

**The Relative Value  
of Three Grades of Feeder Steers  
When Wintered, Grazed and  
Fed Grain on Pasture**



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# THE RELATIVE VALUE OF THREE GRADES OF FEEDER STEERS WHEN WINTERED, GRAZED, AND FED GRAIN ON PASTURE

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There is great variation in the quality of cattle which are available for purchase by the cattle feeder. It has been well demonstrated that the cattleman producing feeders for sale or for his own feed lots can afford to produce only the best. The answer is not as clear, however, for the man who is buying feeder cattle. The lower grades can be obtained with less investment and hence often are attractive.

A number of dry lot feeding experiments have shown that the lower grades often return more money to the feeder than do the better grades. This difference in return is due largely to a greater margin, difference between purchase price and selling price, realized on the lower grades of cattle. Therefore the decision as to grade of cattle to feed should be based upon the purchase price and the price that is likely to be obtained for the finished cattle. Due to seasonal variations in prices of the various grades, the time of marketing is an important consideration. In addition, the lower grades are not suited to feeding for a premium market.

Very little information is available on the relative value of various grades of cattle when wintered, grazed, and then fed grain on pasture. Such a program involves holding the cattle for a long period and marketing them in the fall, which may differ considerably from a dry-lot feeding operation. Two experiments have been conducted at the Southeastern Substation of the Ohio Agricultural Experiment Station to supply information on this question.

## PROCEDURE

In the fall of 1948 and again in 1949, three groups of twenty steers each were purchased on the St. Paul market. These three groups were selected to represent as nearly as possible the choice, medium, and com-

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<sup>1</sup>Deceased.

mon grades of feeders. During both years the choice steers were Herefords; the medium steers, Shorthorns; and the common steers, Holsteins.

The steers were shipped from St. Paul to the Southeastern Substation at Carpenter, Ohio. The three grades of feeders were fed and managed the same. They were wintered on corn silage, mixed hay, soybean oil meal, and minerals to gain approximately one pound per head daily. The three groups were turned to pasture in April and grazed for a period without grain and then fed corn and cob meal on pasture the latter part of the summer.

In the 1948-1949 experiment, one-half of the steers of each grade were started on corn July 7, were removed from the experiment on August 25, and marketed through the commercial fat cattle show and sale at the Ohio State Fair. The remainder of the steers were fed corn from August 18 to October 13. The Herefords and Holsteins, ten head

**TABLE 1.—The Relative Value of Three Grades of Feeder Steers when Wintered, Grazed, and Fed on Pasture**

(Winter 1948-1949)

	Choice Herefords	Medium Shorthorns	Common Holsteins
Number in lot . . . . .	20	19*	20
Av. weight, St. Paul, Nov. 1948, lb. . . . .	732	729	730
Cost per cwt., delivered . . . . .	\$28.00	\$23.00	\$20.00
Cost per head, delivered . . . . .	\$204.96	\$167.67	\$146.00
Weight, start of experiment, Dec. 10, lb. . . . .	718	733	732
Av. daily gain, Dec. 10—April 28, lb. . . . .	1.06	0.92	1.05
Daily ration, Dec. 10—April 28, lb. :			
Corn silage . . . . .	20	20	20
Mixed hay . . . . .	10	10	10
Soybean oil meal . . . . .	1.0	1.0	1.0
Salt (ounces) . . . . .	1.0	1.0	0.9
Feed cost per steer daily . . . . .	\$ .25	\$ .25	\$ .25
Feed cost per steer . . . . .	\$41.00	\$41.00	\$41.00
Cost per cwt. of gain . . . . .	\$22.24	\$25.70	\$22.65
Weight per steer going to pasture, lb. . . . .	866	861	877
Cost per cwt. going to pasture . . . . .	\$28.40	\$24.24	\$21.32

\*A steer died a few days after arrival.

