The Dairy Beef Gene Ireland Programme: Driving Genetic Gain in Dairy-Beef Systems

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An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

AgTech - it's in our DNA

Agenda

- Where are we now?
- Where do we want to get to?
- **How** do we get there?

Where are we now?

THE ROLE OF ICBF

- Focus on genetic improvement as a tool for improving future profit on Irish beef & dairy farms
- Establish and maintain a central database of performance data
- Define a breeding goal & selection indexes (e.g. EBI, DBI & Euro-Star)
- Provide routine genetic evaluations for all breeds
- Operate a breeding scheme of optimal design (i.e. Gene Ireland)
- Ensure continuous improvement based on science

Yearly Database Figures

92k
Herds

7.7 Million
Animal Movements

1.6 Million
Slaughter Records

7.1 Million
Live Animals

59.1 Million
Animals

2.4 Million
Animal Births

8.6 Million
Milk Recording Records

1.1 Million
AI Records

4.3 Million Animal Genotypes
200 Billion rows of SNP data

819k
Health Records

CH_4

2.2k
CH_4 Records

2.4 Million
BVD Records

KG

2.9 Million
Weight Records

ICBF Indexes

Breeding

Dairy Herd

Economic Breeding Index (EBI)

dairy cows

♂ ♀

Dairy Beef Index (DBI)

