



UNDERSTANDING AND USING GENEMAX ADVANTAGE RESULTS

GeneMax® Advantage™ is a genomic test created from a collaboration between Angus Genetics Inc.™ (AGI), a subsidiary of the American Angus Association® and Zoetis to help inform commercial Angus replacement female selection, breeding and marketing. Features of GeneMax Advantage include: three comprehensive economic index scores; genetic predictions for seventeen traits, and Sire Match to HD 50K™ tested Angus GSSM, Angus A.I. and natural service bull batteries.

GETTING STARTED - TESTING STRATEGY AND SAMPLE COLLECTION

The following plan of action is suggested:

- Test the top two-thirds to three-quarters of the heifer crop that were earliest born and meet visual appraisal criteria (i.e. sound feet and legs, acceptable expressed growth and frame size, adequate body capacity, calm docility, etc.).
- Collect tissue, blood card or hair (follicles from switch of tail) DNA samples during pre-weaning, weaning or Bangs vaccination processing. Allflex® Tissue Sampling Units (TSU®s) are the preferred DNA sampling method and are available by contacting your Zoetis or AGI representative.
- Submit samples and completed order forms to AGI at least 30 days in advance of making selection decisions. Information about DNA collection options, instructions and ordering are available at genemaxadvantage.com.
- Watch your email for results and a link to secured AGI customer login.

GENEMAX ADVANTAGE RESULTS

GeneMax Advantage results are delivered by email in a variety of formats, including:

- An attached printable PDF report sorted by Total Advantage Score.
- A link to online login, access, management and

customization of results on the AGI customer website. An example screenshot of results and information about various interactive functions are included below.

- **Exportable PDF and Excel® reports can be generated and downloaded from the AGI login – sorted for desired purposes - which can be used for offline recordkeeping and decision making.**

SELECTION DECISIONS

Depending on the number of replacements needed, the simplest strategy is to select roughly the top one-half of tested heifers based primarily on their Total Advantage Score. For the majority of operations, this will generally propagate Angus-based cow herds (replacements) and feeder/fed cattle with multiple-trait advancement for the highest net returns across the complete CAB supply chain.

For producers with environmental constraints (i.e. regions of lower rainfall) that put a premium on cow adaptability, selection based on Cow Advantage Scores generally limits cow size and milk while emphasizing reproduction and the resulting number of calves produced for sale at weaning. Alternatively, for producers with consistent feed resources and the opportunity to benefit directly from retained ownership or from special feeder cattle marketing programs, added emphasis on Feeder Advantage and associated individual trait predictions can help enhance feeder and fed cattle returns.

GeneMax Advantage results from tested heifers can help customers fine-tune their Angus bull buying. When Advantage indexes or individual trait predictions point to specific opportunities for improvement (i.e. cow cost, marbling, docility), emphasis on associated GE-EPDs and \$Indexes powered by HD 50K helps guide customers to the most complementary Angus bulls.

BREEDING DECISIONS AND FEEDER CATTLE MARKETING

GeneMax Advantage results enable a lifetime of more informed breeding (mating) and marketing decisions for greater net returns, including:

- Use of Sire Match information to avoid inbreeding and associated depression in performance primarily related to reproductive, survival and fitness traits.

- Annually throughout their lifetimes, tested females can be mated more strategically to A.I. sires and/or bull batteries that accentuate genetic strengths and correct weaknesses using Advantage Score, individual trait, and Sire Match information.
- Annually, GeneMax Advantage information from tested heifers can be used to help inform marketing and price discovery of untested steer and unselected heifer mates through feeder cattle marketing programs, such as Angus Link, that integrate genetic and health information.

GENEMAX ADVANTAGE RESULTS

GENEMAX ADVANTAGE DNA TEST RESULT(S) HOME - LOGOUT - DNA - GENEMAX - GENEMAX ADVANTAGE RESULTS

[Disable Zoetis Search Point](#) [Click here for more information about Zoetis Search Point](#)

No items in cart. 1

[Export To Excel](#) [Print GMX Summary PDF format](#)

SIRE IDENTIFICATION
[Sires for File 1893822](#): [Click here to add or edit sires for sire identification with your GMX tests.](#) (Sire Count: 89)

¹CAC = Claw & Angle Composite
²F:G = Feed to Gain

560 record(s) found, (Showing 100 of 560 records, Page: 1)

Tag	Reg Num	Birth Date	Recvd from Lab Date	Notes	Most Likely Sire			Cow Advantage										Feeder Advantage					Total Advantage				
					Sire Tag	Sire Reg Num	Sire Identification Details	CEM	BW	WW	HP	Milk	YH	MW	Cow Cost	Doc	CAC ¹	Cow Advantage	Gain	F:G ²	cW	Marb		RE	Fat	TND	Feeder Advantage
S291					7173	AAA 18812015	Details	65	70	81	90	79	43	67	24	47	41	92	84	81	75	88	55	20	44	87	97
U710					7173	AAA 18812015	Details	64	67	78	87	48	27	67	41	67	25	88	76	70	51	84	44	34	45	81	96
U736							Details	79	18	82	86	32	60	49	58	71	43	95	77	73	81	81	75	50	58	79	95
T605					E143	AAA 18838120	Details	74	57	82	83	86	65	74	13	62	41	91	85	84	82	78	66	39	47	87	95
U602					7173	AAA 18812015	Details	42	51	88	65	48	39	82	35	73	17	68	91	88	67	76	36	34	12	91	94

1 Export to Excel® and Print GMX Summary PDF Format –

Within the secure customer section of the AGI website, select “Export to Excel” to download customized results in spreadsheet format. Click “Print GMX Summary PDF Format” to access a print-friendly PDF version of the results.

