

# Feedlot Willingness to Pay for Genomic Tested Feeder Cattle

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## Introduction

Seedstock producers have used genomic information extensively to select and market breeding stock while commercial producers have more recently adopted genomic testing to select replacement heifers. Similar genomic tests are available for feeder cattle to predict feedlot performance, but their use has been limited relative to those making breeding stock decisions. Similar to how seedstock producers use genetic information to market breeding stock, genomic information could be used to market feeder cattle. An example of a commercially available genomic test is Neogen's Igenity® Feeder test. This test weighs several traits (i.e. hot carcass weight 45 percent, ribeye area 10 percent, marbling 15 percent, tenderness 5 percent, fat thickness 10 percent, residual feed intake 10 percent and calving ease direct 5 percent) to calculate an index and provides scores of 1 (worst) through 10 (best) for an overall Igenity Terminal Index (ITI). The ITI categorizes cattle into three categories: Choice (ITI scores 1-5.49), Premier (ITI scores 5.5-6.49), and Elite (ITI scores 6.5-10) (Neogen, 2023).

Cow-calf producers are interested in using genomic tests to market feeder cattle (DeLong et al., 2023), but little is known concerning feedlots' willingness to pay for cattle marketed with genomic information. Therefore, feedlots were surveyed to determine if they were willing to pay more for feeder cattle marketed with genomic information. Results can help producers determine if marketing feeder cattle with genomic information is in their best interest. Similarly, it can assist feedlots in determining the commercial value of genomic information.

## Survey and Methods

### V. YOUR FUTURE USE OF FEEDER CATTLE GENOMIC TESTS ON CATTLE YOU MIGHT PURCHASE.

Assume there is a feeder cattle genomic test that provides users a **Terminal Feeder Cattle Index (TFCI)** score designed to rank cattle according to their genetic potential for terminal traits. Higher TFCI values indicate animals with increased grid potential. The TFCI is on a 1 to 10 scale, with 10 being the best.

Weightings of the TFCI are: Hot Carcass Weight 45%, Ribeye Area 10%, Marbling 15%, Tenderness 5%, Fat Thickness -10%, Residual Feed Intake -10%, Calving Ease Direct 5%.

The following TFCI scores are associated with specific TFCI Branded Tiers:

TFCI Score	TFCI Branded Tier
1-5.49	Choice
5.5-6.49	Premier
6.5-10	Elite

To determine **how TFCI scores impact revenue**, a set of 4,200 cattle were managed the same and tested using the TFCI. Below are their TFCI scores, their associated TFCI Branded Tier, and revenue received per head. Please note that the additional revenue received could be more if the lots were managed differently based on the feeder cattle genomic test results.

Average TFCI Score	TFCI Branded Tier	Average Revenue Received
4.5	Choice	\$1,720
5.5	Premier	\$1,760
6.5	Elite	\$1,780

**In the next section, we will ask you questions about how much you would pay per hundredweight for different lots of cattle. Please keep in mind that paying more for cattle is an expense to your operation. Hence, to provide us with the most realistic information possible, we ask that you provide answers that reflect what your operation's behaviors would actually be in the marketplace.**

A survey was mailed to 2,690 U.S. feedlots in October 2021 and January 2022 regarding their future use of feeder cattle genomic information on cattle they might purchase and perceptions of feeder cattle genomic tests. Survey respondents were provided information about a hypothetical Terminal Feeder Cattle Index (TFCI) based on information from the Neogen Igenity Feeder genomic test website (Neogen, 2023) (Figure 1).

Figure 1: Information in Survey on Future Use of Genomic Tests on Feeder Cattle One Might Purchase.

Producers were asked if they would be willing to purchase feeder cattle marketed with a TFCI score (yes, maybe, no, don't know, other) and what they would bid for a lot of feeder cattle without genomic test information versus a lot of feeder cattle with differing TFCI scores (Figure 2). These results were used to estimate the premiums feedlots would pay for feeder cattle marketed with genomic test information compared to untested cattle.

17) Would you be interested in purchasing feeder cattle if the seller administered a feeder cattle genomic test on them and marketed them with a Terminal Feeder Cattle Index score?

<input type="checkbox"/> Yes	<input type="checkbox"/> Maybe	<input type="checkbox"/> No (If no, please skip questions 18 & 19; Go to Section VII)	<input type="checkbox"/> Don't Know	<input type="checkbox"/> Other, please describe: _____
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**For the next 2 questions, assume it is today's date in the fall of 2021:**

18) What is your average bid per hundredweight (cwt) for a general lot of cattle that you would purchase for your operation **assuming feeder cattle genomic tests were not conducted on the animals?**

\$ \_\_\_\_\_ per cwt

19) Now assume the seller did administer genomic testing on the same general lot of cattle and was marketing them with known Terminal Feeder Cattle Index (TFCI) scores. In the table below, please write what you would bid per cwt for the cattle with the associated TFCI score/branded tier:

Terminal Feeder Cattle Index Score	TFCI Branded Tier	Price you would bid per hundredweight (cwt)
4.5	Choice	_____ \$/cwt
5.5	Premier	_____ \$/cwt
6.5	Elite	_____ \$/cwt

Figure 2: Questions from a Survey on U.S. Feedlots' Willingness to Pay for TFCI Cattle Results

## Survey Participants

The response rate to the survey was 2.5 percent with 68 producers responding, primarily from Minnesota, Nebraska, Iowa, Texas and Oklahoma. Respondents averaged selling 12,226 head of finished cattle in 2020 with an average total one-time capacity of 11,965 head. Respondents purchased 6,358 head of feeder cattle on average with 89 percent of the cattle being English breeds.

