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An analysis of weaning weight records in Kansas cowherds from 1968 to 1985

Abstract

A data set of 33,208 individual weaning records (1968-1985) from producers within Kansas was analyzed to determine factors influencing weaning weight. In determining the effect of calving sequence (21 day periods), only data from larger cowherds with records from at least 5 years were included (n=18,400). On the average, for every 21 days later a calf is born, there is a 22.8 lb decline in weaning weight. During the 17-year period that these records encompassed, there has been an average annual weaning weight increase of 4.6 lbs. This study suggests that factors influencing weaning weight in Kansas are age at weaning, month of birth, herd size, sex of calf and age of dam.

Keywords

Kansas Agricultural Experiment Station contribution; no. 88-363-S; Cattlemen's Day, 1988; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 539; Beef; Weaning weight; Cow-calf operation

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An Analysis of Weaning Weight Records In Kansas Cowherds From 1968 to 1985

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L.R. Corah and D.J. Patterson

Summary

A data set of 33,208 individual weaning records (1968-1985) from producers within Kansas was analyzed to determine factors influencing weaning weight. In determining the effect of calving sequence (21 day periods), only data from larger cowherds with records from at least 5 years were included (n = 18,400).

On the average, for every 21 days later a calf is born, there is a 22.8 lb decline in weaning weight. During the 17-year period that these records encompassed, there has been an average annual weaning weight increase of 4.6 lbs. This study suggests that factors influencing weaning weight in Kansas are age at weaning, month of birth, herd size, sex of calf and age of dam.

Introduction

The total pounds of calf produced by a cowherd is a major determinant of profitability of a cow-calf enterprise. Numerous research trials have shown that many factors influence weaning weights. Our objectives were twofold: 1) to determine the influence of various factors on weaning weights in Kansas and 2) to develop baseline weaning weight values for use in the Beefpro computer program.

Experimental Procedures

In cooperation with county extension agricultural agents, 33,208 individual weaning weight records were collected from 94 Kansas producers. These records encompassed the years 1968 through 1985. The records included the following information: location (Northwest, Southwest, Northeast, South Central, Southeast); producer identification; year of record; dam breed; sire breed; calf number; calf sex; date of birth; birth weight; age in days at weaning; actual weaning weight; 205-day adjusted weight; weight ratio; height; frame score; dam number; and age of dam. Some of the records did not include information for birth weight, dam breed, sire breed, height, frame score, or age of dam.

Actual weaning weight (WW) was used in all analyses. In determining the effect of calving date (21 day periods), the data set was limited to the larger cowherds with records from at least 5 years (n = 18,400). The 21-day periods were determined from the first calf born in each year for each producer.

Results and Discussion

The mean WW for the years of 1968 through 1985 are shown in Figure 1.1. The fitted line indicates that WW has increased an average of 4.6 lbs per year.

The mean WW and average daily gain (ADG) for calving periods 1 through 7 are depicted in Figure 1.2. The mean WW for period 1 was 495.5 lbs, with the mean cumulative declines between period 1 and periods 2, 3, 4, 5, 6, and 7 being -25.8, -49.0, -75.0, -96.9, -112.9, and -136.8 lbs, respectively. Mean ADG's were similar across all periods; thus, the effect of calving date on WW was primarily due to age at weaning. The cumulative percents of calves born for periods 1, 2, 3, 4, 5, 6, and 7 were 27.3, 60.4, 82.3, 92.5, 96.9, 98.8, and 100, respectively.

The mean WW and ADG for the months of January through July are shown in Figure 1.3. Mean ADG was similar across months, even though mean WW was different.

Size of cowherd and location within the state affected WW. However, it should be noted that these two factors were somewhat confounded by an uneven distribution of cowherd size across the state. The mean WW and ADG by area were Northwest, 477.6, 1.87; Northeast, 471.1, 1.80; Southwest, 454.0, 1.79; and South Central 436.5 lbs and 1.61 lbs/hd/day, respectively. The mean WW and ADG for small (< 50 records/year), medium (50-100 records/year), and large (> 100 records/year) cowherds were 508.7, 2.00; 462.2, 1.79; and 457.4 lbs and 1.78 lbs/hd/day, respectively.

The effect of sex on WW and ADG is depicted in Table 1.1. Bull calves had the heaviest mean WW and the highest ADG, with steer calves intermediate, and heifer calves having the lightest WW and lowest ADG.

