Igenity® Beef Profile Results Key

DNA profiles for crossbred and straightbred cattle

How to interpret your Igenity Beef results: Igenity profiles of replacement heifers and non-registered bulls help you evaluate their genetic potential for maternal, performance and carcass traits. This makes it easy to review and focus on those making the biggest impact.

Igenity reports on 16 traits to help you select, manage and market your cattle. Using Igenity profiles can help you know more about the genetic potential of young breeding stock before you have made significant investments in their development.

Maternal traits drive production:

Igenity
Birth Weight, Calving Ease Direct, Calving Ease Maternal, Stayability, Heifer Pregnancy, Docility, Milk

Calving difficulties, cows that don't breed back, heifers with poor conception, cattle with poor dispositions and cows that milk too much, or not enough, all hurt your bottom line. Evaluating maternal traits in your breeding stock helps you develop a cow-herd that will be more productive for years to come.

Performance traits drive efficiency:

Igenity
Residual Feed Intake, Average Daily Gain, Weaning Weight, Yearling Weight

Heifers and cows that don't require extra feed to maintain body condition are more efficient cows. By selecting females with lower RFI and higher ADG, you will improve efficiency of maintainence and gain in your herd. Selection pressure on these traits can help improve feed efficiency in future calf crops, too. For example, pens of feeder calves can be grouped with other animals of similar potential, and be fed or marketed based on that potential. This leads to more uniform and efficient gain in the finishing phase.

Carcass traits drive value:

Igenity
Tenderness, Marbling, Ribeye Area, Fat Thickness, Hot Carcass Weight

Predicting carcass merit is important whether you are raising feeder calves for sale at weaning, retaining calves to finish and/or selling on quality grids. Igenity profiling allows you to select breeding stock that produce higher-quality carcasses among their progeny. Plus, sorting high-quality cattle from lower-potential cattle helps you manage and market each group more appropriately.

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How to Use Your Scores

Igenity Beef Genetic Effects Table																
	Maternal Traits							Performance Traits				Carcass Traits				
Igenity Scores	Birth Weight	Calving Ease Direct	Calving Ease Maternal	Docility	Heifer Pregnancy	Milk	Stayability	Average Daily Gain	Residual Feed Intake	Weaning Weight	Yearling Weight	Hot Carcass Weight	Fat Thickness	Ribeye Area	Tenderness	USDA Marbling Score
	(lbs.)	(%)	(%)	(%)	(%)	(lbs.)	(%)	(lbs.)	(lbs.)	(lbs.)	(lbs.)	(lbs.)	(in.)	(sq. ins.)	(lbs. WBSF)	(marb. units)
10	11.3	23.9	23.9	22.7	13.1	35.1	29.9	0.35	2.1	63.9	108.5	81.5	0.21	1.8	-1.2	142
9	10.0	21.2	21.2	19.8	11.6	31.2	26.8	0.31	1.8	56.8	96.4	72.4	0.18	1.6	-1.0	126
8	8.8	18.6	18.6	17.4	10.2	27.3	23.6	0.27	1.6	49.7	84.4	63.4	0.16	1.4	-1.0	110
7	7.5	15.9	15.9	15.0	8.7	23.4	20.5	0.23	1.4	42.6	72.3	54.3	0.14	1.2	-0.8	95
6	6.3	13.3	13.3	12.7	7.3	19.5	17.3	0.19	1.1	35.5	60.3	45.3	0.12	1.0	-0.6	79
5	5.0	10.6	10.6	10.3	5.8	15.6	14.2	0.15	0.9	28.4	48.2	36.2	0.09	0.8	-0.6	63
4	3.8	8.0	8.0	7.9	4.4	11.7	11.0	0.12	0.7	21.3	36.2	27.2	0.07	0.6	-0.4	47
3	2.5	5.3	5.3	5.4	2.9	7.8	7.9	0.08	0.5	14.2	24.1	18.1	0.05	0.4	-0.2	32
2	1.3	2.7	2.7	2.9	1.5	3.9	4.7	0.04	0.2	7.1	12.1	9.1	0.02	0.2	-0.1	16
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Understanding 1 to 10 Igenity scoring: This chart allows you to cross reference the 1–10 Igenity scores for traits with their corresponding Molecular Breeding Values (MBV) or expected effects. This MBV is the prediction of how future progeny of an animal are expected to perform compared to the progeny of other profiled animals. *Higher scores are not necessarily better* – they just mean the animal has more genetic potential for that trait.

