The Comparative Value of Steer or Heifer Calves As Feeders Under Varying Feeding Programs

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THE COMPARATIVE VALUE OF STEER OR HEIFER CALVES AS FEEDERS UNDER VARYING FEEDING PROGRAMS

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Criticism of the carcass value of slaughter heifers by packers and retailers can no doubt justify the present spread in slaughter prices. This approximate spread in price has been used to establish the relative value of feeder calves. There is a constant complaint from feedlot operators that heifers are unprofitable when compared to steers of similar quality.

This study was designed to compare the economic advantages and/or disadvantages of steers or heifers using variable but acceptable prefinishing treatments and a common proven finishing treatment. The objectives of this trial were: 1) to compare the response of heifers and steers to varying prefinishing treatments; 2) to determine any sex-treatment interaction; 3) to determine the carry-over effect of prefinishing treatment upon finishing performance; and 4) to determine the justifiable spread in feeder cattle prices for differing sexes under similar conditions.

Methods

Sixty steer and sixty heifer calves of similar quality were randomly assigned to one of five prefinishing treatments, as shown in Table 1. The calves remained on the prefinishing treatments until they reached an average of 625 and 725 pounds for the heifers and steers, respectively. Upon reaching the required weights, all calves were placed on a common finishing ration of 74.5% steam rolled barley, 10% ground alfalfa, 10% beet pulp, 5% molasses, and 0.5% trace mineralized salt.

The steers were implanted with Synovex S and the heifers implanted with Synovex H at the beginning of the finishing phase of the trial.

Steers were marketed at an average weight of 1,081 pounds and the heifers at 917 pounds. Current market prices were used in the economic analysis, realizing that statements made concerning respective values would necessarily change as any of the prices used tended to change.

Results

There were significant differences in average daily gain (ADG) due to sex, rations fed, and sex-ration interactions.

Sex. During the prefinishing phase, when the energy intakes were somewhat limited, the steers gained significantly faster than the heifers ($P < 0.05$), as shown in Table 2. However, during the finishing period, when energy intakes were unlimited, the steers increased their advantage in gain over the heifers ($P < 0.01$). This might be interpreted to mean that the prefinishing rations more closely satisfied the heifers' requirements for maximum gains than they did for the steers.

The heifers were more efficient in the prefinishing period but were less efficient during the finishing period.

The steers spent 132, 108, and 240 days and the heifers 105, 101, and 206 days on the prefinishing , finishing and total feed periods, respectively.

Comparison of feed costs (Table 3) with the actual profits made by each sex (Table 4) seems out of line unless these feed costs are related to the value of each pound of meat produced. When this is done, it is apparent that prices for feeder cattle must do more than simply reflect the differences in slaughter prices. Under the conditions of this trial, if feeder steers were worth $28.50 per hundredweight, the feeder heifers were worth only about $21.40 per hundredweight. In other words, the spread between feeder heifers and steers must be greater if the feeding of heifers is to be as profitable as that of steers.

There were only minor differences in carcass characteristics. The heifers had slightly higher marbling scores and graded slightly higher. However, they had slightly less back fat and a somewhat greater area of ribeye per hundredweight of carcass. Because of lighter carcasses and the slight advantage in ribeye area and back fat, the slaughter value of the heifers should, no doubt, have been closer to the steers but the actual returns were used in this study. This poses the question, "Do current steer carcasses excel heifers in dressing percent and cut out value enough to warrant the spread in slaughter prices?"

Rations. There were significant differences in ADG among rations during the prefinishing period. There were also rations carry-over effects expressed during the finishing phase. The major portion of the differences during the finishing phase (when a common ration was fed) could be attributed to the level of gains made during the prefinishing period. Many of the prefinishing gains were in excess of 1.65 pounds per day. Gains over 1.65 pounds per day have a depressing effect upon subsequent gains in the feedlot or on pasture.

The fact that heifers responded somewhat differently than steers to the prefinishing rations is hard to explain. Sex-ration interactions were significant during all phases of the study.

Greatest overall profits resulted from the long hay prefinishing ration for the steers and the 80:20 hay:grain pellet for the heifers.

Summary

One of five different prefinishing rations was fed to 10 steers and 10 heifers. Upon reaching 725 and 625 pounds in weight for the steers and heifers, respectively, they were placed on a common finishing ration. Significant differences in average daily gains due to sex, prefinishing ration, and sex-ration interactions resulted. Carcass characteristics of the steers and heifers were quite similar. Under the conditions of this study, there must be a greater price variation between feeder steers and heifers if the feeding of heifers is to be as profitable as feeding steers. This, of course, would be subject to change as feed, beef, labor, and/or interest prices vary.

Table 1. Prefinishing Treatment Design

Pen No.	Steers to 725 pounds	Pen No.	Heifers to 625 pounds
1	Corn silage (ad lib.) plus 1% of body weight in chopped alfalfa hay plus 1% weight in concentrate (1)	6	Corn silage (ad lib.) plus 1% of bodyweight in chopped alfalfa hay plus 1% weight in concentrate
2	Hay cubes (ad lib.)	7	Long alfalfa hay (ad lib.) plus 1% of body weight in concentrate
3	Long alfalfa hay (ad lib.) plus 1% of body weight in concentrate	8	Hay cubes (ad lib.)
4	Pelleted alfalfa (ad lib.)	9	Pelleted alfalfa (ad lib.)
5	80:20 pellet of alfalfa hay and steam rolled barley (ad lib.)	10	80:20 pellet of alfalfa hay and steam rolled barley (ad lib.)

(1) Concentrate = 10% cull peas, 15% beet pulp, 5% molasses, and 70% steam rolled barley.

