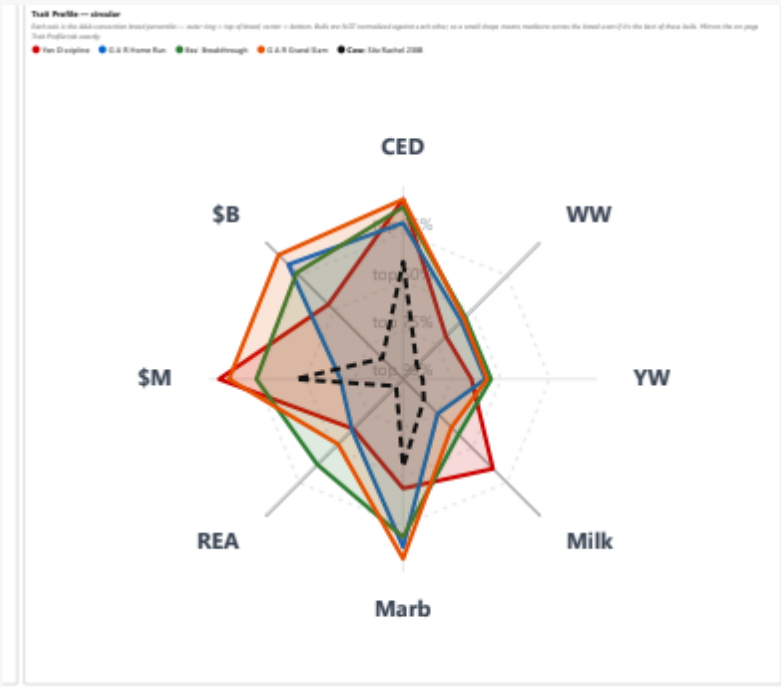
Near Leechburg, Cody Deluisio Adopts an AI Breeding System That Doesn't Compute Its Own Numbers

At Deluisio Angus near Leechburg, PA, Cody Deluisio uses artificial intelligence to sharpen every artificial-insemination decision.



Circular trait profile from Deluisio Angus in Avonmore, PA: each Angus sire charted across eight key EPD and index traits against the breed median (dashed line). Cody Deluisio uses this view to spot a bull's strengths and soft spots at a glance.

AVONMORE, PA, UNITED STATES, July 5, 2026 /EINPresswire.com/ -- As artificial intelligence moves into livestock breeding, a registered Angus operation in western Pennsylvania is drawing a firm boundary around what the technology is allowed to do. At Deluisio Angus, near Leechburg, an AI system chooses which analysis to run and explains the outcome in plain language, but it is barred from calculating the genetic figures a breeder depends on.

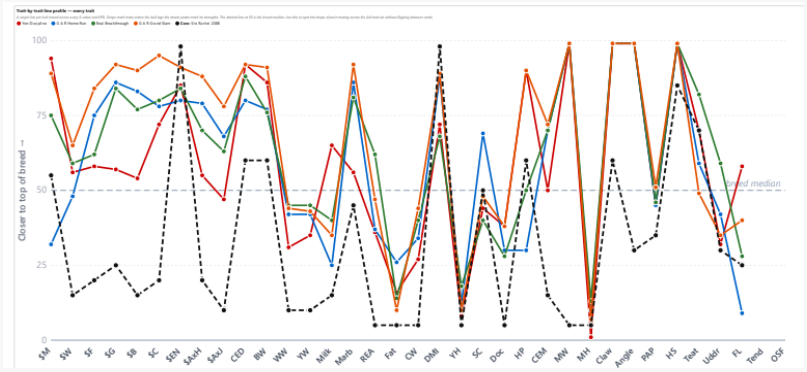
The distinction matters because of how modern beef selection works. Breeders rely on expected progeny differences, or EPDs, and dollar-value indexes to compare animals, and those figures have grown more reliable as DNA testing has been folded in. Genomic information can raise the accuracy of a young sire's EPD on a key trait from roughly 0.15 to 0.45 or higher, effectively giving a bull a track record before he sires a single calf. Generative AI introduces a new wrinkle: language models can produce confident, well-worded numbers that were never calculated at all.

The system at Deluisio Angus is built to prevent that. It follows what its developer describes as a plan-execute-narrate sequence. A reasoning model interprets a breeder's question and selects the appropriate tool. A set of deterministic math engines then performs the actual computation.

The model reports the result but never alters or generates a figure, because it only ever receives numbers the engines have already produced.

Those engines handle mating projections, accuracy-based confidence intervals, and inbreeding analysis based on Wright's path coefficients, a standard method for calculating an animal's coefficient of inbreeding. In one planning run, the inbreeding screen excluded a proposed pairing that reached 13.2 percent and flagged two additional crosses that shared an unusual number of common ancestors before any semen was purchased. Further modules weigh correlated traits against one another and rank matings across multiple competing goals at once.

239L, a calm-tempered Black Angus heifer sired by Dignity, is part of the Deluisio Angus Calm Index breeding program in Avonmore, PA.


Breeding comparison charts of different bulls on a cow. By Cody Deluisio

The operation says the same tools also account for practical constraints most spreadsheets ignore, such as limited or sexed-semen inventory, and for pedigree depth that standard dollar indexes do not capture. Deluisio Angus describes its overall objective as breeding for the next generation and for the plate, meaning maternal longevity and carcass quality pursued together.

"The concern with using AI in breeding is that a model can state a number that was never actually calculated," said Cody Deluisio, an Angus genetic-selection expert who owns Deluisio Angus and developed the system. "Keeping the math in deterministic engines, and using the model only to route and explain it, is how you keep that from happening. The computer does the arithmetic, and the breeder still makes the decision."

Deluisio has published a technical account of the system's architecture and a separate overview of the operation's breeding goals for readers interested in the underlying methods.

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We use artificial intelligence so that our artificial insemination is never a shot in the dark. Every straw has a lot of data that has gone into it.”

Cody Deluisio - Angus Expert

Cody Deluisio
Deluisio Angus
+1 724-204-1674
email us here
Visit us on social media:
LinkedIn
Instagram
Facebook
YouTube
TikTok
X
Other