Comparing scores between profiled animals: The examples below show you how to equate Igenity scores to variations in Molecular Breeding Value effects from the genetic table.

Heifer Pregnancy Rate (HPR)	Igenity Score	Genetic Effect	Description
Animal A	8	10.2%	Animal A will produce daughters with a 7.3% higher probability of conceiving during a normal breeding season compared to daughters of Animal B.
Animal B	3	2.9%	
		7.3%	

Stayability (STAY)	Igenity Score	Genetic Effect	Description
Animal A	8	23.6%	Daughters of Animal A have a 15.7% greater probability of staying in the herd until six years of age than daughters of Animal B.
Animal B	3	7.9%	
		15.7%	

Average Daily Gain (ADG)	Igenity Score	Genetic Effect	Description
Animal A	8	0.27 lbs.	Animal A is expected to produce progeny that will gain 0.19 pounds more per day than progeny of Animal B, and therefore weigh 28.50 pounds more after 150 days on feed.
Animal B	3	0.08 lbs.	
		0.19 lbs. per day	

Residual Feed Intake (RFI)	Igenity Score	Genetic Effect	Description
Animal A	8	1.6 lbs.	Progeny of Animal B are predicted to consume 1.1 pounds less feed per day than progeny of Animal A to achieve the same daily gain.
Animal B	3	0.5 lbs.	
		1.1 lbs.	

Definitions of Traits Reported

Maternal Traits

Birth Weight – Variation in birth weight a heifer or bull will pass along to its offspring. A higher score indicates greater genetic potential for heavier birth weight.

Calving Ease Direct – Percentage of unassisted births, indicating greater probability a calf will be born unassisted out of a first-calf heifer. Genetic factors such as birth weight and shape of the calf are included in Calving Ease Direct (CED). A higher value is greater calving ease.

Calving Ease Maternal – The probability a first-calf heifer will calve unassisted. Calving Ease Maternal (CEM) includes all genetic factors that impact a heifer's ability to calve unassisted, such as pelvic area and her genetic contribution to birth weight. A higher value is greater calving ease.

Stayability – The chance a heifer will remain in the herd as a productive cow until at least six years of age. A higher value is desired.

Heifer Pregnancy Rate – A heifer's potential to conceive during breeding season, relative to other heifers. A higher value is desired.

Docility – The animal's genetic potential to be calm or have calm offspring. Higher scores indicate a higher probabiltiy of progeny with acceptable disposition.

Milk – Is expressed as pounds of calf weaning weight affected by the milk production of a calf's dam. This is not a prediction of actual pounds of milk produced.

Performance Traits

Residual Feed Intake – This is an indicator of feed efficiency. It is the difference in animals' daily consumption of feed to achieve the same level of daily gain. Lower RFI indicates greater feed efficiency.

Average Daily Gain – Based on pounds of gain per day. The Igenity score for Average Daily Gain (ADG) identifies an animal's genetic potential for post-weaning growth.

Weaning Weight – Pounds at age of 205 days.

Yearling Weight – Pounds at age of 365 days.

Carcass Traits

Tenderness – Animals' genetic potential for carcass tenderness as measured by the Warner-Bratzler Shear Force test. A higher score indicates greater tenderness.

USDA Marbling – Marbling score indicates the degree of marbling in the rib eye at the 12th rib expressed in USDA marbling units.

Ribeye Area – Ribeye Area estimates muscling in a beef carcass and is measured in square inches of the ribeye muscle at the 12th rib.

Fat Thickness – Fat thickness is scored as depth of fat in inches over the ribeye muscle at the 12th rib. Higher Fat Thickness scores equate to lower lean yield.

