

What 2020 Taught Us

Feeding cattle through a pandemic provides case study.

by Miranda Reiman, senior associate editor

With all its unpredictability, 2020 wasn't the ideal cattle feeding research trial, but looking in retrospect may provide real-world answers for hard-to-study questions.

What happens when feeders lose access to growth-promoting technology? How does dramatically climbing carcass weight affect *Certified Angus Beef*® (CAB®) brand acceptance?

As supply chains normalized and market access stabilized, scientists turned to database analysis and informal surveys.

CAB has collected its "consist data" six times since 2008, accumulating

individual data on 8 million carcasses, from about two-thirds of the U.S. packing base. The data helps the team categorize the supply of CAB and understand what factors keep cattle from getting the stamp.

"It's not looking through a microscope but looking through a telescope," says Daniel Clark, CAB meat scientist.

Comparing 2019 to 2020 gave them a unique data set.

More carcass weight is better, until it's not

When labor shortages caused by the COVID-19 pandemic limited

harvest capacity, cattle feeders had to hold cattle for dramatically extended periods of time.

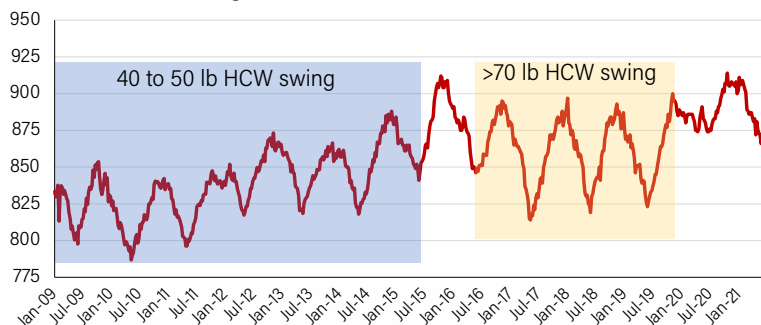
"We've all lived through it. We understand the disruptions that took place there," says Clint Walenciak, CAB director of product solutions. "What can we learn from what happened in that time frame?"

Carcass weights went up at the same time quality grade soared. Some weeks CAB saw record highs in the history of the program, with 41% of the predominately black-hided (A-stamped) carcasses meeting the 10 brand specifications.

To a casual observer, the



Figure 1: Hot Carcass Weight (Pounds) Trend



conclusion is obvious: the more carcass weight, the better. However, a closer study says that's true only to a point.

Typically, there are 40- to 50-pound (lb.) swings in average hot carcass weights (HCW) during the course of the year. In 2020 the seasonal highs and lows spanned 70 lb., Walenciak says. (See Figure 1.)

"As carcass weights hit their peak, CAB acceptance rates were at their lowest points," he says.

While HCW spikes boost marbling, they also correlate with jumps in other traits where there is an upper limit for brand certification.

"When we increase our carcass weight, that's a good thing for marbling; but it does the exact opposite for hot carcass weight, ribeye area (REA) and backfat. It works against us," Clark says.

In 2008 94% of cattle were kicked out of CAB acceptance for lack of marbling. By 2021, that number had declined to 80%. Cattle can miss the mark on more than one measure, such as being both too heavy and having a ribeye above 16 square inches (in.), for example.

There's a two-part explanation: better-grading cattle means fewer failed the marbling threshold; but also, heavier cattle meant more failed for other reasons, Walenciak says.

Clark offers an analogy. Imagine two cars are traveling toward

each other — one is marbling and the other carries HCW, REA and backfat. Everything from genetics to marketing conditions affect the speed at which they're moving.

"Where those cars meet on the road is ultimately going to impact acceptance rate," he says.

In 2019 the average 800-lb. carcass had a 13.6-square-in. ribeye, with a modest degree of marbling and .5 in. of backfat. Modeling a 50-lb. jump in HCW — which is consistent with what happened during the April-June time frame in 2020, when comparing to 2019 weights — that REA increased to 14 square in., marbling went up 20 points and backfat increased to .7 of an inch.

That marbling increase is significant, Clark says, especially considering the number of cattle that just fall short of the modest level (500 points on an 1,100-point scale) required by the brand. (See sidebar.)

However, at some point the increase in marbling won't be enough to overcome the increasing discounts for outliers. It seems 900 lb. is the magic number.

"That 900 lb. is ultimately when we changed from having a net-positive effect to a negative effect," Clark says. "We start to reach that point where we are now kicking out more animals because of hot carcass weight, ribeye area and fat than we are gaining from getting more marbling."

On the line

They were so close.

