By the Numbers

► by **Sally Northcutt,** *director of genetic research, American Angus Association*

Research genetic evaluations: now and later

The Angus heifer pregnancy research genetic evaluation report is available for viewing on the web. Fig. 1 illustrates the link to the heifer pregnancy evaluation details. Heifer breeding records were submitted by participants in the Angus Herd Improvement Records (AHIR®) program along with other typical performance data submissions.

Background

At the February 2007 Board Meeting, the Board of Directors approved the release of heifer pregnancy (HP) expected progeny differences (EPDs) on sires with a minimum 0.30 accuracy in a special research report. Sire EPDs for heifer pregnancy and associated accuracies can be found at *www.angussiresearch.com.*

A research summary of the heifer pregnancy analysis is included, along with a percentile ranking table for the sire EPDs. Also, the use of HP EPDs to compare sires in the listing is described. HP EPDs are to be used as a tool to increase the chance of a sire's daughters becoming pregnant during a normal breeding season. The unit of measure for the EPD is a percentage. A higher EPD is the more favorable direction for selection pressure. As with other EPDs, the relative difference among sires is of importance rather than the absolute value.

Only the sire EPDs are part of the release. Interims are not calculated, nor are there EPDs on females.

It is important to note that HP EPDs do not account for all the physiological factors associated with a heifer's reproductive success. Bill Beal's "Repro Tracks" column on page 158 of this issue does an excellent job of putting these factors into perspective.

In reviewing the results of the HP EPD research run, keep in mind that as the AHIR database for heifer breeding records grows, we would expect re-rankings of sires to occur. To keep this in perspective, it is helpful to view the EPDs as groups of sires that do better than average, for example, rather than chasing a particular animal in a specific percentile ranking.

The heifer pregnancy genetic evaluation is a first in developing EPDs where the trait is lowly heritable (0.13). This would suggest that response to selection could be slower or more challenging than the classic growth and carcass traits to which we are accustomed. The heritability indicates that 13% of the variation in this trait is due to genetics, leaving a large portion (87%) due to environment.

The list of sires meeting the criteria is available only through this separate web-based report. Sire EPDs and accuracies can be downloaded into a spreadsheet format and sorted as desired (see Fig. 2). Breeders may also request a printed version of the report if needed.

Fig. 1: Web site view of heifer pregnancy research genetic evaluation menu

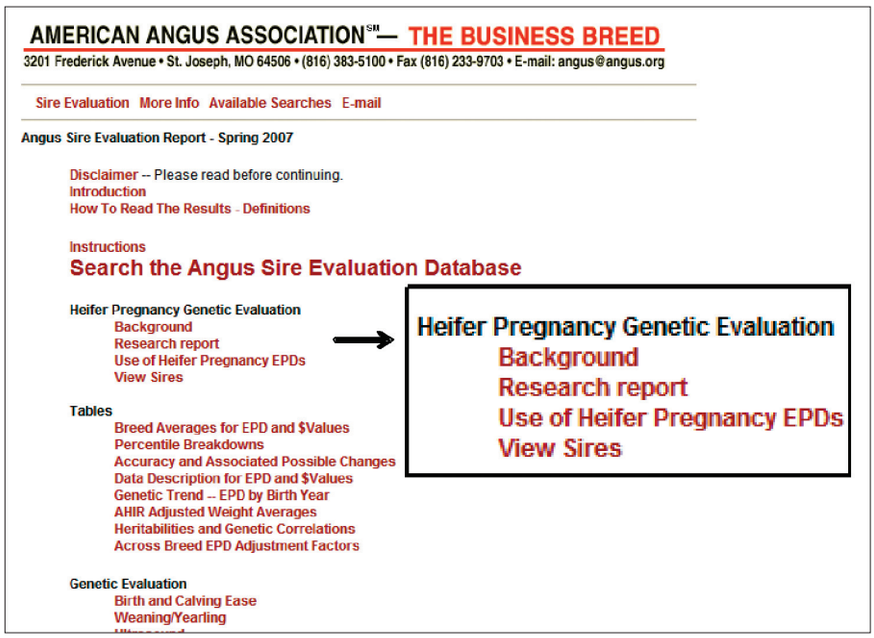


Fig. 2: View of sire HP EPDs and accuracies and access to downloadable spreadsheet

What's next?

Plans are under way to conduct additional research genetic evaluations. These include evaluations for cattle temperament and stayability.

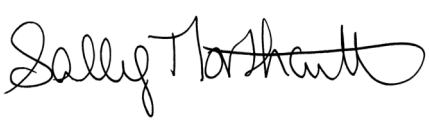
Temperament. The beef industry has noted the effect of cattle disposition on performance traits and carcass merit. Also, research has been conducted in other breeds, such as Limousin, to quantify genetic differences in cattle temperament to create a selection tool for improvement in this trait. Probably every commercial bull buyer at one time or another has mentioned the 'good or bad' disposition in bulls they have purchased.

Research conducted at the University of Missouri using AHIR yearling temperament scores is providing some encouraging genetic opportunities for Angus cattle disposition. Heritability estimates range from 0.37 to 0.45, and estimates of this magnitude indicate that selection for cattle temperament would be effective. More than 40,000 additional temperament scores have been submitted since 2006.

In June 2007, the American Angus Association Board of Directors unanimously approved the pursuit of an Angus genetic evaluation for temperament. The potential exists to develop a research evaluation in a similar format to what has been done for heifer pregnancy, to provide insight into genetic differences in sires for temperament.

Stayability. The heritability for stayability as a measure of cow longevity is similar in magnitude to that of heifer pregnancy. The classic definition of stayability as used by some breeds already publishing stayability EPDs, is the probability that a cow will remain in the herd until she is 6 years of age. These EPDs are typically reported in percentage, with a higher value being more favorable. An EPD for stayability or longevity in some form would identify genetic differences among future daughters of sires for the ability of these females to remain in the cow herd.

Research genetic evaluations are the cutting edge for supplying new information to quantify production and convenience traits in Angus cattle. Lowly heritable traits such as heifer pregnancy and stayability are perhaps the most challenging traits to date that are being addressed by the Association and its membership.



E-MAIL: snorthcutt@angus.org

Editor's Note: *"By the Numbers" is a column by Association performance programs staff to share insights with Angus members about data collection and interpretation, the NCE, genetic selection, and relevant technology and industry issues. If you have questions or would like to suggest a topic for a future column, contact Sally Northcutt, director of genetic research, or Bill Bowman, director of performance programs, at 816-383-5100.*

Want to submit data for HP EPDs?

For more information on submitting data to be included in the next genetic evaluation for heifer pregnancy, refer to these references:

- "By the Numbers" beginning on page 124 of the April 2007 *Angus Journal;*
- "By the Numbers" beginning on page 176 of the May 2007 *Angus Journal;* and
- "Heifer Pregnancy Future" feature article beginning on page 75 of the June 2007 *Angus Journal.*

Contact the Association's Performance Programs Department at 816-383-5100 or ahir@angus.org for more details.