

## The Influence of Cow Body Weight on Steer Progeny Performance

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**Objectives:** This study was focused on evaluating the influence of cow body weight on steer progeny performance from birth to harvest. Cow-calf records collected at the Gudmundsen Sandhills Laboratory from 2005 to 2017 were analyzed. Only mature cows (5 years old or older) were evaluated. Cow body weight was collected at weaning and was adjusted to a common body condition score 5. Table 1 highlights the difference in cow body weights analyzed.

Table 1: Summary of Age and Cows Adjusted Body Weight at Weaning

| Number of Cows | Average Age | Average Weight | Max Weight | Min Weight | Range |
|----------------|-------------|----------------|------------|------------|-------|
| 864            | 6.45        | 1104           | 1422       | 787        | 635   |

**Results:** The influence of cow body weight on steer progeny performance is reported in table 2 below. Steer body weight from birth to harvest showed a significant positive correlation as cow body weight increased, but no influence on steer carcass performance was observed. One hundred pound increase in cow body weight increased steer birth weight by 2.5 pounds, weaning weight by 4.96 pounds, 205-d weight by 8.98 pounds, and average daily gain by 0.46 pounds. Similarly, increasing cow body weight by 100 pounds resulted in an additional 7.20 pounds when the steers entered the feedlot, 10.5 pounds at reimplant, 10.3 pounds final live weight, and 6.48 pounds of hot carcass weight. In contrast to steer body weight, cow body weight did not affect steer carcass performance including marbling, backfat, yield grade or rib eye area.

Table 2: Coefficients used for estimating the influence of cow body weight on steer progeny performance

| Dependent variable                 | Estimate <sup>1</sup> | SE    | P - value |
|------------------------------------|-----------------------|-------|-----------|
| Birth Weight                       | 2.50                  | 0.34  | <0.01     |
| Weaning Weight                     | 4.96                  | 1.62  | 0.01      |
| Adjusted 205 d weight              | 8.98                  | 1.64  | <0.01     |
| Pre-weaning ADG <sup>2</sup>       | 0.46                  | 0.008 | <0.01     |
| Entry body weight <sup>3</sup>     | 7.20                  | 3.12  | 0.04      |
| Reimplant body weight <sup>4</sup> | 10.5                  | 3.51  | <0.01     |
| Final body weight <sup>5</sup>     | 10.3                  | 3.61  | 0.01      |
| Hot Carcass Weight                 | 6.48                  | 2.28  | 0.01      |
| Marbling                           | 0.14                  | 0.07  | 0.07      |
| Backfat, in                        | -                     | -     | 0.97      |
| Yield Grade                        | 0.04                  | 0.05  | 0.47      |
| Rib eye area, in sq                | 0.01                  | 0.09  | 0.90      |

<sup>1</sup> Estimate = regression coefficient used to evaluate increasing cow body weight 100 pounds on steer progeny

<sup>2</sup> ADG= average daily gain

<sup>3</sup> Entry body weight = steer body weight at feedlot entry

<sup>4</sup> Reimplant body weight = steer body weight taken approximately 100 days prior to harvest

<sup>5</sup> Final body weight = calculated using a common dressing percentage of 63%

**Future Work:** The influence of cow body weight on her reproductive performance, and her daughters' reproductive performance will be evaluated.