

From Research to Industry indexes

The pathway of the MERINOSELECT indexes

Indexes are a useful ranking tool and assist in making balanced genetic progress on a range of traits for selection decisions. They are analysis specific and represent production systems across the industry.

In June 2023 Sheep Genetics released five new MERINOSELECT research indexes. This was followed by a period of collecting and reviewing industry feedback on the new indexes to help inform the transition pathway from research indexes to industry indexes for the MERINOSELECT analysis.

Based on the feedback, there were refinements made and updates to the research indexes. This document details the differences between the research and industry indexes. 21st of May 2024 the MERINOSELECT analysis will switch over to four standard indexes, Fine Wool (FW), Wool Production (WP), Sustainable Merino (SM) and Merino Lamb (ML).

The below figure is a summary of the evolution pathway for the MERINOSELECT indexes.

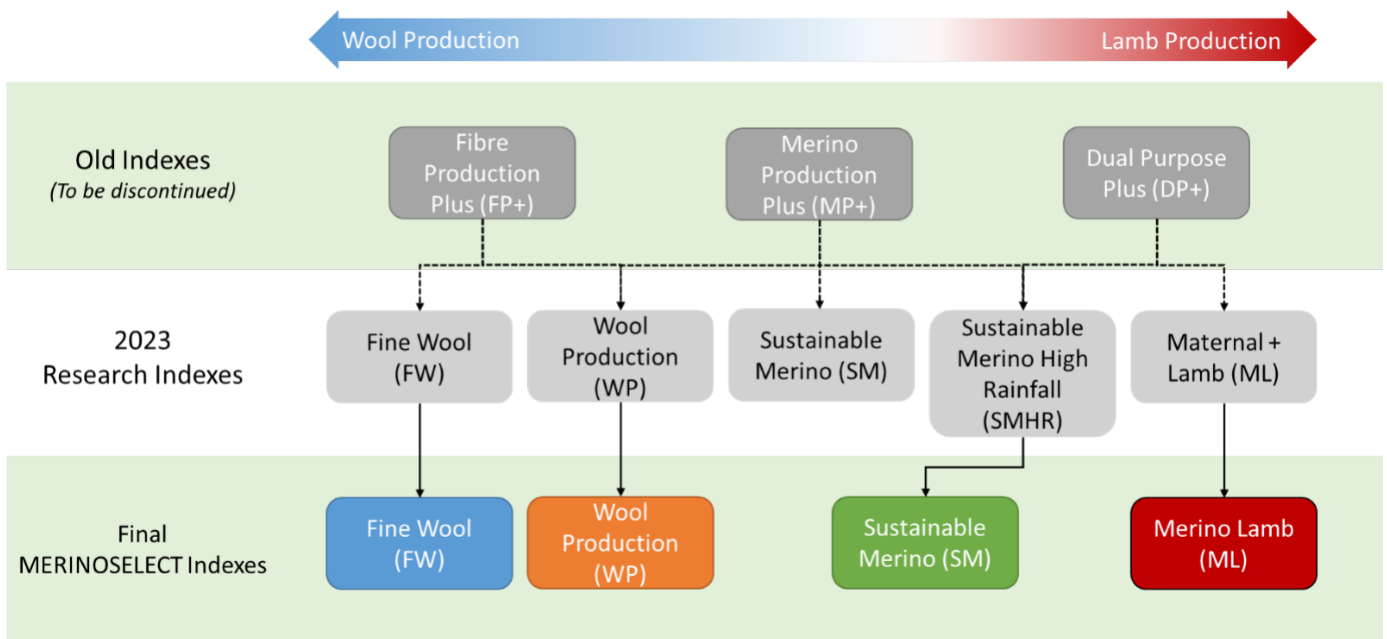


Figure 1: Evolution pathway for the MERINOSELECT indexes

Fine Wool (FW) index

The Fine Wool index is based on a production system where the majority of income is from the wool clip. Reducing the micron of the wool is a strong focus within this index. The production system sitting behind the model of the index is based on producing 15 to 17 micron wool from the breeding flock and followers, and a mixed age wether flock. Focusing on genetic improvement of fleece weight, fibre diameter, staple strength and reproduction, the wool to meat income ratio of the production system is 75:25 weighted towards wool. The index also emphasis on reduced wrinkle and worm egg count.

