

The

Breeders Bulletin



Managers report

As we wrap up the year, I wanted to take a moment to reflect on some key updates and milestones at Sheep Genetics, as well as highlight important dates and insights for the year ahead.

We are pleased to report that the results of our annual survey the feedback received confirms that our continued efforts to provide high-quality service are helping drive genetic progress in the sheep industry. We are committed to listening to your feedback and refining our processes to ensure we continue to offer the best tools and support to help you achieve optimal genetic outcomes.

2025 is shaping up to be an exciting year for Sheep Genetics. We will celebrate two significant milestones 20 years of Sheep Genetics and 25 years of multibreed genetic evaluations for sheep. We are looking forward to celebrating these achievements with our partners and stakeholders in the year ahead, and we remain committed to driving continued success and innovation within the industry.

As we enter the end-of-year period, we're seeing a significant number of Matesel runs. This is a timely reminder of the importance of



starting your Matesel runs well in advance. In this Bulletin, we've included a great case study showcasing the tangible benefits of Matesel indriving genetic progress. We encourage all our clients to plan their runs early (including working with your Service Provider if you are using one) to ensure they get the most out of this powerful tool.

Please note that our office will be closed during the holiday period. We will resume normal operations on **January 6th**, in preparation for the first MERINOSELECT run on **January 7th**.

Thank you for your continued trust in Sheep Genetics. We look forward to working with you in the coming year as we continue to strive towards our shared goal of advancing genetic progress for the sheep industry.

We wish all our staff, clients, and collaborators a restful and enjoyable holiday season.

Peta Bradley - Manager Sheep Genetics

2025 Events

Sheep Genetics staff will again be busy travelling in 2025, you can catch up with us at a variety of events and locations across the country including;

FEBRUARY

17-19th - Meat Elite & Superwhites - Bendigo, VIC

23-25th - Australian White Suffolk Association conference - Adelaide, SA

APRIL/MAY

30th Apr- 1st May - Service Provider Workshop - Melbourne, VIC

JUNE

Dates T.B.C - Sheep Genetics Industry Innovation Roadshow

24-26th - Association for the Advancement of Animal Breeding and Genetics - Christchurch, NZ

JULY

18-20th - Australian Sheep & Wool Show - Bendigo, VIC

AUGUST

3-4th - Sheepvention—Hamilton, VIC

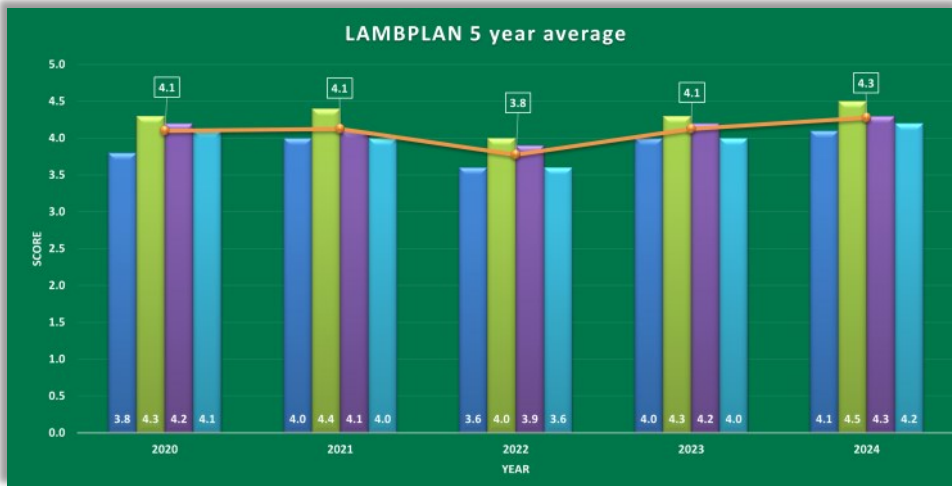
Annual survey overview

Each year we survey all of our active clients, to gain feedback relating to our products and service delivery. This is an important tool for us in identifying areas of the business that are doing well and areas that could be improved.

