

Summary

Eleven sets of twin heifers have completed one lactation on test. Results to date show that a high level of body fatness had little influence on breeding efficiency but slightly increased birth weight of calves, and also resulted in increased calving difficulty, lower milk yields and calf weights, and decreased survival rates of both heifers and calves. Levels of certain blood constituents and the average body temperature of fat heifers were higher than the values of low level heifers.

Relative Value of Bermuda Grass Hay Vs. Prairie Hay For Wintering Beef Calves

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Many pasture improvement plans include establishment of Bermuda grass sod for grazing use or the production of hay. The protein content of the forage may vary considerably with fertilization treatments. Because many cattlemen are concerned with the feeding value of Bermuda grass hay, a preliminary study of its value was started at the Lake Blackwell range area in November, 1960.

Procedure

Eighteen weanling grade Hereford calves were divided into two lots (seven heifers and two steers per lot) on November 16, 1960. Each lot was placed in a small pen (about one acre) and fed hay *ad lib.* Those in Lot 1 were fed prairie hay which had been harvested at the range area. The predominant grasses in this hay were little bluestem, big bluestem, switch, and Indian.

The calves in Lot 2 were fed Bermuda grass hay produced at Stillwater under the direction of the Agronomy Department. This was Midland Bermuda grass grown under conditions of adequate moisture, fertilized with 200 pounds of nitrogen per acre for the season, and cut periodically through the summer.

The chemical composition of the hays is given in Table 1. It was estimated that the total protein furnished by the Bermuda grass hay when consumed at a rate of nine to 10 pounds was more than adequate for maintenance of the calves. The digestibility of the protein in both hays was assumed to be 50 percent. The average daily consumption of Bermuda grass hay was 9.20 pounds per head. Calculations based on a total protein content of 13.1 percent and a protein digestibility of 50 percent indicate an assumed digestible protein intake of 0.66 pounds per head daily. The fact that protein is nearly always the limiting nu-

trient in prairie hay is borne out when calculating the digestible protein intake from this particular hay. This prairie hay contained an average of only 4.44 percent total protein. With an assumed 50 percent digestibility and the measured 9.26 pounds of hay intake, the digestible protein intake from the hay was 0.21 pound. Supplementing the prairie hay with 1.39 pounds of pelleted 41 percent protein cottonseed meal (32.5 percent digestible protein) furnished an additional 0.45 pound digestible protein. The total from the hay and cottonseed meal was 0.66 pound, the same as from Bermuda grass hay alone. This may be compared to their estimated requirement of about 0.60 pound digestible protein per head daily.

Table 1.—Chemical Composition of Hays Fed to Weanling Calves

	Percent composition as fed								Carotene mc/gm
	Water	Ash	Protein	Fat	Fiber	N.F.E.	Ca	P	
Prairie hay	5.9	6.8	4.4	1.9	32.2	48.8	.42	.07	5.7
Bermuda grass hay	5.5	7.9	13.1	1.9	27.1	44.5	.32	.22	43.4

The total protein intake was considerably greater for Bermuda grass hay alone, 1.21 pounds, as compared to 0.98 pound from the prairie hay and cottonseed meal.

A mineral mixture of two pounds salt and one pound steamed bone meal was available in all lots.

Results and Discussion

A summary of weight gain and feed consumption is given in Table 2.

In the period from November 16 until February 11 (87 days) the calves fed prairie hay and cottonseed meal gained 58 pounds. Those calves fed Bermuda grass hay without a protein supplement gained only seven pounds. It is assumed that the basic deficiency in most grass hays is protein. It has been shown that the protein content of prairie hay from this area is not adequate to maintain weight of weanling calves. The protein content of this unsupplemented Bermuda grass hay should be adequate to support some weight gain. We also assume that both hays should furnish sufficient energy for wintering calves for little or no gain.

Although the calculated digestible protein content of the two rations was nearly equal, either the protein in the Bermuda grass hay was not well utilized or other nutrients were lacking. Therefore, starting on February 16, pelleted cottonseed meal was fed to both groups of calves. For those fed Bermuda grass hay this change resulted in a total protein intake which is considerably higher than that deemed necessary. The

gains in the subsequent 27-day period were 19 pounds for prairie hay and 26 pounds for Bermuda grass hay. Calves fed the latter hay had gained more rapidly in this period. Gains of the two groups of calves will be recorded for an additional 40 days.

Table 2.—Relative Value of Bermuda Grass Hay Vs. Prairie Hay for Wintering Beef Calves.

Lot Number Hay Fed ¹	1 Prairie	2 Bermuda Grass
Number of calves per lot	9	9
Average weight per calf (lbs.)		
November 16, 1960	360	362
February 11, 1961	418	369
Nov. - Feb. gain (87 days)	58	7
March 10, 1961	437	395
Feb. - March gain (27 days)	19	26
Average feed consumption per calf (lbs.)		
Cottonseed meal	158	21
Hay ²	1056	1049

¹ Calves in Lot 1 were fed prairie hay and 1.39 lbs. cottonseed meal pellets for the total 114 days. Those in Lot 2 were fed only Bermuda grass hay until Feb. 16. At this time the Bermuda grass hay was also supplemented with 1.39 lb. of cottonseed meal pellets per head daily.

² Total pounds of hay consumed per calf. Average daily consumption was 9.26 and 9.20 lbs. in Lots 1 and 2, respectively.

Summary

Preliminary results have shown that weanling grade Hereford calves fed Bermuda grass hay gained one-eighth of the amount of those fed prairie hay supplemented with cottonseed meal to make the two rations equal in estimated digestible protein content. These data suggest that (1) the protein of the Bermuda grass hay was poorly utilized, (2) the Bermuda grass hay contained some unrecognized inhibitory factor, or (3) the Bermuda grass hay was deficient in some respect.

Stilbestrol for Range Beef Cattle

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Stilbestrol is being used in many systems of beef cattle production. Its use with fattening cattle is generally accepted as a means of increasing weight gain and feed efficiency. In range beef cattle production the three phases in which stilbestrol is being used are: (1) suckling calves, (2) wintering weanling calves, and (3) summer grazing of yearlings. Summaries of 1960-61 research concerning these three phases are included in this report.