IRISH CATTLE BREEDING FEDERATION

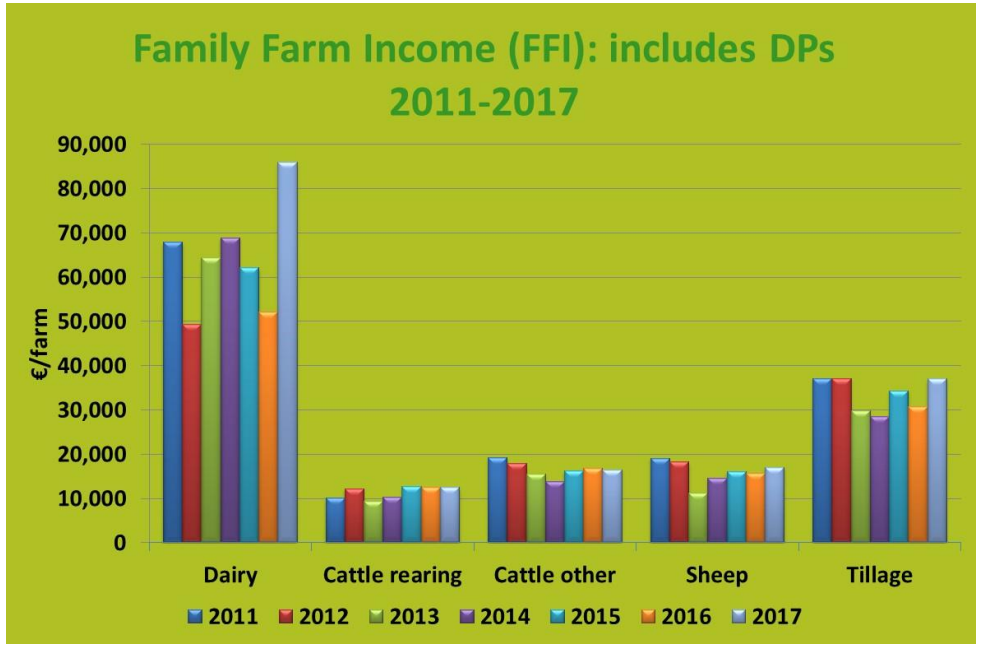
BDGP & BEEP; Key initiatives that are helping deliver greater profit and sustainability for our suckler beef farmers.



Dr Andrew Cromie, ICBF.

