

South Australia Merino Sire Evaluation Site Report

2024 Drop
Yearling & Adult Assessment

Within-Site Results
May 2026

Conducted by

South Australian Merino Sire Evaluation Trial Committee

Under the auspices of



With support from



Foreword

South Australia Merino Sire Evaluation

Australian Merino Sire Evaluation Association (AMSEA) trials provide the opportunity for objective comparisons to be made between rams from different studs by evaluating their progeny for sheep type, structure, wool production and carcase traits. The progeny are all run together in the same environmental conditions that typify SA Merino production with all male progeny marked. The SA site was established in 2017 and is important for South Australia's Merino industry given no other public Merino sire evaluation trials occur in SA. The site will make an important contribution to genetic improvement for Merinos in SA. Supported by Merino SA, the trial is an accredited sire evaluation program run under the rigorous design, recording and data evaluation protocols of AMSEA.

Turretfield Research Centre at Rosedale are generously hosting the 2024-2027 Drops of the SA Merino Sire Evaluation Trial. This follows Keyneton Station, Keyneton who hosted the inaugural 2017 Drop followed by the 2018 Drop, the McMahon family at McPiggery Lameroo, who hosted the 2019 and 2020 drops, and the Eckert Family of Mentara Park, Malinong who hosted the 2021 and 2022 drops. There is significant interest in the site from both SA and interstate ram breeders, with the quality of rams entered of very high calibre.

As a non-profit site, our sponsors provide a very important contribution, and we would like to acknowledge their generous support of the SA Merino Sire Evaluation Site. We would also like to thank those individuals and/or businesses, including Merino SA and many industry service providers who have volunteered their time, service and/or product in helping the site run as smoothly as possible throughout the year.

Stephen Kellock
Chairman
South Australia Site Committee

Site Committee

Name	Email	Phone
Stephen Kellock	admin@kelvalepollmerinos.com.au	0427 438 138
Anna Cameron	acameron@hsfe.com	0403 747 332
Michelle Cousins	cousinsms@bigpond.com	0407 607 899
Hansi Graetz	pepperwell1@gmail.com	0427 790 676
Gary Grigson	Gary.Grigson@sa.gov.au	0423 024 203
Joe Keynes	keyneton@activ8.net.au	0428 648 235
Alyce Lowe	Alyce.Lowe@sa.gov.au	0403 863 220
Darren O'Brien	dobandjodie@gmail.com	0419 772 173
Chris Prime	gkprimeptyltd1@bigpond.com	0427 289 021
Bill Walker	classing@internode.on.net	0428 973 804
Alice Weaver	Alice.Weaver@sa.gov.au	0407 974 638

For further information on this report please contact:

Bill Walker (Site AMSEA Representative)
Ben Swain (AMSEA Executive Officer)

classing@internode.on.net
ben.swain@bcsagribusiness.com.au

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Disclaimer

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2024 Drop Yearling & Adult Assessment

The information in this Site Report provides the results of the assessment of the 2025 drop, including the Yearling assessments of the sire's progeny performance for measured and visually assessed traits.

The Yearling midside fleece assessments were completed at 10 months of age with 10 months of wool growth and shearing was completed at 10 months of age with 10 months of wool growth.

The Adult midside fleece assessments were completed at 22 months of age with 12 months of wool growth and shearing was completed at 22 months of age with 12 months of wool growth. Only the ewes were assessed at the Adult stage.

Visual Trait Assessment and Site Breeding Objective

Visual trait assessment

Classer's Grade: Paul Cousins

Visual Trait Scores: Paul Cousins and Bill Walker

Site Breeding Objective used to assess the Visual Classer's Grades

The Breeding Objective used by the classer/s when selecting the Classers Tops, Flock and Cull grades is described below. The Breeding Objective for both measured and visual assessed traits was developed by the site committee in consultation with the classer prior to the grading.

Rams will be capable of producing progeny with 18-21 micron fleece at 12 months with at least 4kg of wool from 8 months growth from an easy-care plain bodied sheep. In addition, progeny should be capable of achieving 22-25kg carcass weight at 10-12 months of age. Ewe progeny will be fertile and capable of high natural conception rates when first mated at 18 months.

In regard to Classer's Visual Grades the expectation is at the start of grading that there will be a ratio of 25% Top, 50% Flock and 25% Cull. However, the sheep performance relative to the above breeding objective determines the final proportion allocated to each grade.

Sire Codes and Pedigrees

Sire Code	Breeders flock, Sire number	Sheep Genetics ID	Poll	Sire of Sire
1	Gelton Poll, 190140	601341-2019-190140	PH	Westray Poll, 170207
2	Glenville Poll, 220386	600711-2022-220386	PP	Ridgway Advance, 190448
3	Gunallo Poll, 220067	600880-2022-220067	PP	Mernowie, 200769
4	Kelvale Poll, 221415	600416-2022-221415	PH	Kelvale Poll, 201309
5	Malleetech Poll, 222357	609533-2022-222357	PP	Malleetech Poll, 199153
6	Pepper Well Poll, 222047	601351-2022-222047	PP	Kelvale Poll, 200022
7	Pyramid Poll, 220220	601381-2022-220220	PP	Wiringa Park Poll, 200037
8	Richmond, 170013 (Link Sire)	505021-2017-170013	PH	Richmond, 130579
9	Trefusis Poll, 210106	601615-2021-210106	PH	Alfoxtton Poll, 150459
10	Wiringa Park Poll, 220450	601445-2022-220450	PP	Wiringa Park Poll, 200037

Sire and Owner Contact Details

Breeders flock, Sire number Sire ID #	Contact Details
Gelton Poll, 190140 601341-2019-190140, Poll Merino	Geoff Gellert Mt Elliot , 805 Yarram Gap, Willaura VIC 3379 P: (03) 5354 1517, M: 0427 255 220, E: geoffgellert@bigpond.com
Glenville Poll, 220386 600711-2022-220386, Poll Merino	Klay Smith 33 Range Rd, Cowell SA 5602 M: 0488 990 791, E: glenville@activ8.net.au
Gunallo Poll, 220067 600880-2022-220067, Poll Merino	Justin Boughen 8521 Karoonda Highway, Sandlewood SA 5307 M: 0423 065 513, E: boughenbros@gmail.com
Kelvale Poll, 221415 600416-2022-221415, Poll Merino	Stephen Kellock PO Box 304, Keith SA 5267 P: (08) 8755 1761, M: 0427 438 138, E: admin@kelvalepollmerinos.com.au
Malleetech Poll, 222357 609533-2022-222357, Poll Merino	David and Harley Smith 976 Geranium South Road, Geranium SA 5301 M: 0427 857 722, E: david@malleetech.com
Pepper Well Poll, 222047 601351-2022-222047, Poll Merino	Hansi Graetz PO Box 3, Keyneton SA 5353 M: 0427 790 676, E: pepperwell1@gmail.com
Pyramid Poll, 220220 601381-2022-220220, Poll Merino	Joe and Tracey Dahlitz PO Box 15, Cummins SA 5631 P: (08) 8676 4243, M: 0428 295 706, E: roemahkita@bigpond.com
Richmond, 170013 (Link Sire) 505021-2017-170013, Merino	Trevor Ryan Richmond, Quandialla NSW 2721 M: 0437 153 765, E: richmondmerino@gmail.com
Trefusis Poll, 210106 601615-2021-210106, Poll Merino	Georgina and Hamish Wallace 1929 Tooms Lake Road, Ross TAS 7209 M: 0438 986 257, E: gawallace@trefusis.com.au
Wirringa Park Poll, 220450 601445-2022-220450, Poll Merino	Allan Hogley 1281 Nyabing South Road, Nyabing WA 6341 M: 0428 291 097, E: wirringapark@yahoo.com.au

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

Link sires are a vital sire evaluation component as they provide the 'genetic link' between sire evaluation sites located across Australia, allowing all sires entered to have their performance reported relative to each other in the annual Merino Superior Sires. An AMSEA link sire must have at least 25 progeny assessed at their 1st sire evaluation assessment.

The 16 digit Sire ID is a unique number for all sheep.

- 2 for the breed of the flock, e.g. Merino (50), Poll Merino (60), Dohne (51)
- 4 for flock code, AASMB Registered flock code or unregistered code.
- 4 for year of drop & 6 for tag# used in the breeder's records.

Host Property and Ewe Base

Turretfield Research Centre, Rosedale are generously hosting the SA Merino Sire Evaluation Trial for the 2024-2027 drops. Run under the auspices of SARDI and PIRSA, the site receives an average 425mm rainfall in a winter dominant pattern. The Turretfield Research Centre ewe is purposely bred from Leahcim and Mernowie bloodlines to be highly fertile, plainer bodied, and they are a good expression of South Australian Merinos. They have a mature weight of 75-85kg and produce approximately 19 micron wool at 60% yield depending on the season. The ewes mated for the 2024 drop trial were sourced from a rising 3-4 year old age group and were classed prior to joining to ensure an even line. The Turretfield Research Centre is a non-mulesed site.

2024 Drop Summary

The site evaluated 10 rams including 2 link sires. 57 ewes were joined to each sire via AI on 30 November and 1 December 2023. The ewes were pregnancy scanned on 29 January 2024 with a resulting conception rate of 64% from the AI program. Interestingly, 57% of the pregnant ewes were scanned as carrying multiple foetuses. At this time, the ewes were running as 1 mob. Just prior to lambing, the ewes were further split into single-bearing mobs of 50 ewes, twin-bearing mobs of 50 ewes, as well as one mob of triplet-bearing ewes. The quadruplet-bearing ewes and single quint were removed from the trial at this stage. Ewes grazed dry pasture as well as being fed supplementary hay, grain and peas until weaning.

The first cohort of lambs born from the 10 rams occurred in late April. During lambing, daily checks were undertaken and all lambs that were deemed to be 24 hours old were weighed, sexed and tagged (when there was no negative impact on bonding). Lamb marking took place on 21 May 2024, with visual traits fibre pigmentation, non-fibre pigmentation, recessive black, random spot, breech cover and breech wrinkle recorded. Sire pedigree was established by DNA testing. There were 442 progeny generated across the 10 sires. The average marking breech cover was visually assessed as 3.9 (from a range of 1-5, as per the Visual Sheep Scores publication), and the average marking breech wrinkle was visually assessed as 2.1 (from a range of 1-5, as per the Visual Sheep Scores publication). Following lamb marking, lambing mobs were kept in the same lambing mobs until weaning. At lamb marking the lambs were treated with BUTEC, GlanEry 7in1 B12 and CliK to the docking site and purses.

Progeny were weaned at 12 weeks of age on 23 July 2024, at which time they were also drenched and vaccinated with GlanEry 7in1 B12. Weaning weights were assessed, with an average weaning weight of 19.4kg live weight. Progeny then ran together on grass-based pasture in one mob. Supplementary feeding continued until 19 August 2024; lambs fed on a barley and grass mix pasture. Supplementary feeding restarted on 21 October 2024 and continued until 29 September 2025 due to dry conditions. Progeny grazed paddock pasture until supplementary feeding restarted on 9 February 2026.

The progeny was crutched in October 2024 with dag and crutch cover scored. In November the progeny received an application of CliK on the breech and backline as fly control. On 24 February 2025 visual classing was undertaken with the following traits recorded; Mid-side fleece sampling: yield, fibre diameter, fibre diameter coefficient of variation, fibre diameter standard deviation, curvature, comfort, staple strength and staple length. Visual classing: fleece rot, wool colour, wool character, dust penetration, staple structure, random spot, face cover, jaw, hocks, front legs, pasterns, front toes, back toes and Classer's Visual Grade

The progeny were shorn on 26 February 2025 with greasy fleece weight measured. In early March 2025, post shearing visual classing traits shoulder/back, body wrinkle, breech cover, breech wrinkle and random spot were recorded, and an off-shears weight was taken. Backlining of Spinolab was applied for flystrike control. Carcase scanning and weight of the progeny was undertaken on 26 March 2025. At this stage the progeny was split into sex groups and ran as two mobs. The wether component were containment fed to get their weight to 50+kg, and in late July 2025 they were processed at JBS Bordertown where they were assessed for Meat Eating Quality traits. Average carcase weight was 25.8kg, returning \$300/hd including skins.