**FEED PRICES**

Corn silage . . . . .	\$10.00	per ton
Mixed hay . . . . .	20.00	per ton
Soybean oil meal . . . . .	90.00	per ton
Corn and cob meal . . . . .	1.50	per 70 lb.
Minerals and salt . . . . .	0.025	per lb.
Pasture . . . . .	0.10	per steer per day

each, were slaughtered through the Meats Laboratory at the Ohio State University, Columbus, Ohio. The Shorthorns were sold through a local market at Athens, Ohio.

The steers fed in the 1949-1950 experiment were turned to pasture April 18. They were fed corn and cob meal from July 26 to September 19, at which time the experiment was terminated.

## RESULTS

The results obtained when three grades of cattle were wintered, grazed, and fed grain on pasture in two experiments are presented in Tables 1, 2, and 3. It will be noted that the differences in average daily gain made by the three grades during the wintering phase were relatively small. The medium grade gained slightly less during this phase in both experiments. There was some variation in gains between

**TABLE 2.—The Relative Value of Three Grades of Feeder Steers when Wintered, Grazed, and Fed on Pasture**

(Summer 1949)

	Choice Herefords	Medium Shorthorns	Common Holsteins
Average daily gain, April 28—July 7, grass alone, lb. . . . .	1.16	1.21	1.18
The group fed on pasture, July 7—Aug. 25, exhibited and sold at the Ohio State Fair:			
Corn and cob meal, daily per steer, lb. . . . .	11.2	8.4	12.5
Av. daily gain, July 7—Aug. 25, lb. . . . .	2.42	2.04	2.65
Cost per cwt. gain, July 7—Aug. 25 . . . . .	\$14.25	\$14.01	\$14.04
Weight, August 25, lb. . . . .	1073.00	1056.00	1112.00
Selling price, Ohio State Fair . . . . .	\$25.75	\$22.25	\$19.75
Profit or less per steer . . . . .	—\$ 6.50	\$ 1.77	\$ 0.18
The group that grazed July 7 to Aug. 18, then fed on pasture to October 13:			
Av. daily gain, July 7 to Aug. 18,* lb. . . . .	.86	.97	1.40
Corn and cob meal daily, Aug. 18—Oct. 13, lb. . . . .	12.8	13.3	13.7
Av. daily gain, Aug. 18—Oct. 13, lb. . . . .	1.35	1.21	1.07
Cost per cwt. gain, July 7—Oct. 13 . . . . .	\$22.76	\$23.93	\$22.28
Weight, October 13, lb. . . . .	1052.00	1044.00	1056.00
Selling price, Columbus . . . . .	\$23.58		\$18.27
Selling price Athens . . . . .		\$21.03	
Loss per steer . . . . .	\$28.33	\$20.90	\$20.86
Average loss per head, both groups . . . . .	\$17.41	\$ 8.97	\$10.34

\*Nine head in medium grade group July 7 to October 13.

the grades when grazed on pasture without grain. A weighted average of the various groups, however, shows little difference in gains between the grades during this phase.

**TABLE 3.—The Relative Value of Three Grades of Feeder Steers when Wintered, Grazed, and Fed on Pasture**

(1949-1950)

