

Feed and Water Intake Data

Technical breakout session discusses cow herd efficiency and adaptability.

by *Nicole Lane*, editorial intern, & *Troy Smith*, field editor

The Beef Improvement Federation (BIF) plans to revise current guidelines on collecting feed-intake data, researchers told attendees of a technical breakout session in Biloxi, Miss., at the organization's 47th annual convention. Mark Enns of Colorado State University, Matt Spangler of the University of Nebraska and Bob Weaber of Kansas State University suggested updates to adapt BIF recommendations to align with new research.



PHOTOS BY TROY SMITH

► Decoupling body weight gain from feed intake may offer a way to shorten the test length needed to establish feed efficiency predictions, said Mark Enns of Colorado State University.

BIF created the Feed Intake Guidelines Committee to analyze the current guidelines and assess what changes could be made to improve the efficiency and usability of testing for feed efficiency. The committee identified current challenges, including the length of the

warm-up period, length of test for accurate measurement of feed intake and body weight gain, proper contemporary group assignments, and use of embryo transfer data.

"It appears there may be an opportunity based on historical research and some of the research that is being published that we can shorten test length if we decouple body weight gain from feed intake," Enns said.

The shortest testing cycle the current system allows is 91 days (including an acclimation period of 21 days). New guidelines could shorten test time to 56 days. All three presenters referenced research by Kelli Retallick that observed how the cattle industry could go about decoupling feed intake to shorten the amount of time animals spend on test. Making this change would reduce the cost of testing animals for feed efficiency, increase the number of animals that could be tested per year and increase the accuracy of a feed efficiency expected progeny difference (EPD).

The cattle industry has been successful at collecting weight data, leading to an abundance of information on postweaning gain. The committee plans to leverage this data in the guidelines to achieve its goals and decouple the process. Feed efficiency is a trait that has higher variability in data as it is collected in multiple ways and in numerous scenarios. The revised guidelines would help provide clear instruction for contemporary



► Shortening test length will allow the industry to leverage the plethora of postweaning gain records that already exist in national cattle evaluation, said Matt Spangler, University of Nebraska.

group assignment and create a more standardized warm-up period.

"The committee thinks that we can not only decouple feed intake and weight records on test, we think when we do that we can shorten the length of the test to get dry-matter intake records and leverage the plethora of postweaning gain records that already exist at NCE," said Spangler.

The Feed Intake Guidelines Committee plans to present its recommendations to the BIF board of directors at its mid-year meeting in November. It is expected that the new guidelines will be voted upon at that time.

— by *Nicole Lane*



Water intake in beef cattle

Water is a nutrient that is essential to a wide variety of body functions of beef cattle. According to Oklahoma State University Animal Scientist Megan Rolf, water is critical to body temperature regulation, utilization of other nutrients and mineral balance maintenance. Adequate water consumption is required for digestion, reproduction and lactation.



► Megan Rolf said studies have revealed up to a twofold difference in water intake between strains of mice, even when the animals' diets were no different. It is also known that certain breeds of cattle (particularly *Bos indicus* breeds) are less susceptible to the negative effects of water restriction.

According to Rolf, water intake can vary according to an animal's biological type and stages of growth or production. Intake is influenced by environmental factors, too, including an animal's diet, but not all of the variation in water intake by beef cattle is explained by physiological and environmental parameters. Rolf talked about ongoing research to learn more about efficiency of water intake in beef cattle and the influence of genetics.

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twofold difference in water intake between strains of mice, even when the animals' diets were no different. It is also known that certain breeds of cattle (particularly *Bos indicus* breeds) are less susceptible to the negative effects of water restriction. Now available, however, is technology that will allow researchers to collect water intake phenotypes on large numbers of cattle.

According to Rolf, Oklahoma State University scientists are conducting a two-year study of water intake among more than 800 animals. Insentec systems are being used to collect individual feed and water intake data. So far, the data suggest cattle generally fall into groups characterized as high-, medium- or low-intake of water, which is similar to studies with mice. Generally speaking, higher feed intake is associated with higher water intake. However, there is wide variation of intake within each group.

Seeking an understanding of how water intake is influenced by genetics, researchers are looking at factors ranging from hair coat color to potential differences in rumen microbe populations.

"Longer term," said Rolf, "we hope the results will contribute to development of genetic selection tools to increase cattle adaptability to climate variability."

— by Troy Smith

Commercial phenotyping

The beef cattle industry's interest in feed efficiency is not a new thing, but most cattle folk consider technologies for measuring the feed intake of individuals within a pen of cattle to be a recent development. Consequently, some BIF attendees were surprised to learn that GrowSafe Systems Ltd. has been providing automated systems for measuring feed intake for 15 years.

Alison Sunstrum, co-CEO of the Alberta-based company, spoke during a joint BIF committee breakout session, explaining how GrowSafe technology collects and analyzes data based on measures of feed disappearance from a trough for calculation of residual feed intake (RFI). She explained that RFI is thought to be an important trait for which breeders can apply selection pressure to achieve improved feed efficiency.

According to Sunstrum, GrowSafe equipment is currently in use at more than 120 locations in 23 states, seven provinces and numerous foreign countries. Forty percent of these locations are commercial performance-testing stations, while 60% of locations are privately owned farms and ranches. Every station's technology is continuously upgraded and uniformly maintained.



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"We've learned, for example, that animals that grow fast are less likely to feed at night. If they do feed at night, they feed very quickly," said Sunstrum. "We also see evidence that afternoon feeders tend to grow fast and are efficient."

Sunstrum said the ability to detect changes in behavior patterns may serve as early warnings of changes in an animal's health status. Accordingly, there is potential to further develop GrowSafe systems to individually medicate ailing animals per individual specifications and without removing them from the feeding pen.

"Another goal is to develop systems capable of predicting, four weeks in advance of harvest, what animals' hot carcass weights will be," said Sunstrum. "That would help feeders pull growth-promoting feed additives at the most appropriate time."

— by Troy Smith



Editor's Note: Troy Smith is a freelance writer and cattleman from Sargent, Neb. The 2015 BIF Annual Convention was hosted by Mississippi State University and the Mississippi Extension Service June 9-12 at the Beau Rivage Casino and Hotel in Biloxi. The Angus Journal and LiveAuctions.tv provide comprehensive online coverage of the event at www.BIFconference.com. Visit the Newsroom for summaries, proceedings, PowerPoint and audio of the sessions; the Awards page for announcements of award winners; and the Photos page for photo galleries of the tour.



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