MerinoLink
Merino Sire Evaluation
Site Report

Within-Site Results
November 2023

2021 Drop
Yearling and Hogget Assessment

Conducted by

MerinoLINK

Under the auspices of

MERINO
Superior Sires

With support from

BATHURST MERINO ASSOCIATION

awi
Australian Wool Innovation Limited

MerinoLink Merino Sire Evaluation

The Kelly family at "Ferndale" in the Central Tablelands, are the hosts of our 2021 drop Merino Sire Evaluation Trial. This is the first time that they have hosted a Sire Evaluation Trial and also the first time there has been a trial hosted in the Central Tablelands, which enables us to see how the sire's progeny perform in a totally different environment to what we have had before.

These trials could not run as successfully as they do without the contributions of volunteers that give up their time to help with the AI, classing, field days etc. We would like to acknowledge all these volunteers and in particular the members of the local Bathurst Merino Association who have dedicated their time throughout the trial.

Rich Keniry
Chairman
MerinoLink

Site Committee

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Contents

2021 Drop Yearling and Hogget Assessment

The information in this Site Report provides an update of the assessment of the 2021 drop, including the Yearling and Hogget 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 11 months of age with 11 months of wool growth. The Hogget midside fleece assessments completed at 19 months of age with 8 months of wool growth and shearing was completed at 20 months of age with 9 months of wool growth.

Visual Trait Assessment and Site Breeding Objective

Visual trait assessment
Classer's Grade: Andy McLeod
Visual Trait Scores: Joe Walden

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.

> To breed sheep that produce a fine, bright, white quality fleece and of sound conformation (including feet) suitable for the Tablelands environment; maintaining a micron of 17-18, increasing staple length for a short shearing interim whilst maintaining the fleece weight. A selection pressure on a free growing body, with a focus on increased size/fertility to enable a younger maiden joining and wether sales.

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	Sire of Sire
1	Blink Bonnie, 180085	505087-2018-180085	Unknown
2	Bogo, 170182	504792-2017-170182	Terrick West, 150136
3	Boudjah, 180074	505049-2018-180074	Yarrawonga, 160733
4	Conrayn, MVB123 (Link Sire)	504560-2013-MVB123	Unknown
5	Egelabra, 174143	500032-2017-174143	Unknown
6	Glenwood, 170026	501156-2017-170026	Glenwood, 130232
7	Greenland, 170615	504188-2017-170615	Westray, 150016
8	Miramoona, 140012 (Link Sire)	503471-2014-140012	Anderson, 120096
9	Mumblebone, 191128	500063-2019-191128	Mumblebone, 170212
10	Nerstane, 190315	503298-2019-190315	Nerstane, 160404
11	Poll Boonoke, 160612	600001-2016-160612	Collinsville, 120102
12	Pooginook Poll, 190311	601442-2019-190311	Pooginook Poll, 170364
13	Redlands KI, 180102	509124-2018-180102	Yalgoo, 160070
14	Richmond, 170013	505021-2017-170013	Richmond, 130579
15	Rocklyn, 190271	501039-2019-190271	Rocklyn, 170184
16	Roseville Park Poll, 190072	601288-2019-190072	Roseville Park Poll, 173116

Sire and Owner Contact Details

Breeders flock, Sire name Sire ID #	Contact Details
Blink Bonnie, 180085 505087-2018-180085	**Peter Moore** Blink Bonnie, 976 Sodwalls Rd, Tarana NSW 2787 M: 0419 01 1398
Bogo, 170182 504792-2017-170182	**Malcolm Peake** Springfield, 1679 Stockinbingal Rd, Cootamundra NSW 2590 M: 0408 42 6103, E: info@bogomerinos.com.au
Boudjah, 180074 505049-2018-180074	**Michael Green** Boudjah, 174 Old Dangelong Rd, Cooma NSW 2630 P: (02) 6452 6651, M: 0407 22 5825, E: boudjah@bigpond.net.au
Conrayn, MVB123 (Link Sire) 504560-2013-MVB123	**Peter Lette** Foxglen, 650 Rockwell Rd, Berridale NSW 2628 P: (02) 6456 3034, M: 0409 91 6117, E: conrayn650@gmail.com
Egelabra, 174143 500032-2017-174143	**Cam Munro** Egelabra, 9429 Oxley Highway, Warren NSW 2824 P: (02) 6847 4808, M: 0428 47 8696, E: office@egelabra.com
Glenwood, 170026 503471-2014-140012	**Norm Smith** Glenwood, 2220 Twelve Mile Rd, Wellington NSW 2820 P: (02) 6845 3665, M: 0477 31 3665, E: norm@glenwoodmerinos.com.au
Greenland, 170615 503007-2015-150016	**John Alcock** Merambego, 1531 Bungarby Rd, Bungarby NSW 2630 P: (02) 6453 6244, M: 0437 89 8982, E: alcock@skymesh.com.au
Miramoona, 140012 (Link Sire) 503471-2014-140012	**Kim Barnet** Miramoona, Walcha NSW 2354 P: (02) 6777 2885, M: 0429 77 2885, E: barnet@miramoona.com
Mumblebone, 191128 500063-2019-191128	**Chad Taylor** Marapana, 456 Wuuluman Road, Wellington NSW 2820 P: (02) 6845 3620, M: 0458 45 3608, E: chad@mumblebone.com.au
Nerstane, 190315 503298-2019-190315	**John, Hamish and Jock McLaren** Nerstane, 738 Nerstane Road, Woolbrook NSW 2354 P: (02) 6777 5881, M: 0429 77 5891, E: info@nerstane.com.au
Poll Boonoke, 160612 600001-2016-160612	**Justin Campbell** Australian Food & Agriculture, Boonoke, Deniliquin NSW 2710 P: (03) 5884 6604, M: 0427 26 2956, E: jcampbell@austfood.com.au
Pooginook Poll, 190311 601442-2019-190311	**John Sutherland** Pooginook , Jerilderie NSW 2716 P: (02) 6954 6145, M: 0428 95 3017, E: pooginook@paraway.com.au
Redlands KI, 180102 509124-2018-180102	**Keith Bolto** PO Box 128, Kingscote SA 5223 M: 0427 31 1754, E: keith@boltopartners.com.au
Richmond, 170013 505021-2017-170013	**Trevor Ryan** Richmond, Quandialla NSW 2721 M: 0437 15 3765, E: richmondmerino@gmail.com
Rocklyn, 190271 501039-2019-190271	**Ralph Diprose** Elon, Cowra Rd, Grenfell NSW 2810 P: (02) 6343 6331, M: 0488 43 6332, E: rkdiprose@gmail.com
Roseville Park Poll, 190072 601288-2019-190072	**Matthew and Cherie Coddington** Glenwood, 39R Dilladerry Rd MS3, Dubbo NSW 2830 P: (02) 6887 7286, M: 0428 63 5386, E: rpmerinos@bigpond.com

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

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 a 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.

Manager's Report

Host Property and Ewe Base

The Kelly Family are the hosts of the 2021 Drop Merino Sire Evaluation Trial. They are based near Bathurst in the Central Tablelands. The average rainfall is 750mm spread across the year.

For the last 9 years they have run Roseville Park bloodlines as their ewe base. Their ewes reach a mature weight of 60-65kg producing 17.5-18 micron wool with a 75-80% yield.

Ewes were sourced primarily from the 3 and 4yo group and were reclassed by Andy McLeod to produce a consistent line of ewes.

2021 Drop Summary

The site evaluated 16 sires including 2 link sires. 55 ewes were joined to each sire via AI on 27 and 28 April 2021. The ewes were scanned at day 45 which resulted in a success rate of 82% in lamb including triplets. The ewes were then split into twins/triplets and singles. Although there was feed under foot, the ewes were still fed a DDG pellet ration prior to lambing for energy needs.

Closer to lambing, the ewes were split once again. The singles were in one mob of 240, the twins in groups of 40-42 head per lambing paddock and the triplets in 5 mobs of 15. Lambing commenced on 20 September 2021 and was completed on 3 October 2021 (13 day spread).

Due to the large percentage of lambs that were born and survived, it was decided by the site committee to remove the triplet lambs from the trial. This left 207 singles and 681 twins totalling 888 in the trial.

Lamb marking took place on 28 October 2021 and lambs were weaned on 5 January 2022 at 14 weeks of age with an average weight of 20kg. The lambs were run on plantain and rye for a short time before being moved onto pasture. The lambs were classed on 21 July 2022 at 10 months of age (fleece rot, wool colour, wool character, dust penetration, staple structure, face cover, jaw, legs/feet, dag and Classer's Visual Grade) with 26% classed into Tops, 48% Flocks and 26% Culls. Mid-side sampling was also taken at this time.

Shearing of the lambs was conducted on 29 August 2022. The off shears traits were completed early September 2022.

The progeny faced a challenging first year with 1000mm of rolling rainfall spreading over all 4 seasons. This increased the worm burden on them and resulted in them receiving 5 worm treatments over their first year.

The lambs were kept on pasture for the Spring and Summer with no supplementary feeding necessary due to the higher than average pasture growth as a result of the wetter and warmer than usual conditions.

The hogget weight of the lambs was taken on 23 January 2023 averaging 49.7kgs. Carcase scanning took place at the same time.

The lambs were classed, visual traits and mid side samples taken once again by Andy McLeod and Joe Walden on 3 May 2023. They were classed into 29% Tops, 45% Flocks and 26% Culls.

The second shearing took place on 6 June 2023 with an average fleece weight of 4.1kgs from 9 months growth averaging 17.2 micron. From a management perspective, the farm was moving to 10 month shearing, which resulted in the lambs being shorn early to bring them into line with the rest of the flock.

The ewe portion of the lambs were separated and joined to Merino rams from 15 April 2023 for a period of 5 weeks. The ewes were pregnancy scanned on 17 July 2023 which resulted in 102% conception with 49 twins and 322 singles.