Hot Carcass Weight - Hot carcass weight is the hot or un-chilled weight of the carcass after slaughter and the removal of the head, hide, intestinal tract and internal organs

Diagnostic Reports

Bovine Viral Diarrhea – Persistently Infected (BVD PI) – Many producers test their herds for BVD PI as routine bio-surveillance. Negative animals are free of the BVD virus. Positive animals have the virus present in their cells, are likely persistently infected and infect others in the herd. If there is a positive test result, first contact your veterinarian. A positive result in a blood test must be confirmed. Neogen veterinary diagnostic team will contact you.

Other Reports

Sample Rejected (SR) – The quality of DNA testing starts with the quality of the sample. Common reasons for sample rejection are: lack of animal ID on the sample, improper or blank information on an order form, insufficient hair follicle samples, mold, dirt, foreign or fecal matter, evidence of tampering or sending in decomposing animal tissue.

No Result (NR) – Some samples appear normal but don't produce acceptable results due to contaminants that are undetectable to the eye. To test the animal, a new sample will need to be submitted.

Results are not complete (X) – At times Neogen will send out partial results, such as providing BVD PI results before Igenity profiling is completed. The traits scored as an X indicate the analysis for that test has not yet been completed.

Validation: Development of Igenity profiles begins with the assembly of large populations of animals with phenotypic data and/or expected progeny differences (EPDs). We use multiple resource populations, involving thousands of animals that represent various production environments and biological types, often working with partners from the seedstock, cow/calf, feedlot and/or packing segments of the beef industry. Once the phenotypic data and EPDs are captured, our geneticists and research partners carefully analyze marker associations, using appropriate analytical methods, to ensure validity. Markers are analyzed to determine the most powerful combination for any given trait. Final validation takes place in independent populations that include thousands of animals, resulting in confidence any significant associations discovered will have a high probability of truly occurring in various biological types and environments.

Putting Your Results to Work

How to use the results: Using the reports can help in many ways. For example, you can use the scores to sort cattle and manage them for breeding or production. Or, the data can help you pinpoint strengths and weaknesses in your cow herd and identify traits you want to improve. A common way to make improvement is to buy bulls that excel in specific traits. For example, if your cows on average score low for marbling, you can improve your herd by buying bulls that are in the top 30% of their breed for marbling. You can also select your best females for marbling traits. This would move you faster towards your goals. Long term, you can use your Igenity reports to track improvements across multiple traits, increase uniformity in your cattle and measure your progress. To learn more about how to apply your results, visit **igenitybeefdashboard.com** or talk to your Neogen representative.

