



CONVENTION HIGHLIGHTS

Glean insights from predominant industry leaders on the latest technology available to cattle producers.

by **Troy Smith**

There may have been a time when a good many commercial cattle producers shied away from the Beef Improvement Federation (BIF) Research Symposium and Convention. Even some seedstock breeders may have feared the subject matter was too scholarly and the discussion too technical. But the annual BIF event has become an attraction for cattle folk of all stripes, as well as researchers, breed association representatives and technology company personnel. It is an important discussion forum for all who are interested in beef cattle selection and genetics and the application of related technologies.

Cattle producers represented a big portion of the 500 or so registrants attending this year's BIF meeting hosted June 18-21 in Brookings, S.D., by South Dakota State University (SDSU) and the South Dakota Beef Breeds Council.

Pursuing profit

The opening general session featured a panel of four commercial cattlemen — each sharing strategies for pursuing successful beef cattle operations. The foursome included: John Moes, Moes Feedlot,

Watertown, S.D.; Tylor Braden, King Ranch, Kingsville, Texas; John Maddux, Maddux Cattle Co., Wauneta, Neb.; and Trey Patterson, Padlock Ranch, Ranchester, Wyo. While their operations differ significantly, all agreed on the importance of matching cattle type to the production environment. All emphasized the importance of herd fertility, marketing and making improvement through technology adoption.

John Maddux explained his focus on moderate size and fertility in the selection of breeding females. He admitted his 1,100-pound cows do not wean heavy calves. The calves are not well suited to a calf-fed program but make fine feeder cattle after running on grass as yearlings.

“Stocking rate is a key driver of profitability,” Maddux explains. “And we can run more 1,100-pound cows on fixed resources than if they weighed 1,400.”

Needing cattle adapted to the heat, humidity, insects and biosecurity issues of South Texas, Tyler Braden says King Ranch has developed in-herd expected progeny differences (EPDs) and selection indices to guide genetic selection for performance among well-adapted cattle. Braden says the ranch is also applying pressure to



A panel of commercial cattlemen addressed the crowd to share insights on profitability goals across various operations.

reduce mature cow size and stresses the importance of cow longevity.

“Nothing else is more important to controlling costs,” he says, emphasizing longevity’s role in reducing depreciation cost.

The Maddux operation and Padlock Ranch both have replacement heifer development programs described as extensive, meaning they keep more heifers than needed, grow them on diets similar to what they would receive as cows and expose the heifers to a short breeding season.

“We keep only the early-born heifers that are pregnant after one round of AI [artificial insemination],” Patterson says.

John Moes adds he also keeps most of each crop of heifers and exposes all to AI and bulls for two cycles. Only heifers that conceive during the first cycle are retained. Moes says he recently introduced sexed semen to his AI program, with an eye on replacement heifer production.

Progress by genetics

BIF convention attendees reviewed the progress of genetic gain through a presentation by Mark Allan, director of marketing and genomics for TransOva Genetics. “The greatest improvement in both dairy and beef cattle have come through artificial insemination, and everything else has built on that,” Allan shares as he recounted the evolution of modern reproductive technologies.

According to Allan, the accuracy of genetic selection has changed most in the last several years due to the creation of genomic-enhanced EPD values. These selection tools allow for the prediction of genetic merit in much younger animals for which individual and progeny phenotypic data are limited or unavailable. This tool has shortened the genetic interval and has hastened genetic gain.

Allan says coupling genomics with advanced reproductive technologies, including embryo



Former AHA President Kevin Schultz addresses attendees at the 2019 BIF Convention to discuss his ranching philosophies and what he learned at the event. In particular, Schultz emphasized the importance of utilizing newly developed technology and how consumer behaviors will drive the adoption of new technologies in the beef industry.

transfer (ET), in-vitro fertilization (IVF) and sexed semen, has advanced rapidly in the dairy industry. It is happening more slowly in beef cattle because of the need to consider a greater number of economically important traits, seasonal breeding, and the diversity of production environments and management systems. However, the power of intersecting technologies is increasing for the beef industry.

He gave an example of how the dairy industry collects DNA on heifer calves soon after birth, gaining a genomic predictor of future milk production. He foresees the day when genomics facilitate high-accuracy prediction of genetic merit for very young beef heifers and oocytes are collected from beef heifers at 60 to 100 days of age.

Allan cautions, however, genomics alone cannot prove an animal's genetic worth. "Collection of quality phenotypic data is still required for input and output traits," he advises, urging continued data collection to develop training populations and to build the accuracies of EPDs.

Maximizing technology

BIF presenter Alison VanEenennaam, an animal geneticist at the University of California-Davis, spoke about gene editing as a technology following in the footsteps of AI, ET and genomics. VanEenennaam says gene editing has tremendous potential to enhance the sustainability of livestock production while improving animal health and welfare.

