Bluechip Livestock Sire Evaluation Report

Central Test Sire Evaluation
Within Flock Analysis

2011 Drop 1st Evaluation

Conducted by

under the auspices of

The Australian Merino Sire Evaluation Association

September 2012

Disclaimer

The information contained in this publication is based on knowledge and understanding at the time of writing (September 2012). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with an appropriate adviser.

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Foreword

Bluechip Livestock Sire Evaluation - Central Test Sire Evaluation

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

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

Bluechip Livestock is jointly owned by Marty Moses (Moses and Son Woolbroker), Craig Wilson (Craig Wilson & Associates) and Bluechip Livestock aims to provide and market quality independent information to the wider Australian sheep industry.

Sally Martin has played an integral role in the coordination of the BLSE. Sally's dedication and attention to detail has made this unique evaluation possible. On behalf of Marty Moses and myself we thank Sally greatly.

The classing for the first assessment was conducted by Mr Steve Phillips, Yarrawonga Merino Stud and we fully acknowledge his professional contribution to the visual assessments.

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

Craig Wilson, Director, Bluechip Livestock
September 2012

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Date of publication: **September 2012.**

2011 Drop, 1st Assessment, Bluechip Livestock Sire Evaluation Program

The information in this site evaluation report provides a comprehensive assessment of the 2011 drop 1st 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. A 2nd assessment will be made at approximately 17 months of age in 7 months wool.

Three graphs and a table provide a summary of the results. Eight tables provide the detailed performance information.

Contents

Sire and owner details

Bluechip Livestock Sire Evaluation 2011 drop 1st Assessment, 10 months of age with 10 months wool growth.

Sire and owner details

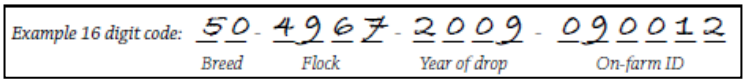
Ram code	Breeders flock, Ram number Ram ID #, Breed †	Contact name, address Phone, Fax
1	Billandri 600571-2007-070262 Poll Merino	Bill & Geoff Sandilands, Billandri, Kendenup WA 6323 P 08-9851 4030 F 08-9851 4264 E 0427 514 030 E csandilands@boardernet.com.au
2	Bogo 504792-2007-072673 Merino	Malcolm Peake, Bogo, Burrinjuck Rd, Bookham NSW 2582 P 02-6227 7152 F 02-6227 7153 M 0408 426 103 E agriman@bigpond.com
3	Centre Plus 601250-2007-707221 Poll Merino	Robert & Mark Mortimer, Devondale, Tullamore NSW 2874 P 02-6892 8259 F 02-6892 8292 M 0429 928 292 E robert@centreplus.com.au
4*	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
5	GRASS Merinos 503884-2008-081949 Merino	Graham Peart, GRASS Merinos, PO BOX 2104, Dubbo NSW 2830 P 02-6884 5544 F 02-6884 5542 M 0428 825 721 E gpeart@rmsaccountants.com.au
6	Greendale 505069-2007-070475 Merino	Allan McGufficke, Willarney, 850 Maffra Road, Cooma NSW 2630 P 02-6452 3605 M 0429 448 078 E milliefarming@activ8.net.au
7	Tallawong Poll 501334-2009-090292 Merino	Frank Kaveney, Murrumville, Dog Trap Road, Yass NSW 2582 P 02-6227 5701 F 02-6227 5701 M 0427 275 701
8	Triggervale Polld 609251-2009-090418 Poll Merino	Andrew & Mandi Bouffler, Valera, Lockhart NSW P 02-6920 7656 M 0427 207 656 E bouf@dragnet.com.au
9	Valdemar 601347-2007-070151 Poll Merino	Duncan Clowes, Valdemar, Blayney Road, Millthorpe NSW 2798 P 02-6366 3213 F 02-6366 3213 M 0428 433 639 E Duncan.clowes@bigpond.com
10	Yalgoo 501552-2009-090179 Merino	Grant & Jock Nivison, Yalgoo, Walcha NSW 2354 P 02-6777 2525 F 02-6777 2875 M 0429 772 527 E yalgoopartnership@bigpond.com

* 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.

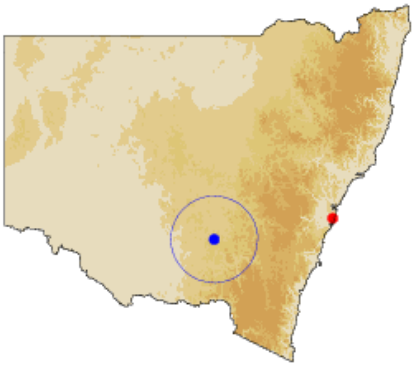
\# Sire ID provides a unique number for all sheep. A sire ID has 16 digits.
- 2 for the breed of the flock, e.g., Merino (50), Poll Merino (60), Dohne (51), SAMM (48), Afrino (AF)
- 4 for flock code, AASMB Registered flock code or unregistered code.
- 4 for year of drop.
- 6 for tag number used in the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



† Breed of flock in which the sire was born.

Management Report

1. Location



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

2. Selection and mating

- 400 Nerstane commercial and cfa stud ewes were mated by Artificial Insemination to 10 sires.
- The ewes were randomly allocated to each ram.
- The insemination program was conducted on 24th and 25th March 2011.
- The insemination program was conducted by Genstock (NSW).
- 45 ewes were allocated to each sire entered.

3. Pregnancy and lambing

- Pregnancy scanning took place on 21st June 2011.
- 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 within one week of lambing and groups brought together and boxed into one contemporary group of ewes and lambs.