Stuart & Andrew Kelly
Ferndale
Caloola, NSW

Assessment and Management Program

Activity	Date/s	Age	Wool
Selection of ewes	March 2021		
Allocation of ewes for mating	April 6-7, 2021		
Pregnancy scanning	June 25, 2021		
Allocated to lambing paddocks	February 11, 2021		
Lambing: start – finish	September 20 – 28, 2021		
Lambing mobs boxed to one management group	October 28, 2021	4 weeks	
Tagging, pigmentation and breech scoring	October 28, 2021	4 weeks	
Marking	October 28, 2021	4 weeks	
Weaning	January 5, 2022	3.5 months	
Mid side fleece sampling (Y) **Mid side fleece sampling (H)**	July 21, 2022 May 3, 2023	10 months 19 months	10 months 8 months
Visual trait scoring (Y) **Visual trait scoring (H)**	July 21, 2022 May 3, 2023	10 months 19 months	10 months 8 months
Shearing (Y) **Shearing (H)**	August 29, 2022 June 6, 2023	11 months 20 months	11 months 9 months
Worm egg count (Y)	September 23, 2022	12 months	
Fat and eye muscle scanning (H)	January 23, 2023	16 months	
Body Weight (W) **Body Weight (P)** **Body Weight (Y)** **Body Weight (H)**	January 5, 2022 May 27, 2022 September 23, 2022 January 23, 2023	3.5 months 8 months 12 months 16 months	
Drench	Hattrick, Startect, Trifecta		
Fly treatment	January 2022 Cyromazine jet on, March 2022 Blowfly and Lice Jet On		
Supplementary Feeding	The lambs were weaned onto plantain/rye paddocks before being moved on to pasture.		
Field day or public display	Two field days were held at "Ferndale" on 12 August 2022 and 2 June 2023. These were a great success, in particular the 2023 Field Day which was held in conjunction with the MerinoLink Conference and attracted over 200 attendees on the day.		

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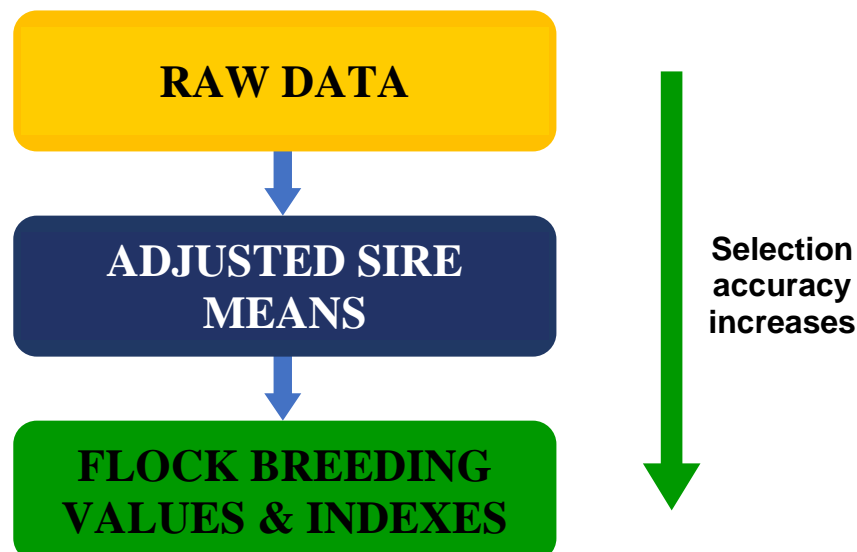
Flock Breeding Values (FBVs)
These results have been adjusted in the same way as Adjusted Sire Means, then further calculations have also been made to account for the level of heritability of a trait (some are more heritable than others) and correlations between traits.

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'.

RAW DATA

↓

ADJUSTED SIRE MEANS

↓

FLOCK BREEDING VALUES & INDEXES

Selection accuracy increases

	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) W = Weaning - 40 to 149 days (6 weeks to 5 months) P = Post Weaning - 150 to 299 days (5 to 10 months) Y = Yearling - 300 to 449 days (10 to 15 months) H = Hogget - 450 to 659 days (15 to 22 months) A = Adult - 660 days or older (22 months or older)
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. Classer's Visual Grade is reported as Adjusted Sire Means; Results which have been adjusted for made 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. More detail on who completed the Visual Grade Classing/Scoring and the site's Breeding Objective is available earlier in this report.
Visual Traits:	The following description of trait scores is a summary of the detailed word and diagrammatical description of these scores in Version 3 (2019) of the Visual Sheep Scores booklet that is available free from AWI or at *www.merinosuperiorsires.com.au*. 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, Jaw* 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. Visual traits are reported as reported as **Adjusted Sire Means**; Results which have been adjusted for made 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.
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).
Feet/Legs:	LEGS - Conformation of feet and legs scored from **1** (very straight) to **5** (very angulated).
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).
Breech cover:	BCOV - Size of natural bare area around the breech from **1** (large) to **5** (no bare).
Breech wrinkle:	BRWR - Degree of wrinkle at the tail set and hind legs from **1** (nil) to **5** (extensive).
Dag:	DAG - Degree of dag adhering to the breech and legs from **1** (nil) to **5** (extensive).
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).

Table 1. 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.

Classer's Visual Grade is reported as **Adjusted Sire Means**; Results which have been adjusted for made 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.

Sire Code	Breeders flock, Sire name	Number of Progeny*	Classer's Visual Grade			
			Yearling		Hogget	
			TOPS %	CULLS %	TOPS %	CULLS %
1	Blink Bonnie, 180085	53	-13	21	-15	8
2	Bogo, 170182	43	-4	14	3	2
3	Boudjah, 180074	43	4	-2	17	-7
4	Conrayn, MVB123 (Link Sire)	48	-22	17	-16	18
5	Egelabra, 174143	49	-15	-2	-8	-3
6	Glenwood, 170026	49	9	-12	11	-18
7	Greenland, 170615	66	-7	2	-17	11
8	Miramoona, 140012 (Link Sire)	52	3	3	2	-6
9	Mumblebone, 191128	36	11	-6	3	-17
10	Nerstane, 190315	51	-8	0	-10	0
11	Poll Boonoke, 160612	49	2	-14	-5	7
12	Pooginook Poll, 190311	59	17	-18	-6	17
13	Redlands KI, 180102	44	-2	0	2	2
14	Richmond, 170013	48	15	-10	23	-16
15	Rocklyn, 190271	42	-10	15	-1	7
16	Roseville Park Poll, 190072	52	19	-7	17	-4
	Progeny group average	**49**	**26**	**26**	**29**	**26**

These grades were collected on both the ewe and wether progeny.

*Number of progeny is as at the Hogget classing event.

Table 2. Visual Traits - Wool Quality and Pigmentation

Visual traits are reported as reported as **Adjusted Sire Means**; Results which have been adjusted for made 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.

Sire Code	Breeders flock, Sire name	Number of Progeny	Wool Quality - *Hogget*					Pigmentation - *Marking*			
			FLROT	COL	CHAR	SSTRC	WEATH	FPIG	SPIG	BLACK % Score 5	SPOT % Score 5
1	Blink Bonnie, 180085	54	2.1	1.9	2.2	2.1	2.2	1.1	4.0	0	0
2	Bogo, 170182	44	1.3	1.6	2.2	2.0	2.2	1.6	4.1	0	0
3	Boudjah, 180074	47	2.1	1.6	2.3	2.1	2.2	1.0	3.5	0	0
4	Conrayn, MVB123 (Link Sire)	50	1.7	1.7	2.6	2.3	2.2	1.3	2.9	0	0
5	Egelabra, 174143	51	1.5	1.7	2.7	2.4	2.4	1.0	2.4	0	2
6	Glenwood, 170026	52	1.4	2.2	2.2	2.0	2.4	1.0	3.3	0	2
7	Greenland, 170615	70	2.6	2.1	2.5	2.0	2.2	1.0	3.4	0	0
8	Miramoona, 140012 (Link Sire)	52	1.8	1.8	2.5	2.1	2.5	1.0	3.8	0	0
9	Mumblebone, 191128	36	1.5	2.0	2.5	2.1	2.4	1.1	3.7	0	0
10	Nerstane, 190315	55	2.2	2.2	2.3	2.0	2.4	1.1	3.8	0	0
11	Poll Boonoke, 160612	51	2.3	2.3	2.6	2.1	2.3	1.1	3.2	0	0
12	Pooginook Poll, 190311	60	3.1	3.0	2.4	2.1	2.7	1.0	2.8	0	0
13	Redlands KI, 180102	49	1.5	1.8	2.0	1.9	2.3	1.0	3.0	0	0
14	Richmond, 170013	53	2.1	2.0	2.1	2.1	2.3	1.0	2.8	0	0
15	Rocklyn, 190271	48	2.3	2.4	2.4	2.0	2.5	1.1	4.5	0	0
16	Roseville Park Poll, 190072	54	1.9	1.5	2.1	2.1	2.2	1.0	3.1	0	3
	Progeny group average	**52**	**2.0**	**2.0**	**2.3**	**2.1**	**2.3**	**1.1**	**3.4**	**-**	**-**

Hogget and marking visual scores were collected on the ewe and wether progeny.

Table 3. Visual Traits - Conformation

Visual traits are reported as reported as **Adjusted Sire Means**; Results which have been adjusted for made 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.

Sire Code	Breeders flock, Sire name	Number of Progeny	Conformation - Hogget				
			JAW	LEGS	BACK	FACE	BDWR
1	Blink Bonnie, 180085	54	1.0	2.1	2.0	3.2	3.4
2	Bogo, 170182	44	1.0	2.2	1.4	3.2	3.3
3	Boudjah, 180074	47	1.0	2.1	1.7	3.2	3.8
4	Conrayn, MVB123 (Link Sire)	50	1.0	2.4	2.2	3.5	3.8
5	Egelabra, 174143	51	1.0	2.2	1.4	3.1	3.7
6	Glenwood, 170026	52	1.0	1.9	1.2	2.7	2.5
7	Greenland, 170615	70	1.0	2.2	2.0	3.4	3.7
8	Miramoona, 140012 (Link Sire)	52	1.0	2.1	1.5	3.2	3.2
9	Mumblebone, 191128	36	1.0	2.0	1.2	3.0	3.4
10	Nerstane, 190315	55	1.0	2.1	1.7	2.9	3.7
11	Poll Boonoke, 160612	51	1.0	2.1	1.7	3.2	3.3
12	Pooginook Poll, 190311	60	1.0	2.1	1.2	3.1	2.7
13	Redlands KI, 180102	49	1.0	2.4	1.5	3.1	3.8
14	Richmond, 170013	53	1.0	2.1	1.6	2.8	3.4
15	Rocklyn, 190271	48	1.0	2.2	1.4	3.3	3.1
16	Roseville Park Poll, 190072	54	1.0	2.2	1.8	3.1	3.8
	Progeny group average	**52**	**1.0**	**2.2**	**1.6**	**3.1**	**3.4**

Hogget scores were collected on the ewe and wether progeny.

