

Recording Birth Weight of Australian Hereford Calves

Birth weight is an important economic trait in beef production systems as lower birth weights are associated with reduced incidence of calving difficulty, but unfavourably correlated with growth rate. Careful recording birth weight of calves allows Hereford breeders to obtain EBVs for Birth Weight, which in turn helps in breeding to minimise calving difficulties while maintaining or increasing growth rate. When submitting birth weights to Hereford BREEDPLAN, it is important to note that birth weights will only be accepted if the calf has been weighed using scales. Visual estimates of birth weight and measurements of birth weight using coronet band tapes are not currently accepted by Hereford BREEDPLAN.

This policy of not accepting use of estimates of birth weight from coronet band scores has been reviewed because of renewed interest in recent years in the value of using coronet band tapes to measure birth weight of calves. This interest reflects a number of reasons, including:

- The expense of purchasing scales to weigh animals
- The difficulty in transporting scales around the paddock
- Scales can be prone to rust
- Scales need to be checked regularly to ensure they are accurate
- Calves can be difficult to manoeuvre and heavy to lift

A recent study conducted by the Animal Genetics and Breeding Unit (AGBU)* at the University of New England, Armidale, aimed to assess whether coronet band measurements are a valid method for measuring birth weight in Hereford calves. Records on 950 Hereford calves from four herds, born between March 2013 and June 2014, were used in the study. Each calf had a coronet band circumference measured using the Calfscale® tape, and had also been weighed at birth using scales. All measurements were taken within 12 hours of the calf being born. Twin calves were removed from the dataset.

The results of the AGBU study indicate that the Calfscale® tape does not provide an accurate estimate of birth weight in Hereford calves. Instead, this study found that the Calfscale® tape tends to overestimate the birth weight of the lighter Hereford calves, and underestimate the birth weight of the heavier Hereford calves. The study also found that there was a large spread of actual birth weight surrounding a single coronet band measurement (Table 1). This was seen across both male and female calves, across most coronet band measurements (Table 1). For example, a coronet band measurement of 17.5 cm was recorded for male calves that actually weighed between 29 kg and 44 kg, and for female calves which actually weighed between 28 kg and 45 kg (Table 1).

Table 1. The predicted weight (kg) and actual weight range (kg) for male and female Hereford calves for each coronet band measurement (cm).

Coronet Band Measurement (cm)	Male Calves		Female Calves	
	Predicted Weight (kg)	Actual Weight Range (kg)	Predicted Weight (kg)	Actual Weight Range (kg)
16	27 kg	N/A	28 kg	30 - 38 kg
16.5	29 kg	32 - 41 kg	30 kg	28 - 41 kg

17	32 kg	31 - 39 kg	33 kg	28 - 42 kg
17.5	35 kg	29 - 44 kg	35 kg	28 - 45 kg
18	38 kg	33 - 46 kg	38 kg	32 - 48 kg
18.5	40 kg	33 - 50 kg	40 kg	32 - 50 kg
19	43 kg	39 - 52 kg	43 kg	37 - 48 kg
19.5	46 kg	44 - 54 kg	45 kg	41 - 49 kg

The AGBU study also estimated the genetic correlation between actual birth weight and the predicted birth weight from the Calfscale® tape (Table 2). The genetic correlation between actual birth weight and predicted birth weight was lower in female Hereford calves than in male Hereford calves (Table 2). The reason for this is unknown, and AGBU researchers plan to investigate this further. When the male and female Hereford calves were analysed together, a genetic correlation of 0.69 (\pm 0.12) was observed (Table 2). This indicates that birth weight measured from a scale and birth weight predicted from the coronet band Calfscale® tape are not the same trait, although there are some genes which underpin the two traits.

Table 2. The genetic correlations between actual birth weight (scale) and predicted birth weight (coronet band tape) for male Hereford calves, female Hereford calves, and both sexes combined.

Sex of Calves	Genetic Correlation Between Actual Birth Weight and Predicted Birth Weight
Male	0.73 (\pm 0.19)
Female	0.55 (\pm 0.21)
Combined	0.69 (\pm 0.12)

The AGBU study also surveyed the participating beef producers to get their views on the ease of use of the Calfscale® tape. One participant responded that the Calfscale® tape was still time-consuming to use, and that he was not confident in how accurately he had collected the coronet band measure. A second participant responded saying that the Calfscale® tape was easy to use and seemed accurate, but he had the calves restrained in a cradle when taking their coronet band measurements. As these responses show, the use of the Calfscale® tape does not eliminate the handling, restraint and lifting of calves by beef producers collecting these measurements.

The AGBU study into the use of the Calfscale® tape has shown that the Calfscale® tape does not predict actual birth weight with sufficient accuracy for use in genetic evaluation for Australian Hereford cattle. Based on the results of this investigation, Australian Hereford breeders wishing to record and submit birth weight measurements on their calves to BREEDPLAN must submit birth weights taken using scales. For further information regarding this study, please contact the Hereford Technical Officer, Catriona Millen on (02) 6773 3357 or 0409 102 644. Catriona can also be contacted via email at catriona@sbts.une.edu.au.

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