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Effects of Time of Weaning on Cow and Calf Performance

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Early weaning results in cows with greater condition at calving. Early weaned calves were fed more days in the feedlot, resulting in heavier carcass weights.

Summary

Research investigating the effects of weaning calves at three different ages was conducted over four years at the Dalbey-Halleck Farm. Each year 180 spring calving cows had their calves weaned at 150 days of age, (n=60); 210 days of age, (n=60); or 270 days of age, (n=60). Weaning at 150 days resulted in greater cow weight and body condition. Pregnancy rate was similar among groups. Early weaned calves were fed a finishing ration longer, which resulted in heavier carcasses and a greater percentage grading at least Choice. Early weaning can be used to improve cow condition at calving.

Introduction

Weaning management is a tool cow/calf producers use to accomplish numerous tasks. Weaning management can alter a herd's nutrient needs and potentially reduce the amount of supplemental feed-stuffs required. Furthermore, weaning management can be used to ensure females are in adequate body condition before calving, potentially improving the herd's reproductive performance. Although researchers have previously

evaluated cow and calf performance when calves were weaned at less than 150 days of age, few researchers have investigated the effects of weaning 150 to 270 day old calves on subsequent cow and calf performance. The objective of this study was to evaluate such effects.

Procedures

In this four-year experiment, 180 spring calving MARC II cows were used. The trial was conducted over four years at the Dalbey Halleck Farm in southeast Nebraska. In year 1, cows were randomly allocated to one of three groups (n=60) based on age, weight, body condition score and date of calving. All cows remained within their respective group through the experiment. Cows were culled for reproductive failure only. Replacement females were selected from and for their origin group.

Each year, groups were subjected to one of the following treatments in a manner mimicking a latin square with two additional years: early weaning (EW, calves 150 days of age, August 20), normal weaning (NW, calves 210 days of age, October 20) and late weaning (LW, calves 270 days of age, December 20). Individual cow weights and body condition scores were recorded on each date of weaning and prior to calving (February 1). Post-weaning, cow groups were managed and grazed in separate pastures until February 1. All groups were managed to reach a minimum body condition score of 5 (1 = emaciated, 9 = obese) before calving.

Upon weaning, steers were transported to the University of Nebraska feedlot located at the ARDC, Mead, Nebraska. All steers were weighed on each weaning date and 28 days post-

weaning at the feedlot. At that time, steers were implanted with an estrogen-containing implant. Steers were fed a 50 percent concentrate receiving ration (DM basis) for approximately 28 days and progressively stepped up through four rations every seven days to a 90 percent concentrate finishing ration (DM basis) which was fed until slaughter. Steers were fed to an end point of .4 inch of backfat which was estimated by feedlot personnel. All steers were slaughtered at the IBP, Inc.'s beef processing plant at West Point, Nebraska where carcass data were collected.

Results

Cow weights, body condition scores, and reproductive performance

Weights and condition scores were not different among weaning groups at the August weaning date and were 1,188 ± 10 lbs, 5.5 ± .1 for EW cows; 1,183 ± 10 lbs, 5.4 ± .1 for NW cows; and 1,186 ± 10 lbs, 5.4 ± .1 for LW cows. At the time of NW in October, cow weight and condition score for the EW group were greater (P < .05) than both the NW and LW groups, although weight and condition score between the NW and LW groups were not different. December weights and body condition scores for the EW, NW and LW groups were all different (P < .01) and were: 1,283 ± 5 lbs, 5.8 ± .1; 1,232 ± 5 lbs, 5.5 ± .1; 1,191 ± 5 lbs, 5.2 ± .1; respectively. Body condition scores in February (approximately one month prior to calving) were different (P < .001) among the EW, NW and LW groups, and averaged 5.6 ± .1, 5.4 ± .1 and 5.2 ± .1, respectively. Reproductive performance as measured by pregnancy rate was not

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Table 1. Pregnancy rates for cows whose calves were weaned at 150, 210 or 270 days of age.

	Treatment		
	EW	NW	LW
No.	240	240	240
Pregnancy rates	92%	95%	94%

different between the EW, NW and LW groups and averaged $92 \pm .01$ percent, $95 \pm .01$ percent, and $94 \pm .01$ percent, respectively (Table 1.).