Table 4. Visual Traits - Breech

Visual traits are reported as reported as **Adjusted Sire Means**; Results which have been adjusted for made 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.

Sire Code	Breeders flock, Sire name	Number of Progeny	Breech Visual Traits			
			BCOV	BRWR	CCOV	URINE
			Marking		*Hogget*	
1	Blink Bonnie, 180085	54	4.9	2.9	3.0	3.0
2	Bogo, 170182	44	4.9	3.5	3.2	2.6
3	Boudjah, 180074	47	4.9	3.2	3.0	2.8
4	Conrayn, MVB123 (Link Sire)	50	5.0	3.1	3.4	2.7
5	Egelabra, 174143	51	5.0	2.8	3.2	2.8
6	Glenwood, 170026	52	4.6	2.1	2.3	2.3
7	Greenland, 170615	70	4.8	3.6	3.0	2.3
8	Miramoona, 140012 (Link Sire)	52	4.8	2.8	3.1	3.2
9	Mumblebone, 191128	36	4.8	3.8	2.7	2.3
10	Nerstane, 190315	55	4.9	2.7	2.8	2.6
11	Poll Boonoke, 160612	51	4.9	2.2	3.0	2.5
12	Pooginook Poll, 190311	60	4.6	2.6	2.5	2.2
13	Redlands KI, 180102	49	4.8	3.0	3.2	2.5
14	Richmond, 170013	53	4.7	1.9	2.4	2.2
15	Rocklyn, 190271	48	4.9	2.5	3.0	2.6
16	Roseville Park Poll, 190072	54	4.9	3.3	3.3	2.7
	Progeny group average	**52**	**4.8**	**2.9**	**2.9**	**2.6**

Hogget and marking visual scores were collected on the ewe and wether progeny.

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.
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) CFW: Clean fleece weight (percentage) FD: Average fibre diameter (micron) FDCV: Fibre diameter coefficient of variation (percentage) SL: Staple length (mm) at the mid-side SS: Staple strength (N/ktex) at the mid-side CURV: Fibre curvature (degrees) WT: Body weight (kilograms) EMD: Eye muscle depth (mm) at the 'C' site FAT: Fat depth (mm) at the 'C' site WEC: Worm egg count (% deviation in worm burden of sire's progeny)
Age at assessment:	M = Marking - 14 to 39 days (2 to 6 weeks) W = Weaning - 40 to 149 days (6 weeks to 5 months) P = Post Weaning - 150 to 299 days (5 to 10 months) Y = Yearling - 300 to 449 days (10 to 15 months) H = Hogget - 450 to 659 days (15 to 22 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 deviations from the average ie. negative values are below average, positives are above. FBVs presented 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 the association between traits, the heritability of the trait, and non-genetic affects such as birth and rear type, sex, and the number of progeny a sire has in the analysis. Adult FBVs are calculated using all measured assessments up to the current stage. As further assessments are completed, breeding values at earlier stages are also subject to change. For more information: www.merinosuperiorsires.com.au/resources.
Indexes	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. The indexes reported are the DP+; MP+; FP+ and WP+. The first 3 of these indexes are the same as MERINOSELECT indexes of that name but account for the fact that direct reproduction records are not currently collected as part of standard sire evaluation trials. The WP+ index is unique to AMSEA. Further information about Indexes is available later in this report and at www.merinosuperiorsires.com.au/resources.

Table 5. Adjusted Sire Means - Wool

Sire Code	Breeders flock, Sire name	Number of Progeny	GFW kg Y	GFW kg H	CFW kg Y	CFW kg H	FD μm Y	FD μm H	FDCV % Y	FDCV % H	SL mm Y	SS N/ktex Y	CURV deg/mm Y	CURV deg/mm H
1	Blink Bonnie, 180085	54	3.1	3.8	2.3	2.9	16.1	16.9	18.4	18.3	78.0	32.7	94.0	91.7
2	Bogo, 170182	44	3.4	4.0	2.4	3.0	16.1	16.8	17.2	18.0	80.1	30.2	97.1	93.8
3	Boudjah, 180074	47	3.4	4.1	2.5	3.2	15.5	16.8	17.7	18.1	78.8	22.2	100.4	95.4
4	Conrayn, MVB123 (Link Sire)	50	3.1	3.8	2.3	2.8	16.2	17.3	17.2	17.3	76.2	30.9	101.1	99.1
5	Egelabra, 174143	51	3.4	4.0	2.5	3.1	16.3	17.5	19.2	18.7	83.8	22.9	92.1	87.8
6	Glenwood, 170026	52	3.2	3.7	2.5	2.8	16.8	17.8	15.6	15.9	92.2	40.3	89.6	89.8
7	Greenland, 170615	70	3.6	4.2	2.6	3.1	16.1	17.2	17.3	18.0	78.5	25.2	95.7	91.9
8	Miramoona, 140012 (Link Sire)	52	3.6	4.1	2.7	3.2	16.8	18.1	16.8	17.4	93.2	37.6	91.6	86.3
9	Mumblebone, 191128	36	3.5	3.9	2.6	3.0	16.2	17.7	18.2	17.8	90.9	22.2	88.1	83.9
10	Nerstane, 190315	55	3.7	4.5	2.7	3.3	15.9	16.9	18.4	18.9	79.7	20.1	96.1	90.8
11	Poll Boonoke, 160612	51	3.7	4.3	2.7	3.2	17.0	17.9	17.2	18.1	87.3	30.6	91.8	89.5
12	Pooginook Poll, 190311	60	3.5	3.8	2.7	2.9	16.5	17.7	17.1	18.0	90.9	30.7	91.7	89.6
13	Redlands KI, 180102	49	3.6	4.1	2.6	3.0	15.3	16.3	17.3	16.9	87.7	26.5	93.6	92.4
14	Richmond, 170013	53	3.5	4.2	2.7	3.2	16.7	17.8	16.6	16.1	93.5	36.2	89.1	84.1
15	Rocklyn, 190271	48	3.4	4.2	2.5	3.1	16.1	16.8	16.9	17.4	86.7	29.1	92.7	89.4
16	Roseville Park Poll, 190072	54	3.7	4.3	2.7	3.2	16.2	17.0	17.3	17.5	85.6	33.9	91.5	88.2
	Progeny group average	**52**	**3.5** kg	**4.1**	**2.6** kg	**3.1**	**16.2** μm	**17.3**	**17.4** %	**17.7**	**85.0** mm	**29.5** N/ktex	**93.6** deg/mm	**90.3**

These Adjusted Sire Means were calculated using data from both ewe and wether progeny for the Yearling and Hogget measurements.

Table 6. Adjusted Sire Means - Weight and Carcase

Sire Code	Breeders flock, Sire name	Number of Progeny	WT kg W	WT kg P	WT kg Y	WT kg H	EMD mm H	FAT mm H
1	Blink Bonnie, 180085	54	19.9	30.4	30.7	44.5	18.2	2.1
2	Bogo, 170182	44	20.5	33.2	32.9	47.2	19.9	2.2
3	Boudjah, 180074	47	21.8	34.6	33.9	50.4	20.6	2.5
4	Conrayn, MVB123 (Link Sire)	50	20.6	30.6	30.9	45.0	18.6	2.3
5	Egelabra, 174143	51	19.6	32.2	30.7	45.1	20.8	2.9
6	Glenwood, 170026	52	21.4	34.2	34.5	49.2	23.1	3.3
7	Greenland, 170615	70	21.0	34.6	33.3	49.5	20.4	2.7
8	Miramoona, 140012 (Link Sire)	52	21.3	34.8	35.0	49.5	21.6	3.1
9	Mumblebone, 191128	36	21.7	35.0	35.4	50.5	22.3	3.3
10	Nerstane, 190315	55	21.0	35.2	34.9	49.7	21.2	2.5
11	Poll Boonoke, 160612	51	20.8	34.2	32.8	49.0	21.5	2.9
12	Pooginook Poll, 190311	60	21.4	35.9	36.1	52.4	23.3	3.1
13	Redlands KI, 180102	49	20.3	33.4	32.8	46.8	20.6	2.8
14	Richmond, 170013	53	20.9	35.2	35.6	50.1	22.3	3.4
15	Rocklyn, 190271	48	21.2	33.7	34.1	49.8	21.6	2.8
16	Roseville Park Poll, 190072	54	22.5	34.8	34.7	49.9	19.4	2.3
	Progeny group average	**52**	**21.0**	**33.9**	**33.6**	**48.7**	**20.9**	**2.7**
			kg				mm	mm

These Adjusted Sire Means were calculated using data from both ewe and wether progeny for the Weaning, Post Weaning, Yearling and Hogget measurements.

