Impacts of Grade Changes on Feeding Costs

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Cattle feeders have known for years that, as days and weight increase on cattle as they approach or pass normal marketing weights, three things happen: 1) daily gain decreases: 2) feed per unit of gain increases: and 3) cost of gain increases. The net energy system proposed by Drs. Lofgreen and Garrett (1968) can be used to demonstrate that with each unit increase in weight, energy requirements (feed) do in fact increase. It is not suprising that some have proposed shortening the period of time that cattle are fed. There must be other factors which cause cattle feeders to feed cattle to heavier weights. Some have proposed that the reason cattle feeders over-feed cattle is because of our present grade standards.

The factors which should determine the length of feed should be: 1) final product quality control: and 2) optimization of the cattle value within the biological limits imposed by the cattle, feed, etc.

The biological-economic factors which interact while cattle are on feed are fairly well understood on a live weight basis, but, are often not understood at all on a carcass basis. The data in figure 1 can be used to illustrate the effect of time on feed on the economic parameters normally considered by cattlemen. This figure represents a simulation of a 700 lb. black baldy steer of medium frame size. Cattle, feed, lot, and money costs are typical for High Plains feedlots about the first of the year. Before drawing any conclusions from this figure, one should carefully study all the input parameters. A change in any of these may cause a significant change in the simulation. The net energy equations can be used to estimate live weight gains either on a daily basis or over a period of time. This is illistrated under the GAIN column below the heading DAYS LBS. Note that the daily gain for days 0-180 given at 20 day increments ranges from a high of 3.55 lbs. to a low of 2.14 lbs. on the last day.

Feed conversion on a daily basis reaches a low 5.64 lbs. of feed per pound of gain on day 20 and progressivly increases to 9.17 on the last day. However, it should be

noted that the pay to pay feed conversion improved through the first 100 days, due to dilution of fixed costs inherent in cattle feeding.

Figure 1 Simulation of a 700 Pound Feedlot Steer

DAYS	ANIM WT.	DAYS FEED	DAYS FEED COST	///GAIN/// DAYS LBS	PY_W LBS	CONVERSION DAYS LBS	PY_W LBS	COST DAYS TOT.	/GAIN PY_W $	BREAK EVEN $/CWT
0	665	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	63.91
20	724	19.73	1.33	3.50	1.21	5.64	14.39	0.45	1.43	62.77
40	797	20.44	1.41	3.55	2.42	5.76	7.76	0.47	0.70	61.20
60	866	20.87	1.44	3.36	2.76	6.21	7.02	0.51	0.61	60.27
80	931	21.05	1.45	3.16	2.89	6.66	6.86	0.56	0.59	59.80
100	992	21.02	1.45	2.95	2.92	7.12	6.87	0.60	0.59	59.69
120	1049	20.83	1.44	2.74	2.91	7.59	6.95	0.64	0.59	59.82
140	1102	20.50	1.42	2.54	2.87	8.08	7.06	0.69	0.60	60.13
160	1150	20.08	1.39	2.23	2.81	8.61	7.20	0.74	0.62	60.61
180	1195	19.59	1.35	2.14	2.75	9.17	7.36	0.80	0.63	61.22

INPUT PARAMETERS

STEERS	
PURCHASE WEIGHT	700
PURCHASE COST/CWT	$60.00
INTAKE FACTOR	5.4
MEDICAL COST/HEAD	$5.0
SHRINKAGE%	5.0
EQUITY PER HEAD	0.0
INTEREST RATE%	15.00
YARDAGE PER DAY	.05
DEATH 1 %	.40
DAY LOOP 1	15
DEATH 2 %	.40
DAY LOOP 2	100

RATIONS USED;

NUMBER	DAYS FED	$CWT	NEM	NEG
1	10	6.49*	86	55
2	10	6.74	91	59
3	160	6.91	95	62

* 2.85 bu. corn, $80 ton alfalfa; $25 ton corn silage; $200 ton soy-meal; ration mark-up =$20./dry matter ton

An area of weakness in knowlege about the cattle business is in how to relate cattle and financial interactions to consumer desires and the final value of the retail product. Claims and counter claims have been made about how to modify the beef animal to suit changing consumer demands with little understanding of how the total system works. It is hard to believe that most cattlemen, packers, and retailers could always be wrong.

How the beef feeding segement works becomes more clear when the simulation in figure 1 is expanded to show the current market value of cattle as they progress through the feeding period. It is very important to reconize that daily changes do occur on both the production and market sides, and while the conclusions developed from the simulation in figure 2 are accurate for the conditions set forth, there will likely never be another day which will give the same numbers. As any cattleman knows, the total beef market is large and there seems to be a market for all types of carcasses. On any day there are sales of carcass beef ranging from 60 lb. veal carcasses to 900 lb. Y-5's. If there are too few of a type or class, these bring premiums, and conversly, too many of a class bring discounts.