Beef sired cattle for slaughter

♂

Beef Herd

Replacement Index

Suckler cows

♂ ♀

Terminal Index

cattle destined for slaughter

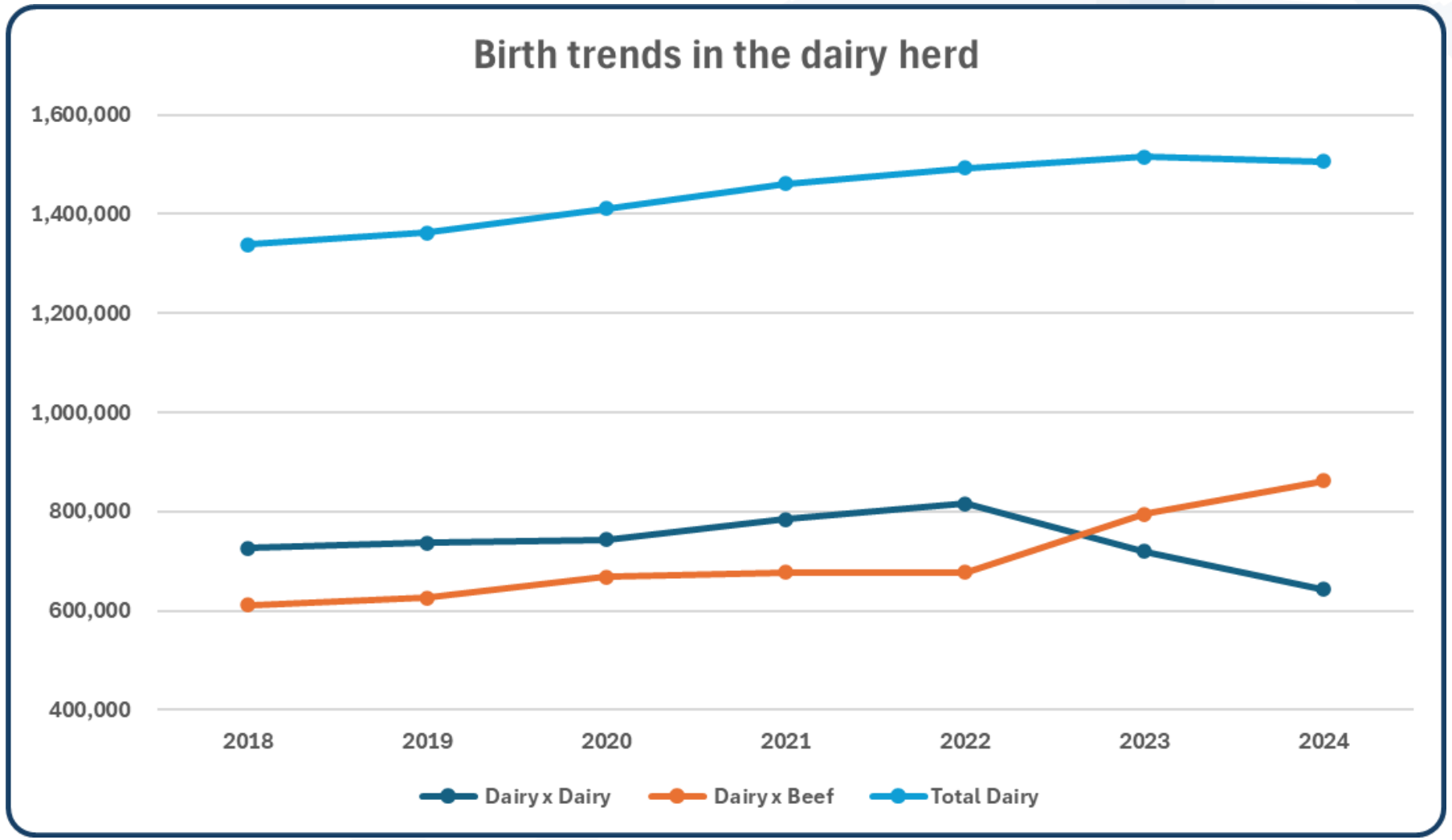
♂

Decision support

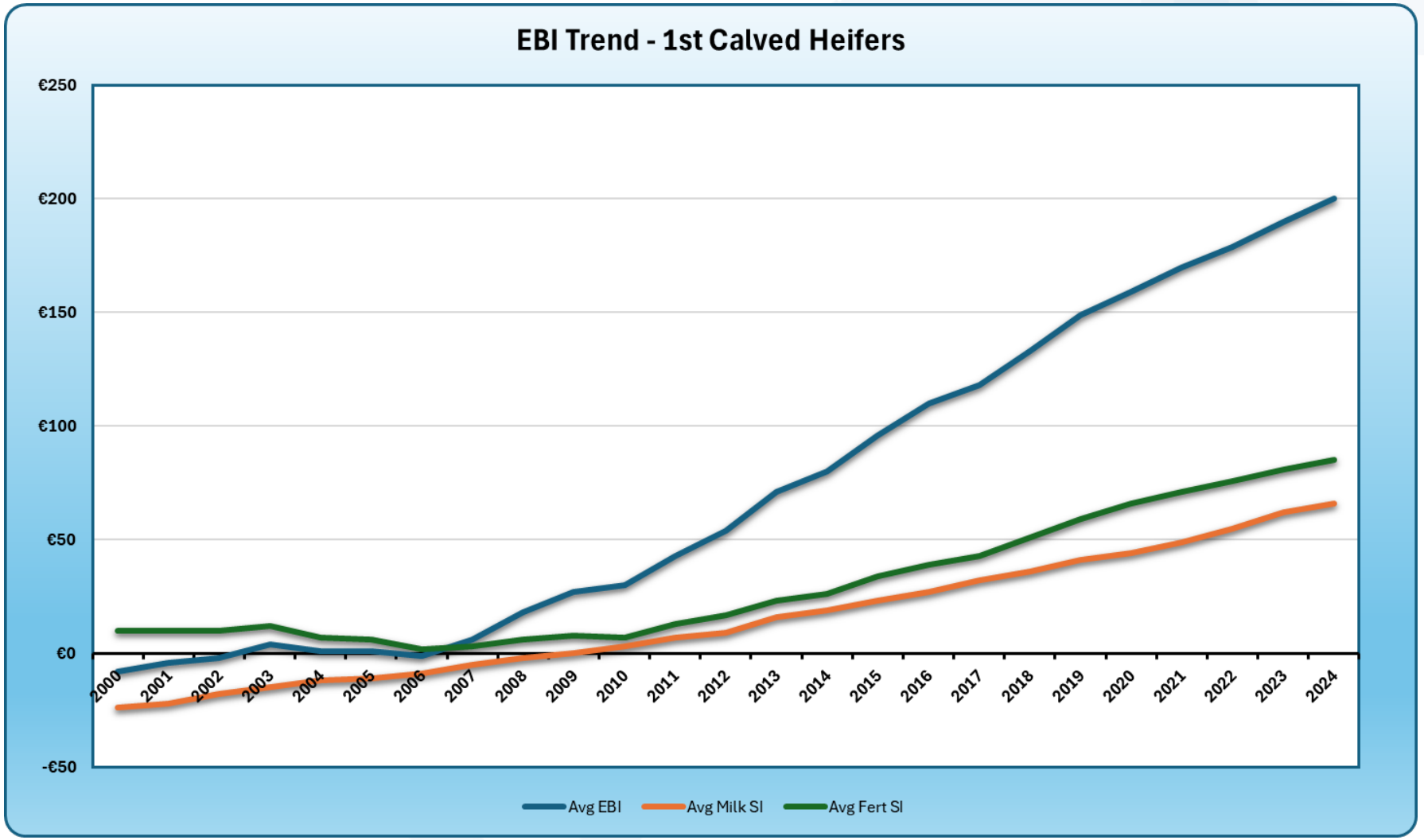
Cows own worth (COW)

Commercial Beef Value (CBV)

Trends in Dairy Births (Jan-Jul)

