

# EPD TO BEAT



PHOTO BY SHAUNA HERMEL

## THE HEAT

### Association unveils EPD to assist breeders in selecting cattle with heat tolerance.

by Jessica Wesson, editorial intern

Cattlemen have known for years there must be a genetic correlation between hair shedding and heat tolerance, but they've never been able to quantify it ... until now.

"We have selected for this for 30 years, but never with a numerical value," says Ben Eggers, Sydenstricker Genetics (SydGen), Mexico, Mo., noting it's been a way to breed cattle adaptable to fescue. "It was just knowing which sire lines were the best on hair shedding."

It was a combination of gut feel and observation, but when Angus Genetics Inc. (AGI) launched the research expected progeny difference (EPD) in February 2020, it gave registered breeders a way to start putting genetic predictions to use toward solving a problem.

The work has been ongoing for a decade, but, as Kelli Retallick-Riley says, it took a collaboration between AGI, the American Angus Association, the Angus Foundation, Mississippi State University, North Carolina State University and the University of Missouri (MU) to get it to an EPD form.

"Our intern a couple of years ago was able to combine multiple data sets," Retallick-Riley says. "It was a dual effort that turned out to prove that hair shedding had a heritability aspect."

Harly Durbin, who has since received her doctorate from MU,

studied how quickly cattle shed their winter coats in late spring to early summer. They researched the correlation between hair-shedding ability and performance and production traits of the herd.

"This heritable trait provides leverage for producers in the Fescue Belt to select animals that can perform better in this environment," Retallick-Riley says. "Producers keep fescue on their operations because it is a hardy grass. It's very drought-resistant,

which ensures cattle have access to grass throughout the growing season."

Unfortunately, it's not without problems.

"Fescue constricts the capillary vessels and causes cattle to tend to be hotter than what they would be if they were not on fescue," Eggers says.

That's where hair shedding intersects with environment.

Blake McDonald began working at SydGen after earning a master's degree from MU, where his thesis research focused on fescue toxicosis.

"We were trying to validate whether or not we could genetically select for fescue tolerance," McDonald says. "We purchased cattle that were naïve to fescue and took DNA samples and hair scores."

The research team evaluated cattle

performance on fescue and removed them. After harvest, the carcass data and performance were reviewed again.

"Fescue has a fungus that's present in the plant itself that inhibits the animal's ability to shed," McDonald says. "Collecting hair-shedding scores will allow us to identify the animals and bloodlines that have the ability to shed better."

Cattle that slick off sooner have additional benefits.

"Our research found that cows that shed later in the season had calves with lighter weaning weights," Retallick-Riley says. "This could be due to the fact cows are putting more of their energy

**"We're trying to get animals that are more suited for their environments, and that's what this hair-shedding EPD is getting after. This way, you're working with the environment instead of against it." — Kelli Retallick-Riley**

into thermoregulating their own bodies, rather than milk production or mothering ability to the calf.”

Although the ability to shed has just recently been incorporated into an EPD, it isn't a new selection criteria.

Eggers says it would often affect some cattle more than others, and it was evident some could not handle the heat.

“We would go check cows at 4 o'clock in the afternoon on a hot summer day,”

Eggers says. “One set of cows would be out grazing in the sun, another set would be grazing a little in the shade, and one set would be in the creek getting muddy.”

The cattle looking to cool off in the creek would experience more health issues after the mud dried.

“These cows would be caked in mud, and the mud would dry out,” Eggers shares. “As the calf hits the udder trying to nurse, a lot of dust would fly through the air. We see a lot more pinkeye from the cows that don't shed well.”

Eggers says his buyers often ask about shedding when buying bulls or semen, even if they are not dealing with fescue.

“I think even northern states look for hair-shedding ability,” Eggers says. “Of course, you want them to grow hair in the winter, but the good cattle will naturally slick off in the summer.”

Why is it important for producers to have an EPD they can look at for this trait?

“The genetics world is working on ‘genetics by environment’ interactions,” Retallick-Riley says. “We're trying to get animals that are more suited for specific environments, and that's ultimately what this hair-shedding EPD is getting after. This way, you're working with the environment instead of against it.”

It also gives producers a new way to assess sire lines they have never considered before.

“If you know one group of cattle

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**Hair Shedding Scoring Guide**

**TRAIT DESCRIPTION GUIDELINES**

- Early summer hair shedding is an indicator trait for heat tolerance and tolerance to fescue toxicosis.
- Score between mid-April to mid-June or when hair shedding is in progress.
- 1-5 visual appraisal scale, where 5 is a full winter coat, and 1 is completely slick. While there is some variability in shedding patterns between individuals, cattle tend to shed from front to back and top to bottom.

