

More BIF News

Continuing coverage of the 2005 Beef Improvement Federation 37th Annual Research Symposium and Meeting.

Last issue we began our coverage of the July 6-9 Beef Improvement Federation (BIF) annual meeting in Billings, Mont., with synopses from the biennial reproductive symposium hosted by the National Association

of Animal Breeders (NAAB), summaries of some of the first day's sessions, coverage of Angus award winners and features of some of the different sessions. This month we provide summaries of more of the

general sessions, as well as some of the committee discussions.

Angus Productions Inc.'s (API's) full coverage of the event is available at www.bifconference.com, a real-time Web site made possible through sponsorship by Boehringer Ingelheim Vetmedica, Inc. The site features streaming audio/video of many of the sessions, symposium papers, synopses, PowerPoint® presentations and award coverage, as well as archives to past coverage.

From Jan. 1-Sept. 13, 2005, the site logged 26,346 visits by 11,837 unique users and registered 247,797 hits.

Selection indexes: Making bulls equal profit

"I salute the board of directors of the associations that have adopted selection indexes," said Mike MacNeil with the U.S. Department of Agriculture (USDA) Agricultural Research Service (ARS). "This represents a major change for them from the way they have done genetic evaluations in the past." MacNeil called selection indexes a valuable tool for the future.

"Sire selection is always about predicting the future," MacNeil said, adding that part of the process is speculation about economic return. The format of selection indexes —

Table 1: Adjustment factors to estimate across-breed EPDs

(See summary beginning on page 60.)

Breed	BW	WW	YW	Milk
Angus	0.0	0.0	0.0	0.0
Hereford	2.9	-1.8	-14.2	-18.8
Red Angus	3.1	-1.0	0.7	-6.8
Shorthorn	7.3	32.0	44.7	12.9
South Devon	6.2	21.9	41.0	4.5
Brahman	12.5	35.6	-4.9	24.9
Limousin	4.0	1.8	-20.8	-16.2
Simmental	5.9	22.8	21.8	10.1
Charolais	10.0	38.8	53.2	1.8
Gelbvieh	4.7	6.3	-22.3	2.4
Maine Anjou	6.3	-5.3	-41.7	-9.4
Salers	4.2	29.0	42.3	9.9
Tarentaise	3.1	30.6	13.1	18.3
Braunvieh	6.0	30.2	12.8	22.4
Brangus	5.1	19.6	19.9	-3.6
Beefmaster	9.2	39.5	37.5	-4.6

Source: Van Vleck and Cundiff, 2005 BIF Proceedings, Billings, Mont.

Table 2: Example of using across-breed adjustment factors to convert noncomparable within-breed EPDs to comparable across-breed EPDs

		BW	WW	YW	Milk
Angus	AB adj. factors ¹ :	0.0	0	0	0
Bull #001	EPDs ² :	2.9	42	83	16
	AB-EPDs ³ :	2.9	42	83	16
Simmental	AB adj. factors:	5.9	23	22	10
Bull #002	EPDs:	0.8	31	59	7
	AB-EPDs:	6.7	54	81	17

¹AB adj. factors are the across-breed adjustment factors from Table 1.

²EPDs are the within-breed EPD values from the breed's genetic evaluation for the bull of interest.

³Across-breed EPDs after adjustment factors are applied to within-breed EPDs.

presented as a single dollar figure for an animal — allows for ease of use and more practical comparisons, particularly for commercial producers choosing terminal sires.

Selection indexes provide a more robust means of evaluating sires, MacNeil said, because they allow for multiple factors to be considered. For instance, phenotypic traits such as growth, feed intake and pregnancy rate, as well as economic factors including returns from beef carcasses and costs of production at the feedlot and cow-calf sector, can be included in calculating an index. Expected progeny differences (EPDs) allow only single-trait comparisons.

Moreover, each breed association can tailor that index simulation to the economically relevant traits (ERTs) in which they are most interested. And, said MacNeil, the multi-trait approach allows for more data to be used in indexes.

“There’s a huge amount of data out there that’s not being used that is economically important,” he said. As an example for bulls, breeding soundness exam information could be included in future selection indexes for terminal sires.

There are some complications in the application of indexes, MacNeil admitted. For instance, not all traits of economic relevance — such as calf survival — have EPDs. Though economically important, that data can’t presently be included in index calculations.

While indexes are not perfect, he said, they are a better tool than the industry has ever had for selection.

— by Kindra Gordon

Multiple-trait selection for maternal productivity

Multiple-trait selection for maternal productivity requires a different mindset than thinking solely about outputs, said Denny Crews of Agriculture and Agri-Food Canada Research Centre, Lethbridge, Alta., Canada. A comprehensive measure of maternal productivity should also consider inputs, or costs.

Maternal productivity is a composite trait influenced by several cost components, and some are hard to measure, he said. Reproductive rate, for example, is influenced by age at puberty, heifer pregnancy rate, calving ease, the rebreeding rate of 3-year-olds and stayability. Reproductive rate is difficult to evaluate, as are cow maintenance requirements influenced by mature weight and feed intake.

