MLP
Merino Lifetime Productivity Project

Merino Lifetime Productivity Project Newsletter No.5

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 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.

- **Balmoral, VIC**
  Host: Tuloona Pastoral
  Committee: Balmoral Breeders Association
  Pingelly, WA
  Host: Murdoch University / UWA   Committee: Federation of Performance Sheep Breeders (WA Branch)
  MerinoLink, Temora NSW
  Host: Moses & Son   Committee: MerinoLink Inc.
  Macquarie, Trangie NSW
  Host: NSW DPI
  Committee: Macquarie Sire Evaluation Association
  New England, NSW
  Host: CSIRO
  Committee: New England Merino Sire Evaluation Association

- 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.

- A unique and extensive dataset will result and be used to enhance existing Merino breeding and selection strategies, for both ram sellers and buyers, to deliver greater lifetime productivity and woolgrower returns.

Penside sire introductions at Macquarie's MLP field day, March 2020

Macquarie MLP Field Day

Wet weather did little to dampen the spirit of this year's March 4 field day as 100+ attendees took part in topical workshops, examined trade displays, viewed the display of Macquarie's MLP ewes and heard the latest from across the industry.

NSW DPI's Trangie Agricultural Research Centre, along with the Macquarie Sire Evaluation Association, hosted the field day. Attendees gave very positive feedback about all elements of the day despite the damp conditions.

The day included workshops by Sue Street and Jillian Kelly speaking on feeding for reproduction, Phil Graham presenting drought recovery options, tips from Scott Davis and Jim Meckiff on sheep technology, a breeding values introduction by Kathryn Egerton-Warburton and Mark Mortimer. Plus Allan Casey, Brad Wilson, Greg Sawyer and Chris Bowman outlined the MLP classing approaches.

Macquarie's 2017 and 2018 MLP ewes were on display with a penside introduction to their sires from Ben Swain, AMSEA. This was followed by these keynote presentations: MLP Highlights (Ben Swain) and the highly relevant topic of Fly Resistance Strategies (Narelle Sales of NSW DPI).

Attendees were also keen to visit the trade and equipment displays onsite.

Download field day results at: merinosuperiorsires.com.au/mlp-project-reports

Brad Wilson (far left) and Chris Bowman (second left) at the classing race giving field day attendees a hands-on demonstration of the MLP classing techniques, March 2020

MLP Developments:
Reporting reproduction results over multiple years

The older drops of MLP ewes have now been through multiple reproduction cycles and their lambing and weaning results are enabling development of reproduction Research Breeding Values (RBVs).

The recently updated Balmoral MLP Report (March 2020) includes the oldest ewes in the project, the Balmoral 2015 drop, who weaned their third drop of progeny in November 2019. Following closely behind are the MerinoLink, Pingelly and Balmoral 2016 Drop ewes who have each weaned two drops of progeny.

The MLP F1 ewes are joined each year using a sire syndicate as chosen by the host site. The syndicate sires themselves are a means to provide the ewes an equal opportunity to get in lamb.

Lambing results are reported within the MLP project via raw data of both scanning and lambing results. A recent addition has been the calculation of kilograms of lambs weaned against the number of ewes joined.

Reproduction results from the MLP ewes has enabled the development of reproduction RBVs for the Merino industry. These RBVs will be added to the MERINOSELECT analysis from April 21. They will also evolve over the life of the project as the cumulative MLP data will be used to estimate the heritability and correlations between the components of reproduction.

RBVs take into account birth/rear type, age of dam, management groups and progeny group size. Genetic correlations between traits and trait heritability are also incorporated in the RBV analysis model.

Up to this point MLP reports have included these RBVs as unique annual results with each stage calculated from just one year's set of reproduction records.

Reported reproduction component traits RBVs include:

Conception	The number of ewes pregnant per 100 ewes joined
Litter Size	The number of lambs born per 100 ewes lambing
Ewe Rearing Ability	The number of lambs weaned per 100 lambs born
Number of Lambs Weaned	The number of lambs weaned per 100 ewes joined (currently calculated from reproduction data only)

Work is underway to enable analysis that combines results across the years, however this single year reporting is hinting at its own story. It is important to remember that these RBVs are still under developement and there is a need to exercise caution.