NDP
National Development Plan
Transforming Ireland

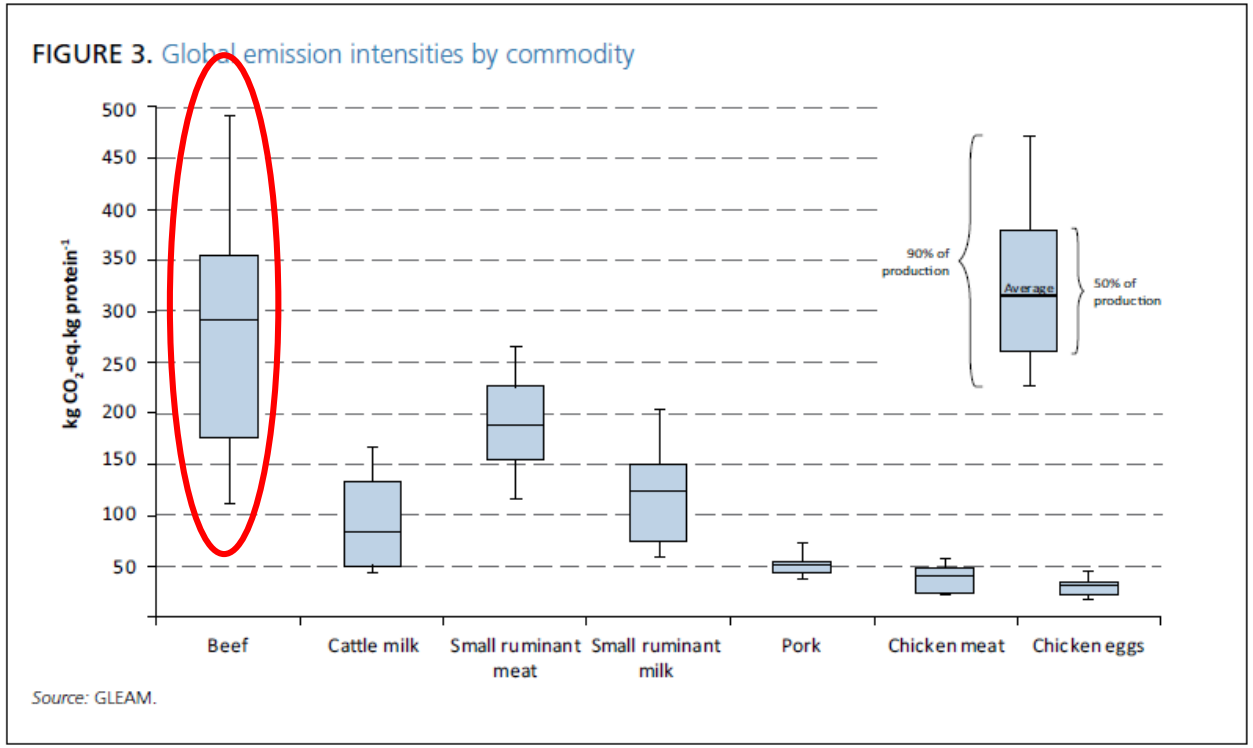
The profitability challenge.



	2008	2008 adj[1]	2018
Number of farms in sample	252	-	203
Stocking rate (LU/ha)	1.95	-	2.26
Live weight output (kg/ha)	637	-	832
Gross output (€/ha)	1,203	1,435	1,921
Gross margin (€/ha)	627	859	965
Net profit (€/ha)	61	293	380
Premia (€/ha)	645	503	503
Total profit (€/ha)	706	796	883
Premia as % of total profit	91%	63%	57%

- Suckler farm profitability is low, but there are opportunities for improvements (*Dillon, 2019*).

The sustainability challenge.



