Bluechip Livestock 2012 Young Sire Program

Central Test Sire Evaluation
Within Flock Analysis

2012 Drop 2nd Assessment

Conducted by

under the auspices of

The Australian Merino Sire Evaluation Association

June 2014

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

Australian Sheep Breeding Values reported here are based on analyses conducted by Sheep Genetics.

Bluechip Livestock Young Sire Program - Central Test Sire Evaluation

The Bluechip Livestock Young Sire Program in addition to the AMSEA requirements the site has full pedigree and Australian Sheep Breeding Values on all the progeny. The male progeny were kept entire and we were able to participate in the Sheep CRC Genomic Pilot Project. The ewe progeny have been joined in 2014 and reproduction data will be analysed in conjunction with the 2011 drop ewes.

Billandri Poll Merino Stud, Western Australia, were used as the ewe base for the YSP. The ewes have Sheep Breeding Values (ASBVs) and have been inspected and classed. Several of these ewes are MERINOSELECT trait leaders. Each sire group was allocated a cross section of ewes based on a DP7% index, averaging 129% at the time of artificial insemination.

As a service to clients and a way of complementing the Peter Westblade Memorial Merino Challenge, Bluechip Livestock co-coordinates the Young Sire Programs at the Temora Agricultural Innovation Centre (TAIC).

Bluechip Livestock is owned by Marty Moses (Moses and Son Woolbroker) and managed by Marty Moses and Simon Coddington. Bluechip Livestock aims to provide and market quality livestock with independent information to the wider Australian sheep industry.

Sally Martin has played an integral role in the coordination of the BLYSP. Sally's dedication and attention to detail has made this evaluation possible.

The classing for the first visual assessment was conducted by Mr Jason Southwell and the second visual assessment by Malcolm Peake, I fully acknowledge their professional contribution to the visual assessments.

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

Marty Moses
Director, Bluechip Livestock

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2012 Drop, 2nd Assessment, Bluechip Livestock Young Sire Program

The information in this site evaluation report provides a comprehensive assessment of the 2012 drop 1st and 2nd stage 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 1st Assessment was made at 10 months of age with 10 months of wool growth. The 2nd Assessment was conducted between 18 months of age in 8 months wool.

Contents

Sire and owner details

Ram code	Breeders flock, Ram number Ram ID #, Breed †	Contact name, address Phone, Fax
1#	Bundilla, 100027 504081-2010-100027 Merino	Rick, Jill & Ross Baldwin, Bundilla, Tubbul Rd, Young NSW 2594 P 02 6383 3802 F 02 6383 3805 E bundillamerinos@bigpond.com
2#	Pooginook, 104160 500788-2010-104160 Merino	John Sutherland, Pooginook Stud Manager, Paraway Pastoral Company, Pooginook, Jerilderie NSW 2716 P 02 6954 6145 F 02 6954 6168 E j.sutherland@parawaypastoral.com
3#	Pastora Poll, 092152 601090-2009-092152 Poll Merino	Tim Westblade, Pastora, Lockhart NSW 2656 P 02-6920 5122 E trwesty@bigpond.com
4**	Woodpark Poll, 100015 601151-2010-100015 Poll Merino	Stephen and Carol Huggins, Eurolie, HAY NSW 2711 P 02-6993 4616 F 02-6993 4122 E eurolie@bigpond.com
5	Hazeldean, 10-0413 500383-2010-000413 Merino	Jim Litchfield, Hazeldean Pty Ltd Cooma NSW 2630 P 02 6453 555 F 02 6453 5526 E admin@hazeldean.com.au
6*	Coromandel Poll, ET2 600553-2007-070002 Poll Merino	Michael Campbell, Coromandel, Gairdner WA 6337 P 08-9836 6044 F 08-9836 3099 E coromandel6@gmail.com
7	Pastora Poll, 102069 601090-2010-102069 Poll Merino	Tim Westblade, Pastora, Lockhart NSW 2656 P 02-6920 5122 E trwesty@bigpond.com
8	Grassy Creek, 100181 601366-2010-100181 Poll Merino	Michael Corkhill, Dryburgh, Reids Flat NSW 2586 P 02-6345 2201 F 02-6345 2201 E grassycreek@bigpond.com
9**	Pooginook, Frazer 500788-2009-090494 Merino	John Sutherland, Pooginook Stud Manager, Paraway Pastoral Company, Pooginook, Jerilderie NSW 2716 P 02 6954 6145 F 02 6954 6168 E j.sutherland@parawaypastoral.com
UR 10	Mega Merinos Australia, 101797 609260-2010-101797 Poll Merino	James Armstrong, Wirrolga, Cassilis NSW 2329 P 02-6376 1163 F 02-6376 1099 E james@cassilispark.com.au

*   Link ram: Ram 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 rams (in addition to Link Rams) between this CTSE site and other sites.

UR   Unregistered Flock. Sires bred in an unregistered flock are identified in the table by a UR following the sire's code.

- 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.

\#   Insufficient progeny to meet AMSEA index and EBV accuracy thresholds at first assessment.   Where accuracy not met, n/a is reported. Visual traits are not reported for these sires because of the low progeny numbers.

1. Location

- Temora Agricultural Innovation Center (TAIC) is located 6km north of Temora. The property is approximately 600 hectares and has an average rainfall of 524mm. TAIC is geographically central to the South West Slopes of NSW and is in a typically mixed farming area.
- The topography of TAIC is quite flat with the soil type varying little across the property and can be described as moderately acid clay loam duplex soil.
- TAIC operates as a research facility and as a commercial farming operation.
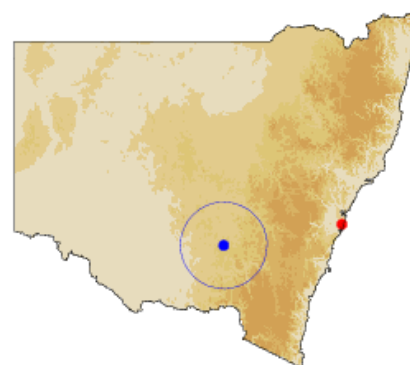
2. Selection and mating

- 400 Billandri Poll Stud ewes were mated by Artificial Insemination to 10 sires.
- The ewes were evenly allocated to each ram using the 7% Dual Purpose index. This allowed each sire group to have a range of ewes with high and low indexes. The average 7% DP index was 129.
- The insemination program was conducted on 16th and 17th January 2012.
- The insemination program was conducted by Genstock (NSW).
- 40 ewes were allocated to each sire entered.

