



Where Profit and Progress Intersect

Highlights of the 2013 Beef Improvement Federation Research Symposium and Convention.

by Troy Smith

2013 Beef Improvement Federation Symposium and Convention

It's been called *the* event where researchers, professionals and producers meet to discuss discovery and development of technologies for beef cattle production. Usually, discussion during the annual Beef Improvement Federation (BIF) Research Symposium and Convention is related to technologies for advancing genetic selection. This year's event June 12-15 in Oklahoma City, focused attention on subjects from genetic tools for improving cow feed efficiency and adaptability to the production environment. And there was a lot of talk about the relative advantages and disadvantages of crossbreeding versus straight-breeding programs.

Nevil Speer, a Western Kentucky University animal science professor, talked about why many commercial producers do not seek the heterosis, or hybrid vigor, achieved through crossbreeding. A likely reason is that straight-breeding can provide a simplified way to genetically reach consumer targets and seek market premiums. Crossbreeding systems can be valuable, admitted Speer, but he warned producers against ignoring value-based marketing opportunities, such as branded-beef programs.

"The reality is that branded beef programs have had an impact," Speer said. "We've increased and

improved marbling prevalence in U.S. cattle. We have improved the quality grade dramatically."

Speaking from the perspective of a cattle feeder was Tom Brink of JBS Five Rivers Cattle Feeding LLC – the nation's largest cattle feeding company. Brink said cow-calf producers need a plan, whether they crossbreed or market straightbred cattle. He called crossbreeding just for the sake of crossbreeding a recipe for creating cattle that are below average for quality.

According to Brink, 70% to 80% of all packer profits come from value-added beef premiums. While commodity beef is essentially a break-even proposition, profit comes from cattle grading USDA (U.S Department of Agriculture) Choice or better. For Five Rivers, there is no profit in cattle that grade Select.

Brink said a straight-breeding program may offer lower production and potentially higher production costs, but there also is potential for creating calves of well-above-average value. By contrast, crossbreeding affords higher productivity (due to hybrid vigor) at a potentially lower cost of production. However, unless crossbreeding is done very well,

resulting calves may be of average value or less. Brink believes profitability can be achieved with either approach, but it requires disciplined implementation of a breeding plan targeting high value calves suitable for grid marketing.

"I'm a friend to any producer who has a reasonable breeding plan and sticks to it, whether it is a crossbreeding plan or a straight-breeding plan," stated Brink.



Dave Daley

After ample research and decades of discussion, Dave Daley thinks there is little more to say about crossbreeding. An animal scientist at California State University-Chico and a fifth-generation rancher, Daley

suspects producer attitudes on the subject have changed very little.

"I don't think you need to talk about crossbreeding anymore. I really don't. I don't think we're changing minds," stated Daley. "I think you, the individual producer in your environment, need to think about planning your genetic program for the long term, not switching here and there."

Daley acknowledged how straight-breeding works well for some producers. Others operate in production environments where ignoring the advantages of heterosis makes no sense.

"It's all environmentally driven. It has to be," emphasized Daley, offering his family's operation as an example of a situation where the cow herd must remain productive in a harsh environment offering sparse and low-quality forage.

"I would not live without the advantages of maternal heterosis," he added, noting the crossbred cow's greater longevity plus higher calving rate, calf survival to weaning rate and cumulative weaning weight.

Daley also reminded cow-calf producers to take a broad view. He fears too many producers fret excessively about genetics, when many other aspects of management have as much or more impact on profitability. Too often, they don't grasp the dramatic impact of environment.

"Think about where you are now and where you want to be in 10 years," Daley advised. "To be honest, that is the easiest thing that I do. I have to focus on things that make a huge difference to me, and genetics is the fun part. Honestly, with all the tools out there, that's the easy stuff. We better start thinking about all these other issues that are going to impact what we do, and you need to start spending the same amount of energy toward those as you do genetics."

Whether they represent a single breed or a combination

Hereford staff, youth recognized at BIF Convention

At the 2013 Beef Improvement Federation (BIF) Research Symposium and Convention June 12-15 in Oklahoma City, American Hereford Association (AHA) staff and Hereford youth were recognized as award recipients.