Table 7. Flock Breeding Values - Wool

Sire Code	Breeders flock, Sire name	Number of Progeny	Flock Breeding Values (deviations)									
			GFW %		CFW %		FD µm		FDCV %		SL mm	SS N/ktex	CURV deg/mm
			Y	H	Y	H	Y	H	Y	H	Y	Y	Y
1	Blink Bonnie, 180085	54	-16	-9	-15	-9	-0.3	-0.6	1.5	1.3	-12.6	4.8	1.2
2	Bogo, 170182	44	-5	-3	-10	-6	-0.3	-0.9	-0.3	0.4	-8.5	1.0	6.6
3	Boudjah, 180074	47	-3	2	-1	8	-1.3	-1.0	0.8	0.3	-11.2	-10.7	11.4
4	Conrayn, MVB123 (Link Sire)	50	-19	-12	-19	-13	-0.1	0.1	-0.4	-0.9	-15.6	3.2	13.4
5	Egelabra, 174143	51	-2	0	2	6	0.1	0.4	2.8	1.9	-2.1	-10.3	-3.5
6	Glenwood, 170026	52	-11	-15	-9	-17	1.1	0.9	-3.3	-2.8	11.8	17.2	-5.8
7	Greenland, 170615	70	5	4	5	4	-0.2	-0.2	0.1	0.1	-11.9	-7.4	4.5
8	Miramoona, 140012 (Link Sire)	52	8	2	9	4	1.1	1.5	-1.1	-0.5	13.8	13.2	-4.3
9	Mumblebone, 191128	36	2	-6	4	-4	-0.1	0.8	1.2	0.4	9.9	-10.5	-9.7
10	Nerstane, 190315	55	9	17	7	14	-0.5	-0.6	1.9	2.1	-9.1	-15.2	4.5
11	Poll Boonoke, 160612	51	12	9	12	8	1.4	1.1	-0.1	0.4	3.7	1.8	-2.9
12	Pooginook Poll, 190311	60	2	-9	6	-9	0.5	0.8	-0.4	0.3	9.9	1.7	-2.7
13	Redlands KI, 180102	49	7	1	0	-3	-1.8	-1.9	-0.3	-0.9	4.3	-5.1	0.3
14	Richmond, 170013	53	6	7	7	7	0.8	0.9	-1.7	-1.8	14.4	10.6	-8.3
15	Rocklyn, 190271	48	-4	3	-6	2	-0.3	-0.9	-0.7	-0.4	2.6	-0.8	-1.3
16	Roseville Park Poll, 190072	54	9	8	8	9	-0.1	-0.5	-0.1	0.0	0.7	6.4	-3.4

Flock Breeding Values are calculated using all available data from both ewes and wethers.

Table 8. Flock Breeding Values - Weight, Carcase and WEC

Sire Code	Breeders flock, Sire name	Number of Progeny	WT kg W	WT kg P	WT kg Y	WT kg H	EMD mm H	FAT mm H	WEC % Y
1	Blink Bonnie, 180085	54	-2.6	-5.6	-6.9	-6.9	-3.8	-3.3	-71
2	Bogo, 170182	44	-1.4	-0.8	-1.1	-2.0	-1.3	-2.7	-7
3	Boudjah, 180074	47	1.6	1.1	0.8	3.0	-1.4	-2.0	169
4	Conrayn, MVB123 (Link Sire)	50	-0.9	-4.9	-6.2	-5.9	-3.2	-1.7	33
5	Egelabra, 174143	51	-2.1	-3.2	-6.5	-6.1	1.0	1.3	32
6	Glenwood, 170026	52	0.9	0.8	1.3	0.7	3.8	3.0	128
7	Greenland, 170615	70	-0.4	0.8	-0.3	1.4	-1.3	-0.1	169
8	Miramoona, 140012 (Link Sire)	52	1.0	1.6	2.9	1.5	0.9	1.6	-92
9	Mumblebone, 191128	36	1.7	1.7	2.9	2.6	1.7	2.5	-44
10	Nerstane, 190315	55	0.0	2.2	3.3	2.1	0.1	-1.6	-2
11	Poll Boonoke, 160612	51	-0.5	0.2	-1.4	0.7	0.9	0.8	53
12	Pooginook Poll, 190311	60	1.1	3.6	6.1	6.6	3.3	1.5	99
13	Redlands KI, 180102	49	-1.5	-1.6	-2.6	-3.6	0.0	0.4	-11
14	Richmond, 170013	53	0.5	1.9	3.6	1.5	2.0	3.2	-69
15	Rocklyn, 190271	48	0.2	0.2	1.6	2.2	0.8	0.0	-58
16	Roseville Park Poll, 190072	54	2.5	2.1	2.5	2.3	-3.5	-3.0	2

Flock Breeding Values are calculated using all available data from both ewes and wethers.

MERINOSELECT Indexes

A guide from Sheep Genetics

Why use a selection index?

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

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

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

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

Choosing the right index

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

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

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

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

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

For detailed explanations and further information on indexes visit:

www.sheepgenetics.org.au

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

Table 9. AMSEA Indexes

The indexes reported are the DP+; MP+; FP+ and WP+. The first 3 of these indexes are the same as MERINOSELECT indexes of that name but account for the fact that direct reproduction records are not currently collected as part of standard sire evaluation trials. The WP+ index is unique to AMSEA. 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	Breeders flock, Sire name	Number of Progeny	AMSEA Index Values			
			Dual Purpose Plus	Merino Production Plus	Fibre Production Plus	Wool Production Plus
1	Blink Bonnie, 180085	54	48	77	101	70
2	Bogo, 170182	44	92	92	102	88
3	Boudjah, 180074	47	92	102	87	105
4	Conrayn, MVB123 (Link Sire)	50	38	64	77	59
5	Egelabra, 174143	51	75	73	73	86
6	Glenwood, 170026	52	127	101	95	88
7	Greenland, 170615	70	86	101	85	108
8	Miramoona, 140012 (Link Sire)	52	129	122	123	117
9	Mumblebone, 191128	36	102	87	79	98
10	Nerstane, 190315	55	118	101	96	114
11	Poll Boonoke, 160612	51	102	106	96	114
12	Pooginook Poll, 190311	60	137	111	91	113
13	Redlands KI, 180102	49	94	104	110	98
14	Richmond, 170013	53	143	125	126	119
15	Rocklyn, 190271	48	117	105	112	102
16	Roseville Park Poll, 190072	54	101	128	127	121

Indexes are calculated using all available data from both ewes and wethers.

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 (DP+ index) and combined visually assessed traits for the site objective.
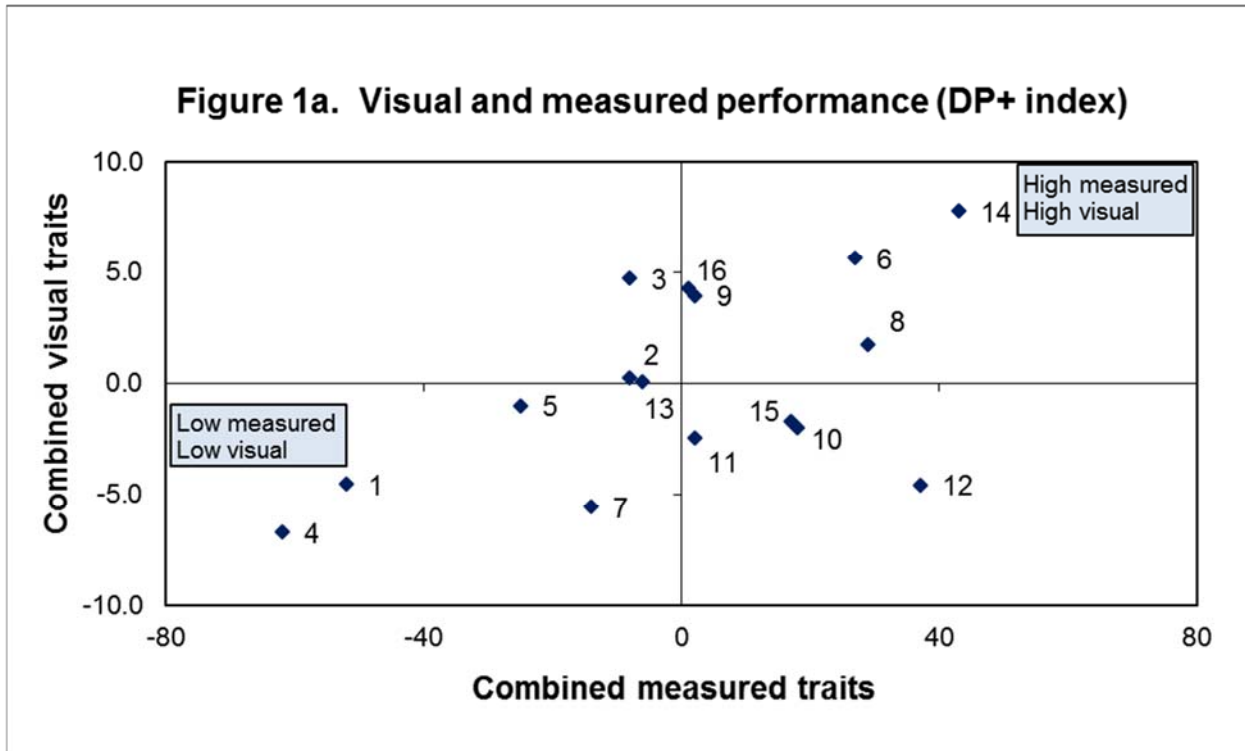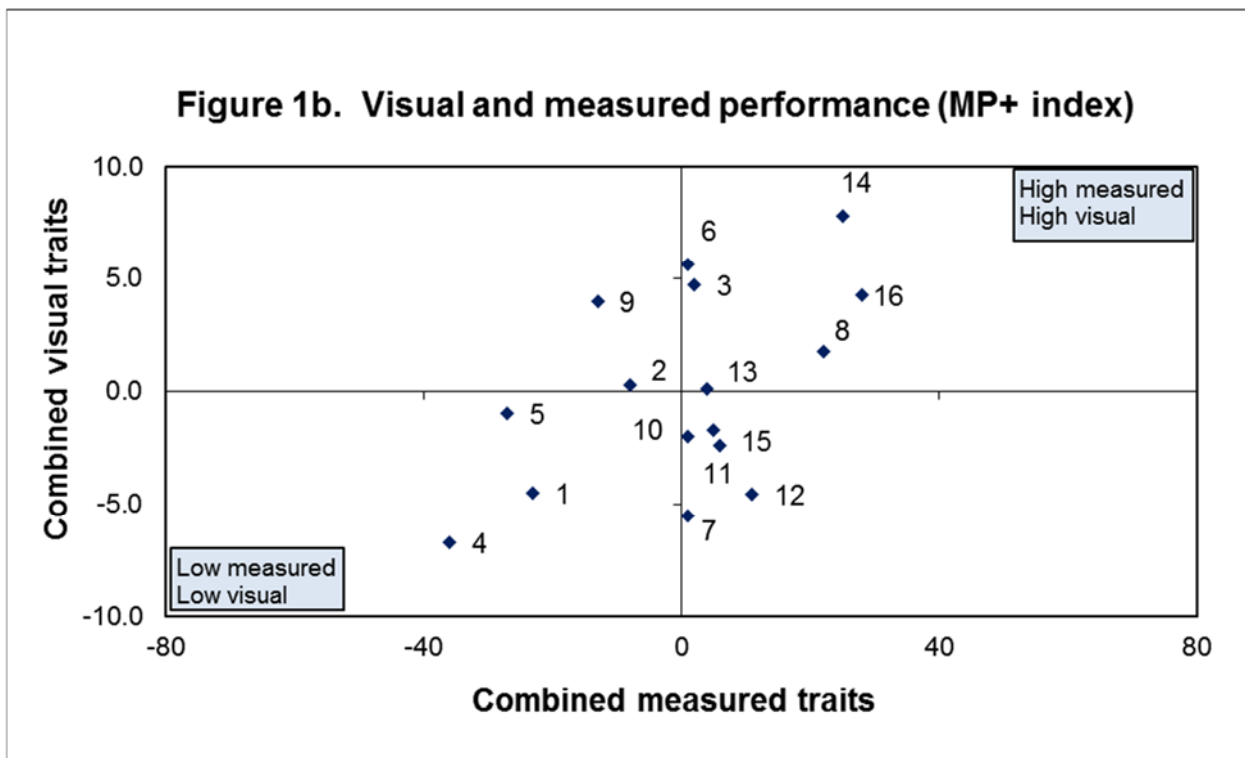