Table 1.1. Effect of Sex on Weaning Weight and Average Daily Gain

Calf Sex	Weaning weight	Average daily gain
Bull Calves	479.4	1.98
Steer Calves	475.5	1.85
Heifer Calves	446.8	1.72

The effect of age of dam on WW and ADG is shown in Figure 1.4. Eight-year old dams had calves with the heaviest mean WW and the highest mean ADG. Calf production of dams steadily increased from 2 to 8 years of age, then gradually decreased.

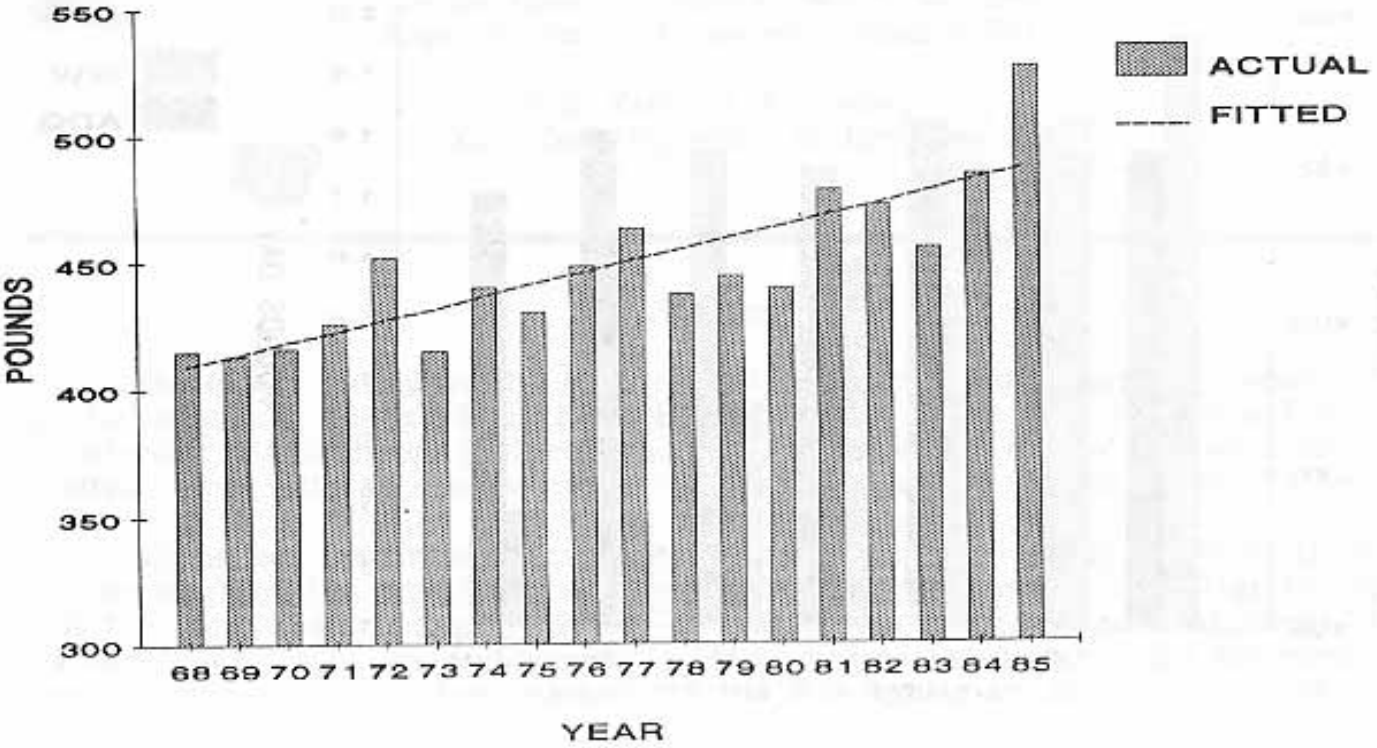
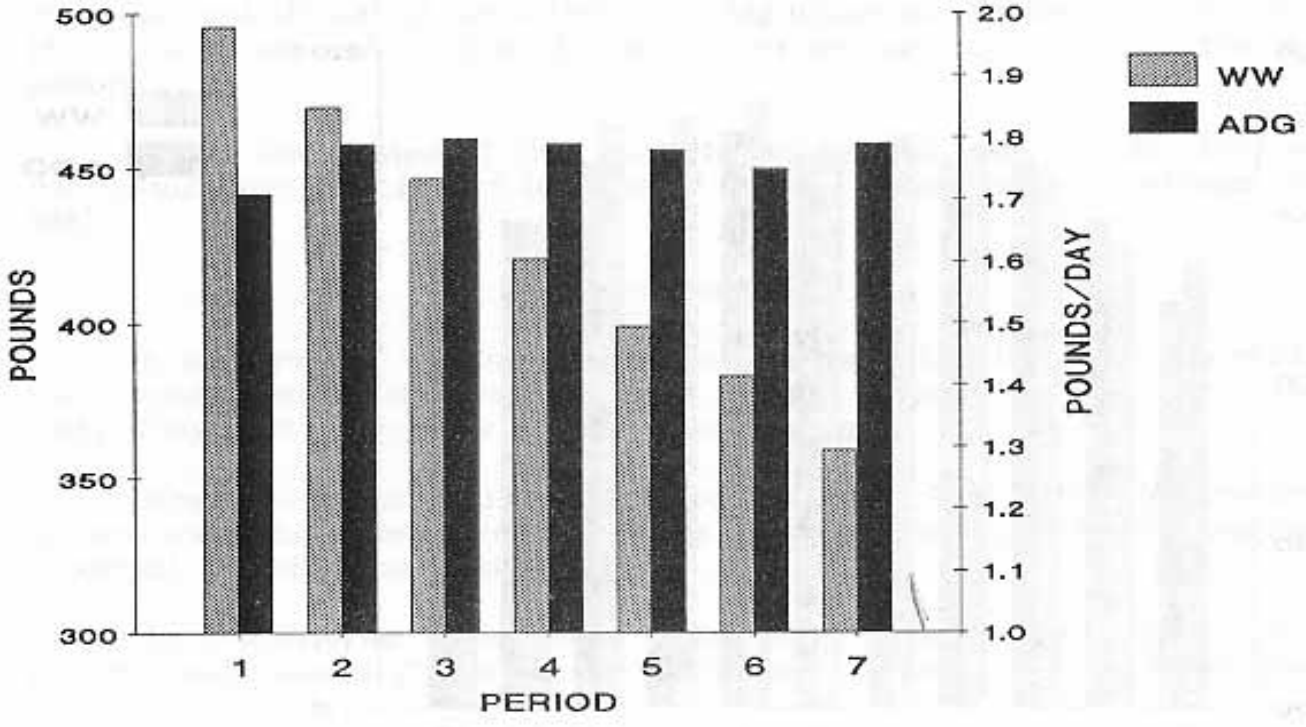


