



Creating a More Sustainable Food Supply Through Genetic Improvement

Presenter Name
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Growing Global Population Leads to Increasing Animal Protein Consumption

By **2050**, the global population will **exceed 9 billion**.



Rapid population growth in developing countries causes protein deficiencies, stunting child development.



Aging population in developed countries increases protein needs.



Protein is a critical nutrient that supports growth, development, and musculoskeletal health.



Urbanization and economic growth boost protein consumption.

Producing More with Less

Because of the ever-growing need for animal protein, increasing sustainability demands from retailers, rising input costs, and tighter margins, farmers must consider how they produce more with less.

LESS

FEED

WASTE

ENVIROMENTAL
IMPACT



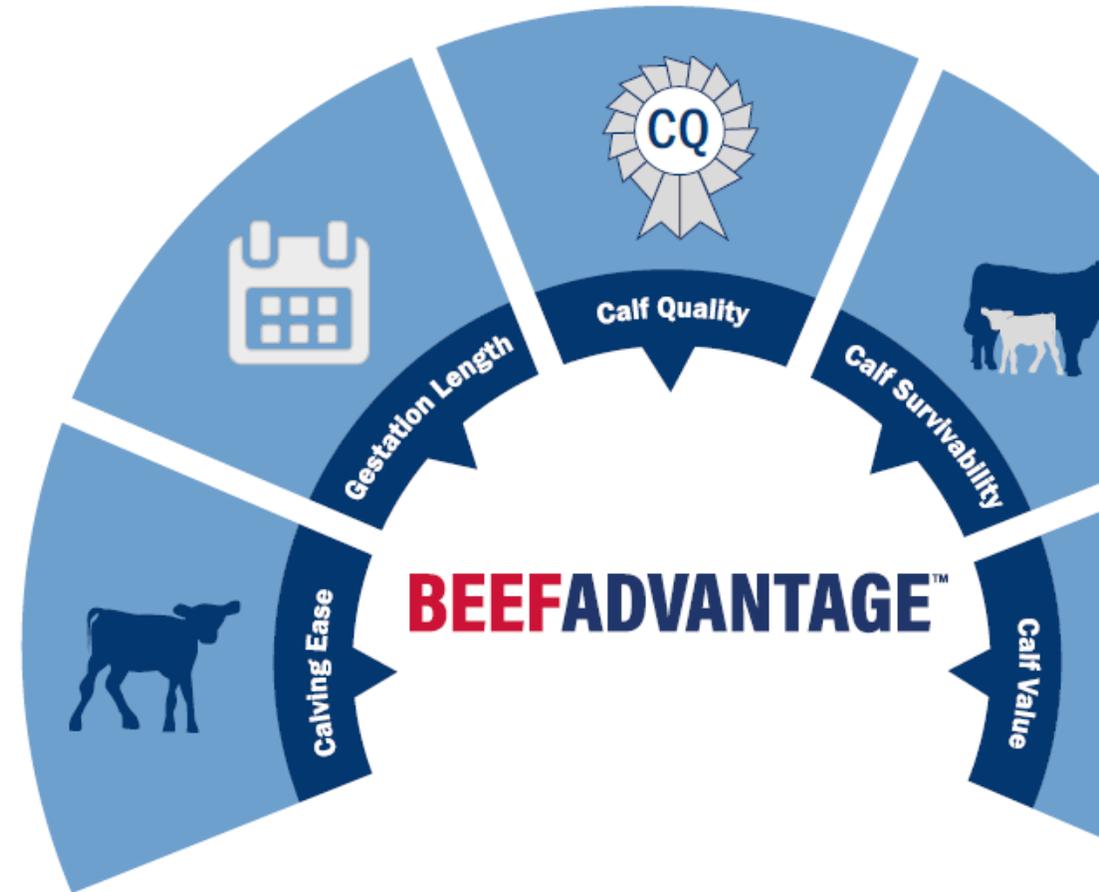
A sustainable food system starts with better genetics



"Pioneering animal genetic improvement to help nourish the world, more sustainably".

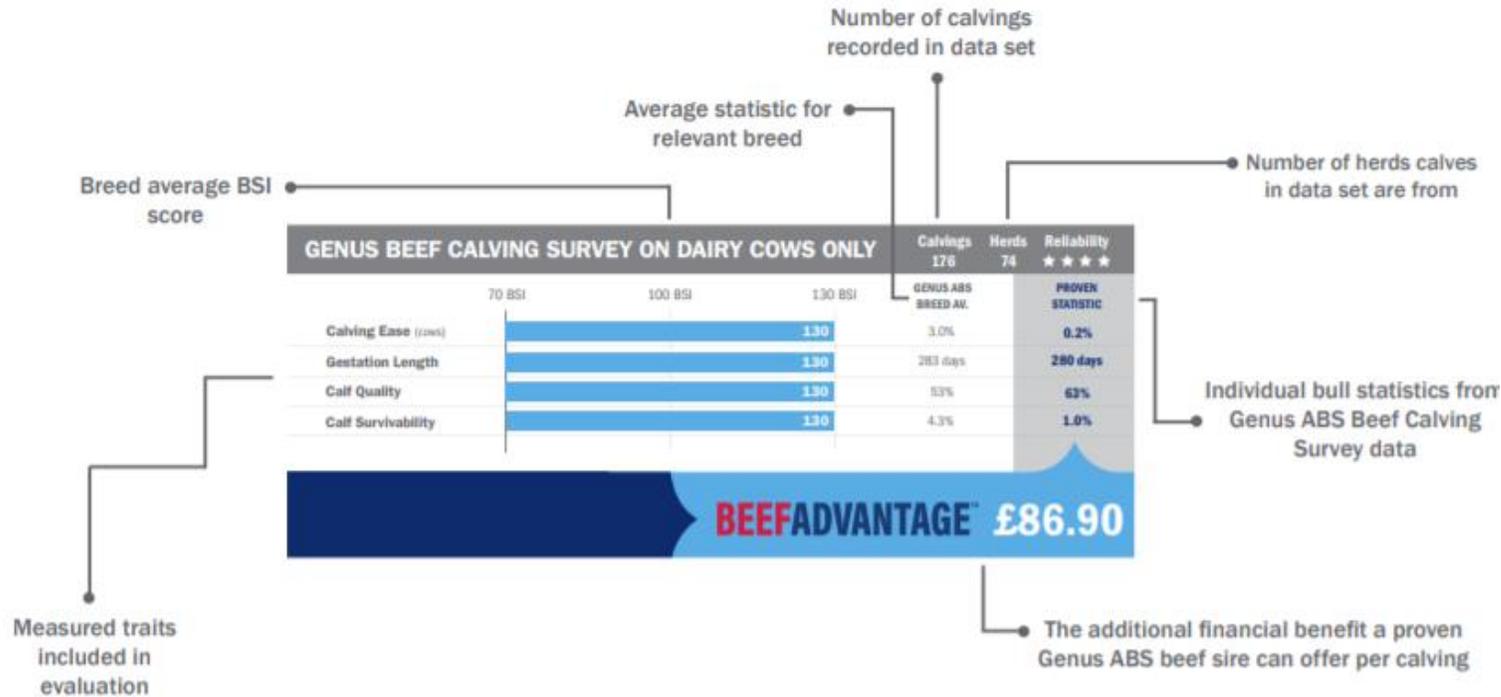


BEEF ADVANTAGE INDEX



The Beef Advantage index is the additional profit an individual Genus ABS proven beef sire can deliver, compared to the average bull of that breed when crossed on to dairy cows.

BeefAdvantage: data provided?



- We display data for beef sires on a scale of 70-130 Beef Sire Index Points (BSI) and all results collected from the Beef Calving Survey are compared to our own breed averages

- The table shows how we present proven sires calving survey results on dairy cows

Sire reliability is of upmost importance when choosing a beef sire suitable for use on your herd. Our star rating system:



- Proven Bull = 120 calvings over 60 herds

Beef Cornerstone



Bulls released onto Cornerstone. 1000 units of each sire sold to our Beef Cornerstone members

Bulls signed off based on Genetics, semen quality and health and conformation

Insemination and Pregnancy data collected

Calving surveys completed by customers

Beef Advantage index generated- only the best graduate!



We also test bulls in Italy and the Czech Republic



Beef Cornerstone Breeding Club

Beef Cornerstone facilitates the testing of Genus ABS Beef sires through our Beef Calving Survey Programme in the UK. This programme enables us to provide reliably proven sires that deliver and meet our customers' needs.

Each year we test in the region of 20 young beef sires, and this number continues to grow annually. In the UK, we currently have over 800 customers actively testing our young beef sires, keen to be first to access the genetics of the future.

The majority of beef sires tested through the Beef Calving Survey programme have been sourced from herds that we have developed relationships with over many years. More recently, we have started to breed sons from our very best proven beef sires in the Genus ABS stud.



The benefits of membership to you:

We are continuously recruiting customers to participate in the Beef Cornerstone Breeding Programme. If you would like to join the testing programme you could benefit from:

- Access to the latest beef sires, including sons of leading Genus ABS proven sires.
- Credit on your Genus ABS account for every completed Beef Calving Survey returned (£10 credit for Aberdeen Angus and British Blue young sires and £7.50 credit for any other beef breed young sires).
- Access to exclusive offers and events!
- A free Beef Cornerstone™ jacket on sign-up.

