New Tools for a New Decade

Key takeaways from the virtual 2020 Beef Improvement Federation (BIF) Research Symposium and Convention.

*by **Troy Smith***

What will the purebred cattle industry look like in 20 years? According to N. Platte, Neb., seedstock breeder Bill Rishel, the answer might depend on producers' willingness to adjust and to adapt to change. In a recent message to the BIF Research Symposium and Convention online audience, Rishel notes Greek philosopher Heraclitus' premise that the only constant in life is change. "The only thing that is not constant is the speed at which it will change," Rishel says.

Recognizing the need for a change in BIF's annual meeting and research symposium, the organization's program committee responded to the COVID-19 situation by adapting the conference to a virtual format. Presentations by Rishel and other speakers were offered online, providing learning opportunities for cattle producers interested in improving the profitability and sustainability of their operations through genetic selection and improved management. More than 1,400 registrants participated in the program June 8–12, originally set to take place in Orlando, Fla.

Bill Rishel

In comments aimed particularly at young producers, Rishel says communication with beef consumers regarding stewardship of natural resources and animal traceability will become increasingly important. He suggests consumers may not be satisfied with a great beef product unless they are reassured it was produced through regenerative and sustainable practices. "The beef industry must communicate the message of the upcycling value from cattle to the environment and society," says Rishel, referring to the ability of ruminants to utilize forages grown on land unsuitable for human food crop production.

He also predicts documenting beneficial environmental practices to communicate with consumers will become necessary. "We must make a greater effort of connecting with consumers to tell what we do and how we care," he urges, emphasizing the need for a unified message explaining there is no protein — animal or otherwise — more natural than beef.

Regarding traceability, Rishel encourages producers to "get serious about an independent, industry-wide and third-party verified traceability program for rapid response to a major disease outbreak."

Currency of trust

Henry Zerby

During his presentation, Henry Zerby reminded the online audience change is inevitable but progress is not. According to the vice president of procurement and innovation for Wendy's, progressive producers must adapt to consumer demand. Zerby says the growing demand for "story proteins" is influenced by product origin, environmental and animal health and welfare production practices, and the status the product represents.

"Transparency is the currency of trust," Zerby says. "We all have an opportunity to help shape the story being told about animal proteins."

Clay Mathis

Tasked with addressing ways cattle producers can improve sustainability of their operations and the beef industry, director of the King Ranch® Institute for Ranch Management at Texas A&M University Clay Mathis supports a systems approach — being mindful of how management of parts of an operation affect the operation as a whole. Mathis says sustainability is about keeping an operation environmentally sound, socially responsible and economically viable. However, Mathis points out producers may gain the greatest leverage by enhancing an important element of social responsibility — consumer trust.

"Our license to manage land, livestock, water and wildlife and to sell food products will be valid only if we maintain consumer and social trust," he shares along with his fears the industry is under-investing in this area. "Consumer trust can change demand, create greater revenue and increase profitability."

The protein plight

Alison Van Eenennaam

Among other highlights was a presentation on "alternative meat" products by Alison Van Eenennaam, animal biotechnology and genomics Extension specialist at the University of California–Davis. Her discussion outlined two distinct types of alternative products: vegan meat substitutes and cultured, or cell-based, meats.

According to Van Eenennaam, vegan meat substitutes are created by breaking down plant-based concentrates and proteins — often legumes — and adding them to binders, fats and flavorings to simulate the taste of meat. Specific examples of plant-based proteins include the Beyond Burger® and the Impossible™ Burger. Cultured meat, however, is laboratory-grown from living animal muscle cells using a bioreactor.

Although vegan meat products comprised just 0.2% of meat products consumed in 2019 and no cultured meat products are yet commercially available, both have been vigorously promoted. Advocates predict by 2040 these alternatives will have collectively claimed 60% of the market for meat. However, while vegan products have found a small niche and cell-based meat may appeal to a segment of consumers, Van Eenennaam thinks neither is likely to live up to the hype.

At this point, production of cell-based meat alternatives is complicated and expensive, requiring large amounts of energy and food-grade nutrient inputs. Plus it produces large quantities of waste products — the very things proponents cite as reasons why animal agriculture must be replaced. Alternative-protein-product advocates also want to free up land used for cattle production for use in growing human food crops, ignoring the fact that cattle spend most of their lives grazing forage grown on land unsuitable for crop production.

Van Eenennaam does not foresee the demise of grazing ruminants as a food production system and maintains neither of the current alternatives is a viable substitute for animal agriculture.

Upcoming selection tools

Matt Spangler

Also included in the BIF program were discussions of selection decision support tools. A presentation by University of Nebraska geneticist Matt Spangler introduced iGENDEC, which stands for internet genetic decisions. The web-based sire-selection tool allows users to generate customized selection indices to help make the most economical decisions for their individual operations.

Spangler explains while expected progeny difference (EPD) values allow a way to compare animals on the basis of their predicted ability to pass on various production traits, the application of many numbers associated with many traits makes balanced trait selection cumbersome. Selection indices were developed to facilitate simultaneous selection for multiple traits using a single number.

According to Spangler, each index represents a collection of trait EPDs weighted by their economic value so that traits with greater effects on certain production and marketing goals receive greater emphasis. Different indices address different combinations of goals and, thus, include different combinations of traits and assign different levels of emphasis for each trait.

A shortcoming of selection indices is each assumes common breeding objectives and constant environmental and marketing conditions. So a user must choose an index that "most nearly" fits his or her situation. Another drawback is, like EPD values, selection indices typically are breed specific.

Spangler says iGENDEC will allow users to generate selection indexes customized according to each producer's individual production environment, specific production

objectives and markets. Producers can input data from their operation such as breed(s) used, a marketing plan, feed costs and other variables and then create an index for ranking animals according to how each might be expected to affect an operation's profitability. Producers may also choose to weight certain traits differently than in standardized indices. Additionally, iGENDEC allows for more seamless across-breed comparisons of seedstock candidates.