4. Weaning and seasonal conditions

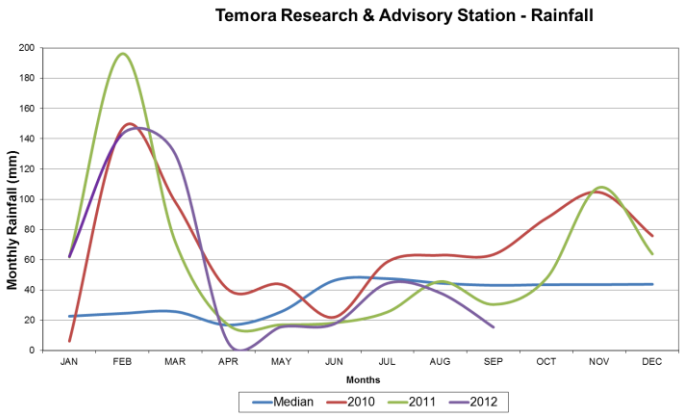
- The lambs were marked, scored and electronically tagged on 23rd September 2011.
- The lambs were weaned onto improved pasture on 15th November 2011.
- Pasture conditions were adequate from birth to their first shearing.

5. Assessments

- 1st stage assessments were carried out by Steven Phillips, Yarrawonga Merino Stud, Harden NSW.

6. Rainfall - TARAS

	2010	2011	2012	median
JAN	6.2	61.8	62.2	22.7
FEB	146.8	196.2	143.2	24.5
MAR	98.1	71.6	129.6	25.7
APR	40.2	16.8	5.0	22.2
MAY	43.7	17.0	15.6	26.8
JUN	22.0	18.2	17.6	47.3
JUL	58.6	25.4	44.4	48.5
AUG	63.0	45.6	38.0	45.1
SEP	63.4	30.4	15.4	43.6
OCT	87.4	47.6		43.5
NOV	104.6	107.8		43.5
DEC	75.8	63.8		43.8
Totals	809.8	702.2	471.0	533.4



*Source: TARAS records and BOM. Average 1988-2012.

Assessment and management program

Activity	Date/s	Age (months)	Wool (months)
Selection of ewes & allocation of ewes for mating	09.03.2011		
Artificial Insemination	24.03.2011		
Pregnancy scanning	21.06.2011		
Separated into sire lambing groups	14.08.2011		
Lambing: start – finish	21 to 31.08.2011		
Lambing mobs boxed to 1 sex management group	04.09.2011	14 days	
Tagging/pigment scores (age in days)	23.09.2011	33 days	
Marked and scored for breech traits	23.09.2011	45 days	
Weaning (age in days)	15.11.2011	86 days	
Pre assessment (even-up) shearing	NA		
Crutching • 1st		7	7
Fat and eye muscle scanning and body weight	05.06.2012	10	
Fleece sampling assessment • 1st • 2nd	18.06.2012	10	10
Staple length assessment • 1st • 2nd	18.06.2012	10	10
Classer's Grade assessment • 1st • 2nd	18.06.2012	10	10
Pre shearing scoring assessment • 1st • 2nd	18.06.2012	10	10
Assessment shearing • 1st • 2nd	19.06.2012	10	10
Post shearing scoring assessment • 1st • 2nd	19.06.2012	10	10
Body weigh assessment • Weaning • Post Weaning • Yearling • Adult	15.11.2011 19.03.2012 05.06.2012	3 7 10	
Worm egg count sampling • 1st • 2nd	27.05.2012		
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			

Visual tait assessment and site Breeding Objective

Visual trait assessment

1st Stage Assessment

Classer's Grade: Steven Phillips, Yarrawonga Merino Stud

Trait Scores: Sally Martin (Breech and Pigment Traits) and Steven Phillips (all other traits).

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

The Breeding Objective used to select the Classer's Tops (25%), Flock (50%) and Cull (25%) 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. *(For the first assessment of the 2011 drop 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.

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 **Combined measured traits and visual trait performance**

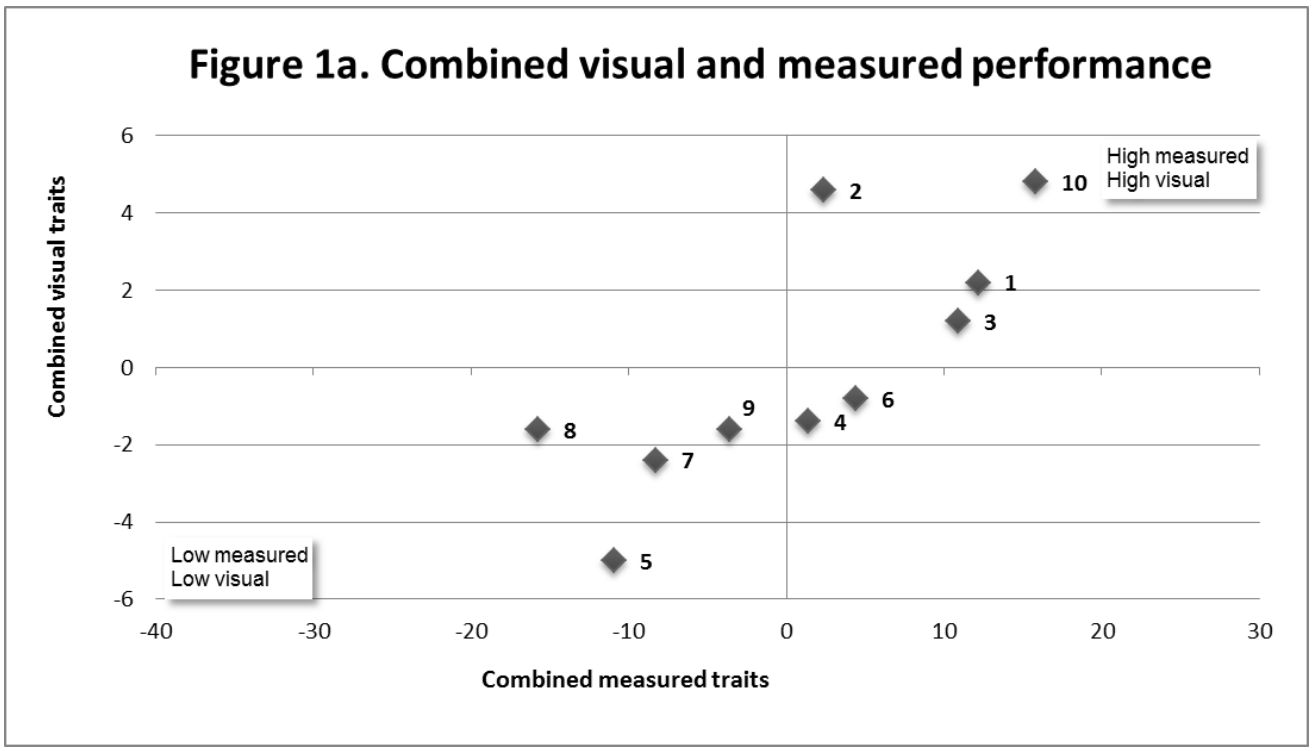
Summary graph: visual and measured performance

