

# Understanding EBV accuracy

*Many members have been making use of Breedplan EBVs in their breeding programmes, but time needs to be taken to consider the accuracies of these figures. Dr Brad Crook at ABRI explains more.*

Performance recording has been embraced by some breeders who are using the information produced to shape their breeding decisions and strategy, uncovering traits that would otherwise not be known. The associated accuracy figures are, however, sometimes less understood.

Dr Brad Crook, genetics research and development manager at ABRI, explains that the calculation of estimated breeding values (EBVs) makes use of an animal's own performance, the performance of known relatives, the heritability of each trait and the relationship between the different traits. All these different sources of information are used in EBV calculations.

He adds: "EBVs are estimates of breeding value – and estimates can change as more information is used in their calculation. The accuracy reported for an EBV is an important piece of information to be considered, as it gives an indication of the volume of information used in calculating the EBV as well as indicating the likelihood of the EBV changing as more information is added."

A range of factors influence EBV accuracy including trait heritability, the accuracy of the parents' figures, amount and effectiveness of available performance information and the genetic correlation with other measured traits.

"At higher accuracy, the likelihood of an EBV changing is reduced as more information is analysed for the animal, its progeny and its relatives," explains Brad.



"High trait heritability can also lead to a high EBV accuracy. This explains why accuracies are usually higher for EBVs related to weight traits than days to calving, because the heritability of weight traits is often higher than for female fertility.

"An animal's EBV accuracy can also be improved if its parents carry high accuracies as more information will be known about the relatives of that animal," he adds.

The accuracy of a specific trait can be improved by recording performance information on the individual animals and also via progeny records. However, accuracies of over 90 per cent are usually only seen when the animal has a sufficiently large number of progeny recorded for the trait. This also depends on contemporary group size, whereby animals in larger contemporary groups will usually also have higher EBV accuracies than those in very small groups – all else being the same.

Herds which record a range of traits will have higher accuracies than those recording a limited number as Breedplan uses genetic correlations in its calculations. For example, recording 200 day weights will also add information to the 400 day weight EBV. However, if accuracies seem low even though performance records are being collected and submitted for Breedplan analysis, it might be reflecting some limitations in the structure of the data (e.g. herd size, contemporary group size, recording practices).

If a pedigree producer prefers to minimise risk through the use of animals with higher accuracies, a higher level of performance recording should be carried out across a range of traits and contemporary group size should be maximised.

Brad says: "Regardless of their accuracy, EBVs are still the best estimate of an animal's genetic potential and use should be made of them in selection decisions. In the case where animals have similar EBVs, the animal with the higher accuracy should be favoured as the results are more predictable.

"It's important to remember EBVs are estimates of breeding value, rather than measures. So looking at accuracy is critical - the higher the accuracy, the more likely the EBV is to reflect the true breeding value of the animal for the trait of interest," concludes Brad.

## Interpreting accuracy

**Less than 50 per cent accuracy** – EBVs in this range will have been calculated based on very little information. It means these EBVs could change significantly if additional animal performance data becomes available

**50-74 per cent accuracy** – medium accuracy and will have been calculated using the animal's own performance and some limited pedigree information

**75-90 per cent accuracy** – EBVs are of medium-high accuracy and will have been calculated based on the animal's own performance coupled with the performance for a small number of the animal's progeny

**More than 90 per cent** - high accuracy and it is unlikely that EBVs will change considerably with the addition of further progeny data