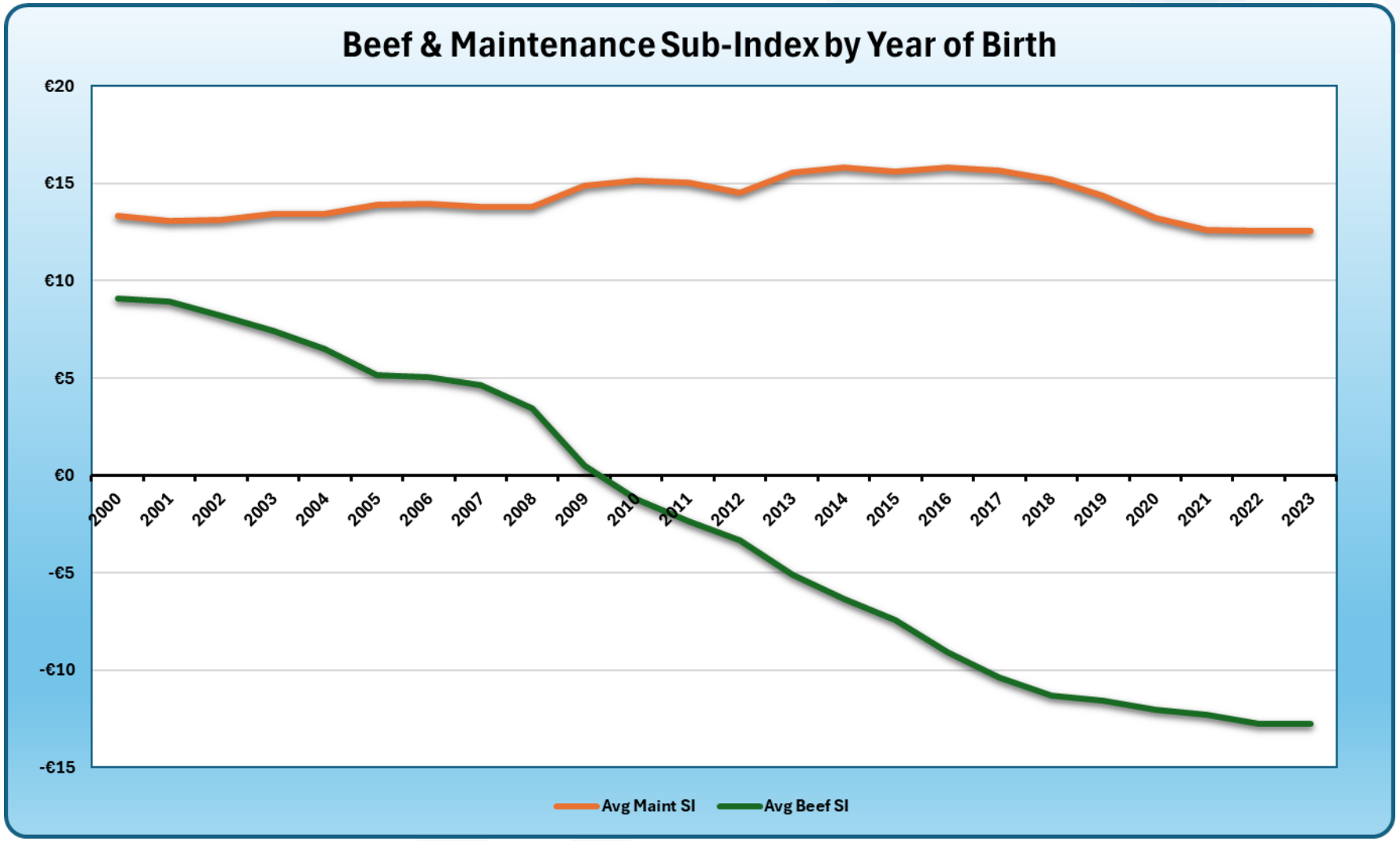


Dairy EBI Trend 2000-2024



- €1 increase in EBI = €2 increase in Profit
- Genetic Gain
  - ~€10/year
- Milk SI & Fert SI increasing at a similar rate!
- Dairy Gene Ireland started in 2005

Dairy EBI Beef & Maintenance Trend '00-'24



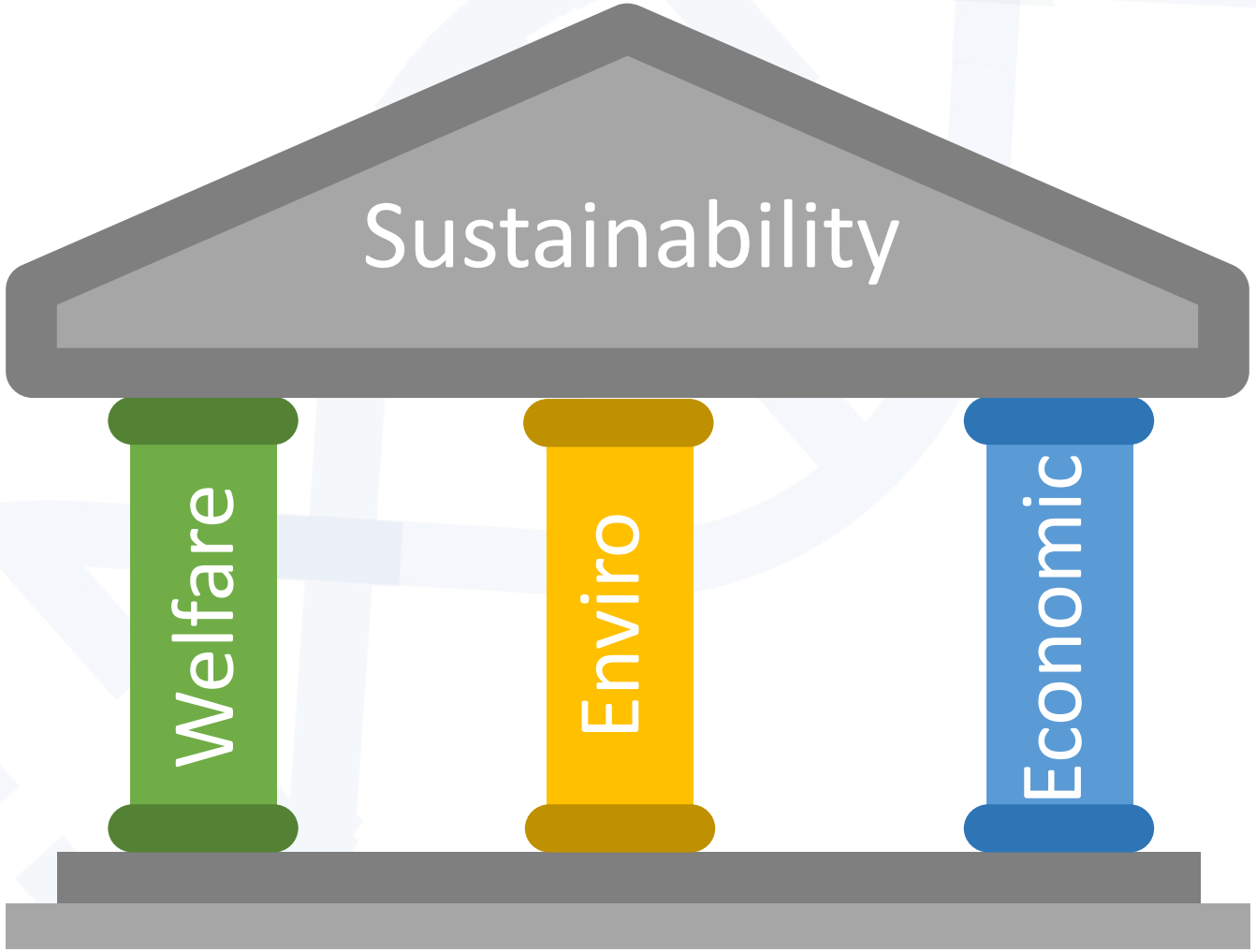
- Cow size has increased over the last 5 years
- Beef sub index continues to decline albeit at a slower rate!

