

to the fact that the average litter size at weaning was about the same for each group in Trial Two whereas there were fewer pigs weaned per litter in the low level group in Trial One.

In considering the results of these trials it should be pointed out that the daily intake of such essential nutrients as protein, minerals, and vitamins was essentially the same for both groups of gilts during gestation. These intakes were at, or near, the National Research Council recommended levels. Only the total digestible nutrient level for group 2 was held below N.R.C. recommended allowances. Gilts in group 2 appeared to be quite hungry and thin, particularly as they approached farrowing. When placed on self-feeders during lactation, these gilts consumed more feed and lost less weight; thus, at weaning the two groups of gilts were essentially alike in appearance.

## **Bermuda Grass Hay for Wintering Beef Cattle**

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Pasture improvement programs have resulted in the increased use of improved strains of bermuda grass, which in turn have made large quantities of bermuda grass hay available for feeding. The protein content of the forage may vary considerably with fertilizer treatments. Little is known of the nutritive value of such hays for beef cattle. Preliminary studies have indicated that gains of cattle fed bermuda hay containing 13.1 percent protein were increased when supplemental cottonseed meal was fed. Thus, supplemental feeding (protein or energy) is important with bermuda hay even though chemical composition of the hay does not so indicate. The great potential production of bermuda hay could serve as the basis of an expanded beef cattle program when proper nutrient supplementation of the hay when fed to cattle has been determined.

### **Procedure**

Thirty grade Hereford weanling calves were divided into three lots (five steers and five heifers per lot) on December 21, 1961. Each lot was placed in one-acre traps and fed hay ad libitum. Those in Lot 1 were fed prairie hay and 1.25 lb. of pelleted cottonseed meal per head daily. The supplement was fed at the rate of twice the daily allowance every other day. The hay, which had been harvested at the Lake Blackwell experimental range area, was mainly little bluestem with appreciable quantities of big bluestem and Indian grass.

The calves in Lots 2 and 3 were fed bermuda grass hay produced at Stillwater under direction of the Agronomy department. The hay was from Midland bermuda grass grown under conditions of adequate moisture, fertilized with 200 lbs. of nitrogen per acre for the season, and cut periodically during the summer. Calves in Lot 2 were not given any supplemental feed. Those in Lot 3 were fed 1.25 lb. of ground corn per head daily. Corn was fed as a source of energy because it is lower in protein than milo, barley, or oats.

A mineral mixture of 2 lbs. of salt and 1 lb. of defluorinated rock phosphate was available in all lots.

## Results

The chemical composition of the supplements is given in Table 1. The protein content of the prairie hay was slightly higher than is usually found in hay produced on the experimental area. The protein content of the bermuda hay was lower than was expected.

Table 1.—Chemical Composition of Feeds.

Feed	Percent Composition							
	Dry Matter	Ash	Protein	Fat	Fiber	NFE	Ca	P
Prairie hay	93.5	7.4	5.2	2.6	30.0	48.3	.39	.12
Bermuda hay (First 55 days)	93.4	8.0	11.0	2.5	28.5	43.9	.46	.38
Bermuda hay (Last 38 days)	93.2	7.6	9.8	1.8	28.3	45.7	.44	.68
Cottonseed meal	92.6	6.3	39.6	3.3	8.4	35.0	.22	1.40
Ground corn	89.9	1.6	8.8	3.8	1.5	74.2	.06	.39

The average daily intake of prairie hay by the calves in Lot 1 was 11.4 lbs. The calves in Lots 2 and 3 consumed an average of 10 lbs. of bermuda hay per head daily. At this rate of hay intake, the daily total protein intake was 1.09, 1.10, and 1.21 lbs. for Lots 1, 2, and 3, respectively, for the first 55 days. Bermuda hay from a different plot was fed for the last 38 days, and because its protein content was slightly lower, the total protein intake for Lots 1, 2, and 3 was 1.09, .98, and 1.09 lb. per head daily, respectively, during this period.

Table 2.—Weight Gains of Cattle Fed Prairie and Bermuda Hay.

Lot number Hay Supplement	1 Prairie 1.25 lb. CSM	2 Bermuda None	3 Bermuda 1.25 lb. corn
Number of head per lot	10	10	10
Average weight per head, lbs.			
Fall 12-21-61	488	488	490
Spring 3-24-62	554	511	557
Gain 93 days	66	23	67

Average weight gains of the cattle are given in Table 2. The cattle in Lot 1 gained .71 lb. per head daily when fed prairie hay and cottonseed meal. The average daily gain was .25 lb. for those fed bermuda hay only. When the high-energy supplement, corn, was added to the bermuda hay (Lot 3), the gains were increased considerably. The data indicated the feeding value of bermuda hay plus corn is equal to that of prairie hay plus cottonseed meal.

In a previous test, prairie hay and cottonseed meal were compared to bermuda hay alone when fed to weanling calves. The two rations were equal in protein content, but the 87-day gains were 51 lbs. less for the bermuda hay. In a subsequent 56-day period, both hays were supplemental with cottonseed meal and the gains were equal.

### Summary

Bermuda hay is a satisfactory roughage for wintering cattle when proper supplemental nutrients are provided. Studies have indicated that the high nitrogen content of certain bermuda hays is not efficiently utilized. Also, corn was a satisfactory supplemental feed for cattle fed bermuda hay.