The remaining ewe component of the 2024 Drop were drenched in early August 2025 with Tridectin and crutched early September 2025. Dag and crutch cover were assessed at this time. An application of Strikelab Extra to the breech and body occurred on 24 September 2025 for flystrike prevention.

The ewe component were taken through to their adult assessment on 5 March 2026, including mid-side sampling and visual classing. Shearing occurred on 11 March 2026 with greasy fleece weight and urine traits recorded, followed by post shearing visual traits being assessed a week later. Post shearing vaccination of Websters 6in1 B12, Startect Broad Spectrum drench and Spinolab backline occurred 23 March 2026.

The 2024 drop ewes were joined with rams on 19 March 2026, with the rams removed from the mob on 21 April 2026 after a 5 week joining. Pregnancy scanning is scheduled for 27 May 2026.

WEC has not been collected as minimum testing thresholds have not been reached.

Gary Grigson
Turretfield Research Centre
Rosedale, South Australia

Assessment and Management Program

Activity	Date/s	Age	Wool
Selection of ewes	October 11, 2023		
Allocation of ewes for mating	November 30 – December 1, 2023		
AI program	November 30 – December 1, 2023		
Pregnancy scanning	January 29, 2024		
Allocated to lambing paddocks	April 10, 2024		
Lambing: start – finish	April 24 - May 6, 2024		
Marking, tagging, pigmentation and breech scoring	May 21, 2024 Tagging at lambing; pigmentation and breech scoring May 21, 2024	3 weeks	
Lambing mobs boxed into a single management group	July 23, 2024	12 weeks	
Weaning	July 23, 2024	12 weeks	
Even Up Shearing	Not conducted		
Crutching (P)	October 3, 2024	5.5 months	5.5 months
Crutching (Y)	September 4, 2025		
Worm egg count (W)	Not collected; minimum measurement threshold not reached.		
Fat and eye muscle scanning (Y)	March 26, 2025	11 months	
Mid side fleece sampling (Y)	February 24, 2025	10 months	10 months
Mid side fleece sampling (A)	March 5, 2026	22 months	12 months
Visual trait scoring (Y)	February 24, 2025	10 months	10 months
Visual trait scoring (A)	March 5, 2026	22 months	12 months
Shearing (Y)	February 26, 2025	10 months	10 months
Shearing (A)	March 11, 2026	22 months	12 months
Body Weight (W)	July 23, 2024	3 months	
Body Weight (P)	November 12, 2024	6.5 months	
Body Weight (Y)	March 26, 2025	11 months	
Body Weight (H)	January 20, 2026	21 months	
Body Weight (A)	March 19, 2026	22.5 months	
Vaccination	Lamb marking and weaning. GlanEry B12.		
Drench	July 23 2024, February 26 2025, August 2025, March 23 2026		
Fly treatment	Preventative flystrike treatment: Clik at lamb marking 21 May 2024 to docking site and purses. Clik to breech and backline November 2024. An off-shears Spinolab to backline 26 February 2025. To the remaining ewe portion Strikelab Extra to breech and body 24 September 2025 and an off-shears Spinolab to backline 23 March 2026		
Field day or public display	June 6, 2025 June 12, 2026		

Explaining the Different Types of Results Reported

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

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

Generally, AMSEA publishes **Adjusted Sire Means**, **Flock Breeding Values** and **Indexes** in Site Reports as they offer a higher level of accuracy. Visual Traits were historically reported as **Raw Data**, however Adjusted Sire Means are now available for these traits and visual traits will now be presented in this format.

Raw Data

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

Adjusted Sire Means

These are raw data results that have been adjusted for the effect of sex, birth type/rear type, age of dam, dam source, age at measurement, the number of progeny a sire has and management group(s).

Flock Breeding Values (FBVs)

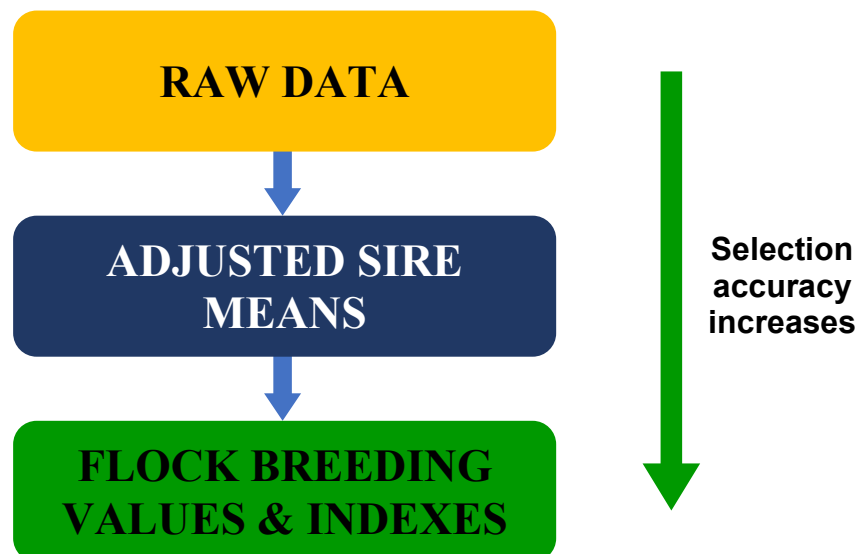
These results have been adjusted in the same way as Adjusted Sire Means, then further calculations have also been made to account for the level of heritability of a trait (some are more heritable than others) and correlations between traits.

FBVs are within site and within drop. As such they do not include data from other sources as is the case with Australian Sheep Breeding Values (ASBVs), which are reported in Merino Superior Sires.

Indexes

A breeding index is the combination of breeding values into a single value that reflects a certain emphasis on those traits.

For more information about each Index see the page in this report titled 'Index Options'.



Understanding the Results - Classer's Visual Grade & Visual Traits

Breeders flock, Sire number:	Identity of the breeder's flock and the sire's number or name.			
Number of progeny:	The number of progeny a sire had at weaning. Average number of progeny is included.			
Trait Leaders:	The highest performing sires for each trait (trait leaders) are highlighted by shading. Curvature is the possible exception when for many breeders the optimum score is in the middle of the range therefore trait leaders have not been highlighted.			
Age at assessment:	M	Marking - 14 to 39 days (2 to 6 weeks)	Y	Yearling - 300 to 449 days (10 to 15 months)
	W	Weaning - 40 to 149 days (6 weeks to 5 months)	H	Hogget - 450 to 659 days (15 to 22 months)
	P	Post Weaning - 150 to 299 days (5 to 10 months)	A	Adult - 660 days or older (22 months or older)
Classer's Visual Grade:	<p>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 also included.</p> <p>Classer's Visual Grade is reported as Adjusted Sire Means. Results which have been adjusted for all available information on sex, birth type, rear type, age of dam, age of measurement, the number of progeny a sire has and management group(s), in order to improve the accuracy. No account is made for trait heritability or genetic correlations between traits that can further improve the accuracy.</p> <p>More detail on who completed the Visual Grade Classing/Scoring and the site's Breeding Objective is available earlier in this report.</p>			
Visual Traits:	<p>The following description of trait scores is a summary of the detailed word and diagrammatical description of these scores in Version 4 (2024) of the Visual Sheep Scores booklet that is available free from AWI or at www.merinosuperiorsires.com.au.</p> <p>For the majority of breeding objectives a lower score would be considered favourable and a large difference below the average performance is preferable. Staple structure and Face are the possible exceptions when for many breeders the optimum score is in the middle of the range therefore trait leaders are not highlighted.</p> <p>Visual traits are reported as Adjusted Sire Means. Results which have been adjusted for all available information on sex, birth type, rear type, age of dam, age of measurement, the number of progeny a sire has and management group(s), in order to improve the accuracy. No account is made for trait heritability or genetic correlations between traits that can further improve the accuracy.</p> <p>A selection of visual traits are also reported as Flock Breeding Values (FBVs). Results which are calculated from data recorded within-site and within-drop and express the expected genetic performance 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, the heritability of the trait, and non-genetic affects such as birth and rear type, sex (see adjustments listed earlier), and the number of progeny a sire has in the analysis. FBVs are calculated using all measured assessments up to the stage which is reported.</p>			

Fleece rot:	FLROT	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:	COL	Greasy wool colour scored from 1 (whitest) to 5 (yellow).
Wool character:	CHAR	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:	DUST	Degree of dust penetration from 1 (only tip <6%) to 5 (71 to 100% of staple).
Staple weathering:	WEATH	The deterioration due to light and water from 1 (least, <6% of staple) to 5 (most, 71 to 100%) reflect the depth and degree of deterioration.
Staple structure:	SSTRC	The size and diameter of each staple from 1 (<6mm) to 5 (>30 mm).
Fibre pigmentation:	FPIG	The percentage of dark fibres on any part of the sheep from 1 (0 pigmented fibres at any site) to 5 (71 to 100% pigmented fibres at one or more sites). This trait does not include random spot or recessive black.
Non-fibre pigmentation:	SPIG	The percentage of pigmentation on the areas not shorn from 1 (0 pigmentation at any site) to 5 (71 to 100% pigmented area on one or more bare skin sites, and/or 71 to 100% of the total hoof area).
Recessive black:	BLACK	Recessive black 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. Only the percentage of progeny for each sire who scored 5 are reported for Recessive black and Random spot.
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.
Jaw:	JAW	The alignment of the lower jaw and its teeth relative to the top jaw from 1 (very well aligned) to 5 (heavily undershot or overshot).
Hocks:	HOCK	Angulation of the hock joints in relation to the feet from 1 (square) to 5 (extreme angulation).
Front Legs:	FLEGS	Orientation of the front legs and feet from 1 (square) to 5 (extreme inward or outward orientation).
Pasterns:	PASTERN	Angulation of the pastern joint from 1 (no angulation) to 5 (extreme angulation).
Front Toes:	FTOES	Direction and degree of growth on the front toes from 1 (straight and normal) to 5 (long and opened or rolled over).
Back Toes:	BTOES	Direction and degree of growth on the back toes from 1 (straight and normal) to 5 (long and opened or rolled over).
Back/Shoulder:	BACK	Conformation of the back and shoulder from 1 (very square) to 5 (very dipped or high).
Face cover:	FACE	Wool cover on the face scored from 1 (open face) to 5 (fully covered face).

Body wrinkle:	BDWR	The degree of body wrinkle from 1 (no wrinkle) to 5 (extensive wrinkle).			
Neck wrinkle:	NKWR	The degree of neck wrinkle from 1 (no wrinkle) to 5 (extensive wrinkle).			
Breech wrinkle:	BRWR	Degree of wrinkle at the tail set and hind legs from 1 (nil) to 5 (extensive).			
Breech cover:	BCOV	Size of natural bare area around the breech from 1 (large) to 5 (no bare).			
Crutch cover:	CCOV	Size of natural bare area in the pubic and groin from 1 (large) to 5 (no bare).			
Dag:	DAG	Degree of dag adhering to the breech and legs from 1 (nil) to 5 (extensive).			
Urine:	URINE	Degree of urine stained wool in the breech area, including the hind legs from 1 (nil) to 5 (extensive).			
Visual Traits reported as Flock Breeding Values (FBVs):	EBRWR:	Early Breech Wrinkle	LBRWR:	Late Breech Wrinkle	
	EBCOV:	Early Breech Cover	LBCOV:	Late Breech Cover	
	ECOL:	Early Wool Colour	LCOL:	Late Wool Colour	
	EFROT:	Early Fleece Rot	LFROT:	Late Fleece Rot	
	ECHAR:	Early Wool Character	LCHAR:	Late Wool Character	
	EDAG:	Early Dag	LDAG:	Late Dag	

FBVs for Visual Traits are reported as 'Early' or 'Late'. Stage codes are divided into early or late as follows.

