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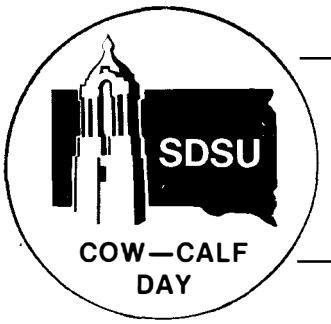

EFFICIENCY TO SLAUGHTER OF CALVES FROM ANGUS, CHAROLAIS AND RECIPROCAL CROSS COWS

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Summary

Records on 227 calves born from 1972 to 1976 were used to evaluate efficiency of calves from Angus (A), Charolais (C) and reciprocal cross cows (AC, CA). There were differences in TDN of cow and calf per unit slaughter weight (A<AC≃CA≃C). However, differences among breed groups in TDN of cow and calf per unit retail cut yield were small despite differences in cow weight (A<AC≃CA<C)[1], cow TDN consumption (A≃CA<AC≃C), calf creep TDN consumption (A≃AC<CA≃C) and retail cut yield (A<C).

Introduction

There has been concern in recent years about effects of cow size on efficiency of production in that larger breeds are being used in crossbreeding systems and because many of the breeds are selected for larger mature weights through selection for large frame size. To evaluate this, knowledge is needed about feed energy requirements per unit product sold in different breeds and crosses. The purpose of this research was to evaluate TDN requirements of cows and calves per unit slaughter weight and retail product yield in calves from Angus, Charolais and reciprocal cross cows.

Methods

Growth and feed consumption records on 227 calves from Angus (A), Charolais (C) and reciprocal cross dams (AC, CA) were used in this study. Cows were drylotted all year and individually fed a ration of chopped alfalfa hay and alfalfa pellets all year plus sufficient cracked shelled corn to meet their energy needs during lactation. Amounts of alfalfa pellets were varied so that weight changes of these cows were similar to their half-sibs of the same breed group that were pastured during the summer grazing season. Calves in drylot were allowed access to creep feed. Feed energy (TDN) charged to a cow-calf unit prior to weaning was TDN consumed by the cow from time of weaning her previous calf to weaning the current calf plus TDN consumed by the calf from creep feed. All cows were bred to the same bull in a given year. Polled Hereford bulls were used for 1972 to 1974 calf crops, a Salers bull was used for the 1975 calf crop and a Limousin bull was used for the 1976 calf crop.

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[1] Symbols used as follows: < represents less than, > represents greater than and ≃ represents approximately equal to. For example, in cow weight, A are significantly lighter than AC, CA and C; the AC and CA are not significantly different from each other but both are significantly lighter than C.

Calves were weaned at an average age of 203 days and individually fed to slaughter. Calves were started on feed using a 20% roughage ration until they reached a predetermined weight (heifers = 625 pounds, steers = 700 pounds) and were then finished on a 10% roughage ration for a predetermined number of days (heifers = 119 days, steers = 140 days). Calves were weighed one day prior to slaughter and carcass data were taken on each calf. Postweaning TDN charged to a calf was TDN consumed from both starter and finishing rations.

Efficiency to slaughter for a cow-calf pair was calculated two ways, TDN of cow and calf to weaning plus postweaning TDN of calf divided by actual slaughter weight and the same TDN divided by actual retail product yield. Data were adjusted to a mean sex, age of dam, year and age of calf in the analyses.

Results

Means for cow weight, TDN consumption, slaughter weight, retail cut yield and efficiencies of cows and calves of the four breed of dam groups are given in table 1. Response of calves from the four breed groups was similar for postweaning TDN consumption and slaughter weight. Calves from A yielded less retail cuts than calves from C, but differences among breed of dam groups were not significant for TDN of cow and calf per unit retail cuts, even with differences in cow weight ($A<AC\simeq CA<C$), cow TDN ($A\simeq CA<AC\simeq C$) and calf creep TDN ($A\simeq AC<CA\simeq C$). However, calves from A required less TDN per unit slaughter weight than any other breed group, although the differences were not large. One possible explanation for this is that calves from A cows deposited more fat in the postweaning period and this fat was trimmed when carcasses were broken down into retail cuts.

This research suggests that, despite differences among breed groups in cow size, the amount of feed energy required to produce a pound of salable product was about the same among the breed groups. Often the breed compositions of producers' herds are fixed and the relationship of cow size to efficiency within a breed is of interest. Since there were differences in cow weight within these breed groups, relationships between cow weight and efficiency measures within breed group were also examined. The range in mature cow weights (1976) at weaning are given in table 2. Correlations found between cow weight and TDN of cow and calf per unit slaughter weight (.19) and cow weight and TDN of cow and calf per unit retail cuts (.19) were low. These correlations suggest that cow weight and efficiency are not closely related within these breed groups. A need exists for evaluation of more breeds and crosses for these measures of efficiency. While these results give little indication of breed differences in efficiency, differences could exist in other breeds or crosses that might be useful in increasing efficiency of beef production. These results do not suggest that there are no differences in cow efficiency nor do they suggest that cow efficiency should be ignored in selection. These results do suggest, however, that cow size is not a good indicator of cow efficiency. Further studies of the repeatability and heritability of cow efficiency are needed to evaluate the potential for improvement of this trait through selection.

Table 1. Cow and Calf Traits for Four Breed Groups of Cows

Breed group of cow	Cow wt. at weaning (lb)	Cow TDN consumption (lb)	Calf TDN to weaning (lb)	Postweaning TDN consumption (lb)	Slaughter wt. (lb)	Retail cut yield (lb)	TDN of cow and calf per Slaughter wt.	TDN of cow and calf per Retail cuts
A	964[a]	4741[a]	471[a]	2673[a,b]	955	350[a]	8.3[a]	23.0
AC	1012[b]	4961[b]	460[a]	2671[a,b]	950	359[a,b]	8.6[b]	22.9
CA	1036[b]	4803[a]	506[b]	2752[a]	946	359[a,b]	8.6[b]	23.0
C	1087[c]	4939[b]	517[b]	2592[b]	948	367[b]	8.5[b]	22.6

[a,b,c] Means with different superscripts differ significantly (P<.10).

Table 2. Ranges of Mature Cow Weights at Weaning of Calves for 1976

A		AC		CA		C	
Low	High	Low	High	Low	High	Low	High
914	1090	906	1218	972	1298	1028	1284