Bringing a Better Steak to Texas

Genetic selection tools based on the BovineSNP50 BeadChip enable 44 Farms to ensure Angus beef quality from farm to table.

Introduction

For years, ranchers bred their cattle based on the outward appearance of their sires and dams (phenotypic traits). Worthy animals were registered with breeder associations, enabling tracking of their progeny. Despite rancher's best efforts, breeding decisions didn't always pan out. There was clearly a limit to the value of phenotypic decision making.

The genomics revolution has uncovered the genetics behind these phenotypic assumptions, supporting some and discounting others, and bringing cold, hard data into the world of cattle breeding. Introduced in 2008, the Illumina BovineSNP50 BeadChip[1] is the basis of the Zoetis HD50K tool used by breeders to determine the genetic merit of each animal compared to the breed average. These expected progeny differences (EPDs) for traits such as birth, weaning, and yearling weights; milk production; marbling; and docility, have a genetic component that can be assessed using the BovineSNP50 BeadChip-based HD50K assay.

The value of the genetics behind high-quality sires and dams was not lost on Bob McClaren when he established 44 Farms[2]. His great-grandfather ran cattle at the turn of the 20th century on land located alongside the Little River in Cameron, Texas. Passed down from generation to generation, he'd spent summer vacations on the ranch. After reuniting the land parcels that had been distributed among his relatives, Bob and his team acquired 70 head of registered Black Angus cattle. They quickly focused on leveraging selective breeding to develop an Angus herd that thrived during the hot Texas summers and yielded high-quality beef. Over the last 15 years, 44 Farms has grown into the largest Angus seed stock operation in Texas, and the fourth largest in the United States.

iCommunity spoke with Bob about the growth of 44 Farms, its use of genetic merit tools to improve the quality of its herd, and the launch of its branded beef program.

Q: Why did you deploy genetic selection to evaluate the animals in your herds?

Bob McClaren (BM): My grandfather was a farmer and rancher. Despite working hard, he and my grandmother just scraped by. I felt that there had to be a better way to maintain and develop a herd. We decided to focus on selective breeding to make cattle ranching a more successful business. We've been fine tuning our genetic approach since purchasing our first few head of cattle.

Q: How did you decide upon the Angus breed?

BM: I did some research to determine the cattle breed and agriculture production approach that would work best in Texas and enable us to establish a thriving business. As the American Angus Association likes to say, 'Angus is the business breed.' It has high muscling characteristics, muscle quality, and is preferred by consumers for its marbling and tenderness. I read and talked to people about it. At the time, there weren't a lot of advocates for the Angus breed in Texas. I believed that Angus could work here as well as it does in the Midwest and Northern climates, and that the breed made the most sense economically. It was a leap and we jumped in understanding the risk.

Q: What cattle breed have Texas ranchers preferred?

BM: The Brahman remains the most favored breed in this part of the country. It was derived from breeds imported to America from India. Brahman cattle are heat- and drought-tolerant. I've seen them grazing when it's 110° F (43° C) at two o'clock in the afternoon. They're tough cattle, but Brahmans certainly don't have the beef attributes of an Angus. They don't grade in a way that supports receiving a premium price (see Sidebar, Page 2).

Bob McClaren is the owner and CEO of 44 Farms. Based in Cameron, Texas, he is carrying on the cattle ranching legacy of his great grandparents.

Selective breeding with data from a BovineSNP50 BeadChip-based array, enables 44 Farms to develop a Black Angus herd that yields high-quality beef and thrives in the hot Texas sun.

Beef Quality and Yield Grades

The U.S. Department of Agriculture (USDA) quality grade is a composite of factors that affect palatability of meat (tenderness, juiciness, and flavor)[3]. The USDA beef quality grades in descending order of quality include:

Prime
Choice
Select
Standard

USDA beef yield grades are rated numerically 1 through 5, with 1 being the highest.

Q: How did you prove to your Texas customers that Angus bulls are the right choice?

BM: One of the challenges that we had early on was to convince ranchers to use Angus bulls and cows. They didn't believe that Angus would work in the extreme Texas heat and drought conditions we face in the summer months. We used genetic selection tools to manage the production traits, enabling our Angus cattle to thrive in the Texas climate, while meeting or exceeding the customer preference for an end-product that ranks high for marbling and palatability. Now we probably market 1,200 Angus bulls a year through our operations in Cameron and Winters, Texas.

Q: What genetic selection tools did you use at first?

BM: We used the GeneSTAR program that was owned by an Angus breeder and based on technology developed from U.S. and Australian Angus research. The company was purchased by Pfizer, which then launched genotyping tools and services. We've been using Pfizer's (now Zoetis) HD50K for almost 10 years.

Genotyping technology has become more reliable and highly accurate in assessing EPDs. The markers used on the HD50K chip account for as much information as we would gain from 20 generations of progeny. By genotyping calves at birth, we can tell which ones should be a part of our seed stock and which ones will deliver the texture, color, and marbling to meet the high-value choice and prime quality grades. With the HD50K, we don't have to wait 25–30 years to obtain that information.

Q: Why did you launch 44 Farms Angus Steaks?

BM: We talked to ranchers that had bought our bulls and females and integrated them into their herds. We'd hear about the great response their cattle were receiving from the feedlot operators that fed and harvest them. They were impressed with the high-quality end product these cattle produced.

We knew this was a reflection of the genetics. We thought running our own commercial operation would be a great way to show the confidence that we have in our genetics. It would enable us to relate, in real time, with our ranching customers about the issues they faced.

We started our commercial operation, handling everything from breeding and grazing to taking these cattle all the way to the rail.

We took the final step of delivering directly to the consumer with our 44 Farms Angus Steaks program[3].

Q: What was the response to the 44 Farms Angus Steaks program?