Wool Traits

ECOL:	Early Wool Colour	LCOL:	Late Wool Colour
EFROT:	Early Fleece Rot	LFROT:	Late Fleece Rot
ECHAR:	Early Wool Character	LCHAR:	Late Wool Character
Early stages include Post Weaning and Yearling		Late stages include Hogget and Adult	

Other Traits

EBRWR:	Early Breech Wrinkle	LBRWR:	Late Breech Wrinkle
EBCOV:	Early Breech Cover	LBCOV:	Late Breech Cover
EDAG:	Early Dag	LDAG:	Late Dag
Early stages include Marking and Weaning		Late stages include Post Weaning, Yearling, Hogget and Adult	

Table 1. Adjusted Sire Means - Classer's Visual Grade

A classer grades all progeny as either Tops, Flocks or Culls based on their visual assessment of all traits relative to the site's Breeding Objective. The percentage deviation from the average of Tops and Culls is presented in this report. Average percentage of Tops and Culls for the entire drop is also included.

Sire Code	Breeder's flock, Sire number	Classer's Visual Grade					
		Number of Progeny*	Yearling		Number of Progeny*	Adult	
			TOPS %	CULLS %		TOPS %	CULLS %
1	Gelton Poll, 190140	38	-2	-5	23	6	-10
2	Glenville Poll, 220386	32	1	-7	14	26	-18
3	Gunallo Poll, 220067	33	5	-1	15	8	12
4	Kelvale Poll, 221415	35	11	-11	17	-19	2
5	Malleetech Poll, 222357	41	-13	2	22	-18	-2
6	Pepper Well Poll, 222047	38	-10	4	24	-18	32
7	Pyramid Poll, 220220	33	-3	15	19	15	-12
8	Richmond, 170013 (Link Sire)	39	-5	4	27	-6	1
9	Trefusis Poll, 210106	45	-18	18	21	-10	8
10	Wiringa Park Poll, 220450	31	34	-18	16	17	-12
	Progeny group average	37	18	27	20	28	25

*Number of progeny is as at either the Yearling or the Adult classing event.

Please see pages 9-11 for a full description of trait names and an explanation of Adjusted Sire Means.

Yearling Classer's Visual Grades are calculated using both the ewe and wether progeny of the sires.

Adult Classer's Visual Grades are calculated using only the ewe progeny of the sires.

Table 2. Adjusted Sire Means - Visual Traits - Wool Quality and Pigmentation

Sire Code	Breeder's flock, Sire number	Number of Progeny	Wool Quality - Adult					Pigmentation - Marking			
			FLROT	COL	CHAR	DUST	SSTRC	FPIG	SPIG	BLACK % Score 5	SPOT % Score 5
1	Gelton Poll, 190140	43	1.0	2.8	2.3	2.5	3.3	1.0	1.9	0	0
2	Glenville Poll, 220386	37	1.0	3.0	2.7	3.0	3.3	1.0	1.8	0	3
3	Gunallo Poll, 220067	40	1.0	2.6	2.4	2.6	3.3	1.0	1.7	0	2
4	Kelvale Poll, 221415	40	1.2	2.8	2.2	2.8	3.0	1.0	2.0	0	0
5	Malleetech Poll, 222357	49	1.0	3.1	3.5	2.7	3.5	1.0	1.9	0	2
6	Pepper Well Poll, 222047	46	1.0	3.3	3.1	2.9	2.9	1.0	2.0	0	2
7	Pyramid Poll, 220220	39	1.0	2.6	2.7	2.6	3.3	1.0	1.9	0	0
8	Richmond, 170013 (Link Sire)	49	1.0	2.9	2.7	2.9	3.0	1.0	1.9	0	2
9	Trefusis Poll, 210106	49	1.0	2.8	3.3	2.5	3.7	1.0	1.8	0	0
10	Wirringa Park Poll, 220450	34	1.0	2.7	2.4	2.5	3.2	1.0	1.8	0	0
Progeny group average		43	1.0	2.9	2.8	2.7	3.2	1.0	1.9	-	-

Please see pages 9-11 for a full description of trait names and an explanation of Adjusted Sire Means.

Marking visual traits are calculated using both the ewe and wether progeny of the sires.

Adult visual traits are calculated using only the ewe progeny of the sires.

Table 3. Adjusted Sire Means - Visual Traits - Conformation

Sire Code	Breeder's flock, Sire number	Number of Progeny	Conformation - Adult								
			JAW	BACK	FACE	BDWR	HOCK	FLEGS	PASTERN	FTOES	BTOES
1	Gelton Poll, 190140	43	1.0	1.1	2.4	1.9	2.1	1.0	1.7	1.1	1.0
2	Glenville Poll, 220386	37	1.0	1.0	2.4	1.8	1.7	1.0	1.8	1.1	1.0
3	Gunallo Poll, 220067	40	1.3	1.1	2.3	2.0	2.4	1.0	1.7	1.0	1.1
4	Kelvale Poll, 221415	40	1.0	1.2	2.5	1.9	1.7	1.0	1.6	1.1	1.0
5	Malleetech Poll, 222357	49	1.0	1.0	2.0	2.3	2.1	1.0	1.6	1.0	1.0
6	Pepper Well Poll, 222047	46	1.2	1.1	2.2	1.8	3.1	1.0	2.0	1.1	1.0
7	Pyramid Poll, 220220	39	1.0	1.1	2.3	2.0	1.7	1.0	1.7	1.2	1.0
8	Richmond, 170013 (Link Sire)	49	1.0	1.1	2.6	2.0	2.7	1.1	2.2	1.2	1.0
9	Trefusis Poll, 210106	49	1.2	1.4	2.5	2.3	2.9	1.1	2.4	1.3	1.0
10	Wirringa Park Poll, 220450	34	1.0	1.0	2.6	2.2	1.8	1.1	2.3	1.4	1.1
	Progeny group average	43	1.1	1.1	2.4	2.0	2.3	1.0	1.9	1.2	1.0

Please see pages 9-11 for a full description of trait names and an explanation of Adjusted Sire Means.

Adult visual traits are calculated using only the ewe progeny of the sires.

Table 4. Adjusted Sire Means - Visual Traits - Breech

Sire Code	Breeder's flock, Sire number	Number of Progeny	Breech Visual Traits					
			BRWR	BCOV	CCOV	DAG	BRWR	BCOV
			<i>Marking</i>		<i>Hogget</i>		<i>Adult</i>	
1	Gelton Poll, 190140	43	2.3	3.8	2.9	1.9	2.1	2.1
2	Glenville Poll, 220386	37	2.1	3.7	3.1	1.8	2.0	2.3
3	Gunallo Poll, 220067	40	2.2	3.9	3.5	1.6	2.2	2.5
4	Kelvale Poll, 221415	40	2.1	4.0	3.2	2.0	2.2	2.8
5	Malleetech Poll, 222357	49	2.1	3.8	3.0	1.8	2.2	2.3
6	Pepper Well Poll, 222047	46	2.1	3.9	3.7	2.2	1.7	2.7
7	Pyramid Poll, 220220	39	2.1	3.9	3.5	1.5	2.2	2.7
8	Richmond, 170013 (Link Sire)	49	2.1	3.9	2.9	1.7	2.3	2.0
9	Trefusis Poll, 210106	49	2.1	3.8	3.8	1.9	2.4	2.8
10	Wiringa Park Poll, 220450	34	2.1	4.0	3.2	1.6	2.0	2.8
	Progeny group average	43	2.1	3.9	3.3	1.8	2.1	2.5

Please see pages 9-11 for a full description of trait names and an explanation of Adjusted Sire Means.

Marking visual traits are calculated using both the ewe and wether progeny of the sires.

Hogget and Adult visual traits are calculated using only the ewe progeny of the sires.

Table 5. Flock Breeding Values – Visual Traits

Sire Code	Breeders flock, Sire number	Number of Progeny	Flock Breeding Values							
			EBWR	LBWR	EBCOV	LBCOV	LCOL	LFROT	LCHAR	LDAG
1	Gelton Poll, 190140	43	0.35	0.01	0.00	-0.15	-0.19	-0.06	-0.61	0.23
2	Glenville Poll, 220386	37	-0.10	-0.14	-0.35	-0.19	0.14	0.04	-0.04	-0.32
3	Gunallo Poll, 220067	40	0.35	0.48	0.07	0.36	-0.72	-0.13	-0.66	-0.16
4	Kelvale Poll, 221415	40	-0.13	-0.13	0.22	0.13	-0.33	-0.02	-0.67	0.11
5	Malleetech Poll, 222357	49	-0.20	-0.21	-0.14	0.03	0.74	0.13	1.06	-0.45
6	Pepper Well Poll, 222047	46	-0.16	-0.55	0.15	0.26	1.22	0.18	0.64	1.95
7	Pyramid Poll, 220220	39	0.04	0.15	-0.05	-0.04	-0.61	-0.10	-0.09	-0.79
8	Richmond, 170013 (Link Sire)	49	-0.13	0.13	0.00	-0.32	-0.13	-0.05	-0.16	-0.21
9	Trefusis Poll, 210106	49	0.03	0.48	-0.10	-0.06	0.17	0.09	0.94	-0.42
10	Wiringa Park Poll, 220450	34	-0.05	-0.22	0.19	-0.02	-0.30	-0.09	-0.41	0.07

Please see pages 9-11 for a full description of trait names and an explanation of Flock Breeding Values.

These Flock Breeding Values were calculated using both the ewe and wether progeny of the sires.

