Making Sense of Data

Turn data into information to improve your potential return on investment.

Commentary by **John Stika**

The loudest voices in our industry echo from a bunch of dead presidents. Actually, they don't make a sound, but Grant, Jackson, Lincoln and Washington command our attention by addressing our pocketbooks.

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The serious cattleman scrutinizes cost/benefit relationships for each management decision today. Whether you are expanding or trying to improve what you have, you must evaluate the potential return on investment (ROI).

Many of you "answered the call" of the information age and committed to gathering feedlot and carcass data on your herds. You have an advantage, thanks to your investment of dollars and time (two years from breeding decisions to harvest) and your precious carcass data prize. But are you using the advantage to improve your ROI?

For years we have treated data itself as the prize, claiming victory upon its safe arrival. It was no wonder we felt that way when carcass data was difficult to gather and had questionable reliability. Today, accurate carcass data is easier to capture.

Those who still treat data as the prize are often those who let it gather dust on a trophy shelf. Most of us have learned that the real prize is the information that can be gleaned from the data. As knowledge — put into action through the decisions we make — it drives the profitability of our cow herds.

Types of data

Long before we can extract information, we must become familiar with the types of data we have. Not all kinds of data can answer the same questions, and the depth of information that can be extracted depends upon the details encompassed in that data. Consider four types of carcass data:

1) percentage, sometimes called "pen level";
2) group;
3) tag transfer; and
4) detailed.

Any data is better than no data, but the order in which these data types are listed represents the increasing level of knowledge provided, as well as the increasing cost of collection.

While the last three data types are based on measuring individuals, percentage carcass data looks strictly at the pen averages. It costs little or nothing and does provide the average hot carcass weight (HCW), percentage distributions for quality grade (QG) and yield grade (YG), and the average carcass value.

However, it offers little to the data-minded producer looking for carcass merit and value variation within a cow herd. Without knowing the ranges in carcass value and HCW, or their relationship to quality and YG for individual carcasses, you're left wondering whether the YG 4 carcasses graded Choice or Select and what they weighed.

Given the limitations of percentage data and the fact that group data can be captured with very little additional effort and at the same low price, group data should always be the minimum level of carcass data you pursue.

If you're not the kind to stop at the minimum, and if you really want to unlock the vault of knowledge, capture at least tag-transfer or even detailed carcass data for $2-$5 per head. That greatly increases your ability to isolate and address carcass-merit strengths and weaknesses in your herd by tracking each carcass back to specific parents. Group data does not provide that opportunity.

There may be slight differences among data providers, but Table 1 identifies the various data points you should expect on each head shipped to the packer for each particular type of data.

No need to be complicated

Trying to make sense of carcass data can be intimidating and frustrating to new and veteran users alike. All the columns and rows of numbers

	Detailed carcass data										
		Tag-transfer carcass data									
			Group carcass data								
Ear tag no.	HCW	QG	YG	CAB certified	$/cwt.	Total value	Marbling score	Backfat, in.	REA, in.	Req. REA, in.	% KPH*
Y534	800	Choice	2	Yes	$117	$936	Modest^{50}	0.30	13.5	13.4	2.0

Table 1: Example of the different types of carcass data available and the parameters included

*%KPH = percent kidney, pelvic and heart fat.

seem to run together until your eyes and head hurt. It may be your unfamiliarity with numbers in general — or perhaps your low tolerance for pain — that casts the data aside with other troublesome papers on the back corner of the desk before anything useful is ever gained from it (low ROI).

It doesn't have to be that hard. You just want to identify variations within your herd and then begin to pinpoint the bright spots and address the problem areas. Those "out" cattle on the bottom end probably lose more money than the top end is making. Using group, tag-transfer or detailed carcass data, these issues can be addressed by ranking the individual carcasses for carcass value, HCW or any one of the data points made available.

Using this ranking method one can quickly identify the light and heavy carcasses, YG 4s and 5s, and low-quality-grade cattle. It's easy to see the range for each parameter, so you can analyze the bottom 25% for value, looking at the reason these carcasses cost you money.

You might find it useful to look at the data in matrix form, especially as you discern the relationships between quality and yield (see Table 2). Looking at the data in ranking, matrix or distribution format takes us a lot further toward answering our questions than looking blankly at a bunch of randomly ordered rows and columns.

The knowledge you can learn takes on a new dimension when you step up from group data to ear-tag transfer. By simply adding the single data point of an ear-tag number, you can begin to tie particular carcass merit strengths and weaknesses back to particular cows and herd sires. By matching the carcass data with weaning weight, you can begin to identify those cows with pasture and carcass performance.

That will often point out cows whose calves should be sold at weaning to maximize profit and those that return more dollars by being placed on feed. Another handy trick for evaluating your bull battery is to group the carcasses by sire group and rank the sires by total carcass value. You may find that bulls excel in different

traits, and you can maximize their value by being more selective in which cows you breed them to.

Without question, detailed carcass data provides the greatest opportunity to accurately profile the carcass merit of your cow herd. However, in most cases a simple tag transfer is enough to answer the questions you have, and therefore provides a greater ROI.

For the data-hungry producer who wants to understand the variation of specific components used to calculate both quality and YG, detailed data is the tool to use. With this in hand you can look at the variations in marbling scores and determine if the cattle were fed long enough (based on backfat measurements), or if they needed more muscle (based on ribeye area).

Although a computer is not required to glean information from data, it's easier when the data is in an electronic format, especially in the case of detailed data. If you are visually oriented, the computer offers a number of possibilities to look

for relationships and comparisons. Putting data in graphic form allows you to quickly get a visual impression of the carcass distribution for various traits and how they relate.

For example, Fig. 1 shows the carcass weight distribution for a set of cattle. We were also able to plot the average actual ribeye area for those carcasses with each weight break against the ribeye area required for average muscling.

At a quick glance you notice a few key points. First, most of the cattle fell within an acceptable carcass weight window, although a few fell outside. Secondly, the cattle were above average for muscling across almost every weight break.

This is just one example of the types of things that can be done to make "information mining" less frustrating and more beneficial to your ROI.

Of course, you must include feedlot performance data in the mining process. That's a key puzzle piece when you're developing a profile of how your cattle perform beyond the ranch. Everyone knows that the carcass is the most valuable thing you produce, but it is the last thing you get paid for.

Whether gathering data on your calves has become a ritual or is a first-time event, consider a few key questions to maximize the ROI of your efforts.

Question No. 1 — Why collect the data?

Question No. 2 — What data do I need to collect?

Question No. 3 — How will I use the data?

If you can't answer Question No. 3 then you should return to the first question and again ask, "Why collect the data?"

If making sense of carcass data were a cakewalk, everyone would do it. The fact is, everyone doesn't. But for those who do, the opportunities to sustain a viable position within this industry are greater.

Table 2: Example of a quality grade vs. yield grade matrix

	YG1	YG2	YG3	YG4	YG5	Total
Prime	0.0%	0.0%	1.0%	1.0%	0.0%	2.0%
Choice	5.8%	39.6%	23.3%	0.0%	0.0%	68.7%
Select	9.1%	13.0%	2.2%	3.5%	0.0%	27.8%
Standard	1.0%	0.5%	0.0%	0.0%	0.0%	1.5%
Total	15.9%	53.1%	26.5%	4.5%	0.0%	100.0%

Fig. 1: Comparison of actual to required ribeye area (REA) across hot carcass weight (HCW)