



## Impact of Moderate and High Weaning Weight EPD Sires on Cow Productivity<sup>1</sup>

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### Findings

- The mating of cows to bulls that differed by 20 pounds for weaning weight expected progeny differences (EPD's) resulted in actual calf weaning weight differences of 28 pounds indicating that EPD's are fairly reliable.
- Use of sires with high weaning weight EPD's did not result in increased calving difficulty.
- Adequate body condition of the cows was maintained regardless if they raised moderate- or high-growth calves.
- Rebreeding performance of cows was not affected by using high weaning weight EPD bulls.

### Introduction

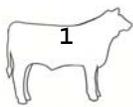
Expected progeny differences for growth traits are well documented and utilized by a large segment of the beef cattle industry. Calf weaning weight is greatly influenced by genetic potential for growth, therefore verification of how reliable weaning weight EPD's are on commercial cow herds needs to be studied.

It is conceivable that calves with above average weaning growth may actually stress their dams to the point where subsequent pregnancy rate or rebreeding performance could be impacted. Therefore, information needs to be developed on the possible influence high-growth calves, which are sired by high weaning weight EPD bulls, have on reproductive performance of beef cows, particularly in the stressful environments of Louisiana.

### Experimental Procedures

Maternal and reproductive performances were evaluated over 5 years involving crossbred cows (Table 1). Cows, ranging in age from 4 to 10 years of age, were mated by artificial insemination (AI) to Simmental sires varying in weaning weight EPD's. Four moderate (MOD) and three high (HIGH) Simmental sires were used (Table 2). All bulls used in this study had high accuracies (>80%) for weaning weight EPD's indicating that EPD values would be expected to be fairly reliable. Once randomly assigned, considering cow breed type, cow age, calving date, and calf sex, cows were synchronized for estrus and inseminated. Cows were exposed to clean-up Simmental bulls 18 days after AI for 60 days. Eighteen day interval was used in order to identify calf sire.

<sup>1</sup>Contribution to Multi-State Beef Cattle Breeding Project, S-277.



Of the 307 cows that were synchronized and inseminated, a total of 120 AI-sired calves were born that survived to weaning. Calves were weighed within 24 hours after birth at which time male calves were castrated. Cows were weighed and body condition scored at the beginning of the breeding season in April. In early June, calves were dewormed for internal parasites, implanted with a growth promotant (36 mg Zeranol) and vaccinated with a 7-way *Clostridia* vaccine. Also, at this time insecticide impregnated ear tags were applied to control horn flies on the cows.

Weaning occurred the last week of September or the first week of October with the average calf age being 229 days. Cows were weighed and body condition scored at weaning and pregnancy status was determined by rectal palpation. Pregnancy rates of cows were evaluated resulting from the breeding season while nursing MOD- or HIGH-growth calves and also the following breeding season after weaning MOD- or HIGH-growth calves. Pregnancy status was confirmed when cows calved the subsequent spring. Non pregnant cows were culled from the herd.

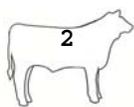
## Results and Discussion

There was no occurrence of calving difficulty for all 120 calvings. Calf birth date, birth weight, and weaning hip height were similar among MOD- and HIGH-growth calves (Table 3). Calf birth date, birth weight and weaning hip height were numerically larger for the HIGH-growth calves but were not statically different. Calves sired by HIGH-growth bulls were heavier ( $P < 0.05$ ) than calves sired by MOD-growth bulls for actual weaning weight and adjusted 205-day weaning weight (Table 3). The MOD and HIGH sires used differed by 20.4 pounds for weaning weight EPD's (Table 2). The realized weaning weight differences between calves sired by MOD- and HIGH-growth bulls was 28 pounds indicating that EPD's are fairly reliable. It would be expected that the realized weaning weight differences of progeny between MOD and HIGH growth sires would have been closer to the weaning weight EPD differences if the number of progeny produced would have been larger (i.e., greater than 500 calves).