Each ram meeting the AMSEA index accuracy threshold assessed at 1st 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 proved for each of the three production indexes. 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 23).

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

Figure 1a 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).



Rams reported in Figure 1a, 1b and 1c			
Ram code	**Breeders flock, Ram number**	**Ram code**	**Breeders flock, Ram number**
1	Billandri, 600571-2007-070262	6	Greendale, 505069-2007-070475
2	Bogo, 504792-2007-072673	7	Tallawong, 501334-2009-090292
3	Centre Plus, 601250-2007-707221	8	Triggerval, 609251-2009-090418
4*	Coromandel Poll, ET2, 600553-2007-070002	9	Valdemar, 601347-2007-070151
5	GRASS Merinos, 503884-2008-081949	10	Yalgoo, 501552-2009-090179

* 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.

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).

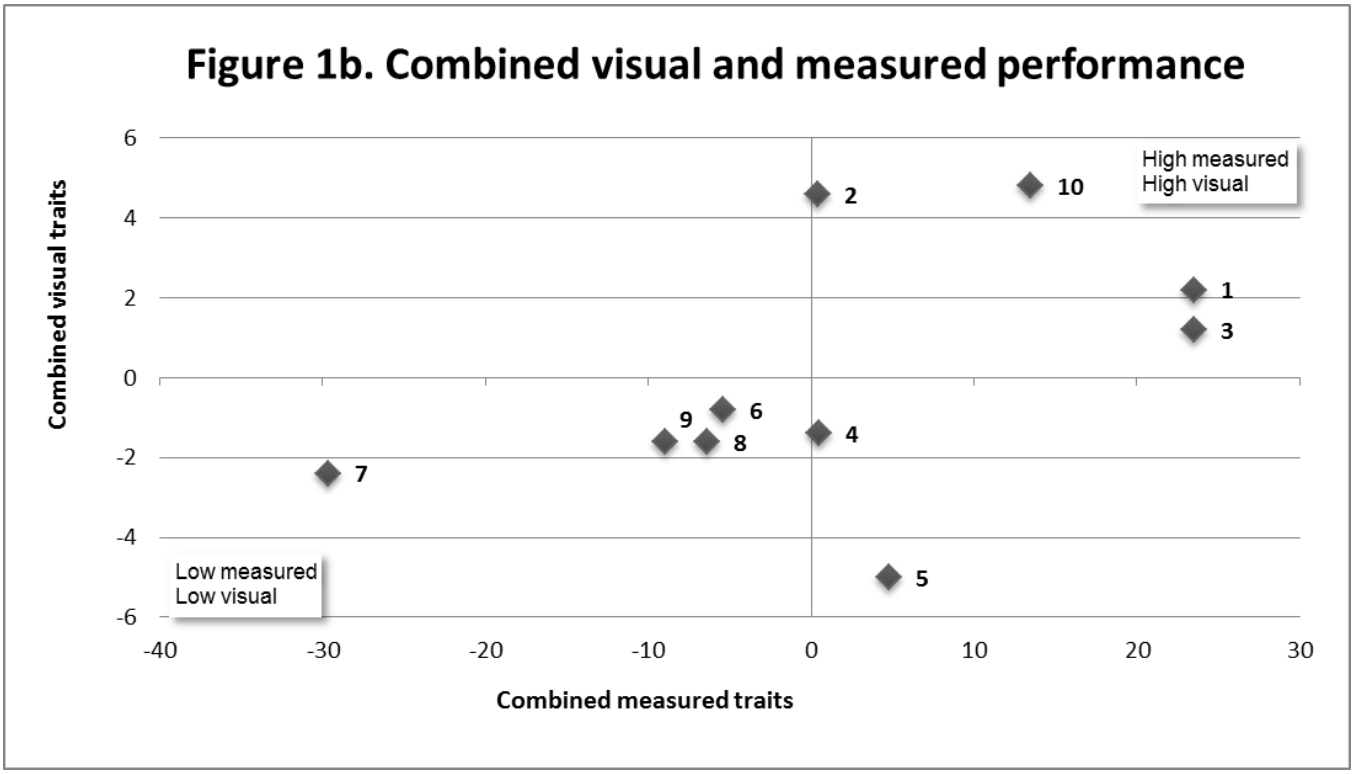


Figure 1c is based on an **AMSEA Dual Purpose Plus (DP+)** index (meat focused production system where surplus progeny are sold as lambs and a portion of ewes are jointed to terminal sires with a high increase in meat traits, reproduction, moderate increase in staple strength and minimal emphasis on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