AA Sires of 2024 Born Dairy Cross Calves

- 454k AA Sired Dairy Beef Animals born Jan to June 2024
- Huge range in beef merit of AA sires with the same level of Calving Difficulty

Sires D Cow CD	Nbr Sires	Avg Carc Wt pta	Sire w Min Carc Wt kg	Sire w Max Carc Wt kg	Avg Gest
<2%	883	**2.1** (2023 = 1.8)	-19.9	19.8	-.8
2 to 3%	5020	**5.4** (2023 = 4.8)	-28.8	29.4	-.57
3 to 4%	1906	**8.8** (2023 = 8.4)	-9.6	30.6	-.28
4 to 5%	243	**11.9** (2023 = 10.9)	-6.6	31.9	-.07
> 5%	39	**11.2** (2023 = 9.6)	-2.3	25.5	.07

Where do we want to get to?



Pillar 1. Welfare

This pillar focuses on ensuring the highest possible standards of care for animals.

This requires

- Proper Nutrition
- High Health
- Correct Housing
- Reduced Stress

& Good Genetics

Pillar 2. Environmental

This pillar focuses on minimizing environmental impact.

This requires

- Grassland management
- Sustainable feed supplies
- Waste management
- Water conservation
- Carbon footprint reduction

& Good Genetics

Pillar 3. Economic Viability

For a system to be truly sustainable, it must be economically viable for farmers.

This requires

- System efficiency
- Reducing feed intake
- Managing costs
- Market spec

& Good Genetics

How do we get there?

What is G€N€ IR€LAND?

National Breeding Programme

To provide high index genetics for farmers through a co-ordinated progeny programme.

Data Collection

To capture good quality phenotypic data in progeny test herds.

