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MILK PRODUCTION OF CROSSBRED DAUGHTERS OF HIGH AND LOW MILK EPD ANGUS AND HEREFORD BULLS

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Story in Brief

Genetic merit for maternal ability in beef cattle is evaluated by the Milk Expected Progeny Difference (EPD). The objective of this study was to determine the effectiveness of the Milk EPD in predicting calf weaning weight differences and to examine its relationship with other measures of cow and calf performance. Cows were sired by high or low Milk EPD Angus or Hereford bulls. Birth weights, 205-d weights, final cow weights, final cow condition scores, and monthly 24-h milk yields were recorded. Calf birth weights were similar across breeds and milk levels. Cows from high Milk EPD bulls produced more milk at all stages of lactation than cows from low Milk EPD bulls. Weaning weights were 41.9 lb heavier for calves out of high milk Angus cows than for calves out of low milk Angus cows and 17.7 lb heavier for calves out of high milk Hereford cows than for calves out of low milk Hereford cows. Cows sired by high Milk EPD bulls had lower final body condition scores than cows sired by low Milk EPD bulls. Final cow weights were similar across breeds and milk levels. As expected, cows from high Milk EPD bulls produced more milk and weaned heavier calves, but did so at the expense of body condition. By selecting for high Milk EPD, producers will increase weaning weights, but will also decrease cow body condition.

Key Words: Beef Cattle, Maternal Ability, Expected Progeny Difference

Introduction

Milk production of beef cows is a major factor in the weaning weight of calves which, in turn, affects the profitability of cow-calf enterprises. High milking cows should produce calves that are heavier at weaning, but they may do this at the expense of body condition and reproductive efficiency. Expected Progeny Differences (EPDs) have been developed to predict the genetic merit of cattle. The Milk EPD describes the maternal ability of dams. The Milk EPD of two bulls predicts the difference in weaning weights of calves from those bulls daughters, due to the milk production of the daughters. This EPD is measured in pounds of calf, not pounds of milk. The objective of this study was to evaluate how well the Milk EPD predicts actual differences in calf weaning weights and to determine its relationship to cow body condition and weight.

Materials and Methods

From 1988 to 1992, cows at the North Lake Carl Blackwell Research Range were mated to bulls from one of four groups. These groups were high Milk EPD Angus, low Milk EPD Angus, high Milk EPD Hereford and low Milk EPD Hereford. The average EPDs for these sires are shown in Table 1. Bulls were selected to be widely divergent for Milk EPD, but similar for birth weight EPD and weaning weight EPD. The base cow herd was Hereford - Angus, ¼ Brahman □ ½ Hereford □ ¼ Angus or ¼ Brahman □ ½ Angus □ ¼ Hereford. Heifers were born from 1989 to 1993. Previous results from this study have been reported by Buchanan et al. (1992, 1993, and 1995).

Heifers were artificially inseminated to calve as 2-yr-olds, and yearly thereafter. Salers, Limousin, Gelbvieh, Angus, Hereford, Charolais, and Maine-Anjou bulls were used in a spring and fall calving system. Cows that were not pregnant after a 60-d breeding season were moved to the opposite breeding season. All calves were weighed and the males were castrated within 24 h of birth. At an average age of 205 d, calf weaning weights were measured. Cow weights and body condition scores (1=extremely thin to 9=obese) were also recorded at weaning.

At seven monthly intervals throughout the lactation, milk production was evaluated by the weigh-suckle-weigh method. Cows and calves were separated at 6:00 p.m. the evening before measurement. At 5:45 a.m. the day of measurement, calves were allowed to suckle the cows, and the cows were weighed and scored for body condition. At 11:45 a.m., calves were weighed, allowed to suckle, and reweighed. This procedure was repeated at 5:45 p.m. These measurements of 6-h yield were averaged and multiplied by four to estimate 24-h milk production.

Data were analyzed using a least squares model that included breed, milk EPD level, sire of cow within breed and milk EPD level, year, season, cow age, calf sire, sex, and all two- and three-way interactions. Means were obtained for monthly milk production, birth and 205-d weight, and final cow weight and condition score.

Results and Discussion

Least squares means for monthly 24-h milk productions are shown in Table 2, and least squares means for birth weight, weaning weight, final cow weight, and final cow body condition score are shown in Table 3. At all periods, daughters of high Milk EPD bulls gave more milk than daughters of low Milk EPD bulls across breeds ($P<.05$). High milk cows had a lower final body condition score than the low milk cows ($P<.01$). Final cow weights were similar across breeds and milk levels ($P=.11$). There was also no difference in calf birth weight between levels across breed ($P=.31$). As expected, calves out of high milk Angus and Hereford dams were heavier at weaning than calves out of low milk Angus and Hereford dams ($P<.01$). The

difference in weaning weights between high milk Angus and low milk Angus was 41.9 lb and the difference between high milk Hereford and low milk Hereford was 17.7 lb. The predicted differences between high and low milk groups were 31.9 lb for Angus and 27.3 for Hereford.

Increased milk production of cows causes an increase in weaning weights of calves. This increase in weaning weight is at the expense of cow body condition. Milk EPDs will predict differences in calf weaning weight from crossbred cows. Cows with high Milk EPDs will have heavier calves, but at cost to body condition.

Literature Cited

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Table 1. Average expected progeny difference (lb) for high vs low Milk EPD Angus and Hereford bulls.

Breed	Level	n	BWEPD	WWEPD	MILKEPD
Angus	High	13	2.5	21.3	19.2
Angus	Low	13	5.1	26.8	-13.7
Hereford	High	9	2.6	22.3	16.8
Hereford	Low	9	5.6	26.3	-10.5

Table 2. Monthly 24-h milk production (lb) least squares means for daughters of high and low Milk EPD Angus and Hereford bulls.

Breed	Level	n	1[a]	2[a]	3[a]	4[b]	5[b]	6[a]	7[b]
Angus	High	187	15.2	15.9	13.5	13.4	10.6	10.4	8.2
Angus	Low	194	12.9	13.5	11.3	10.8	8.7	7.4	5.6
Hereford	High	107	14.5	15.3	11.2	10.7	9.1	7.0	6.6
Hereford	Low	172	12.6	12.7	9.4	10.6	8.3	6.5	6.6
Average std. error			1.1	1.3	1.0	1.0	.9	1.0	1.4

[a]Differences between high and low levels across breed are significant (P<.01).

[b]Differences between high and low levels across breed are significant (P<.05).

Table 3. Birth weights (lb), age-adjusted weaning weights (lb), final cow weights (lb) and final cow body condition scores (1 to 9) least squares means for calves from daughters of high and low Milk EPD Angus and Hereford bulls.

Breed	Level	n	BW	WW[a]	Cow Wt	Cow BCS[a]
Angus	High	187	81.8	523.2	1063.7	4.90
Angus	Low	194	83.5	481.2	1114.4	5.25
Hereford	High	107	84.5	489.9	1123.4	5.09
Hereford	Low	172	85.5	472.1	1128.2	5.20
Average std. error			2.6	13.8	19.8	.08

[a]Differences between levels across breed are significant (P<.01).

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