Genomic testing: An industry perspective

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CRV
Cooperative herd improvement organisation

• Genetics
• Management information and solutions
• Services and consultation
Genomic selection has drastically changed the dairy industry

However, now largely become the ‘status quo’

Farmers are steadily gaining trust in ‘genomics’ as daughters of young genomic sires are starting to produce

Still at the start of the genomic era

New developments are emerging!
HERD MANAGEMENT

- Market is moving from individual cow to herd management
- Rapid developments in technology + Market regulations → Precision Livestock Farming or ‘smart dairy farming’
- Optimal efficient management for return on investment
- Efficient breeding → Genomic Herd Management (GHM)
GENOMIC HERD MANAGEMENT

• Genomic testing: 65% reliability vs. 35% (Parent Average)
  ➢ Parentage verification
  ➢ Efficient young stock selection
  ➢ Improved and strategic mating decisions
  ➢ Strategic carrier matings (CVM, BY, CDH, A2, Polled, RF etc.)
Win – Win concept: Breeding data Plus

- Genotypes cows for free
- Large discount for young stock
- GEBVs
- Breeding advice

- Collects specific phenotypic data
- Participates in conformation scoring
- Property of genotypes to CRV
- Uses 75% CRV semen

CRV

Improve reliabilities
New traits
Genomic herd management
VALUE FOR CRV - R&D

- Improving genomic reliability. Current → 0.6-0.7
- 10,000 cow genotypes selected and added to subset of EuroGenomics reference population (20,000 bulls)
- 23 conformation traits + claw health ($h^2 = 0.11-0.53$)
- De-regression method for cows and bulls (Calus et al.)

- Reliability increased on average by 2%, max 8%
  - Stature: + 6%
  - Rump Angle: + 2%
  - Udder composite: + 8%
  - Body condition: + 1%
  - Total conformation: - 5%
VALUE FOR FARMER - GHM

• Now 236 herds, ± 67.500 female genotypes
• Valuable data to explore benefit genomic testing
• Case example:

- 1,133 calves, PA and GEBV for milk yield. How do they re-rank?

<table>
<thead>
<tr>
<th></th>
<th>PA</th>
<th>GEBV</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-20%</td>
<td>227</td>
<td>227</td>
</tr>
<tr>
<td>20-40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-60%</td>
<td>13%</td>
<td>10%</td>
</tr>
<tr>
<td>60-80%</td>
<td>44%</td>
<td></td>
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<tr>
<td>80-100%</td>
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- 44% PA, 13% GEBV, 10% GEBV
VALUE FOR FARMER - GHM

- 1 (representative) farm, 82 first lactation cows.

- Selection/culling based on GEBV instead of EBV:

- Gain in average GEBV of kept top 75%:

  + 124kg
VALUE FOR FARMER - GHM

- Selection/culling based on GEBV instead of EBV:
- Top 75%, aver. 305-MY:
  +151 kg p.c.p.lact
  X 3.5 = +528 kg p.c.p.life
THE ROAD AHEAD

- 100,000 cow genotypes
- Reliability + 10%
- Collection new phenotypes
- Development new traits
- Support farmer in GHM!!

- Getting used to routine genotyping
- Gain trust in genomic data
- Larger role for breeding
- Decisions based on GEBV!
- Monitor genetic level herd
1. Genomics goes beyond bulls

2. Collaboration and communication are key

3. Genomic Herd Management is the future
THANK YOU FOR YOUR ATTENTION

CRV Vision:

In 2020, 50% of Dutch farmers routinely genotypes every newborn calf.