3. Pregnancy and lambing

- Pregnancy scanning took place on 5th April 2012.
- Ewes were managed as one contemporary group until 5 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 and mothered within one week 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, scored and electronically tagged on 26th July 2012.
- The lambs were weaned onto improved pasture on 10th October 2012.
- Pasture conditions were adequate from birth to their first shearing.

5. Visual Assessments

- The 1st stage visual assessment was carried out by Mr Jason Southwell.
- The 2nd stage visual assessment was carried out by Mr Malcolm Peake.

6. Rainfall - TAIC

	2011	2012	2013	median
JAN	61.8	62.2	10.4	22.7
FEB	196.2	143.2	39.8	24.5
MAR	71.6	129.6	20	25.7
APR	16.8	5.0	2.0	22.2
MAY	17	15.6	51.8	26.8
JUN	18.2	17.6	87.0	47.3
JUL	25.4	44.4	17.6	48.5
AUG	45.6	38.0	25.2	45.1
SEP	30.4	15.4	29.4	43.6
OCT	47.6	16.8	14.8	43.5
NOV	107.8	35.0	47.2	43.5
DEC	63.8	29.8	9.2	43.8
Totals	702.2	471.0	354.4	533.4
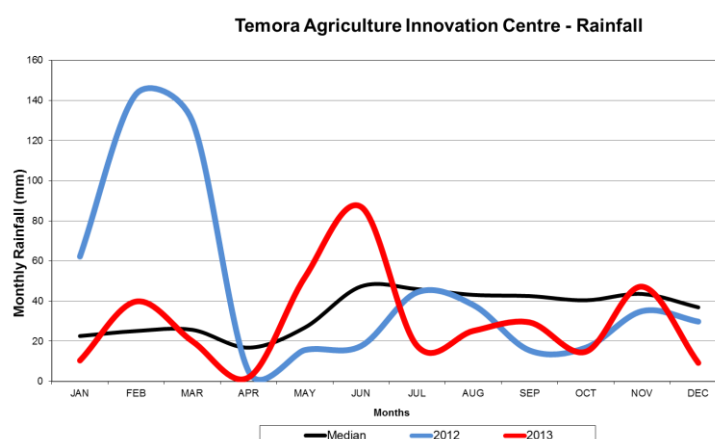
*Source: TAIC records and BOM. Median 1988-2013.

Assessment and management program

Activity	Date/s	Age (months)	Wool (months)
Selection of ewes & allocation of ewes for mating	01.01.2012		
Artificial Insemination	16.01.2012		
	17.01.2012		
Pregnancy scanning	05.04.2012		
Separated into sire lambing groups	08.06.2012		
Lambing: start – finish	13 to 20.06.2012		
Lambing mobs boxed to 1 management group	25.06.2012	14-21 days	
Tagging/pigment scores (age in days)	25.06.2012	14-21 days	
Marked and scored for breech traits	26.07.2012	45 days	
Weaning (age in days)	10.10.2012	92 days	
Pre assessment (even-up) shearing	NA		
Crutching			
• 1st	03.01.2013	7	7
• 2nd	01.10.2013	6	6
Fat and eye muscle scanning and body weight	18.03.2013	10	
Fleece sampling assessment			
• 1st	18.03.2013	10	10
• 2nd	04.12.2301	18	8
Staple length assessment			
• 1st	18.03.2013	10	10
• 2nd			
Classer's Grade assessment			
• 1st	18.03.2013	10	10
• 2nd	04.12.2013	18	8
Pre shearing scoring assessment			
• 1st	18.03.2013	10	10
• 2nd	04.12.2013	18	8
Assessment shearing			
• 1st	28.03.2013	10	10
• 2nd	05.12.2013	18	8
Post shearing scoring assessment			
• 1st	13.04.2013	10	0
• 2nd	05.12.2013	18	0
Body weigh assessment			
• Weaning	10.10.2012	3	
• Early Post Weaning			
• Post Weaning	08.01.2013	7	
• Yearling	18.03.2013	10	
• Hogget	05.12.2013	18	
Worm egg count sampling			
• 1st	Little challenge during the evaluation		
• 2nd			
Sire's Progeny Group Evenness assessment			
Vaccination	Marking, weaning, post shearing		
Drench	As required based on worm egg counts		
Supplementary feeding: start – finish			
Field day or public display of sheep	**(1)** 18/03/2013		

Visual tait assessment and site Breeding Objective

Visual trait assessment

2nd Stage Assessment

Classer's Grade: Malcolm Peake
Trait Scores: Malcolm Peake

Site Breeding Objective used to assess the Classer's Grades – 1st and 2nd Stage Assessment

The Breeding Objective used to select the Classer's Tops (12%), Flock (58%) and Cull (30%) was based a visual assessment where the animal performed well for growth, structurally sound with good wool quality traits including long soft handling wool and fleece weight.   *(No reference was made to measured performance 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. Adjustments have been made for singles and twins. The ASBVs have not been taken into consideration in the within site analysis, however will be used in the across site (MSS) analysis.

All the rams (excluding the link and common sire(s)) were unproven prior to be entered in the Bluechip Livestock Young Sire Program. 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.

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 2nd 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 21).

