Evaluating the Impact of Cow Size on Calf Weaning Weights

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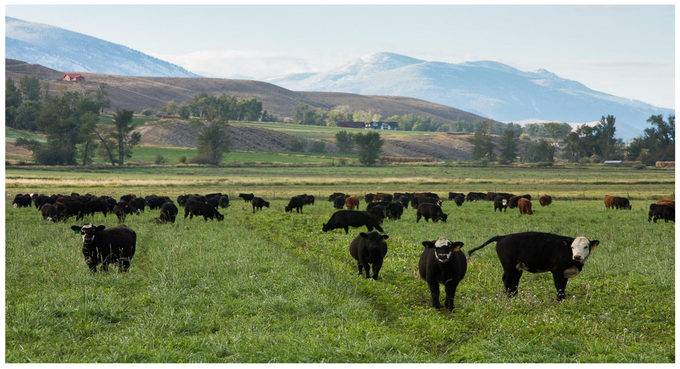
Introduction

- Over the years cow size has increased due to selection for larger beef carcasses.
- As cow size increases, maintenance costs also increase.
- This research was conducted at the University of Idaho's Nancy M. Cummings REEC from 2015-2024.
- Evaluated the relationship between cow size and calf weaning weights, aiming to improve production efficiency and management decisions.
- Analyzed cow weight at weaning, calf weaning weight, and percentage of cow body weight weaned.
- Assessed whether larger cows consistently produce heavier calves and their impact on production.

Objective

The objective of this research was to evaluate the relationship between cow size and calf weaning weights.



Methods

- Data from 484 cows and their calves were collected over a 9-year period (2015–2024).
- Measurements included cow weight at weaning, average calf weaning weight, adjusted weaning weight (205 days), and percentage of cow body weight weaned.
- Linear regression analysis using SAS assessed relationships between cow weight and calf weaning metrics.
- Cows were categorized into weight groups (<1100, 1101-1200, etc.), and average weaning weight was calculated for each group.
- An ANOVA test in SAS determined if average weaning weights differed significantly among weight groups.

Results

A weak but significant positive relationship was observed between Adjusted Weaning Weights (Adj.WW) and cow weight (R^2 = 0.1138).

Variable	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	458.326	15.785	29.04	<0.001
Root MSE	**Dependent Mean**	**Adj. R-sq**	**F Value**	**Pr > F**
49.803	582.622	0.1138	63.30	<0.001

Figure 1. Regression of Cow Weight to Adjusted Calf Weaning Weights.

A strong negative relationship was found between the percentage of cow body weight weaned and cow weight (R^2 = 0.644).

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Intercept	458.326	15.785	29.04	<0.001
Root MSE	**Dependent Mean**	**Adj. R-sq**	**F Value**	**Pr > F**
49.803	582.622	0.1138	63.30	<0.001

Figure 3. Regression of the % of Cow Body Weight Weaned in Calves

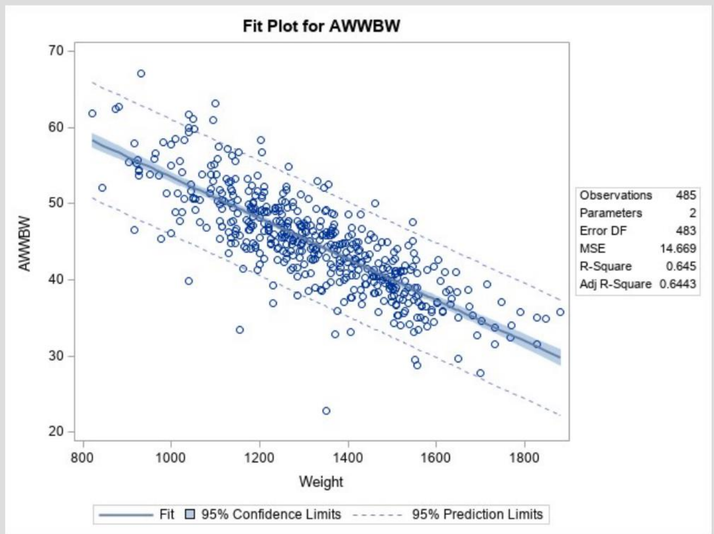

Figure 4. Regression Fit Plot of Negative Relationship of Cow Weight to % of Cow Body Weight Weaned

There was virtually no relationship between average weaning weight (Avg.WW) and cow weight (R^2 = 0.07).

Variable	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	458.326	15.785	29.04	<0.001
Root MSE	**Dependent Mean**	**Adj. R-sq**	**F Value**	**Pr > F**
49.803	582.622	0.1138	63.30	<0.001

Figure 2. Regression of Cow Weight to Average Calf Weaning Weights.

Calves from cow weight groups <1100 and 1101-1200 had significantly lower Adj.WW compared to those from other weight groups. No significant differences in Adj.WW were observed among the heavier cow weight groups (Figure 5).

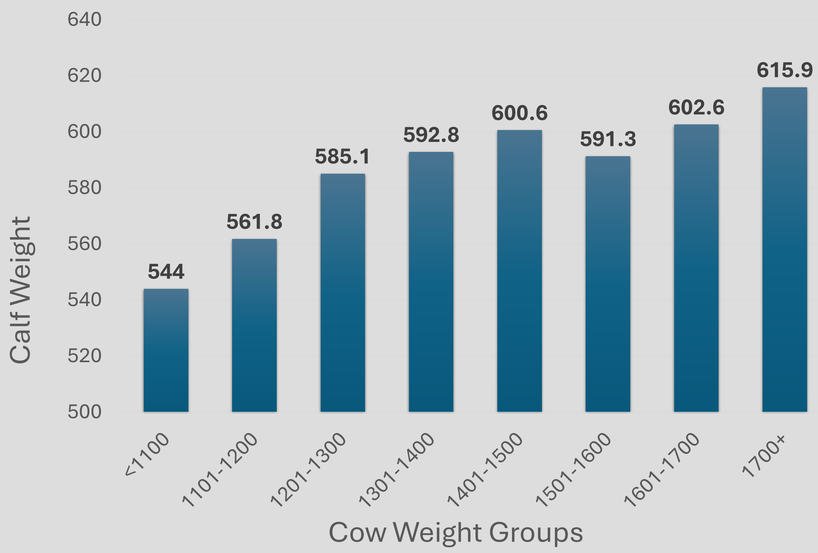

Figure 5. Average calf weaning weights for each cow weight group

Summary/Conclusions

Overall, these findings suggest while cow size does influence calf weaning weight, it is a limited impact. While a weak positive relationship existed between cow weight and adjusted weaning weight, average weaning weight showed no strong correlation. Larger cows weaned a smaller percentage of their body weight, suggesting lower efficiency. Calves from lighter cows (<1100 and 1101-1200 lbs) had lower weaning weights, but no significant differences were found among heavier cows. These findings emphasize the importance of considering both size and efficiency in beef production management.