Your Link to

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Give data more than a snowball's chance

Information has become a blur in the 21st century, an incoming snowball of communication that keeps getting bigger, faster. Voice- and e-mail, text messaging and all of the other clicks and tweets seem to create a daily bank of information that I can barely store, let alone study or process. If only I could delete the flurry of messages as quickly as they come in, I might catch my breath or dig out. Many of us may feel the need for a snowplow on the information superhighway.

There could be a related accumulation: the data feedback on your fed cattle. Cattlemen have been keen to get a report card on their annual calf crops since the dawn of custom feeding. Feedlot performance and carcass quality are the ultimate value drivers for our nation's beef cattle and, good or bad, most folks have only one calf crop to track on an annual basis.

That data arrives in the form of closeouts or packer harvest reports, rare treats to find in the conventional mailbox or e-mail inbox. It could be like finding a drift of cash within the avalanche — but only if we dig it out.

Average daily gain, feed conversion, quality grades, yield grades and dressing percentages don't do us a bit of good unless we sit down and analyze their meaning once the reports are compiled.

Cattlemen, strapped for time and energy, have often gathered years of data that are briefly browsed and placed neatly in a file. However, just a little time and effort can wring out the useful information we had in mind when we set out to get that report card.

Mining the data

Data that describes an entire pen of cattle is fine, as far as it goes. The most commonly collected and simplest to acquire, pen data sheds light on a ranch's total program. However, detailed data is most telling, and when paired with sire and dam information it's a real decision tool.

I'd like to suggest one simple approach that can help convert the details into herd knowledge.

Let's take a look at one ranch's data on cattle harvested in 2010, sorted into sire groups A, B and C (Table 1). This only works in the case of artificial insemination (AI), single-sire or at least "like-sire" pastures.

An Excel spreadsheet and a few simple formulas take care of the math as each animal within a sire group is averaged with its half-siblings to create one numerical measurement for the whole sire group by individual trait.

A handy aspect of this data set is that we have a known birth date for each calf. This allows us to measure some of the traits while using age as a component. Since weight is always a huge factor in the bottom line, let's start that process by looking at carcass weight per day of age.

Progeny from the three sire groups appear relatively close in this trait, but the 0.04-pound (lb.) advantage held by Bull C adds up to 16 lb. at 400 days of age. The extra carcass weight for the Bull C group was an obvious factor in the "total carcass value" column, since the cattle were simply heavier at harvest.

Ribeye area is important because it indicates overall red-meat yield and factors into the yield grade (YG) formula. The column to the right of the ribeye area (REA) averages shows how closely the cattle in each sire group came to hitting the target measurement that is set by that YG formula for the given carcass weight. The values are expressed as negative numbers if the cattle fell short of the required REA and positive if the target REA was surpassed. In this example, the progeny from Bulls A and B were more than 0.5-inch deficient, which, in turn, led to a less desirable yield grade and dressing percent. Both progeny groups had an average of YG 3.3, which is safe, but the leaner Bull C progeny pulled in a few YG 2 premiums to move higher in the ranking.

Effects of marbling

The next column to review here is marbling score. The numbers are based on a scale that theoretically stretches from 0 to 1,000, but the range of 300 to 700 is where most fed cattle fall. Table 2 shows the equivalent USDA quality grade for each marbling score. Select carcasses are in the range from 300 to 399 while low-Choice carcasses are scored 400-499, for example.

Back to the data at hand, we can see that all three sire groups averaged above low-Choice. However, the calves sired by Bull B had several carcasses in the Select category. Even though there were almost as many scoring at the upper end of low-Choice, the net effect was a lower overall carcass value per hundredweight (cwt.), as compared to the other two sire groups, due to Select discounts.

The column displaying total carcass values for the sire groups shows real dollars that are deposited in the bank; however, they do not represent net profit. For one thing, we don't know much about efficiency at the ranch or the feedlot. But we can use carcass weight, age at harvest and price per cwt. to arrive at a number that I've called "carcass value per day of age," in the far right column.

This number, although not a direct measure of efficiency, points to a relationship between weight gain and carcass merit. Logically, cattle that gain weight quickly will have a higher finished value due to pounds, and cattle that hang a high-quality carcass will be worth more dollars per pound. Dividing the overall carcass value by the age in days of each calf is one way to determine which cattle did well in both categories simultaneously, and which fell short.

Progeny from Bull C had the upper hand in weight gain and achieved a price per pound in the middle of the pack. In this case the gain per day of age pushed them above the other two groups in carcass value per day of age. Bull A progeny, although reaching the highest carcass merit, could not surpass the growth advantage to rank highest in value/age. The discounts for Select carcasses and lack of gain advantage drove the progeny of Bull B to the lowest carcass weight per day of age.

Off hand, it would appear that the management decision here is to drop Bull B, or purchase more bulls like Bulls A and C in the future. One can only hope that the genetic variation between the bulls, as seen in expected progeny difference (EPD) values and pedigree, are different enough to suggest the necessary changes for improvement down the road.

This type of analysis won't be useful to every producer, as it's dependent on individual sire information and knowledge of birth dates. It's not all-encompassing since it doesn't account for feed efficiency, but we have to keep in mind that pen feeding cannot pinpoint individual feed efficiency. It would be feasible to find group efficiency if we fed sire groups in separate pens, but that's not always possible. The premise of the whole exercise is to get us to think about what we might look for when we place cattle on feed and collect detailed data.

In the name of herd improvement, it pays to plow open some information pathways beyond just assigning descriptive numbers to the entire calf crop.

Table 2: Equivalent USDA quality grade for each marbling score

Marbling score	Quality grade
≥ 900	Prime +
800 - 899	Prime
700 - 799	Prime -
600 - 699	Choice +
500 - 599	Choice
400 - 499	Choice -
300 - 399	Select

Table 1: Carcass trait averages for sire groups

Sire Group	Age at harvest, days	Hot carcass wt., lb.	Carcass wt. per day of age	Ribeye area, sq. in	REA +/- required @HCW	REA per carcass, cwt.	Marbling score	Yield grade	Backfat, in.	Carcass value per cwt.	Total carcass value	Carcass value per day of age
Bull A	404	788	1.95	12.67	-0.53	1.6	527	3.3	0.57	$163.40	$1,288.14	$3.18
Bull B	404	790	1.95	12.5	-0.7	1.59	425	3.3	0.56	$157.40	$1,240.73	$3.06
Bull C	411	817	1.99	13.6	0.06	1.67	439	3.04	0.53	$160.83	$1,314.66	$3.20

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