Understanding the Results - Measured Traits

Breeders flock, Sire number:	Identity of the breeder's flock and the sire's number or name.			
Number of progeny:	The number of progeny a sire had at weaning. Average number of progeny is included.			
Trait Leaders:	The highest performing sires for each trait (trait leaders) are highlighted by shading. Curvature is the possible exception when for many breeders the optimum score is in the middle of the range therefore trait leaders have not been highlighted.			
Measured Traits: Abbreviation, trait and the (units reported)	Measured traits are those assessed via a standardised collection and testing process completed by an independent, accredited and recognised service provider. Measured traits include the following:			
	GFW:	Greasy fleece weight (percentage)	WT:	Body weight (kilograms)
	CFW:	Clean fleece weight (percentage)	EMD:	Eye muscle depth (mm) at the 'C' site
	FD:	Fibre diameter (micron)	FAT:	Fat depth (mm) at the 'C' site
	FDCV:	Fibre diameter coefficient of variation (percentage)	WEC:	Worm egg count (% deviation in worm burden of sire's progeny)
	SL:	Staple length (mm) at the mid-side		
	SS:	Staple strength (N/ktex) at the mid-side		
	CURV:	Fibre curvature (degrees)		
Age at assessment:	M	Marking - 14 to 39 days (2 to 6 weeks)	Y	Yearling - 300 to 449 days (10 to 15 months)
	W	Weaning - 40 to 149 days (6 weeks to 5 months)	H	Hogget - 450 to 659 days (15 to 22 months)
	P	Post Weaning - 150 to 299 days (5 to 10 months)	A	Adult - 660 days or older (22 months or older)
Adjusted Sire Means	Sire means are the average performance of all the progeny of a sire adjusted for the progeny's birth type, rear type, age of dam, management group and the number of progeny a sire has in the analysis. Adjustments improve the accuracy of the result and adjustments are based on the actual influence of these factors on the drop. No account is made for trait heritability and genetic correlations between traits. The overall progeny group mean is also reported.			
Flock Breeding Values (FBVs)	FBVs are calculated from data recorded within-site and within-drop and express the expected genetic performance 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, the heritability of the trait, and non-genetic affects such as birth and rear type, sex (see adjustments listed earlier), and the number of progeny a sire has in the analysis. FBVs are calculated using all measured assessments up to the stage which is reported. For more information: www.merinosuperiorsires.com.au/resources .			
Indexes	<p>The indexes reported are based on measured traits FBV performance with varying emphasis on fleece weight, fibre diameter, body weight, staple strength and worm egg count.</p> <p>The indexes reported are the FW, WP, SM and ML. These indexes are the same as the MERINOSELECT indexes of that name but account for the fact that not all traits are currently collected as part of standard sire evaluation trials. Further information about Indexes is available earlier in this report and at www.merinosuperiorsires.com.au/resources.</p>			

Table 6. Adjusted Sire Means - Wool

Sire Code	Breeder's flock, Sire number	Number of Progeny	Adjusted Sire Means											
			GFW kg		CFW kg		FD µm		FDCV %		SL mm	SS N/ktex	CURV deg/mm	
			Y	A	Y	A	Y	A	Y	A	Y	Y	Y	A
1	Gelton Poll, 190140	43	4.3	8.3	2.3	4.8	16.7	18.7	18.4	16.4	79.8	36.4	59.2	75.7
2	Glenville Poll, 220386	37	4.3	8.6	2.1	4.9	16.6	19.0	18.4	16.2	79.9	35.4	59.2	74.4
3	Gunallo Poll, 220067	40	4.1	8.7	2.3	5.1	16.0	18.9	18.7	17.7	79.2	36.7	54.1	69.2
4	Kelvale Poll, 221415	40	4.1	8.3	2.2	4.8	17.2	20.0	18.3	16.6	88.0	33.1	55.0	64.7
5	Malleetech Poll, 222357	49	4.1	7.2	2.0	4.1	17.1	19.2	18.4	16.5	79.3	31.6	67.5	83.3
6	Pepper Well Poll, 222047	46	3.9	7.3	2.1	4.1	16.3	18.9	18.0	16.8	85.0	32.6	58.3	68.6
7	Pyramid Poll, 220220	39	3.7	7.8	2.0	4.6	16.3	18.8	18.0	16.6	82.6	29.6	59.0	73.5
8	Richmond, 170013 (Link Sire)	49	4.0	7.7	2.2	4.4	16.8	19.1	17.5	15.1	86.9	35.8	58.3	72.1
9	Trefusis Poll, 210106	49	3.6	7.8	1.7	4.4	16.1	18.4	18.4	16.2	71.0	34.2	73.2	88.8
10	Wiringa Park Poll, 220450	34	4.3	8.5	2.5	5.0	17.1	19.5	18.0	16.4	86.5	40.5	56.9	68.8
	Progeny group average	43	4.0	7.9	2.1	4.6	16.6	19.0	18.2	16.4	81.6	34.5	60.6	74.3
			kg		kg		µm		%	mm	N/ktex		deg/mm	

Please see page 17 for a full description of trait names and an explanation of Adjusted Sire Means.

Yearling Adjusted Sire Means were calculated using both the ewe and wether progeny of the sires.

Adult Adjusted Sire Means were calculated using only the ewe progeny of the sires.

Table 7. Adjusted Sire Means - Weight and Carcase

Sire Code	Breeders flock, Sire name	Number of Progeny	Adjusted Sire Means						
			WT					EMD	FAT
			W	P	kg Y	H	A	mm Y	mm Y
1	Gelton Poll, 190140	43	20.2	41.6	43.7	71.2	58.6	24.3	2.3
2	Glenville Poll, 220386	37	20.6	42.3	45.8	75.1	62.3	26.9	2.7
3	Gunallo Poll, 220067	40	20.3	39.1	41.4	65.1	52.2	24.7	2.4
4	Kelvale Poll, 221415	40	19.5	38.8	42.2	65.8	54.1	26.0	2.6
5	Malleetech Poll, 222357	49	19.1	40.3	44.9	68.2	57.9	27.1	2.8
6	Pepper Well Poll, 222047	46	20.5	39.1	43.2	67.4	56.7	27.2	2.5
7	Pyramid Poll, 220220	39	17.8	37.6	41.0	65.2	53.1	24.8	2.4
8	Richmond, 170013 (Link Sire)	49	19.0	39.2	43.1	64.8	54.7	26.1	2.8
9	Trefusis Poll, 210106	49	18.1	37.7	43.1	67.8	56.0	23.4	2.4
10	Wiringa Park Poll, 220450	34	19.5	38.9	41.9	68.0	54.3	25.7	2.4
	Progeny group average	43	19.4	39.4	43.1	67.7	56.0	25.6	2.5
					kg			mm	mm

Please see page 17 for a full description of trait names and an explanation of Adjusted Sire Means.

Weaning, Post Weaning and Yearling Adjusted Sire Means were calculated using both the ewe and wether progeny of the sires.

Hogget and Adult Adjusted Sire Means were calculated using only the ewe progeny of the sires.

Table 8. Flock Breeding Values - Wool

Sire Code	Breeder's flock, Sire number	Number of Progeny	Flock Breeding Values											
			GFW %		CFW %		FD μm		FDCV %		SL mm	SS N/ktex	CURV deg/mm	
			Y	A	Y	A	Y	A	Y	A	Y	Y	Y	A
1	Gelton Poll, 190140	43	10	10	17	11	0.1	-0.2	0.2	-0.1	-3.9	3.4	-1.0	3.2
2	Glenville Poll, 220386	37	13	11	4	7	0.0	0.3	0.5	0.1	-1.8	-0.1	-1.2	-0.2
3	Gunallo Poll, 220067	40	8	11	17	21	-1.1	-0.6	1.3	1.0	-4.2	1.2	-9.4	-8.7
4	Kelvale Poll, 221415	40	6	3	12	6	1.1	1.1	0.2	0.3	11.8	-2.7	-9.7	-12.0
5	Malleetech Poll, 222357	49	-4	-13	-25	-22	0.9	0.2	-0.2	0.0	-4.9	-1.4	12.2	12.1
6	Pepper Well Poll, 222047	46	-9	-16	-13	-21	-0.5	-0.3	-0.3	0.0	6.1	-2.9	-3.5	-5.8
7	Pyramid Poll, 220220	39	-14	-3	-5	2	-0.5	-0.5	-0.1	0.4	1.0	-7.7	-2.0	-3.3
8	Richmond, 170013 (Link Sire)	49	-2	-6	3	-6	0.3	0.0	-1.4	-1.7	8.6	1.9	-2.4	-2.9
9	Trefusis Poll, 210106	49	-21	-6	-42	-20	-1.1	-0.9	0.1	0.3	-19.5	-0.2	23.7	24.4
10	Wirringa Park Poll, 220450	34	13	10	32	21	0.8	0.9	-0.3	-0.3	6.8	8.5	-6.7	-6.9

Please see page 17 for a full description of trait names and an explanation of Flock Breeding Values.

These Flock Breeding Values were calculated using both the ewe and wether progeny of the sires.

Table 9. Flock Breeding Values - Weight, Carcase and WEC

Sire Code	Breeder's flock, Sire number	Number of Progeny	Flock Breeding Values							
			WT					EMD	FAT	WEC
			W	P	kg Y	H	A	mm Y	mm Y	%
1	Gelton Poll, 190140	43	2.8	4.0	1.8	4.6	4.5	-2.3	-1.1	Worm Egg Count threshold not reached.
2	Glenville Poll, 220386	37	2.9	5.1	6.3	6.3	7.4	0.4	-0.5	
3	Gunallo Poll, 220067	40	0.7	-1.1	-3.9	-1.8	-3.7	-0.6	-0.5	
4	Kelvale Poll, 221415	40	0.5	-0.3	-1.2	-2.0	-2.9	1.0	0.5	
5	Malleetech Poll, 222357	49	-0.3	2.1	3.3	0.5	1.5	1.6	1.3	
6	Pepper Well Poll, 222047	46	1.5	-0.7	-0.5	-0.4	0.5	2.5	-0.1	
7	Pyramid Poll, 220220	39	-3.9	-3.8	-3.6	-3.3	-3.5	-0.4	-0.2	
8	Richmond, 170013 (Link Sire)	49	-0.7	0.3	0.4	-1.4	-1.3	0.9	1.4	
9	Trefusis Poll, 210106	49	-2.7	-2.5	0.4	-2.3	-0.2	-4.0	-1.2	
10	Wiringa Park Poll, 220450	34	-0.8	-2.9	-3.0	-0.1	-2.4	0.8	0.2	

Please see page 17 for a full description of trait names and an explanation of Flock Breeding Values.

These Flock Breeding Values were calculated using both the ewe and wether progeny of the sires.

MERINOSELECT Indexes

A guide from Sheep Genetics

Why use a selection index?

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

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

“ Appropriately designed indexes are central to the goal of breeding more profitable sheep.

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

Choosing the right index

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

Fine Wool (FW) The majority of the income is from the wool clip, with a strong focus on reducing micron.	Wool Production (WP) The majority of the income is from the wool clip, with a strong focus on increasing wool production.
Sustainable Merino (SM) The majority of the income is from the wool clip, and sheepmeat production is balanced.	Merino Lamb (ML) The majority of the income is from sheepmeat production, particularly lambs, with some income from the adult ewe wool clip.

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

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

For detailed explanations and further information on indexes visit:

www.sheepgenetics.org.au

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

Table 10. AMSEA Indexes

The indexes reported are the FW, WP, SM and ML indexes. These indexes are the same as the MERINOSELECT indexes of that name but account for the fact that not all traits are currently collected as part of standard sire evaluation trials. Further information about Indexes is available earlier in this report and at www.merinosuperiorsires.com.au/resources. The average value for all indexes is 100.

Sire Code	Breeder's flock, Sire number	Number of Progeny	AMSEA Index Values			
			Fine Wool	Wool Production	Sustainable Merino	Merino Lamb
1	Gelton Poll, 190140	43	122	127	106	104
2	Glenville Poll, 220386	37	106	113	109	107
3	Gunallo Poll, 220067	40	145	146	120	112
4	Kelvale Poll, 221415	40	94	100	107	107
5	Malleetech Poll, 222357	49	55	53	86	95
6	Pepper Well Poll, 222047	46	68	61	84	93
7	Pyramid Poll, 220220	39	95	93	96	95
8	Richmond, 170013 (Link Sire)	49	103	100	105	106
9	Trefusis Poll, 210106	49	65	58	62	73
10	Wiringa Park Poll, 220450	34	145	149	123	108

Please see page 22 for a description of the Indexes published.

These indexes were calculated using both the ewe and wether progeny of the sires.

Combined Measured Traits and Visual Performance

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

Figure 1a. Combined measured traits (FW index) and combined visually assessed traits for the site objective.

