



Your Link to

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Growth technologies: Genomics may be the best one of them all

A feedlot manager recently shared with me how important it is to make effective use of the growth technologies that are available today. Obviously, he was referring to implants and beta-agonists.

He is certainly right in the context that for 50 years implants have increased

the production efficiency of cattle. Over those decades, when price spreads were not so wide among animal protein choices, that helped allow beef to compete for its market share.

More recently, beta-agonists entered the marketplace, further improving production efficiency of feedlot cattle.

Although valuable, these production technologies both pose the challenge of reducing quality grade (marbling levels) and slightly reducing tenderness, while creating an image problem for beef with the consuming public.

So, does the industry have other growth technology options?

The next big breakthrough

We do: The expanded use of genomics. That's the sequencing of genetic material in cattle DNA for better understanding and control in selection. I would argue it's the beef industry's next big technology breakthrough.

I know, this is not really new, or at least we have talked about it being on the horizon for years. What is new today is the dramatic impact the expanded use of this increasingly available DNA-marker technology will offer.

Through genetic selection alone, the beef industry has already made great progress in increasing the growth rate of cattle — without compromising quality. In the 1980s, feedlot cattle gained 2.5 pounds (lb.) to 2.8 lb. per day. In the 1990s we started exceeding 3 lb. per day, and today 3.3 lb.-3.5 lb. per day is common. Much of this change can be attributed to improved genetics.

We have many pens of straight commercial Angus cattle gaining more than 4 lb. per day. That's simply a testament to the great selection pressure Angus breeders have applied using the tools at hand, such as expected progeny differences (EPDs) (see Fig. 1).

Technology in use today

This progress can be seen to various degrees in all breeds using population genetics information. When we couple that with the DNA markers for growth now identified, the future takes on a whole new level of potential.

Even more exciting is that the markers for important consumer palatability traits, like flavor (marbling) and

tenderness, are well-known and in the early stages of being applied by the industry.

A perfect example is the new reduced-platform DNA test, GeneMax™, launched in 2012 and marketed by Certified Angus Beef LLC (CAB) in conjunction with Angus Genetics Inc. (AGI).

This test allows producers to select feeder calves based on growth and marbling potential or select replacement heifers based on the growth and marbling potential of their progeny. Either way, it's a powerful new selection tool. (For more information, visit www.cabpartners.com/genemax/index.php.)

Angus breeders are blessed by the progress the American Angus Association staff and Board of Directors have initiated in blending DNA into genomically enhanced EPDs. That foresight makes Angus the industry leader in applying DNA technologies to genetic selection.

More to come

We cannot and will not let up in the advancement. Future DNA-based tools will allow selection for disease resistance, feed efficiency, tenderness and all those other traits where developing an EPD was nearly impossible.

Imagine how much it would help to know these broader aspects of genetic

makeup. With today's cattle prices, the cost of health problems is huge and growing. A recent analysis of 40,000 cattle in the Iowa Tri-County Steer Carcass Futurity showed those treated two or more times cost more than \$350 when compared to untreated cattle. Much of that was due to increased death loss, but also included treatment costs, reduced feedlot performance and greatly reduced quality grade. Bottom line, not many sick cattle qualify for the *Certified Angus Beef*® (CAB®) brand.

So if we knew some animals had a genetic propensity for respiratory problems, a totally different, more proactive health regimen could be applied to them. Even better, we would start eliminating certain cows and lines of cattle susceptible to health problems.

In the feedlot, cattle with known health and efficiency potential might well outperform those in the next pen that can only come close by the use of non-genomic and more expensive technology. On the ranch, herds that have been refined with these tools will add a whole new meaning to the old phrase, "reputation cattle."

Maybe the most important factor here is the reputation of DNA as a technology. Probably through its portrayal on TV and in movies, DNA has a very positive connotation with the consumers who buy our great product. It's where perception, science and business all find common ground.

Is DNA the growth technology of the future? I think so.

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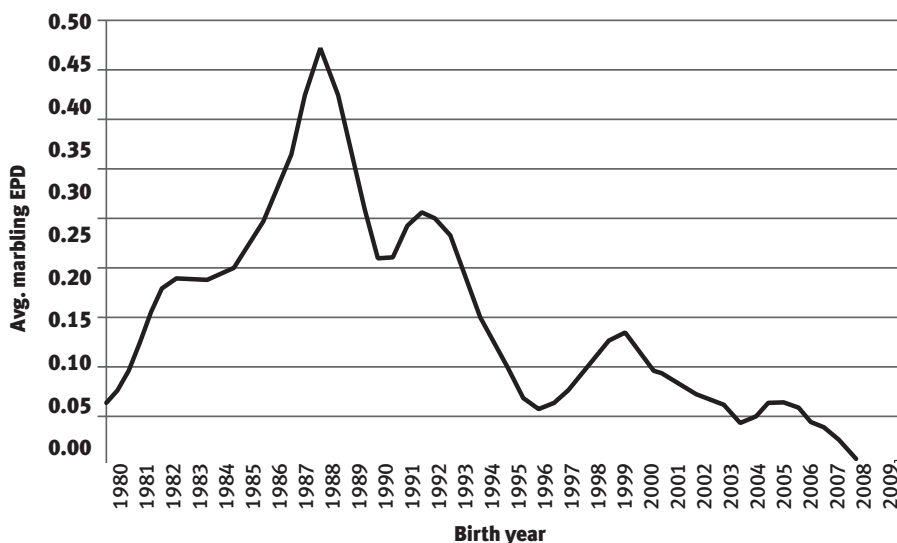
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Fig. 1: Angus genetic trend for marbling (Spring 2011), avg. marbling EPD by birth year



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