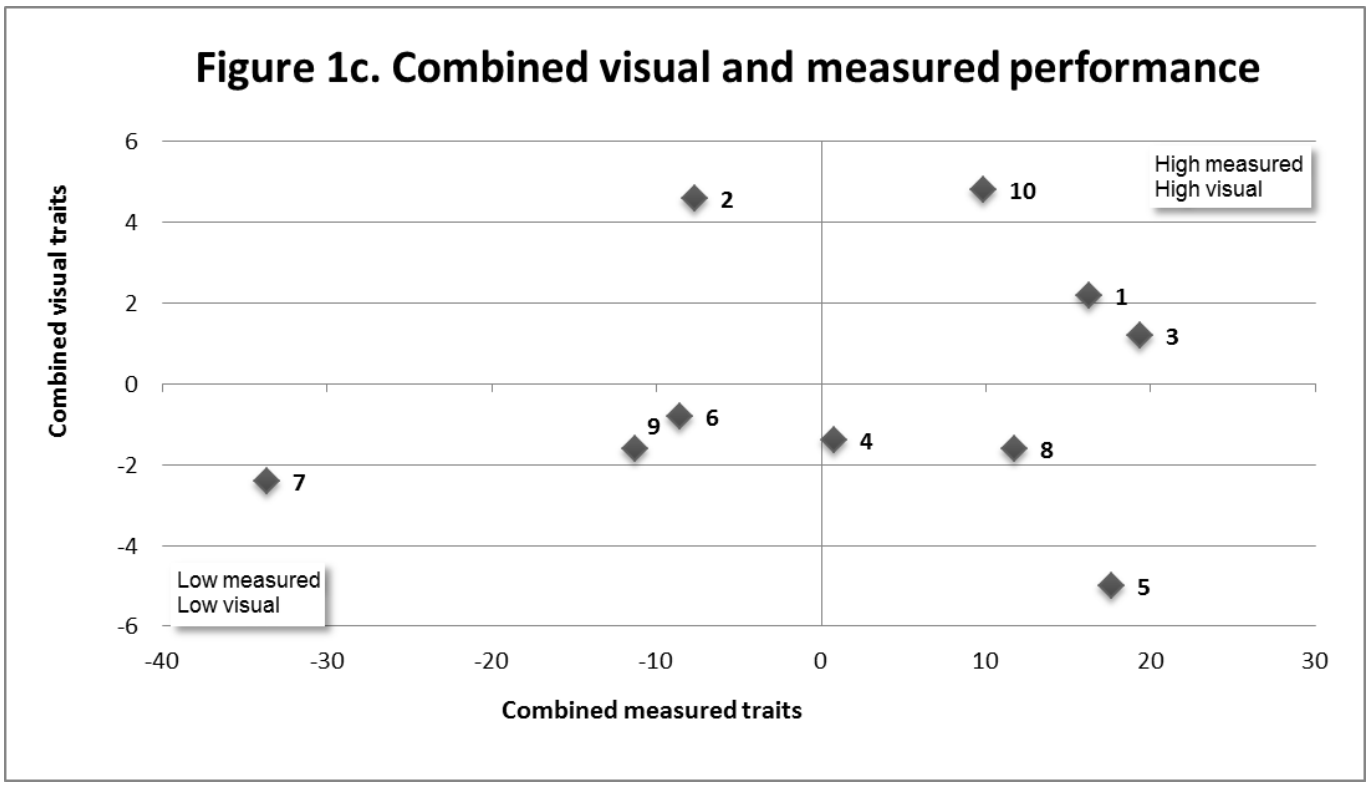


Table 1. **AMSEA Index values and Classer's Grade**

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 20% + 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 22 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.**

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. Moderate reduction in WEC (if measured). Small increase in fleece weight. Little change in meat traits. (Will rank animals similar to 14%+SS index)
Merino Production Plus	Based on a balanced wool and meat production system where surplus progeny are sold as hoggets. Moderate increase in fleece weight, staple strength, meat traits and reproduction. Moderate reduction in fibre diameter. (Will rank animals similar to M7 and DP7 Indexes).
Merino 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. High increase in meat traits, reproduction. Moderate increase in staple strength. Maintain fibre diameter and fleece weight. (Will rank animals similar to DP3.5 and DP7 Indexes).
Fine 20% +SS	Very high emphasis on fibre diameter and an emphasis to approximately maintain staple strength, fleece weight, and body weight.

Ram code	Breeders flock, Ram number	No of Progeny	AMSEA Indexes values				Classer's Grade	
			Fibre Production Plus	Merino Production Plus	Merino Dual Purpose Plus	Fine 20%+SS	Tops % (dev) Y^	Culls % (dev) Y
1	Billandri Poll, 070262	39	112	124	116	111	14	3
2	Bogo, 072673	29	102	100	92	114	18	-5
3	Centre Plus Poll, 707221	27	111	124	119	117	6	0
4*	Coromandel Poll, ET2	30	101	101	101	100	0	7
5	GRASS, Black 4	29	89	105	118	75	-17	8
6	Greendale, 070475	28	104	95	91	108	-8	-4
7	Tallawong, 090292	29	92	70	66	100	-12	0
8	Trigger Vale Poll, 090418	25	84	94	112	68	-10	-2
9	Valdemar Poll, 070151	28	96	91	89	99	-4	4
10	Yalgoo, 090179	23	116	113	110	121	13	-11
Average performance		**29**	**100**	**100**	**100**	**100**	**27**	**19**

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

Figures 2. and 3. Summary Graphs: Fleece Weight by Fibre Diameter, Tops by Cull Grade

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.