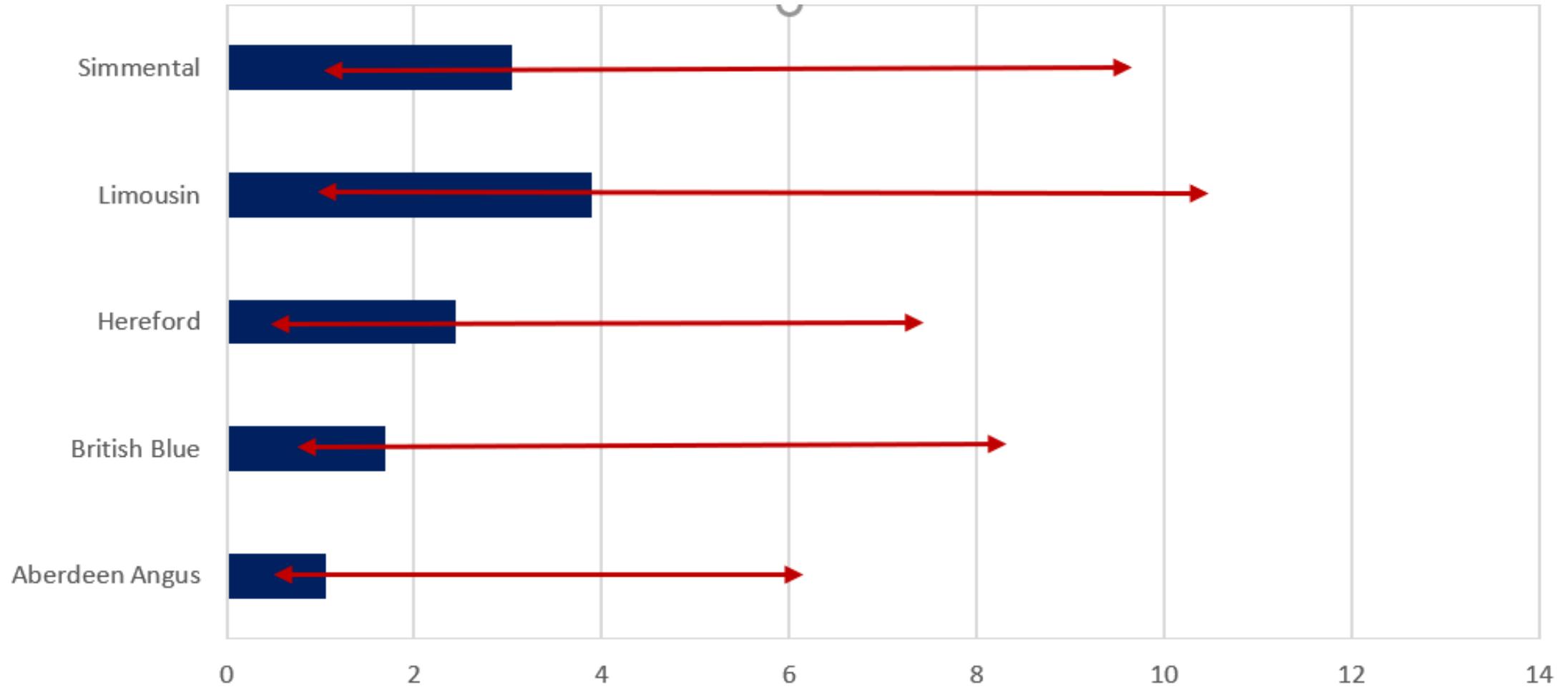
Becoming a member is simple...

If you would like sign up as a new member, or are already a Dairy Cornerstone member and would like to modify your Dairy Cornerstone account to include Beef then simply do so by:

1. Downloading a membership form from the Genus ABS website
2. Contacting our Cornerstone team on: 0870 162 2000 or emailing: GB-Bovine-Cornerstone@genusplc.com
3. Speaking to your local Genus ABS representative



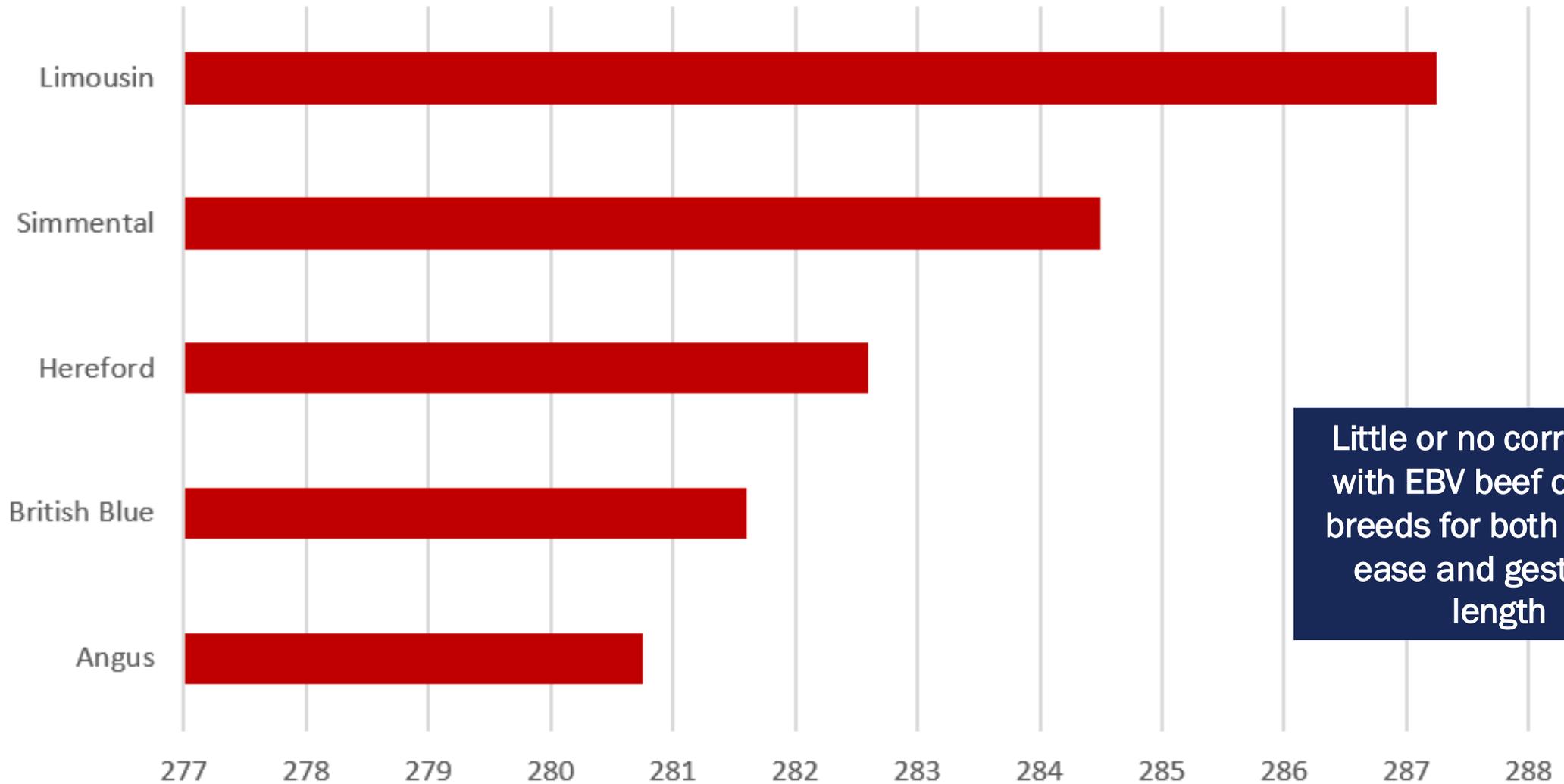
Average Calving Difficulty % for Beef in Focus Breeds



Blue Bar = Current Genus Sires in Stud - average CE %
Red Bar = Previous 3rd Party bulls tested in last 20 years

Breed Variation

Average Gestation Length of Genus Sires by Breed



Little or no correlation with EBV beef on beef breeds for both calving ease and gestation length

The most reliable calving survey data in the world



We collected real-world calving data in dairies for **over 50 years** to deliver robust results to customers



To be proven, our sires must have **120 surveys in over 60 herds**. This is the highest standard globally.



Dedicated to offering Sexcel Male Beef in only the **easiest calving sires with good production performance**

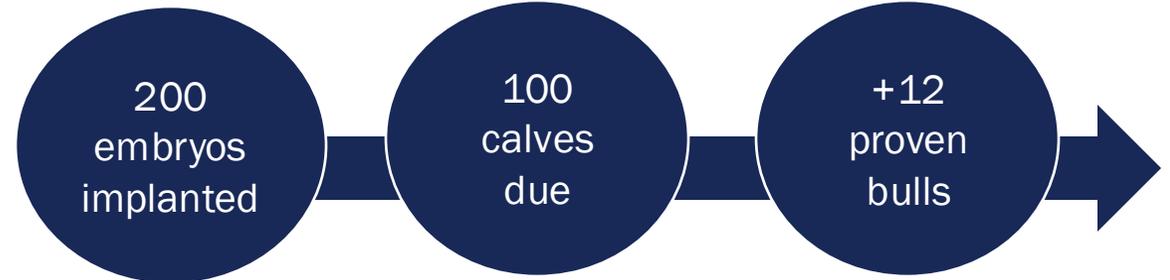


Only the best bulls graduate from our best programme and are sold to dairy farmers