This year we had 154 flocks respond

- 64% LAMBPLAN
- 36% MERINOSELECT

One metric that we report to the Executive and Advisory Committee, is the customer service levels. This combines the answer to four specific questions to provide a score out of five. From the two graphs below, you can see that the scores for 2024 are slightly up from last year, which is a pleasing trend to see, and that the 5 year average is fairly stable.



The four questions are:

- Requests are dealt with in a timely manner (Dk Blue)
- Staff are approachable and friendly (Green)
- Staff are helpful and patient with requests (Purple)
- Staff members can be contacted easily (Lt Blue)
- Orange line - overall score

Other questions relate to specific topics and allow people to rate the items as well as provide comments, four areas are shown below.

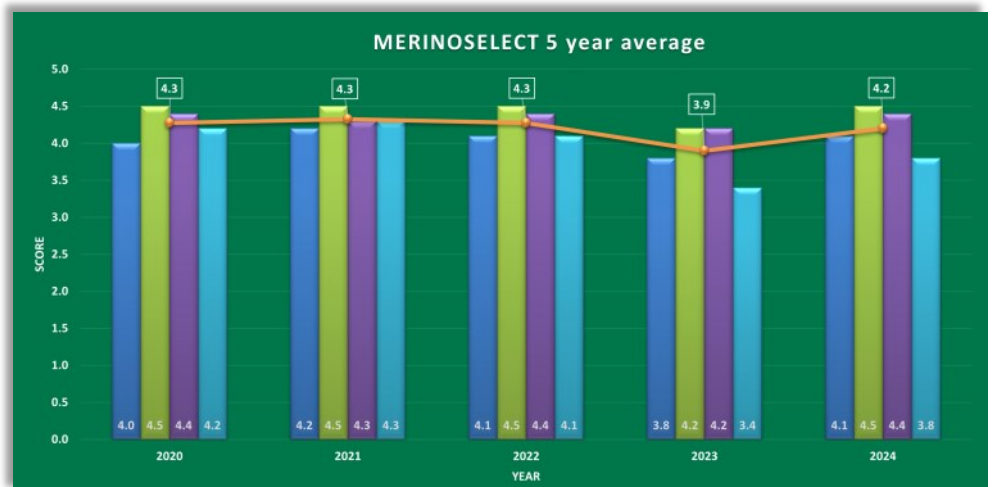
Thank you to all who took the time to respond.

Submission portal

- 60% of flocks are using the portal to submit data
- 77% of those found it very easy/easy to load files
- 75% found the submission summary page very easy/easy to understand

Results portal

- 85% flocks were accessing their reports on the portal
- 85% of those found the portal very easy/easy to use
- 70% found it very easy/easy to create the reports required.



DQS/RUGG report

- 36% of flocks had accessed the report
- 76% of those found it informative and useful
- 40% would implement some changes as a result of the report

MateSel

- 36% of respondents are using MateSel
- 64% of those are accessing it themselves
- It is being used for mate allocations, sire/ semen purchasing decisions, ewes to retain for breeding.

Making genetic gain

Making genetic gain can be made simple by using the Breeder Equation, focusing on improving intensity of selection (aka. the selection differential), accuracy of selection, and generation interval. The Breeders Equation accounts for such factors and is a simple formula which can be used to simply calculate genetic gain (ΔG) via;

$$\Delta G = \frac{((i_m) \times (r_m)) + ((i_f) \times (r_f))}{(l_m) + (l_f)} \times (\sigma_G)$$

where (i_m) and (i_f) are the selection intensity of males and females, (r_m) and (r_f) are the selection accuracy of males and females, (l_m)

and (l_f) are the generation interval of males and females, and (σ_G) is genetic variation. These metrics are all reported in your flock's DQS.

In order to increase genetic gain, you must increase selection intensity and/or accuracy, and decrease generation interval. A targeted approach can be made where all or some areas of the breeders equation are addressed. It's recommended to write out a Breeding Objective and use the Breeders Equation to make genetic gain and achieve your long term breeding goals.