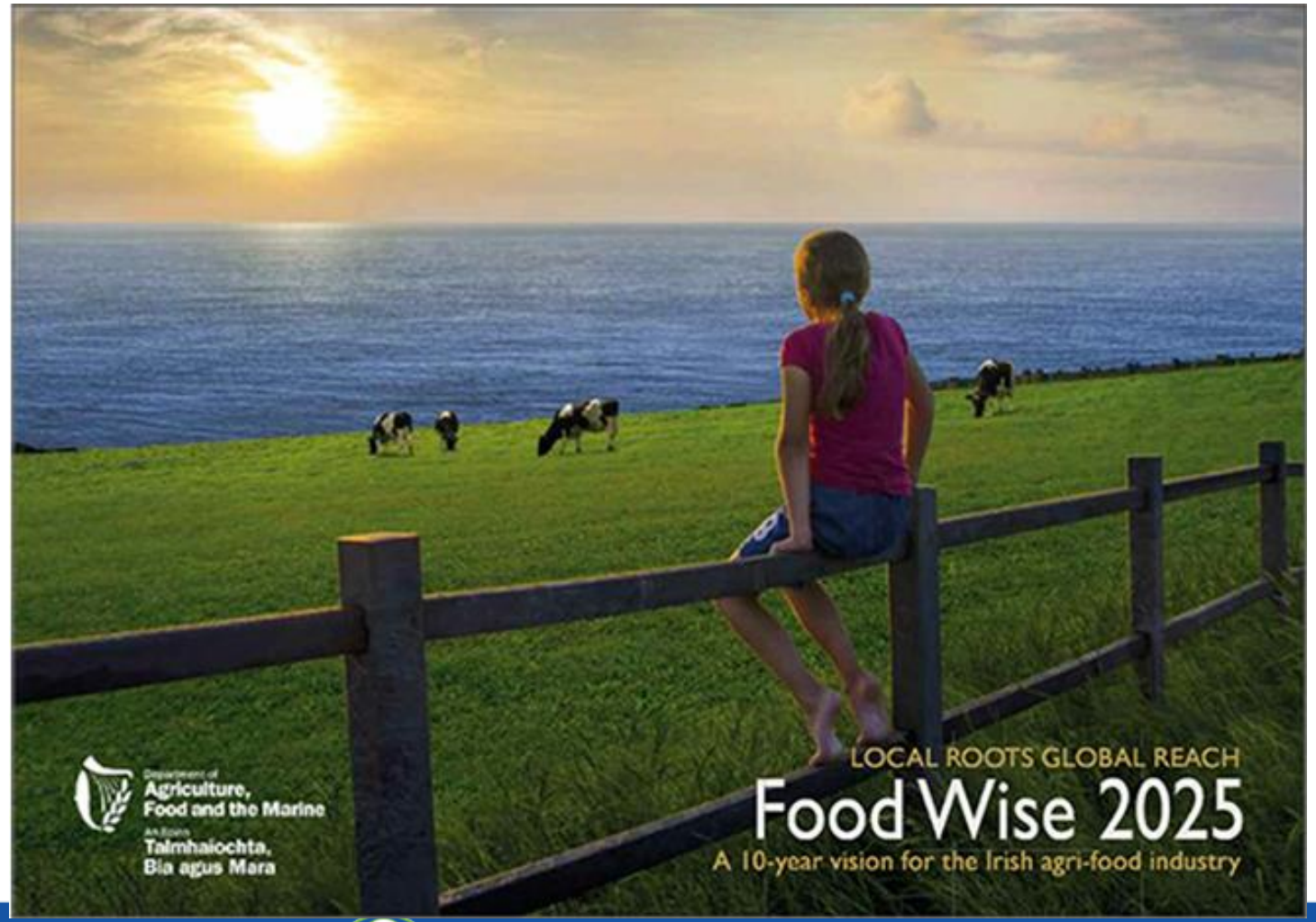
- Suckler cows are NOT carbon efficient, but lots of variation.

But we need suckler cows….

- Suckler cows & beef cattle are a key part of Irelands rural infra-structure.
  - Fragmented farms, marginal land etc.
- More carbon efficient when expressed at a systems level (i.e., lower stocking rate).
- *"In the context of the food versus climate challenge, there is a requirement on countries such as Ireland to become even more efficient in their beef production*". Searchinger 2016.

Beef Data & Genomics Program (BDGP).

