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FEED UTILIZATION DURING LATE GESTATION BY POLLED HEREFORD AND SIMMENTAL COWS

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Summary

Thirty-one Polled Hereford and 29 Simmental cows were individually fed two energy levels for about the last 4 months before calving. Weight, condition score, backfat thickness, and reproduction were evaluated. No differences were found in efficiency of feed utilization between breeds or between energy levels. These cows started the experiment in moderate body condition, and a 10% reduction in dietary energy level during late gestation did not affect their reproductive performance.

Introduction

Profitable beef production depends on the efficiency of feed utilization as well as the level of production. Very little information is available on the interaction between cow production level and production efficiency. Most studies have indicated that efficiency increases as production level increases. One study by Jenkins and Ferrell (Roman L. Hruska US Meat Animal Research Center, Clay Center, NE) indicated that large cows with high milk production had lower efficiency of maintenance than other groups.

In this study, efficiency of cow maintenance, fetal growth during the last trimester of pregnancy, and subsequent cow reproduction and calf growth were evaluated.

Experimental Procedures

Thirty-one Polled Hereford and 29 Simmental cows were fed individually from Oct. 30 to approximately 2 weeks before calving in March. The Polled Hereford cows started the trial with an average condition score of 6.2 and an average weight of 1308 lbs; the Simmental cows started the trial with an average condition score of 5.3 and an average weight of 1314 lbs. Half the cows were fed an energy level that met their requirements, whereas the other half were fed 10% below their requirements. Energy requirements for each cow were calculated, based on her weight, condition, age, and days of gestation. Protein, vitamins and minerals were fed to meet NRC requirements.

Approximately 2 weeks before calving, cows were moved to native bluestem pasture, where they were group fed by breed. Alfalfa hay and milo were fed to meet the energy and protein needs, based on the group average. Supplemental feeding continued until late April, when sufficient grass was available. Cows were exposed to fertile bulls after calving and were allowed to mate at every estrus. Bulls were equipped with chin ball markers, and observations for estrus and/or breeding activity were made twice daily for 107 days after the last cow calved.

Weekly blood progesterone levels were obtained to aid in determining estrus. Conception dates were determined by progesterone levels, palpations, and calving dates the following year.

Results and Discussion

Results are shown in Table 3.1. At the end of the feeding period, all groups of cows had very similar pre-calving condition scores and body weights, averaging 5.8 and 1349 lbs. No differences were detected between breeds or energy levels. There was no difference in lbs of energy (TDN) per lb of gain during the last 4 months of gestation between breeds or energy levels. The 10% reduction in energy level was not enough to cause significant performance differences with these cows, since they started in good condition (condition scores 6.2 and 5.3). The cows averaged 42 days from calving to first estrus and 60 days to conception, with no differences between breeds or energy levels. Calf birth weights averaged 94 lbs, with no differences between breeds or energy levels. The Polled Hereford cows gained 2.06 lbs per day during the following summer grazing, whereas the Simmentals gained significantly less, 1.22 lbs per day. The average weaning weights of the Polled Hereford calves was 540 lbs, and the Simmental calves averaged 610 lbs.

Table 3.1. Least Squares Means for Traits by Breed and Dietary Energy Level

Trait	Polled Hereford		Simmental	
	Low	High	Low	High
Starting Oct. Cond. ¹	6.20 ^a	6.12 ^a	5.43 ^b	5.22 ^b
Starting Oct. Wt. lb	1284 ^a	1333 ^a	1319 ^a	1310 ^a
Pre-calving ADG, lb	0.56 ^a	0.83 ^b	0.56 ^a	0.68 ^{ab}
Pre-calving Cond. ¹	5.84 ^a	5.89 ^a	5.83 ^a	5.82 ^a
Pre-calving Wt., lb	1319 ^a	1376 ^a	1357 ^a	1342 ^a
Pre-calving Daily TDN, lb	11.4 ^a	12.6 ^b	13.0 ^b	14.0 ^c
Gain/TDN, lb	0.04 ^a	0.06 ^a	0.05 ^a	0.05 ^a
Grazing ADG, lb	2.17 ^a	1.95 ^{ab}	1.44 ^{bc}	1.00 ^c
First Estrus, days postpartum	46.4 ^a	51.9 ^a	31.9 ^a	39.2 ^a
Conception, days postpartum	63.2 ^a	70.6 ^a	54.2 ^a	54.1 ^a
Calf Birth Wt., lb	93.8 ^a	91.2 ^a	97.7 ^a	93.2 ^a
Calf 205-day Wt., lb	535 ^a	544 ^a	626 ^b	595 ^{ab}
Ending Oct. Wt., lb	1378 ^a	1313 ^b	1300 ^b	1340 ^{ab}

^{abc} Means with different superscripts are different (P<.05).

¹Condition score scale: 1 = extremely thin to 9 = extremely fat.