Figure 1a. Visual and measured performance (DP+ index)

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

Figure 1b. Visual and measured performance (MP+ index)

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

Figure 1c. Visual and measured performance (FP+ index)
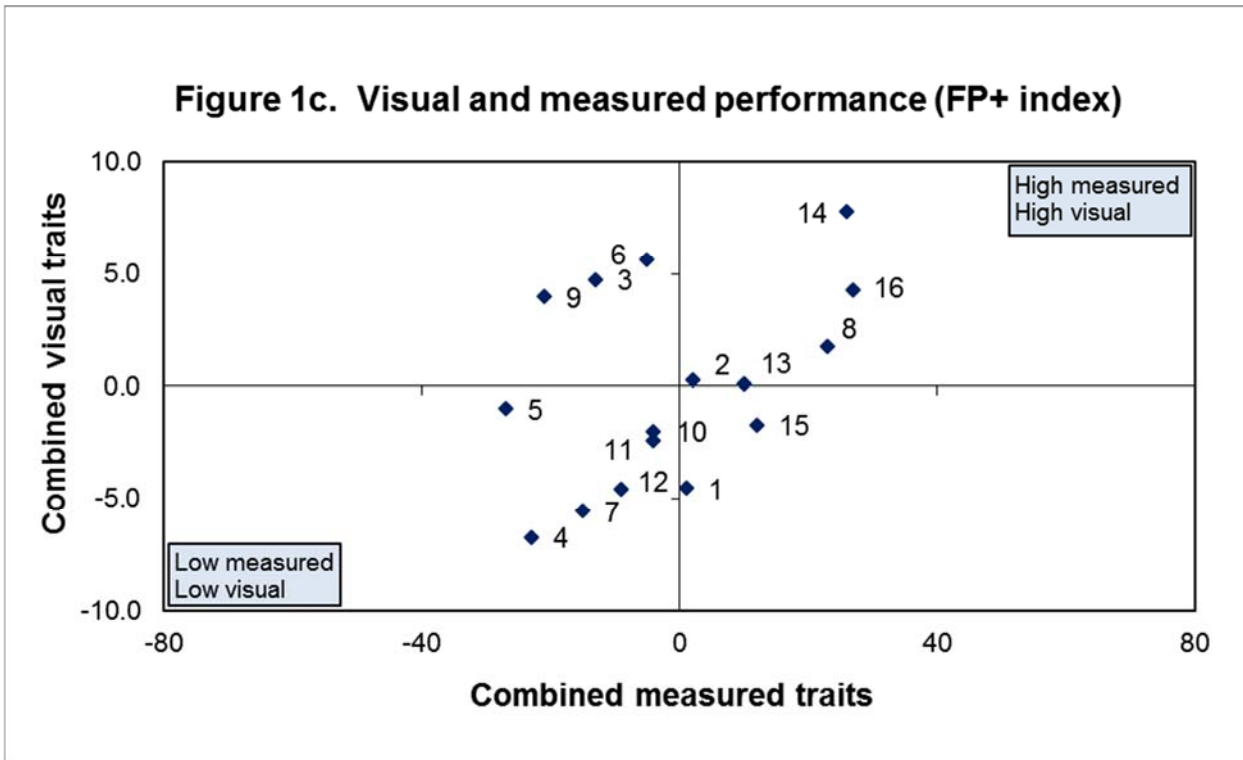
Figure 1d. Combined measured traits (WP+ index) and combined visually assessed traits for the site objective.

Figure 1d. Visual and measured performance (WP+ index)
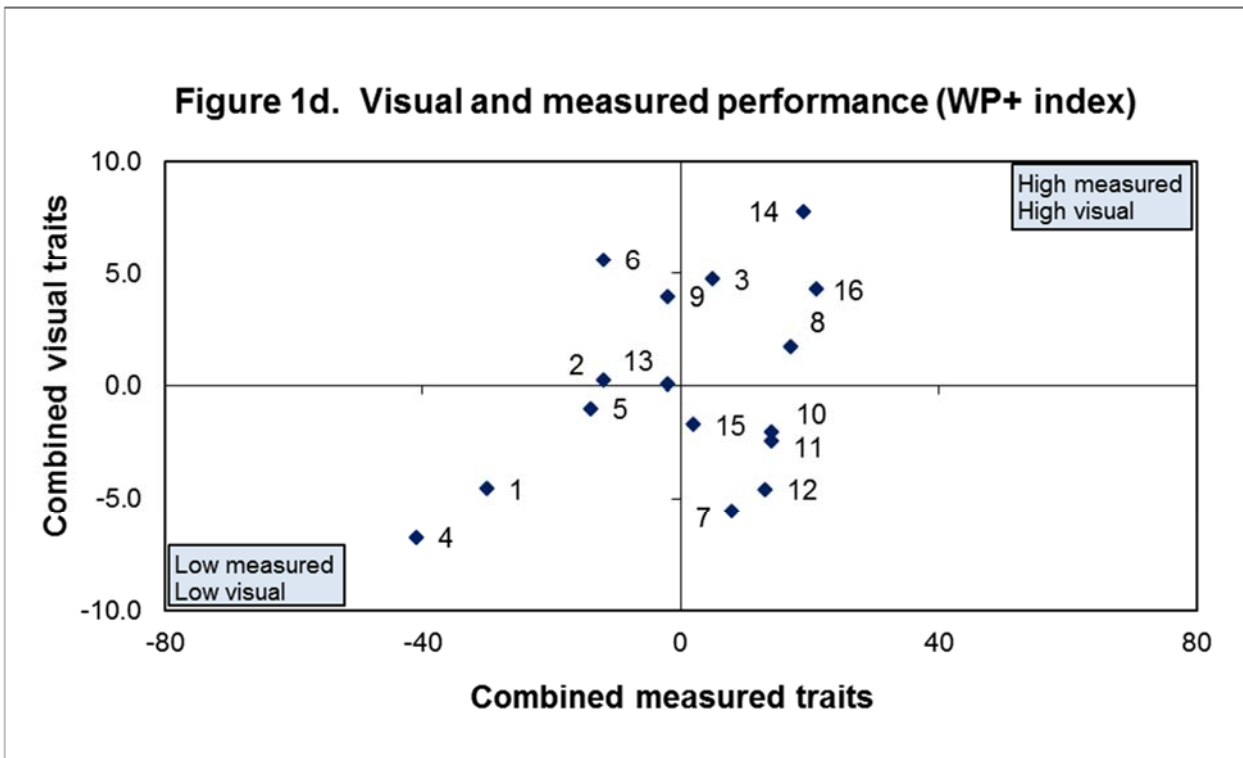
The following quadrant graphs summarise sire results for trait combinations of particular interest to industry. Sire codes are as per Table 2. The blue boxes describe the high and low quadrants of results for the traits, generally placed within the highest performing and the lowest performing quadrants. Progeny group averages are also reported for the graphed traits. Further descriptions are included in the accompanying text.

Explanation of a quadrant graph:
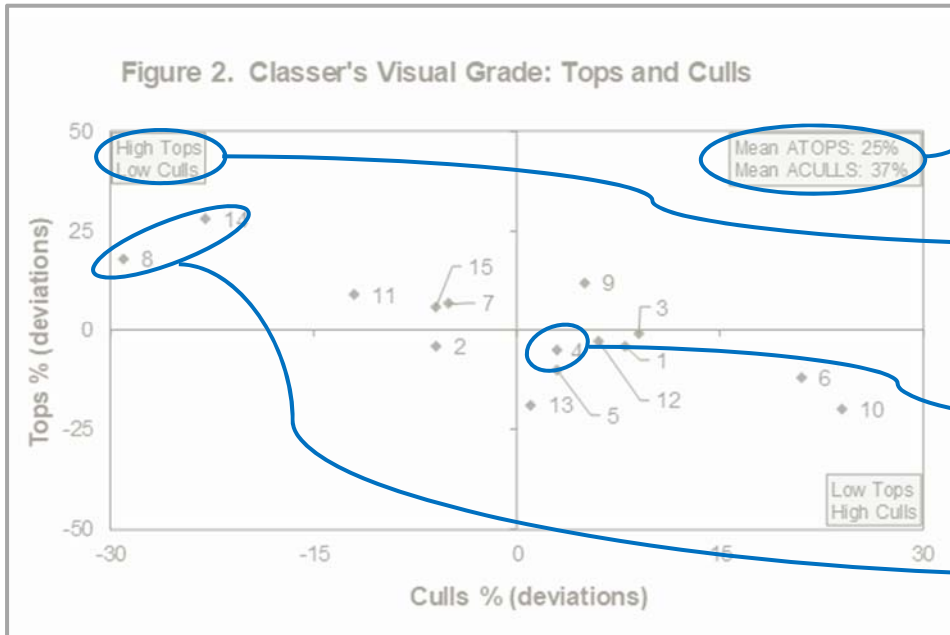
Progeny group averages: in this instance for Tops / Culls.