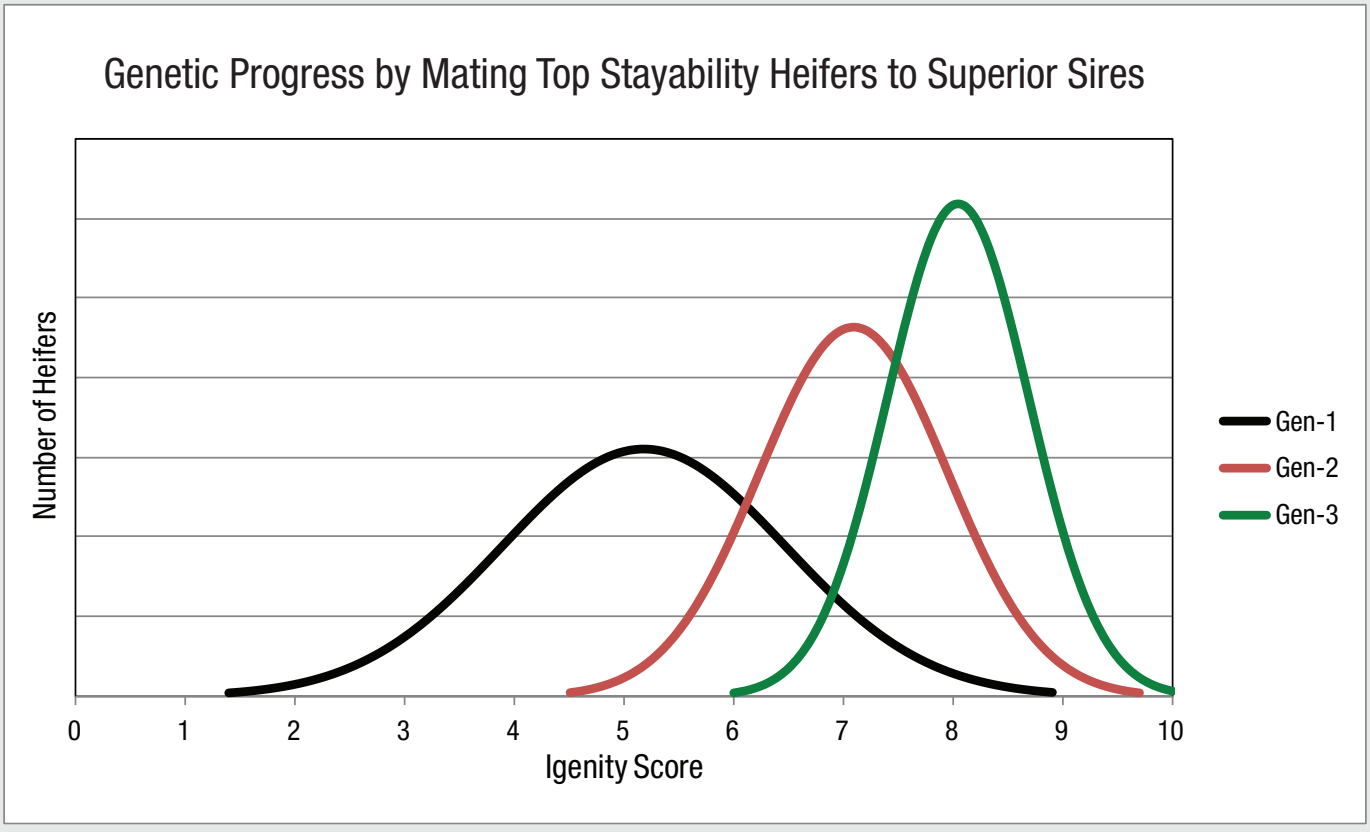
Igenity Production Index: An index helps you put selection pressure on several traits simultaneously without having to review each individual trait score. The Igenity Production Index is a combination of maternal, production and carcass traits. Profiled animals are ranked from top to bottom based on their index scores. This index score makes it easier to determine which heifers to retain as replacements and which to sell. The Igenity Production Index is weighted as follows:

Maternal: Stayability, 30%; Calving Ease Maternal, 10%

Performance: Average Daily Gain, 15%; Residual Feed Intake, 15%

Carcass: Marbling, 20%; Tenderness, 10%

Custom index options: If the Igenity Production Index does not reflect your goals, you can create your own index at **igenitybeefdashboard.com**.



This chart shows how using Igenity profiling to identify the top heifers for stayability and mating them to bulls in the top 5% of their respective breed can improve cow longevity in just two generations. The black line indicates the initial distribution of Igenity stayability scores in the starting generation of cows in the herd. The red and green lines show the Igenity stabability scores for the second and third generations of females that result from mating bulls in the top 5% of their respective breed to heifers in the top third for stayability. Shifting the scores to the right indicates more cows will stay productive in the herd for a longer period of time. You can make similar advancement in other traits you wish to improve in your herd by profiling young heifers and using the information to make more informed selection and breeding decisions.

Igenity Beef Report Options

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Date: 06-15-2018
Genomics Order: 101719
Click here to go to dashboard.

