

# GRASS FED BEEF

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A beef production system utilizing nearly all forage was studied from 1973 to 1976. The system included a wintering phase, a summer grazing phase and a feedlot phase. Straight bred Hereford and Angus-Hereford steers were compared in all phases. Steers finished on chopped hay required 54 more days in drylot when sold at approximately 975 pounds and 46 more days when sold at 1050 pounds than did steers receiving 1% grain. Both grain and the hay finished steers graded U.S.D.A. good and choice, with a higher percentage of Angus X Hereford steers grading choice than did the straight Hereford steers.

A beef production system using nearly all roughage rations has been evaluated at the Dickinson Experiment Station since 1974.

This trial was designed with three feeding phases: the calf wintering phase, the summer grazing phase and the feedlot finishing phase.

In the calf wintering phase, Hereford and Angus-Hereford crossbred calves were self-fed a limited grain-high roughage growing ration to produce gains of 1.25 to 1.50 pounds per day. The wintering ration was composed of 20 per cent ground oats and 80 per cent chopped hay self-fed with minerals added at the rate of 10 pounds of di-calcium phosphate and 40 pounds of salt per ton of mixed feed. The three-year results of the wintering phase are shown in Table 1. The normal wintering phase lasted from early November until May, a period of approximately 160 days.

Table 1. Winter gains, calf wintering phase

	1973-74	1974-75	1975-76	3 Yr. Avg.
<b>Initial wt. (Fall)</b>				
BWF	367	367	475	403
Hereford	374	374	469	405
<b>Spring wt. (May)</b>				
BWF	552	621	707	627
Hereford	583	607	708	633
Days fed	152	175	157	161
<b>Avg. daily gain, lbs.</b>				
BWF	1.21	1.45	1.46	1.37
Hereford	1.37	1.33	1.52	1.41

Following the wintering phase, the steers were pastured from May until late October on a series of three pastures: crested wheatgrass, native range and Russian wildrye. This pasture grazing period lasted 196 days in 1974 and 1975, and 168 days in 1976.

Results of the pasturing phase for the three year period are shown in Table 2.

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Table 2. Average steer gains, pasture phase

	1974	1975	1976	3 Yr. Avg.
<b>Crested wheatgrass</b>				
Days	55	56	53	54.7
Gain/lbs. — BWF	84	68	56	69.3
Hereford	90	69	62	73.7
ADG/lbs. — BWF	1.53	1.21	1.06	1.27
Hereford	1.64	1.23	1.17	1.35
<b>Native range</b>				
Days	71	57	46	58
Grain/lbs. — BWF	130	129	52	103.7
Hereford	108	133	46	95.7
ADG/lbs. — BWF	1.83	2.26	1.13	1.74
Hereford	1.52	2.33	1.00	1.62
<b>Russian wildrye</b>				
Days	70	83	69	74
Grain/lbs. — BWF	37	33	67	45.7
Hereford	36	15	58	36.3
ADG/lbs. — BWF	0.52	0.40 <sup>1</sup>	0.97	0.63
Hereford	0.52	0.18	0.83	0.51
Total pasture period, days	187			
Total grain, lbs. — BWF	218.7			
Hereford	205.7			
ADG/lbs. — BWF	1.17			
Hereford	1.10			

<sup>1</sup>Gains low due to a snowstorm.

After the grazing period, the steers were randomly placed into two groups for the feedlot finishing phase. Half of each group was selected to be sold at 975 to 1000 pounds while the rest were to continue on feed until they reached normal slaughter weights of 1050 to 1100 pounds.

Each group was self-fed a chopped mixed hay ration of approximately 30 per cent alfalfa and 70 per cent brome-crested wheatgrass hay. This hay was very good quality, having good color, odor and an abundance of

fine stems and leaves. In addition to the chopped hay, one group of steers was hand fed oats and barley at the rate of 1 per cent of their body weight.