Below are some examples of simple ways to address areas of the Breeders Equation to make genetic gain – these can be easily and practically implemented on-farm.

Selection intensity = Using the best animals	Selection accuracy = Selecting the best animals with more accuracy	Generation interval = Using the animals earlier
• Selecting high performing sires (rams have biggest impact on flock) • Classing out low genetic merit animals • Purchasing semen and rams from external flocks which have higher index/ ASBVs • AI & ET programs	• Using ASBVs to make selection decisions • Selecting animals with high ASBV accuracy • Ensure recording of high quality data • Genotyping to increase ASBV accuracy for young animals.	• Using young rams • Genotyping young animals • Classing out old animals

Individual changes and actions as mentioned above to increase genetic gain also need to be considered as part of the larger picture of your seedstock or breeding business. Making genetic gain is not an isolated action, but the

result of a larger detailed and well implemented plan. As with every business plan there are a range of activities that set your business up for success, some are fundamental and essential for progress, others build upon those

fundamentals and add additional benefits but are not necessary for every operation. Below we have put together a festive themed way to

identify and work on different aspects of the bigger breeding business plan to assist you in making decision to better your genetic gain.



For more individualised information and recommendation to improve your breeding business there are resources available to Sheep Genetics flocks. The Data Quality Score (DQS) report highlights how your flock is performing for areas of the breeder's equation (selection intensity, selection accuracy, generation interval).

If you wish to discuss how you can improve in areas of the Breeders Equation, and therefore make more genetic gain, please contact us by scanning the QR code, the Development Officers (Chloe, Kate or Marnie) will then organise a time to do a one-on-one with you.



Festive Fact!

Since the start of the year, the Sheep Genetics Development Officers have sat down with over 70 flocks, either online or in-person on the back of events to do a comprehensive flock data audit. On top of that they have been in contact with over two-thirds of the flocks in Sheep Genetics throughout the year.

Missed out? - Scan the QR code above to book your session!

MateSel in action

Within the field of genetics, there's an ongoing battle between increasing genetic gain and maximising genetic diversity. To make significant progress in a trait of interest, it's logical to use the genetics of animals that excel in those traits. However, the overrepresentation of certain bloodlines or individual animals over time can reduce genetic diversity in a flock, which increases the risk of inbreeding and co-ancestry. Inbreeding occurs when an individual inherits a greater proportion of common genes from both sides of its pedigree, leading to potential issues such as deformities or inbreeding depression.

MateSel, a tool provided as part of your Sheep Genetics subscription, helps breeders manage this careful balance between genetic gain and inbreeding. It also supports practical selection decisions and provides estimates for the performance of the next year's drop of lambs.

What is MateSel?

MateSel assists breeders by generating mating suggestions and outcomes based on lists of potential sires and dams, taking into account parameters set for the individualised breeding program (e.g. sire usage limits, pressure on inbreeding and co-ancestry, traits of interest). The software runs multiple scenarios to recommend the best mating arrangements. It even provides a backup mating option in case there are unforeseen circumstances, such as structural changes, that require last minute changes to sire availability.

Users of MateSel provide a list of rams and ewes using Sheep Genetics 16-digit IDs. Only the animals supplied to the program via these lists will be considered by MateSel. Using the 16-digit ID supplied, MateSel will provide