Genetic Evaluations

To provide accurate indexes for all Irish Dairy & Beef bulls

Genetic Gain

To Increase the rate of genetic gain in the national herd

Dairy Beef G€N€ IR€LAND in Numbers

Herds Signed-Up

A large number of herds participating in the programme

600

Straws Dispatched

Number of Straws dispatched/year

21,000

Bulls Tested

40

Bulls distributed/year

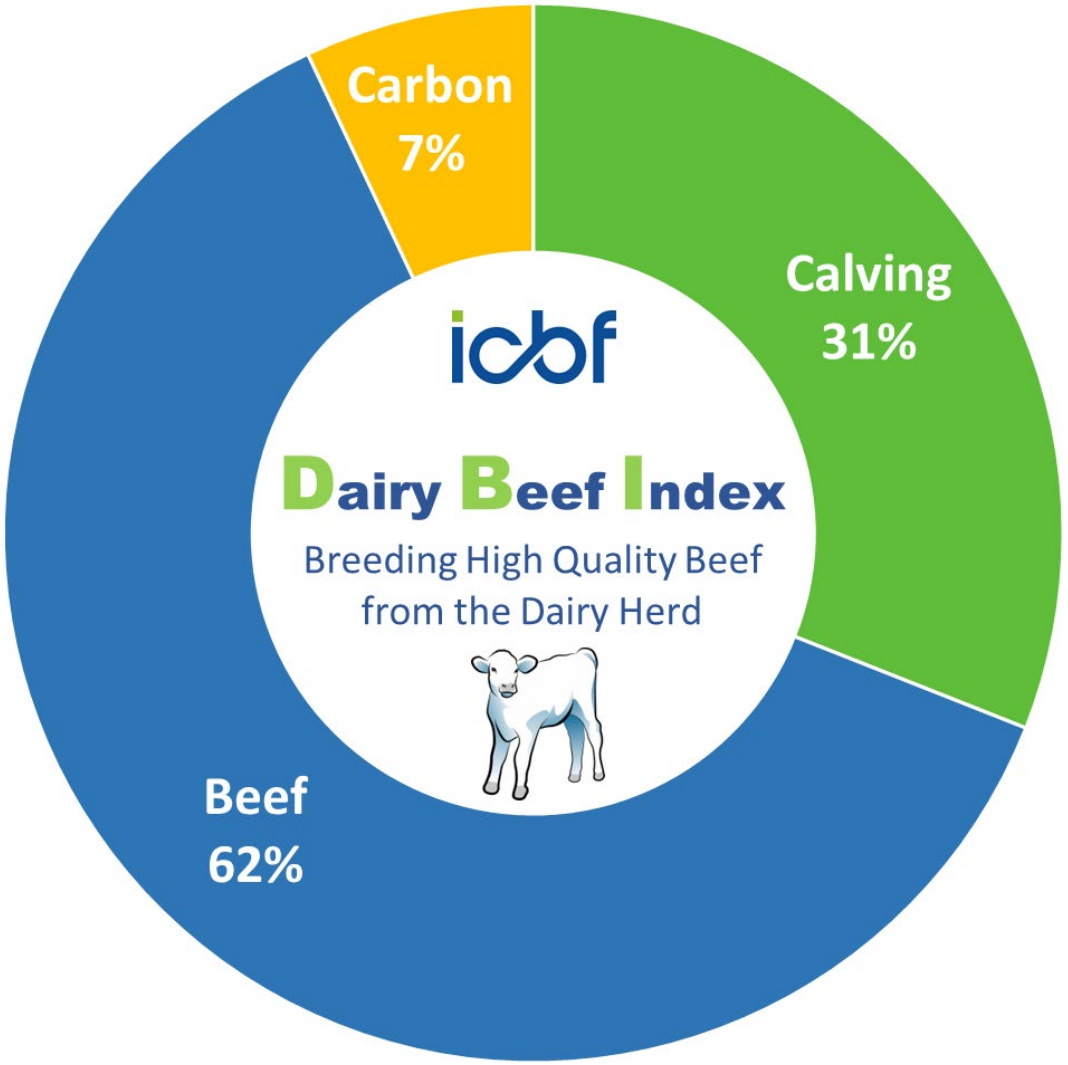
The av. number of straws ordered

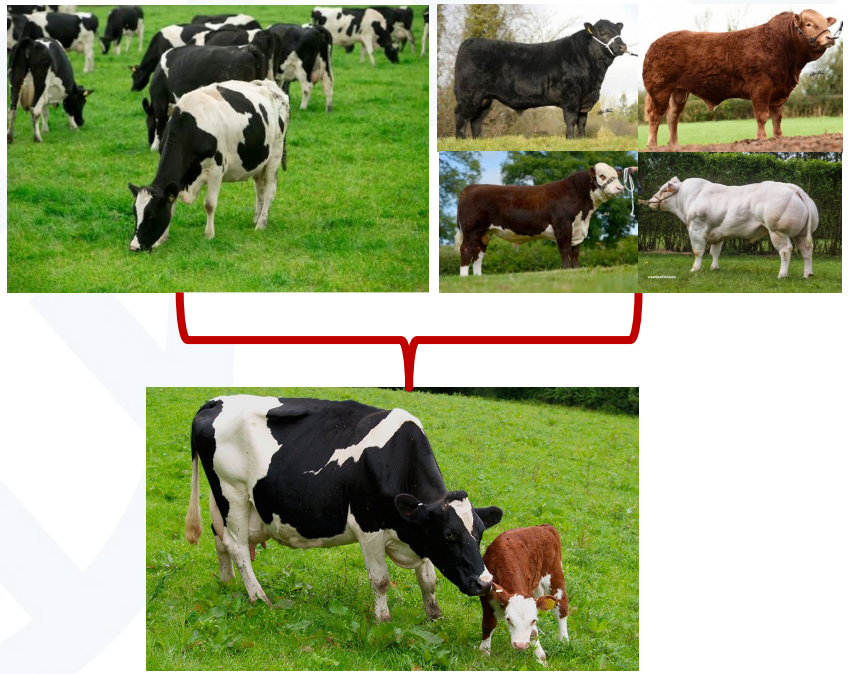
Average Pack Size **36**

600

Progeny/year in Tully

Step 1: Dairy Beef Index (DBI) & Gene Ireland

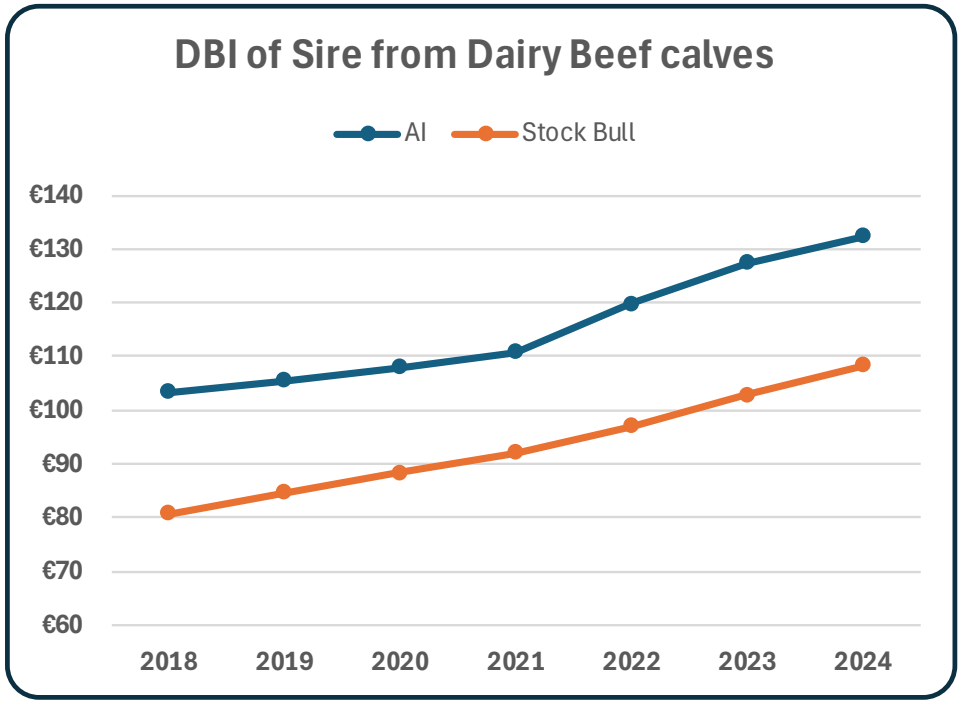




- A breeding index to produce profitable beef cattle from the dairy herd.
- Developed in conjunction with Teagasc (2019)
- Updated in Jan ‘23: €, Age at Finish, Carbon
  - More emphasis on Beef SI & 7% on Carbon
- GI Bulls must be in Top 20% **across breed** on DBI

