

Feedlot Breed Comparison of First Generation Steers

J. L. Nelson and D. G. Landblom

A majority of North Dakota beef cattle producers are attempting to increase profits in their cattle operation by crossbreeding. Deciding which breed to combine is not easy and is often made based upon what type and breed combination is selling well at the time. Since the generation interval in cattle is long and the margin between profit and loss is often small, producers may become trapped into producing a terminal cross calf before they develop a highly productive brood cow.

Research on beef cow efficiency is just starting to filter out of Experiment Stations in the U. S. and Canada. The Dickinson Experiment Station has started to evaluate several different crossbred cow types and sizes in order to provide stockmen with data that has been collected under typical western North Dakota conditions. In this breeding study, crossbred brood cow types are being developed that should maximize heterosis when bred back to unrelated terminal sires. The development of these various brood cow types results in the production of steer calf counterparts which may have good or poor feedlot or carcass traits.

This phase of the trial compares the feedlot performance and carcass information from steers produced during the first generation of breeding. In 1984, the steers fed represented four breed types namely Hereford, Angus X Hereford, Milking Shorthorn X (Angus X Hereford) and Simmental X Hereford. Because of producer interest three additional pens of steers were included in the 1985 trial. These were: Charolais X Hereford; Gelbvieh X Hereford and Salers X Hereford crossbreds.

Before the feeding trial was begun all steers were implanted with Compudose[®], treated for lice, and vaccinated with a 7-way Clostridium vaccine. Average starting weight for all pens ranged from 600 to 675 pounds.

All steers were bunk line fed a complete mixed ration of rolled barley, chopped mixed hay, corn silage and minerals. The barley portion of the ration started at 30% and was increased by 5% increments until it made up 75% of the total ration. Feed consumption is summarized in Table 2. The steers were fed on a grade constant basis, meaning that each group was fed until it felt that 60% of the animals would grade choice when slaughtered. Following this determination, the steers were trucked to Held Beef in West Fargo, North Dakota for slaughter. Dr. Paul Berg, Animal Science Department at N.D.S.U., was in charge of slaughtering and collection of all carcass data.

Summary: All steers performed better in 1985 than in 1984, with average daily gains ranging from 2.91 lbs. for Herefords to 3.44 lbs. for Simmental crossbreds. Feed consumption per day averaged 28.95 lbs. for the Herefords to 36.70 lbs. for the Simmental cross. The Gelbvieh crossbreds had the lowest feed cost per hundredweight gain at \$29.43, followed by Angus X Hereford at \$29.90. The Hereford had the highest at \$34.95. Based on actual selling price minus feed cost in 1985, the Milking Shorthorn X BWF Cross at \$413.47, the Angus X Hereford at \$412.74, and the Simmental X Hereford at \$409.38 showed the highest returns. All steers graded about as expected except for the Gelbvieh crossbreds which failed to make the choice grade. However, they had the largest loin eye size at 12.9 square inches.

This information shows a rather large yearly variation in rate of gain and feed efficiency. There also appears to be substantial differences between breed types in their ability to grade choice.

Feeding gains, economics, carcass data and returns over feed are shown in Table 1 for 1985.

Table 5 shows the 1984 and 1985 combined data.

The trial will be continued in the 1985-86 feeding season.

Summary: All steers performed better in 1985 than in 1984, with average daily gains ranging from 2.91 lbs. for Herefords to 3.44 lbs. for Simmental crossbreds. Daily feed consumption averaged 28.95 lbs. for the Herefords to 36.70 lbs. for the Simmental crossbreds. The Gelbvieh crossbreds had the lowest feed cost per hundredweight gain at \$29.43 followed by Angus X Hereford steers at \$29.90. The Hereford steers had the highest feed cost per cwt. gain at \$34.95. Based on actual carcass value minus feed costs in 1985, the Simmental crossbreds returned

\$440.97, the Milking Shorthorn X (Angus X Hereford) crossbreds \$438.55, and the Angus X Hereford steers at \$443.43 showed the best return. The Charolais crossbreds and the Gelbvieh crossbreds failed to gain as well as expected, with only one of the Charolais steers and none of the Gelbvieh steers grading choice. This reduced their carcass value considerably and therefore lowered their return over feed costs.

The two year combined results shown in Table 3, show some interesting patterns. All three crossbred groups Angus X Hereford, Milking Shorthorn X (Angus X Hereford) and Simmental X Hereford outgained the straightbred Herefords by 0.27 lbs/head/day. Both the Hereford and the Angus X Hereford steers were more feed efficient than the larger framed Milking Shorthorn X (Angus X Hereford) and Simmental X steers.

The Angus X Hereford and Milking Shorthorn X (Angus X Hereford) steers graded 57% choice, the Simmental X graded 54% choice and the straight Hereford only had 28.6% choice according to the U.S.D.A. standards. Best overall return over feed costs was \$442.98 for the Angus X Hereford, followed by the Milking Shorthorn X (Angus X Hereford) at \$439.56.

