on a combination of the measured traits' genetic performance. The indexes used in this report are only some of the many indexes that can be used to describe an individual breeder's objective for measured traits.

If a breeder is considering using a sire in this report it is critical to consider the performance of the breeder's flock relative to the performance standard in this report. The relative performance must be considered to establish the result that can be expected when a sire is used in a breeder's flock.

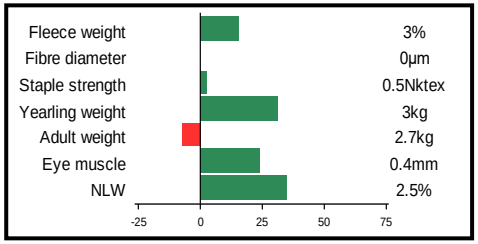
All AMSEA site evaluation reports present 3 standard indexes to provide combined **measured** trait performance These 3 AMSEA indexes are DP+; MP+; and FP+. These indexes are the same as MERINOSELECT indexes of that name however as there is no direct reproduction records captured by sire evaluation AMSEA do not include a Reproduction (NLW) FBV in their index calculations. As a result the 21% contribution by NLW in the DP+ index is not effectively applied by the index calculation.

Index *production system* and breeding objectives

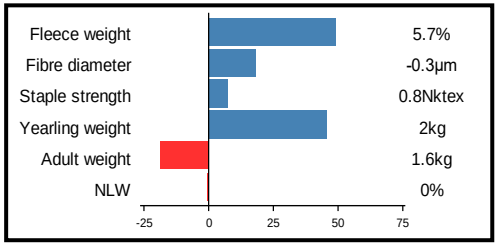
AMSEA **DP+**	**Dual Purpose Plus:** Based on a meat focused production system where surplus progeny are sold as lambs and a portion of ewes are joined to terminal sires. Large increase in body weight and carcase traits. Moderate increase in fleece weight. Maintain fibre diameter and staple strength. Moderate increase in reproduction.
AMSEA **MP+**	**Merino Production Plus:** Based on a balanced wool and meat production system where surplus progeny are sold as hoggets. Large increase in fleece weight. Small increase in staple strength, body weight and reproduction. Moderate reduction in fibre diameter.
AMSEA **FP+**	**Fibre Production Plus:** Based on a wool focussed production system where wethers are retained, operating in an environment where worms cause economic losses. Large reduction in fibre diameter. Large increase in staple strength. Small reduction in WEC (if measured in the breeding program). Small increase in fleece weight. Little change in carcass traits and reproduction.
AMSEA **WP+**	**Wool Production Plus:** Based on the Merino Production Plus system with a greater emphasis on increasing fleece weight, while maintaining fibre diameter and a moderate emphasis on increasing body weight.

Likely responses from using an index for 10 years: The responses are based on a ram breeding flock with a standard breeding program, with no introductions of outside genetics and uses 35% of the selection emphasis on traits that are not in the index.

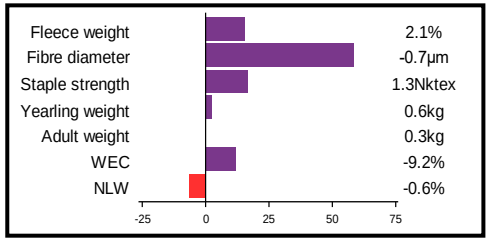
Dual Purpose Plus (DP+)



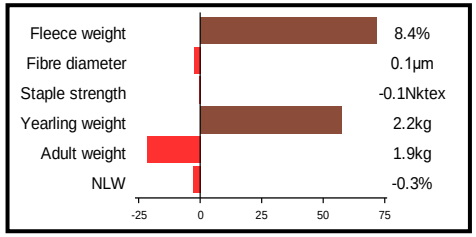
Merino Production Plus (MP+)



Fibre Production Plus (FP+)



Wool Production Plus (WP+)



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

Under the auspices of

The Australian Merino Sire Evaluation Association