Work has been done to refine the research Fine Wool (FW) index, including a modified production system with a breeding ewe flock and associated wether flock of the same size (wethers kept to 6 years), leading to a greater emphasis on wool production, in particular in adult sheep. The final index was also adjusted to increase the emphasis on staple strength and fibre diameter CV, targeting a neutral response to selection in both traits. In comparison to the research index, the final Fine Wool (FW) index results in increased response in fleece weight, in particular for adult sheep, reduced response in growth and mature weight, maintaining fibre diameter CV, with less response for conception, litter size, and wrinkle.

Summary of production system

- Income ratio of wool to meat is 75:25
- Targeting finer wool in the 15 to 17 micron range, from breeding ewe and wether flocks
- Emphasis on reducing wrinkle and worm egg count

Refinements to Fine Wool

- Addition of an adult wether flock
- Increased staple strength emphasis to ensure a neutral response to selection
- Maintaining fibre diameter CV

Wool Production (WP) index

The Wool Production (WP) index is based on a production system where the majority of income is from the wool clip with a strong focus on wool production. The production system for the WP index index is based on a self-replacing wool production system producing 16 to 18-micron wool from the breeding flock and a mixed age wether flock. With a wool to meat income ratio of 71:29 for this production model, the index focuses on genetic improvement of fleece weight, fibre diameter, staple strength, and reproduction, along with negative emphasis on wrinkle.

The production system for the final Wool Production (WP) index was also modified to include an adult wether flock, with wethers kept to 6 years, again leading to a greater emphasis on adult wool traits. The micron premium was adjusted to more closely represent the former Merino Production Plus index, with the emphasis on both staple strength and fibre diameter CV adjusted to maintain neutral responses. In comparison to the research version, in the final Wool Production (WP) index we see greater response in increased fleece weight and reduced micron, in particular in adult age sheep, now maintaining staple strength, reduced response to growth, mature weight, litter size and wrinkle.

Summary of production system

- Income ratio of wool to meat is 71:29
- Targeting wool production in the 17 to 19 micron wool, from breeding ewe and wether flocks.
- Emphasis on reducing wrinkle

Refinements to Wool Production

- Addition of an adult wether flock
- Higher micron premium
- Emphasis on staple strength to maintain a neutral response
- Maintaining fibre diameter

Sustainable Merino (SM) index

Within the research indexes there were two indexes modelled from the same production system, Sustainable Merino and Sustainable Merino High Rainfall. After the consultation period it became evident only one version was required, and as a result, the Sustainable Merino High Rainfall will remain and rebranded as Sustainable Merino.

The Sustainable Merino (SM) index is based on a production system where the income derived is a balance of sheep meat and wool clip, retaining a substantial focus on improving the quantity and quality of the wool. Based on a self-replacing Merino flock producing 17 to 19 micron wool with lambs sold off-shears at a post weaning age. The wool to meat income ratio of the production model is 46:54, with emphasis to reduce wrinkle, dag, and worm egg count.

Small modifications to the research index occurred with the micron premium adjusted to reflect the former Merino Production Plus index, along with increased emphasis on staple strength and fibre diameter CV to avoid an unfavourable response. In addition, a greater penalty applied to increasing mature size (adult weight). Use of the Sustainable Merino (SM) index will lead to more favourable responses for fleece weight, fibre diameter, staple strength, mature size, reproduction, and sustainability traits including wrinkle, worm egg count, and dag score.

Summary of production system

- Income ratio of wool to meat is 46:54
- Sheep meat and wool quantity is of importance, 17 to 19 micron wool with wether lambs sold off shears at post weaning age stage

Refinements to Sustainable Merino

- Increased micron premium
- Increased emphasis on staple strength and fibre diameter CV
- Greater emphasis on limiting increasing mature size

Merino Lamb (ML) index

The Merino Lamb index is based on a production system where the producer is looking to take advantage of the wool production of the Merino in a self-replacing lamb production operation. A strong focus on producing lambs from the Merino ewe means that the production system favours profits from sheep meat, with a 31:69 wool to sheep meat ratio. The flock structure is based on joining ewes as ewe lambs, with older aged ewes joined to terminal sires to produce crossbred prime lambs. The system also focusses on maintaining intramuscular fat to meet an industry desire for improved eating quality.