"Allowing producers to take part in the creation of their own selection indices has the potential to increase technology adoption," Spangler says.


Brad Hine

Another BIF session focused on Australian efforts to develop tools for selecting animals on the basis of their relative healthfulness or disease resistance. Copresenters Brad Hine, a researcher at Commonwealth Scientific and Industrial Research Organisation, and Christian Duff, Angus Australia special projects manager, explained research seeking a predictor of an animal's ability to mount cell-mediated response and antibody response to disease challenge. Both types of response are important to broad-based resistance to a wide range of pathogens.


Christian Duff

As a result, genomic breeding values (ImmuneDEX Values) have been generated as estimates of the genetic differences between animals for overall immune competence. According to Hine, the goal is to use this tool within a selection index to remove the low responders but not to target the selection of high-immune-response animals.


Travis Mulliniks

In a presentation aimed at purebred and commercial breeders alike, University of Nebraska animal scientist Travis Mulliniks warned against placing too much emphasis on selection for increased milk production.

Seeking greater output through heavier calf-weaning weights, many producers focus on selection for growth traits and more milk to fuel the growth.

"Selection for increased milk production impacts more than calf growth," says Mulliniks, noting the unintended consequences of increased risk of reproductive failure and the higher cow nutritional requirements that accompany prolonged emphasis on milk production.

Mulliniks says heavy-milking cows often are at greater risk of decreased pregnancy rates which then affect cow longevity in the herd. He reminds the audience that reproduction is five times more economically important than growth traits or milk production.

Heavy-milking cows with higher nutritional needs take more feed, which may force the producer to reduce stocking rates. Ultimately, this decrease reduces the carrying capacity of the ranch. Mulliniks cautions producers to consider how selection for increased milk production costs, particularly feed costs, noting how feed costs usually represent more than 50% of the variation in profitability of cow-calf operations.

"Typically, the most profitable producers have lower costs of production," Mulliniks says. He further emphasizes boast-worthy weaning weights are not a sure indicator of profitability.

Announced during the virtual BIF event was the retirement of Mississippi State University Extension beef specialist Jane Parrish from her role as executive director of BIF. Succeeding Parish is Bob Weaber, associate professor of beef breeding and genetics at Kansas State University. Expecting to return to the standard format, the next BIF conference is scheduled for June 22–25, 2021, in Des Moines, Iowa. **HW**

Editor's note: To view presentation archives and award winners from the 2020 virtual conference, visit *BeefImprovement.org*.

Hereford leaders recognized with BIF Pioneer Awards

The Beef Improvement Federation (BIF) awarded Paul Bennett, Red House, Va., and the late Craig Ludwig, put location here, with the Pioneer Award June 9 during the virtual 2020 BIF Research Symposium and Convention. The Pioneer Award recognizes individuals who have made lasting contributions to the improvement of beef cattle, honoring those who have had a major role in acceptance of performance reporting and documentation as the primary means to make genetic change in beef cattle. Learn more about Bennett's and Ludwig's achievements below.

Paul Bennett


Paul Bennett

Paul Bennet heads up his family's operation, Knoll Crest Farms (KCF), which has been producing seedstock genetics since 1944. The Bennett cow herd includes three breeds — Hereford, Gelbvieh and Angus. Annually, KCF markets 400 bulls. In 2020 the KCF prefix was recognized with 40 Certified Hereford Beef sires and 31 Dam of Distinction females from the American Hereford Association (AHA); 10 Dam of Merit and two Dam of Distinction females from the American Gelbvieh Association; and 29 Pathfinder females from the American Angus Association, all of which validate the merits and genetic influence of the KCF program.

"The KCF prefix is synonymous with multi-trait excellence and, as a result, has gained the respect of the most progressive seedstock and commercial cattlemen alike while placing leading genetics in every bull stud in the U.S.," says Shane Bedwell, AHA chief operating officer and director of breed improvement, who presented the award. "Through Paul's leadership and mindset of being an early adopter of key breed improvement tools, he has positioned Knoll Crest Farms as a true nucleus seedstock operation."

Bennett has served as BIF president and is a leader in his community. He has dedicated time to national breed associations as well as national and state cattlemen's associations' advisory committees and is a deacon at Union Hill Baptist Church.

Craig Ludwig


Craig Ludwig

Craig Ludwig was posthumously presented the Pioneer Award by Robert Williams, American Wagyu Association executive director. Ludwig earned his bachelor's and master's degrees from Iowa State University and his doctorate from Oklahoma State University. In 1971 he accepted a position with the AHA, where he worked for nearly three decades. During his time with the AHA, Ludwig served several roles but spent the majority of his years as director of the Total Performance Records (TPR) program. As head of the TPR program, he oversaw rapid growth in the performance programs of the AHA.

Following BIF recommendations, Ludwig implemented the AHA Feedlot and Carcass phase of the TPR program in 1976, which became widely known as the National Sire Evaluation Program. Following his time at the AHA, Ludwig served as secretary of the American Braunvieh Association and chief operating officer of the American Black Hereford Association. He also served on the BIF board of directors and was an active participant in BIF's annual research symposium for several years.

Ludwig, in cooperation with the University of Georgia, the Canadian Hereford Association and the American Polled Hereford Association, was integral in developing the first multi-association North American Hereford Genetic Evaluation, which later became international evaluations with the addition of South American Hereford associations.

"Craig Ludwig not only took the challenge – he played a large role in changing the culture of not only the Hereford breed, but the beef industry," says Dave Nichols, 2000 BIF Pioneer Award recipient from Bridgewater, Iowa. **HW**