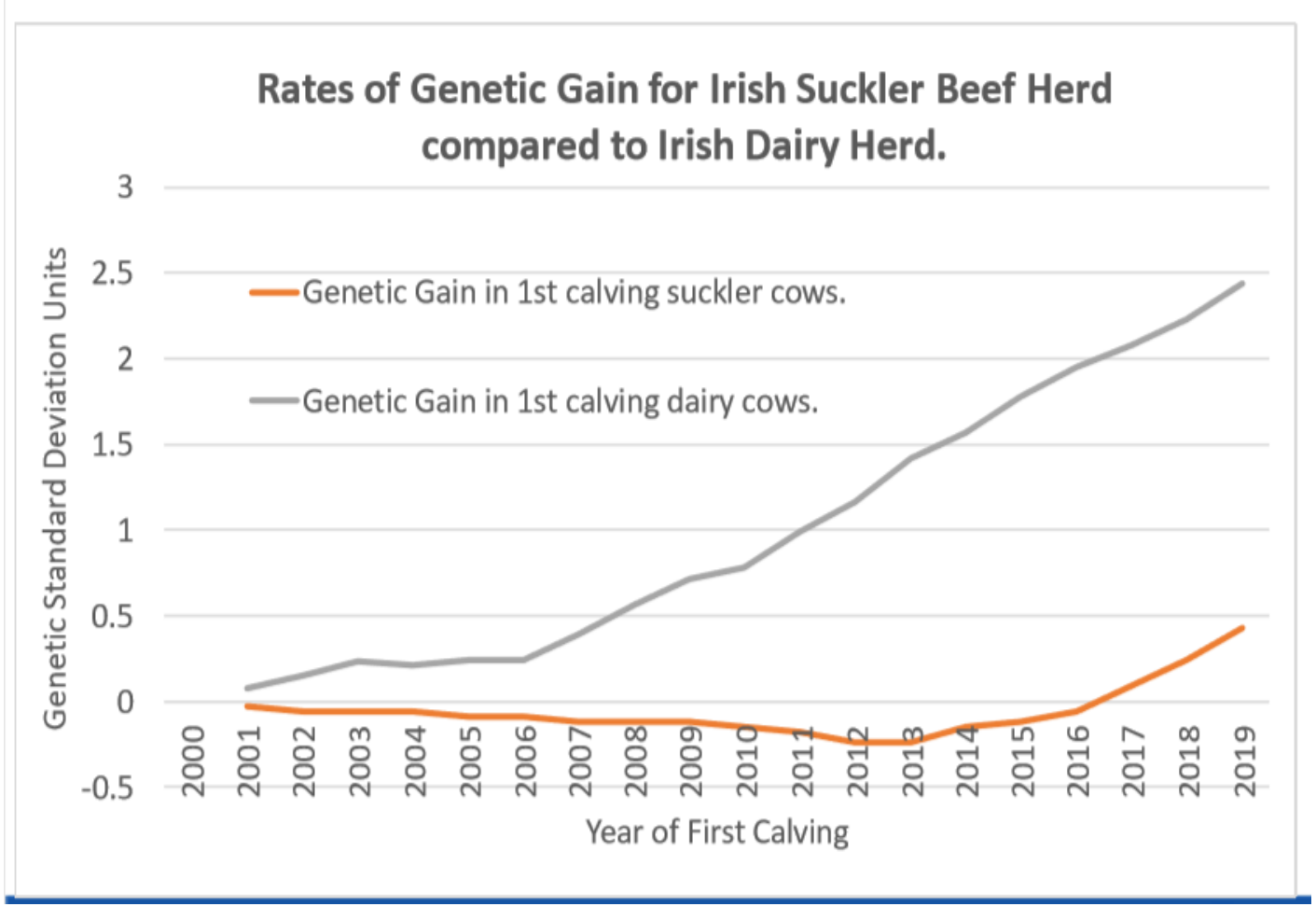
- Apply the latest DNA technology to support an important indigenous industry.
- Simultaneously addressing global challenges around GHG and food security



Irish Beef Data and Genomics Program.

- More profitable, sustainable & carbon efficient cows.
- €300m total funding 6 years (2015-2020), as part of RDP.
  - Farmers paid ~€90/cow/year to complete key actions re: the scheme, e.g., data recording & targets for 4/5 star cows & bulls.
  - ~24k farms & 550k cows.
  - ~1.5m animals genotyped to-date.
  - Cost of genomic service is €20/animal.
- Additional & complimentary Beef Environmental Efficiency Pilot added in 2019.
  - Additional action around cow and calf live-weight.