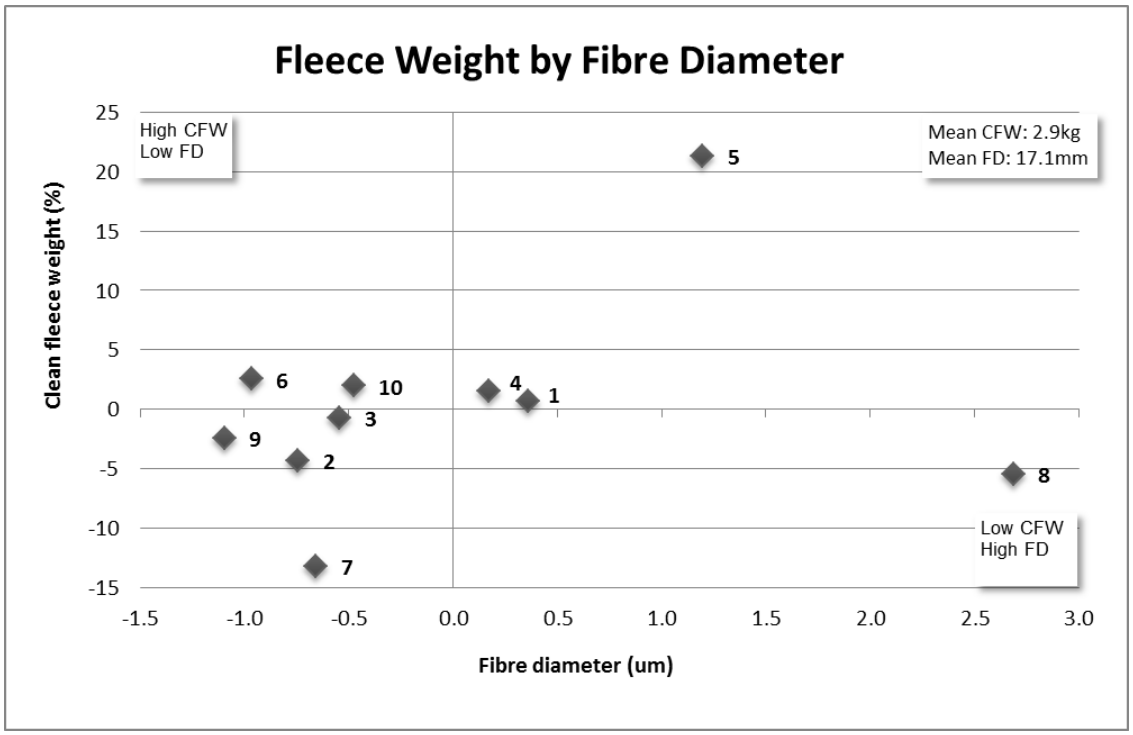
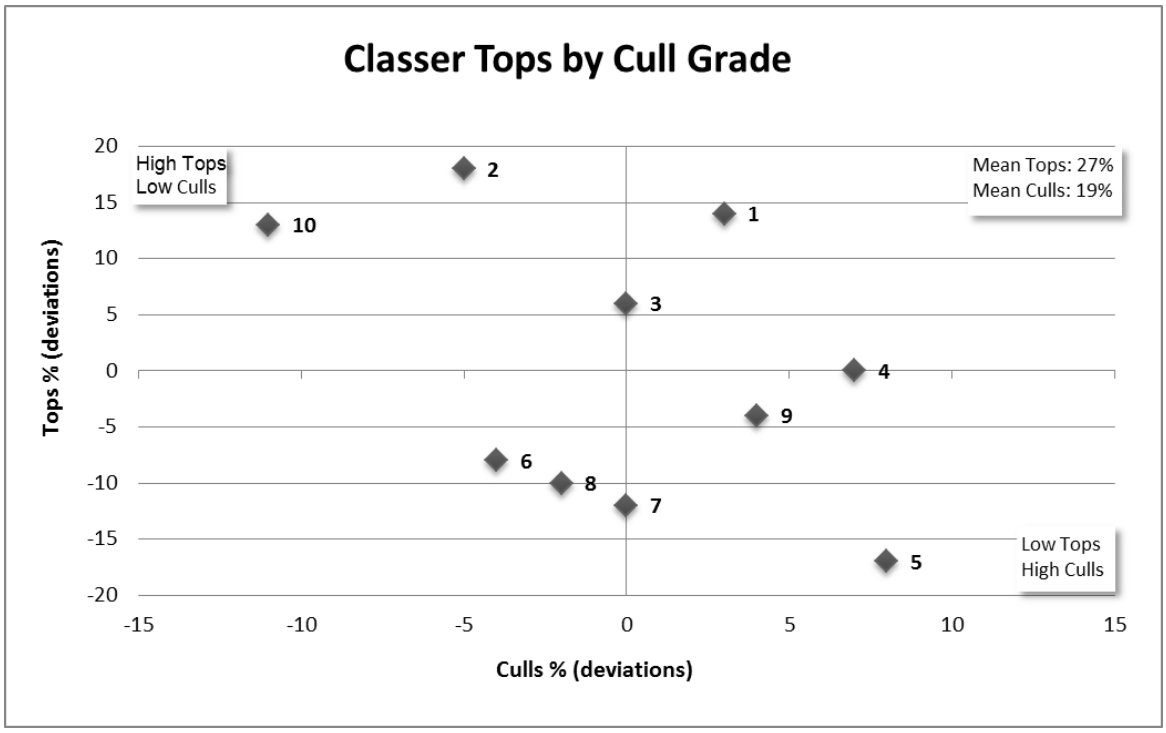


Figure 3 Classer's Tops by Cull Grade - describes performance for Classer's Tops Grade on the side axis and Cull Grade on the bottom axis. Rams that have above average Tops and below average Culls are in the top left hand quarter. Classer's Tops (25%), Flock (50%) and Cull (25%) is based a visual assessment where the progeny performed well for growth, structurally sound with good wool quality traits including long soft handling wool and fleece weight.



