



Foundation Fundamentals

► by Milford Jenkins, Angus Foundation

What's it worth?

Investing in beef cattle research — what's it worth to Angus breeders and our commercial cow-calf Angus bull customers? Investing in beef cattle research for the benefit of our registered-Angus seedstock producers, commercial cow-calf customers of our Angus genetics, and consumers of our beef products is a high priority for the American Angus Association and the Angus Foundation's resources.

"If you put down a dollar [in agriculture research], that's the equivalent of getting \$20 back," said Julian Alston, professor of agricultural and resource economics at the University of California–Davis, while speaking to the American Society of Animal Science (ASAS) in 2012. "This high return on investment is due to the direct link between agriculture research and agricultural productivity."

Inquiries and proposals

The American Angus Association's Research Priorities Committee (RPC) brings focus and coordination to these collective efforts and recommends funding for projects. The committee members include representation from the American Angus Association, Certified Angus Beef LLC (CAB), Angus Genetics Inc. (AGI) and the Angus Foundation.

The RPC prioritizes the research areas listed on the Angus Foundation's website as follows:

- feed efficiency (cow emphasis);
- carcass quality and consumer satisfaction;
- reproduction and stayability/longevity;
- adaptability [includes pulmonary arterial pressure (PAP), fescue toxicosis/hair shedding];
- genome preservation and data collection;
- membership needs;
- breed strengths; and
- disease.

External (e.g., universities, etc.) research inquiries and proposals are directed through the RPC for review, which then makes recommendations for any requested funding through Association entities. In instances where the Association and RPC seek intellectual property, for proprietary reasons and confidentiality of results, funding of these research endeavors is provided through the parent company. Results of research projects funded by the 501(c)(3) not-for-profit affiliate Angus Foundation are required to be made available to the public domain.

Initial research

From a historical standpoint, once growth from increased levels of unrestricted and

research-earmarked charitable contributions to the Angus Foundation started occurring, the organization's investments in research began in earnest in 2005 with \$24,000 to the USDA Agricultural Research Service (ARS) for genome sequencing.

By studying the bovine genome, researchers were able to identify genes that influence production traits and carcass traits. Research findings form the background for DNA technology applied in subsequent years to the Association's genomic-enhanced EPDs (GE-EPDs). This initial single nucleotide polymorphism (SNP) marker research allowed scientists to work toward genomic panels that are now applied to selection tools. The project produced public domain access of SNPs associated with the genome map. This level of accessibility enables the beef industry to apply SNPs to:

- parentage;
- traceback;
- genetic selection;
- continued study of the bovine genome and its evolution; and
- technology applied to future genomic enhanced selection tools in Angus cattle.

Other projects

Since that initial research project investment in SNP on behalf of the Association's members, the Angus Foundation has funded, in whole or in part, a wide array of research projects related to beef cattle.

One project was whole-herd (e.g., heifers,

lactating and dry cows, postweaning bulls) biological efficiency research at the University of Illinois and North Carolina State University. The data collected and results found in this study have been used in the Association's National Cattle Evaluation (NCE) system's feed intake evaluation and contributed to the residual average daily gain (RADG) EPD.

Another project was the development and evaluation of hair-coat shedding scores in Angus cattle, conducted at North Carolina

State University (NCSU) and Mississippi State University (MSU). This research provided evidence that cows that shed late in the season wean lighter calves. Hair-coat shedding is a heritable trait and can be altered by selection. Producers within the southeastern or southern United States who have observed late hair-coat shedding within their herds can select for hair-coat shedding earlier in the season.

This should result in higher weaning weights, making the cow herd more productive.

Understanding the relationship between feed efficiency measures during the heifer-development stage and measures taken during first lactation in purebred Angus was a research project funded at Iowa State University (ISU) 2008-2011. This study found that evaluation of first-calf heifers is complex due to feed energy intake being partitioned into the three areas that one should address when using the residual feed intake (RFI) model. These areas are maintenance, growth and milk production.

Funding has also been provided for research in genomic and proteomic markers for Angus bull fertility to Mississippi State University (MSU), genomic sequencing for Angus sires at the University of Missouri (MU), and the development of genetic evaluation methodology for traits of economic importance in Angus cattle at the University of Georgia (UGA).

A National Cattlemen's Beef Association (NCBA) Product Enhancement Priority, the regulation of marbling development in beef cattle by specific fatty acids was a joint research project with Texas Tech University,

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Texas A&M University and the University of Idaho funded by the Angus Foundation. This project addressed marbling and early cellular differentiation relative to improving insufficient marbling in beef cattle.

Practical application

It is worth noting the UGA software and methodology is used extensively in AGI and American Angus Association research and development. More specifically, results for the NCE in Angus cattle are produced by UGA software routines and algorithms to provide Angus selection tools on a weekly basis. The software provides the backbone or foundation for research and application of genetic prediction tools for Angus cattle.

Available results

For more details about these Angus Foundation-funded research projects, visit our website at www.angusfoundation.org and click on “Research and White Papers.” You’ll want to also check out our new white papers on the topics of ground beef and heat stress now featured on the website to even further enhance the educational value of this resource to our members and supporters.

“We haven’t been spending enough,” Alston went on to say, referring to the money spent on agricultural research. “The way we get that productivity growth rate is from science.”

Your Association and Angus Foundation couldn’t agree more. The case for resources to

invest in beef cattle research and science has never been stronger than it is today. With fewer and fewer federal and state appropriations available for researchers in higher education each year, support from the private sector and organizations like the Association and Angus Foundation will become even more important.

What’s research worth to you and your Angus and commercial beef cattle operation?



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Author’s Note: *Milford Jenkins is president of the Angus Foundation. Visit www.angusfoundation.org for more information regarding the Angus Foundation.*