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#	Bundilla Poll, 100027	504081-2010-100027	Unknown
2#	Pooginook, 104160	500788-2010-104160	Unknown
3#	Pastora Poll, 092152	601090-2009-092152	Unknown
4**	Woodpark Poll, 100015	601151-2010-100015	Unknown
5	Hazeldean, 10.413	500383-2010-000413	601050-2002-020603 (Stockman Poll, Jim)
6*	Coromandel Poll, ET2	600553-2007-070002	600478-2004-041575
7	Pastora Poll, 102069	601090-2010-102069	Unknown
8	Grassy Creek Poll, 100181	601366-2010-100181	600553-2007-070002 (Coromandel Poll, ET2)
9**	Pooginook, Frazier	500788-2009-090494	500788-2007-073802
10UR	Mega Merinos Australia Poll, 101797	609260-2010-101797	Unknown

*   Link ram: Ram 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 rams (in addition to Link Rams) between this CTSE site and other sites.

\#   Insufficient progeny to meet AMSEA index and EBV accuracy thresholds at first/second assessment. Where accuracy not met, n/a is reported. Visual traits are not reported for these sires because of the low progeny numbers.

Figure 1a. Combined visual and measured performance
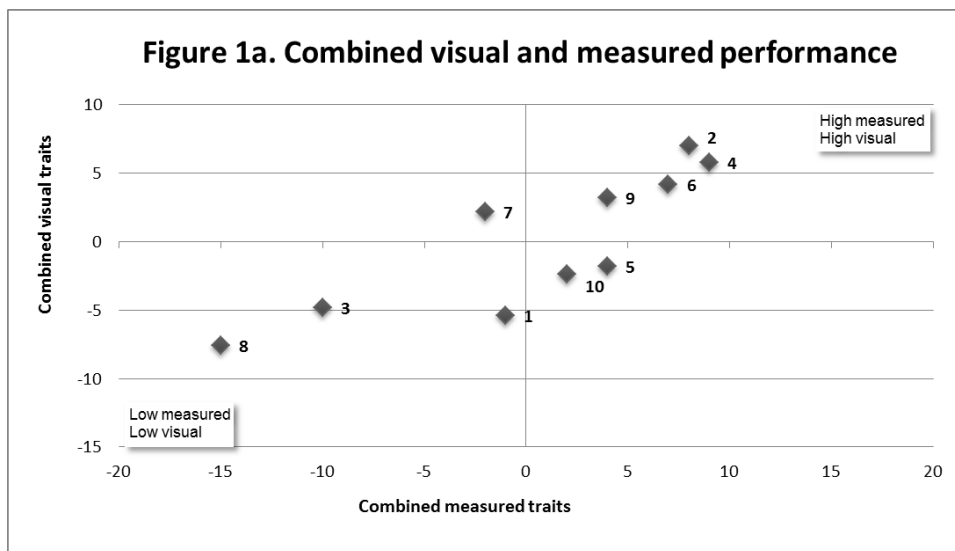
Figure 1a is based on an **AMSEA Dual Purpose Plus (DP+) index** (meat focused production system where surplus progeny are sold as lambs and a portion of ewes are jointed to terminal sires with a high increase in meat traits, reproduction, moderate increase in staple strength and minimal emphasis on fibre diameter and fleece weight).

Figure 1b. Combined visual and measured performance
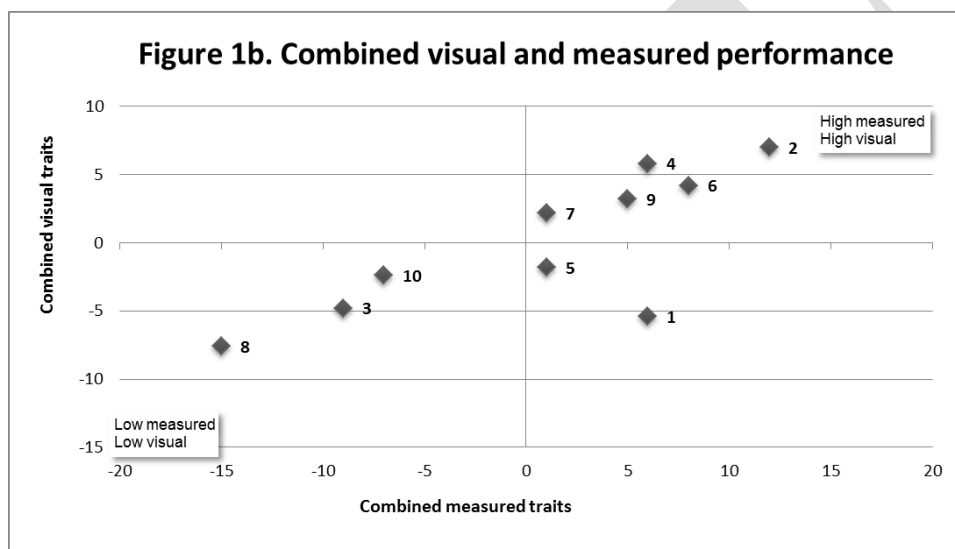
Figure 1b is based on an **AMSEA Merino Production Plus (MP+) index** (moderate increase in fleece weight, staple strength and meat traits and a moderate reduction in fibre diameter where surplus progeny are sold as hoggets).

Figure 1c. Combined visual and measured performance
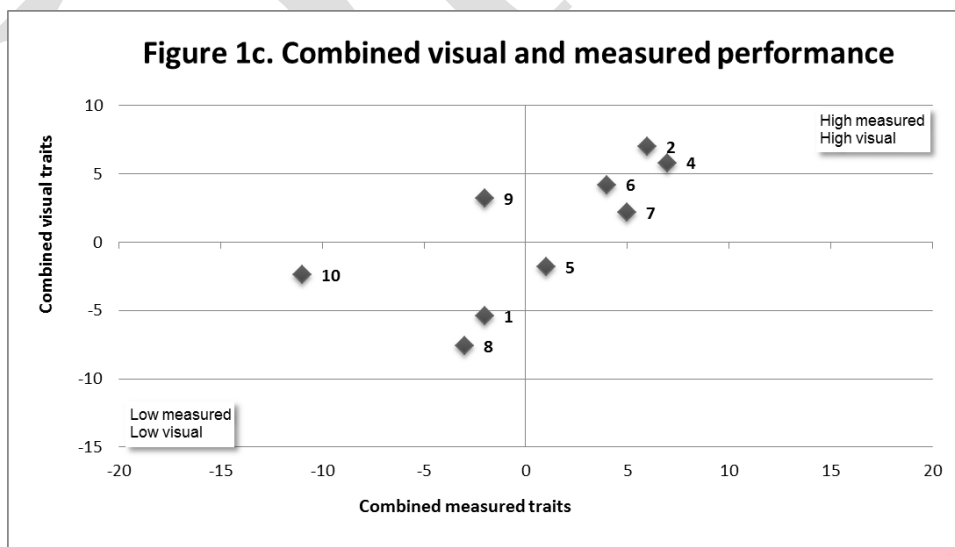
Figure 1c is based on an **AMSEA Fibre Production Plus (FP+) index** (large reduction in fibre diameter, large increase in staple strength, moderate reduction in WEC (if measured) and small increase in fleece weight).