NuEra Genetics: creating our own genetic lines



T14 - Angus

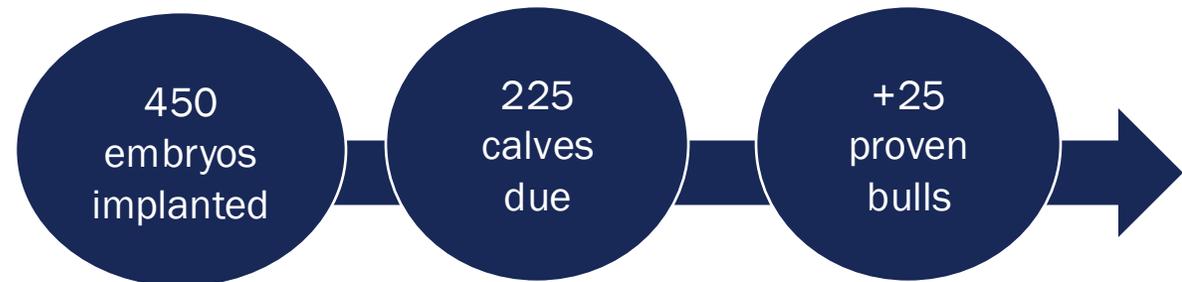


(4500 embryos produced globally)

Females retained for flushing



T15 – British Blue



NuEra Profit

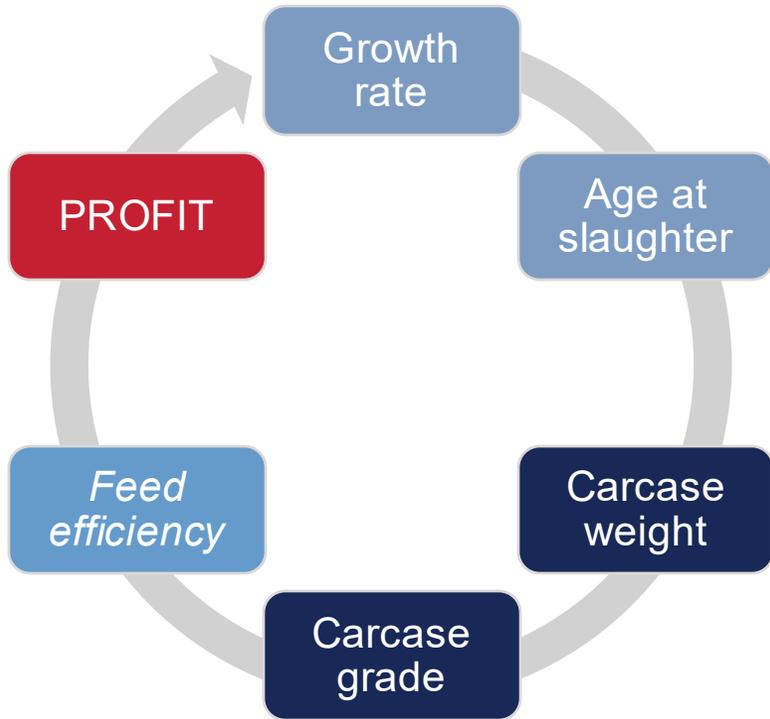


Integrated beef supply chains – conception to consumption



NuEra Genetics: Collecting data from Beef on Dairy progeny across the Supply Chain.

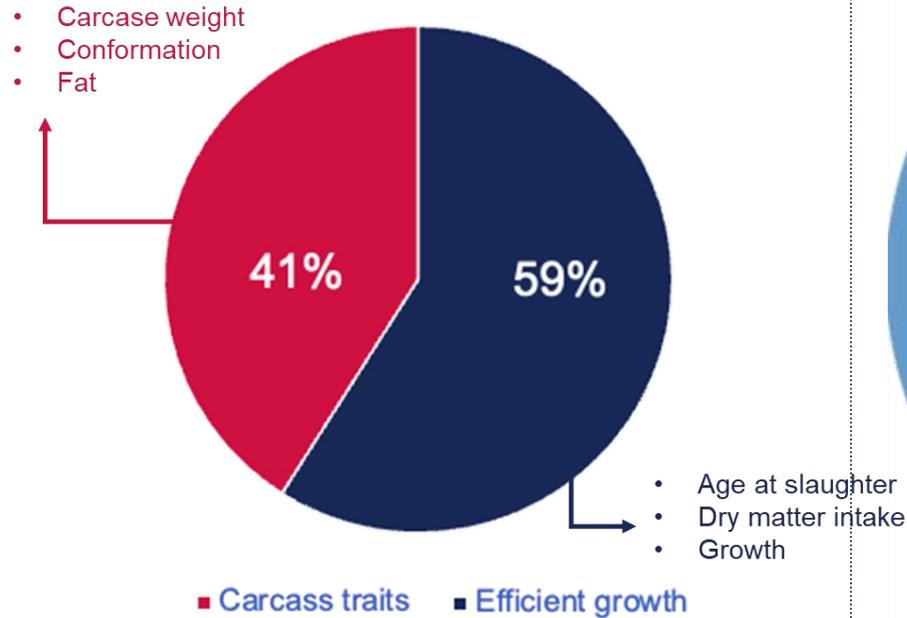
Example of traits collected



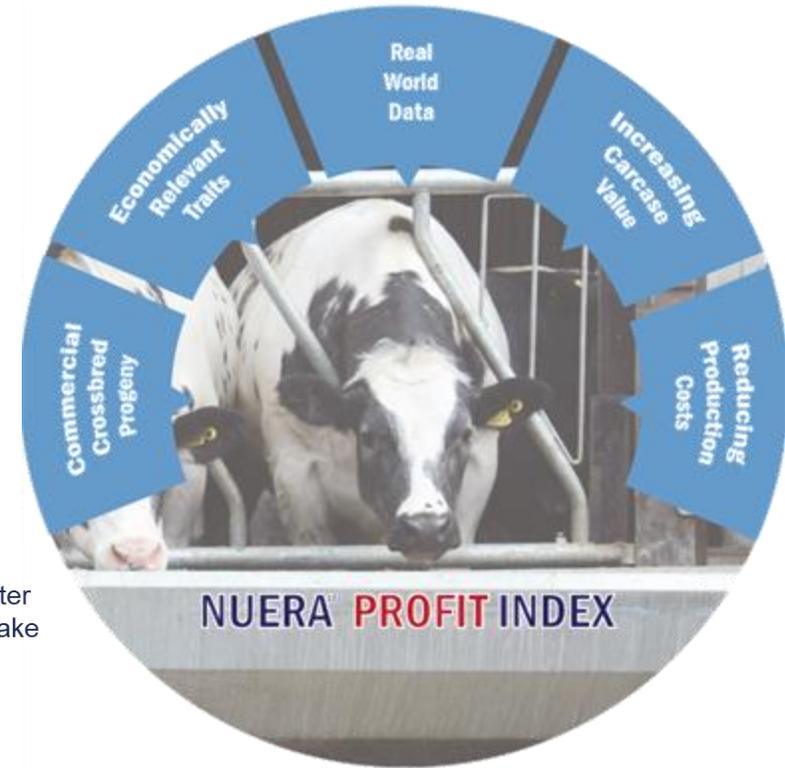
Data also collected:

- Water intake
- Microbiome samples
- Health traits

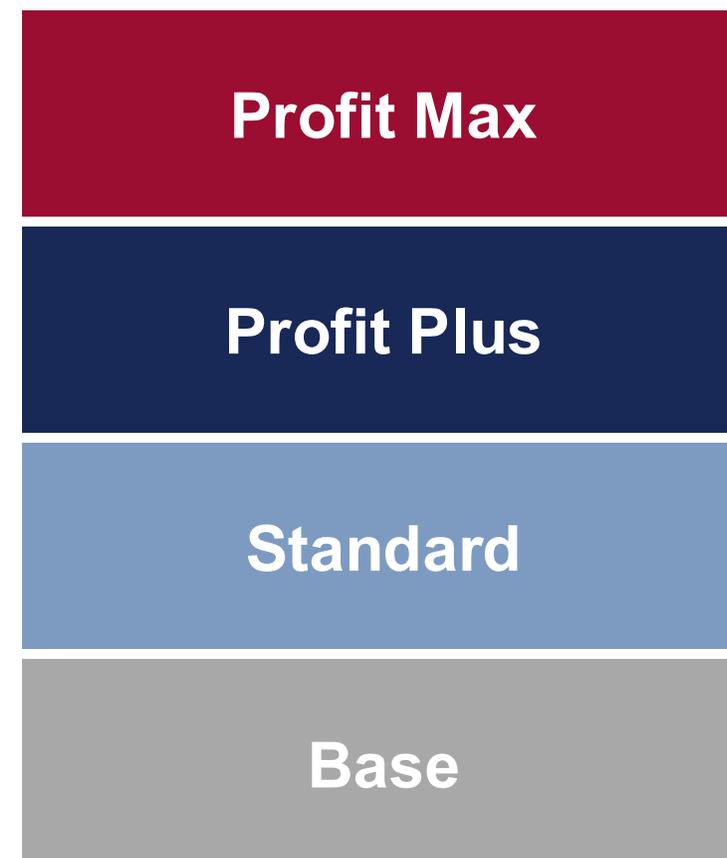
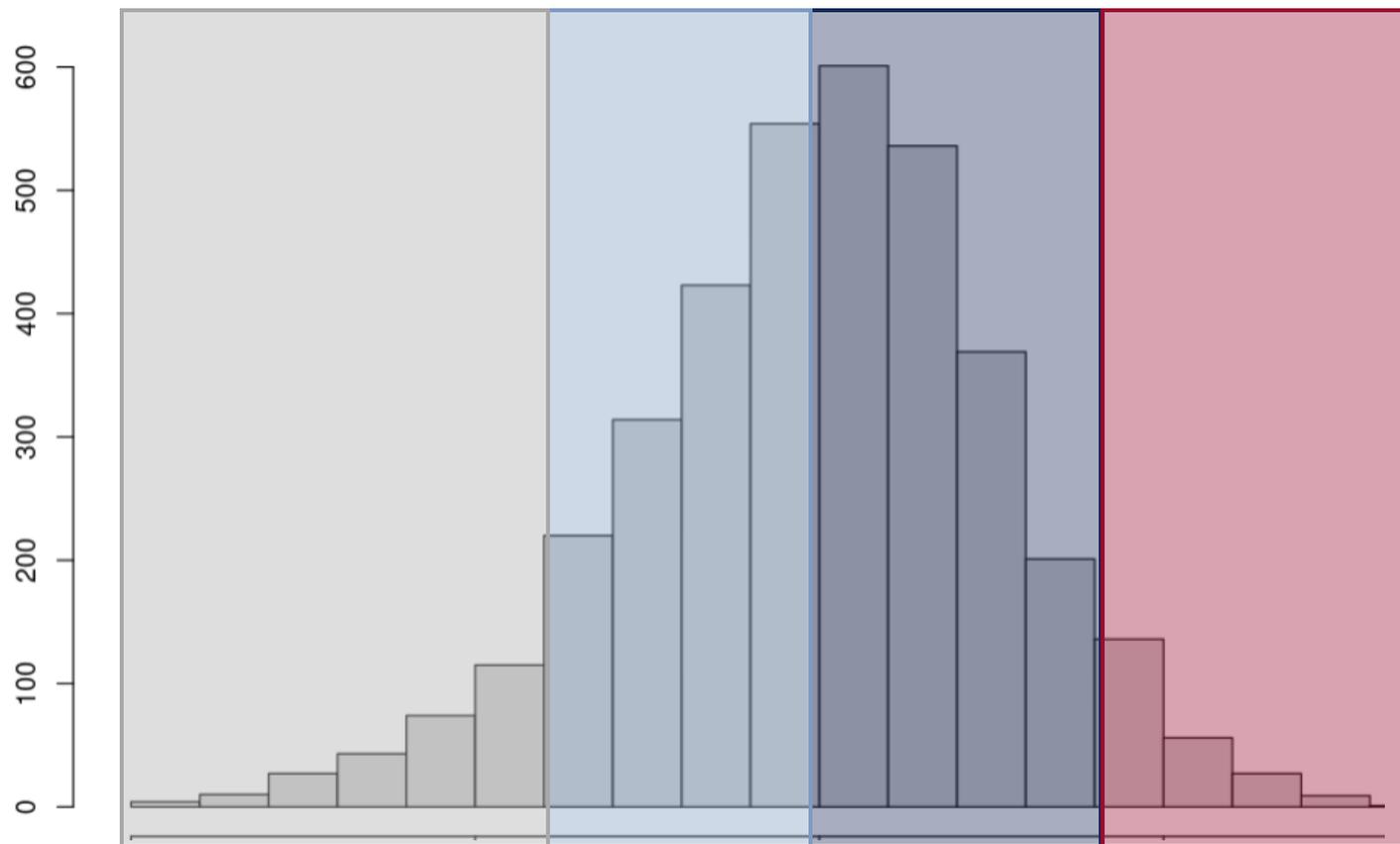
Weighting of traits



