

FERTILITY. GROWTH. PROFIT.

Genetic tools to improve your bottom line.



IGENITY BEEF. HANDBOOK



Revolutionising Beef Production & Empowering Your Marketing Strategy with Confidence

The Igenity DNA testing portfolio has been a game-changer for commercial beef producers since its introduction in 2003. It allows for the ranking of cattle based on traits that impact productivity, helping producers select the animals more accurately based on their genetic merit. This improves the overall profitability, production and sustainability of their beef operation.

Additionally, Igenity provides beef producers an efficient solution for managing and marketing cattle with more confidence. Producers can evaluate fertility, performance and carcass traits in one step, and focus resources on young stock of verified merit. This allows you to breed cattle tailored to their specific production and business goals, leading to a stronger herd overall.

Igenity[®]

Select with Confidence

The logo for IGS Multi-breed Genetic Evaluation, featuring a stylized diamond pattern of grey and orange squares to the left of the text "IGS Multi-breed Genetic Evaluation" in orange and grey, with "powered by BOLT" in smaller text below.

Now powered by the largest multi-breed
genetic evaluation anywhere



WHAT IS IGENITY BEEF

Igenity Beef utilises DNA to predict genetic variation in cattle, providing an additional selection method to commercial producers to use when culling, joining or supplementary feeding. Igenity Beef can be used to determine which heifers to retain for your breeding herd, identify your highest value calves, or select your commercial sires.

The Maternal, Production and Terminal indexes place emphasis for the traits most important for animal performance, without compromising production from other correlated traits.

Who can use Igenity Beef?

The test is designed for commercial breeders of crossbred or unregistered purebred Bos Taurus cattle.

Breeds suitable and supported by Igenity Beef: Angus, Red Angus, Simmental, Limousin, Gelbvieh and Hereford. Crossbred animals that include these breeds are also suitable to utilise and obtain Igenity results. Igenity Beef allows animals with up to 50% indicus content to be tested* (*talk to your Territory Manager before proceeding).

How can I utilise Igenity Beef within my herd?

With Igenity you can put targeted selection pressure on traits your animals will pass on to their offspring. Using Igenity results can help in many ways. For example, you can use the scores to sort cattle and manage them for breeding or production, or pinpoint and identify strengths and weaknesses in your herd and identify areas of improvement. Long term, you can use Igenity to track improvements across multiple traits, increase uniformity in your cattle, and measure your progress.

IGENITY BEEF SAMPLE LIFE CYCLE From Operation to Delivery



STEP ONE

Contact NEOGEN Territory Manager



STEP TWO

Tissue Sampling Unit (TSU) collection from animals



STEP THREE

Fill out Igenity Beef submission form



STEP FOUR

Email electronic form to naa-lab@neogen.com & print hard copy to be sent with samples



STEP FIVE

Post samples to 14 Hume Drive, Bundamba QLD 4304



STEP SIX

Samples arrive to our Lab for testing



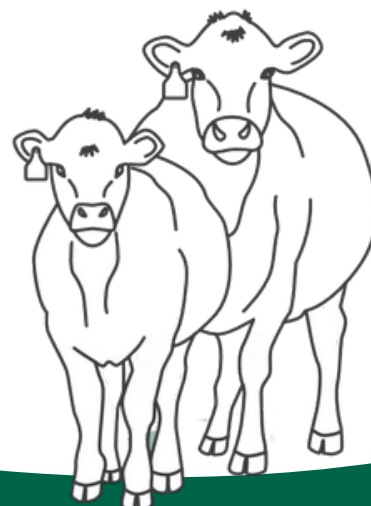
STEP SEVEN

Results delivered in 4-6 weeks



STEP EIGHT

Igenity Beef results reported - Individually sort and manage cattle accordingly



UNDERSTANDING IGENITY BEEF TRAITS & SELECTION



HOW TO INTERPRET YOUR IGENITY BEEF RESULTS

Igenity profiles of replacement heifers and non-registered bulls help you evaluate their genetic potential for fertility, performance, and carcass traits. This makes it easy to review and focus on those making the biggest impact. Igenity reports on 17 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.

