MLP
Merino Lifetime Productivity Project

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Merino Lifetime Productivity Project Newsletter No.2

MLP Quick Facts:

- The Australian Wool Innovation (AWI) funded **Merino Lifetime Productivity (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 genetics, and economic interactions, of a diverse range of Merino types delivering high quality wool, lambs and meat through life.
- 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 independent visual classing and productivity traits will be assessed.
- Newsletter 1 (www.wool.com/mlp-newsletter-1) provides further background information on the MLP.

MLP field day update

Each of the five sire evaluation sites involved with the MLP holds field days which provide an opportunity for attendees to inspect progeny, compare data and hear from industry experts.

Balmoral (Victoria)

More than 270 producers turned out at the Balmoral Sire Evaluation field day in February to witness the display of 2017 and 2018 drop standard sire evaluation progeny and hear from a range of speakers including AWI director Don Macdonald, Anne Ramsay (MLP update), John Steinfort (liquid nitrogen skin modification) and Simon de Graaf who outlined the successful insemination of 50-year-old semen (http://beyondthebale.wool.com/?iid=163306#folio=48). The MLP results were also made available on the day at "Kooringal" hosted by the Balmoral Breeders, a short distance from "Tuloona", the MLP site and home to the 2015 and 2016 drop MLP progeny.

AWI Director Don Macdonald addressing the Balmoral 2019 field day audience, February 2019.

Balmoral Breeders Site Committee hosts of the Balmoral field day and MLP Balmoral site, February 2019.

A sample of 2017 drop MerinoLink F1 ewes, March 2019.

MerinoLink (Temora NSW)

The MerinoLink MLP field day to be held on 15 March promises to be an exciting day, despite the ongoing dry conditions, with a full program including MLP 2016 and 2017 drop F1 ewe progeny inspections. This will allow attendees to directly compare the progeny both visually and in consideration of their latest assessment results which will be released at the field day. Presentations on the day will provide an overview of the MLP project as well as an insight into the research logic driving MLP sire selection.

The 2017 drop will be penned in sire groups and the 2016 drop grouped based on their reproduction performance from the previous year. F2 lambs (the next generation lambs) will be displayed in two groups; the progeny of the high ASBV fleece weight syndicate sires and those from low ASBV fleece weight syndicate sires.

Attendees at the MerinoLink field day will have the very first opportunity to review the results from the 2016 drop ewe reproduction analysis with these ewes having just completed a full lamb and fleece production cycle. Pregnancy scanning results from 11 March will provide early insight into the first of the reproduction performance for the 2017 drop.

The field day will be held on site at Temora, NSW on 15 March (www.wool.com/merinolink-field-day).

Upcoming field days

The New England (Armidale, NSW) site is set to display their 2018 drop progeny for the first time at their 20 June field day which will be held in conjunction with the MerinoLink annual conference. The 2017 drop will also be on display with results to date available on the day.

The Macquarie field day (Trangie, NSW) will be marked by the first display of their 2018 drop progeny. Ewes will be penned in sire groups and within those sire groups, ewes will be divided into the progeny of the original two divergent foundation ewe sources (representing contrasting skin type and wrinkle). This will provide an opportunity for attendees to compare the progeny of sires from both foundation ewe types.

MerinoLink MLP Field Day, Temora NSW Friday 15 March, 2019
New England MLP Field Day, Armidale NSW Thursday 20 June, 2019
Macquarie MLP Field Day, Trangie NSW Wednesday 10 July, 2019

First repeat data on weaning percentage tells a story

The MLP project has now been running for several years at the Balmoral site and, for the first time, analysis of repeat lambing data for the 2015 drop ewes (2017 and 2018 drop lambs) has been possible. This data is published in the MLP site reports (https://merinosuperiorsires.com.au/mlp-project-reports/) and discussed at the respective field days.

Repeat data is important as it starts to tell a story about heritability and repeatability; what can be effectively selected for and what cannot, based on current understanding and practices.