Usage Trends of the Dairy Beef Index (DBI)

Avg. DBI of Sires used on Dairy Beef calves by birth year									
Year	Num. Serves	AI				Stock Bull			
		Num.	% AI	DBI	Beef SI	Num.	% SB	DBI	Beef SI
2018	349,334	111,994	32%	€103	€97	237,340	68%	€81	€85
2019	365,351	117,732	32%	€105	€98	247,619	68%	€85	€86
2020	400,196	139,382	35%	€108	€103	260,814	65%	€88	€88
2021	414,262	161,636	39%	€111	€105	252,626	61%	€92	€89
2022	420,623	178,373	42%	€120	€107	242,250	58%	€97	€91
2023	525,022	253,278	48%	€127	€106	271,744	52%	€103	€93
2024	429,816	242,778	56%	€132	€107	187,038	44%	€108	€94



- Small Improvement in Beef SI but needs continued focus
- Gene Ireland gives the industry an achievable target each year

Dairy Beef Index
Breeding High Quality Beef from the Dairy Herd

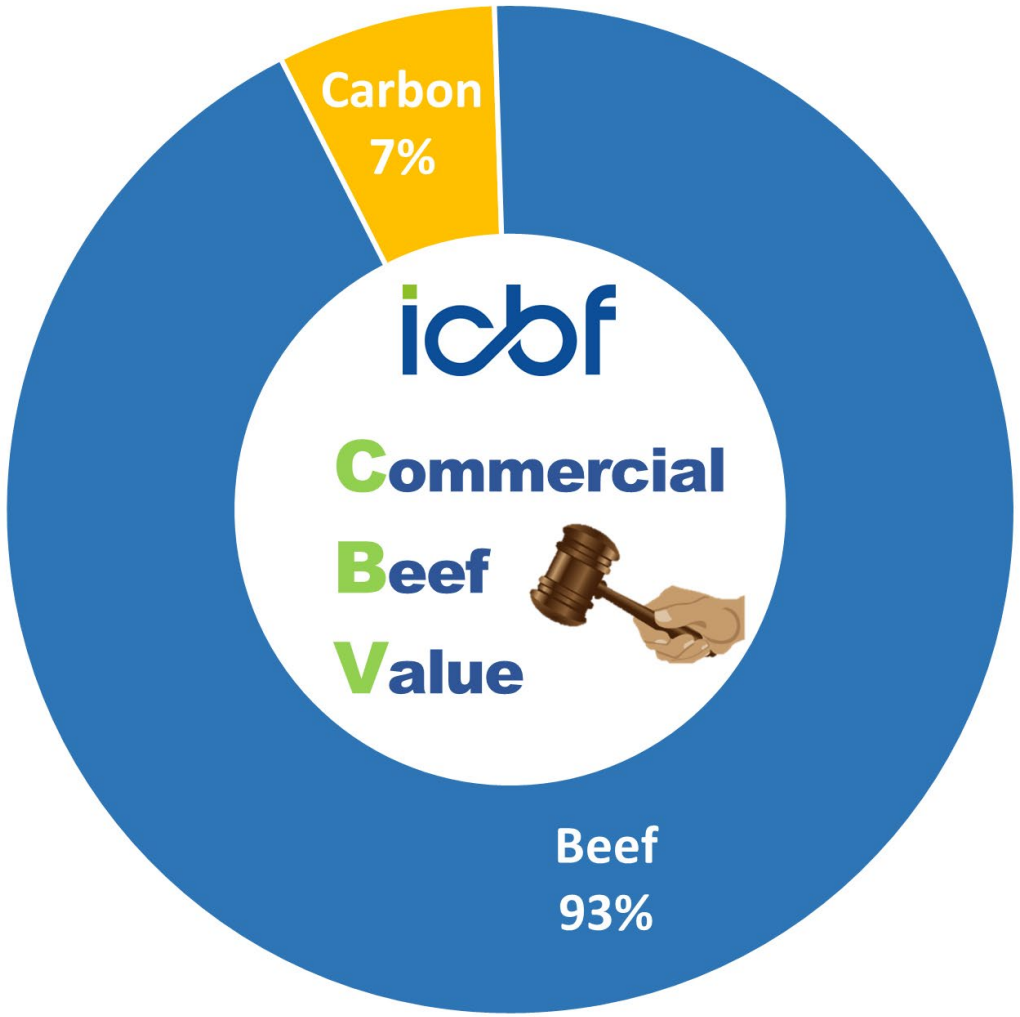
Breed Percentiles

Date of Evaluation: 24-SEP-24 (VALID UNTIL 26-NOV-24)

Breed	Index/Trait	Average	Top 20%	2024 GI Bulls
All Breeds	DAIRY BEEF INDEX (profit/dairy progeny born)	91	112	**136**
All Breeds	DBI Beef Sub Index (profit/dairy progeny born)	132	153	**138**
All Breeds	DBI Calving_Sub Index (profit/dairy progeny born)	-31	-6	**-2**
Angus	DBI INDEX	126	143	**159**
Angus	DBI Beef Sub Index	93	105	**113**
Angus	DBI Calving_Sub Index	29	40	**40**
Hereford	DBI INDEX	85	105	**122**
Hereford	DBI Beef Sub Index	86	97	**97**
Hereford	DBI Calving_Sub Index	-3	12	**20**

Averages are based on pedigree animals born in the last 5 years.

