



Sweeping Changes

Dave Nichols talks about challenges and opportunities for cattle producers in the DNA age.

by **Eric Grant**, American Angus Association

Looking across the rolling hills of central Iowa, it's easy to see how rural America has been reshaped the last few years. Not so long ago, much of this countryside was grass and cows, but recent changes in the nation's energy policy resulted in pastures being converted to cropland.

At the same time, the availability of alternative feedstuffs like distillers' grains — the byproduct of ethanol production — has reinvigorated the Iowa cattle-feeding industry and provided the state's cattle producers with a newfound economic advantage.

"The Iowa cattle-feeding industry has increased by 10% in the last couple of years," remarks Dave Nichols, who has raised seedstock near Bridgewater, Iowa, all of his life.

Nichols has been at the forefront of many interesting changes through the years. Back in

▶ **Above:** "When we started this effort, there were 130-plus million head of cattle in this country. Today, we have 90 million head, but we're producing more beef today than we did back then with 40 million less head. That's an extraordinary advancement."

the 1960s, he helped create the Beef Improvement Federation (BIF), an organization that has developed guidelines and standardization for genetic evaluation and advanced the performance and quality of cattle. The organization ultimately paved the way for expected progeny differences (EPDs), powerful tools cattle producers use today to improve and refine their cattle.

"Think about it," says Nichols. "When we started this effort, there were 130-plus million head of cattle in this country. Today, we have 90 million head, but we're producing more beef today than we did back then with 40 million less head. That's an extraordinary advancement. We're using fewer resources. We're more efficient than ever before, but we're getting so much more out of these cattle than we ever imagined."

Quality is better, too. The *Certified Angus Beef*® (CAB®) brand sold 865 million pounds (lb.) of beef this year, a 7% increase over the

previous year. The CAB acceptance rate for cattle also hit all-time highs at 24.24%, and consumer demand for the product has increased by 80% since the early 2000s.

All of these advancements would not have been possible without genetic-evaluation programs — and the widespread use of genetic

tools like EPDs by seedstock and commercial producers.

DNA changing the game

The industry, however, has undergone a tectonic shift in genetic evaluation the last few years with the advent of DNA testing.

On the one hand, Nichols sees vast potential in DNA technology; there are EPDs that are enhanced through the combination of traditional, phenotypic measurements like birth weights, weaning weights and marbling, combined with DNA results.

The use of DNA reduces risk in genetic

"Every living thing — including you — carries a large number of broken genes."

— **Jared Decker**

CONTINUED ON PAGE 34

advancement, says Nichols, but as we learn more about the genetic traits of cattle, the industry also has discovered a growing list of genetic abnormalities and conditions.

“Here’s the bitter pill,” Jared Decker, assistant professor of beef genetics for the University of Missouri (MU), told *BEEF* magazine. “Every living thing — including you — carries a large number of broken genes. I recently saw cattle advertised as ‘100% genetic-defect free.’ The breeder did not realize this, but this statement is patently untrue, and is actually false advertising. The breeder could have stated that the animals are 100% free of known genetic defects, but all animals carry genetic defects.”

It’s that two-edged sword that has Nichols both excited and somewhat cautious about where DNA technology will take the industry.

On the one hand, there’s no doubt that cattle producers who embrace DNA technology can make more rapid advancements than ever before. On the other, “we’re going to find some things out about our cow herds that we probably don’t want to know, such as the discovery of genetic conditions,” says Nichols.

“So you make the choice,” adds Nichols. “Would you rather be breeding cattle like we always have — essentially blind — and not know? Or would you rather have DNA information that allows you to know which cattle in your cow herd carry potentially harmful genetic conditions? Who’s in a stronger position, the guy who knows, or the guy who doesn’t? I’ll take knowledge every time.”

An early adopter

Nichols has been an aggressive adopter of DNA technology. His program was a test herd for Igenity in the mid-2000s, helping the company correlate phenotypic traits with corresponding genes, a process called “training.”

When the American Angus Association announced last August a newly discovered condition called developmental duplication, or DD, Nichols held his breath.

“Since 2007, we’ve used 208 Angus sires,” he says. “About 25% of them were potential carriers of DD.”

The DD condition is a simple recessive, meaning affected progeny must inherit the mutation from both parents in order for it to be expressed phenotypically. Affected matings may result in early embryonic death. In rare cases, affected animals are born with additional limbs.

Nichols had collected DNA samples on all of his herd bulls the last nine years, and these



► “So you make the choice,” adds Nichols. “Would you rather be breeding cattle like we always have — essentially blind — and not know? Or would you rather have DNA information that allows you to know which cattle in your cow herd carry potentially harmful genetic conditions?”

samples were on file with the American Angus Association, so he could simply order up a test and wait for the results.

“We always try to be proactive and took a positive approach to this problem,” he says.

Nichols applauds the Association’s policy concerning DD, which publishes the status of registered-Angus cattle — “DD free,” “DD potential,” “DD carrier” or “DD affected” — and provides each breeder with the information they need to manage the condition. Cattle designated as DD free (DDF), DD potential carriers (DDP), DD carriers (DDC) or DD affected (DDA) are eligible for registration.

“The board wisely chose to let the marketplace determine the value of these cattle,” says Nichols.

The path ahead

So what does this mean for the future, and how do breeders move forward?

“As more of these genetic conditions are discovered,” says Nichols, “it’s our job as seedstock producers to inform our customers about them, and the seedstock producers who do a better job of providing this kind of information to their customers will be in a much stronger position. Genetic conditions aren’t going away. This is the new reality of our business.”

The good news when it comes to genetic conditions is that in order for them to be expressed, the genes must be inherited from both parents. In other words, cattle that are carriers simply need to be bred to non-carrier cattle, and the conditions will never be expressed.

Nichols and others believe this represents a new opportunity for seedstock producers to build better bridges to their customers, working more closely with them to identify the right bulls or replacement heifers for their breeding programs.

“Information is really key,” says Bryce Schumann, CEO of the American Angus Association. “The more you educate yourself about genetic conditions, the better positioned you are not only to breed around these conditions and reduce their frequency, but also to assist your customers.”

Schumann suggests that both seedstock and commercial producers take advantage of a powerful tool called AAA Login on www.angus.org.

“Not only does this online tool allow you to view your herd inventory, AI certificate inventory, EPD data and much more, it can also generate a list of potential carriers in your herd and help you make better breeding decisions,” Schumann says.

Adds Nichols: “We will continue to do our very best to inform our customers about the good, the bad and the ugly on every bull, every female, every straw of semen that we sell regardless of the customers’ ZIP code. That’s the way we’ve been doing it for 60 years, and at my age, I’m not about to change.”



Editor’s Note: Eric Grant is director of communications and public relations for the American Angus Association. For more information about how AAA Login can help manage potential carriers of DD, read the “Login Lowdown” column on page 92 of the November Angus Journal.