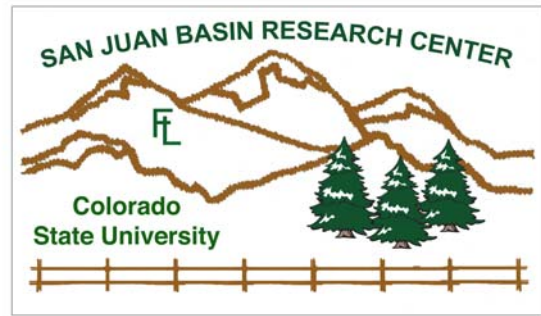


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The Comparison of Actual Birth Weights and Hoof Tape Measurements

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Reporting accurate birth weights is important for producers to insure accurate Expected Progeny Differences (EPDs) and to evaluate calving ease as it relates to birth weight. The Calfscale® tape was developed by recording hoof measurements and comparing them to actual birth weights. Hoof circumference measurements taken at the same intervals only change 1/10 centimeter from a wet hoof to a dry hoof. The objective of this project is to compare actual birth weights to those recorded using the Calfscale® birth tape.

Cattle Management. Data were collected on calves born at the San Juan Basin Research Center (SJBRC) in Hesperus, CO. Calving occurred from mid February through mid-April. Both birth weight and the birth tape estimate were taken within the first 24 hours of life while the calf was being tagged and vaccinated. Data was collected on 252 calves during the Spring of 2001.

Traits analyzed. Actual birth weight was recorded using a hand-held hanging scale. The hoof tape estimated weight was recorded using a Calfscale® vinyl tape that was placed around the coronary band of the front hoof. The estimated birth weight in pounds was read from the tape scale and recorded for each calf. The difference between birth weight and the birth tape measure was calculated from these measurements.

Statistical Analysis. The General Linear Models analysis of variances procedure of SAS (1996) was used in the analysis of the independent variables of breed, age of dam (AOD) and sex of calf. Age of dam was grouped into 2, 3, 4, 5-9 and 10+. Breed groups were designated as Hereford/Polled Hereford (H/PH), System 1 (Sys1) and crossbreds (XB). Least squares means and a partial correlation for actual birth weight (BW) and the hoof tape prediction (TAPE) were taken from this initial analysis.

After reviewing the distribution of the measures as shown in Figure 1, a different relationship was observed between birth weight and birth tape as birth weights increased. To explore this potential relationship, birth weights were divided into three equal groups. Weights below 78 were designated as low, weights between 78 and 93 were average and those above 93 were high. A secondary analysis including breed, AOD, sex and birth weight group (Low, Ave, High) was performed.

RESULTS AND IMPLICATIONS

The Least Squares Means of the weights for each of the treatment groups from the initial analyses are presented in Table 1. Breed, sex and AOD were significant ($p < .01$) for both birth weight and the birth tape weight. The crossbred calves were heaviest at birth while the H/PH calves were the lightest. As expected, bull calves weighed more than heifer calves. Additionally, the AOD means confirmed that calves from two-

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year old dams were the lightest as a result of our bull selection. The partial correlation between birth weight and birth tape was .82 revealing a strong relationship between the two weights.

Least Square Means from the second analysis are presented in Table 2. In these analyses, only sex and birth weight group significantly affected birth weight and birth tape measurements. The means for the birth weight groups showed that at low birth weights, the birth tape over estimates the weight while at the higher birth weights, the tape underestimates the weight.

LITERATURE CITED

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Table 1. Least Squares Means for Birth Weight and Birth Tape by Breed, Sex and Age of Dam (AOD)

	BW lbs	TAPE Lbs
Overall Mean	86	87.9
Breed	**	**
H/PH	80.4	83.0
Sys1	86.1	87.8
XB	87.9	88.6
Sex	**	**
1	81.2	82.2
2	88.4	90.6
AOD	**	**
2	80.2	82.7
3	81.9	84.0
4	88.4	87.6
5 to 9	87.6	90.1
10 +	85.8	87.7

** P < .01
* P < .05

Table 2. Least Squares Means for Birth Weight and Birth Tape by Breed, Sex, Age of Dam (AOD) and BW Group

	BW lbs	TAPE lbs	Diff lbs
Overall Mean	86	87.9	1.87
Breed	*		
H/PH	83.9	85.5	1.57
Sys1	85.1	87.2	2.1
XB	86.9	87.9	1.0
Sex	**	**	**
1	84.3	84.5	0.2
2	86.4	89.3	2.9
AOD			
2	85.1	86.1	1
3	85.3	86.4	1.1
4	85.4	85.6	0.2
5 to 9	85.9	89.1	3.2
10 +	84.9	87.2	2.3
BW Group	**	**	**
Low	70.2	76.9	6.7
Medium	84.1	85.7	1.6
High	101.7	98.2	-3.5

** P < .01
* P < .05