The table shown below displays a subsample of sires from Balmoral's 2015 drop with RBV results reported across each of their annual reproduction cycles (in 2017, 2018 and 2019). **Full results are available for download at merinosuperiorsires.com.au/mlp-project-reports.**

These results suggest that being a leader of one trait does not necessarily result in top results for other/all traits. Nor are there many results showing leaders across all three ages/reproduction cycles. This aligns with industry's knowledge that reproduction is a lowly heritable trait and large volumes of records are needed to accurately explore reproduction differences (page 4 has more information).

Table 1 - A subsample of sires in the Balmoral 2015 Drop Reproduction Research Breeding Values reporting each of their three reproduction cycles.
A2: Adult2, 2017 (Maiden) A3: Adult3, 2018 A4: Adult4, 2019 **A blue cell denotes a trait leader.**

Breeders flock, Sire number	Conception			Litter Size			Ewe Rearing Ability			Number of Lambs Weaned		
	A2	A3	A4	A2	A3	A4	A2	A3	A4	A2	A3	A4
Bogo, 111424	0	1	4	14	7	0	-2	0	4	2	7	6
Bundilla, 111265	2	3	5	35	21	39	0	-1	-2	9	7	9
Centre Plus Poll, 207316	3	5	0	4	8	4	-2	-2	2	2	2	8
Greenfields Poll, 130599	3	-6	0	19	-15	6	6	7	3	23	3	7
Hazeldean, 11.43	-2	-3	-2	45	12	7	2	-3	0	11	-6	-3
Merinotech WA Poll, 100081	3	6	6	14	12	12	-5	-6	-7	-3	-7	-4
Moojepin, 100248	-1	2	1	13	18	5	10	5	3	21	17	7
Mumblebone, 130850	2	-1	6	21	10	25	1	4	3	11	12	22
Nareeb Nareeb, 130380	0	0	3	49	31	19	3	1	-3	23	12	3
Tuckwood Poll, 121021	-1	-2	6	11	-1	19	7	-2	0	13	-7	14
Yalgoo, 120043	0	-5	-5	-7	-12	0	-11	1	6	-24	-9	10
Yiddinga, 130374	0	6	-5	-5	16	-25	-8	1	7	-18	16	-3

Around the sites

Balmoral

The MLP ewes are in exceptional condition following a good season in 2019 and for the start of 2020. The 2015 drop had their fifth classing / shearing and the 2016 drop their fourth assessment in February. **A full set of updated results are available for download at merinosuperiorsires. com.au/mlp-project-reports.** Both drops were joined in March with the 2015 drop at condition score 3.4 and the 2016 drop at 3.2.

Tom Silcock (left) and Michael Craig (Site Host) during classing at Balmoral, February 2020.
Image credit: Anthony Close, Balmoral Breeders

Pingelly

A dry summer has seen supplementary feeding of the Pingelly ewes carried out over an extensive period. Ewes were joined in February with the 2016 drop averaging condition score 3.0 and the 2017 drop 2.7. A recent monitor has seen the 2016 drop move up to 3.1 with the 2017 drop also lifting to 2.9. Pregnancy scanning of both drops is scheduled for April.

Pingelly's 2016 drop ewes on their way into the shearing shed, December 2019.
Image credit: Amy Lockwood, Murdoch University

MerinoLink

A rainfall of 120mm in the first few months of 2020 saw the ewes move out of confinement feeding in mid-March. The ewes were pregnancy scanned on March 17 where both drops averaged condition score 2.8. The 2016 drop ewes scanned 148% foetuses with 95% of ewes in lamb and the 2017 drop scanned 127% foetuses with 86% of ewes in lamb. These are solid results for the site following difficult seasonal conditions.

MerinoLink 2016 drop ewes, early March 2020.
Image credit: Lexi Cesnik, Moses & Son

Macquarie

With 180mm of rain received already in 2020 the Macquarie ewes will move to some green feed during lambing after years of drought feeding. Pregnancy scanning took place in February with both drops averaging a condition score of 3.1. The 2018 drop maiden ewes scanned 111% foetuses with 95% of ewes in lamb and the 2017 drop scanned 134% foetuses and 94% of ewes in lamb. This is a great conception result for the site, especially considering the recent dry conditions. As reported, a successful field day was held on March 4.