IGENITY'S 17 TRAITS FOR BETTER SELECTION

Fertility	Production	Carcass
<ul style="list-style-type: none">• Birth Weight• Calving Ease Direct• Calving Ease Maternal• Stayability• Heifer Pregnancy• Docility• Milk• Scrotal Circumference	<ul style="list-style-type: none">• Residual Feed Intake• Average Daily Gain• Weaning Weight• Yearling Weight	<ul style="list-style-type: none">• Tenderness• Marbling• Ribeye Area Fat• Fat Thickness• Hot Carcass Weight

FERTILITY TRAITS DRIVE PRODUCTION

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 impact your bottom line. Evaluating fertility traits in your breeding herd helps you develop a more productive herd for years to come.

PRODUCTION TRAITS DRIVE EFFICIENCY

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 maintenance and gain in your herd. Selection pressure on these traits can help improve feed efficiency in future generations, too. For example, 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

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 allows you to select breeding stock that will produce higher quality carcass traits among their progeny. Plus, sorting high-quality cattle from lower-potential cattle helps you manage and market each group more appropriately.

INDEXES FOR SELECTION DECISIONS

Igenity indexes are designed for multi-selection based on key traits of question. Maternal Production Index (MPI) for emphasize and balance on selecting animals that have high potential for fertility, longevity and higher weaned calf weight. Igenity Production Index (IPI) for balanced traits important for maternal, production and carcass qualities, with significant increases in MARB and ADG. Igenity Terminal Index (ITI) primary emphasis on carcass traits with favourable increases Hot Carcass Weight (HCW), Rib Eye Area (REA) and Marbling (MARB)

UNDERSTANDING 1-10 IGENITY SCORING

This chart allows you to cross reference the 1-10 Igenity scores for traits or expected effects. This score 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.

IGENITY BEEF GENETIC EFFECTS TABLE																	
Igenity Scores	Fertility Traits								Production Traits				Carcass Traits				
	BW	CED	CEM	DOC	HPR	MILK	STAY	SC	ADG	RFI	WW	YW	HCW	FAT	REA	TEND	MARB
	(kg)	(%)	(%)	(%)	(%)	(kg)	(%)	(cm)	(kg)	(kg)	(kg)	(kg)	(kg)	(mm)	(sq cm)	(kg WBSF)	(marb. Units)
10	4.1	17.8	16.1	16.8	12.3	19.4	53.6	1.59	0.12	0.31	23	39.5	46.5	6.45	10.9	-0.54	150
9	3.6	15.8	14.3	15	10.9	17.3	47.6	1.41	0.11	0.28	20.4	35.1	41.3	5.73	9.7	-0.45	133
8	3.2	13.9	12.5	13.1	9.5	15.1	41.7	1.23	0.09	0.24	17.9	30.7	36.2	5.01	8.5	-0.45	116
7	2.7	11.9	10.7	11.2	8.2	12.9	35.7	1.06	0.08	0.21	15.3	26.3	31	4.3	7.3	-0.36	100
6	2.3	9.9	9	9.4	6.8	10.8	29.8	0.88	0.07	0.17	12.8	21.9	25.8	3.58	6.1	-0.27	83
5	1.8	7.9	7.2	7.5	5.4	8.6	23.8	0.71	0.05	0.14	10.2	17.5	20.7	2.87	4.8	-0.27	67
4	1.4	5.9	5.4	5.6	4.1	6.5	17.9	0.53	0.04	0.1	7.7	13.2	15.5	2.15	3.6	-0.18	50
3	0.9	4	3.6	3.7	2.7	4.3	11.9	0.35	0.03	0.07	5.1	8.8	10.3	1.43	2.4	-0.09	33
2	0.5	2	1.8	1.9	1.4	2.2	6	0.18	0.01	0.03	2.6	4.4	5.2	0.72	1.2	-0.05	17
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

COMPARING SCORES BETWEEN PROFILED ANIMALS

Heifer Pregnancy Rate (HPR)	Igenity Score	Genetic Effect	Description
Animal A	8	9.5%	Animal A will produce daughters with a 6.8% higher probability of conceiving during a normal breeding season compared to daughters of Animal B.
Animal B	3	2.7%	
		6.8%	

