Angus Joins Global Initiative to Improve Livestock Efficiency

AGI to lead North American data collection for $4.85 million research grant from the Bezos Earth Fund and Global Methane Hub.

by Sarah Kocher, American Angus Association

Joining a new global effort to help beef cattle producers breed more efficient livestock, the Angus Foundation — alongside Angus Genetics Inc. (AGI) and other research partners in North America, Oceania and Europe — announced the receipt of a $4.85 million research grant.

During the next five years, Kelli Retallick-Riley, AGI president, expects to better understand the genetic differences in energy efficiency between animals emitting different levels of methane, allowing for new genomic tools to enhance the already robust toolkit available to the beef industry.

The grant is one piece of a larger $27.4 million global initiative, backed by the Bezos Earth Fund and Global Methane Hub, to reduce energy waste in livestock by targeting methane emissions and the natural variation that exists in herds.

"The research and efforts made possible by this grant will support today's beef farmers and ranchers as well as future generations, because we know reducing energy waste to make cattle more efficient is a long-term goal that affects the livelihoods of people who raise cattle," Retallick-Riley says.

The energy she talks about is maintenance energy, and when less energy is required by a cow for maintenance, that means more energy for growth and production.

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Looking to the anticipated results of the project, Retallick-Riley envisions the tool could help breeders identify genetically more efficient cattle by identifying those producing less methane.

"We're excited to participate in this global initiative, and we're thankful to the Angus Foundation for helping to facilitate this global partnership," she says.

John Dickinson, chair of AGI's board from Auburn, Calif., says he is interested in how this work will look at cattle efficiency from a different perspective than the industry typically has.

"The common practice has been to measure gains or performance against resources like costs and inputs," he says. "This research will look at the energy loss side of the equation, which not only gives a different perspective but dives deeper into the complex trait of efficiency."

Dickinson says the analysis feels even more relevant to the needs of the industry when he considers future market and resource challenges.

"Our current cow numbers sit at 60-70-year lows, but as we go forward the need will become greater," he says. "At the end of this current cycle, I struggle to think we'll have the same number of available acres with the current cost and competition for land and forage resources. I think there will be a limit to what we can build back to, and consequently, we will ask even more out of the Angus cow for production."

Why focus on methane to help do this? A 2023 study, published in the *Journal of Dairy Science*, shows a portion of animals naturally emit up to 30% less methane than others, so there is opportunity to apply genetic selection pressure to make change.

"We recognize exploring topics like those addressed by this research

can often be polarizing within our industry," Retallick-Riley says.

But what convinced leadership to take the bold step, she says, was that this initiative isn't one controlled by forces outside of the beef industry. Instead, the grant provides the finances for Angus and the cattle industry to conduct methane research for the world.

"Being able to leverage funds outside of members' pockets was a good fit for this type of research to better understand the genetic differences for traits," she says.

At the same time, it positions Angus breeders to be on the leading edge of research, instead of on the sidelines. Rob Adams, chair of the Angus Foundation's board from Union Springs, Ala., knows some cattlemen might be skeptical, but he looks at it a different way.

"If some cattle are as much as 30% more efficient in their methane production, as is suggested, then these cattle are probably also just simply more efficient in general," Adams says. "That likely also means they are a lower-input-cost kind of cattle. If we can quantify that and make it possible to genetically select for these cattle, that will be a win-win for all of us."

In total, the effort will evaluate the genotypes of more than 10,000 animals, collect phenotypes for methane emissions data and integrate findings into genetic selection tools for breeding programs to deliver long-term, low-cost benefits. This project also builds upon the other methane research AGI and the Association has already supported.

"Anytime we can equip Angus breeders with science-based tools that can help them drive meaningful genetic progress in their herds — at no cost to them — that's a huge success," Retallick-Riley says.

While AGI will lead collection efforts in North America, the full group's research will be coordinated by Steve Miller at the University of New England's Animal Genetics and Breeding Unit (AGBU) in Armidale, Australia. Miller currently serves as AGBU's executive director.

The list of participating teams includes those from: AGI in the United States; University of New England in Australia; Beef and Lamb New Zealand Genetics and Ag Research in New Zealand, Scottish Rural University College in the U.K., and Teagsac and the Irish Cattle Breeding Federation in Ireland.

Retallick-Riley says she is pleased the Angus breed will be in a leadership position with this work because of the responsibility she feels it has, especially to the U.S. beef industry.

"Angus breeders are the primary drivers of genetic change across the globe," Retallick-Riley says. "As a breed, this research keeps us part of a global conversation."

Dickinson says there are many global conversations regarding the true impact of methane production in cattle.

"I think it is important that we are at the table and involved in those conversations," he explains. "The results of this research project will not only give our membership a tool that better describes the energy-waste side of the equation for efficiency, but it also may lead to more opportunities for the international exchange of genetics. At the end of the day, we want to have the most comprehensive set of genetic predictors available to breeders." AJ

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