

Merino Lifetime Productivity Project Newsletter No.3

MLP quick facts

- The Australian Wool Innovation (AWI) funded MLP project is a \$7m (plus \$5m from partners), 10-year partnership between AWI, the Australian Merino Sire Evaluation Association (AMSEA), nominating stud Merino breeders and site hosts.
- The project aims to:
 - increase the understanding of the genetic, environment and economic interactions for a diverse range of Merino types producing wool, lambs and meat during their lifetime; and
 - establish how to better select for improved lifetime productivity.
- The MLP project runs at five sites where sire evaluation trials operate for the first two years and then continue tracking performance of ewe progeny as they proceed through four to five joinings and annual shearings.
- A full suite of assessments will be undertaken during the MLP project including visual trait scoring, classer gradings, the objective assessment of a range of key traits and index evaluations.

MLP field day update

MerinoLink, Temora 15 March

The MerinoLink site field day on 15 March attracted over 100 attendees; a great result given the very tough season and the difficulties growers are experiencing with the relentless on-farm hand feeding requirements.

The site penned the 2017 drop ewes in sire groups and the 2016 drop based on their reproductive performance from the previous year. Trade displays and presentations completed the day. Sally Martin, MerinoLink Site Manager, commented that the day was a terrific opportunity for local Merino growers to see and hear what MLP meant for them:

“The MLP field days are a great way to showcase the trial sheep and recognise the research elements that are important to the project. The reproduction and lifetime performance data of the two drops of ewes involved at the MerinoLink site will help answer many industry questions as well as contributing significant industry data that will benefit many in the industry.”



MerinoLink MLP Field Day, pen-side sire introduction by Ben Swain (AMSEA), March 2019.



MerinoLink MLP Field Day, 2016 drop ewes displayed by 2018 reproduction results, March 2019.

Classing Merinos for lifetime productivity

The MLP project is combining the use of sheep classers and their various approaches with measurement-based selection techniques to assess the accuracy of a range of sheep selection scenarios when selecting for ewe lifetime productivity.

Two specific forms of sheep classing are being applied; the AMSEA Classer's Visual Grade which is currently used across all of AMSEA's Merino sire evaluation trials and involves a three-way classing of the complete progeny group into tops (25%), flocks (50%) and culls (25%), and a Professional Grade which involves a five-way classing into tops (1%), studs (9%), seconds (60%), sales (20%) and culls (10%).

The ewes are classed randomly as a mob to the site's breeding objective without access to measurements, data or sire identification, thereby eliminating any potential bias. Both of these approaches are undertaken annually on each drop.



The Balmoral site committee classing team undertaking AMSEA visual classing and midside sampling. January 2019.



Nathan King (right) undertaking the professional classing at the Pingelly MLP Site, assisted by Henry Vaughan (left). November 2018.

Classers also complete an annual assessment of specific visual traits, as is done in Merino sire evaluation trials. Wool, conformation and breech traits are scored according to the Visual Sheep Scores publication which is available for download at wool.com

A third classing approach, the Wells Classing Trial, has been established at several sites as an MLP Add-On Project.

This classing method will explore the results from classing within sire progeny groups. Progeny are



Angus Carter completing AMSEA classing with Visual Sheep Scores on display, assisted by Amy Bell. New England, July 2018.



Ben Swain (middle) briefing classer Chris Bowman (right) for the Wells Classing Trial at Macquarie, with Alan Casey (left) on peg allocation. February 2018.



Bill Walker (front) and Chris Bowman (rear) undertaking the Wells Classing Trial. February 2019.

presented in their sire groups, still with sire unidentified, and the classer is informed of the entrant/sire group's breeding objective. Classers then class the progeny group four ways as tops (10%), firsts (25%), seconds (30%) and culls (35%) according to the entrants breeding objective. Two classers complete this method independently.

The Wells Classing Trial differs significantly from the AMSEA Classer's Visual Grade and Professional Grade in that ewes are presented for classing in their sire groups. This recognises that each site is made up of divergent sire types and that not all entrants' breeding objectives are the same.

This MLP Add-On Project is occurring for one drop of F1 ewes at the MerinoLink (Temora, NSW) and Balmoral (Harrow, Vic) sites and on both drops of ewes at the Macquarie (Trangie, NSW) site. Classing will occur at the one-year-old, two-year-old and final (at approximately five years of age) assessment to determine how animals visually perform later in their lifetime relative to their earlier visual classing(s).