## Willingness to Pay for TFCI Branded Cattle

Survey respondents' average bid for feeder cattle without genomic information was \$150.45/cwt while the average bid for cattle with genomic information was: Choice cattle (TFCI score=4.5) \$151.47/cwt, Premier cattle (TFCI score=5.5) \$154.51/cwt, and Elite cattle (TFCI score=6.5) \$157.37/cwt. Thus, feedlots were willing to pay \$1.02/cwt more (+0.68%) for Choice cattle, \$4.06/cwt more (2.70%) for Premier cattle, and \$6.92/cwt more (4.60%) for Elite cattle on average versus untested cattle<sup>1</sup>.

## Self-Assessed Knowledge of Feeder Cattle Genomic Tests and Costs

More than half of survey respondents reported having a "Poor" or "Very Poor" knowledge level of genomic tests (55 percent) and their associated costs (66 percent) (Figure 3). Despite respondents placing a positive value on genomic tests of feeder cattle, education is needed to assist feedlots utilizing these tests.

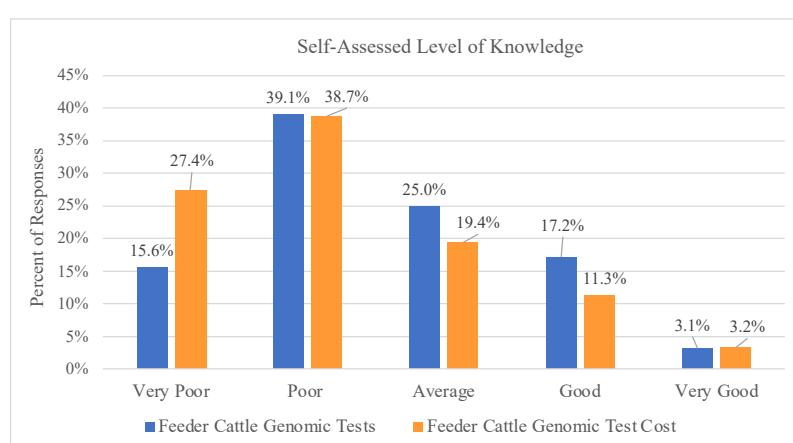


Figure 3: Self-Assessed Knowledge of Feeder Cattle Genomic Tests

Notes: n=64. Feeder cattle genomic test mean response=2.53 and feeder cattle genomic test cost mean response=2.24. Scales were 1=very poor to 5=very good.

<sup>1</sup>Choice and Elite cattle price differences were significantly different from untested cattle at the 95 percent level.

## Perceptions of Usefulness of Feeder Cattle Genomic Tests

Seventy-seven percent of respondents indicated they thought genomic tests would be “Moderately Helpful” to “Extremely Helpful” in determining which cattle to purchase while 80 percent of respondents said it would be “Moderately Helpful” to “Extremely Helpful” in determining what to pay for them. Seventy-five percent of respondents thought genomic tests would be “Moderately Helpful” to “Extremely Helpful” in determining how to group cattle based on expected performance in the feedlot while 82 percent thought it would be “Moderately Helpful” or “Extremely Helpful” when marketing finished cattle. Eighty-four percent of respondents said tests would be at least “Moderately Helpful” in deciding which cattle sellers to buy from in the future. This means feedlots think genomic testing feeder cattle has potential to inform operational decisions.

## Potential Barriers to Adoption of Genomic Testing

Information also was collected concerning potential barriers to using genomic tests. The largest barrier appears to be the cost of the test, as 69 percent reported they “Agree” or “Strongly Agree” the test is currently too expensive if they had to pay for it themselves. At the time of the survey, the test cost \$15 per head. Thirty-five percent responded they “Agree” or “Strongly Agree” they would not receive enough information to improve overall cattle buying decisions while 48 percent of respondents were “Undecided”. Similarly, 39 percent “Agree” or “Strongly Agree” they did not know their cattle sellers well enough to use a feeder cattle genomic test on cattle they purchase, with 35 percent of respondents being “Undecided.”

## Knowledge and Perception of TFCI Information

Respondents largely (65 percent) indicated they were “Undecided” about whether genomic test results accurately predict cattle performance. Furthermore, 48 percent of respondents were “Undecided” if they know how to use genetic test information to assist in making cattle purchasing decisions while 42 percent “Agreed” they knew how to use the information. Furthermore, only 13 percent of respondents knew (Agreed or Strongly Agreed) what a “fair” price for genomic testing in cattle should be.

## Conclusions and Implications

This study found feedlots would pay, on average, up to 4.60 percent more for genomic tested feeder cattle than feeder cattle that were not genomic tested. Additionally, the study revealed that feedlots did not have a complete understanding of genomic tests and their costs prior to the survey. It was found that the primary use of genomic tested feeder cattle would be to market finished cattle and decide from whom to buy feeder cattle in the future. Respondents cited cost as the primary barrier to using genomic tests if they had to pay for it. Furthermore, respondents were unsure if genomic tests would provide adequate information to improve cattle buying decisions or be an accurate performance predictor.

This study demonstrates there are challenges associated with genomic testing for feedlots, and some of those challenges may be addressed with educational efforts. This educational effort on feeder cattle genomic tests is likely needed along the entire cattle production chain. Very few feeder cattle are marketed with genomic test information, which may be a reason few feedlot operators have used this information when purchasing feeder cattle. However, if more cattle are marketed with such information, and it proved to be beneficial, feedlot managers would be more likely to include it in their decision-making process.

Given the cost of the genomic test may be a barrier, it may be wise to only test a representative sample of cattle. For instance, a producer selling a group of 60 steers may only test 10 percent to 20 percent of the cattle and then provide the average genomic test score in the description when marketing the cattle. As a final thought, producers should consider the expected quality of their cattle before they decide to invest in testing, as cattle with below average test results will not receive a premium and may even experience a discount.

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