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1978

Animal Science Reports

1978

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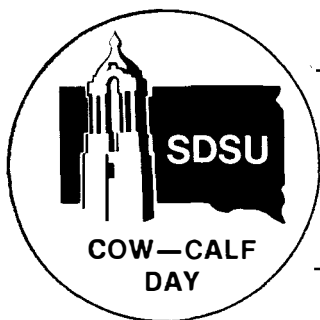
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Recommended Citation

Dinkel, C. A. and Trevillyan, W. R., "Effects of Mating and Management Systems on Beef Production" (1978). *South Dakota Cow-Calf Field Day Proceedings, 1978*. Paper 8.
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EFFECTS OF MATING AND MANAGEMENT SYSTEMS ON BEEF PRODUCTION

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A.S. Series 78-22

Summary

A 4-year summary of performance of straightbred Hereford cattle and cattle from a Simmental-Hereford rotation cross on two management levels indicates breed group differences in gestation (2 days), birth weight (9 pounds), weaning weight (64 pounds), fall cow weight (94 pounds), rib eye area (.9 sq in), carcass weight (63 pounds) and carcass weight per day of age (.12 pound per day) with the crossbred group having the higher value in all traits. The two breed groups did not differ in calving percent, day born, dystocia score, weaning percent, marbling, fat thickness, kidney and pelvic fat and percent cutability. There were indications of management effects on dystocia score (.2), weaning percent (5%), weaning weight (10 pounds) and fall cow weight (26 pounds) with the super management having the larger value in all except dystocia score and weaning weight.

Introduction

In recent years there has been increased interest in crossbreeding of beef cattle and with the introduction of new breeds from the European continent increased interest in the use of larger and/or higher milking breeds in these crossbreeding systems. With the expected increase in nutrient requirements for maintenance and milk production associated with increased size of cow and increased milk production, changes in management practices need to be evaluated. This project was designed to evaluate the Simmental-Hereford and the Angus-Hereford two breed rotations and the straightbred Hereford, with all three groups receiving either usual herd management (regular) or a higher level of management consisting of a higher energy level for developing replacement heifers during their first winter and a flush each year at breeding time extending from 30 days prior to the breeding season and carrying 20 days into the breeding season (super).

Procedure

In 1972, 50 Hereford heifers and 50 Simmental-Hereford heifers were purchased at weaning time. They were equally divided to the regular and super management groups and produced their first calves in 1974. Replacement heifers have been selected on the basis of weaning weight from each of the calf crops produced, with heifers staying in their respective management groups. Because of high calf prices in 1973 and high hay prices in 1974, the Angus-Hereford cross was not added to the project until the fall of 1975. Because data are available from only one calf crop and all from 2-year-old heifers, this breed group is not included in this report. At this stage in the project comparisons made are between straightbred Hereford

and quarter blood Simmental calves out of half Simmental-Hereford mothers, with all calves within a year from both breed groups sired by the same Polled Hereford bull.

Results

There were no breed or management effects on calving percentage averaged over all years. However, there were breed differences within years with the Simmental-Hereford 2-year-old heifers calving at an 18% higher rate in 1974 but at a 5% lower rate than the Herefords in 1975 and 1976. In 1977, the two groups were equal.

Differences in dystocia score and day born were rather small. The day the calf was born was analyzed to evaluate whether larger, heavier milking cows were taking longer to rebreed and thus calving later. Differences in day born seemed to reflect the small difference in day the breeding season started each year with no difference existing between breeds or management groups. While the analysis indicated the management difference in dystocia score favoring the super management level was real and could be expected to be repeated, the size of the difference (.2 of a unit) is not large enough to be important.

The 3% advantage in calves weaned of the Herefords over the Simmental-Herefords was not significant in the analysis. However, the 5% advantage of the super over the regular was significant and for this reason could be expected to be repeated. However, most of the losses occurred at calving time and it is difficult to understand how a flushing treatment at breeding could influence losses at calving. This advantage will have to be weighed against the cost of the grain for the flush treatment and, in the case of the Herefords, a detrimental effect on weaning weight discussed later.

The Simmental-Hereford cows produced calves that were 9 pounds heavier at birth, a difference that was consistent and could be expected to repeat. Management treatment did not influence birth weight.

Both breed and management effects were significant for weaning weight. The Simmental-Hereford cows produced an average 64 pounds more calf at weaning on an age of calf, age of dam and sex adjusted basis and the regular management group averaged 10 pounds higher weaning weight than the super group. The two breed groups responded differently to the management treatment with the Simmental-Hereford cows producing the same weaning weight on the two management treatments and the Hereford cows producing 20 pound lighter weights on the super management treatment. This difference in production for the Hereford cows was quite consistent over the years, but no logical explanation is apparent.

There were important breed and management differences in fall cow weight. The Simmental-Hereford cows averaged 94 pounds heavier than the Hereford cows at weaning time and the cows from the super management group averaged 26 pounds heavier than the regular group.

Combining the calving percent, weaning percent and weaning weights to estimate pounds of calf weaned per cow exposed in the breeding pasture

yields an advantage to the Simmental-Hereford cows of 50 pounds. The Antelope Range Livestock Station was fortunate to miss the extreme drought suffered in most of the surrounding areas during the course of this experiment. In evaluating the results of this experiment, one should realize that the larger size and heavier milking ability of the Simmental cross cow would require stocking of fewer cows as compared to the Hereford breeding group. If one were evaluating this on the basis of fully stocking a commercial ranch, this, of course, would lower the number of cows from which the 50-pound advantage would be gained. At the same time, fewer cows would offer the advantage of fewer variable costs such as personal taxes, veterinary costs, etc. These latter costs in recent years have varied from \$75 to \$100 per year per cow and thus cannot be overlooked in the total evaluation of an operation.

Analysis of the postweaning traits measured on these steers indicated that carcass weight, rib eye area and carcass weight per day of age were different for the two breed groups and that the breed difference varied from year to year. It appears that the change in carcass weight was responsible for the year to year differences in all three traits. Hereford carcasses over all years averaged 698 pounds and the Simmental-Hereford 63 pounds heavier at 761. In the first year the Simmental-Hereford advantage was 64 pounds, in the second 16 and in the last year 119 pounds. The breed difference in rib eye area over all years was .9 of a square inch, varying from .2 the second year to .6 the first year to 1.7 in the third year. Differences in carcass weight per day of age, a measure of growth rate in this analysis, was 1.21 pounds per day for the Hereford and 1.33 for the Simmental-Hereford averaged over all years. Differences by years in favor of the Simmental-Hereford group were .13, .03 and .20 pound per day. No ready explanation is available for the narrowing of breed group growth in the second year.

Other postweaning traits which were analyzed but were not significantly affected by breed or management differences were fat thickness, percent kidney and pelvic fat, percent cutability and marbling which is the measure of carcass grade in this experiment.

Breed group differences in this experiment may be expected to change some over the years as the two-breed rotation cross changes in percent composition of the two breeds. After three generations, this percentage will vary so little that these periodic changes should not be apparent.