

## Key messages

- › Provide your clients with the best advice by using ABVs accurately.
- › Australian Breeding Values (ABVs and ABV(i)'s) are a prediction of the genetic value of an animal. They will not indicate an exact outcome.
- › ABVs are best used to compare animals against each other.

Farmers look to their herd improvement service providers as a key source of information. ABVs are a valuable tool you can use to support your clients as they make their bull selections. As with any tool, it is important to use ABVs correctly. This Technote is a good reminder of how ABVs are best utilised to achieve genetic progress with your clients.

## Using ABVs to compare bulls

ABVs are a prediction of the genetic value of an animal relative to the genetic average. They are best used to compare animals to each other or compare an animal to the average. For example,

- › a bull with a Cell Count ABV of 103 is 5% superior to a bull with a Cell Count ABV of 98.

If the farmer's breeding objective includes improving resistance to mastitis (lowering cell count), farmers are encouraged to select a team of bulls that are more than 100 for Cell Count ABV. To be effective, this should be repeated over a number of years.

## Comparing genetic merit with performance outcomes

ABVs are not an absolute measure of what a cow will produce or what she will look like. Rather ABVs are expressed relative to each other using a base point (average). The average acts as the reference point to which animals can be compared.

As an example, let's use a bull with a Milking Speed ABV of 105. The figure '105' is of no value unless it is compared to the Milking Speed ABV of another bull or to the average of 100.

- › Milking Speed ABV of 105 means that this bull is 5% better than average for milking speed compared to the average of 100.

Remember that how well an animal performs (its phenotype) is a combination of its genetics and the environment within which it was managed. ABVs predict the genetic component. By only comparing cows within the same herd, age group and stage of lactation (known as the herd/year/season effect), ABVs estimate the differences in performance due to genetic merit, rather than management or environmental effects.

To ensure you give good advice to your clients, use ABVs to compare bulls against each other instead of using them to predict performance outcomes.

## Defining the average

Average is the modern dairy cow. ADHIS analysed the national milking population to determine the group of cows which represents the average of the current milking population in Australia. The average will be updated annually.

The average is set at 0 for production traits and 100 for non-production traits.

## What is 'ideal'?

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ABVs compare bulls or cows to the average within their breed. ABVs do not indicate what is 'ideal'. Each farmer will have his/her own description of what is 'ideal' for their herd. For example, some farmers may want their cows to be of smaller stature while others will prefer taller cows. If smaller cows are desirable, bulls with a stature ABV less than 100 should be selected.

In a second example, there is not a magic number that a bull must attain to be labelled a 'calving ease' bull. ABVs are only useful when comparing bulls against each other or against the average. A Calving Ease ABV of 104 simply means that the bull is 4% superior for calving ease than a bull with an ABV of 100. It does not mean that all calvings will be easy.

## Myth busters

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ABVs are a scientific tool that assists farmers in making breeding decisions. They are also often used to promote products. The following are some examples where ABVs could be interpreted more accurately to produce more useful advice for farmers.

This bull looks like he will be useful in my client's bull team but I can't use him because he has an ABV of 100 for overall type.

**false**

An ABV of 100 means that the bull is average for overall type within a breed. In the same way, a cow with a PI of 100 is considered average within a herd. No better, no worse... just average. If the client's breeding objective includes overall type, select a team of bulls which are over 100 or if the choice has come down to a couple of bulls, select the bull with the highest overall type ABV. If the breeding objective does not include overall type, focus on finding bulls that are superior for the traits of interest.

An ABV of 1 in the old scale is now 110 in the new system of expression.

**false**

The new expression of non-production ABVs is a percentage more or less than the average of 100. This method of expression is quite different to the previous method. Therefore, it is impossible to directly compare non-production ABVs produced before and after April 2008. Focus on comparing bulls against each other.

My client's herd is better than average, so I can't use ABVs.

**false**

All herds can improve their genetic make-up. ABVs are equally useful for high genetic merit herds as well as those that at early stages of development. Farmers with high genetic merit herds still need to identify the best bulls available to use in their herd. To decide between two bulls, select the bull with the greater ABV for the traits of interest.

This bull is better than his proof indicates as most of his daughters were in an area affected by drought last year.

**false**

By comparing animals in the same herd, age group and stage of lactation (herd/year/season effect), environmental variations are accounted for when calculating ABVs. ABVs predict the genetic merit of an animal which does not change due to a poor season. Although the actual performance of the animals may have been negatively impacted by the season, the genetic merit did not change. The ABVs help us separate the difference between genetics and actual performance.

## Summary

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Good advice to farmers depends on the accurate use of ABVs. By keeping in mind the relative nature of ABVs and the differences between genetic merit and performance outcomes, we can improve our information service to clients.