Table 1. Feedlot gains, economics and carcass data for 1985.							
	Hereford	Charolais X Hereford	Gelbvieh X Hereford	Angus X Hereford	Salers X Hereford	M. Shorthorn X Hereford	Simmental X Hereford
No. of steers	7	7	7	7	7	7	7
Final Weight, lbs.	1069.6	1137.0	1124.9	1088.0	1147.1	1146.6	1264.1
Initial Weight, lbs.	644.3	629.3	638.0	628.0	648.3	702.9	706.9
Gain, lbs.	425.3	507.7	486.9	460.0	498.8	443.7	557.2
Days fed	146	160	146	146	162	146	162
ADG, lbs.	2.91	3.17	3.33	3.15	3.07	3.03	3.44
Hot carcass wt., lbs.	625.6	658.4	643.8	642.0	683.4	665.1	741.6

Dressing %	58.5	57.9	57.2	59.0	59.6	58.0	58.7
Loin eye size	11.8	12.0	12.9	11.5	12.2	11.2	11.3
Fat thickness	.47	.33	.30	.53	.29	.45	.39
U.S.D.A. Grade	2 choice 5 good ²	1 choice 6 good ³	7 good ²	5 choice 2 good ²	4 choice 3 good ³	4 choice 3 good ²	4 choice 3 good ³
Actual Carcass Value \$	545.11	533.48	553.72	570.99	571.00	587.17	622.47
Assumed Carcass Value \$ ¹	545.11	570.09	553.72	570.99	599.88	587.17	654.45

¹Assumed value using \$86/cwt for good, \$90/cwt choice

²actual selling price - choice @ \$90.00, Good @ \$86.00

³Actual selling price - Choice @ \$87.00, Good @ \$80.00

Table 2. Feed consumption for 1985.							
	Hereford	Charolais X Hereford	Gelbvieh X Hereford	Angus X Hereford	Salers X Hereford	M. Shorthorn X Hereford	Simmental X Hereford
Feed Consumption/lbs							
Barley	15.4	17.6	17.0	16.3	17.6	17.6	19.5
Corn Silage	10.4	11.1	11.4	10.8	11.4	11.9	13.2
Mixed Hay	1.59	1.94	1.92	1.85	2.03	2.13	2.06

Alfalfa	1.37	1.44	1.46	1.42	1.43	1.42	1.62
TM Salt	.102	0.12	0.11	.11	0.12	0.12	.13
Di Cal	.102	0.12	0.11	.11	0.12	0.12	.13
Total/ Day/lbs	28.95	32.32	32.00	30.66	32.73	33.31	36.70
Feed/lb gain	9.94	10.58	9.61	9.73	10.6	10.96	10.70
Feed Cost/Steer	148.63	161.29	143.31	137.54	163.99	148.62	181.51
Feed Cost/cwt gain	34.95	31.77	29.43	29.90	32.87	33.49	32.57
Return over feed \$	396.47	372.19	410.41	433.43	407.00	438.55	440.97
Assumed value ² \$	396.47	408.80	410.41	433.43	435.89	438.55	472.94

²Assumed value using \$86/cwt for good, \$90/cwt for choice

Table 3. Two year average feedlot gains, economics and carcass data - feedlot comparison trial.

	Hereford	Angus X Hereford	M. Shorthorn X Hereford	Simmental X Hereford
Gains:				
No. head	14	14	14	14
Days fed	170.5	160	160	178
Initial wt., lbs.	621.4	636	674.6	691.15

Final wt., lbs.	1069.4	1100	1147.6	1205.9
Gain, lbs.	448	464	473	517
ADG, lbs.	2.66	2.92	2.95	2.94
Economics:				
Feed/head, lbs.	24.70	26.78	29.33	30.47
Feed/lb. gain, lbs.	9.21	9.12	9.52	10.30
Feed cost/head, \$	158.41	152.76	167.34	190.46
Cost/cwt gain, \$	35.34	32.89	35.26	37.13
Carcass Data:				
USDA Grade ¹	4 ch	8 ch	8 ch	6 ch
	10 gd	6 gd	6 gd	8 gd
Hot weight, lbs.	619.5	646.5	657.0	702.5
Carcass Value, \$	553.87	595.74	607.12	615.70
Return over feed, \$	395.44	442.98	439.56	425.44
1984 ¹ Choice carcass value \$101.00/cwt - good - \$91.00/cwt.; Choice carcass value \$96.00/cwt - good - \$90.00/cwt.				
1985 ¹ Choice carcass value \$90.00/cwt - good - \$86.00/cwt.; Choice carcass value \$87.00/cwt - good - \$80.00/cwt.				

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