Understanding Selection Advantage

Selection advantage is a tool to understand trait responses for indexes. It is calculated for a group of animals by ranking them on index then looking at the performance of the top 10% of that group compared to the average (i.e. how much better are the top 10% compared to average for each trait). These results reflect the potential trait responses using that index. Responses can differ across flocks, based on level of recording, data quality and selection pressure, therefore selection advantage acts as a guide to inform industry.

The selection advantages for the trait contributions in each index have been calculated for all current 2021 drop progeny for all MERINOSELECT member flocks.

The selection advantages shown below are expressed in relative terms to show the direction of response for each trait group. The relative selection advantage reflects the advantage achieved given the genetic variation available to select upon in each trait. This allows us to compare each of the traits on equal ground and combine them into trait groups for easy comparison between the indexes. For example, fleece weight traits of the different age stages, i.e., post weaning, hogget and adult can all be combined into a single fleece weight trait group for use in comparisons.

The figures below include selection advantages comparisons between the existing Dual Purpose Plus (DP+), Merino Production Plus (MP+) and Fibre Production Plus (FP+) to the new research MERINOSELECT indexes, Sustainable Merino (SM), Sustainable Merino High Rainfall (SMHR), Maternal and Lamb (ML), Fine Wool (FW) and Wool Production (WP). Each box plot shows the range in flock selection advantages for that trait group for each index. This can be compared to the existing FP+, MP+ and DP+ indexes to better understand trait response.

A green arrow indicates a more favourable response to selection advantage to that trait group within the new indexes compared to the existing, a red arrow indicates a reduced or unfavourable response.

For more information on all the MERINOSELECT indexes, please go to the Sheep Genetics website.
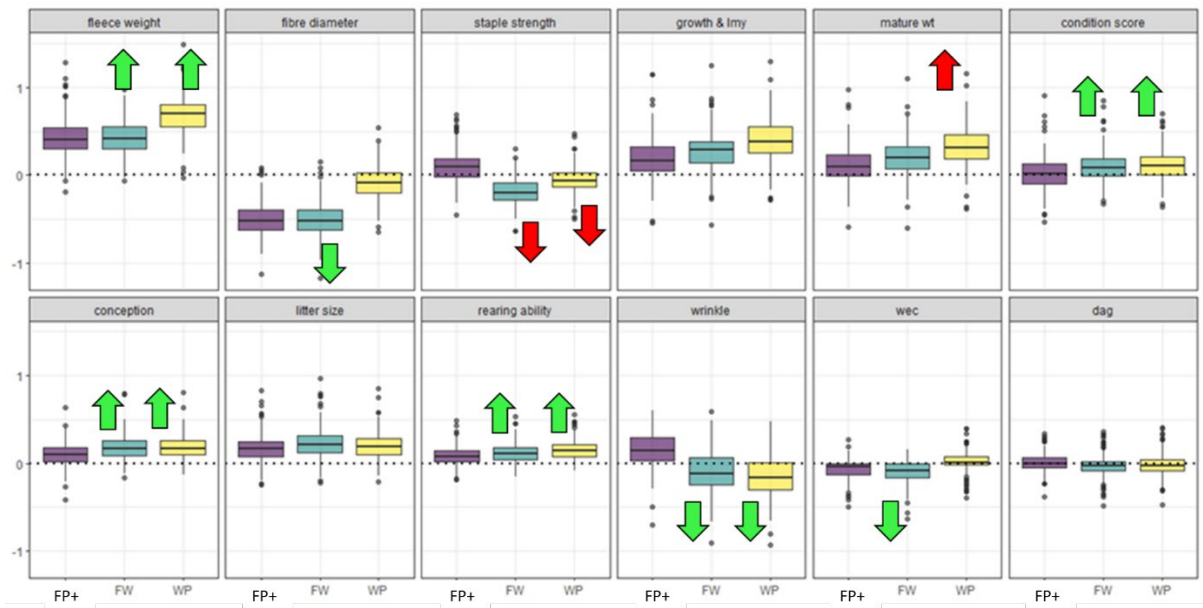
Figure 1: The range in relative selection advantages for each trait group realised from selection on FP+, FW, and WP indexes, across MERINOSELECT member flocks in their 2021 drop progeny.
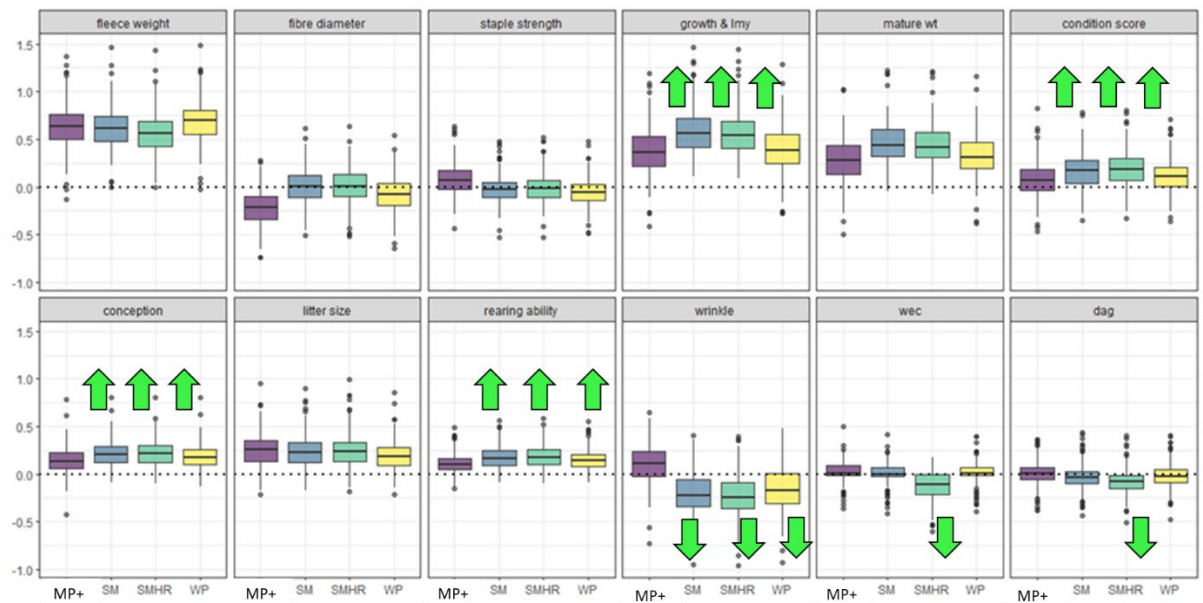