AMSEA Classer's Visual Grade and Visual Sheep Scores, along with the Professional Classing results, are reported at MLP Field Days and within the MLP Reports for each site. These reports are available via www.wool.com/mlp.

Table 1 is an excerpt from the Balmoral MLP Report, February 2019, and shows the AMSEA Classer's Visual Grade performance to date of the 25 sires used in the



Bill Walker (left) and Nathan King (right) undertake the Wells Classing Trial at MerinoLink's Temora MLP Site. March 2019.

Balmoral 2015 drop. These grade results are expressed as adjusted sire means and reflect deviations from the overall group average.

These results show that some sire group performances change significantly over time, while others appear to be more stable. Once the MLP project is complete, the lifetime data will provide information on how well the scoring, objective assessments and classers have predicted lifetime productivity and at what age. Comparisons between the objective and classing data at each age will occur and the repeatability of these assessments will be considered.

Most of these lifetime comparisons will not be available until 2024 when the ewes reach five and six years of age at every site.

Table 1: Balmoral 2015 Drop AMSEA Classer's Visual Grade Results, February 2019

Number of ewes in sire progeny group	BREEDERS FLOCK, SIRE NUMBER	PROGENY NO	TOPS (%)				CULLS (%)			
			P	A2	A3	A4	P	A2	A3	A4
	Billandri Poll, 130087	14	16	0	7	6	-3	-5	-2	-8
	Bogo, 111424	22	-12	26	32	14	3	-19	-20	-17
	Bundaleer Poll, 13V741	29	-7	-14	7	-2	3	-19	-20	-17
	Bundilla, 111265	19	28	-17	-15	-17	-8	12	25	10
	Centre Plus Poll, 207316	20	-19	-9	4	12	22	3	-6	-17
	Darriwell, 130941	16	5	-10	-15	-16	14	-2	-5	13
	Glenpaen, 120042	24	-12	-15	24	23	7	29	-2	-6
	Greenfields Poll, 130599	19	-10	8	-5	-7	22	-9	4	-8
+28 This sire group has 28% more ewes classed as Tops at the Post Weaning stage than the average of this drop	Hazeldean, 11.43	26	28	13	9	1	-13	-5	-3	-14
	Kurra-Wirra, SR5681	21	-8	6	8	11	28	4	-19	-12
	Leahcim Poll, 090918	26	-9	-9	-13	-3	1	17	17	2
	Leahcim Poll, 123153	22	-4	-15	-12	-8	-5	3	14	10
	Merinotech WA Poll, 100081	25	-1	19	4	-3	-9	-12	-11	-2
	Mokanger, 120092	16	-28	-27	-8	-4	14	36	0	3
	Moojepin, 100248	20	-17	-9	-21	-21	15	14	39	19
	Mumblebone, 130389	13	-12	10	-13	-14	-5	3	29	10
	Mumblebone, 130850	14	43	18	2	14	-28	-12	0	-8
	Nareeb Nareeb, 130380	20	23	1	-2	-2	-11	-15	-8	-7
	Nerstane, 130467	22	-8	24	5	9	3	-11	0	6
	One Oak No.2, R56	33	-5	-11	7	20	5	0	-13	2
	Roseville Park, 140019	18	-4	-10	15	6	-10	-8	-21	-15
	The Mountain Dam, 11/ESA004	30	-2	-5	-10	-6	-15	0	16	15
	Tuckwood Poll, 121021	28	4	17	1	6	-7	-6	-8	-7
	Yalgoo, 120043	29	13	9	4	-12	-11	-10	-11	13
	Yiddinga, 130374	27	-1	2	-13	-7	-5	-12	-6	16
	AVERAGE	22	27	28	20	22	28	19	33	22

P: Post Weaning age stage, 210-300 days old

A2: Adult2, 1.5-2.5 years
A3: Adult3, 2.5-3.5 years
A4: Adult4, 3.5-4.5 years

Blue shading highlights trait leaders which are the top performing sires for that trait

-19
This sire group has 19% less ewes classed as Culls at the A3 stage than the average of this drop

Consistent results across all age stages are observable for this sire group

Average percentage of ewes classed at the Post Weaning stage as Tops across all sire progeny groups

Upcoming field days

New England, “Chiswick”, Uralla, 20 June

The New England site field day will be held at CSIRO “Chiswick” New England Highway, Uralla in conjunction with the MerinoLink annual conference on 20 June.