Genomic Profitability Index

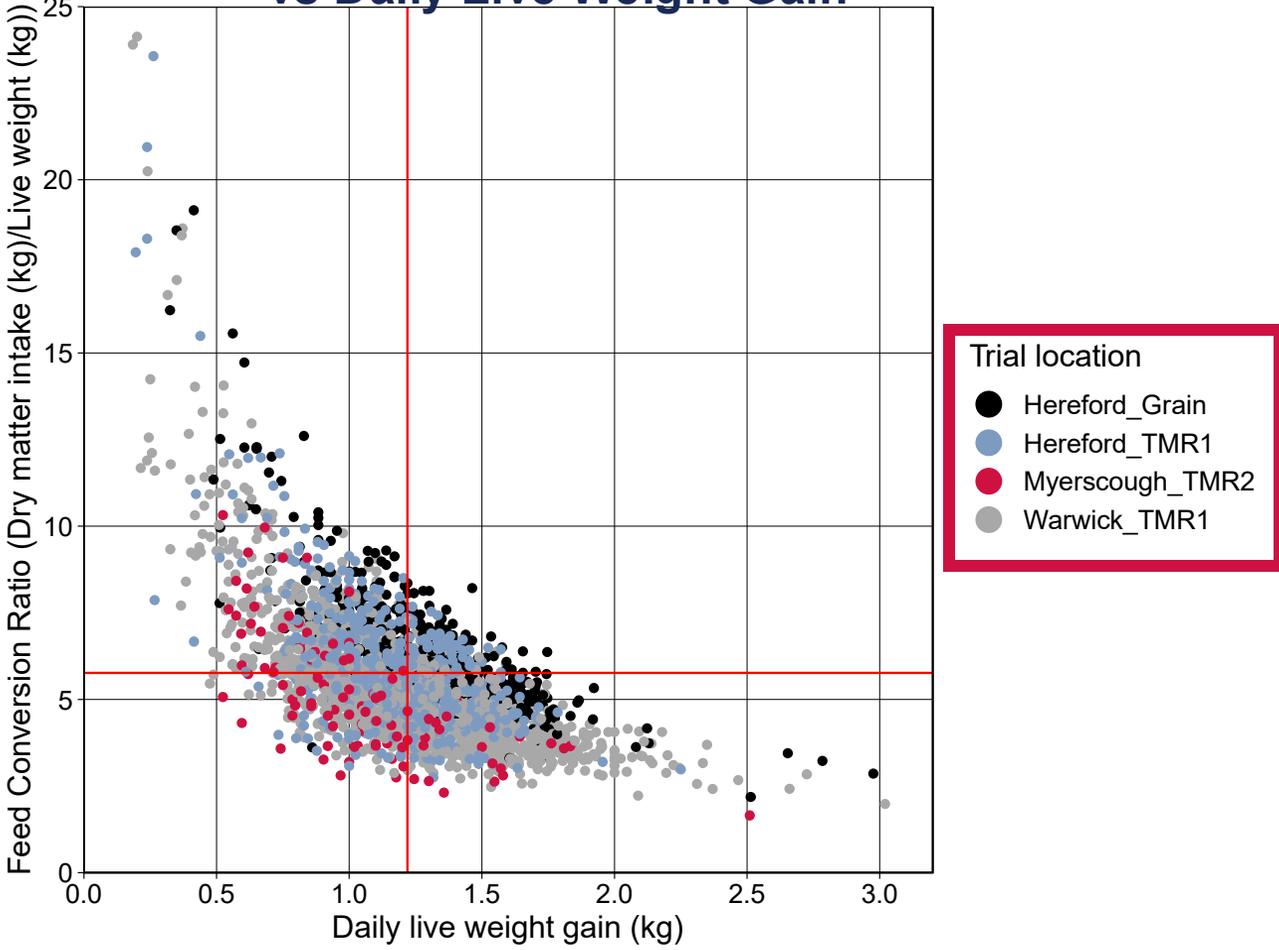


Then we place the bulls into 4 tiers...



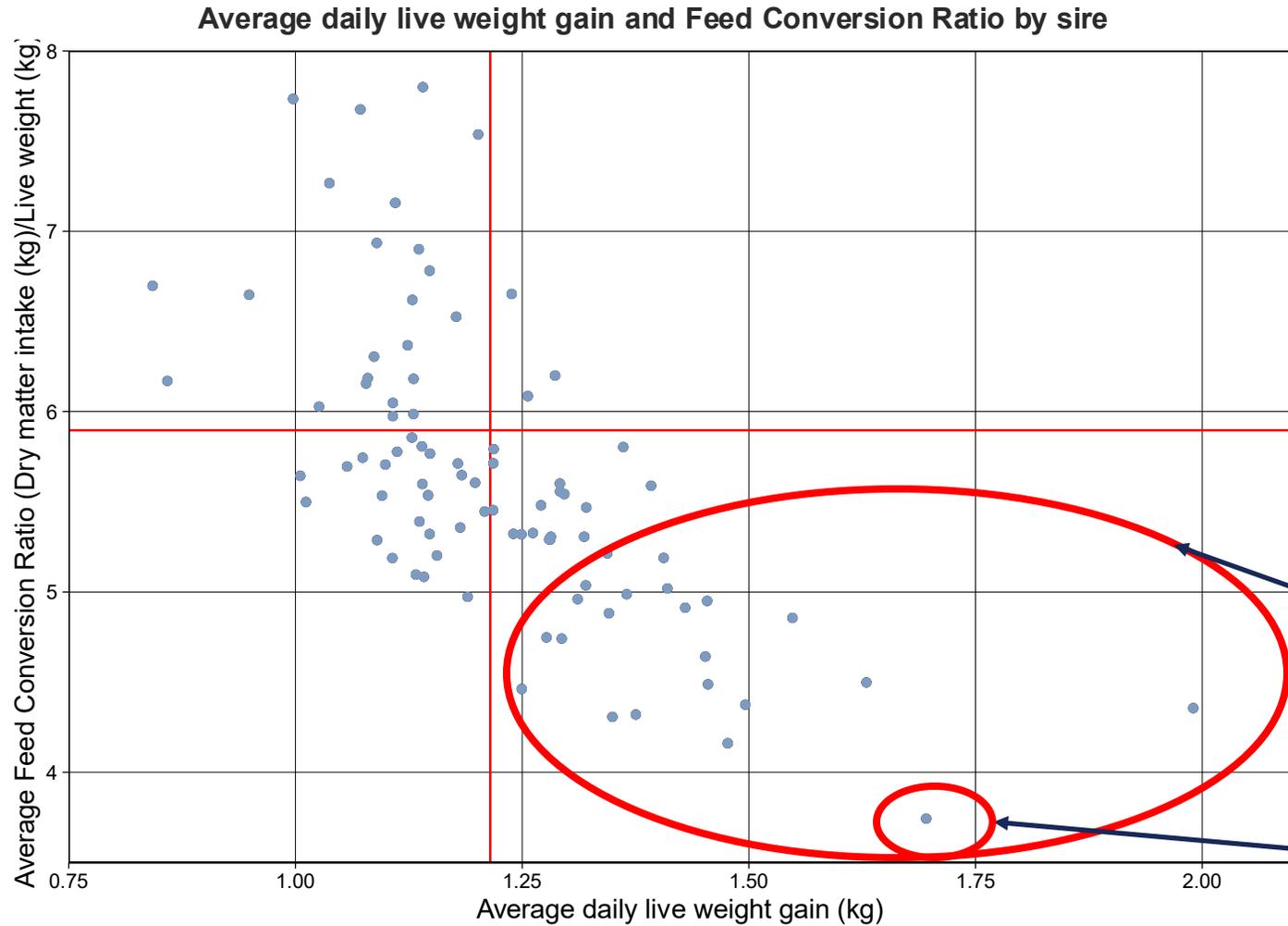
Feed conversion efficiency variation by animal vs Daily Live Weight Gain