Average Daily Gain (ADG)	Igenity Score	Genetic Effect	Description
Animal A	8	0.09 kg	Animal A is expected to produce progeny that will gain 0.06 kilograms more per day than progeny of Animal B, and therefore weigh 9 kilograms more after 150 days on feed.
Animal B	3	0.03 kg	
		0.06 kg	

Stayability (STAY)	Igenity Score	Genetic Effect	Description
Animal A	8	41.7%	Daughters of Animal A have a 29.8% greater probability of staying in the herd until six years of age than daughters of Animal B.
Animal B	3	11.9%	
		29.8%	

Residual Feed Intake (RFI)	Igenity Score	Genetic Effect	Description
Animal A	8	0.24 kg	Progeny of Animal B are predicted to consume 0.17 kilograms less feed per day than progeny of Animal A to achieve the same daily gain.
Animal B	3	0.07 kg	
		0.17 kg	



ENCOMPASS DASHBOARD

The Data Management Tool to Navigate Your Operations Genetic Success

What is the Encompass Platform?

The Encompass platform is a revolutionary genomic data management platform that allows you to sort and utilise your herds data. Encompass allows you to customise your genomic information in an accessibly format to assist in your businesses success, generation after generation. Neogen's Encompass is powered by the software of nTell, creating opportunity to focus on what really matters.

Analyse results with ease on the Encompass Dashboard

Producers who use the Igenity Beef test can access test results online through Neogen's Encompass dashboard. Encompass is designed to visually evaluate and analysis DNA results of commercial stock. By utilising the dashboard tools, producers have more power to manage their data more closely and make more informed selection. Create herd reports and assess their maternal, production, and carcass traits. Use the site to sort cattle, compare them to herd mates.

The Encompass Dashboard filters animal's data using multiple traits in a simultaneous fashion. In a few moments, you have a prioritized ranking of animals for selection and management decisions.

Encompass Sorting

Easily categorize your animals by their true potential. Decide which heifers to keep, cull, or strategically breed to maximize genetic gain.

Row #	Tag ID	Sample Barcode	IgMI	IgPI	IgTI	BW	CED	CEM	DOC
6	3023	NE01038092	6.35	6.1	5.45	7	5	6	7
7	3024	NE01038091	6.3	5.9	4.35	5	7	8	7
8	3027	NE01038095	6.3	5.9	5.7	4	7	9	6
9	4000	NE01038105	6.1	5.65	5.35	5	6	5	7
10	4007	NE01038099	6.5	5.6	5.35	3	9	9	5
11	6008	NE01038114	5.85	5.3	5.1	6	6	7	8
12	6023	NE01038112	6.5	6.05	4.75	2	10	8	6

Total Rows: 36

Custom Index Creation:

Create a customisable index on traits important to your breeding and production objectives.

Name: Custom index

⊖ Trait: CED	Negative Weight: <input type="checkbox"/>	Percentage: 20 %
⊖ Trait: CEM	Negative Weight: <input type="checkbox"/>	Percentage: 20 %
⊖ Trait: BW	Negative Weight: <input checked="" type="checkbox"/>	Percentage: 15 %
⊖ Trait: STAY	Negative Weight: <input type="checkbox"/>	Percentage: 25 %
⊖ Trait: WW	Negative Weight: <input type="checkbox"/>	Percentage: 20 %

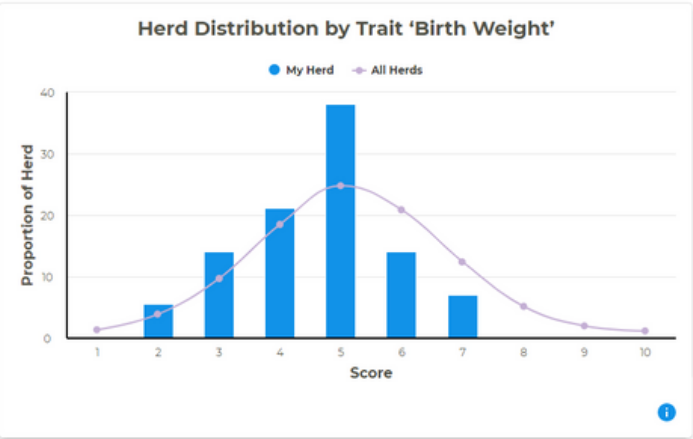
+ Add Trait Total: 100/100%

CANCEL SAVE INDEX

Benchmarking:

Benchmark your herd on particular traits by using the site tools, you can easily see patterns, strengths, and areas needing improvement.