Cow body weight and body condition score at weaning and at subsequent breeding were similar after nursing MOD- or HIGH-growth calves (Table 4). Cow body weight and body condition score were numerically lower for the cows raising HIGH-growth calves but were not statically different. It is important to note that average or adequate body condition for a mature cow is 5. With body condition scores being above this acceptable threshold, it appears that body condition of the cows were adequate regardless of growth type of calf raised.

Pregnancy rates were similar for cows raising MOD- or HIGH-growth calves, both while nursing calves (96.0 vs. 96.5%), and after weaning during the subsequent breeding season (91.7 vs. 93.6%; Table 5). For an acceptable pregnancy rate to be achieved, numerous studies have demonstrated the importance of having cows in at least a moderate degree of body condition (body condition score 5 or 6) at initiation of the breeding. Thus, even though differences in weaning productivity were created through sire selection, adequate body condition was maintained and as a result similar and highly acceptable pregnancy rates were achieved for cows raising either MOD- or HIGH-growth calves.

In conclusion, results from this study indicate that weaning weight EPD values among high accuracy bulls are fairly good predictors of progeny weaning weight performance. Weaning weight differences of the magnitude created in this study between progeny sired by MODERATE- and HIGH-growth bulls on basis of weaning weight EPD's are not expected to



detrimentally impact pregnancy rate of the cow herd, especially when cows are maintained at an adequate degree of body condition.

**Table 1. Breed composition of crossbred cows by sire breed**

Sire breed	No.	Breed composition <sup>a</sup>
Angus	46	A <sub>2</sub> B <sub>1</sub> H <sub>1</sub>
Brahman	26	B <sub>1</sub> H <sub>1</sub>
Brangus	7	B <sub>7</sub> A <sub>5</sub> H <sub>4</sub>
Gelbvieh	28	G <sub>2</sub> B <sub>1</sub> H <sub>1</sub>
Gelbray	13	B <sub>7</sub> G <sub>5</sub> H <sub>4</sub>
Total	120	—

<sup>a</sup>A = Angus; B = Brahman; G = Gelbvieh; H = Hereford

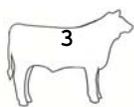
**Table 2. Simmental sires and weaning weight (WWT) EPD's**

Sire EPD type	Sire I.D.	No. of calves	WWT EPD	
			lb	Acc.
Moderate	A	11	23.8	0.87
Moderate	B	14	22.1	0.88
Moderate	C	15	24.9	0.97
Moderate	D	18	16.6	0.88
Total/weighted avg.	—	58	21.4	0.90
High	A	35	43.3	0.97
High	B	11	27.2	0.87
High	C	16	48.4	0.81
Total/weighted avg.	—	62	41.8	0.91

**Table 3. Birth and weaning traits of calves by sire EPD type**

Trait	Sire EPD type	
	Moderate	High
Birth date, day	47.7	49.7
Birth weight, lb	91.9	98.5
Actual weaning weight, lb	597 <sup>a</sup>	625 <sup>b</sup>
205-day weight, lb	547 <sup>a</sup>	575 <sup>b</sup>
Weaning hip height, in.	46.3	46.9

<sup>a, b</sup>Means within a row differ (P < 0.05)



**Table 4. Cow body weight (BW) and body condition score (BCS) at weaning and breeding by sire EPD type**

Trait	Sire EPD type	
	Moderate	High
BW at weaning, lb	1,314	1,279
BCS at weaning	5.47	5.39
BW at breeding, lb	1,323	1,276
BCS at breeding	5.52	5.35

**Table 5. Pregnancy rates (PR) of cows by sire EPD type**

Trait	Sire EPD type	
	Moderate	High
PR while nursing calves, %	96.0	96.5
Subsequent PR after weaning <sup>a</sup> , %	91.7	93.6

<sup>a</sup>Pregnancy resulting the following breeding season after weaning moderate or high-growth calves.

