

Cost-Return Comparisons for Finishing Yearling Steers

by Russell Gum and John Wildermuth*

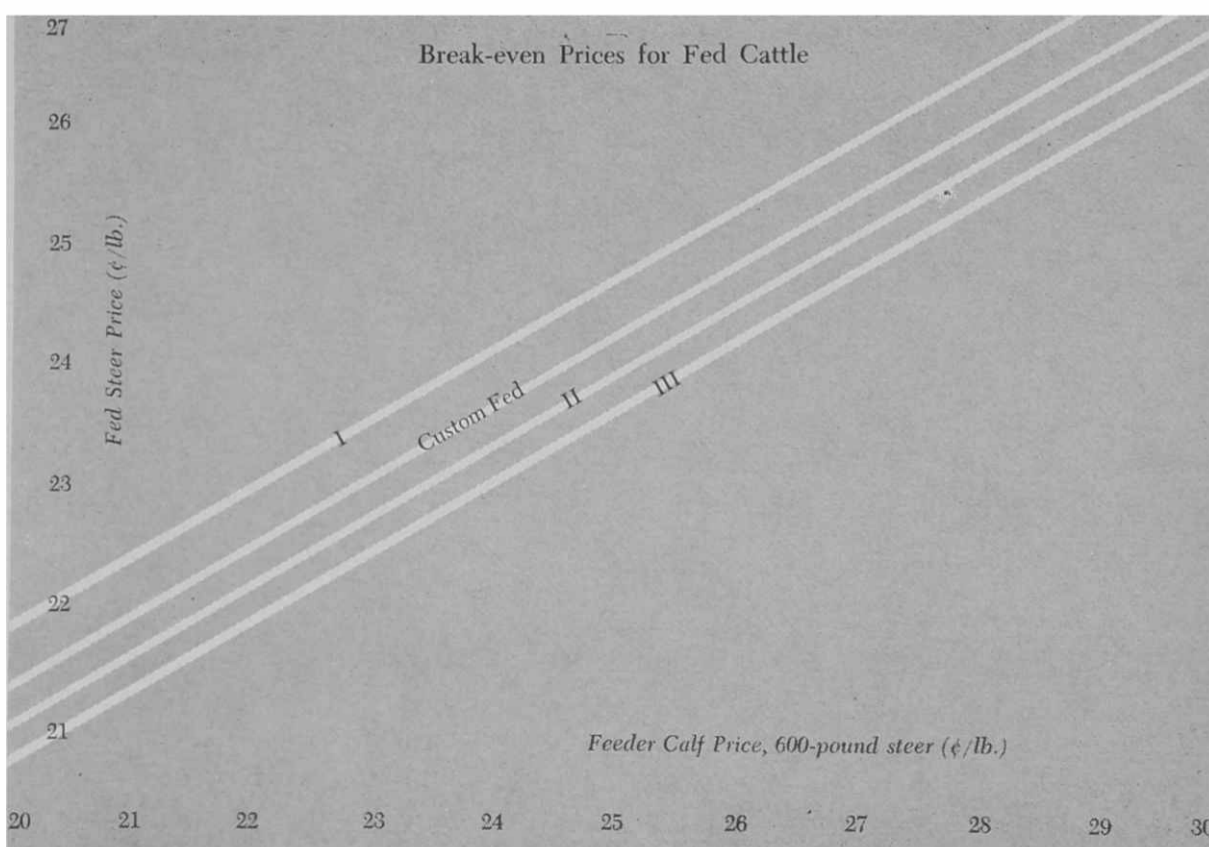
Profits from livestock feeding operations may be calculated as the difference between value added and the total cost of holding, feeding, and marketing the animals.

Under the above definition of profits, value added is the difference between returns from the sale of the finished animals and the total cost of the feeder stock.

The definition of costs and returns in the above manner emphasizes that profits in livestock feeding are very much dependent upon the relationship between feeder and fat cattle prices. Pursuant to the above, the

Table 1. Ration Used.

Percentage of Total Feed Fed	Ingredient	Price Per Ton (dollars)
21.4	Alfalfa Hay	30
63.2	Milo	44
4.5	Cottonseed pellets	81
.6	Urea	100
.5	Salt	28
.5	Dicalcium phosphate	100
.2	Limestone	15
.1	Trace minerals	350
5.0	Molasses	36
4.0	Fat	130
100.0		\$46.49



purpose of this article is twofold: (1) to demonstrate the methodology of determining break-even fat cattle prices and (2) to provide cost data for the feeding of yearling steers in Arizona.

Cost Data

The cost data presented herein are based on a specific feeding plan which can be considered typical for the feeding of yearling steers in Arizona. Under this plan the cattle are placed on feed at 600 pounds and fed for a period of 157 days. Typically, three different rations are utilized: A 55 percent concentrate ration is fed for 15 days; a 75 percent concentrate ration is fed for 56 days; and an 85 percent ration is fed for 86 days.

