

Rear Teat Placement ABV

Technote 12

HIGHLIGHTS

- Farmers wanting to improve Rear Teat Placement can now include this trait in their breeding objective
- To narrow the distance between rear teats, select for bulls from the Good Bulls Guide with a Rear Teat Placement ABV more than 100
- To widen the distance between rear teats, select for bulls from the Good Bulls Guide with a Rear Teat Placement ABV less than 100.

Introducing rear teat placement

In some cows, applying a cluster during milking is difficult because of close or crossed rear teats. In recent years, breed societies have scored the rear teat placement of heifers during classification. This data has been used to develop an Australian Breeding Value (ABV) for Rear Teat Placement that will allow farmers to breed for this trait.

Data for rear teat placement is collected through the linear type evaluations of first lactation females. On a scale of 1-9, breed society classifiers assess and record the position of the rear teats in relation to the centre of the quarter as illustrated in Figure 1.

An analysis of 7,060 Holstein and 1,657 Jersey cows scored in 2010/11 found a phenotypic mean score is 7.1 in Holstein and 6.5 in Jersey, indicating that both breeds tend to be closer to the crossing end of the scale.

How is it expressed?

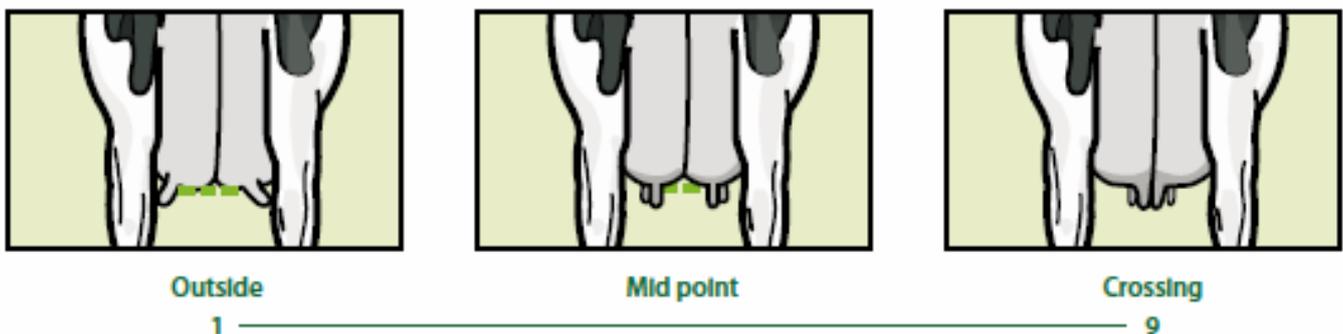
Using the data collected about a bull's daughters, information from the bull's pedigree and genotype, ADHIS calculates and reports the ABV.

Rear Teat Placement ABV is standardised with an average of 100 and standard deviation of 5. Average represents the modern dairy cow. Each year, ADHIS updates the average (base) to ensure it reflects the current milking population. This is set at 100 for non-production traits, such as rear teat placement.

Rear teat placement is an example of a trait where neither extreme is desirable. Therefore, the direction of expression can be tricky. The Rear Teat Placement ABV is expressed:

1. In the same direction in which the linear trait is measured (higher is closer).
2. In the same direction as front teat placement (more than 100 is closer).
3. In the same direction as many foreign countries currently express the same trait (more than 100 is closer).

Figure 1: Classification of the position of the rear teats in relation to the centre of the quarter.



How can I use it in my breeding program?

There is a range in rear teat placement, as demonstrated in Table 1, meaning farmers will be able to select for closer or wider rear teats.

To widen the distance between rear teats, select bulls from the Good Bulls Guide with an ABV less than 100.

An ABV of 95 means 1 standard deviation below average (wider rear teats). About 34% of bulls will have an ABV between 95 and 100 as illustrated in Figure 2.

Heritability

Heritability is an estimate of the level of genetic control for a trait. As such, genetic gain is more rapid in high heritability traits compared to low heritability traits. The heritability of Rear Teat Placement is 0.25, meaning that it is moderately heritable and the pace at which changes can be made is similar to traits such as fore and rear udder attachments.

Correlations

In dairy cattle breeding, most traits have a relationship with each other. For example, there is a positive relationship between protein kilograms and milk litres. More milk generally means more protein.

These relationships are known as correlations and are reported in a range between -1 to +1. In the case of rear teat placement, the genetic correlation between rear teat placement and front teat placement is strongly positive at 0.71. This means that as you breed for closer front teats there is a strong tendency to have closer rear teats, but this is not always the case, as such the Rear Teat Placement ABV will provide direct information to farmers about this trait.

Correlations between rear teat placement and other udder traits are shown in Table 2.

	Genetic correlation	Description of the relationship
Front Teat Placement	0.71	Strongly positive
Centre Ligament	0.81	Strongly positive
Mammary System	0.61	Strongly positive
Udder Depth	0.07	Very little relationship

Farmers wanting to improve Rear Teat Placement can now include this trait in their breeding objective

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For more information

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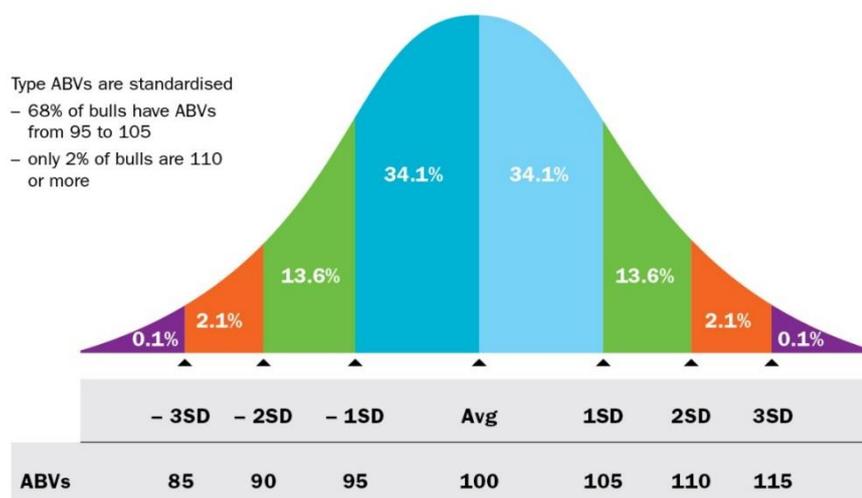


Figure 2: Rear Teat Placement ABV of 95 means 1 standard deviation wider placement than average