The repeat data which has just been released from Balmoral, hints at interesting trends and raises questions which will hopefully be addressed as more data is collected over subsequent years.

As shown in Figure 1, the repeat raw data recorded in 2017 and now 2018 for the MLP 2015 drop ewes relating to weaning rate shows that the F1 ewes of some sires performed consistently across both years (Sires "O" and "R") while others did not (Sires "P" and "Y"). This means that selection for weaning % in one year may not accurately predict the performance of that ram in subsequent years.

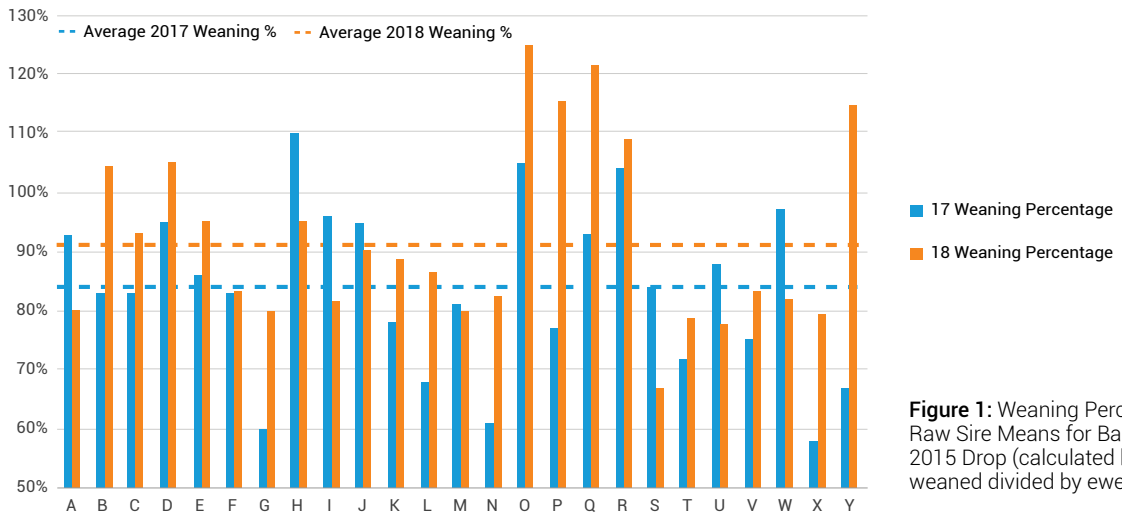

Figure 1: Weaning Percentage Raw Sire Means for Balmoral 2015 Drop (calculated by lambs weaned divided by ewes joined)

This raw data must, however, be considered with caution as raw sire means for low heritability reproduction traits are inflated measures of genetic merit. Breeding values which account for both low heritability and variable F1 ewe progeny numbers between sires should be used for the purposes of predicting future sire performance.

The correlation between number of lambs weaned breeding values for the 2015 drop sires is at the low end of moderately correlated (0.32) and influenced by the reproduction components shown in Table 1.

Number of lambs weaned is made up of three component traits, 1) conception, 2) litter size and 3) ewe rearing ability. Litter size has the highest correlations between the two lambings (0.69) and ewe rearing ability the lowest (0.14).

Table 1: Reproduction Research Breeding Values* Correlations of Balmoral 2015 drop ewes: 2017 lambing v 2018 lambing results.

REPRODUCTION COMPONENT	CORRELATION BETWEEN YEARS
Conception	0.24
Litter size	0.69
Ewe rearing ability	0.14

* Research Breeding Values are used to predict future performance. Correlations of less than 0.3 are considered "low", correlations of 0.3 to 0.59 "moderate" and 0.6 and greater are considered "high".

Reproductive data must be supported by a substantial data set to be interpreted with confidence; something the MLP will deliver over the course of the project, remembering that the results presented here are based on 1,000 records or only 4% of the 25,000+ records to be collected through MLP.

MLP provides platform to explore yield differences

The dry, dusty conditions which have characterised some wool growing areas during the recent drought have, in some circumstances, caused yields to tumble and resulted in disappointing clean fleece weights and wool quality results.