Understanding the results – measured trait performance

Measured trait performance and Classer's Grade – Tables 2 and 3 – pages 14 and 15

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.

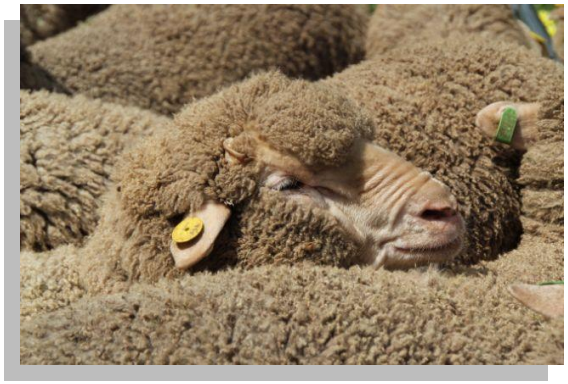
Number of progeny: The number of progeny a ram had at the most recent measured analysis.

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 8). 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.	Flock Breeding Values (deviations) GFW % Y^	CFW % Y	FD um Y	WT *kg* Y	Classer's Grade[1] Tops % (dev) Y	Culls % (dev) Y
1	Billandri Poll, 070262	39	-0.3	0.7	0.4	4.1	14	3
2	Bogo, 072673	29	-3.4	-4.3	-0.7	-2.3	18	-5
3	Centre Plus Poll, 707221	27	-0.4	-0.8	-0.5	3.6	6	0
4*	Coromandel Poll, ET2	30	1.0	1.5	0.2	-0.3	0	7
5	GRASS, Black 4	29	18.3	21.3	1.2	3.7	-17	8
6	Greendale, 070475	28	5.0	2.5	-1.0	-3.1	-8	-4
7	Tallawong, 090292	29	-11.2	-13.2	-0.7	-6.4	-12	0
8	Trigger Vale Poll, 090418	25	-5.5	-5.4	2.7	5.1	-10	-2
9	Valdemar Poll, 070151	28	-4.2	-2.4	-1.1	-1.1	-4	4
10	Yalgoo, 090179	23	1.9	2.0	-0.5	-0.5	13	-11
	Average performance	**29**	**4.3 kg**	**2.9 kg**	**17.1 um**	**46.5 kg**	**27 %**	**19 %**

* 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); A = Adult (540 days and older).

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

■ Information on how to use the results in the table above can be found on page 13.

Table 3. **Other measured traits**

Ram code	Breeders flock, Ram number	No. of prog.	Flock Breeding Values (deviations)						
			FDCV % Y^	SL mm Y^	SS *N/ktex* Y^	Curv deg/mm Y^	Fat mm P^	EMD mm P^	WEC% P^
1	Billandri Poll, 070262	39	-1.4	-2.1	4.2	4.0	-0.2	-1.0	-3.3
2	Bogo, 072673	29	-0.6	-1.6	1.2	0.8	-0.4	-0.6	47.8
3	Centre Plus Poll, 707221	27	-0.7	6.8	1.0	-1.2	0.2	-0.1	34.8
4*	Coromandel Poll, ET2	30	-0.3	-4.0	1.1	1.0	-0.6	0.0	-1.3
5	GRASS, Black 4	29	3.4	5.4	-4.4	-11.2	-0.2	0.5	39.0
6	Greendale, 070475	28	0.9	-0.2	-3.1	-2.3	-0.1	-0.1	-10.2
7	Tallawong, 090292	29	-1.0	-3.7	-1.0	2.5	0.2	-0.3	-23.4
8	Trigger Vale Poll, 090418	25	-1.2	3.9	5.4	1.3	1.1	1.5	-46.3
9	Valdemar Poll, 070151	28	0.8	-6.7	-6.7	3.9	-0.2	0.1	-17.1
10	Yalgoo, 090179	23	-1.0	3.9	4.3	3.7	0.4	0.5	-11.4
	Average performance	**29**	**15.3**	**86.7**	**37.0**	**92.1**	**4.3**	**28.3**	

* 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);

■ Information on how to use the results in the table above can be found on page 13.

Understanding the results – scored performance traits

Scored trait performance – Tables 4a to 4d – pages 17 to 20. 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 telephone 02 92995155). 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.

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 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	0.0	89	11	0	0	0	-0.1	92	8	0	0	0	-0.1	42	44	14	0	0	0.1	0	53	42	5	0
2	-0.1	95	5	0	0	0	0.0	91	4	0	5	0	-0.3	59	36	0	5	0	0.0	0	68	27	5	0
3	-0.1	96	4	0	0	0	0.0	85	15	0	0	0	-0.1	37	52	11	0	0	0.1	0	56	41	3	0
4*	0.1	80	20	0	0	0	0.1	77	23	0	0	0	0.0	30	57	13	0	0	-0.1	0	70	30	0	0
5	0.3	72	17	5	3	3	0.2	62	38	0	0	0	0.4	4	72	24	0	0	0.2	0	45	48	7	0
6	0.0	88	8	4	0	0	0.0	88	8	4	0	0	-0.1	38	54	8	0	0	-0.1	0	65	35	0	0
7	-0.1	100	0	0	0	0	-0.1	100	0	0	0	0	-0.1	35	62	3	0	0	-0.1	0	73	27	0	0
8	-0.1	96	4	0	0	0	0.0	83	17	0	0	0	0.4	5	78	13	4	0	0.2	0	48	48	4	0
9	0.1	77	19	4	0	0	-0.1	92	8	0	0	0	0.0	31	58	11	0	0	0.0	0	62	38	0	0
10	-0.1	96	4	0	0	0	-0.1	96	4	0	0	0	-0.2	43	57	0	0	0	-0.2	0	74	26	0	0
Avg.	**1.1**	**89**	**9**	**2**	**0**	**0**	**1.1**	**87**	**13**	**0**	**0**	**0**	**1.8**	**32**	**57**	**10**	**1**	**0**	**2.4**	**0**	**61**	**36**	**3**	**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.