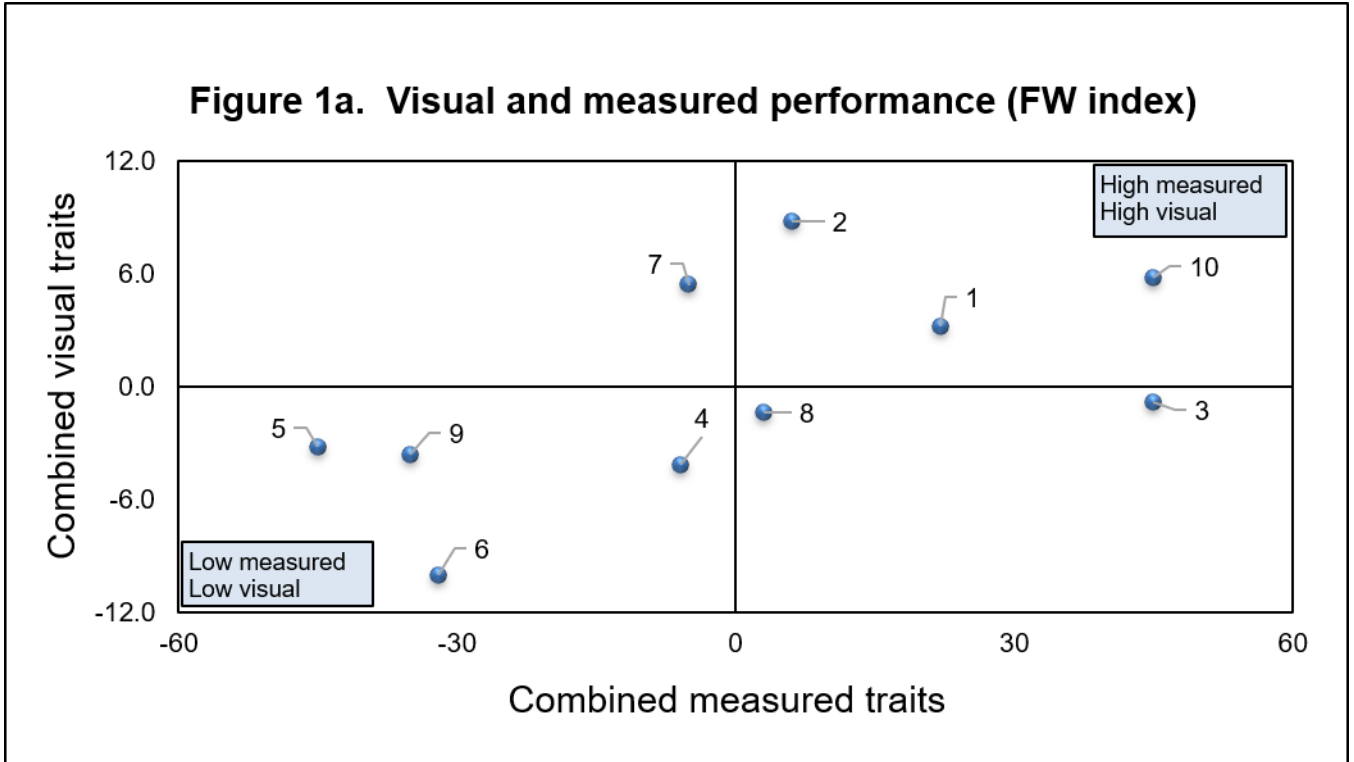
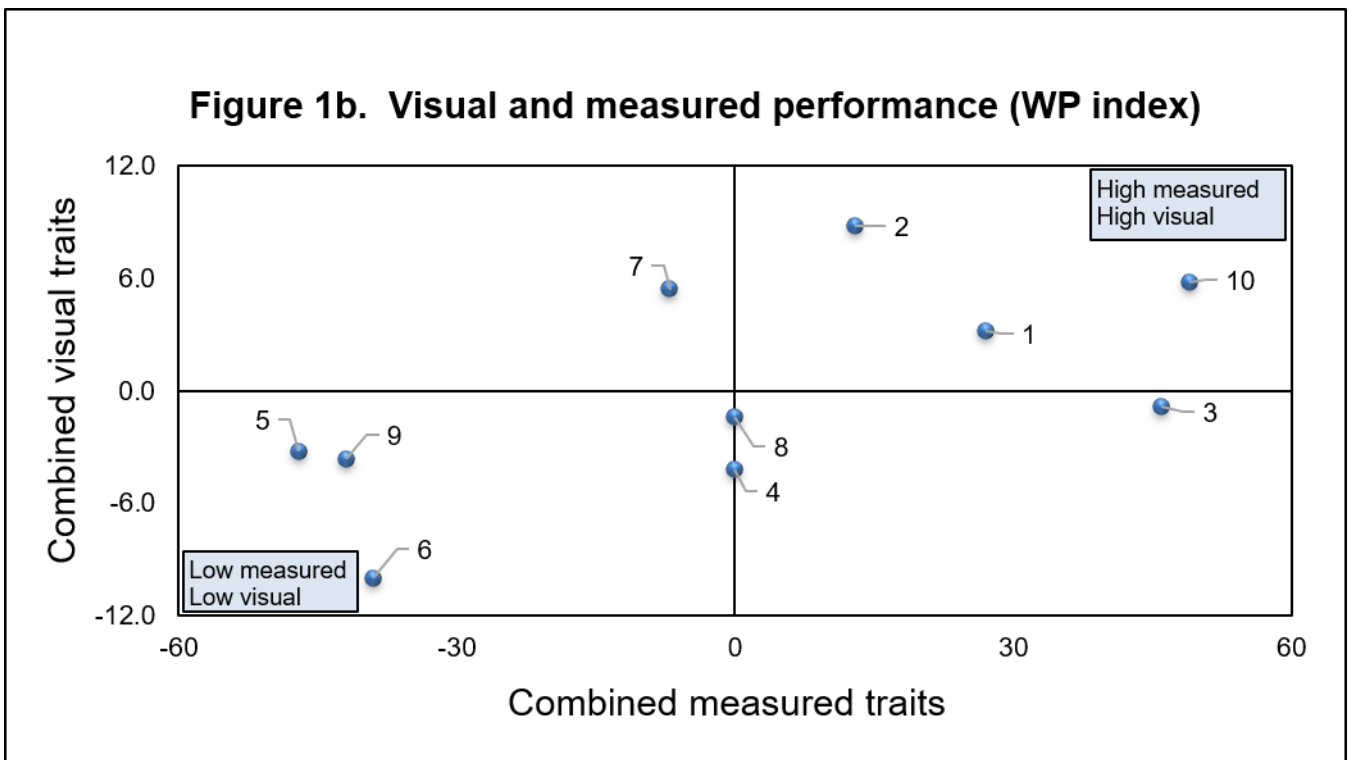


Figure 1b. Combined measured traits (WP index) and combined visually assessed traits for the site objective.



Combined visual traits are derived from Classer's Visual Grade via the following formula:

$$\text{Tops\%} - \text{Culls\%} / 5$$

Figure 1c. Combined measured traits (SM index) and combined visually assessed traits for the site objective.

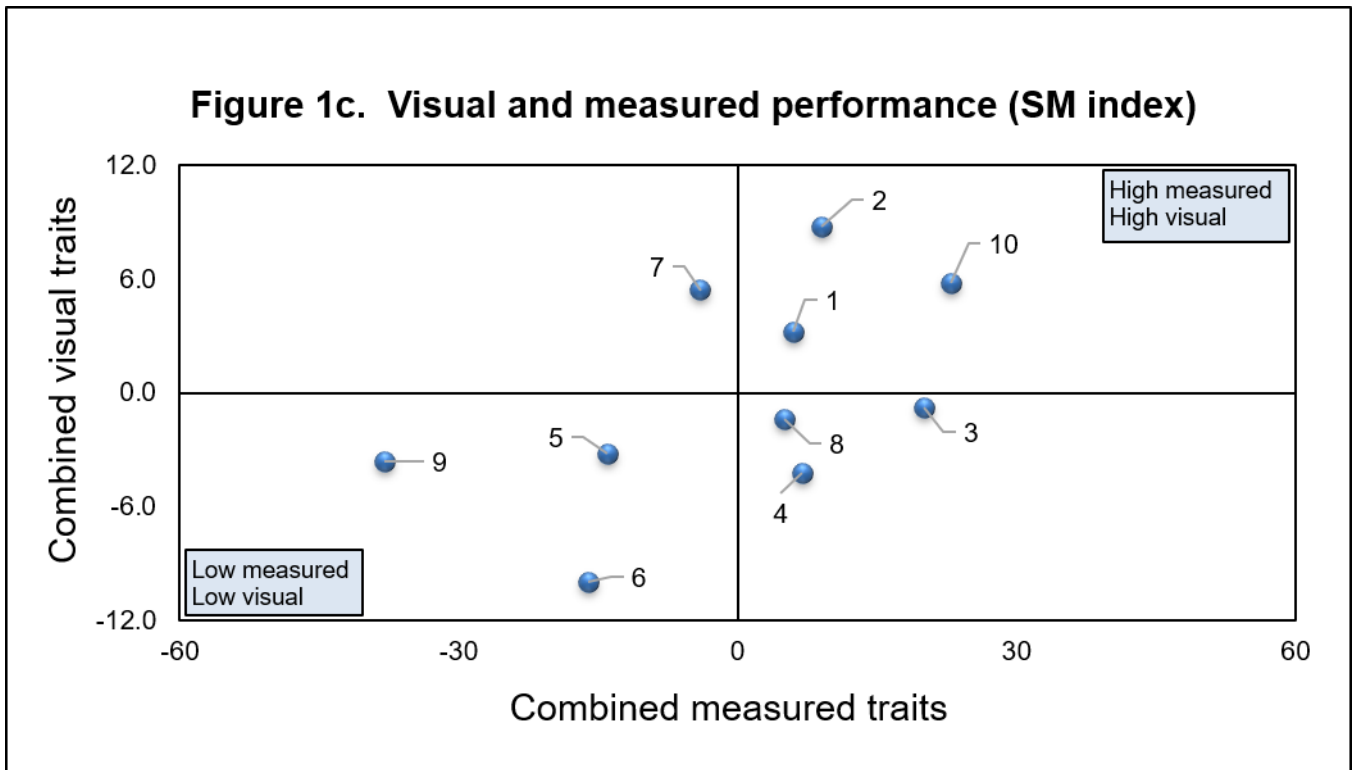
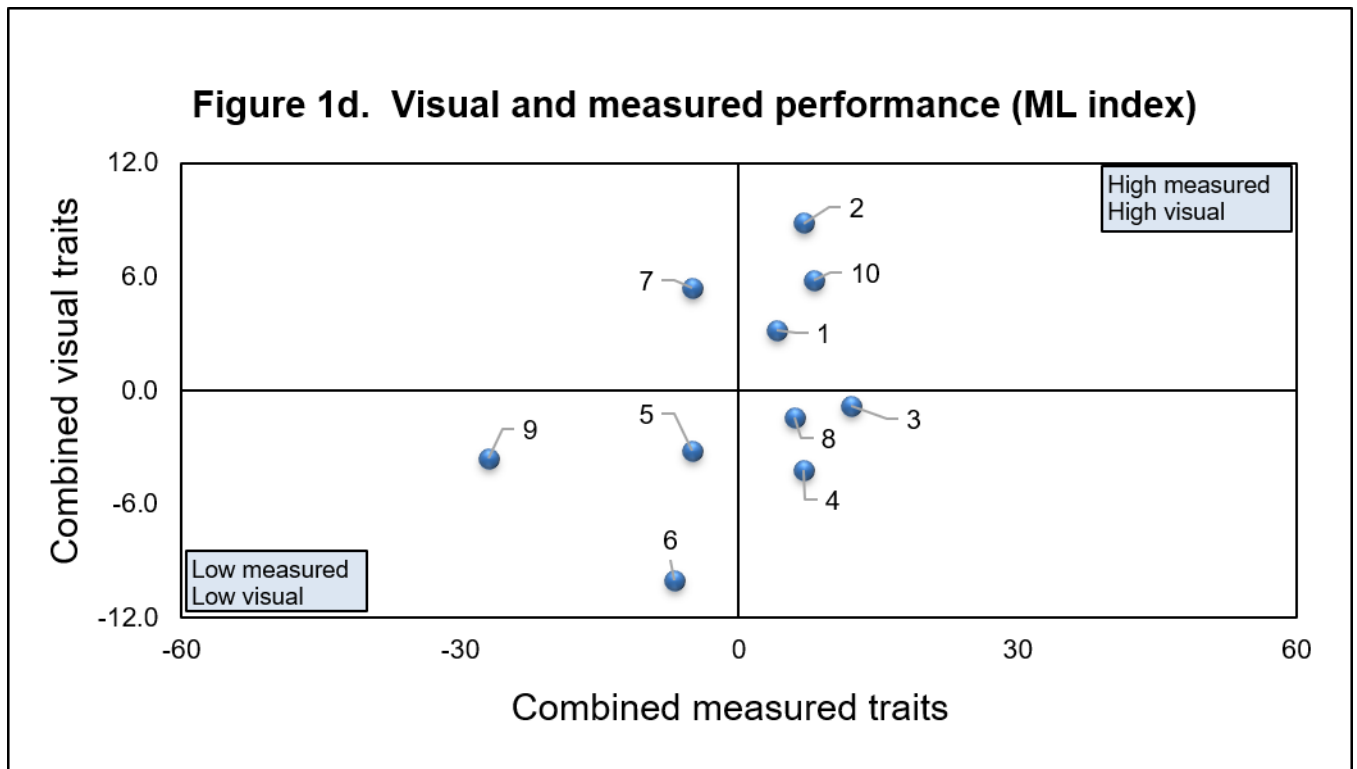


Figure 1d. Combined measured traits (ML index) and combined visually assessed traits for the site objective.