Table 1. AMSEA Index values and Classer's Grade

The highest performing 3 rams for each trait (i.e. trait leaders) are highlighted by shading. Each ram is listed for Classer's Grade and the same three indexes at all site evaluations. An additional index (Fine Merino 10%+SS) considered relevant to this site evaluation is also reported. 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 20 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
Fine 10% + Staple Strength	Moderate emphasis on fleece weight and fibre diameter plus moderate emphasis on staple strength.

Ram code	Breeders flock, Ram number	No of Progeny	AMSEA Indexes values				Classer's Grade			
			Dual Purpose Plus	Merino Production Plus	Fibre Production Plus	Fine 10%+SS	Tops % (dev)		Culls % (dev)	
							Y^	H^	Y	H
1#	Bundilla Poll, 100027	4	99	106	98	103	*Insufficient progeny to report visual traits*			
2#	Pooginook, 104160	5	108	112	106	110	51	*Insufficient progeny*	-26	*Insufficient progeny*
3#	Pastora Poll, 092152	4	90	91	n/a	99	*Insufficient progeny to report visual traits*			
4**	Woodpark Poll, 100015	12	109	106	107	107	-1	23	-1	-6
5	Hazeldean, 10.413	11	104	101	101	98	-18	-12	-14	-3
6*	Coromandel Poll, ET2	14	107	108	104	105	-8	4	2	-17
7	Pastora Poll, 102069	18	98	101	105	110	-9	-2	1	-13
8	Grassy Creek Poll, 100181	11	85	85	97	89	-13	-13	21	25
9**	Pooginook, Frazier	12	104	105	98	102	4	10	-5	-6
10^UR	Mega Merinos Australia Poll, 101797	14	102	93	89	83	-5	2	1	14
	Average performance	**11**	**100**	**100**	**100**	**100**	**23**	**12**	**29**	**30**

*   Link ram: Ram 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.*

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

^   Y = Yearling (300 to 400 days).   H = Hogget (400 to 540 days) [1]   Classer's Grade is expressed as the percentage deviation of average Tops% and Culls%

\#   Insufficient progeny to meet AMSEA index and EBV accuracy thresholds at first/second assessment.   Where accuracy is not met, n/a is reported. Visual traits are not reported for these sires because of the low progeny numbers.

Figure 2 Fleece weight by fibre diameter - describes performance for fleece weight on the side axis and fibre diameter on the bottom axis. Rams that are above average for fleece weight and below average fibre diameter are located in the top left hand quarter.

