

CALF PERFORMANCE, BODY WEIGHT AND CONDITION SCORE FOR FIRST CALF HEIFERS Sired BY HIGH AND LOW MILK EPD Sires

David S. Buchanan¹, Gary K. Ziche² and Leon Knori³

Story in Brief

Milk Expected Progeny Difference (EPD) is used to evaluate the genetic merit for maternal ability of beef bulls. This study was designed to examine the effectiveness of Milk EPD for predicting calf weaning weight differences and to evaluate correlated changes in other traits associated with the cow and calf. Polled Hereford and Angus sires (n=12) were selected at the extremes (High vs Low) of each breed for Milk EPD. Calves from the first year (n=66) out of daughters sired by these bulls were evaluated for differences in birth weight and 205-day weight and the cows were evaluated for weight and condition score. Cows sired by High Milk EPD bulls had heavier calves at birth and weaning (Polled Hereford, 73.6, 417.8 lb; Angus, 74.4, 447.9 lb) than did cows sired by Low Milk EPD bulls (Polled Hereford, 68.1, 409.2 lb; Angus, 62.2, 391.5 lb). Cows sired by High Milk EPD bulls had lower condition scores (Polled Hereford, 5.0; Angus, 5.2) than did cows sired by Low Milk EPD bulls (Polled Hereford, 5.4; Angus, 5.7). There were no significant differences in cow weight although cows sired by Low Milk EPD bulls tended to be heavier. The actual difference in calf 205-day weight was much larger than predicted by the Milk EPDs for cows sired by Angus bulls. Milk EPD is an effective tool for identifying differences in maternal ability but there may be a cost in ability to maintain condition.

(Key Words: Beef Cattle, Maternal Ability, Growth, Sire Evaluation.)

Introduction

Maternal ability, as it affects calf weaning weight, is an important trait in beef cows. It is generally assumed that maternal ability is largely a function of the milking ability of the cow. With this in mind beef cattle breed associations have adopted the use of the Milk EPD to describe the maternal component

¹Professor ²Graduate Assistant ³Herdsmen

influencing weaning weight. The Milk EPDs for two bulls should predict the difference in weaning weight (due to differences in maternal ability) of calves from daughters of the two bulls. The measurement unit for a Milk EPD is pounds of calf, not pounds of milk. The purpose of this study is to evaluate whether actual weaning weight differences are similar to the Milk EPD expectations and to evaluate any additional effects on the lifetime performance of the cow. This report describes the first year of results from two-year old cows.

Materials and Methods

Cows (n=200) that were inseminated to calve during 1989 were mated to Angus and Polled Hereford bulls that had large differences in Milk Expected Progeny Difference (Milk EPD). These cows were Hereford-Angus, 1/4 Brahman-1/4 Angus-1/2 Hereford and 1/4 Brahman-1/2 Angus-1/4 Hereford. These data represent the first year of calves (spring and fall calving) from a long term study to evaluate Milk EPD. Replacement heifers will be produced over a period of at least four years.

Three bulls were chosen from each of the four groups (High Milk EPD Angus, High Milk EPD Polled Hereford, Low Milk EPD Angus, Low Milk EPD Polled Hereford). Average EPDs from the four groups (Table 1) showed a difference of 20.4 and 28.3 lb for Polled Hereford and Angus sire groups, respectively. Daughters (n=66) of High and Low Milk EPD bulls had their first calves in the spring and fall of 1991. The calving season was from mid-February through mid-April and September through October. Calves from these first-calf heifers were sired by Salers bulls (n=7). Each calf was weighed within 24 hours of birth. They were weaned when the group averaged 205 days and all weights were adjusted to 205 days.

Cows were weighed at calf weaning and a body condition score was obtained at the same time. The condition scores followed a 1 to 9 scale with 1=emaciated and 9=extremely obese.

The data were analyzed with a model that included sire of dam group, sex, season, sire of calf and all two-way interactions.

Table 1. Average milk expected progeny differences (EPD) of Polled Hereford and Angus sires of first calf heifers.

Breed	Milk EPD level	Milk EPD
Polled Hereford	High	+17.0
Polled Hereford	Low	-3.4
Angus	High	+16.3
Angus	Low	-12.0

Results and Discussion

Calves from daughters of High Milk EPD sires were heavier ($P<.05$) at birth than calves from daughters of Low Milk EPD sires (Table 2). Daughters of High Milk EPD Angus sires weaned calves that were 56.4 lb heavier ($P<.05$) than calves from daughters of Low Milk EPD Angus sires. The difference in calves from Polled Hereford sires was only 8.6 lb. This difference in the Angus sires was almost double the 28.3 lb difference that was predicted by the Milk EPDs. However, the Milk EPDs of the Polled Hereford sires predicted a difference of 20.4 lb so the observed difference was not as large as the predicted difference.

The heavier calf weights from daughters of High Milk EPD bulls are not likely to be obtained without some cost in the cow's ability to maintain size and condition. No significant differences were found among the four cow groups for cow weight at weaning (Table 3). However, daughters of Low Milk EPD bulls were somewhat heavier for both breeds. Daughters of High Milk EPD bulls had lower ($P<.05$) average condition scores in both breeds. The difference was .4 and .5 units for Polled Hereford and Angus, respectively.

More data are required before definite conclusions can be reached concerning the effectiveness of Milk EPD for predicting differences in calf weaning weight. Such data will be available in future years. It will also be interesting to evaluate the effect these observed differences in calf performance have on the reproductive performance of the cows. The sacrifice of condition score in daughters of High Milk EPD sires may suggest more difficulty in maintaining regular reproductive performance, but there are insufficient data to draw any conclusions at this time.

These results provide an initial verification that daughters of High Milk EPD bulls will have heavier calves at weaning than daughters of Low Milk EPD bulls. Producers that make bull selections based upon Milk EPD should

Table 2. Average birth weight and 205-day weight of calves out of first calf heifers sired by high and low milk EPD bulls.

Breed	Milk EPD level	n	Birth wt (lb)	205-day wt (lb)
Polled Hereford	High	11	73.6 ^a	417.8 ^{ab}
Polled Hereford	Low	23	68.1 ^{bc}	409.2 ^b
Angus	High	17	71.4 ^{ab}	447.9 ^a
Angus	Low	15	62.2 ^c	391.5 ^b
Standard Error			2.2	15.2

^{a,b,c} Means in a column with different superscripts are significantly different ($P<.05$).

Table 3. Average weight and condition score of first calf heifers sired by high and low milk EPD bulls.

Breed	Milk EPD level	n	Cow wt (lb)	Condition score
Polled Hereford	High	11	887.0	5.0 ^a
Polled Hereford	Low	23	937.8	5.4 ^{bc}
Angus	High	17	912.5	5.2 ^{ab}
Angus	Low	15	934.7	5.7 ^c
Standard Error			28.6	.2

a,b,c Means in a column with different superscripts are significantly different (P<.05).

be able to use the values to rank bulls with some confidence. More data are required to determine how much confidence can be placed on the Milk EPDs. These results also suggest that the increase in calf weaning weight is not without cost in the cow's ability to maintain herself. Additional data from first calf heifers and results from more mature cows should help to establish the magnitude of that cost. Certainly, each producer should carefully consider the appropriate level of milk for his/her environmental, management and marketing conditions. Even if additional maternal ability is desired, maximum values of Milk EPD may not be justified in many situations.