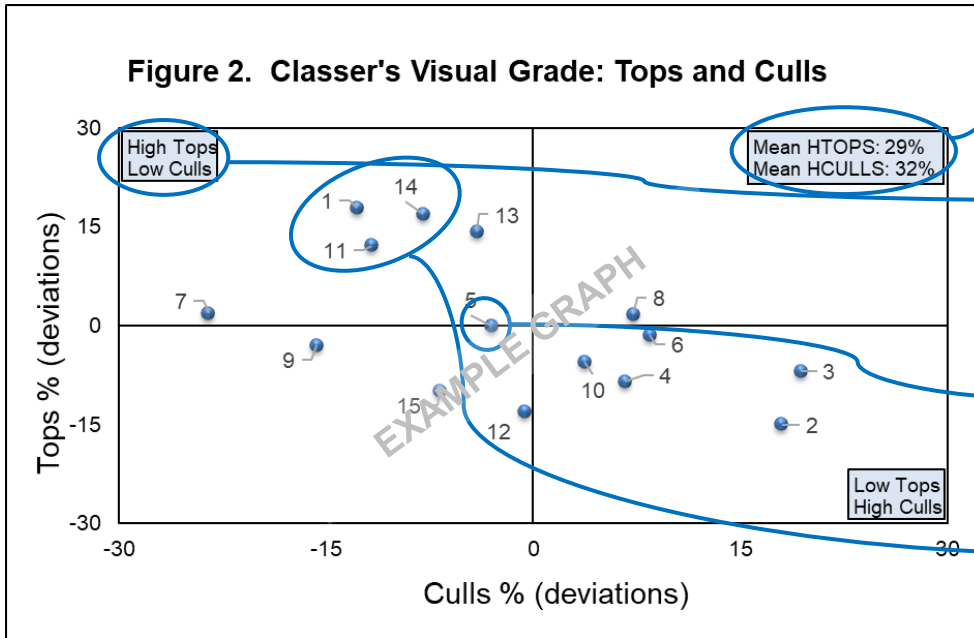
Combined visual traits are derived from Classer's Visual Grade via the following formula:

$$\text{Tops\%} - \text{Culls\%} / 5$$

Understanding the Results - Summary Graphs

The following quadrant graphs summarise sire results for trait combinations of particular interest to industry. Sire codes are as per Table 2. The blue boxes describe the high and low quadrants of results for the traits, generally placed within the highest performing and the lowest performing quadrants. Progeny group averages are also reported for the graphed traits. Further descriptions are included in the accompanying text.

Explanation of a quadrant graph:



Progeny group averages: in this instance for Tops / Culls.

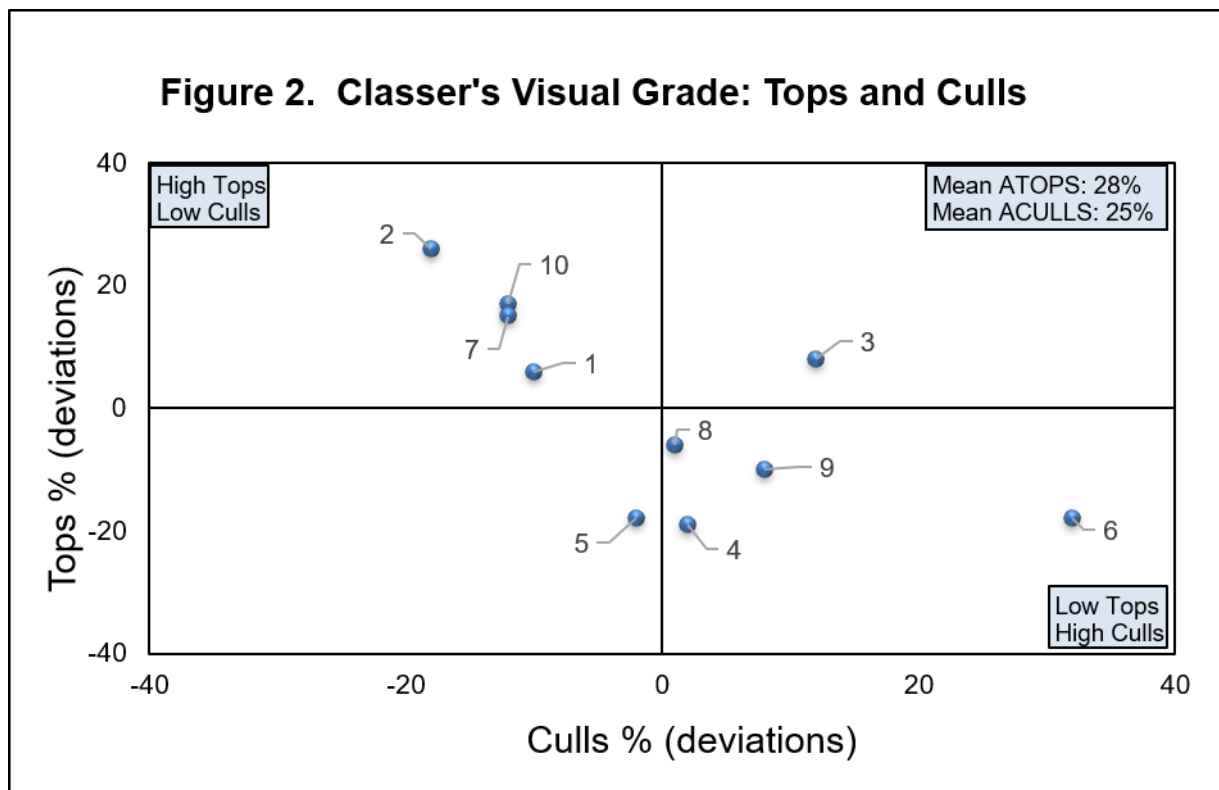
For this figure, this top left quadrant reports the most favourable performance (High Tops and Low Culls). Different quadrants will be the most / least optimal for different trait combinations.

This sire is performing close to the progeny group average.

These sires are recorded in the extreme portion of the most optimal quadrant for this set of traits (Top / Culls).

Figure 2. Classer's Visual Grade - Tops and Culls

The graph describes performance for Classer's Visual Tops Grade on the side axis and Culls Grade on the bottom axis. Sires that have above average Tops and below average Culls are in the top left hand quarter.



Summary Graphs

Figure 3. Fleece Weight and Fibre Diameter (FBVs)

The graph describes performance for clean fleece weight (CFW) on the side axis and fibre diameter (FD) on the bottom axis. Sires that are above average for fleece weight and below average fibre diameter are located in the top left hand quarter.

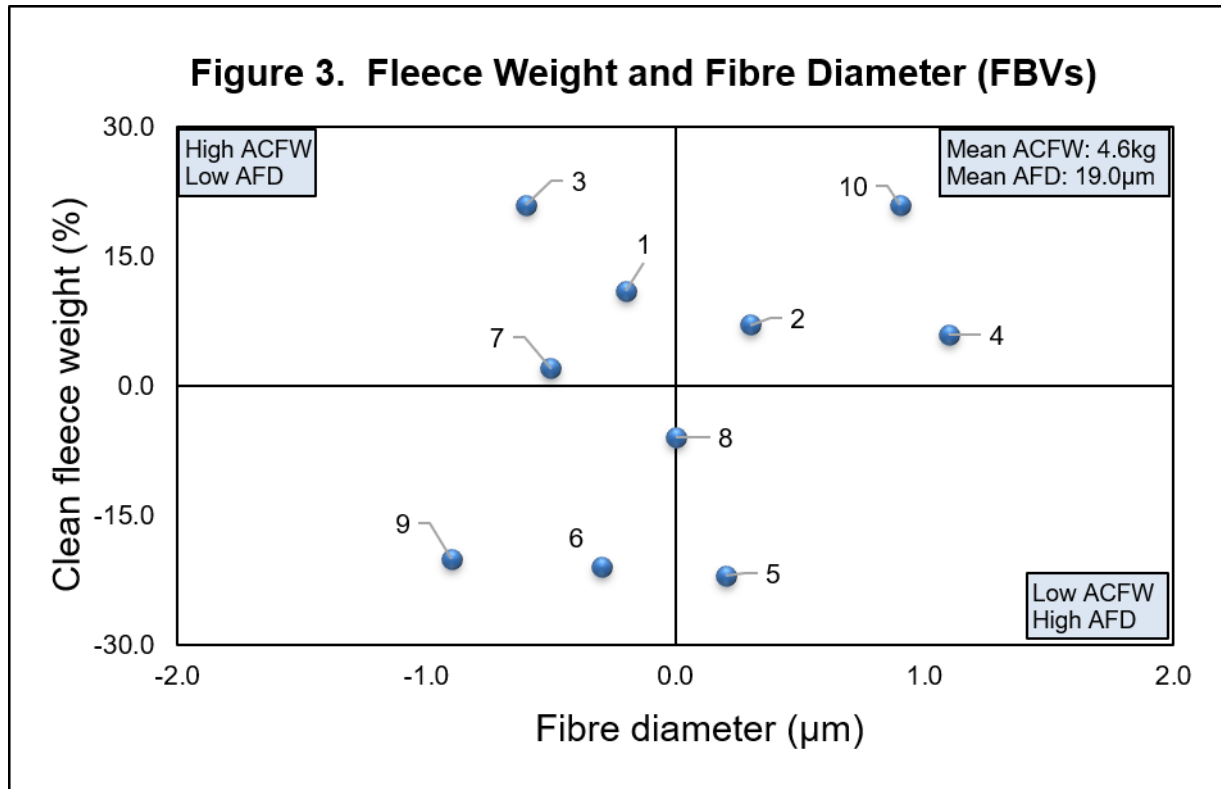
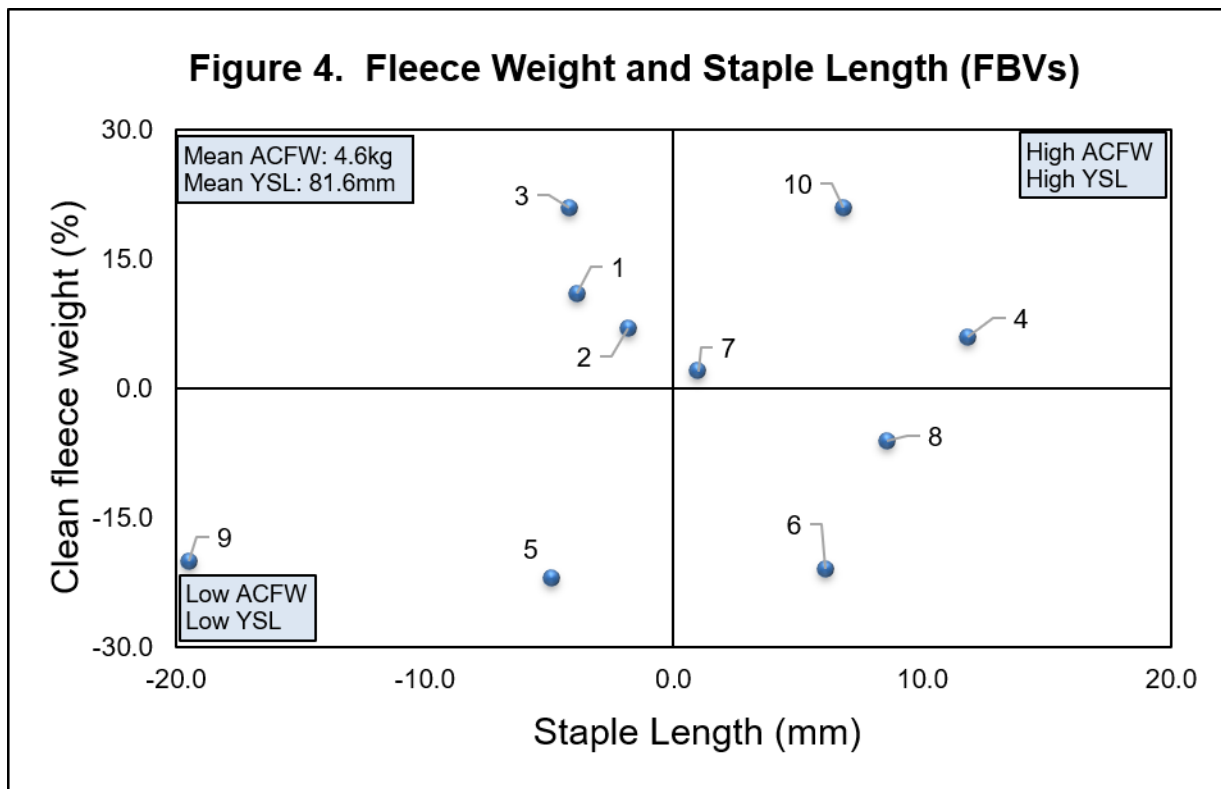