	Choice Herefords	Medium Shorthorns	Common Holsteins
Number in lot . . . . .	20	20*	20†
Av. weight, St. Paul, Nov. 4, 1949, lb. . . . .	637	652	643
Cost per cwt. delivered . . . . .	\$24.50	\$19.75	\$17.50
Cost per head, delivered . . . . .	\$156.07	\$128.77	\$112.53
Weight, start of experiment, Nov. 29, lb. . . . .	596	643	634
Av. daily gain, Nov. 29—April 18, lb. . . . .	.96	.89	1.05
Av. daily ration, Nov. 29—April 18:			
Corn silage, lb. . . . .	20.0	20.0	20.0
Mixed hay, lb. . . . .	8.3	8.5	8.4
Soybean oil meal, lb. . . . .	.5	.5	.5
Minerals, oz. . . . .	2.0	2.0	2.0
Salt, oz. . . . .	1.1	1.1	1.1
Feed cost per steer daily . . . . .	\$ .21	\$ .21	\$ .21
Feed cost per steer, 154 days . . . . .	\$32.34	\$32.65	\$32.50
Weight going to pasture, April 18, lb. . . . .	730	768	781
Av. daily gain, April 18—July 26, pasture alone, lb. . . . .	1.44	1.48	1.40
Feeds fed on pasture, July 26—Sept. 19:			
Corn and cob meal, lb. . . . .	17.1	17.6	16.0
Soybean oil meal, lb. . . . .	.9	.9	.9
Av. daily gain, July 26—Sept. 19, lb. . . . .	1.21	1.54	2.11
Cost of grain per cwt. of gain, July 26—Sept. 19. . . . .	\$33.82	\$26.04	\$21.49
Pasture costs per steer, at ten cents daily . . . . .	\$15.40	\$15.40	\$15.40
Weight, Sept. 19, lb. . . . .	940	1000	1035
Cost of lot, Sept. 19 . . . . .	\$4469	\$3724.92	\$3284.48
Necessary selling price, Sept. 19 weights . . . . .	\$23.78	\$19.61	\$17.63
Actual selling price, Sept. 26 . . . . .	\$24.96	\$21.70	\$21.83
Profit per steer . . . . .	\$11.09	\$20.90	\$43.47

\*Steer withdrawn start of pasture.

†Steer withdrawn in winter quarters.

Steer withdrawn on pasture.  
These steers not charged to lot.

**FEED PRICES**

Corn silage . . . . .	\$10.00	per ton
Mixed hay . . . . .	20.00	per ton
Soybean oil meal . . . . .	90.00	per ton
Minerals and salt . . . . .	0.025	per lb.
Corn and cob meal . . . . .	1.50	per 70 lb.
Pasture . . . . .	0.10	per steer per day

In the final phase of the experiment, grain was fed to the three grades of cattle while on pasture. Corn and cob meal was fed in the first experiment and corn and cob meal with 0.9 pound of soybean oil meal per head daily in the second. It will be noted in Tables 2 and 3 that in two of the three comparisons made the common cattle gained somewhat faster than either the choice or medium grades. Statistical analysis showed this difference to be significant. On the average, the Holstein steers gained at a more rapid rate than either the choice Hereford or medium Shorthorn steers when fed grain on pasture.

Due to a slightly slower rate of gain, the feed cost per hundred weight of gain was somewhat higher for the medium steers than for the other two grades during the wintering phase of the first experiment. In the group of steers marketed on August 25, 1949 (Table 2), there was a marked difference in rate of gain between the three grades when fed grain on pasture. There was, however, also a difference in the amount of corn and cob meal consumed per head daily which resulted in feed costs per unit of gain being very similar. In the second experiment, the common steers made faster gains when grained on pasture than the other grades with slightly less corn and hence produced gains at a lower cost.

In the first experiment the net loss per steer was \$17.41, \$8.97 and \$10.34 for the choice, medium, and common grades, respectively. A profit per steer of \$11.09, \$20.90, and \$43.41 for each of the three grades was realized in the 1949-1950 experiment. On the average, the lower grades of steers proved the most profitable in these experiments. These differences were due largely to a more favorable margin on the lower grades of steers.

In the first experiment, the difference in purchase price between the choice and common steers was \$8.00 per hundred weight. The difference in selling price average of the two groups marketed was \$5.65. In the second experiment, the difference in purchase price between these two grades was \$7.00, while the difference in selling price was only \$3.13 per hundred weight. Although the data were not obtained in this experiment, it is likely that the choice or beef type steers would have shown a more favorable margin had they been fed to a higher slaughter grade. Choice grade cattle are suited to feeding for a premium market while the lower grades are not.

Ten head of the Hereford and Holstein steers fed in the 1948-1949 experiment were slaughtered through the Station Meats Laboratory. The slaughter date obtained are presented in Table 4.

It will be noted in Table 4 that the Holstein steers shrank slightly more in transit and dressed 3.1 percent less than the Hereford steers.