Genetic evaluation and prediction of maternal productivity are difficult because properly designed research data is lacking, Crews said. However, Agriculture and Agri-Food Canada Research Centre has used historical data to develop a maternal productivity index (MPI) in collaboration with the Canadian Hereford Association. The objective was to create a tool for genetic selection of cattle with the ability to

consistently wean heavy calves, during a sustained period of time, while maintaining input costs.

Component traits of the MPI include weaning weight, maternal effects on weaning weight (milk), weight of the cow at weaning time, as well as stayability to account for reproductive consistency. The emphasis, or economic weighting, of each component trait was based on its

relative contribution to maternal productivity.

“The Maternal Productivity Index represents a combination of EPDs with relative economic values,” Crews explained. “There was a definite emphasis on maternal characteristics and stayability, rather than growth.”

Application of this selection tool is expected to result in a positive genetic

change for all component traits. It could be used in varying production environments, with economic weighting of component traits adjusted accordingly. However, the MPI requires further validation to build confidence in its value as a selection tool, he said.

— by Troy Smith

(Continued on page 60)

More BIF News *(from page 59)***Learning from dairy cattle selection**

“Indexes really are the way to go,” Paul VanRaden told attendees of the BIF meeting. VanRaden, a research geneticist with the USDA-ARS Animal Improvement Programs Lab in Beltsville,

Md., spoke about the dairy industry’s experience with selection indexes, which it has been using since 1971.

VanRaden explained that a selection index works by considering multiple traits at once, and, provided you have accurate data on ERTs, he said, they can be an effective selection tool.

He cautioned, however, that having accurate evaluations is not the same as

knowing what to do with them.

“With some important traits it is difficult to know which direction to select for,” he said, giving examples of selecting for large vs. small cows, skinny vs. fat cows, high milk volume vs. low volume, etc. In the instance of frame size, he said the showing sometimes dictates selection for large animals, while on-farm production requires a smaller animal,

which can lead to a selection quandary. Thus, he said, producers need to know their production goals and select accordingly.

Additionally, VanRaden stressed the importance of subtracting expenses out of indexes. “Don’t just focus on the income; remember to subtract out expenses,” he said, citing feed costs, veterinary expense and death loss as examples.

On an international level, the dairy industry currently maintains a database with information on dairy sires from 25 countries and 27 traits all blended together to form an index on the top-merit bulls.

He said this has been a useful tool for dairy producers and reported that a similar international evaluation is being proposed for the beef industry. The program would gather raw data into one pooled analysis for beef sires from around the globe. The proposal is in the early stages.

VanRaden said the United States and Australia have not been supportive of the concept, but the International Committee on Animal Recording (ICAR) intends to go ahead with a pooled evaluation, at least for the Charolais and Limousin breeds.

An official published goal helps stimulate economic research and gives breeders direction on which traits are more important, VanRaden concluded. “I believe indexes help producers to compete and move their breed ahead. I hope the indexes will be a more accurate solution in the long run.”

—by *Kindra Gordon*

Updates to EPDs discussed

Updates to the beef industry’s EPD efforts were the focus of discussions during Friday’s Genetic Predictions Committee roundtable.

Colorado State University (CSU) animal scientist Dorian Garrick posed the questions: “What can we do to further increase profitability of beef selection? What new EPDs should be developed?”

He said the answer to those questions needs to hinge on a producer’s goal, which is typically profit. Thus, he said, it makes little sense to have an EPD for feed-to-gain ratios because of their low effect on income and expense. Instead, he suggested pursuing the EPD traits that affect income, such as dry-matter intake (DMI).

“We are missing a bunch of traits in EPDs. A few years ago it was reproduction, and we’ve since added several of those,” Garrick added. “Today, it is feed costs, and animal health and disease.”

As an example, in regard to feed costs, he reported that feed intake EPDs could be computed from production EPDs. In fact, the dairy industry in New Zealand is already doing this by using milk yield and production data from a sire’s progeny.

An EPD for ratio traits is not needed, Garrick emphasized, adding, “We need EPDs for income traits, and from that we can use those pieces for an economic

index that includes all traits for feed efficiency.”

Dale Van Vleck, with the Roman L. Hruska U.S. Meat Animal Research Center (MARC) in Clay Center, Neb., provided an update on the new across-breed EPD tables (see Table 1, page 58), which MARC has calculated for the last several years. The table allows bulls of different breeds to be compared on a common EPD scale by adding the appropriate adjustment to EPDs produced in the most recent genetic evaluations for each of the 16 breeds included (see Table 2, page 58).

Van Vleck pointed out some notable changes. Maine-Anjou is computing its EPDs with a new base. The result is major changes to the adjustments for Maine-Anjou weights and maternal milk. Maternal records for Brangus and Beefmaster are included in the table for the first time.