Figure 1.1. Effect of Year on Weaning Weight



* PERIOD=21 DAY CALVING INTERVALS BEGINNING WITH THE FIRST CALF BORN

Figure 1.2. Effect of Period on Weaning Weight and Average Daily Gain

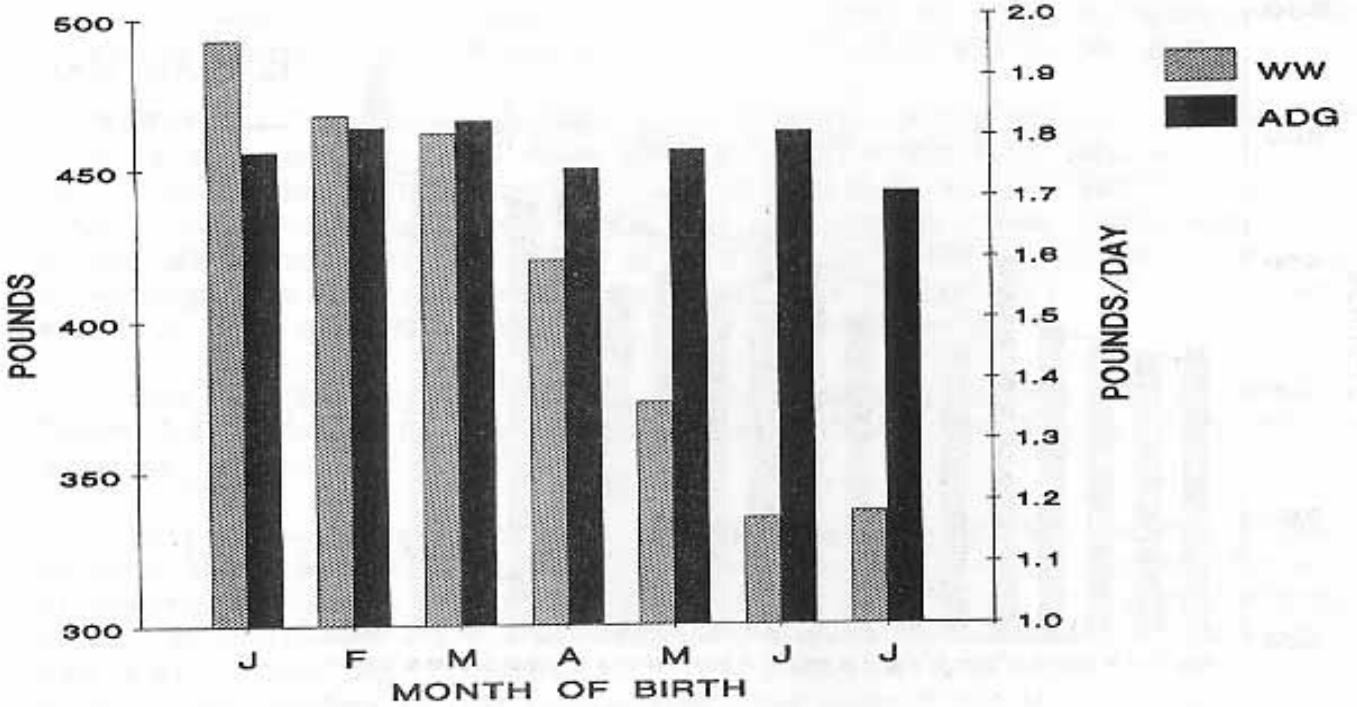


Figure 1.3. Effect of Month of Birth on Weaning Weight and Average Daily Gain

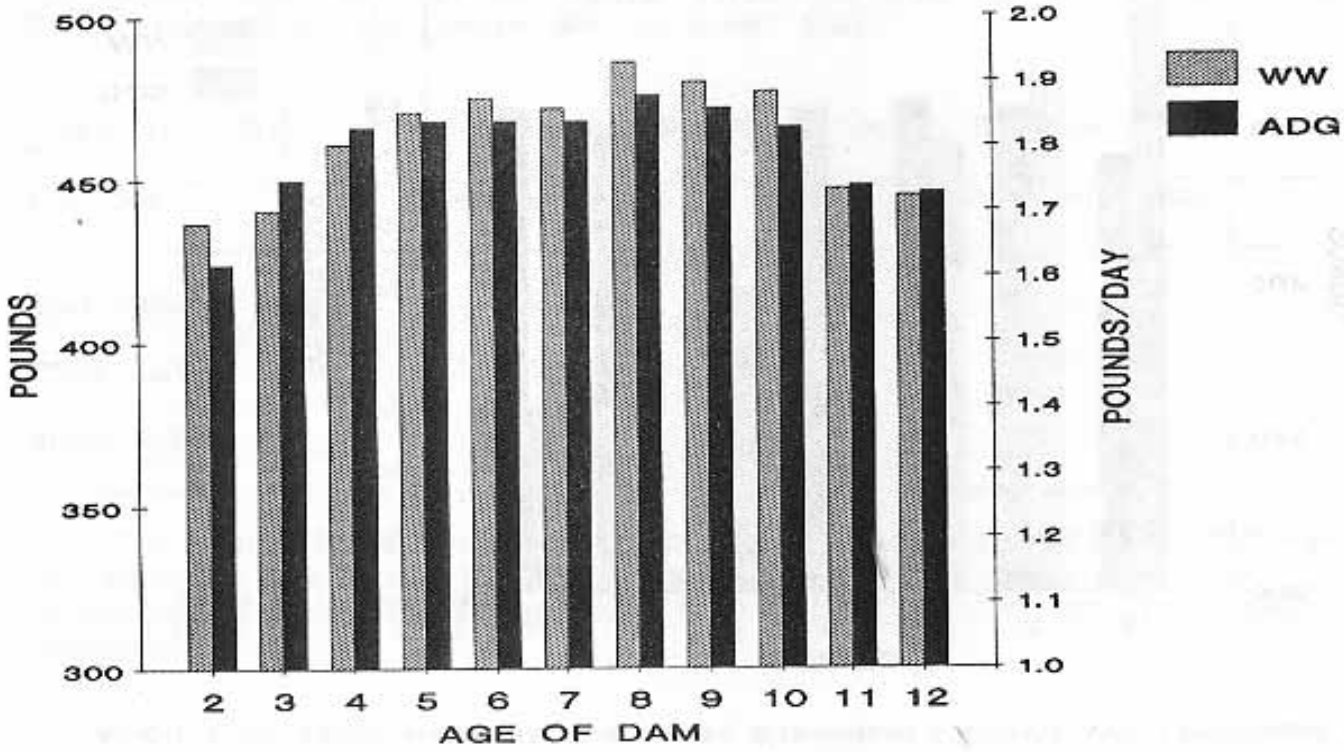


Figure 1.4. Effect of Age of Dam on Weaning Weight and Average Daily Gain