2 Tag, Reg/Assn Num, Birth Date, Recvd from Lab Date –

Animal identifiers include the ranch tag number, American Angus Association (Assn) assigned commercial animal registration (Reg) number, birthdate and the date that results were received from the lab (Recvd) for internal monitoring of turnaround times.

3 Notes –

The notes column is used to report Sample Failed and Resubmit information to customers.

4 Individual Trait Scores –

GeneMax Advantage individual trait scores range from 1 to 100 and are based on underlying genomic predictions. Scores of 50 represent average genetic merit as benchmarked against the tested commercial Angus reference population (n > 95,000), and generally higher scores are more desirable. Exceptions include predictions for milk, mature cow weight, and yearling height, where intermediate levels of genetic merit are often more optimal, and predictions for fat thickness where higher scores indicate less fat and more favorable contribution to USDA yield grade.

• **Calving Ease Total Maternal (CEM)** – Higher scores indicate greater likelihood of unassisted calving due to underlying genomic predictions for maternal (i.e. pelvic size) and direct (i.e. birth weight) effects on calving ease.

• **Weaning Weight (WW)** - Higher scores represent genetic merit for more growth - heavier weaning weight (lbs.), transmitted to progeny.

- **Heifer Pregnancy (HP)** – Higher scores correspond to higher probability of pregnancy at the end of the first breeding season due to genomic predictions for inherent fertility.
 - **Milk** – Higher scores represent greater predicted genetic potential for the maternal component of weaning weight – which favorably impacts progeny weaning weights but unfavorably influences feed requirements, associated costs and possibly expressed future reproductive performance (if feed requirements are not met). Intermediate Milk score values are likely optimal for many situations.
 - **Mature Weight (MW)** – Higher scores equate to genomic predictions for heavier mature cow weight, less favorable associated feed requirements and possibly expressed reproductive performance (similar to milk), but higher cow salvage value. As with milk, intermediate MW score values are probably optimal for many production scenarios.
 - **Gain** – Higher scores mean more genetic potential for post-weaning growth – gain in the feedyard - transmitted to progeny. Typically, scores for weaning weight and gain are highly related.
 - **Carcass Weight (CW)** – Higher scores indicate genetic merit for heavier carcass weights transmitted to progeny. While heavier carcass weights are generally more valuable, nonconforming excessively heavy carcasses - currently greater than 1,000 and/or 1,050 lbs. - are discounted.
 - **Marbling (Marb)** – Higher scores are associated with genetic merit for more marbling and more favorable USDA Quality Grades expected to be transmitted to offspring.
 - **Ribeye Area (RE)** – Higher scores communicate genomic predictions for larger ribeye areas (square inches) and more favorable associated USDA Yield Grades passed on to progeny.
 - **Fat** – Higher scores indicate genetics for less fat thickness (in) as measured between the 12th and 13th rib on carcasses, and more favorable associated USDA Yield Grades, transmitted to offspring.
 - **Birth Weight (BW)** – Higher BW scores are generally more desirable and indicate genetics for lower BW
 - **Feed-to-Gain (F:G)** – Higher F:G scores are more desirable and indicate genetics for less DMI per unit of Gain
 - **Yearling Height (YH)** – Higher YH scores indicate genetic merit for taller frame size – intermediate optimums suggested
 - **Claw Set and Foot Angle Composite (CAC)** – Higher CAC scores are more desirable and indicate lower, more favorable combined genetic merit for Claw and Angle foot score soundness
 - **Docility (DOC)¹** – Higher DOC scores indicate genetic merit for calmer temperament
 - **Cow Cost (CC)¹** – Higher Cow Cost scores indicate less feed cost (input) due to combinations of lower MW, MH and Milk - should be evaluated relative to production output
 - **Tenderness (TND)¹** – Higher TND scores indicate genetic merit for lower, more favorable shear force
- ¹Previously reported as Smart Outliers
- 5 GMX Advantage Index Scores** – GeneMax Advantage scores range from 1 to 100 (higher scores are better, average score = 50) and rank females for predicted net profit from combined genetic merit for the following stages of the production:
- **Cow Advantage** – Predicts differences in profitability from heifer pregnancy, calving ease total maternal, milk production, growth, docility, foot soundness and costs due to cow size and milk, assuming progeny are sold at or shortly after weaning.
 - **Feeder Advantage** – Predicts differences in net return of feeder calf progeny due to transmitted genetics for post-weaning growth, feed intake, carcass weight and CAB carcass merit (marbling and traits associated with USDA Quality and Yield Grades).
 - **Total Advantage** – Predicts differences in profitability from genetic merit across all economically relevant traits captured in the Cow and Feeder Advantage scores.
- 6 Most Likely Sire** – The Sire Match feature reports the tag, registration number and name of the most likely Angus sire from the HD50K tested or ANGUS GS registered and transferred Angus bull battery. Angus bulls may be tested and Sire Match may be included either before or after candidate daughters are tested with GeneMax Advantage. Commercial producers are encouraged to buy registered, transferred and genomic tested Angus bulls to enable the Sire Match feature.

LEARN MORE

If you have any questions or need assistance as you get started with GeneMax Advantage, visit genemaxadvantage.com or angus.org/AGI - or contact your Zoetis or AGI representative.

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