Efficient, easy-keeping brood cows mean lower input costs and a healthy bottom line, Iowa researchers say. [PHOTO BY CORINNE PATTERSON]

Cheap Cows = Profitable Calves

Story by
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Did that headline grab your attention? That's the idea, but don't misunderstand the intent of this story. Don't expect to read about surefire ways to make big money raising high-dollar calves from a batch of sorry cows. You see, the headline doesn't refer specifically to cows that were cheap to buy. It does refer to cows that are cheap to own — the kind with low maintenance costs.

Every genuine cow person can understand that, compared to a high-maintenance herd, efficient, easy-keeping brood cows mean lower input costs. That's true, at least, when you compare feed bills. And 50%-75% of cow maintenance costs can be attributed to feed. So managing cows that require less feed should have a positive influence on the bottom line.

The best boost to overall profitability should come, however, from cows that are cheaper to feed, but that also produce offspring that are more valuable in the feedlot. With that in mind, livestock economist John Lawrence and his Iowa State University (ISU) colleagues analyzed results from the long-running annual Tri-County Steer Carcass Futurity (TCSCF) in southwest Iowa. They looked at steer performance in the feedlot and carcass data, and the cow feed costs of participating producers.

"It's the economist's job to beat the data until the truth falls out," Lawrence says. "And the early data suggests that cows with lower feed costs also produce the most profitable calves in the feedlot."

Lawrence says to understand how the cost of feeding a cow might be linked to her calf's potential for making money in the feedlot, producers must first understand the factors that drive feedlot profitability. Studies have shown that price variables significantly outweigh

Table 1: Percent relative contribution of variables affecting feedlot return by Choice-Select spread

Choice-Select	Net return	FE	HCW	Fat	REA	KPH	Marbling
$4.00	$50.36	–38.7	49.3	–9.3	22.4	2.0	43.3
$8.00	$52.61	–35.6	44.4	–8.2	19.7	1.8	54.7
$12.00	$58.00	–31.8	38.5	–7.2	15.3	1.8	61.7
$16.00	$65.77	–26.3	31.1	–5.3	12.9	1.1	65.1

Table 2: Percent relative contribution to feedlot return by feed cost ($12 Choice-Select spread)

Feed Cost	Return	FE	HCW	Fat	REA	KPH	Marbling
Actual, minus 10%	$ 58.24	–29.06	41.05	–5.91	14.81	0.84	61.54
Actual	$ 58.00	–31.80	38.50	–7.20	15.30	1.80	61.70
Actual, plus 10%	$ 57.95	–32.78	34.39	–7.37	17.84	2.01	61.71

production variables in explaining feedlot profit differences. In other words, prices paid for feeder cattle and corn have a greater effect than do average daily gain and feed efficiency.

Pricing influence

The price variable that exerts the most influence on profit is the selling price of fed cattle. Value-based (grid) marketing systems are used by packers to relay market demand to producers through premiums and discounts based on carcass merit. As a result, value differences within a pen, or even a truckload, of fed cattle can exceed $350 per head. That illustrates, Lawrence says, how the variable with the greatest influence has become more inconsistent.

In a grid marketing system, hot carcass weight (HCW), quality grade and yield grade each play roles in establishing net carcass value. Variation in value depends on discounted characteristics, such as carcasses that are too light or too heavy, Select or Standard quality grades and Yield Grade (YG) 4 and 5 carcasses. Naturally, producers benefit from genetics and management practices that help them avoid discounts while enhancing opportunities to capture premiums paid for the most desirable carcasses.

Variability of revenue increases with grid marketing, compared to live animal or grade-and-yield pricing. HCW has been shown to be the most significant source of variation. Fat thickness and ribeye area generally account for less than 3%. Marbling (as it affects quality grade) may account for up to 25% of variation, depending on the particular grid system used and the time period in which marketing occurs.