This has been reflected at two NSW MLP sites which remain in drought and has caused the NSW Stud Merino Breeders Association to question the reliability of yield measurement through mid-side sampling when sires with divergent skin types, staple length and density are run in dusty environments.

To address this concern and explore the issue more broadly, a new project has been established which leverages the MLP by introducing fleece sampling at the pin-bone site, as well as carrying out 'whole of fleece' coring. When combined with the standard practice of mid-side sampling, annual classing and measuring dust pentation, it is hoped these additional measures will provide the ideal dataset for analysis to determine what genetics or sheep types perform best across challenging environments, or within an environment and how to best calculate clean fleece weight.

The introduction of pin-bone sampling may also allow the industry to determine if under certain conditions this sampling location, which is close to the "dust prone" topline, is better able to predict yield differences between individual sheep and sire types.

To facilitate this work, MerinoLink will include the additional pin and whole of fleece samples at their February - March 2019 assessment. Macquarie has collected pin and mid side samples at their recent February assessment on the 2018 drop progeny.

Based on the results from the February and March sampling, there is a possibility of repeating the three measures in the Macquarie and MerinoLink assessments in October.

The samples will be tested routinely by AWTA in line with the measurement of the mid-side samples for the standard range of traits measured in the MLP project; specifically yield, fibre diameter, fibre diameter CV, curvature, staple strength and staple length.

Further analysis will also be undertaken in order to validate other recorded traits, such as dust penetration, in order to investigate alternative methods of distinguishing the difference in whole of fleece yield between sire groups.

As the MLP project is focused on ewe lifetime productivity sufficiently detailed results, particularly of low heritability traits like reproduction, will not be delivered until all ewes have reached five years of age. These final results will be published in 2025; however, results from this MLP Add On project are expected to be available over the next several years.

Around the sites

Several of the sites continue to experience severe drought conditions. While feeding plays a role in all site programs at key times in the production cycle, supplementary and in some cases full ration feeding have been implemented across the drought effected sites to ensure liveweight and body condition score targets are met.

MerinoLink

Joining concluded at the MerinoLink site on 25 January with pregnancy scanning taking place on 11 March. Fleece sampling occurred in late February with AMSEA, professional classing and the classer trial occurring in early March and shearing scheduled at the end of March.

Macquarie

Pregnancy scanning was undertaken at Macquarie on 20 February revealing 88% conception, 43% multiples and 43% singles. Other activities at Macquarie in February included the first post weaning assessment of the 2018 drop ewes, the classer trial, AMSEA and professional classing and fleece sampling.

New England

The 2017 drop ewes at New England have been crutched, scanned (fat and muscle), weighed and assessed fortnightly for teeth eruption with 25% still showing their lamb teeth at 17 months of age. Ewes will be joined for the first time in April.

The 2018 progeny were weaned on 3 December with the ewe lambs then weighed at intervals. A small number of breech fly strikes were recorded in late December.

Balmoral

The 2015 and 2016 drop ewes were classed and mid-side sampled in late January before being shorn in mid-February. Joining is scheduled to commence 17 March.

The latest results from the Balmoral site are available in the updated MLP report (link to https://merinosuperiorsires.com.au/mlp-project-reports/) which includes the first reproduction results for the 2016 drop ewes and the second for the 2015 drop ewes. The relationship between the 2015 drop ewes first and second lambing results is quite low which is expected given the low heritability for reproduction.

Pingelly

The first of the classing and sampling events took place in December and joining commenced 1 February for five weeks with scanning scheduled for 22 April. Ewes were weighed and condition scored plus scanned for fat and muscle prior to joining.

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Classers Bill Walker and Nathan King were involved in the Classer Trial at MerinoLink, March 2019.

Macquarie team involved in the Post Weaning assessment of the 2018 drop, February 2019.

Sarah Blumer and Colin Byrne at Pingelly undertaking a body weight and condition score on MLP wethers, March 2019

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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. GD3317

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