Gene editing is a technique that can be used to introduce useful genetic variations into breeding programs. According to VanEenennaam, it involves the use of enzymes that cut DNA at a targeted location where a chosen DNA sequence can be inserted, deleted or substituted. Gene editing is distinct from genetic engineering because it does not involve introduction of DNA from a different species.

"It's a little bit like a cherry on top of a breeding sundae," VanEenennaam shares, explaining gene editing can be an enhancement but will not replace traditional breeding programs. The technology provides new opportunities to introduce targeted, beneficial genetic variations.

Talking about an available technology not necessarily well-used, retiring BIF president Lee Leachman, of Ft. Collins, Colo., shared his concern regarding the development and application of selection indices. Designed to help producers exercise multiple-trait selection, an index is a single number representing

a combination of trait EPDs weighted by their economic value. Different indices incorporate different combinations of traits, applying different values to each, depending on the selection objectives. Consequently, a producer must understand which traits to emphasize and which indices will help further his or her production and marketing goals.

Leachman says he recognizes the power of selection indices. "I believe in them," he states, but he also fears too many producers use them improperly. Their resulting selection decisions are steering their herds in the wrong direction. Leachman notes the application of many current breed association indices is driving up mature cow size, feed intake and maintenance costs. He called for development of indices that promote more profit per acre, instead of promoting higher production per cow.

"We devote less intellectual capital and financial resources to index development than any other activity in beef cattle selection," Leachman laments.

University of Nebraska animal geneticist Matt Spangler says selection indices were designed to improve commercial cow-calf producer profitability. Calling indices "a step in the right direction," he admitted their shortcomings.

"Indices are not comparable across breeds," he points out. "They assume constant environmental and marketing conditions, and they are not well understood by producers."

Reminding the audience indices were not designed to improve a breed or to correct a breed deficiency, Spangler says selection indices ought to guide bull selection for individual herds and their unique production



Mark Allan, director of marketing and genomics for TransOva Genetics, discusses the vital role of genomic-enhanced EPDs on improving the accuracy of genetic selection.

setting and resources, as well as specific marketing goals.

Spangler points to a collaboration among land-grant universities, private industry and the United States Department of Agriculture (USDA) to develop computer software to enable individual producers to create customized selection indexes. These customized selection tools would be based on each producer's unique herd-level economics and would be applicable across breeds.

"We hope to have a working model ready by the first quarter of 2020," Spangler reports.

Shane Bedwell, American Hereford Association (AHA) chief operating officer and director of breed improvement, told a BIF committee meeting audience selection for udder quality ought to be a priority for all cow-calf producers. He cited some obvious reasons including poor calf performance when teat size inhibits a newborn's consumption of colostrum. Poor quality udders can lead to higher incidence of injury and mastitis,

which reduce cow longevity. Dealing with udder issues also may increase labor costs.

Bedwell explained how AHA initiated udder scoring in the 1990s, eventually scoring udder suspension and teat size as two separate traits. Udder quality is considered moderately heritable, and the AHA began cattle evaluation for these traits in 2015. To date, the AHA is the only breed to provide EPDs as tools for comparing bulls based on their ability to pass on these qualities to their daughters.

Sexed semen defined

Held in conjunction with the BIF meeting was a session sponsored by the National Association of Animal Breeders, which featured a discussion of sexed semen and the practicality of its application in commercial herds. Speaker George Perry, a SDSU reproductive physiologist, says he looks for wider adoption of AI among commercial producers and consideration of sexed semen to choose calf gender.

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Alison VanEenennaam, an animal geneticist at the University of California-Davis, brought to light the latest news on gene editing as a technology following in the footsteps of AI, ET and genomics.

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2019-20 BIF Board of Directors are (seated, l to r) **Tommy Clark**, Culpeper, Va., president; **Lee Leachman**, Ft. Collins, Colo., past president; **Jane Parish**, Mississippi State University, BIF executive director; **Bob Weaber**, Kansas State University, BIF central region secretary; **Darrh Bullock**, University of Kentucky, BIF eastern region secretary; **Mark Enns**, Colorado State University, BIF western region secretary; **Josh White**, National Cattlemen's Beef Association; **Mark Thallman**, U.S. Meat Animal Research Center; (back row, seated, l to r) **Robert Williams**, American Wagyu Association; **Lex Carter**, Pingree, Idaho; **Jack Ward**, American Hereford Association; **Aaron Arnett**, Sexing Technologies; **Kajal Devani**, Canadian Angus Association; **Kevin Schultz**, Haviland, Kan.; **Gordon Jones**, Lafayette, Tenn.; **Matt Perrier**, Eureka, Kan.; **Jackie Atkins**, American Simmental Association; **Lance Bauer**, Beefmaster Breeders United; **Gordon Hodges**, Hamptonville, N.C.; **Shane Bedwell**, American Hereford Association; **Megan Rolf**, Kansas State University; **John Genho**, Woodville, Va.; and **Joe Epperly**, Albion, Neb. Not pictured are Vice President **Joe Mushrush**, Strong City, Kan.; **Dan Moser**, Angus Genetics Inc.; and **Stephen Scott**, Canadian Beef Breeds Council.