**SCORING TIPS**

- Score cattle when there is the most variability in shed-off, which depends partly upon location (north vs. south).
- Aim to score cattle on the same day or within a few days of each other.
- Cattle should be at least yearlings when hair shedding scores are recorded.
- Ideally, record hair shedding scores every year on the whole herd.

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**Hair Shedding Scoring Guide**

	<b>Score 5</b>	0% shed - full winter coat
	<b>Score 4</b>	25% shed - lost winter coat around head and neck
	<b>Score 3</b>	50% shed - lost hair along top line and further down brisket compared to a 4
	<b>Score 2</b>	75% shed - only holding hair on flanks and around belly
	<b>Score 1</b>	100% shed out - no remaining winter coat

\*\*Photographs courtesy of Dr. Trent Smith, Mississippi State University  
Visit AAA Login at Angus.org to submit scores. Call the American Angus Association® team at 816-383-9100 with questions.

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The American Angus Association's "Hair Shedding Scoring Guide" is available for download at <https://bit.ly/ABBshed>.

works well within your environment, then you may never venture out and look at new sire lines," Retallick-Riley says. "This could limit genetic diversity in your herd, which increases the risk of inbreeding. The hair-shedding EPD allows producers to look at animals raised elsewhere and allows them to bring those new cattle in with less risk."

Not only does it allow producers to consider bringing in animals, but selling them, too.

Most cattle in the world are in subtropical climates, she says. Having genetic predictors in the form of EPD values gives producers more confidence in selecting cattle with the genetics to adapt to that climate for export.

Hair shedding is heritable, explains Retallick-Riley. "It has

just above 40% heritability. With that level of heritability, it means progress through genetic selection can be made."

You can download a sortable list of research EPDs on AI sires at <https://www.angus.org/Nce/Definitions>.

## Tips for scoring

To assist in scoring your herd for shedding ability, McDonald recommends using the American Angus Association's "Hair Shedding Scoring Guide" available for download at [https://bit.ly/](https://bit.ly/ABBshed)

[ABBshed](https://bit.ly/ABBshed). The guide has photos and descriptions of the 1-to-5 scoring system, as well as guidelines for collecting the information.

Scoring is relatively simple and easy, explains Retallick-Riley. The herd should be evaluated between mid-April and mid-June, she advises. Producers in the North may want to wait closer to the latter part of this period to allow the herd to express the full variation of the scoring system. Those in the South may need to do it earlier in the season, as the cattle will slick off sooner.

"If all animals have already slicked off or have not started to shed, then the data is not valuable to predict genetic differences," she says. "Variation at a point in time allows us to compare differences; if no variation is present, then we have no way of knowing which ones slicked off the quickest."

Scoring needs to be done within a limited period, she says. "There is a seven-day window in which they can collect scores on a group of cattle for scores to be included in the same contemporary group."

She recommends waiting until cattle are at least 1 year of age before scoring them.

"Age definitely has an effect on the hair-shedding ability," she says. "As cattle get older, they will shed off their coat more completely. That's why we don't accept hair-shed scores to be used in the genetic evaluation until

## Foundation support

A portion of the research used to develop the American Angus Association's new EPD for hair shedding was funded by the Angus Foundation's Angus Fund, which prioritizes youth, education and research.

"When it comes to research, the Angus Foundation looks at what tools we can provide our breeders and their customers, as well as how we can solve questions within the breed," says Thomas Marten, executive director of the Angus Foundation.

"It was really twofold. The first phase of research was trying to figure out what effect hair-shedding ability had on overall production," Angus Genetics Inc. (AGI) President Kelli Retallick-Riley says. "The second part was trying to articulate that into a tool that producers could use to start solving issues on their operations."

The hair-shedding score was birthed out of a need for producers to make better selection decisions. The American Angus Association, AGI and the Angus Foundation are all committed to furthering the Angus breed and providing tools for breeders. Learn more at [www.angusfoundation.org](http://www.angusfoundation.org).

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cattle are at least a year of age."

If producers are uncomfortable collecting scores, Retallick-Riley encourages them to keep at it, even if they choose not to send scores in to the Association that first year.

"The more you get out there and score, the more confident you will get," she says. |

Editor's note: Jessica Wesson was the *Angus Beef Bulletin* 2021 summer intern.