Step 2: Commercial Beef Value (CBV)



- Tool for non-breeding beef farmers to give a better insight into an animal's genetic merit.
- Launched in Dec '21.
- It is the Terminal Index less the calving traits (calving diff, gestation & mortality).
- Beef includes: Carcass weight, Confomation, Feed Intake, Docility, Finishing Age & In-spec.
- Carbon makes up 7%

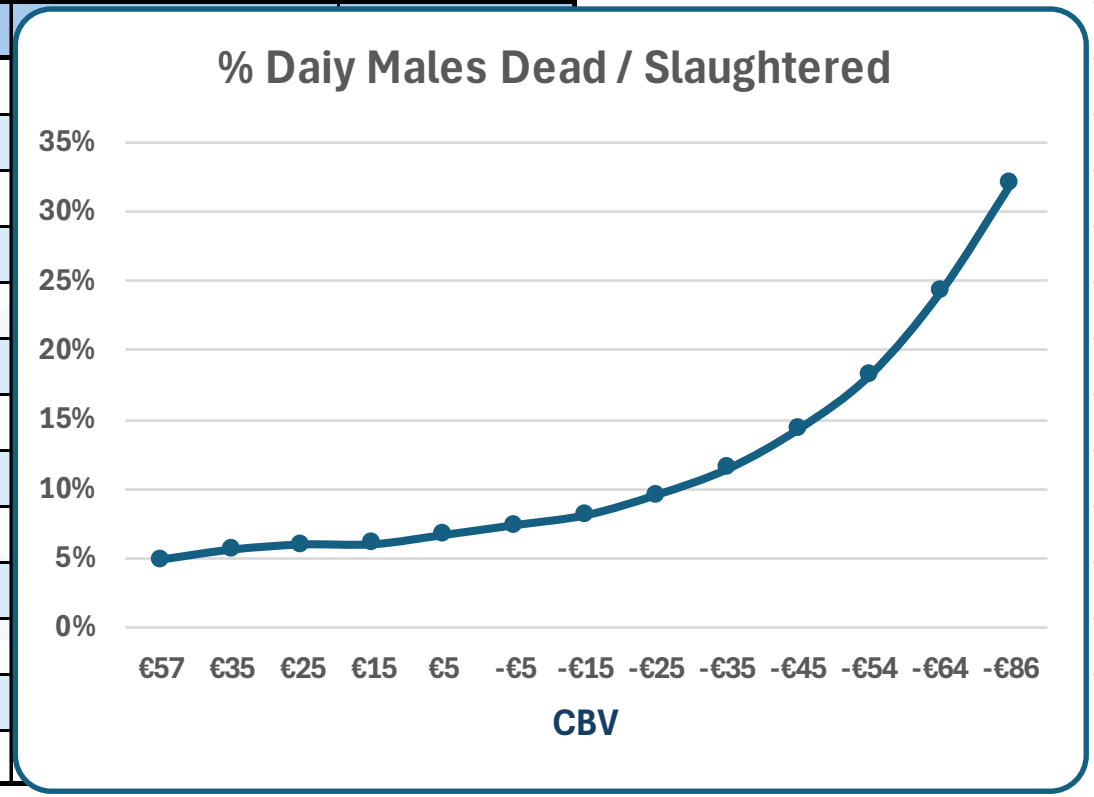
Suckler M & uncalved F

Dairy M

Dairy X Beef M & uncalved F

Sustainability Pillar 1. CBV & Welfare

Relationship between CBV & % dairy male calves Dead/Slaughtered at 42 days				
CBV Range	**Avg. CBV**	**Dairy Males**	**Dead/Slau.**	**% Dead/Slau.**
Grt 40	€57	10,228	501	5%
30 to 39	€35	9,682	544	6%
20 to 29	€25	16,306	976	6%
10 to 19	€15	25,752	1,546	6%
0 to 9	€5	32,493	2,170	7%
0 to -9	-€5	33,758	2,492	7%
-10 to -19	-€15	28,107	2,277	8%
-20 to -29	-€25	20,537	1,965	10%
-30 to -39	-€35	13,630	1,559	11%
-40 to -49	-€45	8,499	1,216	14%
-50 to -59	-€54	4,981	905	18%
-60 to -69	-€64	2,840	687	24%
Grt -70	-€86	3,202	1,026	32%



- CBV is a very good indicator of calf quality and/or likelihood of an animal dying or being slaughtered.
- Beyond a CBV of -€35, likelihood increases very significantly.

Sustainability Pillar 2: CBV & Environment

Dairy Beef Steers in Tully (n=350)

	CBV	Methane (g/day)	DMI	ADG	Final Liveweight	Carcass Weight	Kill Out %
Top 10% (n = 35)	€183	222	12.08	1.6	647	350	54%
Bottom 10% (n=35)	€36	256	13.04	1.6	605	304	50%

- ➔ Excellent tool to help identify lower methane animals
- ➔ Critical for industry and policy makers re: direction of travel for animal breeding decisions


Commercial Farm


Research Farm


Tully

Sustainability Pillar 3: CBV & Economics

- Lots of positive engagement & discussion with beef finishers

Herd A (Suckler Bulls)	CBV	SI Age Months	Carc Wt	€/kg	Total €
Top 10%	€357	14	423	5.80	2452
Bottom 10%	€203	17.1	372	5.43	2024

