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# Identifying Profitable Characteristics of Steer Calves To Be Retained

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# CORNHUSKER ECONOMICS

## Identifying Profitable Characteristics of Steer Calves To Be Retained

Market Report	Yr Ago	4 Wks Ago	9/17/10
<b><u>Livestock and Products,</u></b>			
<b><u>Weekly Average</u></b>			
Nebraska Slaughter Steers, 35-65% Choice, Live Weight . . . . .	\$83.42	\$98.85	\$97.68
Nebraska Feeder Steers, Med. & Large Frame, 550-600 lb. . . . .	110.53	133.00	124.00
Nebraska Feeder Steers, Med. & Large Frame 750-800 lb. . . . .	99.49	119.86	113.35
Choice Boxed Beef, 600-750 lb. Carcass. . . . .	142.04	158.47	158.15
Western Corn Belt Base Hog Price Carcass, Negotiated. . . . .	50.92	80.90	80.30
Feeder Pigs, National Direct 50 lbs, FOB. . . . .	40.00	*	*
Pork Carcass Cutout, 185 lb. Carcass, 51-52% Lean. . . . .	56.91	93.85	91.34
Slaughter Lambs, Ch. & Pr., Heavy, Wooled, South Dakota, Direct. . . . .	91.25	134.00	139.00
National Carcass Lamb Cutout, FOB. . . . .	247.57	303.02	327.61
<b><u>Crops,</u></b>			
<b><u>Daily Spot Prices</u></b>			
Wheat, No. 1, H.W. Imperial, bu. . . . .	3.56	5.25	5.95
Corn, No. 2, Yellow Omaha, bu. . . . .	3.02	3.77	4.59
Soybeans, No. 1, Yellow Omaha, bu. . . . .	9.46	10.08	10.49
Grain Sorghum, No. 2, Yellow Dorchester, cwt. . . . .	4.61	6.71	8.13
Oats, No. 2, Heavy Minneapolis, MN, bu. . . . .	2.01	2.62	3.26
<b><u>Feed</u></b>			
Alfalfa, Large Square Bales, Good to Premium, RFV 160-185 Northeast Nebraska, ton. . . . .	*	135.00	152.50
Alfalfa, Large Rounds, Good Platte Valley, ton. . . . .	82.50	77.50	72.50
Grass Hay, Large Rounds, Premium Nebraska, ton. . . . .	*	95.00	*
Dried Distillers Grains, 10% Moisture, Nebraska Average. . . . .	85.00	99.00	124.00
Wet Distillers Grains, 65-70% Moisture, Nebraska Average. . . . .	35.00	30.50	41.50
<b>*No Market</b>			

A recent study done by the Department of Agricultural Economics, University of Nebraska-Lincoln, investigates the predictive power of physical characteristics exhibited by steer calves, at and prior to weaning, on profits associated with weaned calf retention. Historically, retained ownership of beef cattle calves owned from birth through the finishing stage of production by a single owner, has been found to be a profitable endeavor for cow-calf producers. Despite these findings, observed evidence indicates many producers choose not to retain ownership. Three reasons that may explain this include tradition, cash flow needs of the business and risk. Producers who choose to retain ownership of their cattle face the risk of volatile markets and production challenges. This investigation explores the possibility that cow-calf producers may be able to mitigate a portion of these risks by selectively screening calves with specific physical characteristics.

The driving logic behind this study is that physical characteristics of calves are commonly expected to predict physical performance. Given that this expectation is true, physical performance contributes to and is one determinant of profitability.

From an economic perspective, information in this market relative to animal characteristic is asymmetric. Cow-calf producers may have a distinct advantage over others in the marketing chain with respect to information specific to their animals, information that relates to performance. These producers have direct access and are familiar with information about their calves, such as birth weight, dam size, weaning size and date, age and any other information they choose to collect. Several methods are designed to exploit the information asymmetry between cow-calf producers and the downstream supply chain.

Animal information used in this study are from March born Husker Red steer calves owned by the University of Nebraska-Lincoln, weaned at the Gudmundsen Sandhills



Laboratory (GSL) near Whitman, Nebraska, and fed out as slaughter cattle at the University's West Central Research and Extension Center (WCREC) in North Platte, Nebraska. This study only considers calf-feds; steers are typically taken to slaughter in June, where all carcass data is recorded. UNL is able to control quality, and markets these slaughter animals on a grid system.

Input information for the various cost and revenues were obtained from the USDA-AMS, Livestock Marketing Information Center (LMIC), actual values paid at the WCREC, Dawson County Extension office, *Nebraska Farm Real Estate Market Developments* report and the Cattle Fax database.

Two marketing schemes, a live cattle and a grid pricing system, are used to determine if various physical characteristics of calves are predictive of profitability.

## Results

While not part of the actual study, it was found that for most of the years covered by the study, 2003–2007, calf retention was more profitable than selling at weaning. This fact does not consider other methods of sale, such as pre-conditioning, yearling or anything in-between.

The important indicators for profitability for the live slaughter cattle market scheme include the physical characteristic of birth weight, weaning weight and weaning age. Birth weight and weaning weight are found to have a positive effect on profitability, while weaning age is negative. Other non-physical characteristics that affected profits are corn prices and differences in cattle market conditions by year. The corn price coefficient is negative, consistent with reduced profits from increasing corn prices. The years 2004 to 2006 have a negative effect, making these years reduced in profit relative to 2007.

The grid pricing scheme is found to be somewhat different, which is surprising given that grid pricing considers more variables in developing a value. Birth weight is found to be the only physical characteristic statistically associated with profit prediction. This characteristic is positively associated with profit. The other variables, including corn prices and years has a similar effect as the live slaughter pricing scheme. Interestingly, the grid price scheme model was not as powerful a predictor of profit, possibly indicating that information is missing from the model. It may be that information from the sire, such as found in an EPD, would be beneficial.

## Discussion

Calves' birth weights affect profitability in both live and grid marketing retained ownership scenarios. The birth weights influence cost and revenue factors, with the revenue factors overpowering the cost factors, on average, for the years considered here. Larger birth weights are

often associated with larger cows, and ultimately larger carcass weights, which increase revenues.

The two other physical effects found to affect profit for the live market scheme are weaning age and weight. Weaning age is negatively associated with profits, which may be caused by increased opportunity costs and the effects of age and maturity on efficiency. Weaning weight has a positive effect, making heavier calves more profitable than light calves, given all other factors are equal. Heavier calves are likely the faster growing, with larger frames.

## Conclusions

Information asymmetry in the beef cattle supply chain is used as a hypothesis to explore retained ownership options for cow-calf operators. The methods developed investigate the predictive power of calves physical characteristics, observed up to and including weaning, by cow-calf producers on profitability. Two marketing regimes are explored: a grid-based market and a live-slaughter weight market.

Profitability is improved by ranking and selecting calves based on models developed in this research for specified years for the GSL calves. In general, the live marketing scheme model suggests that a calf with a larger birth weight and heavier weaning weight, weaned at a relatively young age, has the best profit potential for retention. It is possible that additional information about the calf's genetic potential and health might increase the accuracy and success of the models suggested here.

It is reaffirmed that calf characteristics are not the only contributors to profitability. Both input costs and revenue related to prices play major roles in overall profitability of retained calf profits versus weaned calf profits.

This study limits the analysis to steers, but could be extended to heifers. A copy of the complete study and results are available from the authors.

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