Figure 2. Fleece Weight by Fibre Diameter
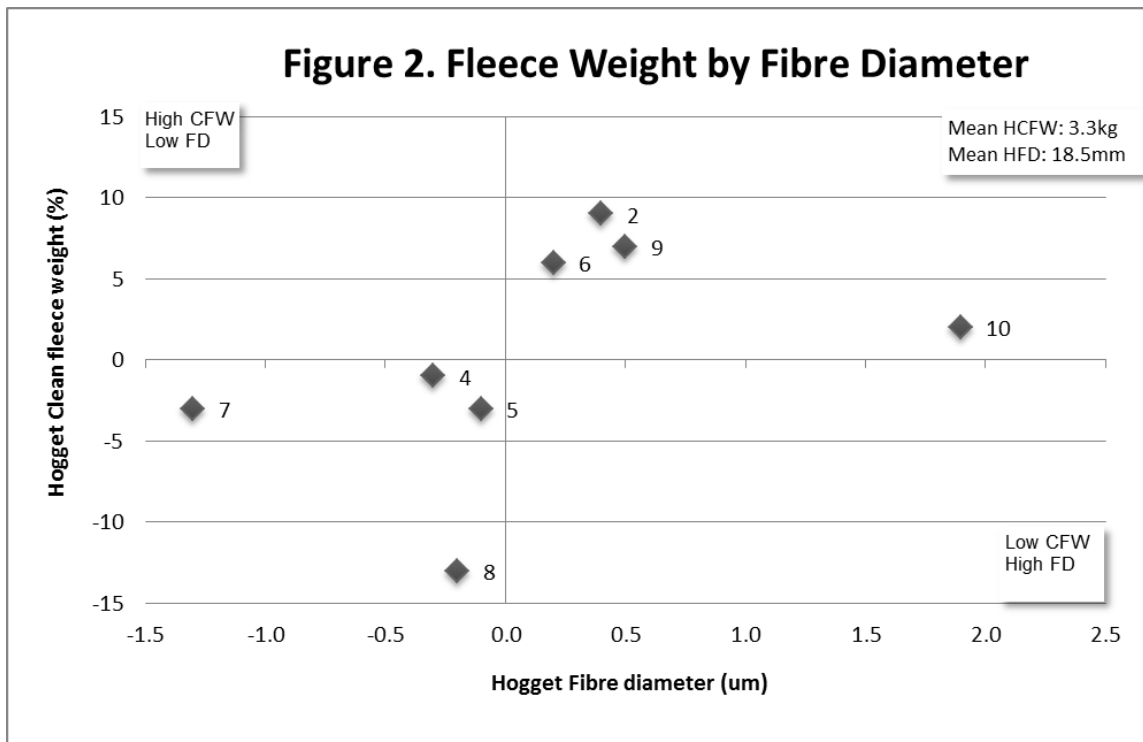
Figure 3 Classer's Tops by Cull Grade - describes performance for Classer's Tops Grade on the side axis and Cull Grade on the bottom axis. Rams that have above average Tops and below average Culls are in the top left hand quarter. Classer's Tops (12%), Flock (58%) and Cull (30%) is based a visual assessment where the progeny performed well for growth, structurally sound with good wool quality traits including long soft handling wool and fleece weight.
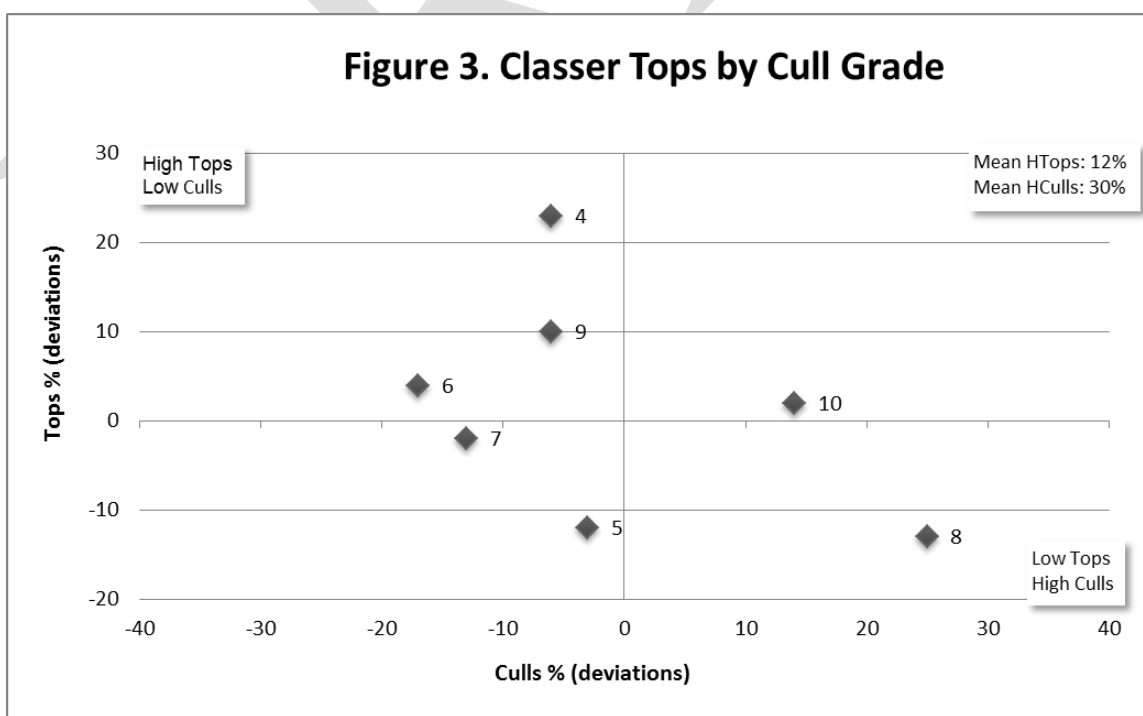
Figure 3. Classer Tops by Cull Grade

Measured trait performance and Classer's Grade – Tables 2 and 3 – pages 12 and 13

Ram code:	Allows a ram to be located on the summary graphs and some tables.
Ram name:	Identity of the breeder's flock and the ram's number or name.
Number of progeny:	The number of progeny a ram had at the most recent measured analysis.

Flock Breeding Values: Flock Breeding Values (FBVs) are Estimated Breeding Values (EBVs) calculated by Sheep Genetics for the ram'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 rams (in this case based on the performance of their progeny). A ram's progeny will express half of their ram's FBV. FBVs do not necessarily reflect the rams 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 ram's progeny)

Age at assessment:

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 Tops, Flocks or Culls based on visual assessment of all traits relative to the site's Breeding Objective (page 6). The percentage deviation from the average of Tops and Culls is presented in this report.

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

Ram code	Breeders flock, Ram number	No. of prog.	GFW % Y^	GFW % H	CFW % Y	CFW % H	FD um Y	FD um H	WT kg W	WT kg P	WT kg Y	WT kg H	Tops % (dev) Y	Tops % (dev) H	Culls % (dev) Y	Culls % (dev) H
1#	Bundilla Poll, 100027	4	14.0	n/a	12.0	n/a	0.5	0.5	1.0	1.4	1.8	1.6	n/a	n/a	n/a	n/a
2#	Pooginook, 104160	5	8.0	7.0	11.0	9.0	0.4	0.4	0.7	0.8	1.7	1.6	51	n/a	-26	n/a
3#	Pastora Poll, 092152	4	-8.0	n/a	-9.0	n/a	-1.2	-1.3	-0.5	-1.1	-1.6	-1.9	n/a	n/a	n/a	n/a
4**	Woodpark Poll, 100015	12	1.0	0.0	0.0	-1.0	-0.3	-0.3	-0.1	0.2	0.4	0.1	-1	23	-1	-6
5	Hazeldean, 10.413	11	-2.0	-2.0	-4.0	-3.0	-0.3	-0.1	0.4	0.6	0.2	0.5	-18	-12	-14	-3
6*	Coromandel Poll, ET2	14	1.0	4.0	2.0	6.0	0.1	0.2	-0.1	0.0	0.2	0.9	-8	4	2	-17
7	Pastora Poll, 102069	18	-4.0	-3.0	-4.0	-3.0	-1.0	-1.3	-0.2	-0.3	-0.5	-0.6	-9	-2	1	-13
8	Grassy Creek Poll, 100181	11	-11.0	-13.0	-12.0	-13.0	-0.2	-0.2	-2.4	-3.4	-3.9	-4.2	-13	-13	21	25
9**	Pooginook, Frazier	12	9.0	9.0	7.0	7.0	0.5	0.5	2.0	2.4	2.3	2.6	4	10	-5	-6
10UR	Mega Merinos Australia Poll, 101797	14	-1.0	-1.0	4.0	2.0	1.8	1.9	0.6	1.3	1.5	1.7	-5	2	1	14
	Average performance	11	4.6 kg	5.6 kg	2.6 kg	3.3 kg	16.9 um	18.5 um	32.5 kg	44.5 kg	44.8 kg	62.8 kg	23 %	12 %	29 %	30 %

∗   Link ram: Ram 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.*

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

^   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).