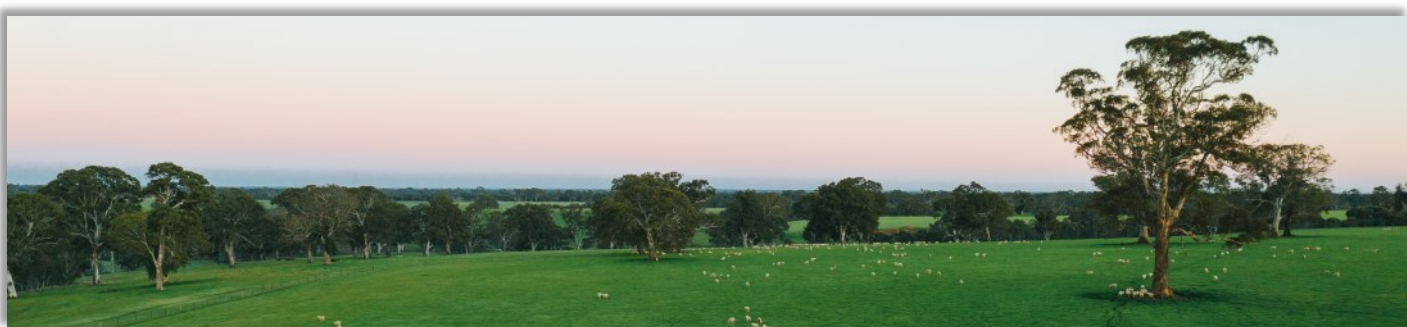
suggested mating allocations based on the breeding objective and parameters supplied to the program by the user. It is customisable to suit your flock and genetic direction.

While MateSel provides statistically optimal outcomes for balancing genetic gain and inbreeding, it is just one tool in the breeder's toolkit. Flexibility is key when applying these results. Breeders should adapt the recommendations to suit the unique needs of their operations, which can be influenced by factors such as wool type, structure, and practical considerations (e.g., single joining, backup joining, syndicate joining, or changing seasonal conditions).

The real value of MateSel lies in understanding its power and how to adjust its recommendations to best suit your flock's needs.

MateSel is an advanced but user-friendly resource once you understand the basic principles. Those who want to utilise this resource must attend two training sessions and pass an assessment to ensure they understand the tool's capabilities and can apply it effectively. During training, breeders learn the differences between co-ancestry and inbreeding, the balance between genetic gain and inbreeding, the importance of accurate data input to Sheep Genetics, and how to leverage MateSel to achieve their individual breeding objectives.

Training is typically held online in September or October each year, with the potential of more sessions if demand is high, and the 2024 sessions have just wrapped up. Over the last two years, 25 breeders and service providers have been trained and given access to MateSel.



MateSel - Glen Iris case study

Glen Iris Poll is a Merino stud based in the Southwest Slopes of NSW and is managed by Daniel and Fiona Rankin. The flock has transformed over the decades from a Corriedale to dual purpose Merino flock and began submitting data to Sheep Genetics four years ago, building on 30 years of performance recording and 60 years of sheep breeding experience. For them, integrating MateSel into their operation was the next logical step to improve their flock's genetics.

“We’ve found ASBVs (Australian Sheep Breeding Values) incredibly useful for comparing animals across different age groups, as it removes non-genetic variation,” said Fiona. “Since using ASBVs, we’ve been able to fine-tune our joining decisions, focusing on the traits we want to maintain and those we want to improve.”

With a solid foundation of data capture and pedigree recording, Glen Iris saw MateSel as a tool to streamline the selection process, reducing the complexity and time required to manually match ewes to rams and analyse data.

“We found MateSel to be a valuable starting point, which we then further fine-tuned,” Fiona explained. “The resulting progeny look incredibly even phenotypically. So far, we’re really happy with the results.”

Glen Iris's Breeding Objective

Glen Iris's breeding objective focuses on producing animals with the following traits:

- **Early growth**, particularly post-weaning weight (PWT)
- **Maintaining/reducing mature weight (AWT)**
- **Good carcase quality**, having identify an option for Yearling Eye Muscle Depth (YEMD) and Yearling Fat (YFAT) within their flock.
- **Increasing Yearling Clean Fleece Weight (YCFW) and reducing Yearling Fibre Diameter (YFD)**



Image .
Fiona
Rankin

- **Increased weaning rate (WR)**, with additional emphasis on Ewe Rearing Ability (ERA)

Having a defined breeding objective is essential when using MateSel, as it shapes the parameters that influence mating selection decisions.