Both the 2017 and 2018 drop ewes will be penned in sire groups accompanied by the latest available data. The 2017 drop ewes will have details from their first assessment plus some recently recorded classing, carcase, worm egg count and growth details. The younger ewe group have not yet been through a fleece assessment. Presentations and trade displays will accompany the display of sire groups and latest results with further information available from the [field day brochure](#).

Macquarie, Trangie Research Station, 10 July

The Macquarie field day, to be held at Trangie on 10 July, will feature the 2018 drop ewe progeny bred from 16 diverse industry sires. When the site was established, the ewe base was sourced from commercial clients of two bloodlines of contrasting skin type and levels of wrinkle. To show the influence ewe type has on progeny, field day visitors will see the 2018 drop ewes displayed both in sire groups and ewe base type, making for 32 groups in total.

The field day will also provide the opportunity to hear more about how to interpret the MLP results as well as an update on the MLP at Macquarie and the latest developments more generally. A pen-side sire introduction by the site’s Professional sheep classer Chris Bowman and AMSEA’s Ben Swain is sure to provoke lively debate.

David Greig, the newly appointed site chairman, commented:

“This field day is a unique opportunity to see two different types of ewes joined with 16 different sires so attendees can get hands-on with 32 different bloodline combinations. If you’re in the west of the state and thinking of restocking this day will let you inspect a lot of different genetics together in the one place. The added bonus is also having their wool and carcase results available!”

The 2017 drop of ewes will have lambs at foot in July and will not be on display this year. Both drops will feature in the 2020 field day scheduled for March 2020.

Upcoming MLP field day dates

New England MLP Field Day
New England Highway, Uralla, NSW
Date: Thursday 20 June, 2019
Contact: Jen Smith 0411 825 748
[Download the flyer](#)

Macquarie MLP Field Day
Trangie, NSW
Date: Wednesday 10 July, 2019
Contact: Kathryn Egerton-Warburton 0429 943 708

Pingelly MLP Field Day
UWA “Ridgefield”, Pingelly, WA
Date: Friday 25 October, 2019
Contact: Bronwyn Clarke 0418 957 293

Value of MLP seen in sire ranking changes over time

Early MLP results show that sire rankings are changing as their ewe progeny ages. This demonstrates the value of collecting whole of life data which is a defining feature of the MLP project.

Each of the five MLP sites collect data annually from the first generation Merino ewe progeny (F1) bred through the trial. In the case of Balmoral, this includes the 2015 drop ewes for which a significant volume of repeat data has now been collected. While the true potential of the data will not be realised until the project is completed in 2024, some interesting trends in the Adjusted Sire Means have been identified in the recent results published in the [Balmoral MLP Report](#) available from the Merino Superior Sires Website.

First among these is how greasy and clean fleece weight rankings are changing over time. The table on the next page shows a steady increase in fleece weight for all sires up until A3 (2.5 to 3.5 years) with overall production decreasing slightly at A4 (3.5 – 4.5 years). There is also a greater spread in fleece weight across the sires at A3 compared to A4. Further data collection and analysis over the course of the MLP project will reveal the impact of seasonal variation on these results and provide a more complete impression of how and why fleece weight varies during the lifetime of a Merino ewe.

Adjusted Sire Means are the average performance of all the ewe progeny of a sire adjusted for an individual's birth type (single or twin), rear type (single or twin), age of dam, management group, the number of progeny a sire has and the number of F1 breeding age ewes that are dry, lambled and lost or rearing single or multiple lambs.

Adjustments improve the accuracy of the result and the size of the adjustment is based on the actual influence these factors have on the drop. No account is made for trait heritability and genetic correlations between traits (as is the case for Flock Breeding Values (FBV) and Indexes) or the F1 ewes pregnancy or rearing status.

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. FBVs are

adjusted in the same way as Adjusted Sire Means with further adjustments made to account for the level of heritability of the trait and correlations between traits.



Raw data, on the other hand, is made up of the ewe progeny results which are unadjusted for birth type, rear type, age of dam or management group. Neither trait heritability or the genetic correlation between traits, both of which improve the prediction of how a sire's progeny performs, are considered in raw data.

The results also show a difference in the performance of individual sires across the years. Take for example Glenpaen and One Oak that at early stages were average and are now leaders for greasy fleece weight (GFW). The Billandri and Nerstane sires have remained leaders throughout and the Bundilla sire is now starting to rejoin the pack.