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Detailed Report

Animal Information				Decision Indexes		Maternal							Growth				Carcass					Screening		
Animal ID Number	Sample Barcode Number	Gender (M/F)	Breed	Igenity Production Index	Igenity Maternal Index	BW	CED	CEM	HPR	Milk	STAY	Doc	WW	ADG	YW	RFI	Marb	REA	Fat	Tend	HCW	HP	CC	BVD PI
535 Marcee	NE007794921	M	GV	7.20	6.15	4	7	4	8	6	8	4	7	9	8	6	8	6	9	7	7	PcPc	Yes	Negative
208 Varilek	NE007781741	M	GV	6.95	6.00	4	7	7	8	8	8	8	7	9	8	9	8	5	9	6	6	PcPc	Yes	Negative
7171 Marcee	NE007781751	M	GV	6.85	6.25	5	5	6	8	7	8	8	7	7	7	7	6	6	6	10	7	PcPc	Yes	Negative
796 Marcee	NE007781761	M	GV	6.85	5.85	5	7	5	8	6	7	7	8	10	9	8	7	4	6	9	7	PcPc	Yes	Negative
85 Nick R	NE007794941	M	GV	6.75	6.25	2	10	7	7	6	7	7	7	7	7	7	9	5	6	5	5	PcPc	Yes	Negative
K205 Van Beek	NE007795001	M	GV	6.75	6.05	4	8	7	7	7	5	7	9	9	9	5	9	8	9	5	9	PcPc	Yes	Negative
V59	NE007794911	M	GV	6.70	6.15	2	8	5	8	6	8	8	6	7	6	8	8	5	5	7	6	PcPc	Yes	Negative
V04	NE007794981	M	GV	6.65	5.95	6	5	5	8	7	7	7	8	8	8	8	9	6	7	6	8	PcPc	Yes	Negative
93 Nick R	NE007781721	M	GV	6.60	5.75	6	5	4	8	6	6	6	8	10	9	5	8	5	8	4	8	PcPc	Yes	Negative
10 Nick R	NE007781731	M	GV	6.50	5.95	4	6	6	8	7	7	6	7	7	7	8	8	5	8	7	6	PcPc	Yes	Negative
66 Jerald R	NE007794961	M	GV	6.40	5.35	6	4	4	7	5	6	7	7	8	8	7	7	3	8	10	8	PcPc	Yes	Negative
600 Marcee	NE007794991	M	GV	6.25	5.85	5	5	6	8	6	6	6	6	7	6	5	5	4	6	9	6	PcPc	Yes	Negative
V27	NE007781711	M	GV	6.20	6.15	3	8	6	6	7	7	7	7	7	7	6	6	6	5	5	6	PcPc	Yes	Negative
V9	NE007794951	M	GV	5.95	5.90	3	8	5	8	9	7	5	7	7	7	9	7	6	8	6	6	PcPc	Yes	Negative
94 Jindra	NE007781771	M	GV	5.90	5.50	6	4	6	7	5	5	8	8	8	8	7	7	6	5	6	7	PcPc	Yes	Negative

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Fast Report

Animal Information			Decision Indexes			
Gender (M/F)	Breed	Animal ID Number	Igenity Production Index Star Quartile Ranking	Igenity Production Index	Igenity Maternal Index	Selection
M	GV	535 Marcee	****	7.20	6.15	
M	GV	208 Varilek	****	6.95	6.00	
M	GV	7171 Marcee	****	6.85	6.25	
M	GV	796 Marcee	****	6.85	5.85	
M	GV	85 Nick R	***	6.75	6.25	
M	GV	K205 Van Beek	***	6.75	6.05	
M	GV	V59	***	6.70	6.15	
M	GV	V04	***	6.65	5.95	
M	GV	93 Nick R	**	6.60	5.75	
M	GV	10 Nick R	**	6.50	5.95	
M	GV	66 Jerald R	**	6.40	5.35	
M	GV	600 Marcee	**	6.25	5.85	
M	GV	V27	*	6.20	6.15	
M	GV	V9	*	5.95	5.90	
M	GV	94 Jindra	*	5.90	5.50	

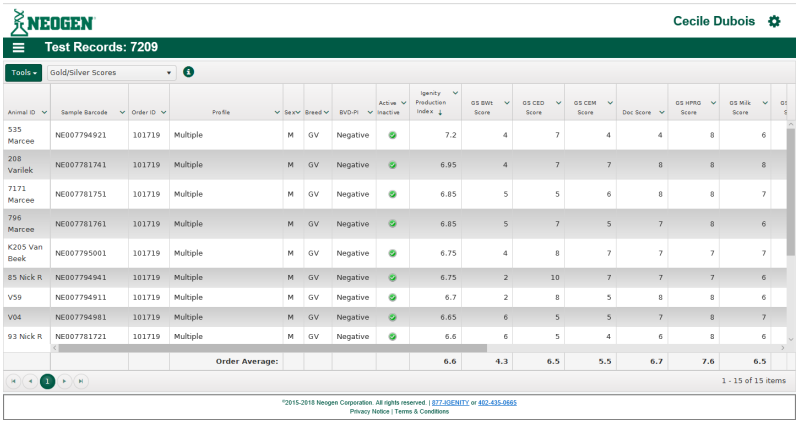
Fast Report
• Use this report for quick, simple sorting of top-performing and bottom-performing replacement heifers