Considerations when looking at the MateSel estimated progeny results

- MateSel does not account for multiples or dry. It assumes one alive lamb is the outcome of each mating it suggests.
- MateSel predicts progeny performance from a mid-parent breeding value (the average of the parent's breeding values for that trait) and the assumption that the progeny inherits evenly from the sire and dam. While a 50:50 inheritance is assumed, genomics shows that a progeny can inherit more genes from one parent than the other, up to a 40:60 difference. There will be variation on an individual level as to how close to their mid parent values progeny are across the flock.
- Additionally, the mid parent in MateSel is estimated at the time of the MateSel run, parent ASBV do change over time as more information (including progeny performance) are added to the analysis

- When actioning the joining results, there often will be changes and tweaks to the joining lists. Reasons can include
 - Removal of a sire, due to illness or structural differences
 - Management decisions made later to suit the practicality or season
 - Back up joining's may result in matings not specified by the MateSel outcomes, so results will differ

For example, when going through the matings and making final selection decisions some tweaking to the joining suggested by MateSel were done for Glen Iris. This ability to fine tune by using the back-up ram supplied or swapping ewes out based on structure is important to using the tool of MateSel to get the best outcome from your matings.

*Image .
Dan
Rankin*



Results - the MateSel estimations and Glen Iris 2024 drop progeny results

Below is a summary of the results Glen Iris returned from their MateSel runs informing selection decisions compared to how the subsequent 2024 drop progenies ASBVs are.

Table 1 highlights the 2024 drop's average ASBV for key traits as estimated using MateSel and compared to the 2023 drop results (favourable trends are highlighted in blue). The results indicated that genetic gains were made towards Glen Iris's breeding objectives in most traits. Significant improvements were seen in traits such as fat, clean fleece weight, fibre diameter, and ewe rearing ability.

Trait	Average 2023 drop genetic merit	MateSel's predicted outcome for the 2024 drop	Difference from 2023 drop
PWT	10.71	8.6	-2.11
YWT	11.32	9.5	-1.82
YEMD	2.14	2.27	0.13
YFAT	0.32	0.69	0.37
YCFW	10.62	12.63	2.01
YFD	2.27	1.51	-0.76
WR	0.24	0.23	-0.01
ERA	0.02	0.04	0.02

With the performance recording and submission of data for the 2024 drop underway, ASBVs are now available on Glen Iris's 2024 drop. Table 2 highlights the average of the 2024 drop ASBV results compared to the average of the 2023 drop of Glen Iris (from the 7th of October 2024 MERINOSELECT run). These results showed improvement on the traits of importance for the breeding objective from the 2023 drop. There has been significant genetic gain in particular for clean fleece weight and fibre diameter.

Trait	Average 2023 drop genetic merit	Average 2024 drop genetic merit	Difference
PWT	10.71	10.5	-0.21
YWT	11.32	11.33	0.01
YEMD	2.14	2.18	0.04
YFAT	0.32	0.62	0.3
YCFW	10.62	13.21	2.59
YFD	2.27	1.84	-0.43
WR	0.24	0.25	0.01
ERA	0.02	0.04	0.02

When comparing the progeny average results between the MateSel estimated performance and 2024 drop progeny we can see that the MateSel program was able to sufficiently predict what the 2024 drop progeny performance would be. PWT and WR exceeded expectation gaining a percentile band with the other key traits sitting within the expected results.

Trait	MateSel's predicted outcome for the 2024 drop	Matesel ranking on percentile	2024 drop genetic average	2024 drop ranking on percentile
PWT	8.6	20	10.5	5
YWT	9.5	30	11.33	30
YEMD	2.27	20	2.18	20
YFAT	0.69	40	0.62	40
YCFW	12.63	80	13.21	80
YFD	1.51	90	1.84	90
WR	0.23	30	0.25	20
ERA	0.04	40	0.04	40

Conclusion

For Glen Iris, MateSel has proven to be an effective tool in improving the accuracy and efficiency of their breeding decisions. By using the software to guide mating choices, they've seen promising results in their flock's genetic progress. As with any tool, understanding how to adapt the software's recommendations to fit their operation is crucial to achieving the best outcomes.

Interested in MateSel for your operation?

If you are interested in knowing more about MateSel and being trained how to use the program. Scan the QR code and fill out the form to register for 2025 training.



12 days of improving your Sheep Genetics flock and data

Forget about the 12 days of Christmas, with its partridge in a pear tree....