**TABLE 4.—Slaughter Data of Hereford and Holstein Steers**  
(1948-1949 Experiment)

	Hereford	Holstein
No. steers slaughtered . . . . .	10	10
Shrink in transit, 90 miles, percent . . . . .	2.5	3.2
Slaughter weight, lb. . . . .	1005.00	1016.00
Dressing percentage . . . . .	57.5	54.4
Paunch and intestines, lb. . . . .	177.3	209.3
Hide, lb. . . . .	81.0	69.6
Carcass grades:		
Average good . . . . .	2	
Low good . . . . .	1	
High commercial . . . . .	5	
Low commercial . . . . .	2	1
High utility . . . . .		2
Average utility . . . . .		2
Low utility . . . . .		4
Cutter . . . . .		1
Percentage carcass yield:		
Edible portion . . . . .	74.7	72.4
Bone . . . . .	17.6	20.5
Fat . . . . .	7.5	6.8
Tenderness score*:		
3 days after slaughter . . . . .	3.67	3.59
14 days after slaughter . . . . .	6.70	6.51

\*10 very tender, 9-8 tender, 7-6 slightly tender, 5-4 tough, 3-1 very tough.

The hides from the Holstein steers were lighter but the paunch and intestines somewhat heavier than those from the Hereford steers. The Holstein carcasses were approximately one full grade lower than the Herefords.

The percentage carcass yields were determined by separating one-half of each carcass into bone, fat trim, and edible portion. The edible portion of the carcass is designated as edible meat with no more than a three-eighths inch layer of fat on any surface. The results of these carcass yield experiments, as presented in Table 4, show that Holstein carcasses had a higher proportion of bone, a slightly smaller percentage of fat, and 2.3 percent less edible meat than the Hereford carcasses.

The tenderness of the meat was determined by a taste panel from broiled steaks obtained from each carcass. The tenderness scores obtained at three and fourteen days following slaughter are presented



in Table 4. There were only very slight differences between the two groups of cattle with respect to this factor. The steaks from the Hereford carcasses were slightly more tender at both three days and fourteen days but these differences were not statistically significant.

## DISCUSSION

In the two experiments reported here there was little difference in performance between choice, medium, and common steers when wintered and pastured without grain. When fed grain on pasture during the latter part of the summer the common or Holstein steers gained, on the average, at a faster rate than the other two grades. In one experiment, however, they also ate a larger daily amount of grain and hence produced no cheaper gains. In these experiments the lower grades of steers proved to be most profitable, due largely to a more favorable margin between purchase and selling price.

The results of these experiments are in general agreement with dry lot feeding experiments, which have compared various grades of feeder cattle. Cattle of different grades but of similar condition are likely to gain at much the same rate and at a similar cost per unit of gain. Thus, by far the most important consideration in deciding what grade of feeder cattle to purchase is the spread in price which is likely to exist between the grades when the cattle are fattened and ready for market. The most profitable grade to purchase during one year may not be the most profitable during another, depending upon the numbers of feeder and slaughter cattle available and the relative prices of the various grades.

The slaughter experiments herein reported show a lower dressing percentage and a higher proportion of bone in carcasses from Holstein steers than from Hereford steers. A lower selling price for the lower grades of cattle is therefore justifiable. The results from the taste panel studies, however, show no preference for one grade over the other. It therefore seems likely that cattle of similar sex, age, and condition but of different breeding will produce meat of similar quality.

## SUMMARY

Two experiments have been conducted to study the relative value of three grades of feeder steers when wintered, grazed and fed grain on pasture. The three grades made similar gains when wintered and grazed without grain. The common steers gained significantly faster when grained on pasture but in only one experiment were their gains more economical during this phase. The lower grades proved most profitable due largely to a more favorable spread between purchase price and selling price.

Holstein steers had a lower dressing percentage when slaughtered than Hereford steers and their carcasses contained a higher proportion of bone. However, there was no difference in tenderness of meat from the two grades when determined by taste panel studies.