Feed conversion efficiency variation by animal vs Daily Live Weight Gain



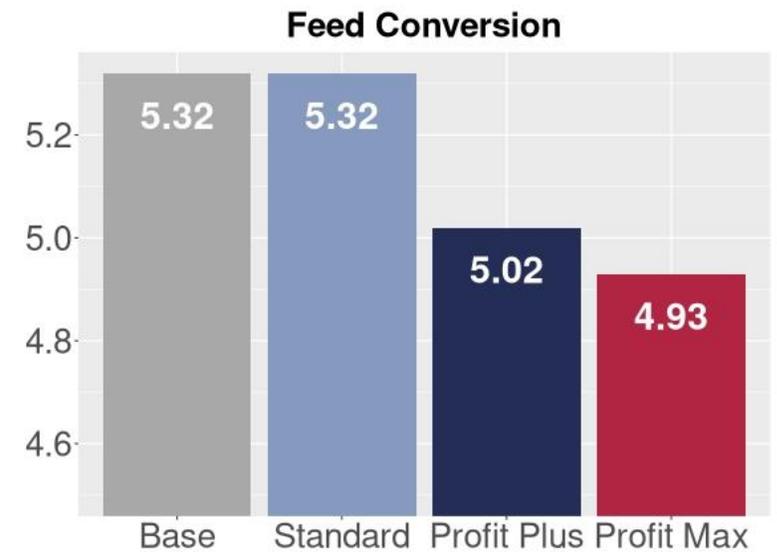
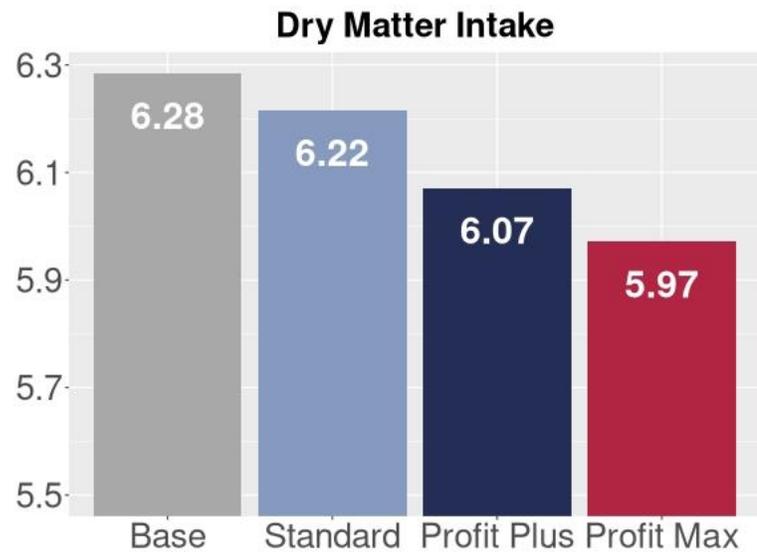
We see the same wide variation in FCR on different diets and locations, giving confidence the differences are driven by genetics

Feed conversion efficiency variation by animal vs Daily Live Weight Gain – by sire



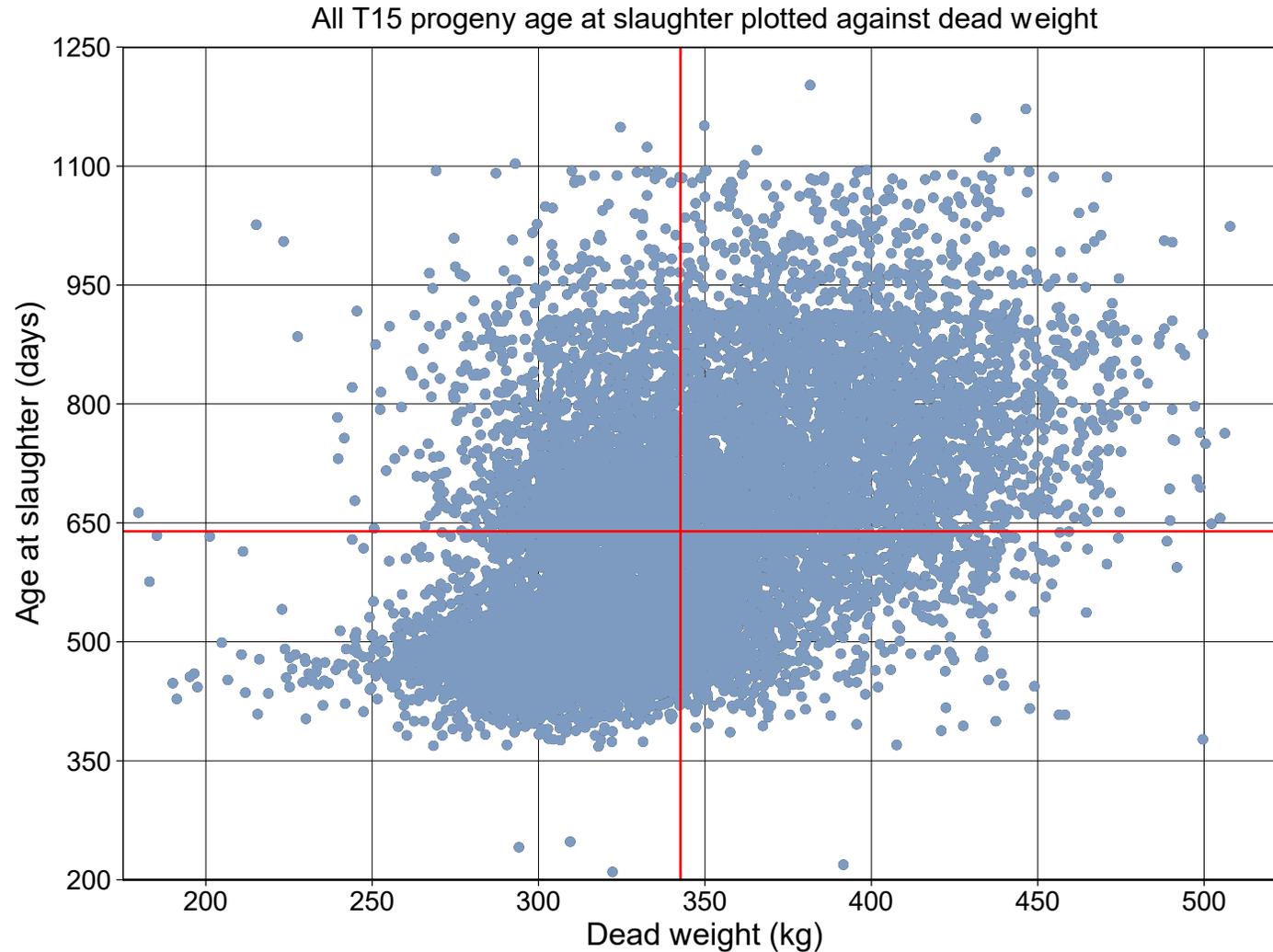
Best sire has progeny that only require 4kg DM/Kg gain. 2kg or 30% less than the average sire or 100% less than the poorest sires