Presently, the across-breed values are only for weight traits. Van Vleck said there is some discussion about computing across-breed values for carcass traits in the coming year. He showed an example table he computed for marbling, fat thickness, ribeye area (REA) and percent retail product (%RP). The data represents 11 breeds and 400 sires. However, he said, before an across-breed EPD table for carcass traits can be pursued, some standardization procedures need to be determined among breed associations and the industry. For instance, how should carcass or ultrasound-mixed data be handled? When should animals be measured? Which sexes should be included in the database?

“We do need to make more study of this before we release them,” Larry Cundiff of MARC added, “but I think we all should be encouraged by the potential result.”

— by *Kindra Gordon*

Examples of attributes presently being verified through different programs include source of origin, age, feeding processes, genetics, livestock handling and/or preconditioning protocols. In the future, Gerken said, the industry will see more people thinking outside the box with their verification systems and offering claims of consistency, satisfaction, and even championing meal solutions.

“The brand promise shows integrity. Look for brands to project more specific messages,” she said. “And, given the supercenters of today, verified brands are going to have to lead with quality, not price.”

Looking ahead, Gerken said she predicts consumers will look for more definition in the verified brands, such as breed of livestock, antibiotic use,

geographic regions, etc. Before those details can be pursued, she noted, the industry must start with age and source verification, which have become urgent due to recent global concerns about bovine spongiform encephalopathy (BSE).

Especially if the United States wants to regain export market access to Japan, she said, producers will need to have calving

(Continued on page 62)

Process-verified programs: applications & value

An increasingly common thread in value-added products of the future will be that they are verified, Cara Gerken of IMI Global Inc. told attendees at the BIF Producer Applications Committee Meeting. “Consumers want to know where their food came from and if it is safe,” said Gerken, formerly with USDA.

Gerken provided an overview of the different opportunities evolving for quality assurance (QA) verification programs. In total, she said process verification provides suppliers the opportunity to assure customers of their ability to provide consistent-quality products and services. She cited USDA’s Process Verification Program (PVP) and Quality Systems Assessment (QSA) as two examples presently available, but she said in the future there would also be third-party vendors who provide similar services.

“The most important aspect of these verification programs is that they allow for managing the system and allow the producer to tell their own story and capture value,” Gerken said.

More BIF News *(from page 61)*

records with dates, unique animal identification (ID) for individuals or groups of cattle, and the ability to transfer the identity of those cattle to the next owner. These things will require a defined calving season and maintaining records for a minimum of three years, she said.

In preparation for age- and source-

verification protocols, Gerken stated the most important thing that has to be done through the production chain is to preserve the identity of each calf all the way back to the ranch. "It does not need to be fancy," she said, but a recordkeeping system needs to be put in place by each cow-calf producer.

Fortunately, several breed and state association programs are in place — and

emerging — to assist producers in facilitating the animal ID and source- and age-verification processes. Examples in existence include the Southeastern Livestock Network, composed of 10 southeastern states, and the Montana Beef Network, as well as well-known breed programs including Certified Hereford Beef, the Red Angus Feeder Calf Certification Program (FCCP) and

AngusSource.SM Representatives from each of these programs provided short overviews of their programs' goals and abilities to assist producers with documenting source, age and even genetic verifications.

— by Kindra Gordon

Surfing for genetics

The NBCEC is developing a Web-based decision support tool for producers to utilize when making selection decisions with EPDs and multi-breed evaluations. The site is being developed by CSU and is accessible at <http://ert.agsci.colostate.edu>. It presently includes 1 million bulls in the database from about eight breeds. Producers can sort between artificial insemination (AI) sires and yearling bulls.

CSU's Garrick explained the uniqueness of this Web-based tool and the fact that it allows for what he called "customized computations."

"We're allowing you the power to play with the models yourself," Garrick said. As an example, he said the Web-based decision support will allow producers to define their herd's parameters and then see interactions between different ERTs. For instance, the model will mate a producer's herd to the sire he or she selects and create a daughter herd with base EPDs, as well as incomes and costs.

"It will tell you the ramifications to your herd and show you predicted income and expense from that bull," he said.

Specifically, Garrick listed six ways in which the new interactive tool will enhance selection beyond solely looking at EPDs in an electronic database. He said the tool will allow for:

- 1) interpretation of threshold traits;
- 2) multi-breed evaluation and crossbreeding;
- 3) interactions between ERTs;
- 4) assessment of nutritional implications;
- 5) assessment of financial implications; and
- 6) accounting for risk associated with the use of bulls with less-than-perfect accuracy.

The Web-based decision support is not just another index, Garrick said. He explains that the Web-based decision support provides justification as to why particular animals get the values they get; whereas, index selection makes decisions for you without respect to your specific production, management and economic considerations.

Garrick also reported that a feedlot module is being developed to complement the new Web-based tool and project dollar and risk values for sires. "We believe better decision support will give better decisions for profit," he concluded.

— by Kindra Gordon