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The influence of the time of marketing can be illustrated by the effect of the Choice-Select price spread, which is a significant driver of grid premiums and discounts. There is a typical seasonal pattern for the Choice-Select spread, but it widens whenever the supply of market-ready cattle grading Choice falls short of demand.

"While of lesser importance to profit variability than selling price," Lawrence notes, "feed efficiency and average daily gain still impact feeding costs and, thus, profits and are correlated with carcass traits."

Based on data from 1,147 steers consigned to the TCSCF during a four-year period, Table 1 shows the relative contribution to net return for variables including feed efficiency (FE); HCW; fat thickness (Fat); ribeye area (REA); kidney, pelvic, and heart fat (KPH); and marbling across four different Choice-Select price spreads.

The results show that HCW, marbling, FE and REA greatly affected net return per head. Marbling became increasingly important as the Choice-Select spread widened, while the importance of other factors decreased.

Table 2 shows the effect of raising or lowering feed cost by 10% from the actual feed cost. Changing feed cost, Lawrence explains, did not have a significant effect on the variables' relative contributions to profit. Marbling was still most important.

Low cost, high gain

Now, we began by talking about the cow's contribution to feedlot profitability. Certainly, cow-calf producers supplying calves for the feeding sector are concerned with their own feed costs. Cow size and milk production affect feed requirements, since a larger cow requires more feed to maintain optimal body condition. Birth

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Table 3: Avg. feedlot return per cow cost group, across different Choice-Select spreads

Cow group	Cow cost	$4 spread	$8 spread	$12 spread
Low-cost	$148.50	$48.46	$41.36	$32.93
High-cost	$168.43	$41.97	$33.03	$24.07
Avg.	$158.43	$45.23	$37.21	$28.52

Table 4: No. of steers with low and high feedlot returns, by cow stored feed cost

	$4 spread		$8 spread		$12 spread		
Cow cost	Low	High	Low	High	Low	High	Total
Low	66	68	62	72	60	74	134
High	68	65	72	61	73	60	133
Total	134	133	134	133	133	134	267

weight is positively correlated to cow size, while weaning weight is influenced by milk production. A cow-calf producer who markets pounds of weaned calves must measure calf and cull-cow income against the cost of maintaining a larger cow. But how does the equation change if the producer retains ownership of calves through the feedlot and markets steers on a grid?

Looking for correlations between cow traits and feedlot and carcass traits, Lawrence used data representing five herds that entered all or nearly all of their steer calves in the TCSCF each fall. Focusing on these herds, he explains, reduced the selection bias that might result from including herds from which only the best steers were entered in the futurity. A total of 267 steers from the five herds were sorted into two groups, based on stored cow feed costs (low vs. high). Table 3 shows the feedlot return for steers from each group and the average return across three different Choice-Select spreads.

"The average of the two groups differed by $20 per cow," Lawrence says. "Interestingly, the low-cost cow group had the higher feedlot return. The average feedlot return for steers from these cow groups differed by $6.50 to nearly $9 per head, depending on the Choice-Select spread. Statistically, neither cow cost nor feedlot return was significantly different across groups, but the lower-cost cow group produced calves with generally higher feedlot return."

Going a step further, Table 4 compares where the number of steers from low- or high-cow-cost groups placed in the low- and high-feedlot-profitability groups. Ranking the variables from lowest to highest and dividing the data into two equal groups determines the classifications. Seventy-four of 134 steers from low-cost cows produced high-return steers in the feedlot, compared to 60 head that were low-return steers.

Granted, this is a small sample. Furthermore, the averages across the groups are not statistically different. Still, the results suggest that some cows are more desirable because they are cheaper to feed *and* their offspring are more profitable in the feedlot.

"Note (from Tables 3 and 4) that at narrow Choice-Select spreads, the difference in feedlot profits and the number of high-return calves from low-cost cows decreases," Lawrence says. "A greater portion of feedlots' net returns are explained by marbling score as the spread widens. The current trend toward rewarding higher-quality-grading cattle will have the added benefit of reduced cow cost."