* Russell Gum and John Wildermuth are assistant professors in the Department of Agricultural Economics, The University of Arizona, Tucson.

The average concentrate level of the rations weighted by the number of days each is fed is 78.6 percent. Therefore, for costing purposes it is possible to assume, as we have in Table 1, that the steers are fed a continuous ration of 78.6 percent concentrate level. Valued at current average prices, this ration costs \$46.49 per ton, Table 1.

Assuming an average rate of gain of 2.7 pounds per day, the 157-day feeding period results in a total gain of 425 pounds and a final weight of 1,025 pounds. Based on a 1 to 7.5 feed conversion ratio, 3,188 pounds of the average ration would be required during the total feeding period. The resulting feed cost on a per pound of gain basis is 17.44 cents (3,188 pounds of the ration times the \$46.49 per ton cost all divided by the 425 pounds of gain).

The above feed costs have been incorporated into the budgets presented in Table 2. The total cost per pound of gain is presented in four operating situations: (1) feedlot capacity of less than 4,000 head, (2) feedlot capacity between 4,000 and 10,000 head, (3) feedlot capacity of 10,000 to 26,000 head, and (4) custom fed. All assumptions relating to these budgets are detailed in the footnotes to Table 2.

Break-Even Price Comparisons

It is now possible to determine the exact price which must be received for the finished animals in order to equate total costs with total returns. In Table 3 these "break-even" prices are presented for each of the four operations budgeted in Table 2 and under a number of alternative feeder cattle prices.

At a feeder cattle price of 20 cents per pound, a Type I operation would break even if the finished cattle were sold at a price of 21.76 cents per pound. As a result of the cost advantage associated with the larger operations, their comparable break-even price is lower — 21.08 cents, 20.85 cents, and 21.33 cents respectively for situation II, III, and custom fed. The same interpretation applies to the data at all of the other assumed feeder cattle price levels (e.g., break-even prices at the 25 cents feeder price level are: Size I, 24.68 cents; Size II, 24.00 cents; Size III, 23.77 cents, and custom fed, 24.24 cents.

The break-even price information

Table 2. Costs Per Pound of Gain — Yearling Steers.

Item	Size Category ^a			Custom Fed
	I	II	III	
Depreciation	.96	.45	.33	
Taxes, interest, insurance	.86	.52	.34	
Total fixed costs	1.82	.97	.67	
Salaries and wages	1.73	1.30	1.10	
Utilities	.22	.19	.15	
Gas, oil, grease	.19	.11	.10	
Repairs	.41	.23	.27	
Vet. fees	.31	.15	.24	
Nutrition services	.00	.02	.06	
Legal and accounting	.02	.06	.03	
Trucking and freight	.06	.10	.01	
Promotion	.00	.01	.01	
Other costs	.10	.11	.07	
Death loss ^b	.49	.49	.49	.49
Interest on cattle in lot ^c	1.45	1.42	1.41	1.43
Feed costs ^d	17.44	17.44	17.44	21.26
Total variable costs	22.42	21.63	21.38	23.18
Total cost/lb. of gain	24.24	22.60	22.05	23.18

^a Size category I is less than 4,000 capacity; size category II is 4,000 to 10,000 capacity; size category III is 10,000 to 26,000 capacity. Custom fed cattle are fed in a 10,000 to 26,000 capacity lot with a charge of \$10 per ton of feed fed.

^b One percent death loss valued at 26 cents per pound for an 800-pound steer.

^c Interest on feeders valued at 26 cents per pound plus interest on costs of gains. Interest is at 7 percent per year rate.

^d Feed cost calculated assuming an average price of feed at \$46.49 a ton and a 1 to 7.5 conversion ratio.

Table 3. Break-Even Prices of Fed Cattle.

Feeder Cattle Price (¢/lb.)	Category			
	I	II	III	Custom Fed
20	21.76	21.08	20.85	21.33
21	22.34	21.66	21.44	21.90
22	22.93	22.25	22.02	22.49
23	23.51	22.83	22.61	23.07
24	24.10	23.42	23.19	23.66
25	24.68	24.00	23.77	24.24
26	25.27	24.59	24.36	24.83
27	25.85	25.17	24.95	25.41
28	26.44	25.76	25.53	25.99
29	27.02	26.34	26.12	26.58
30	27.61	26.93	26.70	27.17

presented in Table 3 is also displayed graphically, Figure 1. Given the assumed holding, feeding, and marketing costs and the various feeder cattle prices, a price received for the finished animals anywhere above the relevant line in Figure 1 will lead to a net operating profit. Total profits would, of course, be found by multiplying the per unit profit (difference between the price received and the break-even price) times the number of units sold (pounds of live animals.)

This analysis emphasizes the importance of outlook data pertaining to the price of fed cattle. Further, it provides a convenient means of estimating profits or potential profits given current feeder prices and expected fat cattle prices at the end of the feeding period. This information has been provided with the conviction that there is at least one Arizona cattleman who is failing to evaluate his potential profits in this or an analogous fashion.