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 two 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.
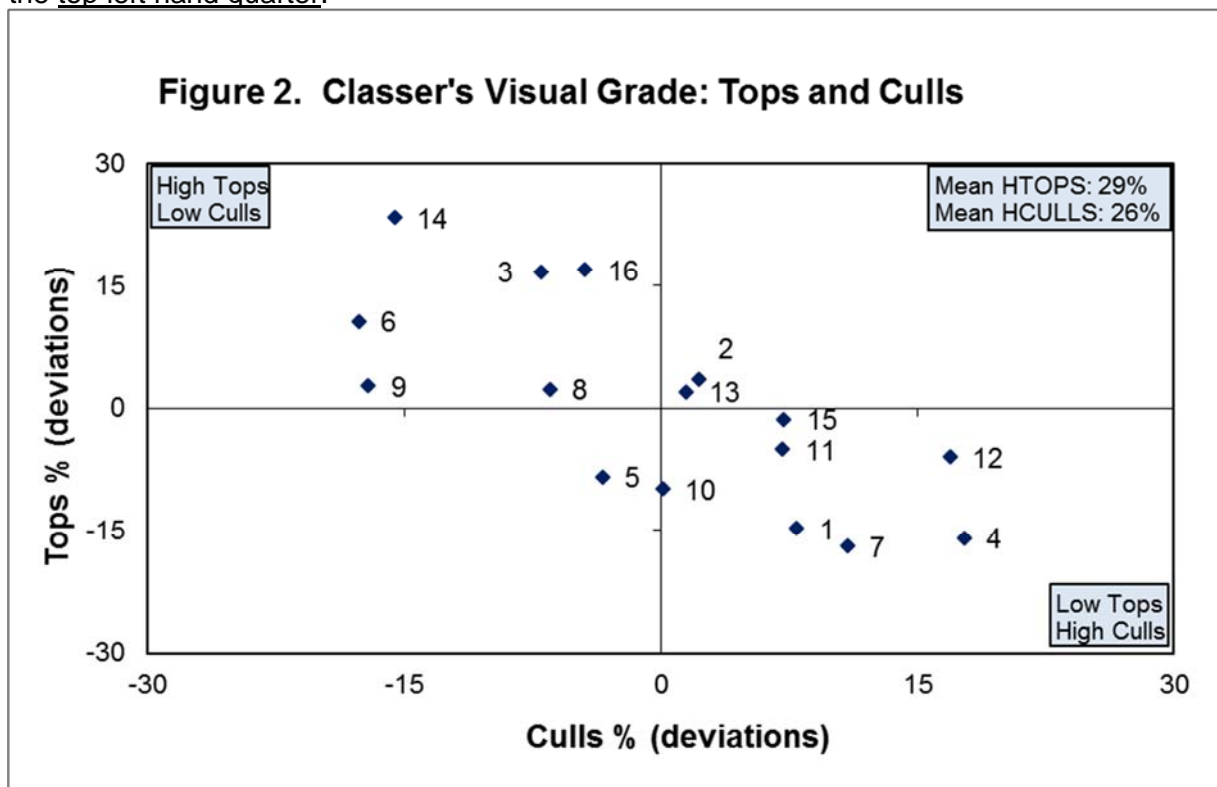
Figure 3. Fleece Weight and Fibre Diameter (FBVs)
The graph describes performance for clean fleece weight (CFW) on the side axis and fibre diameter (FD) on the bottom axis. Sires that are above average for fleece weight and below average fibre diameter are located in the top left hand quarter.
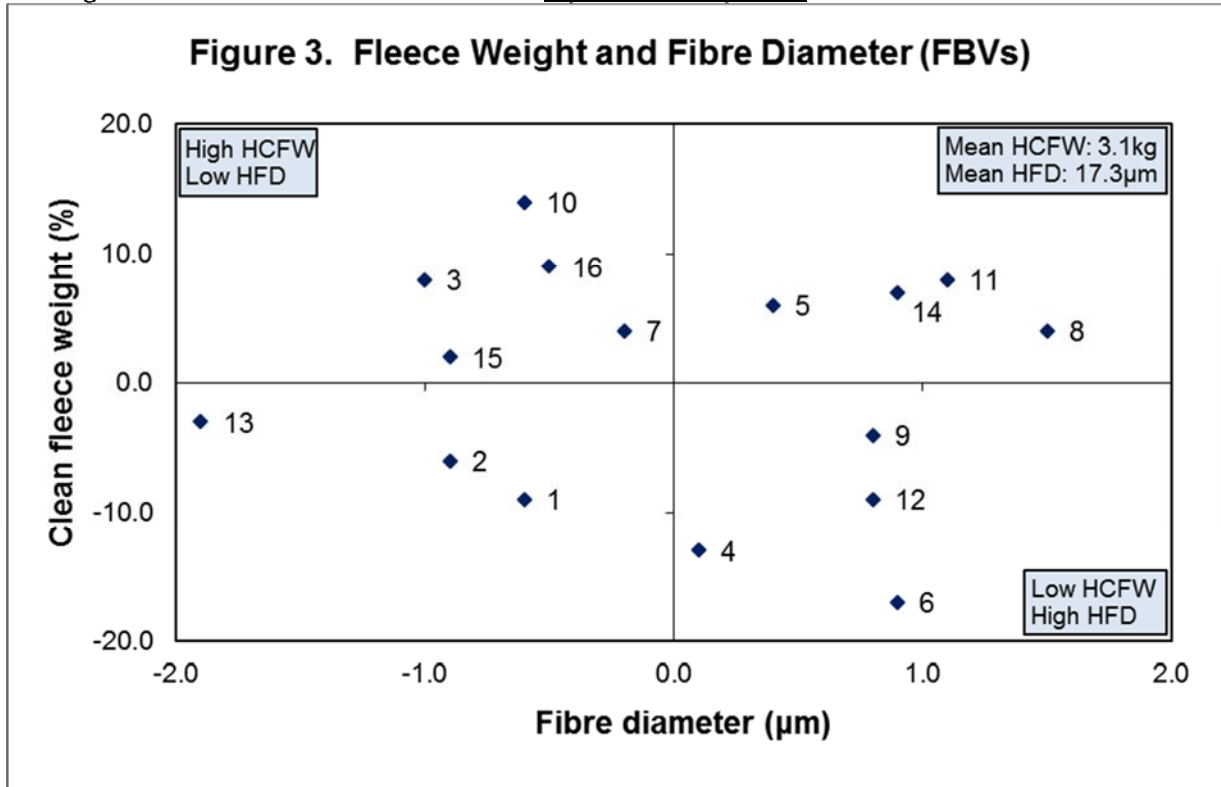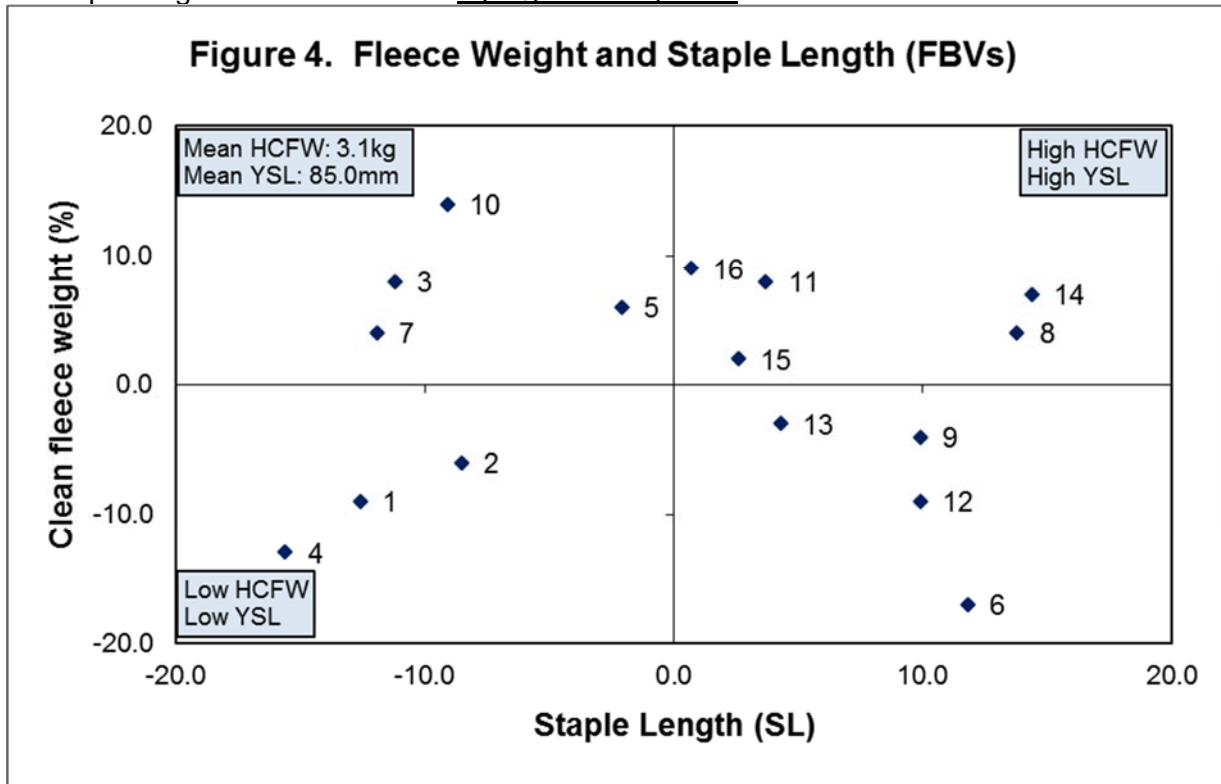

Figure 3. Fleece Weight and Fibre Diameter (FBVs)

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.

