# Where Premiums

*Grid data on a million cattle over 11 years shows the top correlation to net premium is CAB acceptance.*

*Story by*
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Premiums and discounts rule the world of value-based cattle marketing. If you've fed cattle or followed the progress of your calves through a feedlot to a packer grid, you have been in on a program of continuing education.

When a truckload of finished cattle sells on a grid, individual data can tell a lot about cow herd and sire genetics, health and management. Within a couple of years, you may be able to see patterns that separate better from worse, but what carcass traits are most correlated with net premiums paid, and which clearly point to discounts?

That's tough to discern from the close-up look at how your cattle did; you can't see the forest for the trees. Answers begin to appear when you can look at grid marketing data that spans 11 years and a million cattle in more than 20,000 harvest groups.

GeneNet LLC, operated by Ken Conway, Hays, Kan., has amassed just such a resource (see "Grid highlights").

Since the late 1990s, Conway has worked with more than 1,400 producers of high-quality cattle, up to 150 feedlots and many seedstock producers across the United States. GeneNet started with Angus-based cattle and negotiated a progressive pricing system, assisting seedstock producers in channeling genetics from their customers through to a premium market, and getting feedback on harvest results.

"In 11 years, those million-plus head of cattle have garnered $17.17 per head over the average live price, or, in other words, more than $17 million has been added to the pockets of GeneNet producers," Conway says. Moreover, those producers have the information they need to add still more value in the future.

Conway recently agreed to work with Certified Angus Beef LLC (CAB) data

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analyst Mike King to see what larger lessons can be learned from percentile rankings, ranges and correlations among the traits. Results show where dollars are earned or lost.

## Analysis and results

"In any database with so many variables, some will be more or less correlated with others," King explains. "We looked at all of those relationships, but focused on their effect on carcass premiums."

King sorted the lots by quartile, based on carcass grid premiums, and also looked at means and ranges in the top and bottom 10% for those premiums (see Table 1). He ran simple statistical correlation coefficients for all lot data (see Table 2) and separate correlations for those lots in the top 10%.

"A couple of relationships stand out right away," Conway says. "As quality grade increases by quartile, and certainly at the very top, premiums also increase. On the other hand, as the percentage of outliers increases, premiums quickly fade."

The trait most positively associated with grid premiums was *Certified Angus Beef*® (CAB®) brand acceptance, showing a statistically strong 0.57 correlation.

Numerically, the category of "Percent Choice or Higher" shows an even

stronger correlation at 0.65, but that must be broken down to its component groups of CAB, lower-Choice and Prime, King explains. Grading low-Choice is only slightly correlated with a premium. On the other hand, percent Select is almost as negatively correlated with premiums as CAB is positive.

Among the other findings, lot size was smaller in those earning higher premiums. King says there was a slightly negative correlation perhaps due to more sorting. Lot size in the top 10% averaged 47 head, with 49 for the top quartile, while the lower three quartiles showed an average of 54 to 55 head. In the lowest 10% for carcass premium, the largest lot was 461 head, but the top 10% range included a very uniform lot with 362 head that made 35% CAB and Prime.

## Other correlations

Harvest dates fell across the period of 11 years, factoring in the 572 different weekly grid base prices, Conway says. The mean harvest dates for all quartiles were in 2004, near the midpoint of the time period represented in the data. The two lots with lowest premiums were sold in October 2001 and October 2004. The two highest-premium lots have one thing in common: They sold in the same week in early October 2003. Overall, market timing may have had more to do with luck than other factors.

Base price was not highly correlated to any other factor, King says. However, there was a 0.29 correlation to the Yield Grade (YG) 4 percentage, and a somewhat negative correlation to percent Prime.

In the quartile rankings, both live and carcass weights were similar for the top three premium quartiles, but significantly heavier for the bottom quartile. "Pounds do not always mean more dollars, especially on a grid with YG 4 and heavyweight discounts in play," Conway notes.