Figure 2 The Value Of Simulated Cattle on December 12,1981

DAYS	ANIM WT.	COST DAYS TOT.	/GAIN PY_W $	BREAK EVEN $/CWT	EST. DRESS %	% CH.	% Y-4 PLUS	CAR. VALUE $	CAR. / L.WT	P&L $
0	665	0.00	0.00	63.91	52.00			325.8	48.99	-99.2
20	724	0.45	1.43	62.77	53.50					
40	797	0.47	0.70	61.20	55.00			418.5	52.50	-69.3
60	866	0.51	0.61	60.27	57.50	20		479.5	55.36	-42.5
80	931	0.56	0.59	59.80	60.50	30		544.8	58.52	-12.0
100	992	0.60	0.59	59.69	61.50	40		593.0	59.78	.89
120	1049	0.64	0.59	59.82	62.50	60	2	640.2	61.03	12.68
140	1102	0.69	0.60	60.13	63.50	70	5	685.3	62.18	22.65
160	1150	0.74	0.62	60.61	64.50	80	10	726.7	63.19	29.69
180	1195	0.80	0.63	61.22	65.50	85	25	759.8	63.58	28.24

The column "CAR. /L.WT" is calculated on the basis of what these cattle would have brought on a beef market where a packer would hold a constant $30 kill cost including profit margin. The value is determined by adding the offal credit minus the kill cost to the wholesale carcass value. The numbers in figure 2 were the values on December 12,1981. On this date offal brought $5.67 live weight basis, choice cattle brought $94.25, good carcasses sold for $92 and Y-4 carcasses were at $86.25 per hundred.

Usually cattle increase in value as the feeding period progresses. Cattle on feed are often worth far less in the beef trade than feeder cattle sell for live during the first few weeks on feed. In the data in Figure 2 these cattle increased in live value from a low of $48.99 to a high of $63.58 per hundred over the 180 day projection. Note

that the feeder animal in this example was valued at $60 per cwt. if the feeder cattle had cost less than $49 you could expect this type cattle to start going direct to slaughter. Most of the time cattle are "cheapened back" in the feedlot.

Exceptions to this "cheapening back" have occurred a few weeks out of the last decade when feeder cattle sold for less per pound than fed cattle. When feeder cattle are high in relation to fed cattle (ie 1979) the increase in the "CAR /L.WT" value is very steep as cattle progress on feed. If for some reason this did not occur, feeder cattle would need to sell for much less per pound than fed cattle. Note the sharp increase in the value of the carcasses in Figure 2, they were increasing at over three dollars a day in the early feeding period. Even in the last 20 days the value was still $1.66 per day. This was less than the cattle feeders total cost which averaged $1.78 per day during the last 20 days.

The major factor which effects the "CAR./L.WT" value of cattle is dressing percentage. Grade of cattle is like the tail on the dog; it has an effect but only in that it has an effect on the value per pound. Yield grade works the same way. It will take much larger premums than have typically been paid to improve the profitibility of the shorter day cattle in Figure 2 under the conditions that exist at this time.

In the simulation in Figure 2 the dressing percentages had to be estimated based on our experiences with our feedlot research cattle. Note that dressing percent increased from 52 percent as the cattle were started on feed to over 65 percent with a long feeding period. Drs. Walters and Hintz in 1981 published a paper "Preliminary Development of Yield Grade and Dressing Percentage Prediction Equations for Beef Steers". Their equations show promise in working with calves placed on feed at an early age, but not with aged yearlings. Until the beef industry develops better figures it will have a hard time managing cattle to their maximum economic potential. There are selections of different breeds of cattle which we have had the opportunity to feed and collect carcass information which were worth far more or less than those illustrated in the figures. With heavy muscled cattle higher dressing percentages can be achieved with less fat cover while with thinner muscled cattle the reverse is true.

The same cattle shown in figure 2 can now be repriced on a number of different beef price structures. When doing this you will notice a trend in the beef business, when carcass beef goes up in price (market highs), live cattle prices seem to lag. What happens most of the time is that the trade is willing to accept cattle with less days and less dressing percentage. It should also be pointed out that when the carcass beef market declines the live cattle price does not always fall to the expected levels. Again the trade seems to make up for the lower carcass price by reguiring a higher dress.

If the consumer or retailer finds for example that lower grading cattle with less fat cover are indeed worth more to them then they could possibly bid more for short day cattle. Using the example in Figure 2; at 100 days had the trade bid $5.54 more per hundered on a carcass basis they would have yielded the same money to the cattle feeder as the 160 day cattle.

The proposed grade change, if adapted, will not likely reduce either the cost of beef to the consumer nor most of the time lower the production costs to the beef industry. It may at times make it possibly easier to sell pens of cattle made up breeds of cattle which do not grade well. There are large differences in the value of the carcasses of different cattle. These differences have been very apparent for a number of years. It appears that the beef industry is one which wants to operate on averages and to pretend that all cattlemen's cattle are worth the same. A premium paid one minute for real value is the new market the next. Similiarly discounts for inferior animals can establish a new market.

Knowledge of how the market works, and of how to produce the kind of product that the consumer wants to buy is the real chalange for the beef industry. Cattlemen should not confuse the responsibility of the beef industry with that of the consumer. We in the beef industry must work constantly to most efficiently produce the kind of product that the consumer wants without bothering them with our problems.

References:

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