Progeny Performance – Validation Traits



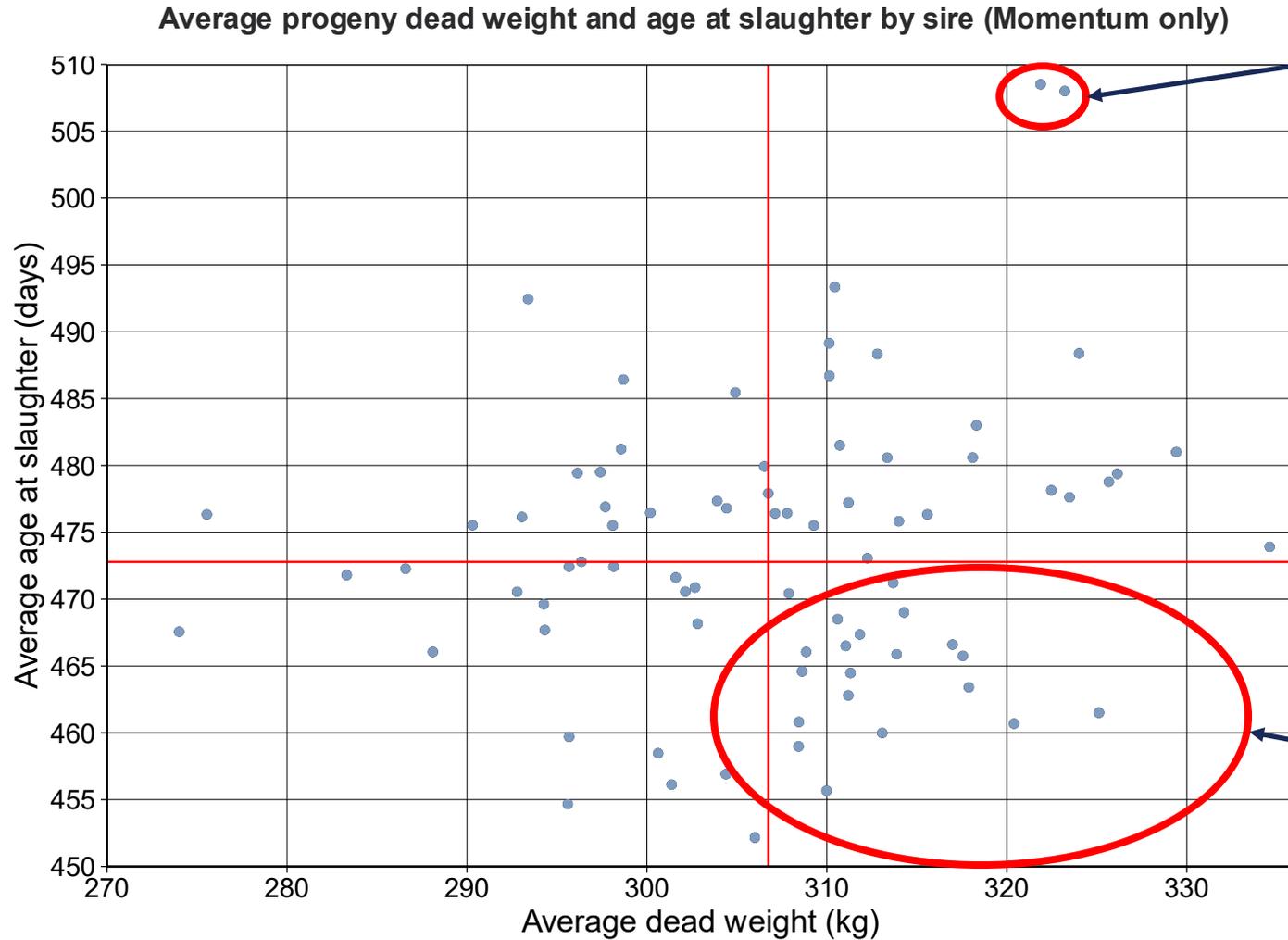
Feed trial records are available on offspring which have gone through the Momentum program only.

Age at Slaughter (days) vs Dead Weight (kg)



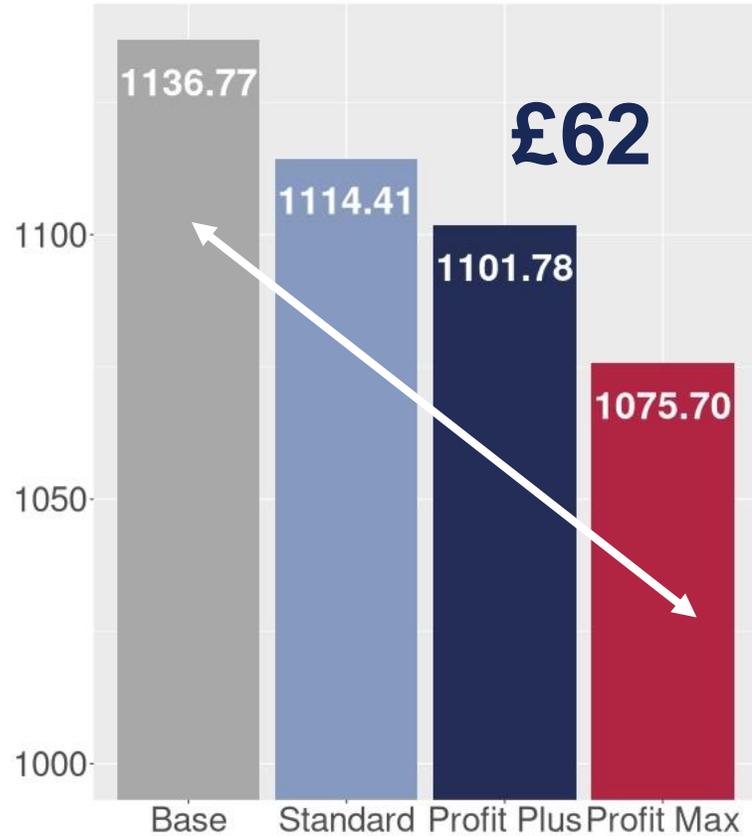
Includes Commercial units and Momentum progeny

Age at Slaughter (days) vs Dead Weight (kg)

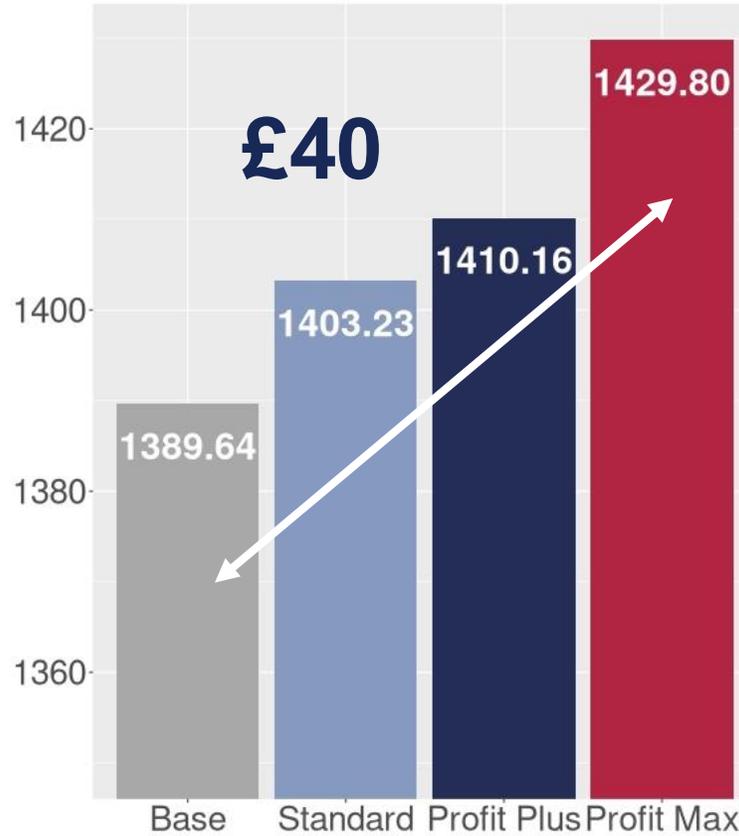


Profitability by tier for each trait

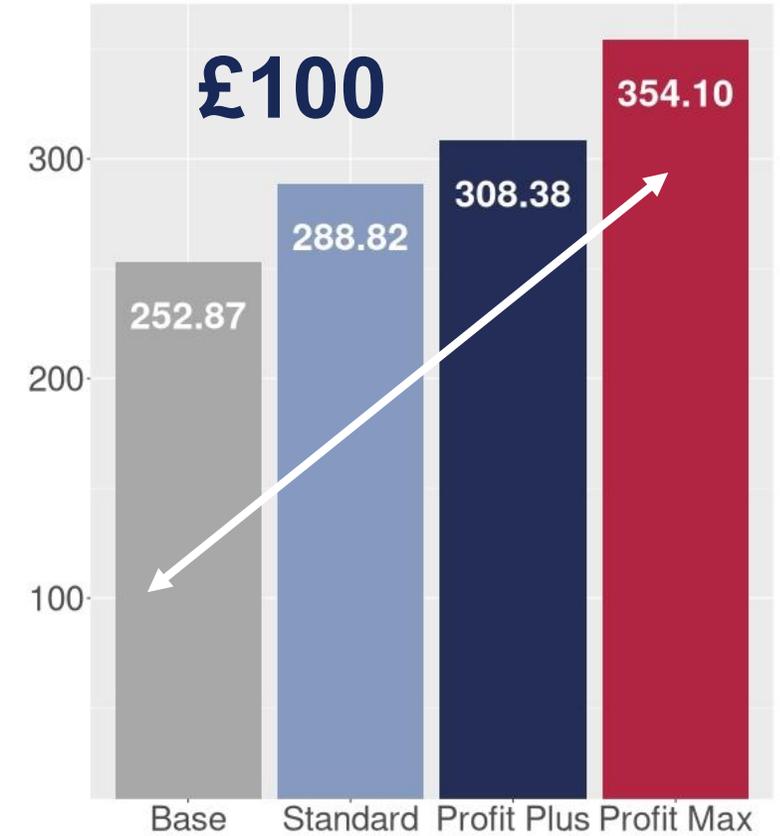
Cost of production



Carcase value



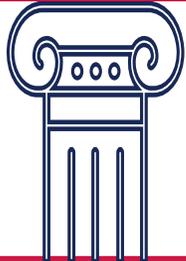
Profitability



Foundation of our NuEra breeding programme

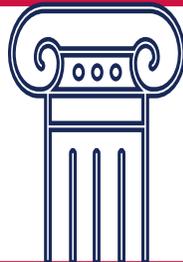
What is the breeding goal?

To increase the profitability of dairy-beef carcasses



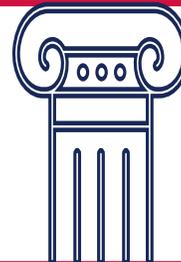
What traits are relevant?

Age at slaughter
Carcass weight
Conformation
Fat
Feed efficiency



What is our population of interest?

Commercial crossbred cattle sired by beef bulls





Cutting-edge research for a sustainable future

Proving the Impact of Genetics.