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

Insufficient progeny to meet AMSEA index and EBV accuracy thresholds at first/second assessment.   Where accuracy is not met, n/a is reported. Visual traits are not reported for these sires because of the low progeny numbers.

Information on how to use the results in the table above can be found on page 11.

Table 3. **Other measured traits**

Ram code	Breeders flock, Ram number	No. of prog.	FDCV % Y^	FDCV % H	SL mm Y^	SL mm H	SS N/ktex Y^	SS N/ktex H	Curv deg/mm Y^	Curv deg/mm H	Fat mm Y^	EMD mm Y^	WEC% Y^
1#	Bundilla Poll, 100027	4	0.9	n/a	1.3	Trait not measured at Hogget age	-2.5	Trait not measured at Hogget age	-2.0	-1.9	n/a	n/a	Trait not measured due to low WEC counts
2#	Pooginook, 104160	5	-0.4	-0.4	4.3		0.2		-2.7	-2.4	0.4	-0.2	
3#	Pastora Poll, 092152	4	0.0	n/a	-5.3		-4.6		5.0	4.2	n/a	n/a	
4**	Woodpark Poll, 100015	12	0.1	0.4	2.2		1.4		1.1	1.1	0.7	1.0	
5	Hazeldean, 10.413	11	1.1	0.9	-2.6		1.1		1.4	0.3	-0.7	0.4	
6*	Coromandel Poll, ET2	14	0.0	-0.3	-3.6		0.9		1.1	1.1	-0.3	0.5	
7	Pastora Poll, 102069	18	0.0	0.1	6.4		-2.4		0.9	2.0	-0.9	-0.7	
8	Grassy Creek Poll, 100181	11	-1.0	-1.1	-6.8		3.3		6.0	5.7	1.3	0.9	
9**	Pooginook, Frazier	12	-0.3	-0.4	2.0		-1.4		-4.4	-3.6	-0.6	-0.7	
10[UR]	Mega Merinos Australia Poll, 101797	14	-0.2	-0.1	4.6		3.1		-8.8	-8.8	1.0	0.7	
	Average performance	11	16.9 %	18.4 %	76.2 mm	Mm	36.0 N/ktex	N/ktex	94.0 deg/mm	95.5 deg/mm	1.8 mm	23.2 mm	%

* Link ram: Ram evaluated to provide links between site evaluations and sites so that the all evaluations can be combined into one report, e.g., *Merino Superior Sires.*

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

^ Y = Yearling (300 to 400 days); H = Hogget (400 to 540 days)

Insufficient progeny to meet AMSEA index and EBV accuracy thresholds at first/second assessment. Where accuracy is not met, n/a is reported. Visual traits are not reported for these sires because of the low progeny numbers.

Information on how to use the results in the table above can be found on page 11.

Scored trait performance – Tables 4a to 4d – pages 15 to 18. 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 ram'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 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).
- ■ Injury/Disease: Non-genetic effects due to injury, misadventure or infection – Yes or No.

Traits are reported as a deviation (Dev) from the average trait score for all progeny. The percentage of a ram'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.

Ram code	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
1#																								
2#	*Insufficient progeny to report visual traits*						*Insufficient progeny to report visual traits*						*Insufficient progeny to report visual traits*						*Insufficient progeny to report visual traits*					
3#																								
4**	0.2	92	0	0	8	0	-0.2	33	58	9	0	0	-0.2	0	25	58	17	0	0.3	0	0	50	50	0
5	0.2	73	27	0	0	0	0.0	28	45	27	0	0	0.2	0	9	55	36	0	0.0	0	9	64	27	0
6*	-0.1	100	0	0	0	0	-0.1	21	71	8	0	0	-0.2	0	29	57	14	0	0.1	0	0	71	29	0
7	0.0	94	6	0	0	0	0.2	23	44	33	0	0	-0.2	0	28	56	16	0	0.4	0	6	33	61	0
8	0.0	91	9	0	0	0	0.1	27	45	18	10	0	-0.1	0	9	82	9	0	-0.2	0	36	28	36	0
9**	-0.1	100	0	0	0	0	-0.3	46	38	16	0	0	-0.1	0	38	38	15	9	0.0	0	15	54	31	0
10UR	-0.1	100	0	0	0	0	0.3	7	64	29	0	0	0.6	0	0	43	43	14	0.2	0	0	64	36	0
Avg.	**1.1**	**95**	**4**	**0**	**1**	**0**	**2.0**	**25**	**55**	**19**	**1**	**0**	**3.1**	**0**	**18**	**60**	**20**	**2**	**3.2**	**0**	**12**	**57**	**31**	**0**

*   Link ram: Ram 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 rams (in addition to Link Rams) between this CTSE site and other sites.

\# Insufficient progeny to meet AMSEA index and EBV accuracy thresholds at first/second assessment.   Where accuracy is not met, n/a is
   reported. Visual traits are not reported for these sires because of the low progeny numbers.

