Dohne Genetic Evaluation on the World Stage

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Who are Sheep Genetics?

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The purpose of Sheep Genetics?

- SG is the national genetic evaluation service for the Australian sheep industry.

- Our role is to provide tools for producers to breed the sheep that they want.

- Success measured by rate of genetic improvement by the number of animals.
Analysis Upgrades – Blended

Australian Sheep Breeding Values
- MerinoSelect ASBV
- LambPlan ASBV
  - Within flock BV Genetic Group

Genomic Breeding Value
  - Within flock BV No Genetic group

RBV
Analysis Upgrades – Single Step

Australian Sheep Breeding Values

Within flock BV
Genetic Group
Analysis Upgrades – Single Step

- In 2016 we make the transition from Eating Quality RBVs to ASBVs

- All animals will have breeding values for all traits ➔ reporting still subject to accuracy thresholds

- ASBVs for EQ traits now available for on more animals
Dohne Index

Percentage of Trait Economic Contribution

<table>
<thead>
<tr>
<th>Trait</th>
<th>Percentage</th>
<th>10 Year Genetic Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fleece weight</td>
<td>-30%</td>
<td>1.22 %</td>
</tr>
<tr>
<td>Fibre diameter</td>
<td>-15%</td>
<td>0.05 Micron</td>
</tr>
<tr>
<td>Staple strength</td>
<td>0%</td>
<td>-0.08 nkt</td>
</tr>
<tr>
<td>Post-weaning weight</td>
<td>0%</td>
<td>2.90 kg</td>
</tr>
<tr>
<td>Yearling weight</td>
<td>15%</td>
<td>3.13 kg</td>
</tr>
<tr>
<td>Eye muscle</td>
<td>30%</td>
<td>0.91 mm</td>
</tr>
<tr>
<td>Fat</td>
<td>45%</td>
<td>0.14 mm</td>
</tr>
<tr>
<td>Mature weight</td>
<td>60%</td>
<td>2.78 kg</td>
</tr>
<tr>
<td>NLW</td>
<td></td>
<td>1.54 %</td>
</tr>
</tbody>
</table>
Dohne Genetic Trends

Dohne Index

Dohne Genetic Trends

Muscle & Fat

- **Yfat**
- **Yemd**

Year: 2005 to 2014
Dohne Genetic Trends

Fleece

- Yfd
- Ycfw%
Dohne Genetic Trends

![Graph showing NLW% trends over the years 2005 to 2014. The graph indicates a decline from 2005 to 2008, a rise in 2009, a decrease in 2010, and a significant increase from 2013 onwards.](image-url)
RAMping up genetic gain

Project Aims

• Improve Breeding Program Effectiveness and Genetic gain:
  – Develop series of on farm reports
  – Identify potential barriers to genetic gain through benchmarks
  – Develop clear recommendations

• Develop training package that accredited Service Providers can use

• Reports available via Dashboard for SP and Breeder access

• Allow a more proactive approach
Breeders Equation

Selection intensity: Select only the very best animals
Selection accuracy: Pick the best ones more often
Generation Interval: Breed from them as soon as possible
Variation: Different enough to pick from
The graph shows the percentage of pedigrees across different average index percentiles. The y-axis represents the percentage of pedigrees, and the x-axis shows the average index percentile categories: 0-20%, 20-40%, 40-60%, 60-80%, and 80-100%. The data is color-coded: blue for full pedigrees, red for synthetic pedigrees, and green for pedigrees with no information.
Commercial Breeders

• Rams;
  – Which ASBVs & index match your breeding objective
  – Select rams with the best available ASBVs in your price range that are functional
  – Ram audit, annually review all rams in the sire team, are they good enough to still be there?
    – How long have you been keeping them?
Commercial Breeders

• Ewes;
  – How have you been selecting your replacement ewes?
    • Visual only/Visual and measurement
  – How could this be done with higher accuracy?
    • Records for weight and preg scan?
    • RAMPOWER?
    • Singles vs twins
  – Culled on age or performance?
Global Dohne Evaluation

• Useful if genetics are being, or can be, exchanged between countries
  – Can we identify genetic linkage?

• A global evaluation has the potential to identify more variation with higher accuracy
  – Potential for higher rates of gain

• Already several international flocks in the Sheep Genetics Dohne evaluation
Global Dohne Evaluation

- Direct international subscription through ABDA
- Submission through association/society
  - If alignment with ADBA
- Data exchange between Sheep Genetics and other service providers
  - E.g. Trans-Tasman data exchange with SIL for Maternal breeds
- Needs to be tested on a case-by-case basis
Key points

• Dohne rate of genetic progress is good
  – Driven by accuracy of selection

• Rate of gain could be improved by;
  – Higher selection efficiency, better use of BVs
  – Shorter generation interval

• Scope for more global collaboration