Star Quartiles
•This is a ranking of animals within the order into four groups, based on their Igenity Production Index scores
•The system is designed for producers who need a fast, simple sorting method

Indexes For Selection Decisions
• Use multi-trait selection pressure
• For selection, management, marketing

Online Tools To Custom Sort
• Visit Igenitydashboard.com
• You can build your own indexes
• Sort and compare cattle

Need To Reorder Test Kits?
• Visit order.Igenity.com

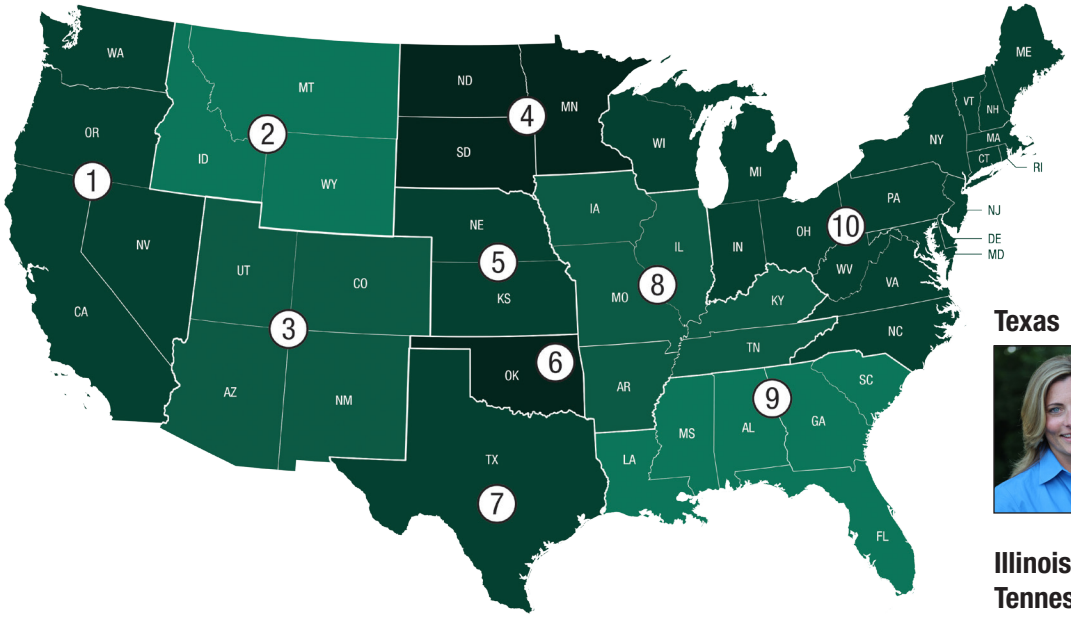


Detailed report: All traits in the test order are scored from 1 to 10, including the selection indexes — 10 is more of the trait and 1 is less of the trait. Traits are grouped by Maternal, Performance and Carcass categories. The report ranks cattle in the test order based on the Igenity Production Index (IPI).

Fast report: The fast report is designed for producers who want to use a fast, simple DNA score when retaining heifers during a gate-cut visual inspection. It is based on IPI scores. Cattle are sorted into four-star, three-star, two-star and single-star groupings. The cattle could be sorted into replacement or feeder groups using the star system.

Igenity Beef Dashboard: The beef dashboard is an online resource for benchmarking, custom sorting and analysis. See Igenitybeefdashboard.com or contact your territory manager.

Contact Your Territory Manager for Field Support



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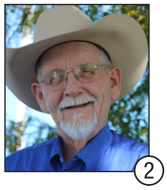

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