Comparative Values of Prairie Hay and Sorghum Grain for Calves, 1965-66 (Project 253 4-6)

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This test was to determine if sorghum grain could completely replace prairie hay in a ration for calves being fed for limited growth. Intake of grain was restricted to supply approximately the same amount of energy consumed by calves fed hay free choice.

The experimental treatments follow:

Lots 18 and 19 - Prairie hay unlimited, supplemented with a soybean oil meal based supplement.

Lots 20 and 21 - 2 lb. per day of prairie, sorghum grain at level to equal total digestible nutrient intake of lots 18 and 19. A soybean oil meal based supplement was fed.

Lots 22 and 23 - Sorghum grain limited to equal intake of total digestible nutrients of lots 18 and 19. A soybean oil meal based supplement was fed.

One of each two lots (19, 21, 23) was supplied top soil, placed in one end of the feed bunk and kept before the steers at all times. Pens were not hard surfaced so all lots had access to soil other than that fed.

The test was designed so all lots would receive approximately the same amount of total digestible nutrients and protein. Estimated TDN content for prairie hay was 45%; for the ground sorghum grain and soybean oil meal, 80%. Protein content of the hay was 5%; the grain, 10%; and the soybean meal, 46%. Other nutrients thought to be lacking in any ration were mixed with the soybean oil meal. Vitamin A was added to supply 10000 I.U. per head daily, a trace mineral mixture was added, see footnote 2, table 10. Monosodium phosphate and ground limestone were used to equalize phosphorus and calcium intake as near that required as possible. Salt was before the steers at all times.

The initial weight December 18 was a full weight taken in the afternoon, the weight January 4 and the final weight were shrunken weights taken after 15 hours without feed or water.

The steers were choice grade Herefords, 12 head to a lot, that originated in Barber county, Kansas.

Observations

For the entire test, including the first two-week adjustment period, the calves receiving prairie hay gained more and required less total digestible nutrients to produce a pound of gain. Steers receiving sorghum grain and the grain and hay combination performed about equally.

After the two week adjustment period, performance (daily gain and TDN per lb. of gain) was about the same under all treatments.

The limited amount of dry matter fed in lots 20 through 23 increased both salt and top soil intakes.

One steer in lot 23 died March 20, from an undetermined cause, a few bloat cases were observed in lots 21 and 23 where top soil was being fed and the intake of dry matter restricted. One steer in lot 21 was treated for bloat twice.

Take cattle out

Table 10
Comparative value of prairie hay and sorghum grain for calves December 18, 1965, to March 25, 1966
97 days.

Experimental treatment	Prairie hay		Prairie hay & sorghum grain		Sorghum grain	
	No soil	Top soil fed	No soil	Top soil fed	No soil	Top soil fed
Lot no.	18	19	20	21	22	23
Initial weight per steer[1]	450	452	451	450	448	447
Final weight per steer[1]	566	561	522	532	538	531
Daily gain per steer	1.19	1.12	0.73	0.84	0.92	0.86
Daily ration per steer:						
Prairie hay	11.9	11.9	2.5	2.4	0.7[3]	0.7[3]
Ground sorghum grain	0	0	5.5	5.5	6.6	6.5
Soybean oil meal (also served as carrier for trace minerals, vitamin A, calcium and phosphorus sources, see footnote 2)	1.3	1.3	1.1	1.1	1.1	1.1
Salt	.09	.13	.23	.23	.25	.22
Top soil	0	0.06	0	0.18	0	0.24
Feed per lb. of gain:						
Concentrates	1.1	1.2	9.0	8.3	8.7	8.8
Prairie hay	9.9	10.8	3.4	3.1	0.8	0.8
Total	11.0	12.0	12.4	11.4	9.5	9.6
Total digestible nutrients per lb. of gain	5.4	5.8	8.7	8.0	7.3	7.4
Performance from January 4 to March 25, 1966, after all lots were receiving their experimental diet.						
Daily gain per steer	0.86	0.94	0.94	0.95	1.00	1.03
Daily ration per steer:						
Prairie hay	12.2	12.2	2.1	2.1	0	0
Ground sorghum grain	0	0	5.9	5.9	7.2	7.2
Soybean oil meal	1.3	1.3	1.1	1.1	1.1	1.1
Salt	0.08	0.10	0.30	0.27	0.26	0.22
Top soil	0	0.06	0	0.22	0	0.27
Feed per lb. of gain:						
Concentrates	1.5	1.4	7.5	7.4	8.3	8.1
Prairie hay	14.2	13.0	2.2	2.2	---	---
Total	15.7	14.4	9.7	9.6	8.3	8.1
Total digestible nutrients per lb. of gain	7.6	6.7	7.0	6.8	6.6	6.5

1. Initial weight per steer December 18 was a full weight taken in the afternoon; all other weights, January 4 and March 25 were taken after 15 hours without feed or water.

2. Added to the soybean oil meal were these nutrients: Vitamin A to supply 10000 I.U. per head daily; a trace mineral mixture supplying in mg. per head daily; manganese, 200; iron, 300; copper, 60; cobalt, 10; iodine, 14; and zinc, 41. Monosodium phosphate and ground limestone were used to equalize phosphorus and calcium intake as near the requirement level as possible for all lots.

3. Prairie hay was fed lots 22 and 23 only the first two weeks while it was gradually being replaced with grain.