Diff = €428

Herd B (Suckler Steers)	CBV	SI Age Months	Carc Wt	€/kg	Total €
Top 10%	€325	24.3	399	5.42	2166
Bottom 10%	€175	26.5	343	5.20	1782

Diff = €384

Herd C (DB Steers)	CBV	SI Age Months	Carc Wt	€/kg	Total €
Top 10%	€173	24.3	330	5.27	1744
Bottom 10%	€32	25.0	288	5.38	1544

Diff = €200

Decision support for dairy herds

Dairy Beef Index
BREEDING HIGH QUALITY BEEF CATTLE FROM THE DAIRY HERD
icbf

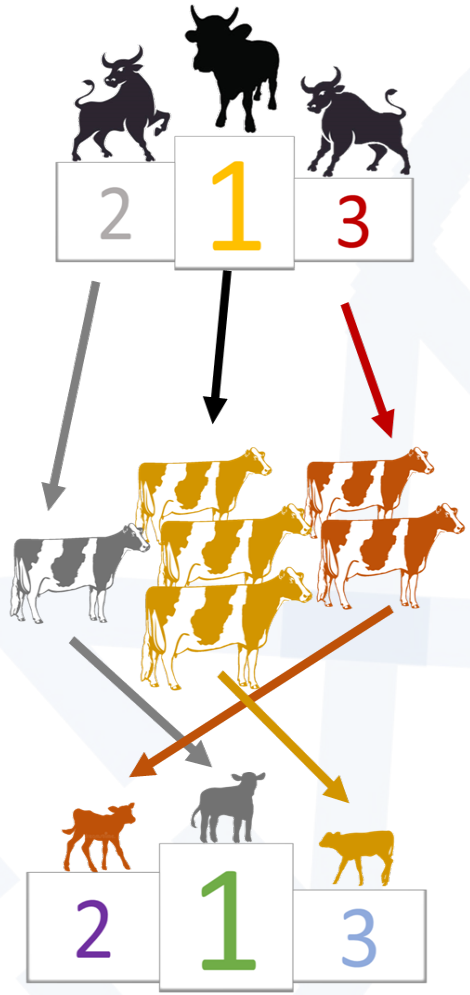
Sire Advice

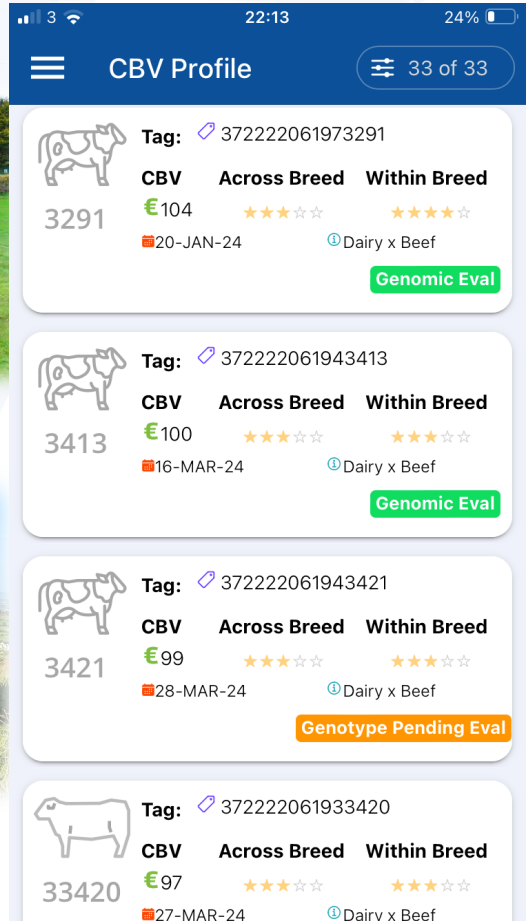
Commercial Beef Value

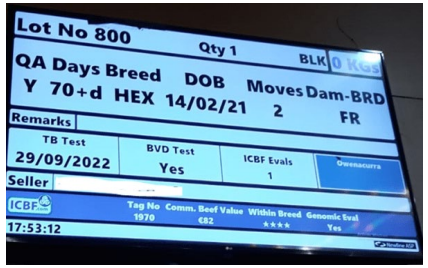
Rank Sires

Rank Matings

Rank Progeny







Summary

- Integrated ICBF database is the cornerstone
- Structured breeding programme (GI) is the vehicle
- Tully provides industry with valuable data on GI progeny
- Adoption is critical

Collaboration is key


Thank You

Our Farmer & Government Representation

An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

Irish Creamery Milk Suppliers Association

IFA – Feirmeoirí Aontaithe na hÉireann – The Irish Farmers' Association

Our AI & Milk Recording Organisations

DoveaGENETICS

MUNSTER BOVINE
Collectively Improving Farm Life

PROGRESSIVE GENETICS

TIPPERARY COOPERATIVE

Our Herdbooks

Parthenais

Irish Angus Cattle Society

The Irish Aberdeen-Angus Association

Irish Simmental

Jersey Cattle Association of Ireland

Irish Limousin Cattle Society

IHHFA – Irish Charolais Cattle Society

Irish Shorthorn Society Ltd.

Salers Cattle Society of Ireland

Irish Hereford Breed Society

Irish Aubrac

MRI Cattle Society of Ireland
Meuse Rhine Issel – Milk & Muscle!

Ayrshires

EASBB

The Irish Moiled Cattle Society

Blonde D'Aquitaine

Irish Belgian Blue

Droimeann Cattle Society

ISP

Montbeliarde

Ireland's native dairy breed

Norwegian Red Cattle Society

icbf Acknowledging Our Members