Although the GeneNet grid pays some of the highest premiums available for lean Yield Grades, according to the data only those grading YG 3 were moderately and positively correlated with carcass premiums.

"That's probably because YG 3 was also moderately correlated with CAB and Prime," Conway says. YG 2 was slightly correlated with premiums, but YG 1 joined YG 4 and 5 in a similarly moderate negative correlation to net premiums.

When only the top 10% of lots for carcass premium are considered, King notes percent CAB is the trait most positively associated with premiums, but it is only a 0.21 correlation. That's much smaller than the 0.57 correlation between carcass premiums and CAB acceptance in all lot data, and this smaller correlation was most likely the result of less variation in carcass premiums in the top 10% group compared with the entire population. Negative correlations were also smaller in the upper 10th percentile, and in this case grading lower-Choice was the most negative correlation at -0.20; Select was -0.18.

## Outliers

Many excellent cattle are represented in the top 10% premium group, of

## Table 1: Continuous lot variables in GeneNet data (1999-2009), by quartile, top 10%, bottom 10%, and ranges

| Quartile or Group | Carcass premium, $/head | CAB® acceptance rate, % | % Choice and above | HCW, lb. | % YG 4s and 5s | % Out cattle* | Total discount (with YG 4-5) |
|---|---|---|---|---|---|---|---|
| Top | 48.35 | 29.1 | 88.7 | 755.1 | 3.9 | 1.2 | 5.1 |
| Second | 25.18 | 18.2 | 81.1 | 754.7 | 4.2 | 2.0 | 6.2 |
| Third | 10.62 | 12.1 | 72.2 | 758.6 | 5.5 | 2.1 | 7.6 |
| Bottom | -15.48 | 7.6 | 61.4 | 774.6 | 9.7 | 8.3 | 18.0 |
| Top 10% | 61.26 | 33.9 | 91.3 | 753.7 | 3.7 | 1.0 | 4.7 |
| Low 10% | -31.44 | 5.8 | 53.4 | 786.9 | 12.1 | 12.4 | 24.5 |
| Range High | 137.71 | 86.0 | 100.0 | 971.0 | >50.0 | >50.0 | >50.0 |
| Range Low | -174.88 | 0.0 | 2.2 | 551.0 | 0.0 | 0.0 | 0.0 |

*Out cattle are Standards, Commercial, dark cutters, heavies and lights.

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### Grid highlights

It helps to explore features of the grid (*www.genenetbeef.com/grid.pdf*), before delving into the data it has generated since 1999.

"The first key is to understand how we figure the base price," says company president Ken Conway, who invites inquiries via that web site or by phone at 785-628-3004. That price involves either a bid or the weekly weighted-average Nebraska dressed beef price, along with the U.S. Department of Agriculture (USDA) grading percentage at the intended plant and the weekly average difference in value between Choice and Select beef.

All of the GeneNet cattle go through JBS-USA plants, mostly in Greeley, Colo., or Grand Island, Neb., but may also be calculated through the plant in Dumas, Texas.

Like all grids, this one works on the basis of premiums and discounts from the base. Premium Choice and Prime cattle earn rewards, as do Yield Grade (YG) 1 and 2. Select animals are discounted by the Choice-Select spread, and other discounts are calculated for YG 4 and 5, Standard, Commercial or outliers as discussed in examples.

Although the progressive grid was adjusted somewhat about halfway through its historical span, Conway says, "Premiums can still be compared over the years, front to back. Market swings have been a bigger variant."

# Come From

course. There are the 65% Prime, the 92.9% YG 2s, the many groups of 100% Choice and higher. But some lots in the database overcame significant discounts to remain in at the top. One such lot of 29 head came to market at just 992 pounds (lb.) and had to take a lightweight (<535 lb.) dock on 10.34% of the cattle, plus another 3.45% had dark-cutter discounts. However, there were 17.2% Prime, 27.6% CAB and only 3.5% YG 4s.