■ Information on how to use the results in the table above can be found on page 16.

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 15. 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	0.1	0	61	39	0	0	0.0	6	92	2	0	0	0.0	100	0	0	0	0	0	17	25	53	5	0	0	0
2	-0.1	0	86	9	5	0	-0.1	18	77	5	0	0	0.0	100	0	0	0	0	-0.1	14	50	27	4	5	0	0
3	0.0	0	78	19	3	0	-0.2	30	67	3	0	0	0.0	100	0	0	0	0	0.1	11	33	48	8	0	0	0
4*	0.0	0	67	33	0	0	0.1	6	87	7	0	0	0.0	100	0	0	0	0	-0.1	30	20	40	7	3	0	0
5	0.2	0	52	48	0	0	0.3	0	79	21	0	0	0.0	100	0	0	0	0	0.2	8	34	48	10	0	0	0
6	-0.2	4	81	15	0	0	0.0	15	73	12	0	0	0.0	100	0	0	0	0	-0.1	12	50	31	7	0	0	0
7	-0.1	0	81	19	0	0	-0.1	12	88	0	0	0	0.0	100	0	0	0	0	0	7	54	27	12	0	0	0
8	0.2	0	52	48	0	0	0.1	0	91	9	0	0	0.0	100	0	0	0	0	-0.4	26	52	17	5	0	0	0
9	0.0	0	69	31	0	0	-0.1	19	73	8	0	0	0.0	100	0	0	0	0	-0.4	19	54	27	0	0	0	0
10	0.0	0	70	30	0	0	-0.1	13	87	0	0	0	0.0	100	0	0	0	0	0.7	9	22	30	26	13	0	0
Avg.	**2.3**	**0**	**70**	**29**	**1**	**0**	**1.9**	**12**	**81**	**7**	**0**	**0**	**1.0**	**100**	**0**	**0**	**0**	**0**	**2.4**	**15**	**39**	**35**	**8**	**3**	**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.

■ Information on how to use the results in the table above can be found on page 16.

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 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	0.0	97	0	3	0	0	0.0	100	0	0	0	0	0.0	97	0	3	0	0	-0.1	0	25	75	0	0	-0.1	26	53	21	0	0
2	0.0	100	0	0	0	0	0.0	100	0	0	0	0	0.1	95	0	5	0	0	0.0	0	9	91	0	0	0.1	27	32	41	0	0
3	0.1	93	0	7	0	0	0.0	100	0	0	0	0	0.0	100	0	0	0	0	0.0	0	19	78	3	0	-0.3	37	48	15	0	0
4*	0.0	100	0	0	0	0	0.0	97	0	3	0	0	0.0	97	0	3	0	0	0.0	0	17	80	3	0	0.0	20	57	20	3	0
5	0.0	100	0	0	0	0	0.0	100	0	0	0	0	0.0	100	0	0	0	0	-0.1	0	21	79	0	0	0.5	7	38	52	3	0
6	0.0	100	0	0	0	0	0.0	100	0	0	0	0	0.0	100	0	0	0	0	0.0	0	12	88	0	0	0.0	12	69	19	0	0
7	0.0	100	0	0	0	0	0.1	92	0	8	0	0	0.0	100	0	0	0	0	0.1	0	0	100	0	0	-0.1	27	54	19	0	0
8	0.0	100	0	0	0	0	0.0	100	0	0	0	0	0.0	100	0	0	0	0	0.0	5	13	78	4	0	-0.2	32	45	23	0	0
9	0.0	100	0	0	0	0	0.1	92	0	8	0	0	0.1	92	0	8	0	0	0.2	0	0	96	4	0	0.2	15	46	35	4	0
10	0.0	100	0	0	0	0	0.0	100	0	0	0	0	0.0	100	0	0	0	0	-0.1	0	26	74	0	0	-0.1	18	65	17	0	0
Avg.	**1.0**	**99**	**0**	**1**	**0**	**0**	**1.0**	**98**	**0**	**2**	**0**	**0**	**1.0**	**98**	**0**	**2**	**0**	**0**	**2.9**	**0**	**14**	**84**	**2**	**0**	**2.1**	**22**	**51**	**26**	**1**	**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

■ Information on how to use the results in the table above can be found on page 16.

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.

Ram	Breech Wrinkle					
code	Dev	1	2	3	4	5
1	-0.6	41	28	31	0	0
2	0.5	14	18	32	29	7
3	-0.3	19	48	30	0	3
4*	-0.1	10	50	30	10	0
5	-0.1	7	55	34	4	0
6	0.4	3	22	56	19	0
7	0.2	4	37	44	11	4
8	-0.4	26	39	30	5	0
9	0.2	8	31	42	19	0
10	0.1	13	22	57	8	0
Avg.	**2.5**	**14**	**35**	**39**	**10**	**2**

* 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

■ Information on how to use the results in the table above can be found on page 16.