Figure 4. Fleece Weight and Staple Length (FBVs)

The graph describes performance for clean fleece weight (CFW) on the side axis and staple length (SL) on the bottom axis. Sires that are above average for fleece weight and above average for staple length are located in the top right hand quarter.



Summary Graphs

Figure 5. Fleece Weight and Body Weight (FBVs)

The graph describes performance for clean fleece weight (CFW) on the side axis and body weight (WT) on the bottom axis. Sires that are above average for fleece weight and above average for body weight are located in the top right hand quarter.

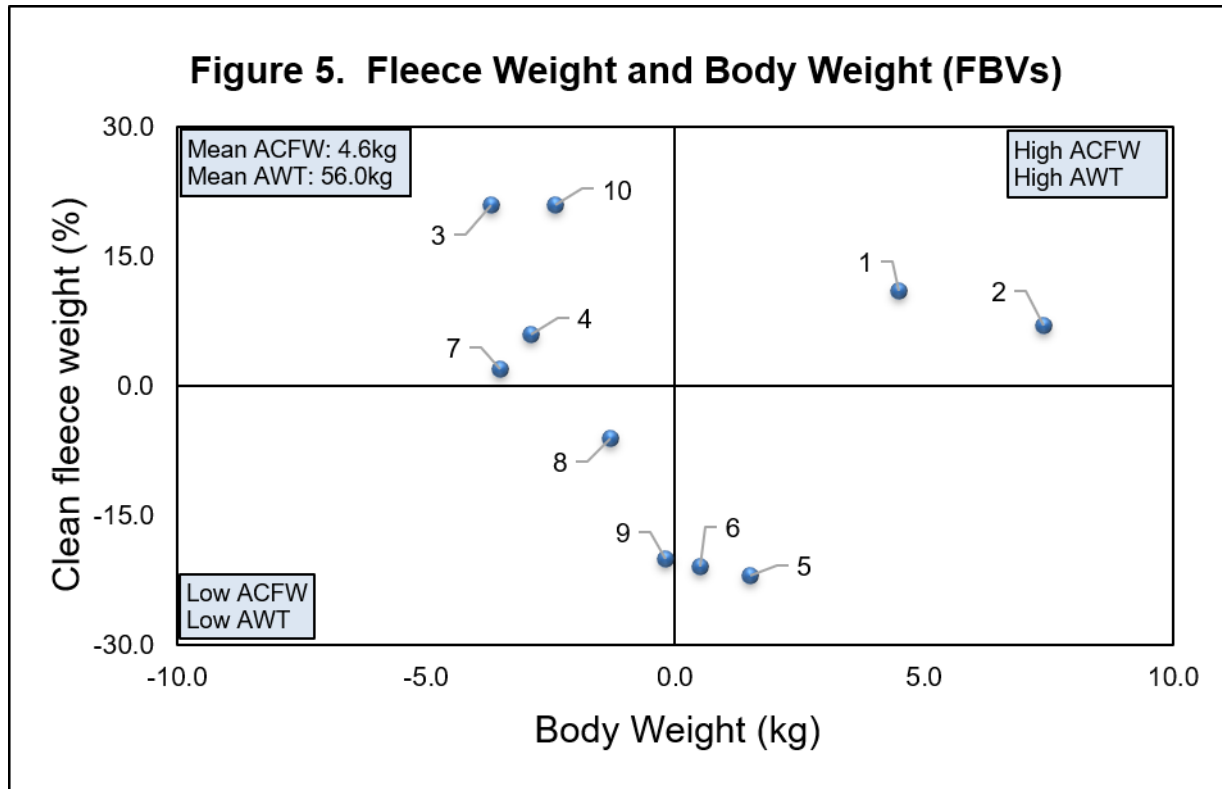
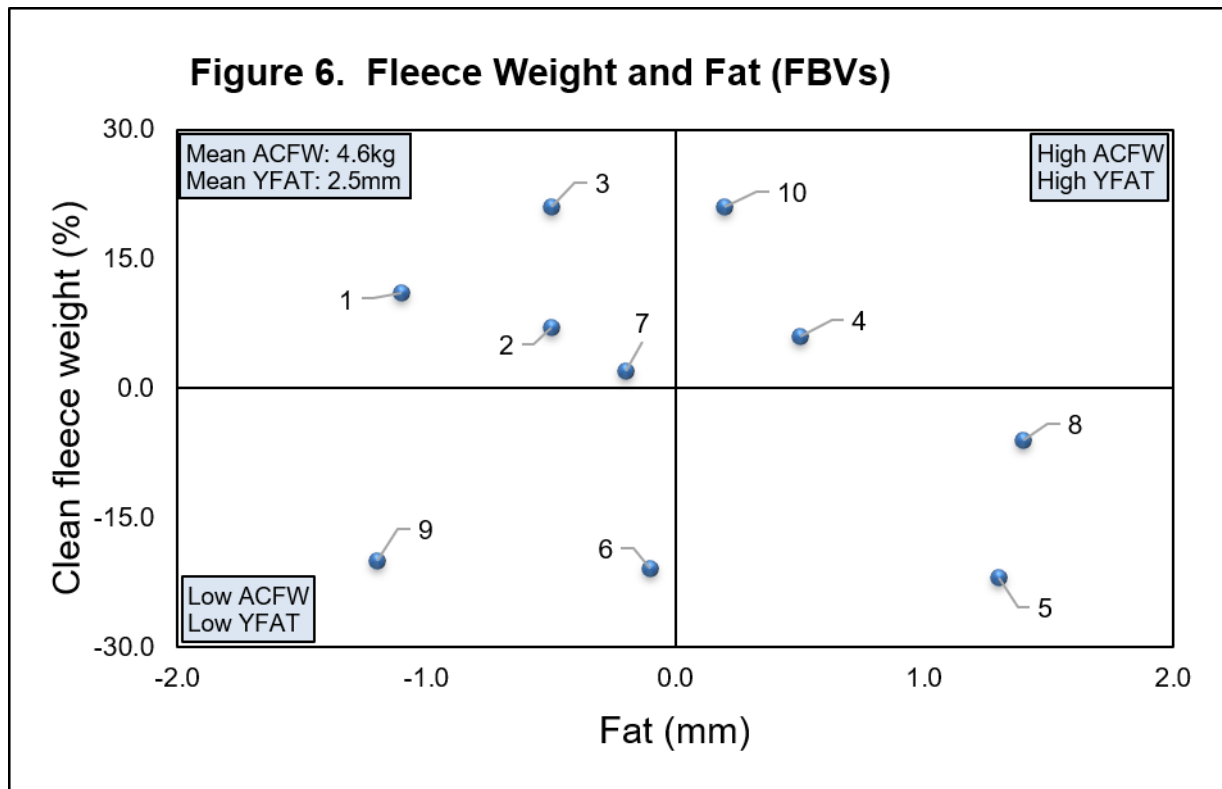


Figure 6. Fleece Weight and Fat (FBVs)

The graph describes performance for clean fleece weight (CFW) on the side axis and fat depth (FAT) on the bottom axis. Sires that are above average for fleece weight and above average for fat are located in the top right hand quarter.



Summary Graphs

Figure 7. Fleece Weight and Eye Muscle Depth (FBVs)

The graph describes performance for clean fleece weight (CFW) on the side axis and eye muscle depth (EMD) on the bottom axis. Sires that are above average for fleece weight and above average for eye muscle depth are located in the top right hand quarter.