Other lots in the top 10% overcame such flaws as 35.6% YG 4s or 15% heavies (>950 lb.). The range in base price for cattle sold in this upper percentile of carcass premiums ran from less than $98 per cwt. to nearly $180 per cwt., and the net premiums were from $48.02 per head to $137.71 per head.

Perhaps the most unusual cattle are the outliers in the bottom 10% for premiums, those taking an average net loss of $31.44 per head, with a range of -$14.31 down to -$174.88. Conway says most of them can be associated with feeding or marketing errors.

The highest ratio of Prime cattle in any lot is not in the top, but in the bottom 10th percentile. So how does one suffer a net premium loss of $27.04 per head with cattle that grade 77.5% Prime? Conway points to their 37.5% YG 4s, 5% YG 5s and 12.5% heavies. Other amazingly bad lots featured 46% Standards, 53% Commercials and 51.3% dark cutters. "Those had to involve a ration error that threw a lot of heifers into heat," Conway notes. "Some kind of odd lot comes through once every year or two. If you look at data on enough cattle, you see some extremes."

For more details on GeneNet, visit *www.genenetbeef.com*. For more details on this analysis of the 1999-2009 database or to read the abstract submitted via the Midwest Section of the American Society of Animal Science (ASAS), visit *www.cabpartners.com/news/research*.

**Table 2: Correlation coefficients for all lot data in the GeneNet database**

| | Premium | HCW | Base Price | % Prime | % Choice & Up | % Select | % Standard | % Comm'l | % CAB | % YG 1-2 | % YG 4 | % YG5 | % Dark Cutter | % Heavy |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Carcass Premium | 1.00 | 0.14 | 0.03 | 0.33 | 0.65 | -0.57 | -0.43 | -0.29 | 0.57 | -0.03 | -0.26 | -0.21 | -0.23 | -0.27 |
| Hot Carcass Wt. | | 1.00 | 0.01 | -0.01 | 0.05 | -0.04 | -0.06 | 0.03 | -0.05 | -0.21 | 0.22 | 0.14 | -0.07 | 0.50 |
| Base Price | | | 1.00 | -0.16 | -0.02 | 0.01 | 0.02 | 0.04 | -0.04 | -0.04 | 0.29 | 0.05 | 0.04 | 0.01 |
| % Prime | | | | 1.00 | 0.48 | -0.49 | -0.14 | -0.01 | 0.29 | -0.25 | 0.11 | 0.09 | 0.00 | 0.00 |
| % Choice & Up | | | | | 1.00 | -0.97 | -0.47 | -0.14 | 0.55 | -0.46 | 0.22 | 0.09 | -0.15 | 0.01 |
| % Select | | | | | | 1.00 | 0.32 | -0.01 | -0.53 | 0.44 | -0.23 | -0.10 | 0.02 | -0.01 |
| % Standard | | | | | | | 1.00 | 0.16 | -0.24 | 0.28 | -0.08 | -0.02 | 0.08 | 0.02 |
| % Commercial | | | | | | | | 1.00 | -0.10 | 0.04 | 0.00 | 0.04 | 0.05 | 0.05 |
| % CAB | | | | | | | | | 1.00 | -0.27 | 0.03 | 0.03 | -0.08 | -0.09 |
| % YG 1-2 | | | | | | | | | | 1.00 | -0.27 | -0.22 | 0.08 | -0.10 |
| % YG 4 | | | | | | | | | | | 1.00 | 0.39 | 0.03 | 0.15 |
| % YG 5 | | | | | | | | | | | | 1.00 | 0.01 | 0.13 |
| % Dark Cutters | | | | | | | | | | | | | 1.00 | 0.01 |
| % Heavy (> 950 lb.) | | | | | | | | | | | | | | 1.00 |

The CORR Procedure — Simple Statistics.