BM: It began online with the idea that we would use that as a base to educate our potential steak customers and launch the business. Out of the blue, we started receiving calls from chefs around Dallas, Fort Worth, Houston, and Austin who wanted to use a local product and had heard about our steaks. We started making restaurant visits, meeting with owners and chefs and telling our story. They liked the fact that we had the data to validate the quality of our beef and where it was coming from.

The program has been well received. 44 Farms Angus steaks have become synonymous with quality and are enabling restaurants to market steaks to their customers. The key to its success in the future will be to maintain a high level of quality and consistency. We feel like we have a plan to do that and are excited about growing this aspect of the business.

Q: In what other ways do you employ the HD50K array results in your business?

BM: The array enables us to measure and quantify the quality of our herd, the product we provide to ranching customers, and the beef end product that's delivered to restaurants, retail operations, and the public. The data has been instrumental in gaining acceptance and interest in 44 Farms genetics and our steak program.

It's the bull side of the breed that drives the genetics of palatability and marbling. We use the HD50K to select for sires with DNA markers that deliver higher marbling. That drives the value of beef these days. We guarantee that at least 50% (bull side) of our 44 Farms Angus beef will be from 44 Farms genetics. We would love for it to be 100%, but not all of our customers run our females.

> "The array enables us to measure and quantify the quality of our herd, the product we provide to ranching customers, and the beef end product that's delivered to restaurants."

Q: What aspects of the HD50K data are of interest to ranchers and how does that differ from the data that interests chefs and restaurateurs?

BM: Ranchers want to talk about birth weight EPDs, and often times weaning and yearling weights. Chefs are more interested in the quality of the marbling and the predictability of that trait. They love to see the cattle that have those genetic characteristics. They find it fascinating that inside this black hide is very marbled beef and are amazed that we're able to predict it using genetic tools.

Q: Is the level of marbling also impacted by how the cattle are fed?

BM: Yes, its part genetics and part how they're raised and finished. In the feed yard, they are on a well-balanced nutritional program of high roughage and corn. That certainly plays a role in the finished product.

Using the HD50K, we generate reports on the sires and offspring that do the best job in the feed yard and how well both sets of animals do in terms of quality grading. In 2014, we're harvesting about 40 cattle a week. So far, we've had only two Select grade steers in our whole program. That performance demonstrates to our commercial cattle customers that our Angus genetics work and that these USDA Choice and Prime cattle are enabling them to realize a premium price. The profitability this brings to their operations is meaningful to them. It's exciting for us and gets us fired up about what's coming down the road as we expand our operations.

Q: How do the strong genetics of your cattle impact how they are finished in the feedlot?

BM: Many people believe that to get a Prime or a high-Choice grade you've got to leave cattle on feed longer. We're finding that you don't have to do that with our cattle. Our cattle are performing well on fewer days of feed and that saves money. We're seeing USDA yield grades in the 2's and 3's as opposed to 4's and 5's. That positively impacts the bottom line of our commercial cattle customers.

Q: How has the quality of your herd changed in the last 10 years?

BM: The quality of our herd and our breeding programs continue to improve. We call it our Angus Strong program and a large part results from our use of genetic selection. With the HD50K technology, we can more easily trace and track which sire and female groups are doing the best job. It increases our flexibility, enabling us to adjust and continue to improve the herd. We can make an incremental change in one breeding season. That would be impossible to achieve without this technology.

> "Genetic selection improves the quality and efficiency of a commercial operation and can make a profitable difference for the producer."

Q: Is the Angus Strong program a combination of your genetic selection, grazing, and animal husbandry practices?

BM: Yes, it's all part of our story. Our beef is an all-natural product, with no hormones or antibiotics, ever. It's an important message for our food service customers.

Many consumers want an all natural product that tastes good, and our beef really does. We've had about 100 taste tests at different restaurants with different chefs. To this day, we have never lost a taste test. It's really a testament to the Angus breed and our Angus Strong program. It demonstrates how genetic selection improves the quality

and efficiency of a commercial operation and can make a profitable difference for the producer.

Q: Is that a story that resonates with your commercial producers?

BM: Ranchers are a tough audience and it's hard for them to change what they've done in the past. We're finding that the genetic and performance data that we provide is capturing their interest and making them more receptive to new approaches. The all natural program is not for every producer. It takes a little more time and attention, and you have to be willing to buy into that to get the premium value on the end product. Most ranchers see the value of it.

> "We can make an incremental change in one breeding season. That would be impossible to achieve without this technology."

Q: How are you going to use genetic selection moving forward?

BM: We want to continually improve and fine tune the quality of our herd. Identifying cattle efficiently that have the right stuff supports a smooth operation on all fronts.

We're always trying new things and making sure that we remain on the front end of the best practices and latest genetic technologies. You have to be if you're going to be a leader and remain competitive in this business.

Q: What do you hope is the lasting impression that customers have of 44 Farms?

BM: I think people see the value of the Angus breed and the value we add through our Angus Strong program. We are very customer service oriented. We guarantee our bulls. We try to be good partners and are there for customers when they have issues, questions, and challenges. Our goal is to help them improve their herds through genetics and some of the science that we've learned over the years.

While you can have all the greatest and finest technology, if you're not willing to know your customer and invest your time and resources in them you won't be as successful. We talk about that all the time. I hope that we're known for our customer service, as much as anything.

References

1. Illumina BovineSNP50 BeadChip, illumina.com/products/bovine_snp50_whole-genome_genotyping_kits.ilmn
2. 44 Farms, www.44farms.com (25 April 2014).
3. USDA Beef Quality and Yield Grades, Texas A&M Agriculture and Life Sciences, meat.tamu.edu/beefgrading/ (25 April 2014).
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