Jack Ward, AHA chief operating officer and director of breed improvement, was recognized with a BIF Continuing Service Award.

Ward is a third generation seedstock producer. He grew up in Indiana and was an active 4-H and FFA member, showing cattle, sheep and hogs. Prior to joining the AHA staff in 2003, he managed several prominent Angus herds in Kentucky and Indiana.

Ward spearheads AHA's effort to include genomic data in AHA's expected progeny differences (EPDs), AHA's Whole Herd Total Performance Records program and National Reference Sire Program.

A proponent of performance data coupled with phenotypically correct cattle, Ward has judged livestock shows for more than 25 years in the U.S., Canada and South America. He served on the BIF board of directors from 2006 to 2012 and, as well, participated on the National Beef Cattle Evaluation Consortium advisory board.

He has received numerous awards citing his commitment to the beef industry and the training of young people for careers in agriculture. Ward and his wife,



Jack Ward (right) receives a Beef Improvement Federation Continuing Service Award from Mark Cowan, 2012-13 BIF president.



Erika Downey (center, left), Texas A&M University, and Heather Bradford (center, right), Kansas State University, receive Frank Baker Memorial Scholarship awards. Pictured (l to r) are: Mark Cowan, 2012-13 BIF president; Downey; Bradford; and Robert Williams, American International Charolais Association.

Photos by Angus Journal staff provided courtesy of BIFconference.com

of breeds, cows have become bigger. Talking about the trend toward cows of larger mature size and greater milking ability, Oklahoma State University animal scientist David Lalman said past and current selection emphasis is making beef cows more expensive to maintain. Such cows have higher nutrient requirements for which the added cost, in many cases, is not offset by increased productivity. Lalman cited a variety of research data suggesting trends, for several years, in both weaning weight and weaning rate have been relatively flat.

According to Lalman, mature cow weight per inch of height continues to increase. Research indicates that for every 100 lb. of increased mature cow weight, her calf weighs an additional 6 lb. at weaning. The value of that added calf weight probably ranges from \$5 to \$7.

“But every 100 lb. of additional cow weight costs about \$42 in added maintenance cost,” stated Lalman. “You need 50 lb. of calf weight to pay for it, and we’re a long way from that.”

Also accompanying selection for cows with more muscle and more capacity but less fat is the potential for negative impact to fertility. Less body fat in proportion to muscle means these bigger cows may have to achieve a higher body condition score to be in optimum condition for reproduction.

Regarding selection for milk, Lalman said selection has pushed lactation potential so far that cows of some beef breeds are approaching maintenance

levels for the Holstein breed. He advised cow-calf producers to consider what levels of feed resource allocation are now required to meet goals for production and reproduction.

“I suggest to you that the pendulum has already swung too far, and we are trying to make the environment fit the kind of cows we like,” said Lalman, recommending selection for more moderation in growth, mature size and milk.

Microorganism studies

Among the research reports delivered during the BIF meeting was a presentation explaining new studies of microorganisms that contribute to many body functions of beef cattle. According to Andrew Benson of the University of Nebraska Food Science and Technology Department, the “microbiome” is another genetic component that was revealed by gene-sequencing research.

According to Benson, researchers are trying to discover if there is genetic control of the composition of gut microbe populations and how their roles may influence the expression of economically important traits of beef animals, including feed efficiency. Ultimately, they want to know if microbe composition could be influenced through genetic selection.

Udder quality

In a committee breakout session, Kansas State University graduate student Heather Bradford reported on recent work to assign heritability values to udder-quality traits. Bradford said udder

quality can serve as an indicator trait of cow longevity plus calf survivability and performance.

She reviewed the BIF guidelines for evaluating udder suspension according to the recommended numerical scoring system, explaining that the American Hereford Association provided scores representing more than 300 contemporary groups of 2- to 15-year-old females.

Analysis showed udder quality to be moderately heritable in beef cattle. Results also showed a high genetic correlation between udder suspension and teat size (0.83), between overall udder score and udder suspension (0.70) and between overall udder score and teat size (0.72).

