

Calving Ease ABV for Holsteins

Technote 24

HIGHLIGHTS

- Reducing the number of difficult calvings reduces calf mortalities and improves cow health and welfare.
- The Calving Ease ABV is an indicator of how easily a bull's progeny will be born.
- From April 2020, the model for the Calving Ease ABV has been updated to include genomics with the following benefits:
 - Almost all Holstein bulls (including young genomic bulls) now receive a Calving Ease ABV (previously only proven bulls)
 - Improved reliability.
- To reduce the risk of difficult calving from this mating, choose bulls with a Calving Ease ABV of at least 103.

The Calving Ease ABV allows farmers to improve the ease with which calves are born by selecting bulls whose progeny are likely to be born easily. From April 2020, almost all Holstein bulls, including young bulls receive a Calving Ease ABV.

Calving ease

Calving difficulty affects animal health and welfare and increases herd costs. Difficult calvings involve more labour and veterinary costs, higher calf mortality and reduce a cow's future fertility and survival.

An Australian study showed that calves from difficult births have slightly poorer fertility and fitness later in life, compared with calves that were born without difficulty (Haile-Mariam & Pryce, 2017). Although their milk yield was not significantly different, calves from difficult births had:

- Later first calving
- Longer calving interval
- Lower survival from first to second lactation.

The risks of calving difficulty can be reduced by good management, such as rearing well-grown heifers. Selection and breeding strategies can also reduce the incidence of calving difficulty in both the short and long term.

Breeding for calving ease

The Calving Ease ABV is a trait of the sire of the calf, meaning it reflects the ease by which his calves are born. This is not a measure of how easily his daughters will calve. This means a bull's Calving Ease ABV is most relevant for the calving outcome from a specific mating (rather than long term genetic improvement of his daughters' calving ease).

The Calving Ease ABV is expressed as a percentage of normal or easier calvings in mature cows, more or less than an average of 100.

The higher the number, the easier the calving. The average is 100. Bulls in the top 10% for calving ease have an ABV of 103 or more.

To reduce the risk of difficult calvings, choose bulls with a Calving Ease ABV of at least 103. If breeding replacements, ensure the bull is also a Good Bull (high BPI).

How is Calving Ease ABV calculated?

DataGene uses farmers' scores as well as genomic and pedigree analysis to produce the Calving Ease ABV.

The updated model, used from April 2020, includes genomics, plus information from reports from farmers such as calving ease and calf size scores.

The calving ease score is based on farmer assessment of the level of difficulty experienced with the birth of the progeny of the bull. Farmers score calving difficulty using a range from No Difficulty to High Difficulty to reflect the degree of assistance or difficulty of the calving. Farmers also score the size of the calf from tiny to huge.

Updated Calving Ease ABV (2020)

The updated Calving Ease ABV uses a new multi-trait model that incorporates multiple sources of information (including genomics) and is more reliable.

In the past Calving Ease ABVs were only available for older bulls that had records from their calves being born. Now young bulls also have a genomic ABV for calving ease. This dramatically increases

the choice available to farmers, as more than half of the bulls in the Good Bulls Guide are young genomic sires.

Reliability and Validation

Reliability is a measure of confidence in ABVs. The higher the reliability, the closer a bull is to his true breeding value.

The inclusion of genomics has improved the reliability of the updated Calving Ease ABV by 14%. Young bulls with no Australian daughters have an average Calving Ease ABV of about 60%. This is closer to 90% for a bull with 100 observations.

In a validation study, a group of 326 young genomic Holstein bulls were evaluated using the updated Calving Ease ABV model. These bulls had no progeny at the beginning of the study. The top 5% were compared to the bottom 5% of the group.

It's important to note that all categories of bulls had some progeny that were born with difficulty. However, there were 6.2% more difficult calvings observed in the bottom group, compared to the top.

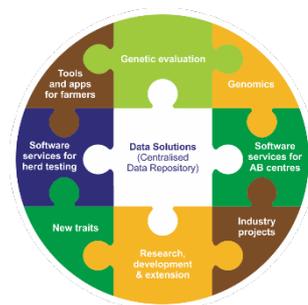
These results confirm that the updated Calving Ease ABV can help to identify the worst and the best bulls for calving difficulty, even when they are young genomic bulls.

Table 1. Comparison of the proportion of progeny born with difficulty in young genomic Holstein bulls grouped by Calving Ease ABV.

Validation bull category	Reliability %	Proportion of progeny with any difficulty
All	49	7.9%
Best 5% based on new Calving Ease ABV	47	5.6%
Worst 5% based on new Calving Ease ABV	58	11.8%

Bull rankings

The Calving Ease ABV is not included in the Balanced Performance Index or other Australian indices so there will be no impact on bull rankings with a change to the new model.



About DataGene

DataGene is an independent and industry-owned organisation responsible for driving genetic gain and herd improvement in the Australian dairy industry. DataGene performs pre-competitive herd improvement functions such as genetic evaluation, herd testing and herd improvement software development and data systems. DataGene is a Dairy Australia and industry collaboration.

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Other breeds

The Calving Ease ABV is only published for Holsteins. The Jersey breed has significantly fewer calving ease issues. There is not enough data available to calculate calving ease for other breeds.

Summary

The updated Calving Ease ABV is more reliable and available for almost all Holstein bulls – including young genomic bulls.

To reduce the risk of calving difficulties, select bulls from with a Calving Ease ABV above 103. If breeding replacements from this joining, ensure the bull is also a Good Bull (high BPI).



Acknowledgement

The improvements to Calving Ease evaluations are the result of DairyBio research. DairyBio is a joint initiative between Agriculture Victoria, Dairy Australia and the Gardiner Dairy Foundation. We also thank farmers and software providers who supply data used in genetic evaluations.

Scientific papers

Haile-Mariam, M. & J.E Pryce 2018. Relationship between calf size at birth with its own and its dam's performance in Holstein cattle , *Proceedings of the World Congress on Genetics Applied to Livestock Production*, 247
https://www.researchgate.net/publication/323255810_Relationship_between_calf_size_at_birth_with_its_own_and_its_dam's_performance_in_Holstein_cattle

Haile-Mariam, M. & J.E Pryce 2017. Does experiencing birth difficulty influence performance as an adult (later life) in Holstein cattle? 22nd AAABG Conference, At Townsville, Queensland, Australia, Volume: 22
https://www.researchgate.net/publication/318586090_does_experiencing_birth_difficulty_influence_performance_as_an_adult_later_life_in_holstein_cattle

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