Change in fleece weights and other key traits from young age stages and as older adults is one of the key areas that the MLP is investigating to ascertain what to measure and when to select for optimal lifetime performance. Early results suggest there may well be significant differences in wool growth paths over time, although how much of this is due to differing reproductive performance is yet to be determined. This will continue to be monitored throughout the course of MLP to identify if there are early predictors for those animals that are most productive throughout life.

Sheep Genetics has recently added Adult Clean Fleece Weight as a standard ASBV in their website Animal Search function, reflecting the increased interest in better understanding changes in Merino fleece weight over time. This means that both Yearling and Adult Fleece Weight are displayed and growers can more reliably select animals that are good performers for fleece weight, both early and later in life.

Until recently, adult fleece weight ASBVs were driven by the correlations with early age fleece assessments. As ram breeders move to collect more hogget and adult fleece weight data on their animals (ewes), the accuracy of adult fleece weight ASBVs will increase. The results of the MLP will enhance the development of these ASBVs through demonstrating the degree of variation in fleece weight over time and recommending the optimal time to collect adult data to predict lifetime productivity.

Table 2: Balmoral 2015 drop Adjusted Sire Means for Greasy Fleece Weight (GFW) and Clean Fleece Weight (CFW) across age assessments

BREEDERS FLOCK, SIRE NUMBER	GFW (KG)				CFW (KG)			
	P	A2	A3	A4	P	A2	A3	A4
Billandri Poll, 130087	2.3	4.7	6.1	5.8	1.4	3.4	4.6	4.2
Bogo, 111424	1.9	4.4	5.0	5.0	1.1	3.3	3.9	3.8
Bundaleer Poll, 13V741	2.1	4.6	5.1	5.0	1.1	3.2	3.7	3.6
Bundilla, 111265	2.3	4.7	5.3	5.1	1.3	3.5	4.0	3.8
Centre Plus Poll, 207316	2.0	4.3	5.0	5.1	1.1	3.1	3.7	3.8
Darriwell, 130941	2.0	4.6	6.0	5.4	1.2	3.5	4.6	4.1
Glenpaen, 120042	2.1	4.6	5.7	5.5	1.1	3.3	4.3	4.1
Greenfields Poll, 130599	2.1	4.6	5.6	5.4	1.2	3.4	4.2	4.1
Hazeldean, 11.43	2.2	4.8	5.7	5.3	1.3	3.5	4.2	3.9
Kurra-Wirra, SR5681	2.1	4.5	5.2	5.0	1.2	3.4	4.1	3.8
Leahcim Poll, 090918	1.8	4.1	5.0	4.8	1.1	3.0	3.7	3.5
Leahcim Poll, 123153	1.9	4.2	4.8	4.7	1.1	3.1	3.6	3.4
Merinotech WA Poll, 100081	2.0	4.5	4.9	4.8	1.2	3.3	3.7	3.6
Mokanger, 120092	2.0	4.4	5.4	5.4	1.2	3.4	4.3	4.2
Moojepin, 100248	2.1	4.5	4.9	4.8	1.2	3.1	3.4	3.3
Mumblebone, 130389	1.9	4.2	4.9	5.1	1.1	3.0	3.6	3.6
Mumblebone, 130850	2.1	4.1	5.0	4.9	1.1	2.8	3.5	3.5
Nareeb Nareeb, 130380	2.1	4.3	5.3	5.0	1.3	3.2	4.0	3.8
Nerstane, 130467	2.2	4.9	5.7	5.8	1.2	3.5	4.1	4.1
One Oak No. 2, R56	2.0	4.6	5.7	5.5	1.2	3.4	4.4	4.2
Roseville Park, 140019	2.0	4.3	5.1	5.0	1.2	3.3	3.9	3.8
The Mountain Dam, 11/ESA004	2.0	4.1	4.9	4.9	1.2	3.0	3.7	3.6
Tuckwood Poll, 121021	2.2	4.5	5.4	5.4	1.3	3.3	4.1	4.0
Yalgoo, 120043	2.1	4.2	4.8	4.7	1.2	3.1	3.7	3.5
Yiddinga, 130374	2.1	4.4	4.8	4.8	1.2	3.2	3.6	3.5
AVERAGE	2.1	4.5	5.2	5.1	1.2	3.3	4.0	3.8

P = Post weaning 210 to 300 days

A2 = Adult 1.5 to 2.5 years

A3 = Adult 2.5 to 3.5 years

A4 = Adult 3.5 to 4.5 years

Blue shading highlights trait leaders which are the three top performing sires for that trait.