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

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 ram'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 14. These are Fibre pigmentation, Non-fibre pigmentation, Recessive "black" and Random "spot".
Fibre pigmentation and Non-fibre pigmentation are scored **1** to **5** however recessive black and random spot are scored **1** (no pigmentation of this type) or **5** (when the trait is expressed). Only the percentage scored 5 are reported for recessive black and random spot.

| | Wool Quality | | | | | | | | | | | | Pigmentation | | | | | | | | | | | | | |
| Ram | Staple Weathering | | | | | | Staple Structure | | | | | | Fibre pigmentation | | | | | | Non-fibre pigmentation | | | | | | Black | Spot |
code	Dev	1	2	3	4	5	Dev	1	2	3	4	5	Dev	1	2	3	4	5	Dev	1	2	3	4	5	5	5
1#													*Insufficient progeny to report visual traits*						*Insufficient progeny to report visual traits*							
2#	*Insufficient progeny to report visual traits*						*Insufficient progeny to report visual traits*						0.0	100	0	0	0	0	-0.6	59	23	18	0	0	0	0
3#													*Insufficient progeny to report visual traits*						*Insufficient progeny to report visual traits*							
4**	0.0	0	0	100	0	0	4	9	83	0	8	0	0.0	100	0	0	0	0	0	17	61	13	9	0	0	4
5	0.0	0	0	100	0	0	0	0	91	9	0	0	0.0	100	0	0	0	0	-0.3	48	31	11	10	0	0	0
6*	0.0	0	0	100	0	0	0	0	93	7	0	0	0.1	96	0	0	0	4	0.1	28	32	24	16	0	0	0
7	0.0	0	0	100	0	0	0	0	100	0	0	0	0.1	96	0	0	0	4	0.3	7	52	33	4	4	0	0
8	0.0	0	0	100	0	0	0	0	100	0	0	0	0.0	100	0	0	0	0	0	19	45	36	0	0	0	0
9**	0.0	0	0	100	0	0	0	0	100	0	0	0	0.0	100	0	0	0	0	-0.3	31	62	3	4	0	0	0
10^UR	0.1	0	0	93	7	0	0	0	100	0	0	0	0.1	97	0	0	0	3	-0.5	52	28	20	0	0	0	0
Avg.	3.0	0	0	99	1	0	0	0	97	2	1	0	1.0	99	0	0	0	1	2.2	27	41	23	8	1	0	0

* Link ram: Ram 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 rams (in addition to Link Rams) between this CTSE site and other sites

Insufficient progeny to meet AMSEA index and EBV accuracy thresholds at first/second assessment.   Where accuracy is not met, n/a is reported. Visual traits are not reported for these sires

  because of the low progeny numbers.

Information on how to use the results in the table above can be found on page 14.

Traits are reported as a deviation (Dev) from the average trait score for all progeny. The percentage of a ram'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.

Ram code	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	
1#	*Insufficient progeny to report visual traits*						*Insufficient progeny to report visual traits*						*Insufficient progeny to report visual traits*						*Insufficient progeny to report visual traits*						*Insufficient progeny to report visual traits*						
2#																									0.1	0	19	67	14	0	
3#																									*Insufficient progeny to report visual traits*						
4**	0.0	100	0	0	0	0	0.2	92	0	0	0	8	-0.1	100	0	0	0	0	-0.1	0	8	92	0	0	0.0	0	29	57	14	0	
5	0.0	100	0	0	0	0	-0.1	100	0	0	0	0	-0.1	100	0	0	0	0	0.2	0	0	82	18	0	0.2	0	14	68	18	0	
6*	0.0	100	0	0	0	0	0.1	93	0	7	0	0	-0.1	100	0	0	0	0	0.1	0	0	93	7	0	0.0	0	29	54	17	0	
7	0.0	100	0	0	0	0	0.0	94	0	6	0	0	-0.1	100	0	0	0	0	0.0	0	0	100	0	0	-0.3	4	46	38	12	0	
8	0.0	100	0	0	0	0	0.1	91	0	9	0	0	0.2	91	0	0	0	9	0.1	0	0	91	9	0	0.1	0	29	52	19	0	
9**	0.0	100	0	0	0	0	0.1	92	0	8	0	0	0.2	92	0	0	0	8	0.0	0	0	100	0	0	0	0	33	50	17	0	
10UR	0.0	100	0	0	0	0	-0.1	100	0	0	0	0	0.0	93	0	7	0	0	-0.4	7	29	64	0	0	-0.4	11	43	43	3	0	
Avg.	1.0	100	0	0	0	0	1.1	96	0	3	0	1	1.1	95	0	3	0	2	3.0	1	4	92	3	0	2.8	2	28	56	14	0	

* Link ram: Ram 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 rams (in addition to Link Rams) between this CTSE site and other sites

\# Insufficient progeny to meet AMSEA index and EBV accuracy thresholds at first/second assessment. Where accuracy is not met, n/a is reported. Visual traits are not reported for these sires
because of the low progeny numbers.

Information on how to use the results in the table above can be found on page 14.

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 ram'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.

Ram code	Breech																						
	Breech Cover						Breech Wrinkle						Crutch Cover						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
1	0.1	0	0	8	50	42	0.4	0	33	25	42	0											
2	-0.2	0	5	23	45	27	0.1	9	18	50	23	0											
3	0.0	0	0	17	50	33	0.8	0	17	25	50	8											
4**	0.0	0	0	17	48	35	-0	13	26	48	13	0											
5	0.0	0	0	10	59	31	-0.1	4	41	41	14	0	Crutch Cover not scored						Dag not scored				
6*	-0.1	0	0	16	60	24	0	12	24	52	8	4											
7	-0.1	0	0	26	41	33	-1	30	37	26	7	0											
8	0.3	0	0	5	45	50	0.3	5	23	45	18	9											
9**	-0.1	0	0	23	42	35	-0	27	31	19	19	4											
10^UR	0.1	0	0	7	55	38	-0.4	28	31	28	10	3											
Avg.	4.2	0	0	15	50	35	2.7	13	28	36	20	3											

*   Link ram: Ram 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 rams (in addition to Link Rams) between this CTSE site and other sites

\#   Insufficient progeny to meet AMSEA index and EBV accuracy thresholds at first assessment.   Where accuracy is not met, n/a is reported. Visual traits are not reported for these sires because of the low progeny numbers.

Information on how to use the results in the table above can be found on page 14.

Table 5. **Ram averages for measured traits**

Ram averages are the average performance of all the progeny of a ram. No account is made for factors that can improve the ram average value accuracy.