Select Trait: Birth Weight



Start Managing Your Future!
 Managing your operations genomic success starts with Neogen's Encompass platform.

Watch your inbox
 Once your sample has been received and processed, you will be sent an invitation via email from iYotah for the Encompass platform to create your account.

ADDITIONAL TESTS



Get more with your Igenity scores by selecting additional testing for defects that may be a priority to your breeding & cull decisions:

HornPoll	Selecting animals based on their poll status has become a priority to many producers to improve animal welfare and decrease the economic cost that dehorning causes to the production of the animal.
COAT	Coat colour is an easily recognisable trait and for many breeds a defining characteristic, so much so that many breeders include coat colour as an important part of their animal selection criteria. Select animals based on their potential to express coat colour that is best suited for your environment, production or market.
BVDV (PI)	Bovine viral diarrhoea virus (BVDV) or “pestivirus” can have significant impact to your production and health of the herd. Persistently infected (PI) animals are at risk of abortions, infertility, and/or embryonic deaths. Animals positive for the virus are able to transmit the virus across the herd.

PARENTAGE

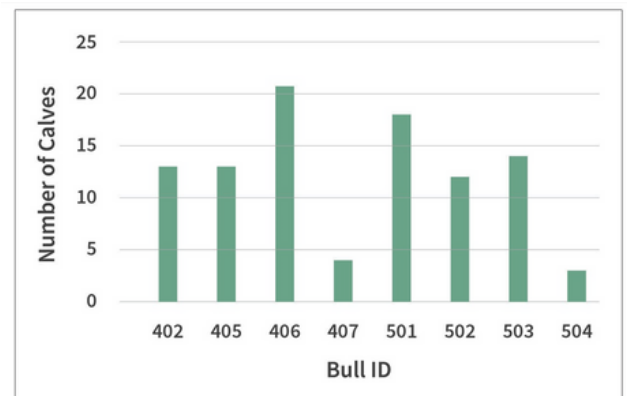
HOW PARENTAGE INFORMATION COMPLEMENTS IGENITY PROFILING

You can use DNA testing to determine parentage. In conjunction with Igenity Beef testing, parentage verification helps you discover the parents of your most productive and high performing sires and/or dams. Parent verification can help make faster progress on genetic improvement in your herd.

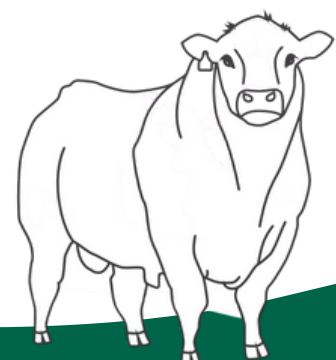
Advantages of Parentage Verification

- Find the top and bottom bulls.
- Identify bulls with most influence in your calf crop.
- Confirm sires that caused calving problems.
- Discover the sires of early born calves.
- Identify the sires of any abnormal calves.
- Find the bulls siring the top and bottom carcasses.
- Know earlier which traits to emphasis when purchasing your next bulls.
- Match calves to their dams to track cow productivity.

Each of these advantages can have a major impact on the bottom line. If you do have a problem bull, it may take an extra year to identify him without verifying the parentage of the current year’s calf crop.



Getting value: In this real example of yearling bulls, No. 407 and No. 504 are under-performing compared to the group.



MATERNAL TRAITS

Birth Weight (BW) — 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 (CED) — 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 CED. A higher value is greater calving ease.

Calving Ease Maternal (CEM) — The probability a first-calf heifer will calve unassisted. 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 (STAY) — 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 (HPR) — A heifer's potential to conceive during breeding season, relative to other heifers. A higher value is desired.

Docility (DOC) — The animal's genetic potential to be calm or have calm offspring. Higher scores indicate a higher probability of progeny with acceptable disposition.