**Table 3. Weights and gains, carcass data and returns — short fed drylot phase 1974-77**

	1% Grain ration		Chopped hay ration	
	BWF	Hereford	BWF	Hereford
<b>Weights and gains</b>				
Initial wt., lbs.	865	846	858	854
Final wt., lbs.	993	976	1004	1007
Days fed	62	62	116	116
ADG, lbs.	2.62	2.53	1.31	1.37
<b>Carcass information</b>				
Hot carcass wt., lbs.	539	526	540	530
Dressing %	54.2	53.4	53.7	52.7
U.S.D.A. grades	3 Cho 6 Gd	9 Gd	7 Cho 2 Gd	3 Cho 6 Gd
<b>Selling price</b>				
1974-75	3/4/75 Cho \$54.40	Gd \$50.50		
	4/16/75 Cho \$66.00	Gd \$62.00		
1975-76	1/20/76	Gd \$59.00		
	3/25/76 Cho \$55.00	Gd \$53.00		
1976-77	11/16/76 Cho \$59.50	Gd \$55.50		
	1/10/77 Cho \$59.50	Gd \$55.00		
Avg. carcass value, \$	303.46	290.73	320.02	303.24
Avg. feed costs, \$	71.75	51.75	76.46	76.46
Return over feed, \$	251.70	238.98	243.55	226.78

**Discussion:**

This trial has shown that calves can be wintered in good growing condition using a self fed ration of approximately 20 per cent oats and 80 per cent tame hay plus minerals.

As expected, pasture gains varied somewhat from year to year, but the three-pasture system did allow an extended grazing period.

Performance of steers in dry lot was about as expected. Steers receiving grain at the rate of 1 per cent of their body weight were marketed in less time, averaging 54 less days in the early selling and 46 less days in the normal selling groups.

Although the hay fed steers required more time to reach the same market weight, returns over feed were not appreciably different. They hay fed steers graded good to choice at the weights sold.

Over the years, the crossbred steers graded higher than the straightbred steers, largely because they expressed more marbling in the loin eye muscle.

Except for minerals free choice, the steers did not receive any additional feed additives, supplements or growth stimulants.

Upon reaching slaughter weights, all were shipped approximately 300 miles to Flavorland Dressed Beef in West Fargo, North Dakota. Individual carcass data was collected with the assistance of the Animal Science Department, North Dakota State University.

Average trial results for three years are summarized in Tables 3 and 4.

**Table 4. Weights and gains, carcass data and returns — long fed drylot phase 1974-77**

	1% Grain ration		Chopped hay ration	
	BWF	Hereford	BWF	Hereford
<b>Weights and gains</b>				
Initial wt., lbs.	863	847	840	849
Final wt., lbs.	1083	1045	1026	1030
Days fed	116	116	162	162
ADG, lbs.	1.98	1.72	1.18	1.12
<b>Carcass information</b>				
Hot carcass wt., lbs.	607	594	567	565
Dressing %	56	56.7	55.3	54.7
U.S.D.A. grades	1 Pr 5 Cho 2 Gd 1 Std	3 Cho 6 Gd	8 Cho 1 Gd	2 Cho 7 Gd
<b>Selling Price</b>				
1974-75	4/16/75 Cho \$66.00	Gd \$62.00		
	6/11/75 Cho \$81.00	Gd \$73.00		
1975-76	3/25/76 Pr \$56.00	Cho \$55.00		
	5/12/76 Cho \$61.50	Gd \$59.50		
		Std \$51.00		
1976-77	1/10/77 Cho \$59.50	Gd \$55.00		
	2/14/77 Cho \$57.00	Gd \$54.00		
Avg. carcass value, \$	356.93	344.29	374.53	354.77
Avg. feed costs, \$	103.57	103.57	107.83	107.83
Return over feed, \$	253.36	240.72	266.70	246.93

**Summary:**

This trial has demonstrated that Hereford or BWF steer calves can be fed from weaning to slaughter on rations composed almost entirely of roughage, without the use of feed additives, supplements, or synthetic growth stimulants. When conditions of high grain price and normal roughage costs exist, this feeding system may well be utilized with good results.