In comparison to the research index the Merino Lamb production system has modified substantially, leading to changes to expected selection responses. In comparison to the research indexes responses in fibre diameter, staple strength, fibre diameter CV and eating quality are now on average neutral to slightly beneficial. An improved response in yearling conception is expected whilst increases in litter size have been reduced. Gains in growth and lean meat yield align with those expected from the Historic Dual Purpose plus index but the increase in mature size has been reduced.

Summary of production system

- Income ratio of wool to meat is 31:69
- Sheep meat is favoured while maintaining a good fleece. 18 to 20.5 micron wool where lambs are sold at a post weaning age stage as prime lambs.
- Older ewes are joined to a terminal sire.

Refinements to Merino Lamb

- Addition of a yearling joining to the model
- Emphasis on eating quality traits
- Increased micron premium
- Emphasis on fibre diameter CV

Summary

Based on the feedback and consultation during the research phase of the MERINOSELECT indexes, some changes and refinements were made. As of the 21st of May, MERINOSELECT analysis the four industry indexes of Fine Wool (FW), Wool Production (WP), Sustainable Merino (SM) and Merino Lamb (ML) will become available. These indexes are designed to support the Australian Sheep Industry in improving genetic gain for production, reproduction and welfare, benefiting the Australian sheep industry now and into the future.

A summary of the differences in where each production system is returning profit is provided in the figure below for each of the four indexes and their corresponding production system.

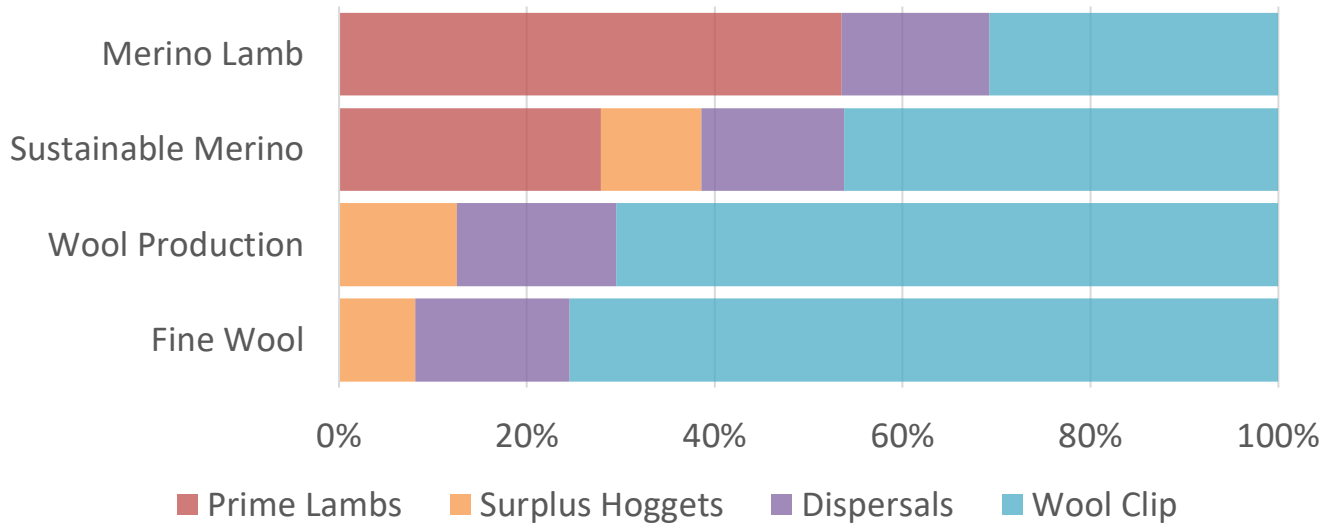


Figure 2: Distribution of the production system profits spread across sheep meat sales from prime lambs, surplus hoggets and adult sheep dispersals and from the total wool clip of the production system.



More information

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