“So selection for one trait should result in improvement to the others, as well,” explained Bradford. “The American Hereford Association says the genetic trend indicates steady improvement (in udder quality) since 1989, based on phenotypic selection. But the Association hopes to make further improvement by including udder quality in their National Cattle Evaluation, and publishing EPDs and a selection index.”

Mature cow size

National Animal Germplasm Program (NAGP) Director Harvey Blackburn talked about the mission of the USDA Agricultural Research Service (ARS) germplasm repository located in Fort Collins, Colo. Since 1999 the NAGP has collected, evaluated and stored germplasm from animals considered important to agriculture.

Semen, embryos and other tissues containing genetic information have been cryogenically preserved to secure biodiversity and to provide economic benefits to the agriculture industry. Among the 35 animal species represented at the Fort Collins repository are multiple breeds of beef cattle.

According to Blackburn, NAGP resources have been tapped for a project designed to scale back mature size in a cow herd near Marfa, Texas. Management of the Dixon Water Foundation Ranch became concerned that, over time, its cattle had become too large and less suited to the high-desert environment’s forage resources.

The proposed solution is to select for cattle of more moderate mature size by using “older” genetics chosen from among more than 300 Hereford sires in the NAGP repository. Representatives of the “1996 era” were targeted for bull selection. For the planned duration of the experiment, progeny growth, carcass characteristics of grass-finished steers, long-term female performance and grazing

behavior will be evaluated.

“We’ve got the cows bred to identified bulls, and we’re waiting for the first group of calves,” reported Blackburn. “Results should give us some insight if more moderate cattle will increase productivity and profitability. The resulting progeny could also serve as a resource for production system adaptability.”

Feed efficiency research

BIF meeting attendees also heard an update on the government grant-funded study focused on improvement of feed efficiency in beef cattle. USDA ARS is investing up to \$5 million dollars in the multi-year cooperative research project involving multiple land grant universities. Scientists involved seek to better understand influential factors and to develop selection tools for feed efficiency.

“This project is unique because it is integrated. Two-thirds of the funding goes to research, but a third goes toward outreach, or Extension,” explained Matt Spangler, a geneticist and Extension beef specialist at the University of Nebraska. “The outreach component is the technology transfer part. It involves stakeholders early on, engaging all segments of the beef industry.”

Spangler said 12 cattle breeds are now included with a total of 8,666 animals phenotyped. Relatively new results include Angus and Hereford heritability estimations for dry-matter intake and residual feed intake. According to Spangler, both appear to be moderately heritable.

He also noted that 10% of heritability for dry-matter intake appears to be influenced by one quantitative trait locus.

Quantitative trait loci (QTLs) are stretches of DNA containing or linked to the genes that underlie a quantitative trait. Mapping regions of the genome that contain genes associated with expression of a specific trait is an early step in identifying and sequencing the actual genes influencing trait variation.

Regarding the apparent link between dry matter heritability and a single QTL, Spangler said, “That’s huge. It’s the kind of information we’re looking for.”

More than 500 beef cattle enthusiasts were present during the 45th annual BIF meeting in Oklahoma. Representing more than 40 state and national cattle associations, BIF’s mission is to develop cooperation among all segments of the beef industry in the compilation and utilization of performance records to improve efficiency, profitability and sustainability of beef production. **HW**

Mary Ann, and sons, Cameron and Carter, also run about 25-30 cows near Plattsburg, Mo.

National Junior Hereford Association (NJHA) member Heather Bradford was chosen the 2013 Frank Baker Memorial Scholarship Award winner. Her essay was titled “Genetics of Udder Quality in Beef Cattle.” Another NJHA member Tyler Schultz was chosen a Roy A. Wallace Scholarship Award winner.

Congratulations to these Hereford enthusiasts! **HW**



Roy A. Wallace Memorial Scholarships were awarded to Loni Woolley, Texas Tech University, graduate winner, and Tyler Schultz, Kansas State University, undergraduate winner. Pictured (l to r) are: Mark Cowan, 2012-13 BIF president; Woolley; and Schultz.