However, Perry notes the lower pregnancy rates typically associated with sexed semen — as much as 38% lower than rates resulting from AI with conventional semen. Perry cites studies suggesting there is “a big semen type-by-estrus expression interaction,” meaning pregnancy rates are significantly reduced when females not fully expressing estrus are inseminated with sexed semen. Therefore, breeding programs incorporating heat detection are recommended when sexed semen is used. Accordingly, use of sexed semen is often

discouraged when employing estrous synchronization for timed AI — mass breeding.

University of Missouri reproductive physiologist Jordan Thomas says a potential solution is application of split-time AI. This approach involves sorting females synchronized for timed AI into two groups. Females fully expressing estrus — as shown by heat detection patches — are inseminated at the prescribed time. Insemination of the second group — non-estrus at the prescribed time — is delayed for 20 to 24 hours.

“This allows the non-estrous females more time to express estrus prior to insemination. We get a better total estrous response and an improved pregnancy rate,” Thomas notes, explaining pregnancy rate for the total group typically increases by 5% or more with application of split-time AI. Thomas notes, however, results of split-time AI have been most consistent for heifers and more variable for mature cows.

Also announced at the BIF meeting was a significant change of format for the organization's

“Uniform Guidelines for Beef Improvement Programs” — published recommendations for standardization of performance records across breeds. First published in 1970, the guidelines have evolved, incorporating new information based on scientific research and industry experience. It was announced at the convention the guidelines are going “wiki.” Under construction is a new web-based platform which allows collaborative editing of content by its users. **HW**

Mershon Cattle LLC Awarded BIF Commercial Producer of the Year

Wednesday, June 19, the Beef Improvement Federation (BIF) awarded Bruce and Tracey Mershon of Mershon Cattle LLC the BIF Commercial Producer of the Year Award. This national award is named annually at the group's meeting and symposium in Brookings, S.D., to honor a producer who shows great dedication to improving the commercial beef industry.

Mershon Cattle LLC is a diversified crop and livestock operation headquartered on a Century Farm in Buckner, Mo., northeast of Kansas City. The Mershon family has deep roots in Missouri agriculture. In 1865, Bruce's great-

great-grandfather, Eli Mershon, settled in the Fort Osage area of Jackson County and purchased 160 acres shortly thereafter. The family has farmed there ever since.

Bruce and Tracey Mershon have owned cattle since 1993 and launched Mershon Cattle LLC in 2012. They purchased Sunny Acres Farm in Appleton City, Mo., in 2013 to expand the operation. The Mershon cow herd consists of 1,600 Angus-based, crossbred cows, which are bred to Hereford, Simmental and Charolais sires. This complementary breeding program allows the operation to produce efficient, high-performing offspring, and is

paired with a sustainable grass management program to maximize environmental stewardship.

Bruce and Tracey have built their award-winning cattle operation while working full time as a commodity trader and marketing communications professional, respectively. A key to their success is gathering complete phenotypic records on each calf crop from birth to harvest. In conjunction with utilizing cutting-edge reproductive technologies, this phenotypic data is used to implement strategic improvements in building accuracy for their cow herd.

In 2017, the American Hereford Association (AHA) invited Mershon Cattle to become a test herd in the National Reference Sire Program (NRSP). Bruce and Tracey were already using Hereford semen and collecting the complete phenotypic data required for the NRSP, making this program an ideal fit for Mershon Cattle. Through participation in the NRSP, replacement females and fed steers will be ran through an individual feed intake system to establish a baseline for feed efficiency.

The Mershons are passionate about growing their community and bettering the beef industry. Bruce and Tracey hold leadership roles with multiple livestock organizations and other national agricultural groups. Through leadership and involvement, the Mershons endeavor to improve their operation, their land, their community and the beef industry every day.

“There's nothing better than to get an award from the experts of our industry,” Bruce says. “It's not just a popularity contest — it's actually about what you're doing and what you're achieving, and makes this a special award.” **HW**

Mershon Cattle LLC, Buckner, Mo., was named the 2019 Beef Improvement Federation Commercial Producer of the Year during an awards ceremony June 19 in Brookings, S.D. Pictured (l to r) are: Burt Rutherford of BEEF magazine, award sponsor; Tracey and Bruce Mershon of Mershon Cattle LLC; and Lee Leachman, 2018-19 BIF president.