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 % Y^	CFW % Y	FD um Y	WT kg Y	Fat mm P	EMD mm P	FDCV % Y	Curv deg/mm Y	SL mm Y	SS N/ktex Y
1	Billandri Poll, 070262	39	0.0	0.0	0.2	3.6	0.0	-1.1	-0.9	2.3	-2.1	3.2
2	Bogo, 072673	29	-0.1	-0.1	-0.5	-2.5	-0.2	-0.4	-0.5	0.4	-1.0	0.7
3	Centre Plus Poll, 707221	27	-0.1	-0.1	-0.5	3.8	0.2	-0.3	-0.4	-1.4	6.3	1.7
4*	Coromandel Poll, ET2	30	0.0	0.0	0.2	-1.5	-0.5	0.1	-0.2	0.4	-4.1	0.2
5	GRASS, Black 4	29	0.5	0.4	0.8	2.8	-0.1	0.4	2.7	-8.2	3.0	-2.1
6	Greendale, 070475	28	0.3	0.0	-0.7	-2.9	-0.1	0.0	0.7	-1.9	-0.5	-2.7
7	Tallawong, 090292	29	-0.3	-0.3	-0.4	-6.5	0.1	-0.2	-0.8	1.3	-3.1	-2.6
8	Trigger Vale Poll, 090418	25	-0.3	-0.2	2.1	3.9	0.6	1.0	-0.4	0.7	2.8	4.2
9	Valdemar Poll, 070151	28	-0.1	0.0	-0.7	-0.8	-0.3	0.1	0.4	2.4	-5.8	-7.4
10	Yalgoo, 090179	23	0.1	0.1	-0.4	0.1	0.2	0.4	-0.7	4.0	4.6	4.8
	Average performance	**29**	**4.3 kg**	**2.9 kg**	**17.1 um**	**46.5 kg**	**4.3 mm**	**28.3 mm**	**15.3 %**	**92.1 deg/mm**	**86.7 mm**	**37.0 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).

Index Options – indexes reported on page 5.

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.

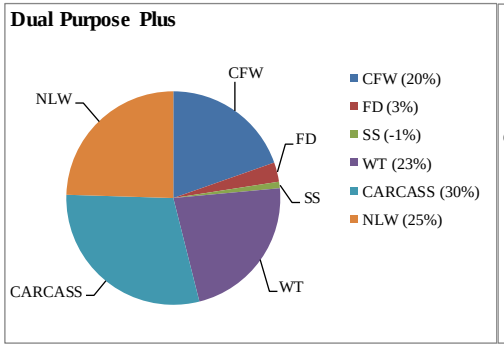
All AMSEA site evaluation reports present 3 standard indexes to provide combined **measured** trait performance These 3 AMSEA indexes are DP+; MP+; and FP+ These indexes are the same as MERINOSELECT indexes of that name however as there is no direct reproduction records captured by sire evaluation AMSEA do not include a Reproduction (NLW) FBV in their index calculations. As a result the 14% contribution by NLW in the DP+ index is not effectively applied by the index calculation.

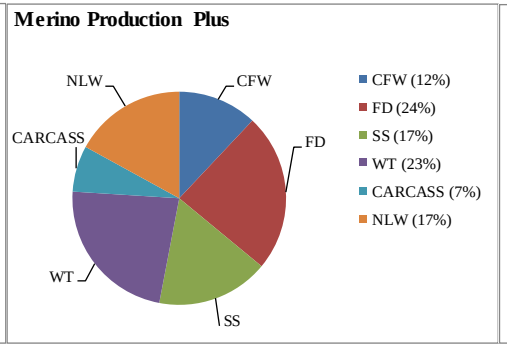
This report has added an additional index – the AMSEA Fine 20%+ SS.

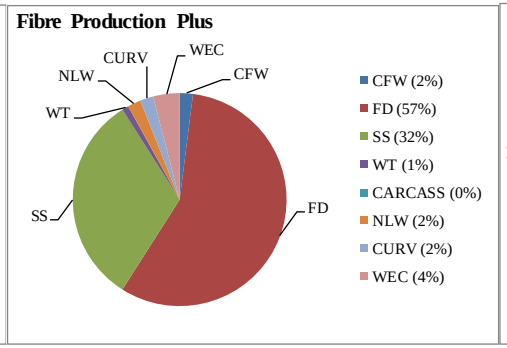
Index *production system* and breeding objectives

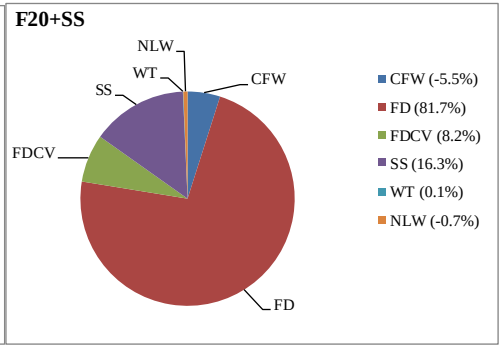
AMSEA **DP+**	**Dual Purpose**: Based on a meat focused production system where surplus progeny are sold as lambs and a portion of ewes are joined to terminal sires. High increase in carcass traits and fleece weight, moderate increase in reproduction, fibre diameter maintained, maintain or small increase in staple strength.
AMSEA **MP+**	**Merino Production:** Based on a balanced wool and meat production system where surplus progeny are sold as hoggets. Moderate increase in fleece weight, staple strength, carcass traits and reproduction, moderate reduction in fibre diameter.
AMSEA **FP+**	**Fibre Production:** 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, moderate reduction in WEC (if measured in the breeding program), small increase in fleece weight. Little change in carcass traits and reproduction.
AMSEA **Fine 20%+SS** (F20% +SS)	High emphasis on fibre diameter and staple strength. There is adequate emphasis on other traits to maintain performance except a moderate reduction in reproduction (number of lambs weaned – NLW).

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.

Combined measured trait and combined visual trait performance

Combined measured trait performance is calculated as (7% MP Index – 100).
Combined visual trait performance is calculated as:
(Classer's Grade Tops% – Culls%)/5, expressed as a deviation from
(average Tops% – average Culls%)/5.

Example

Ram's performance:
- AMSEA 7% MP Index value = 119.7
- Tops% = 25.5 (average Tops% = 25.1)
- Culls% = 17.6 (average Culls% = 16.4)

- Combined Measured = 119.7.0 – 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
  = -0.16

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