Validating the Impact of Genetics on Sustainability



Innovate
UK



Department
for Environment
Food & Rural Affairs

SRUC 

Through the industry's first comprehensive beef-on-dairy (BxD) Life Cycle Assessment (LCA), we are demonstrating the reduced environmental impact of our genetics and proving the right genetics reduce input needs, improve overall efficiency, increase feed efficiency and growth rates, and reduce methane emissions.

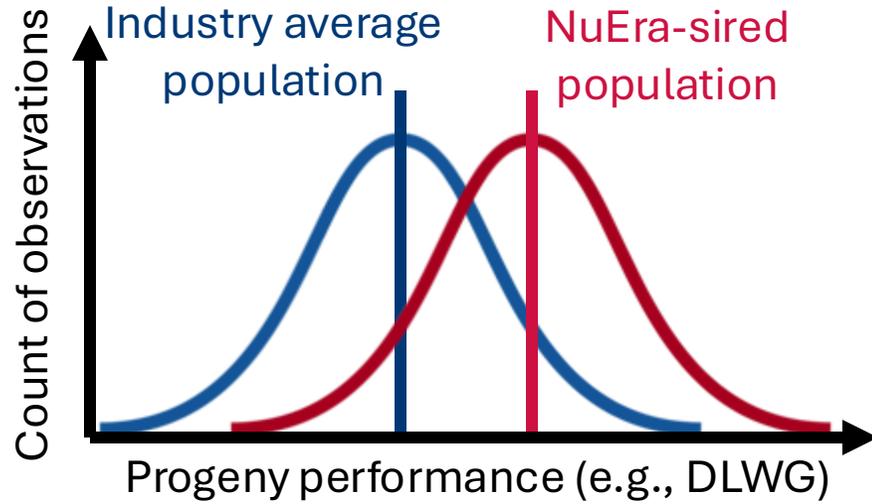
Co-funded by Innovate UK and DEFRA, in partnership with Scotland's Rural College (SRUC), the Climate Smart Genetics project is:

- At the forefront of developing innovative ways to measure and reduce the environmental impact of beef production
- A holistic approach to advancing our understanding of how genetic traits influence methane emissions
- Driving more sustainable farming practices

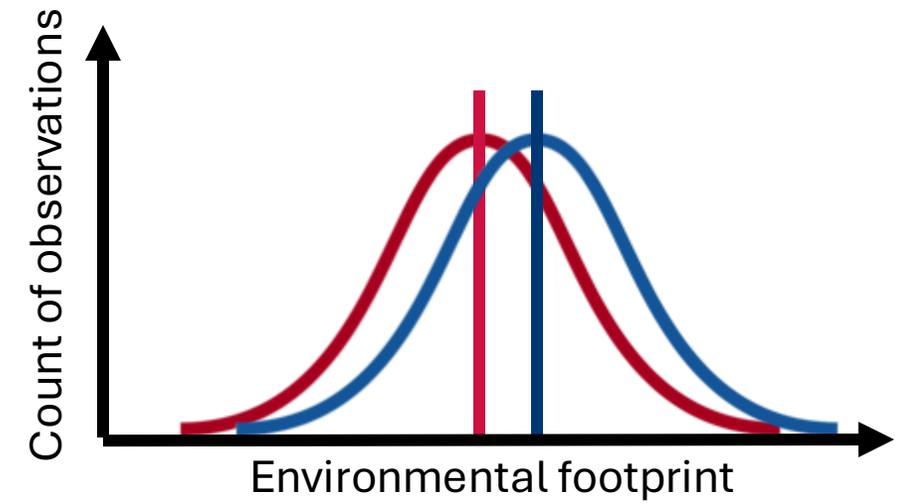


NuEra Genetics reduces the estimated environmental footprint of BxD production faster than the industry average

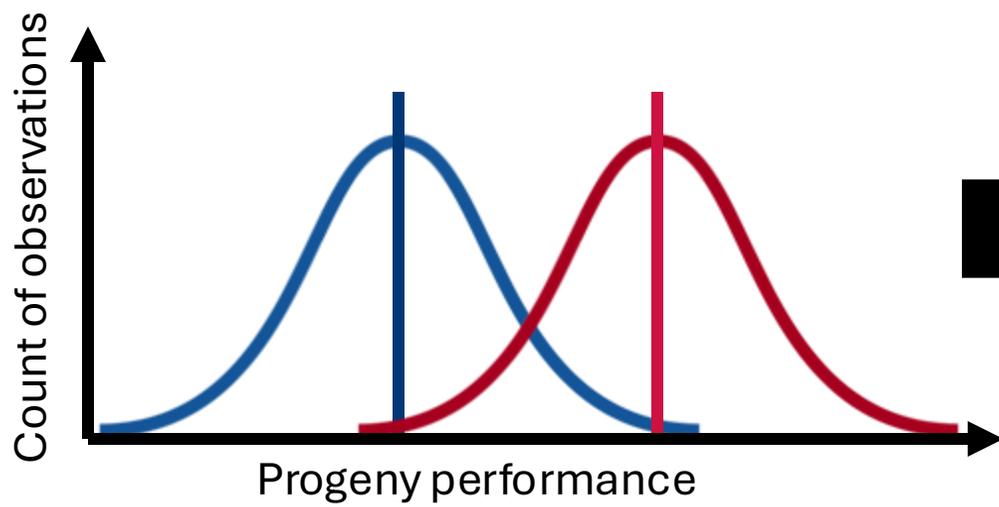
2024



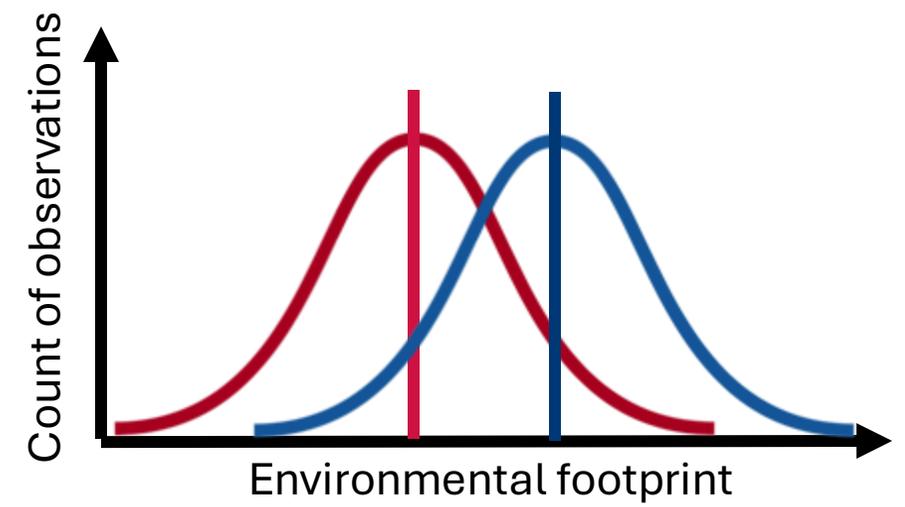
LCA



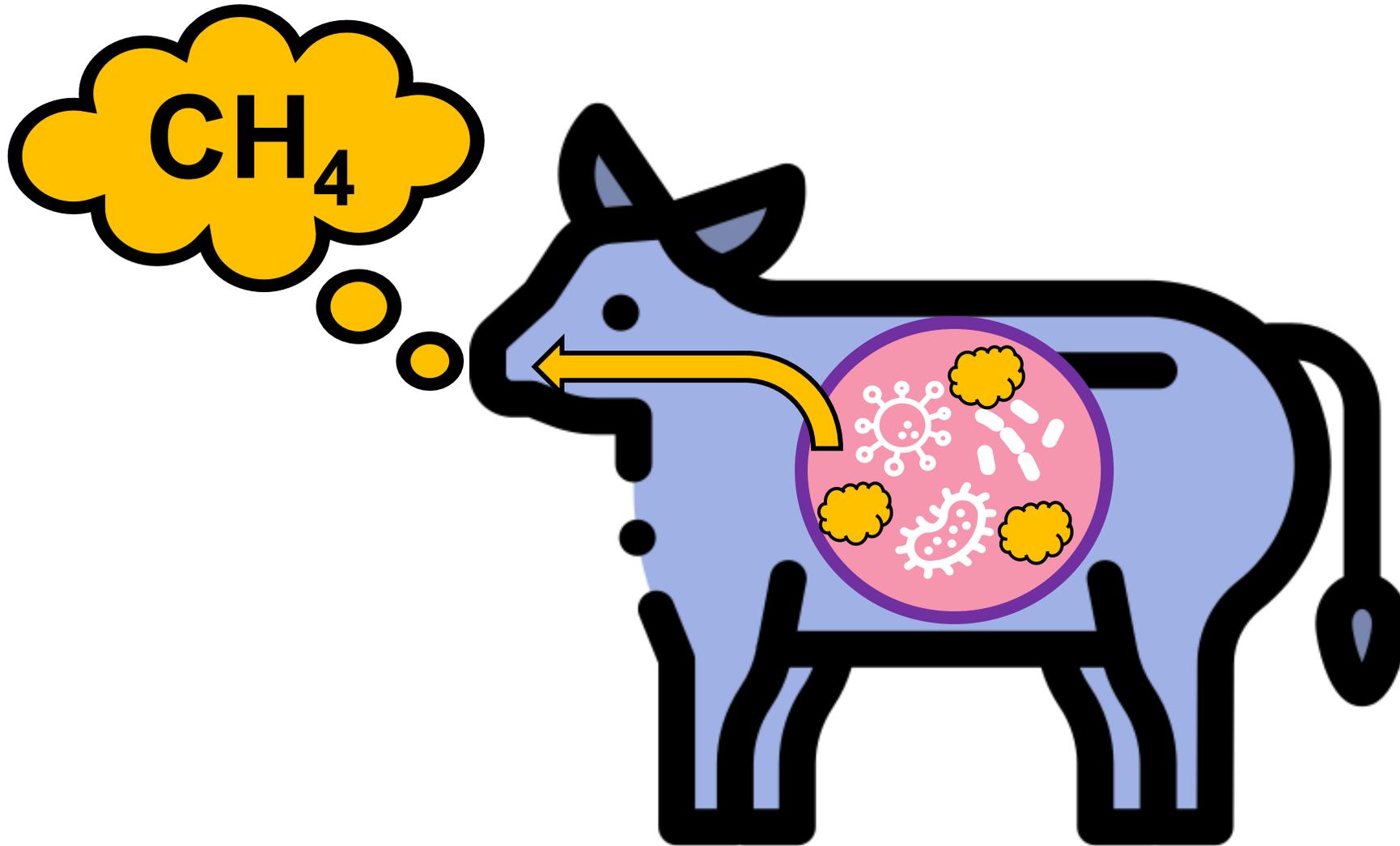
2029



LCA



Where does methane in cattle come from?