Figure 4. Fleece Weight and Staple Length (FBVs)

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.
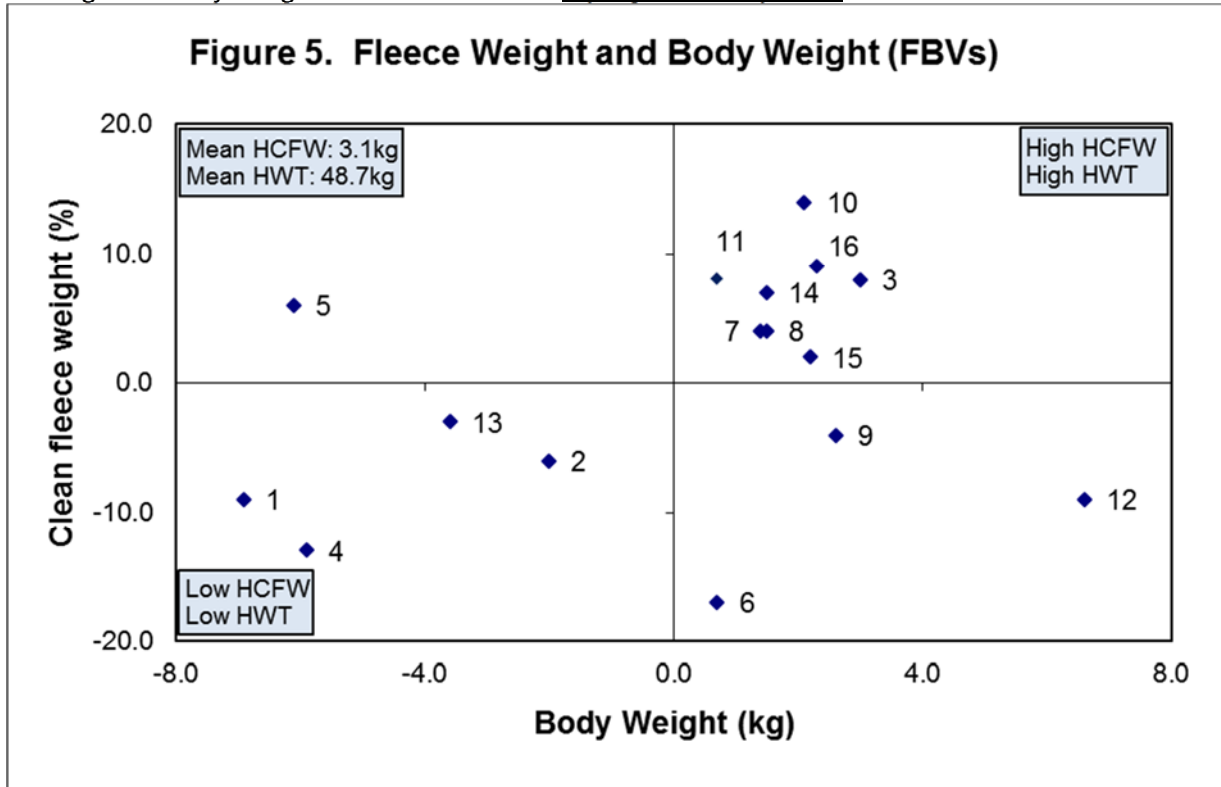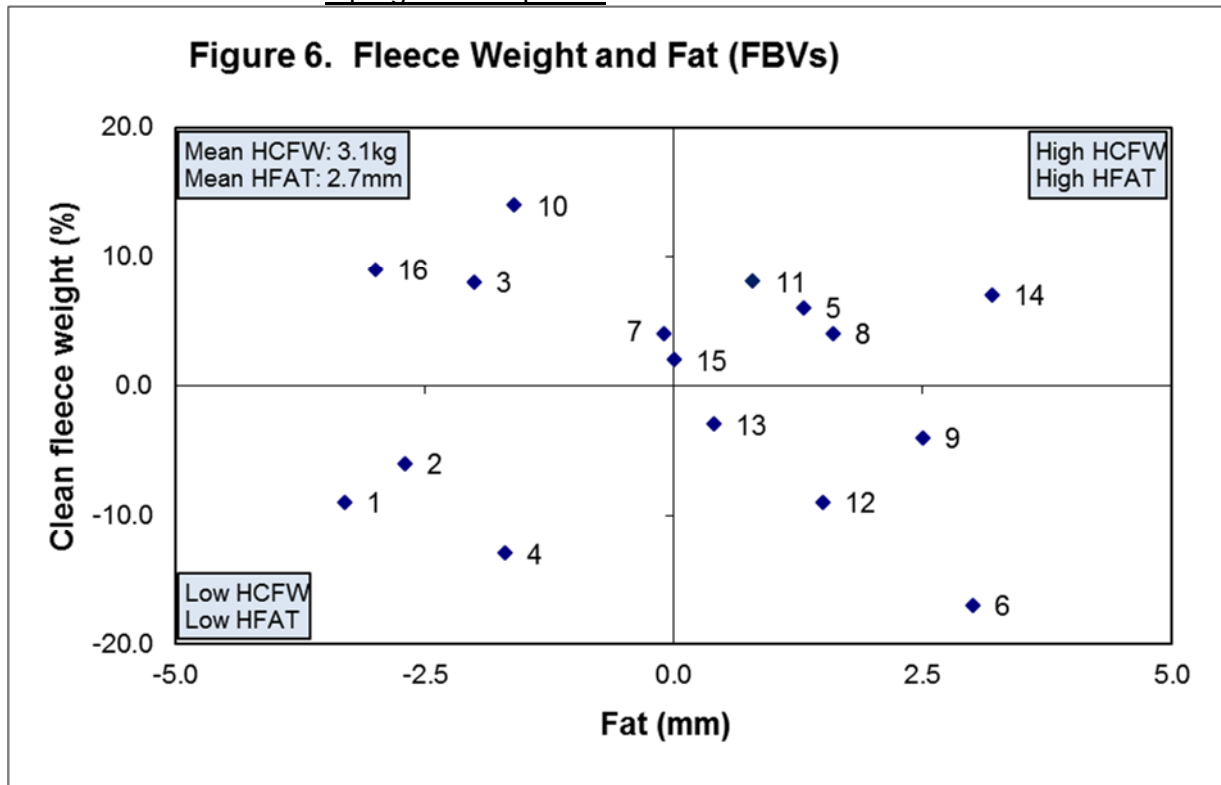

Figure 5. Fleece Weight and Body Weight (FBVs)

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.

Figure 6. Fleece Weight and Fat (FBVs)

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.
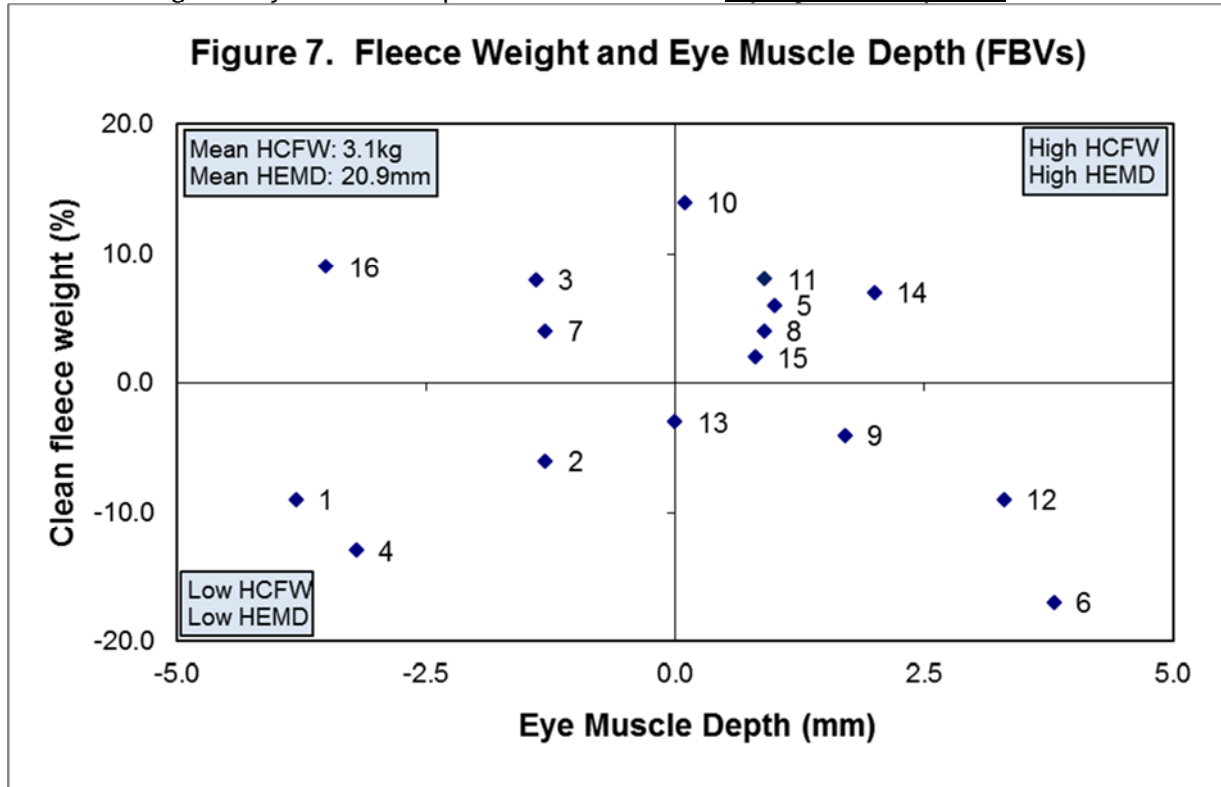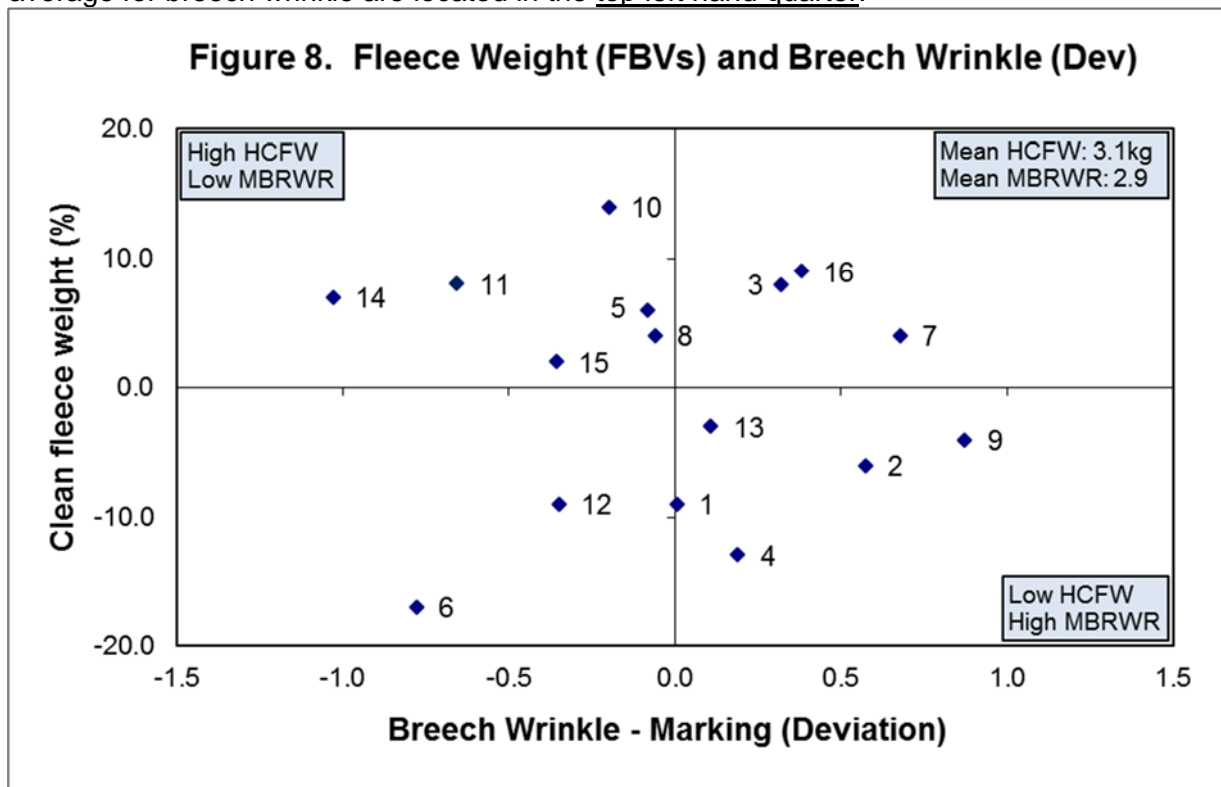