Milk (M) — Expressed as kilograms of calf weaning weight affected by the milk production of a calf's dam. This is not a prediction of actual kilograms of milk produced.

Scrotal Circumference (SC) — Difference in scrotal size as an indication of fertility in replacement females. A higher score equates to higher scrotal size.

PERFORMANCE TRAITS

Residual Feed Intake (RFI) — 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 (ADG) — Based on kilograms of gain per day. The Igenity score for ADG identifies an animal's genetic potential for post-weaning growth.

Weaning Weight (WW) — Kilograms at age of 205 days.

Yearling Weight (YW) — Kilograms at age of 365 days.



CARCASS TRAITS

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

USDA Marbling (MARB) — Marbling score indicates the degree of marbling in the rib eye at the twelfth rib expressed in USDA marbling units.

Ribeye Area (REA) — Estimates muscling in a beef carcass and is measured in square centimeters of the ribeye muscle at the twelfth rib.

Fat Thickness (FAT) — Scored as depth of fat in mm over the ribeye muscle at the twelfth rib. Higher fat thickness scores equate to lower lean yield.

Hot Carcass Weight (HCW) — Hot carcass weight is the hot or unchilled weight of the carcass after slaughter and the removal of the head, hide, intestinal tract, and internal organs.

INDEXES

Igenity Maternal Index (IMI) - This index is highly maternal and designed to select replacement heifers for fertility, longevity and higher weaned calf weight. It is a tool developed for producers who sell calves at weaning or after a short backgrounding period.

Igenity Production Index (IPI) - The Igenity Production Index is well balanced for maternal, production and carcass progeny traits. It is designed for producers who raise their own heifers and want broad improvement across multiple traits.

Igenity Terminal Index (ITI) - select animals that have genetic potential have carcass traits and quality, but also pass that same genetic potential on to their progeny.

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.

MAXIMIZE POTENTIAL, GENERATION AFTER GENERATION



MAKE FERTILITY GAINS PAY DIVIDENDS

A one-point increase in Igenity stayability scores on 250 cows reduces cow replacement rate by 48 heifers –over six years, that’s \$138, 465.



INCREASE GENETIC MERIT FOR WEANING WEIGHT

Raising weaning weight average score by one Igenity point on 250 cows boosts calf production by 794 kilograms per year



IMPROVE CARCASS VALUE

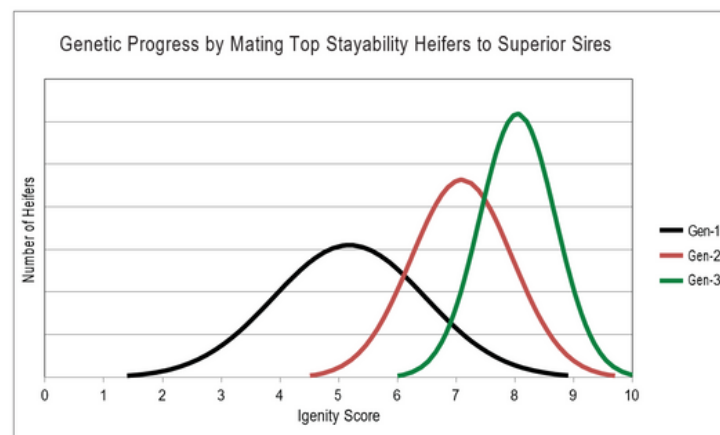
An increase in average marbling and average daily gain scores by 2.4 Igenity points results in \$72 more profit, per head.

DNA powered selection

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 stayability 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 advancements 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.





Contact us for further inquiries

Hannah Bourke

Genomics Sales Manager
0447 299 096
hbourke@neogen.com

Harry Stewart

Technical Sales Rep
0447 373 084
hstewart@neogen.com

Chris Hoffmann

Territory Manager - VIC & TAS
0427 167 148
choffmann@neogen.com

Mel Strasburg

Territory Manager - QLD & NT
0447 014 133
mstrasburg@neogen.com

Dan Roe

Territory Manager - SA & WA
0447 639 552
droe@neogen.com

Hannah Powe

Territory Manager - NSW
0477 771 404
hpowe@neogen.com



07 3736 2134 | naa@Neogen.com | 14 Hume Drive, Bundamba QLD 4304