Methane is the byproduct of microbes fermenting feed in the rumen.

Cattle then belch out the methane that their rumen microbes produce.

We can only manage what we measure, so we measure...everything.



Whole animal emissions



Enteric emissions



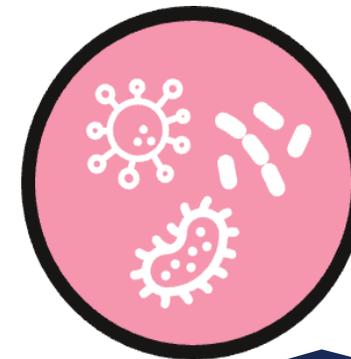
Feed intake



Water intake



Daily body weight



Microbiome sampling

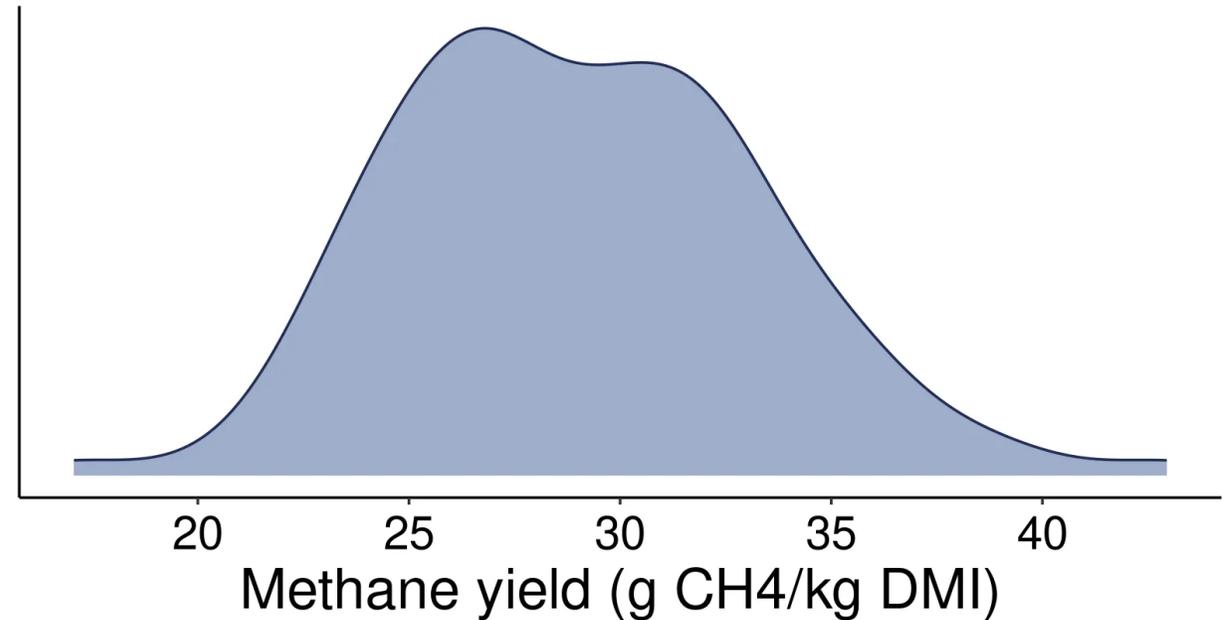
Green feed installed at Mollington beef unit

Data from Green feed equipment has now been updated.

With 600 progeny now tested, we can see 100% difference between the highest and lowest animals tested



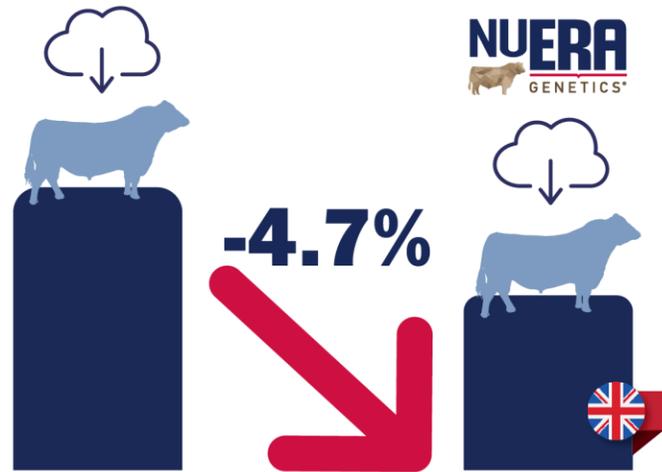
Distribution of CH₄ yield - Mollington



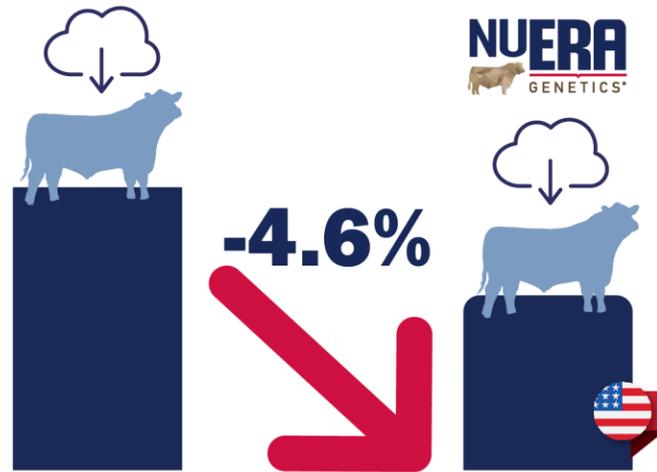
Next stage is to see if sire differences match up with differences seen at SRUC with animals going through the respiration chambers

Ground-Breaking Research of the Environmental Advantages of Improved Genetics

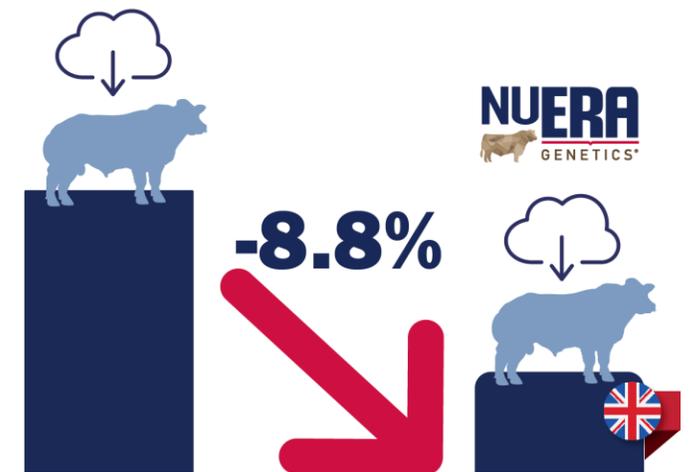
Within the **Angus** population, NuEra Genetics progeny have a potential 4.7% reduction in emissions intensity.*



Within a **multi-breed** population, NuEra Genetics progeny have a potential 4.6% reduction in emissions intensity.†



Within the **British Blue** population, NuEra Genetics progeny have a potential 8.8% reduction in emissions intensity.*



*As compared to the competitor average genetics for emissions intensity by UK LCA data.

† As compared to the competitor average genetics for emissions intensity by US LCA data.

NuEra Genetics[®] Role in a More Sustainable Future

FARMERS CAN EXPECT:



Increased
growth
rates



Improved
feed
conversion



Higher
quality
carcass



Reduced
GHG emission
intensity

DELIVER MORE VALUE TO THE SUPPLY CHAIN:



Improved
efficiency



Increased
profitability



Reduced
environmental
impact



Profit from Genetic Progress



Cutting-Edge Rumen Microbiome Research

CLIMATE SMART GENETICS PROJECT

A key feature:

DEVELOPING MICROBIOME-DRIVEN BREEDING

- Aiming to improve the sustainability of beef production by harnessing the power of the rumen

THE APPLICATION



Use information from the rumen microbiome to genetically improve traits related to production and environment impact, simultaneously



Create a tool that can be scaled, commercially, to impact ABS breeding programs around the world

DEFINITIONS:

RUMEN (noun) //

A unique symbiotic system where microbes turn feed into energy and protein, in which methane is a by-product.

RUMEN MICROBIOME (noun) //

The community of microorganisms, including bacteria, fungi, protozoa, and archaea, that reside in the rumen of a ruminant animal.

A more sustainable food
supply chain starts with
GENETICS, making genetic
improvement a critical factor in
meeting market expectations.



Thank you for listening

Any questions?



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ABSglobal.com | 800.ABS.STUD