This holiday season we are thinking about 12 days of making improvements to your Sheep Genetics flock and data submission.

Use the handy guide below and have a go at ticking off as many improvements as you can!

Sign up for a **1**:1 with the Development Officers to discuss your flock and data in more details for 2025!



Mark **2** runs ahead on the calendar before any important decisions (i.e joining, culling and sale cataloguing) to ensure all the data you need for it is submitted to Sheep Genetics. *(We have included one in this mail out - handy!)*

Check that you have submitted the **3** key fields when requesting parentage assignment:

1. Complete sire list
2. Complete dam list and
3. Complete progeny list

Check your exclusions report for the **4** main pedigree exclusions.

1. Twins by different sires where pedigree method is not defined as DNA Parentage
2. Non ET siblings born more than 1 day apart but less than 151 days to the same dam
3. Sire is a female or dam is a male
4. Date of Birth is missing or invalid

Write up or refine your breeding objective to meet the **5** criteria of a SMART breeding objective.



Specific Measurable Achievable Relevant Time based

There are **6** thousand Genomic Pedigree Inconsistencies with a result available in the 2023 and 2024 drops across the analyses. Check your Genomic Pedigree Inconsistencies reports under the results dashboard, update in your software and resubmit to Sheep Genetics.

Enjoy some light bedtime reading with the **7** chapters of the “Breeders Guide to Quality Assurance”





8 Episodes of the Ewe-niquely Genetics podcast available on Spotify, listen to then and learn all about your Sheep Genetics analysis.

Over **900** genomic tag changes occurred in the month of October 2024 alone. Check your genotyping submission before they are sent to try and limit these and potential issues later on.

Allow for **10** business days between the run cut off and ASBVs being published online.

11 new users of MateSel added in Sept/Oct of 2024, set a reminder to sign up for next year's training and refresher sessions.

There are **12** months in the calendar year, do you know which measurements to take when? Set up a measurement calendar that follow data collection protocols and data submission cut-off dates. *(Remember that handy calendar we mentioned earlier!)*



Genetics myth busting

“ASBVs aren’t accurate enough to predict progeny performance”

Myth! *ASBVs can be used to predict progeny performance.*

A proof of profit was undertaken on some research data where 300 commercial Merino ewes were artificially inseminated to 15 White Suffolk sires. The top and bottom 5 sires ASBVs

for PEMD, IMF, %and SHEARF5 were compared to determine the expected difference between progeny of the higher genetic merit and lower genetic merit sires (average of top 5 minus the average of the bottom five, divided by 2). This expected difference as per ASBVs aligned with the difference in actual phenotypic performance between the average of the top 5 sires to the bottom 5 sires.

		Post weaning eye muscle depts (PEMD)	Intramuscular fat (IMF)	Shear force (SF5)
Sire ASBVs	Average of Top 5 ASBV sires	3.72	-0.25	0.94
	Average of Bottom 5 ASBV sires	1.24	-0.78	4.76
	Difference between top & bottom sires	2.48	0.53	-3.82
	Expected difference	1.24	0.27	-1.91
Progeny performance	Top 5 ASBV sire team	30.55	5.02	23.02
	Bottom 5 ASBV sire team	28.50	4.87	24.89
	Actual difference in performance	1.70	0.15	-1.87

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SHEEP GENETICS



Peta Bradley
SHEEP GENETICS MANAGER

**CLIENT SERVICE
DEVELOPMENT OFFICERS**



Chloe Bunter
MERINOSELECT



Marnie Hodge
LAMBPLAN



Kate Rummery
Sheep Genetics

**PROJECT
COORDINATOR**



Nicole Williams

**DATABASE
DEVELOPMENT**



Ermias Zerazion
MERINOSELECT



Stephen Field
LAMBPLAN



Adrian Forrest
Term Systems
Developer

SHEEP GENETICS

Building W41a
The Short Run
UNE ARMIDALE 2351

P: 02 8055 1818

E: info@sheepgenetics.org.au

www.sheepgenetics.org.au

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