Steer weight and gain performance

At the August weaning date, there was no difference in weight among the EW, NW and LW steer groups, which averaged 430 ± 4 , 440 ± 4 and 434 ± 4 , respectively. On the date of normal weaning (October 20), EW steers were heavier than either the NW or LW steers. From August to October, EW steers were in the feedlot and NW and LW steers were suckling their dams, which likely resulted in the weight difference. Weights for NW or LW steers on the date of normal weaning were similar. On the last date of weaning (December 20), weights between all groups were different ($P < .001$) and averaged 812 ± 8 lbs for the EW steers, 728 ± 8 lbs for the NW steers and 590 ± 8 lbs for the LW steers. Steer ADG between the August and October weaning date was greater ($P < .001$) for the EW ($2.93 \pm .08$ lb/day) steers compared to the NW ($1.68 \pm .08$ lb/day) and LW ($1.69 \pm .08$ lb/day) steers. Between the October and December weaning dates there was no difference in ADG between the EW and NW groups and averaged about 3.4 lb/day. However, ADG for both the EW and NW groups was greater ($P < .001$) during the period between October and December compared to the LW group ($.99 \pm .09$ lb/day). The overall ADG for the treatment groups between the August and December weaning dates were dif-

Table 2. Steer feedlot performance of calves weaned at 150, 210 or 270 days of age.

	Treatment			
	EW	NW	LW	SE
No.	114	106	104	
DOF ^a	243 ^b	198 ^c	158 ^d	5
DMI, lb	18.2 ^b	19.8 ^c	21.5 ^d	.4
ADG, lb	3.08	3.30	3.30	.22
Gain/Feed	.162	.155	.161	.006

^aDOF = days on feed.

^{bcd}Means in a row with different superscripts are different ($P < .01$).

Table 3. Steer carcass performance of calves weaned at 150, 210 or 270 days of age.

	Treatment			
	EW	NW	LW	SE
No.	112	106	104	
HCW ^a , lbs	715 ^d	719 ^d	693 ^e	7
FD ^b , inches	.47	.45	.42	.02
% \geq Choice	94 ^d	84 ^{de}	78 ^e	4
YG ^c	2.7 ^d	2.6 ^{de}	2.4 ^e	.1

^aHCW = Hot carcass weight.

^bFD = Fat depth measured between the 12th and 13th ribs.

^cYG = Yield grade

^{de}Means in a row with different superscripts are different ($P < .01$).

ferent and averaged $3.22 \pm .05$ lb/day for the EW steers, $2.43 \pm .05$ lb/day for the NW steers and $1.35 \pm .05$ lb/day for the LW steers. The differences in group ADG between the weaning dates are a function of nutrient intake. Steers in the feedlot consumed a ration greater in energy than those steers still on their dams. Because of the nutrient intake differences, steers in the feedlot gained more weight between August and December than those steers remaining with their dams.

Steer feedlot performance

Days on feed and feedlot DM intake among the EW, NW and LW groups were different ($P < .01$) and averaged 243 ± 5 days, $18.2 \pm .4$ lbs/day; 198 ± 5 days, $19.8 \pm .4$ lbs/day; and 158 ± 5 days, $21.5 \pm .4$ lbs/day, respectively (Table 2.). ADG and gain to feed means were not different among the treatment groups (Table 2.). Hot carcass weight (HCW) for the LW (693 ± 7 lbs) group was less

($P < .05$) than means for EW (715 ± 7 lbs) and the NW (719 ± 7 lbs) groups. Fat depth (FD) at the 12th rib was not significantly different between the EW, NW and LW groups. Percentage of steers grading USDA Choice or higher and Yield Grade for the LW group (78 ± 4 percent, $2.4 \pm .1$) were less ($P < .05$) than for the EW group (94 ± 4 percent, $2.7 \pm .1$; Table 3.). However, the NW calves were intermediate and not different from the EW or LW groups. The difference in carcass characteristics among weaning groups is likely a result of the number of days each group was fed a finishing ration. Time of weaning can significantly effect cow weight and body condition, and steer DOF and DM intake.

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