

Improving calving ease and development of gestation length Breeding Values

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Why calving ease and gestation length are important?

- **Calving difficult**
 - Animal welfare
 - Effect on herd profit
 - Calf losses,
 - Increased labour and veterinary cost
 - Reduced subsequent fertility and survival of cow
- **Gestation length - animal welfare**
 - Manipulating gestation length can:
 - help to reduce the need for calving induction
 - minimise calving difficulty
 - may help to reduce culling



Traits observed at calving

Calving ease, gestation length, fate of calf

- trait of the calf born – direct effect
 - Breeding value for the sire of the calf
- trait of the cow calving - maternal effect
 - Breeding value for the sire of the cow



Calving ease & Gestation length –current situation

- **Currently there is genetic evaluation for one aspect of calving ease**
 - Identify bulls whose progeny are born easily
 - **Genomic breeding value has low reliability**
 - Not available
- **Gestation length ABV is not available**
 - Identifying bulls with short gestation length:
 - Then be used to reduce the need for calving induction

Gestation length ABV

- **Gestation length breeding value**
 - Not available
 - **Given the data (~40,000/year) and the heritability (40%)**
 - **Direct gestation length ABV for bulls can be produced with reasonable reliability**
 - **Bulls with 10 progeny can get ABV with reliability of 53%**
 - **Also we can produce genomic BV**
 - **so overseas bulls where GL is not evaluated can get genomic BVs**

Calving ease ABV

- **Identify bulls whose progeny are born easily for use on heifers**
- **Low heritability**
 - 0.09 in heifers and ~ 0.03 in cows
- **Current ABVs have low reliability**
 - Average heritability of 0.06 – bull should have 75 progeny to get ABV with reliability of 53%
 - ABV(g) with acceptable reliability is problematic

Strategies to improve reliability of calving ease ABV

Research

- Better models and joint analyses with gestation length – 3% increase in reliability
- Accounting for maternal genetic effect
- Joint analyses with other calving traits which are more heritable

Quantity and quality of data

- **For every 10 cow with milk yield data only 2 have calving data**
- **the more data the more reliability BV**

Conclusion

DairyBio and DataGene are planning to produce

- **New Direct ABV for gestation length**
- **Improved direct ABV for calving ease**

Both require more data – you can help!

What are your opinions on detailed ABVs for calving traits?

- **Do we need maternal BV for gestation length, calving ease?**
- **Do we need ABV for stillbirth? Direct or maternal?**

Acknowledgements

- Funding by DairyBio - Department of Economic Development, Jobs, Transport and Resources
- DataGene for Data
- Dr Phil Bowman for extraction of data
- Drs Jennie Pryce and Gert Nieuwhof for their support