

The Value of Sorghum Grain, Corn and Wheat Fed Individually and in Varying Combinations in Beef Cattle Finishing Rations. (Project 567)

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Sorghum grain is the predominant grain produced in Kansas for livestock. In general, sorghum grain may be expected to produce a rate of gain similar to corn and greater than wheat when fed to beef cattle. However, it is not normally as efficient from the standpoint of pounds required per pound of gain. Two feedlot trials have been conducted to determine the value of feeding mixtures of sorghum grain and corn or wheat.

Experimental Procedure

Trial 1. Hereford steers averaging about 740 lbs. and previously used in summer pasture grazing studies were divided into six lots on the basis of weight and conformation. They were fed daily about 8 pounds sorghum silage, 3 pounds alfalfa hay and 1 pound of supplement for 159 days. Grain was fed as sorghum grain or wheat and mixtures as shown in table 5. One lot (12) received a mixture of equal parts sorghum grain, wheat and corn. The steers were fed twice daily the amount they would clean up.

Trial 2. Sixty Hereford heifers purchased on the Dodge City market were divided into six lots on the basis of purchase weight and conformation. The daily ration was composed of 2 pounds alfalfa hay, 1 pound supplement, 2 pounds prairie hay for the first 56 days and grain free choice. The grain or mixtures of grain are shown in table 6.

Results

Results are presented in tables 5 and 6. Trial 1. Wide variation within lots resulted in no significant differences in rate of gain. However, the steers on all wheat gained less and those receiving the mixture of three grains gained more. Animals receiving wheat tended to use less feed per pound of gain. Trial 2. The heifers receiving all sorghum grain gained less ($P < .10$) than the others. Mixtures of sorghum grain and corn tended to produce higher gains with greater feed efficiency, though neither difference was statistically significant.

Observations

1. Using wheat in a mixture with sorghum grain produced no change in rate of gain; however, feed efficiency tended to be increased.
2. Using corn in a mixture with sorghum grain tended to increase gains and feed efficiency.
3. Mixtures of grain seemed to be more acceptable to the animals over a longer time.
4. There were no significant differences in carcass grades or other characteristics observed.

Table 5
Feedlot results for Finishing Steers with Sorghum Grain,
Sorghum Grain and Wheat or Sorghum Grain, Wheat and Corn.
December 15, 1965 to May 23, 1966 - 159 days

Lot no.	7	8	9	10	11	12
No. steers per lot	11	11	11	10	11	11
Grain, %:						
Sorghum grain	100	75	50	25	--	33
Wheat	--	25	50	75	100	33
Corn	--	--	--	--	--	33
Av. initial wt., lb.	741.4	742.7	742.7	748.0	742.3	740.9
Av. final wt., lb.	1192.7	1189.5	1183.6	1199.0	1160.5	1227.7
Av. daily gain, lb.	2.84	2.81	2.77	2.84	2.63	3.06
Av. daily ration, lb.:						
Sorghum silage	7.9	7.8	7.9	8.0	7.9	7.9
Alfalfa hay	3.0	3.0	3.0	3.0	3.0	3.0
Grain	17.8	17.6	16.1	14.0	14.4	17.8
Supplement	1.0	1.0	1.0	1.0	1.0	1.0
Feed per cwt. gain, lb.:						
Sorghum silage	278	279	284	280	300	259
Alfalfa hay	106	107	108	106	114	98
Grain	626	626	581	518	548	582
Supplement	35	36	36	36	38	33
Feed cost per cwt. gain, \$	16.54	17.29	17.18	16.33	18.03	16.97
Shrink to market, %:						
Hauling	0.88	0.95	1.34	1.83	0.78	0.78
Overnight stand	2.90	2.52	2.69	2.37	2.46	2.48
Av. hot carcass wt., lb.	726.8	729.7	717.2	709.0	707.0	764.8
Dressing %, feedlot wt.	60.94	61.35	60.59	59.13	60.93	62.30
Dressing %, market wt.	63.30	63.48	63.07	61.65	62.87	64.34
Est. kidney knob, %:	3.0	2.95	2.91	2.95	2.82	2.91
Av. fat thickness 12th rib, in.	0.57	0.70	0.65	0.58	0.53	0.68
Av. size ribeye, sq ₁ in.	11.88	11.97	11.72	12.22	12.63	12.85
Av. degree marbling	7.45	7.18	7.00	7.30	7.45	7.09
Carcass grades:						
Top choice	-	1	-	-	-	1
Av. choice	-	-	6	2	1	2
Low choice	6	6	2	5	4	4
Top good	5	4	3	2	4	3
Av. good	-	-	-	-	1	1
Low good	-	-	-	1	1	-

1. 4 = slightly abundant, 5 = moderate, 6 = modest, 7 = small amount, 8 = trace.

Table 6
Feedlot Results for Finishing Heifers With Sorghum Grain,
Sorghum Grain and Corn or Sorghum Grain, Corn and Wheat.
June 4 - September 24, 1966 - 112 days

Lot no.	7	8	9	10	11	12
No. heifers per lot	10	10	10	10	10	10
Grain, %:						
Sorghum	100	75	50	25	-	33
Corn	-	25	50	75	100	33
Wheat	-	-	-	-	-	33
Av. initial wt., lb.	607.5	608.5	607.0	608.5	607.0	610.0
Av. final wt., lb.	897.0	936.5	945.0	946.5	935.0	936.0
Av. daily gain	2.58	2.93	3.10	3.02	2.93	2.91
Av. daily ration, lb.:						
Grain	17.0	17.6	17.5	16.2	16.2	16.6
Supplement	1.0	1.0	1.0	1.0	1.0	1.0
Alfalfa hay	2.0	2.0	2.0	2.0	2.0	2.0
Prairie hay	1.7	1.7	1.7	1.7	1.7	1.7
Feed per cwt gain, lb.:						
Grain	658	600	565	538	553	570
Supplement	39	34	32	33	34	34
Alfalfa hay	77	68	65	66	68	69
Prairie hay	67	59	56	57	59	59
Feed cost per cwt gain, \$	16.55	15.42	14.96	14.86	15.69	15.77
Av. hot carcass wt., lb.	543.0	585.5	587.0	583.5	577.5	572.6
Est. Kidney Knob, %	2.15	2.35	2.45	2.22	2.32	2.17
Av. fat thickness 12th rib, in.	0.56	0.59	0.70	0.57	0.58	0.56
Av. size ribeye, sq. in.	10.54	11.37	11.17	11.13	11.12	10.74
Av. degree marbling	7.5	7.2	7.7	7.7	7.1	7.8
Av. yield grade	2.3	2.4	2.9	2.1	2.5	2.3
Carcass grades:						
Top choice	-	-	-	-	1	-
Av. choice	1	4	-	1	-	1
Low choice	2	2	3	1	5	-
Top good	2	-	3	3	-	2
Av. good	5	3	4	4	4	5
Low good	-	1	-	1	-	2

1. 4 = slightly abundant, 5 = moderate, 6 = modest, 7 = small amount, 8 = trace.