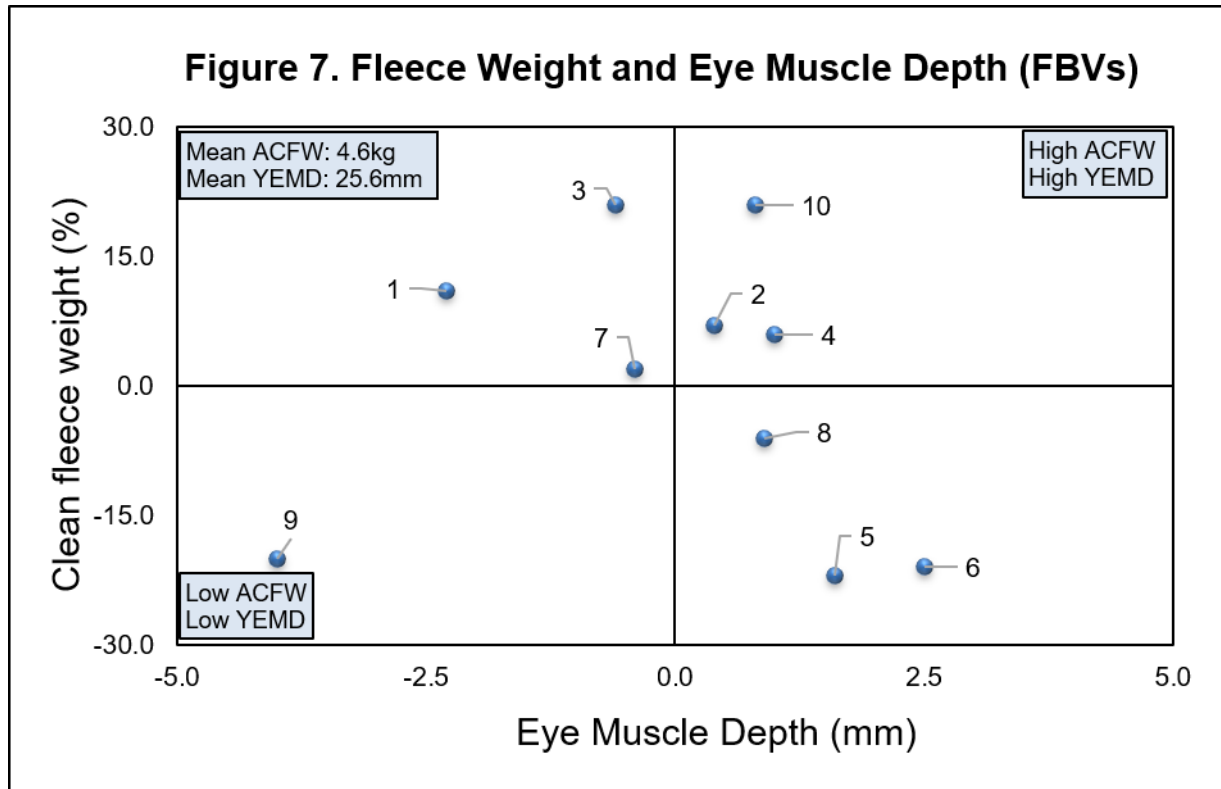
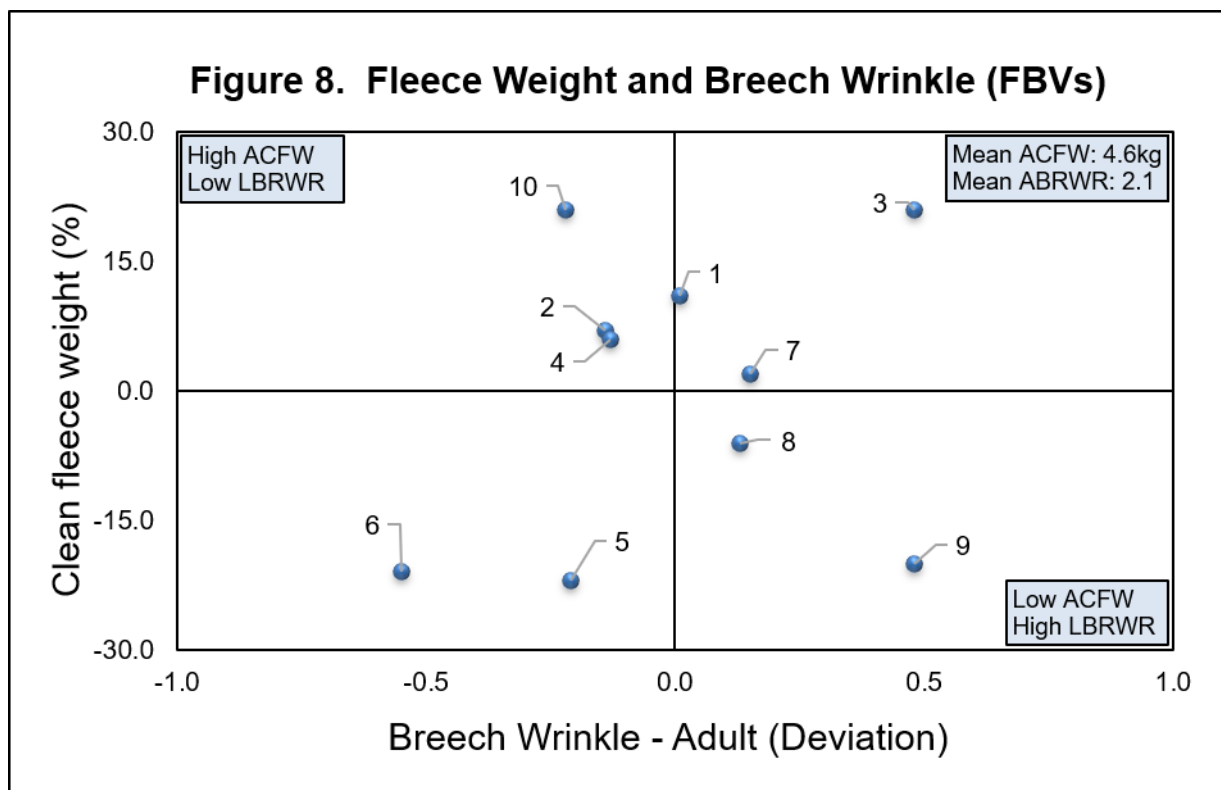


Figure 8. Fleece Weight and Breach Wrinkle (FBV)

The graph describes performance for clean fleece weight (CFW) on the side axis and breach wrinkle (BRWR) on the bottom axis. Sires that are above average for fleece weight and below average for breach wrinkle are located in the top left hand quarter.



Summary Graphs

Figure 9. Body Weight and Eye Muscle Depth (FBVs)

The graph describes performance for body weight (WT) on the side axis and eye muscle depth (EMD) on the bottom axis. Sires that are above average for body weight and above average for eye muscle depth are located in the top right hand quarter.

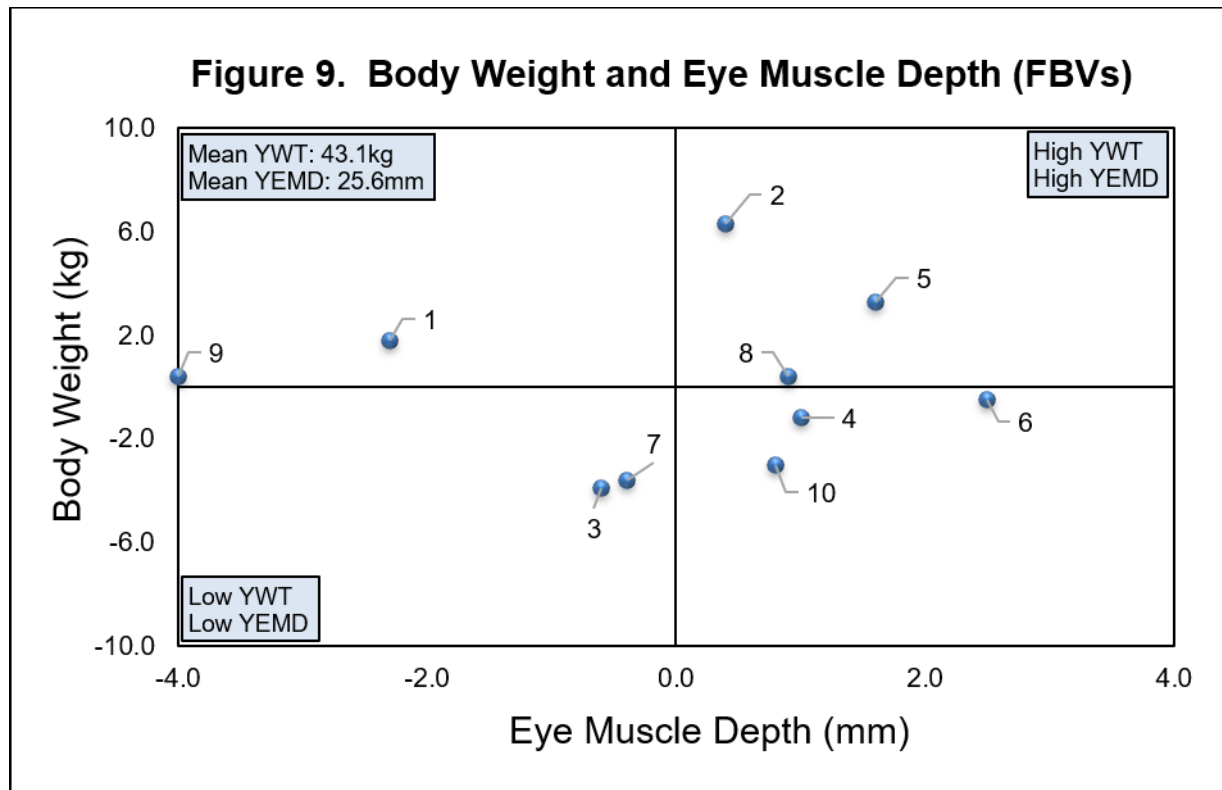
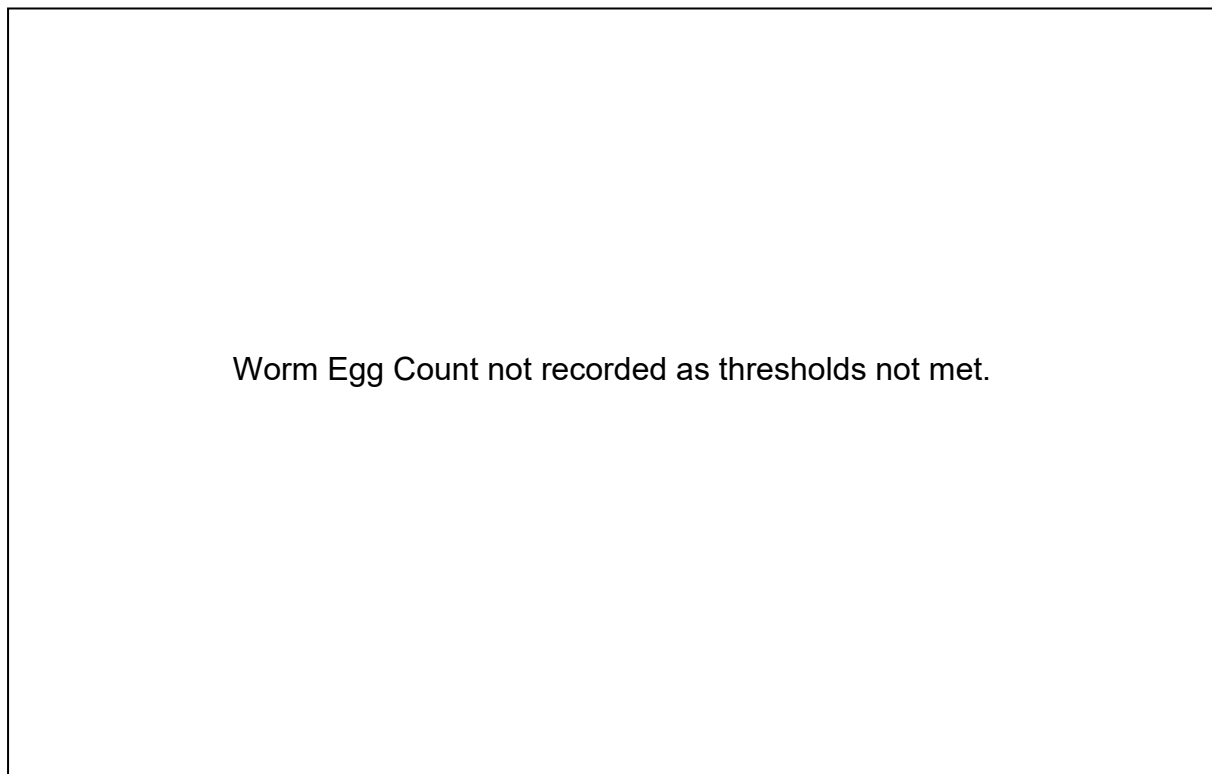


Figure 10. Staple Strength and Worm Egg Count (FBVs)

The graph describes performance for staple strength (SS) on the side axis and worm egg count (WEC) on the bottom axis. Sires that are above average for staple strength and below average for worm egg count are located in the top left hand quarter.





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