Figure 7. Fleece Weight and Eye Muscle Depth (FBVs)

Figure 8. Fleece Weight (FBV) and Breech Wrinkle (Dev)
The graph describes performance for clean fleece weight (CFW) on the side axis and breech wrinkle (BRWR) on the bottom axis. Sires that are above average for fleece weight and below average for breech wrinkle are located in the top left hand quarter.

Figure 8. Fleece Weight (FBVs) and Breech Wrinkle (Dev)

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.
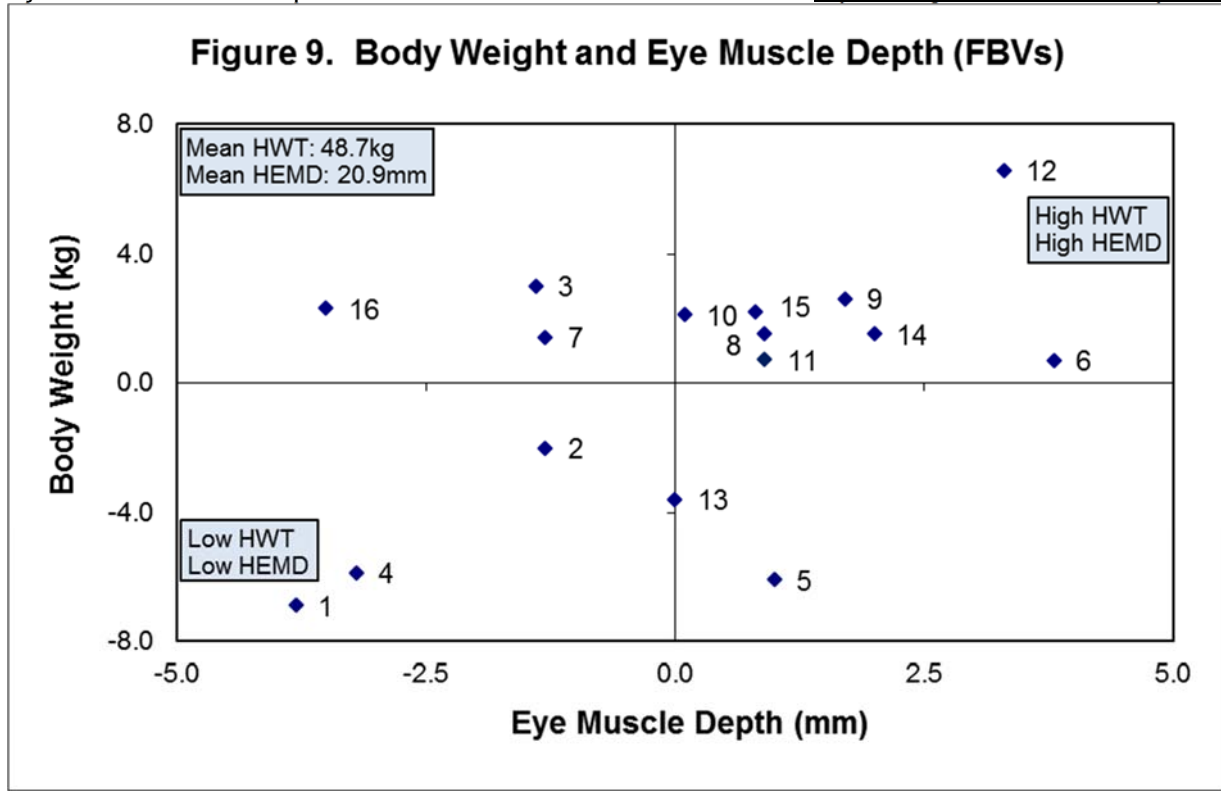

Figure 9. Body Weight and Eye Muscle Depth (FBVs)

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.

Figure 10. WEC and Staple Strength (FBVs)
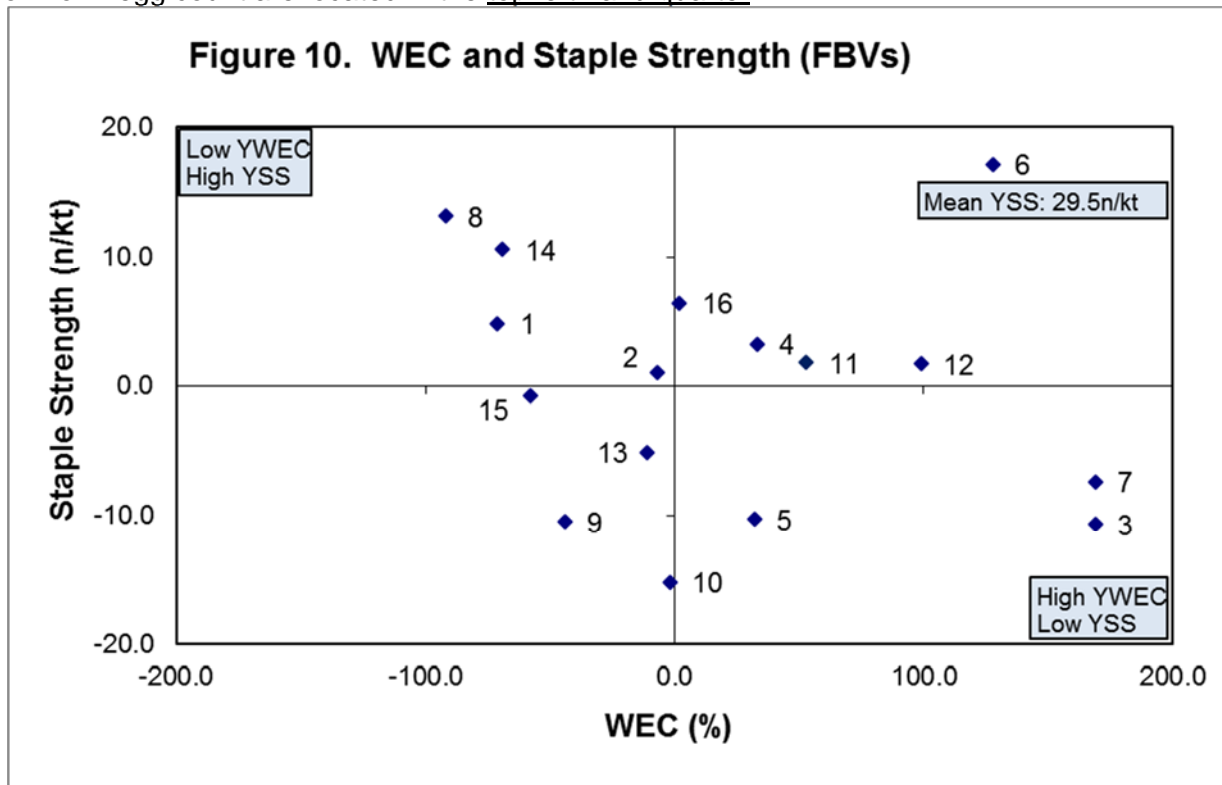
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