Around 8.4% of all black-hided cattle that fail to make CAB for lack of marbling sit within 25 marbling points (on a 1,100-point scale) of making the brand.

"Why is that so important? I would argue it's because just small changes that we can make in that distribution can really make big shifts in the number of cattle that ultimately end up over the modest degree and ended up in the Certified Angus Beef brand," says meat scientist Daniel Clark.

That's compared to those kicked out for backfat, where only 3.5% sit on the line, within a tenth of an inch of making it. Or ribeye area (REA), where only 2% are withing in a quarter of an inch.

There's \$50 on average available in CAB premiums per qualifying carcass, it's worth finding a way to push a few more from "so close" to "made it," Clark says.

They are likely beginning to see their most potential at around 850 lb, he notes, though it's based on an average population.

"Someone would need to understand where their cattle lie realtaive to that average to make a comparison," Walenciak said. "Steers versus heifers would also have a major impact."

The rate of marbling matters

If the speed on the interstate is measured in mph, this shift can be calculated in marbling-change-per-unit-of-HCW.

"We'd need to increase our marbling score by 4.5 points for every 10 pounds that we gained in hot carcass weight," Clark says.

Of course, that varies based on type of cattle and genetics.

"We saw a lot of cattle that were up around 1 degree for every pound of hot carcass weight," Clark notes.

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“They were actually increasing a full marbling score.”

As the backlog became even more significant by the fall of 2020, carcass weights approached a 900-lb. national average.

“That was kind of what we considered the danger zone,” Clark says. “We started to kick out more and more cattle because they were getting too fat.”

Then, as the HCW trended closer to 875 lb. toward the end of the year, acceptance rates once again hit all-time highs.

It’s not just a history lesson, Clark says. That knowledge can be applied to today’s population.

“There’s a significant number of cattle that are in the market that ultimately are not meeting their optimum genetic potential,” he says.

Putting more days on them could be a net benefit to the feeder and the industry, provided input costs support that.

“We’re not saying all cattle need to be fed longer,” Clark notes, but those with the natural propensity to marble may be well suited.

The timeline of a beta-agonist

At the height of the pandemic-induced disruptions, many cattlemen didn’t have a choice. They had to feed cattle longer.

Brad Johnson, the Gordon W. Davis Regent’s chair in Meat Science and Muscle Biology at Texas Tech University, was fielding several calls a day.

“The use of ractopamine was over, because we couldn’t manage growth enhancing technology like that, because we didn’t know when those cattle were going to ship,” he says.

Harvest date mattered because of how a beta-agonist works. The ractopamine molecule binds to

a receptor to cause a biological response that increases protein synthesis and results in more muscle mass.

“But the interesting thing about beta-agonists is that their receptors are very sensitive to long-term use,” Johnson says.

They’re usually used for just 20 to 30 days at the end of a feeding period.

“We feed a short time because the receptors, if we feed longer, become desensitized, and they don’t respond to [the additive] anymore,” he says. “From an economic standpoint, after about 38 to 40 days, you’re losing money every day.”

Without the carcass gain to pay for the compound, it’s a futile investment, he says.

No tech? No problem

In June 2020 Johnson surveyed 10 nutritionists representing a large number of feedlots and found the industry-wide estimated 70-75% of cattle on feed on ractopamine during any given time was down to 30- 35%. Those able to maintain their beta-agonist program had arrangements with a packer.

“They knew within maybe a 10-day window when they could ship these cattle,” he says.

Many others temporarily abandoned ractopamine. Johnson says pharmaceutical companies report usage is back to pre-pandemic levels.

“I don’t agree with that. My nutritionist friends don’t agree with that, and it’s not just related to the pandemic,” he says.

There are other factors at play, Johnson says, like exports to China, which has a zero-tolerance policy on beta-agonist levels.

Plus, they’ve gained knowledge.


Dressing percentage or yield increases with HCW and more days on feed. The mature animals do not

put more calories toward blood and hide, but instead they add it mostly to muscle in what’s commonly called “carcass transfer,” Johnson says.

“These feedlots have learned that they can manage this response

by increasing days on feed, without necessarily using the technology,” he says, which helps avoid possible negative side effects such as reduced tenderness and marbling. “If I just simply feed these cattle three weeks longer, I’m going to get a beta-agonist response without the risk and management issues of feeding that compound.”

It’s not the large-scale research trial he’d design, but Johnson says 2020 provided a great case study if nothing else.

“We’ve endured a lot, but I think we’ve learned a lot,” he says. 

Editor’s note: Walenciak, Clark and Johnson all spoke as part of the 2021 Feeding Quality Forum.

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— Brad Johnson

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