Ram code	Breeders flock, Ram number	No. of prog.	Ram averages for measured traits (deviations)														
			GFW kg		CFW kg		FD um		WT kg		Fat mm	EMD mm	FDCV %	Curv deg/mm		SL mm	SS N/ktex
			Y^	H	Y	H	Y	H	Y	H	Y	Y	Y	Y	H	Y	Y
1#	Bundilla Poll, 100027	4	0.7	0.9	0.2	0.5	0.6	0.6	2.7	5.4	-0.1	-1.8	0.2	-1.4	-2.0	0.2	-3.4
2#	Pooginook, 104160	5	0.2	0.1	0.2	0.2	0.3	0.0	1.9	0.6	0.1	-0.2	-0.3	-2.2	2.9	3.8	0.2
3#	Pastora Poll, 092152	4	-0.4	-0.3	-0.2	-0.3	-1.0	-1.1	-1.6	-0.4	-0.1	0.0	0.0	5.2	2.5	-5.3	-6.3
4	Woodpark Poll, 100015	12	0.0	0.1	0.0	0.1	-0.4	0.2	-0.6	1.2	0.2	0.9	0.1	1.6	0.2	2.7	2.5
5	Hazeldean, 10.413	11	-0.1	-0.1	-0.1	-0.2	-0.3	-0.1	-0.4	-1.6	-0.2	0.5	1.0	2.1	-0.2	-2.2	3.1
6*	Coromandel Poll, ET2	14	-0.1	0.4	0.0	0.4	0.0	0.0	-0.8	1.4	-0.1	0.6	-0.1	0.5	0.4	-3.7	1.2
7	Pastora Poll, 102069	18	-0.3	-0.1	-0.1	-0.1	-0.6	-1.1	-0.6	-1.5	-0.2	-0.4	0.1	1.0	2.0	6.7	-1.4
8	Grassy Creek Poll, 100181	11	-0.3	-0.5	-0.1	-0.3	-0.2	-0.2	-3.2	-4.4	0.3	0.7	-0.5	4.1	2.2	-5.4	3.3
9	Pooginook, Frazier	12	0.3	0.2	0.1	-0.1	0.3	0.5	1.4	2.1	-0.1	-0.4	-0.5	-4.1	-1.3	0.3	-2.5
10^UR	Mega Merinos Australia Poll, 101797	14	-0.2	-0.7	0.0	-0.3	1.2	1.2	1.2	-2.8	0.2	0.3	0.2	-6.8	-6.7	2.8	3.2
	Average performance	11	**4.6 kg**	**5.6 kg**	**2.6 kg**	**3.3 kg**	**16.9 um**	**18.5 um**	**44.8 kg**	**62.8 kg**	**1.8 mm**	**23.2 mm**	**16.9 %**	**94.0 deg/mm**	**95.5 deg/mm**	**76.2 mm**	**36.0 N/ktex**

*   Link ram: Ram 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 rams (in addition to Link Rams) between this CTSE site and other sites

^   Y = Yearling (300 to 400 days); H = Hogget (400 to 540 days); A = Adult (540 days and older).

Insufficient progeny to meet AMSEA index and EBV accuracy thresholds at first/second assessment.   Where accuracy is not met, n/a is reported. Visual traits are not reported for these sires because of the low progeny numbers.

Information on how to use the results in the table above can be found on page 14.

Index Options – indexes reported on page 9.

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.

This report has added an additional index – the AMSEA Fine 20%+ SS.

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 carcass 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, carcass traits 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. Moderate 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 **Fine 10% +SS** (F10 +SS)	Fine wool Merino self-replacing production system with moderate emphasis on fleece weight and fibre diameter (10% Micron Premium) plus moderate emphasis on staple strength and maintain performance on other traits.

Traits contribution to economic gain: The percentage contribution of the traits listed to economic gain in a commercial flock that selects rams using the index.
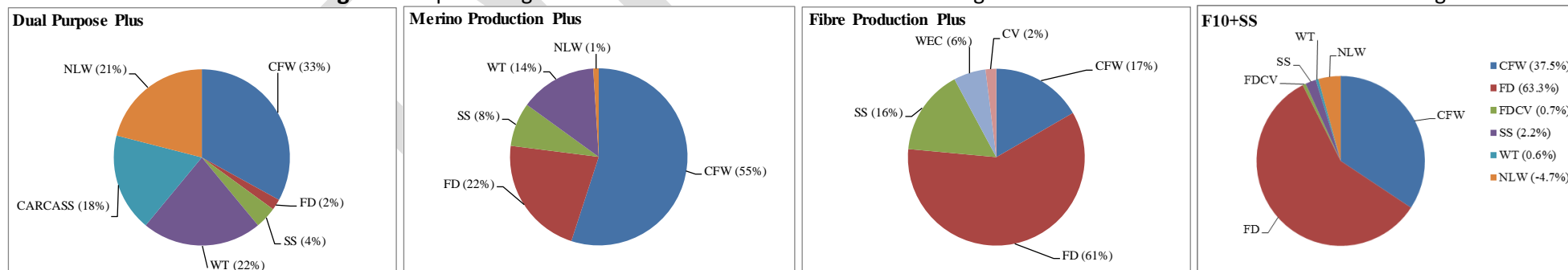
Accuracy of Flock Breeding Values

Flock Breeding Values (FBVs) are reported by Sheep Genetics (SG). FBVs express the expected performance of progeny of a ram relative to another ram in the evaluation when mated to the same standard of ewes. FBVs improve the accuracy of ram results because they account for the association between traits, adjustment for birth effects and the number of progeny a ram has in the analysis.

True Breeding Values would be achieved if the number of progeny evaluated for each ram 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 rams 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 ram's progeny.

Link rams

Link rams provide the 'genetic link' between CTSE sites located across Australia to allow all rams entered in these site evaluations to have their performance reported relative to each other in *Merino Superior Sires*. *Merino Superior Sires* reports rams from across all effectively linked CTSE sites and across all evaluations at these sites. Link rams are therefore a vital component of the Central Test Sire Evaluation.

To be used as a link a ram 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 rams which can provide a wider perspective of the elite rams available across many flocks in Australia and New Zealand.

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