Around the sites

Drought conditions continue at some of the sites with supplementary feeding, and in some cases full ration feeding, being implemented to ensure liveweight and body condition score targets are met.

MerinoLink

The site continues to experience ongoing drought conditions. Pregnancy scanning results showed an average 69% conception rate for the 2017 drop maiden ewes (which is consistent with the district average) and 84% for the 2016 drop. Both the 2016 and 2017 drop ewes started lambing in late May with tagging and DNA sampling to take place in mid July.



MerinoLink 2017 Drop ewes, March 2019.



MerinoLink Lambing, 2016 Drop, May 2019.

Macquarie

Conditions remain very difficult at the site and sufficient feed has been secured to feed sheep through to harvest. The 2017 drop ewes have lambed for the first time with F2 lamb tagging and DNA sampling completed in mid June. The 2018 ewes are tracking well for joining at the end of 2019. The 2018 drop ewes will be on display for the 10 July field day.



Macquarie Lambing, 2017 Drop, April 2019.



Macquarie Lambing, 2017 Drop, April 2019.

New England

Severe drought conditions remain at the site with full feeding underway for both the 2017 and 2018 drop to maintain body condition within MLP protocols. The older ewes have been through their first joining with pregnancy scanning scheduled for late June. Both drops of ewes will be on display at their 20 June field day which will be held in conjunction with the MerinoLink conference.



New England 2018 Drop ewes, February 2019.



New England 2017 Drop ewes in for classing, June 2019.

Balmoral

The site missed out on summer rains which restricted summer crops and resulted in minimal feed growth. Recent rains have assisted although the ewes remain on supplementary feed. Both the 2015 and 2016 drops have completed joining with pregnancy scanning revealing 93% conception in the 2016 Drop and 95% in the 2015 Drop. This will be the third drop of lambs for the older ewes and the second for the younger ewes.



Balmoral 2016 Drop ewes, May 2019.



Balmoral 2015 Drop ewes, May 2019.

Pingelly

The dry start to the year preserved dry feed value although this has been degraded by light rain events in March and April. The 2016 and 2017 ewes are on regular supplementary feed. Pregnancy scanning results from April show an extraordinary result for the maiden and older ewes with the 2017 drop maiden ewes achieving 94% conception, and the 2016 drop achieving 96% conception.



Pingelly 2016 Drop single-bearing ewes, May 2019.



Pingelly 2017 Drop single-bearing ewes, May 2019.

Industry Steering Committee

The MLP Industry Steering Committee (ISC) met in Sydney in early April as part of their ongoing role to provide industry input and help steer the direction of the MLP. This committee comprises members from the project partners (AWI and AMSEA), representatives from the Australian Association of Stud Merino Breeders (AASMB), ram breeders, site committee representatives and nominated sheep classers involved within the project.

The ISC was featured in a recent podcast which is available for listening via [The Yarn, Episode 86](#).



ISC members: Bill Sandilands, Geoff Lindon, Tom Silcock, Graham Wells, Sally Martin, Jock McLaren, Nathan King, Geoff Davidson, Matthew Coddington, Russell Pattinson, Drew Chapman, Chris Bowman, Bill Walker, Rich Keniry, Ben Swain, Jane Littlejohn, Georgina Wallace, Anne Ramsay and Brett Jones.

Download the MLP Reports

MLP Reports including raw data, adjusted sire means, breeding values and indexes are produced annually for each site and can be downloaded from the [Merino Superior Sires website](#).

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Project contact details

Anne Ramsay	MLP Project Manager	0400 368 448
Ben Swain	AMSEA Executive Officer	0427 100 542
Geoff Lindon	AWI Program Manager Genetics & Animal Welfare Advocacy	0427 572 228

Site Manager contact details

Balmoral	Tom Silcock	0419 882 239
Macquarie	Kathryn Egerton-Warburton	0429 943 708
MerinoLink	Sally Martin	0400 782 477
New England	Jen Smith	0411 825 748
Pingelly	Bronwyn Clarke	0418 957 293

The Merino Lifetime Productivity Project is being undertaken in partnership between the Australian Merino Sire Evaluation Association Incorporated (AMSEA) and Australian Wool Innovation (AWI). AMSEA and AWI would like to acknowledge those entities who also contribute funding, namely Woolgrowers through sire evaluation entry fees, site committee in-kind contributions, and sponsors of AMSEA. A special acknowledgement is also made to the Australian Government who supports research, development and marketing of Australian wool. GD3418



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