Macquarie 2018 drop ewes in the rain at the field day, March 2020
Image credit: Emma Grabham, AMSEA

New England

In a drastic change of season the New England site received 377mm of rain during January and February. Ewes have since returned to paddock grazing and the flies were busy in the lead up to crutching in mid-February. An individual worm egg count was conducted early in March. Ewes will be joined on March 30 with both the 2017 and 2018 drops currently averaging a condition score of 3.1.

COVID-19 UPDATE

All MLP Sites are currently undertaking an impact assessment to determine and manage the impact of COVID-19 on their site's project activities and assessments.

The different situations at each site will decide the appropriate management approach.

Reaching the halfway mark - MLP data indicator

The halfway point in the data collection section of the MLP project has been reached with the project having now collected 54%, or 975,948, of the almost 2 million data points scheduled for collection within the project.

Why collect so many records?

The 2 million data points will fill existing data gaps and allow exploration of lifetime relationships between wool, growth, carcase, reproduction and disease resistance attributes. A higher number of records enables a more accurate understanding of the genetics.
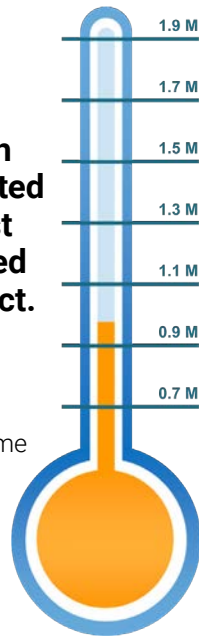
Another way to visualise this is to consider these graphs:
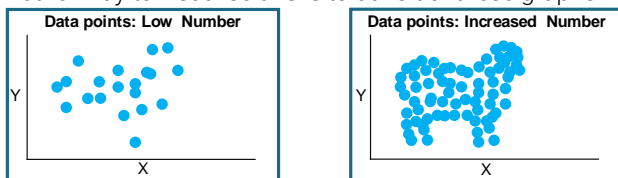
The same range of data is shown in each graph, however the increased number of data points on the right gives a clearer picture of the Merino ewe.

The MLP project was designed to generate a high quality reproduction data set. This focus on reproduction (which is more lowly heritable) brings with it the need to collect an increased number of data points.

The project has a target to collect 100 reproduction records per sire, over 5 annual joinings. This will be achieved with the trial design aiming for 30 F1 ewes per sire at their first joining, with 20 remaining at 6 years old. Results collected from this number of ewes ensures sufficient reproduction records and more than adequate records for more heritable production traits such as fleece weight/growth/micron.

(Modelling suggests sires with <20 ewes will still obtain reasonably accurate individual reproduction records and will further compliment the overall data set.)

MERINOSELECT milestone for the MLP

Collected MLP project results will be included in MERINOSELECT analyses and available on the Sheep Genetics website at the end of April, meeting a key MLP project milestone.

Sheep Genetics, the national breeding evaluation service for sheep breeders and buyers, has now received all collected repeat adult data for all MERINOSELECT traits from 5,700 daughters of 134 industry sires in the project. The repeat adult data for wool, body weight, worm egg count, reproduction and visual traits will now be included in the MERINOSELECT analyses. This is in addition to the results collected and submitted previously as part of the sire evaluation phase. The genotypes of the 5,700 daughters (the MLP ewes) have also been added.

AWI, AMSEA, Meat & Livestock Australia (MLA) and the Animal Genetics and Breeding Unit (AGBU) have worked together to get this data into the MERINOSELECT genetic evaluation.

This will build on the information from MLA's Resource Flock project and data previously collected by breeders, enhancing the reference population and giving industry access to more accurate breeding values for an increased number of animals.

Testing is currently being completed to show the impact of including the MLP results on the MERINOSELECT database. It appears that the inclusion of repeat adult fleece data will have little impact on ASBVs. Reproduction results look like having some influence on Number of Lambs Weaned (NLW), especially for sires who had little or no previous reproduction records in MERINOSELECT.

MLP results will be included in the MERINOSELECT run that is scheduled for April 21 and then available via the **Sheep Genetics website** in late April. Going forward, MLP results will be submitted as they are generated by the project in line with the regular, routine MERINOSELECT analyses.

This is a significant milestone for the MLP project and is a great outcome for Sire Entrants, Site Hosts, Site Committees and the wool industry generally.

Update: 2020 MLP field days

Plans for the 2020 MLP field days are currently on hold. Updates available via wool.com/mlp

Further information

www.wool.com/MLP