Table 2. Average Daily Gains, Feed Efficiencies, and Cost of Gain by Periods

Prefinish treatment	Prefinishing Period				Finishing Period				Overall			
	Days fed	ADG(1)	FE(2)	Cost/ cwt. gain	Days fed	ADG(1)	FE(2)	Cost/ cwt. gain	Days fed	ADG(1)	FE(2)	Cost/ cwt. gain
	no.	lbs.	lbs.	$	no.	lbs.	lbs.	$	no.	lbs.	lbs.	$
STEERS												
Corn silage	113	2.18^{ab}	718	15.15	121	309^{bc}	722	20.30	234	2.66^{a}	720	18.25
Long alfalfa	141	1.79^{e}	875	16.38	103	3.74^{a}	673	18.72	244	2.63^{ab}	753	17.80
Alfalfa cubes	141	1.83^{dc}	976	15.62	107	3.34^{a}	752	20.45	248	2.48^{ab}	846	18.42
Alfalfa pellets	134	2.07^{bc}	920	17.17	100	3.29^{a}	770	21.17	234	2.60^{ab}	839	19.34
80:20 pellets	134	2.02^{bcd}	786	16.60	107	2.98^{c}	788	21.88	241	246^{b}	787	19.46
Steer average	133	1.98	855	16.18	108	3.29	741	20.50	240	2.59	289	18.65
HEIFERS												
Corn silage	99	2.08^{a}	732	15.30	107	2.97^{abc}	745	20.84	206	2.54^{ad}	740	18.64
Long alfalfa	113	1.64^{a}	865	16.11	96	3.04^{a}	729	19.97	209	2.28^{cd}	782	18.46
Alfalfa cubes	113	1.69^{a}	939	15.33	96	2.68^{c}	832	22.77	209	2.14^{d}	887	19.56
Alfalfa pellets	99	1.97^{a}	931	17.36	104	2.72^{bc}	856	23.08	203	2.36^{bc}	887	20.73
80:20 pellets	99	2.06^{a}	723	15.22	102	3.11^{a}	686	19.38	201	2.59^{a}	701	17.75
Heifer average	101	1.89	838	15.86	101	2.90^{abc}	770	21.21	206	2.38^{bc}	799	19.03

(1) Average daily gains within columns and within sex groups having different superscripts are significantly different ($P < .05$)

(2) Feed efficiency in pounds of feed per hundredweight of gain.

Table 3. Summary of Finishing Performance and Carcass Characteristics

Prefinish Treatment	Initial weight lbs.	Final weight lbs.	Average daily gain lbs.	Warm carcass weight lbs.	Marbling score(1)	USDA grade(2)	Back fat in.	Ribeye sq. in.
				STEERS				
Corn silage	714	1,086	3.09	652	12.7	16.1	.47	11.4
Long alfalfa	720	1,108	3.74	665	13.8	16.5	.48	11.5
Alfalfa cubes	725	1,081	3.34	649	10.8	15.3	.38	11.4
Alfalfa pellets	746	1,076	3.29	646	14.4	16.6	.47	11.3
80:20 pellets	735	1,055	2.98	633	14.7	16.8	.48	11.2
Steer average	728	1,081	3.29	649	13.3	16.3	.45	11.4
				HEIFERS				
Corn silage	637	950	2.97	570	14.8	16.6	.41	11.7
Long alfalfa	615	904	3.04	542	13.3	16.2	.43	11.1
Alfalfa cubes	623	874	2.68	524	12.9	16.2	.35	11.0
Alfalfa pellets	627	906	2.72	544	13.9	16.3	.49	11.3
80:20 pellets	635	949	3.11	570	14.3	16.8	.41	11.9
Heifer average	627	917	2.90	550	13.8	16.4	.42	11.4

(1) 9= Traces, 12= Small, and 15= Modest.

(2) 14= Good and 17= Choice.

Table 4. Financial Summary

Prefinish treatment	Cost/ head	Selling value/cwt	Value/ head	Feed cost/ head	Yardage/ head	Interest/ head	Profit/ head	Suggested feeder value/cwt
	$	$	$	$	$	$	$	$
				STEERS				
Corn silage	133.38	28.00	304.08	112.79	11.70	9.90	36.31	28.50
Long alfalfa	133.38	28.06	310.90	113.92	12.20	10.41	41.01	28.50
Alfalfa cubes	133.38	27.75	299.98	112.91	12.40	10.55	30.74	28.50
Alfalfa pellets	133.95	28.11	302.46	117.20	11.70	10.09	29.52	28.50
80:20 pellets	132.24	28.25	298.04	115.01	12.05	10.27	28.47	28.50
				HEIFERS				
Corn silage	109.91	25.67	243.87	96.74	10.30	7.35	19.57	21.62
Long alfalfa	109.65	25.71	232.42	87.50	10.45	7.14	16.68	20.07
Alfalfa cubes	109.91	25.58	223.57	86.65	10.45	7.12	9.44	20.56
Alfalfa pellets	109.91	25.67	232.57	98.47	10.15	7.30	6.74	20.21
80:20 pellets	109.91	25.67	243.61	91.95	10.05	6.99	24.71	24.63

EXPLANATION:
Actual feeder steer costs, $28.50/cwt; feeder heifer costs, $25.50/cwt.
Steers sold for $27.50 and $28.25/cwt for good and choice, respectively.
Heifers sold for $25.25 and $25.75/cwt for good and choice, respectively.
Yardage was figured at 5 cents per head daily and interest calculated on initial cost, feed cost, and yardage at the rate of 6% per annum.