Figure 2: The range in relative selection advantages realised for each trait group from selection on MP+, WP, SM, and SMHR indexes, across MERINOSELECT member flocks in their 2021 drop progeny.
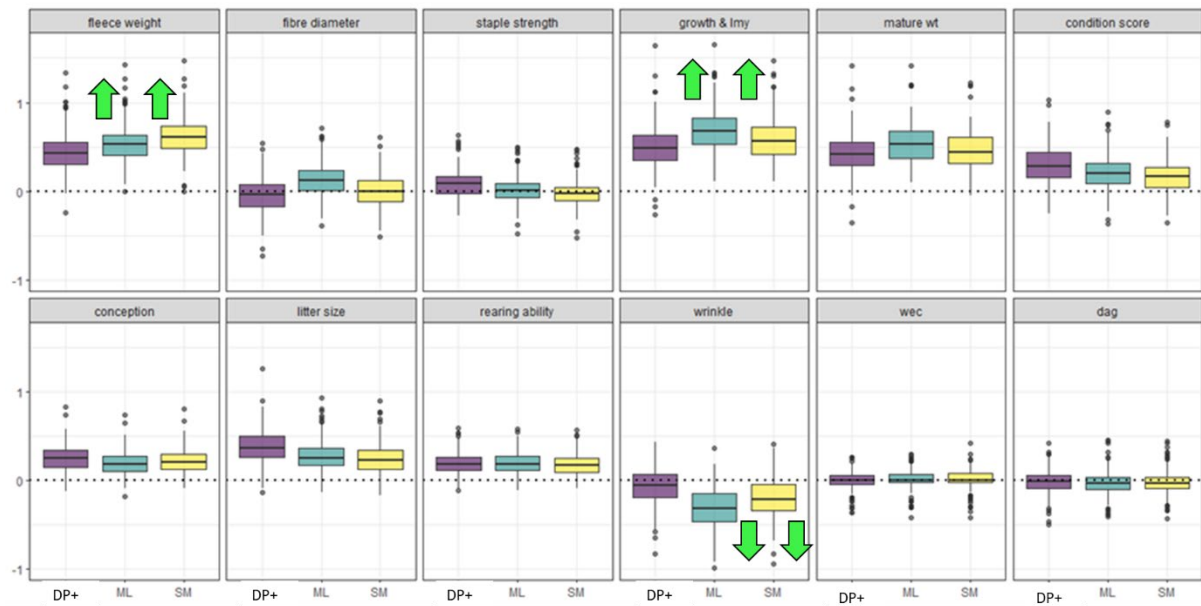
Figure 3: The range in relative selection advantages realised for each trait group from selection on DP+, ML, and SM indexes, across MERINOSELECT member flocks in their 2021 drop progeny.

Acknowledgement