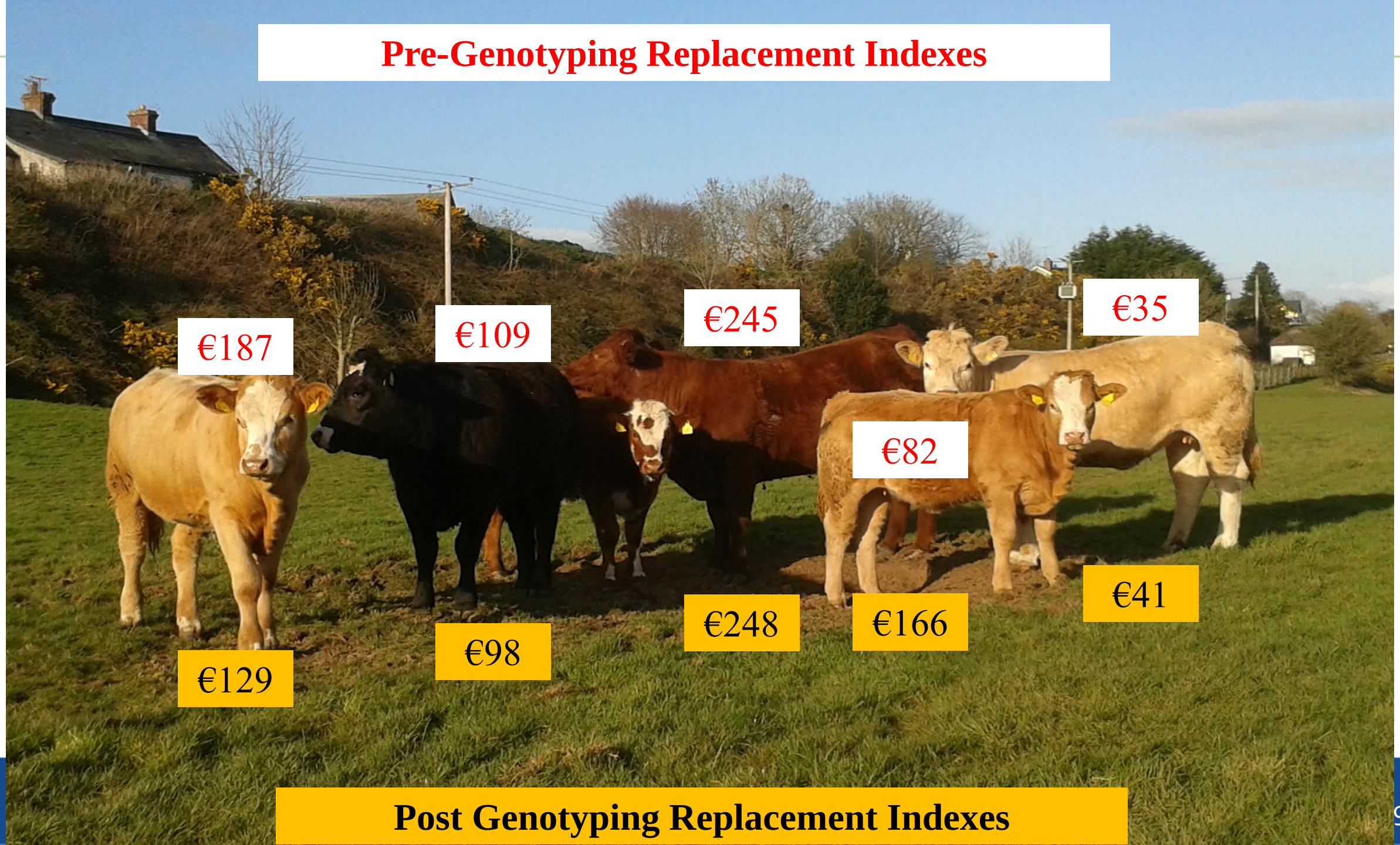
Impact of BDGP; Genetic Gain for Industry.



- Genetic gain in EBI unquestioned across industry.
  - Equivalent to €1.5 bn or 4 cpl in milk price.
- Could the same be achieved in Suckler beef => objectives of BDGP.
- Both EBI and Rep Index are now gaining at same rate (0.2 gsd/year). Only difference is 15 year time lag.
  - Rep Index => Has delivered ~€50m (0.15 cents/kg) to beef industry. Will grow to €300m by 2030.
- Direct impact of BDGP for Industry.

Impact of BDGP; Genetic Gain for Farmers.

Pre-Genotyping Replacement Indexes



Post Genotyping Replacement Indexes

Approach Taken.

- Key question; How accurate were the initial €uro-Star evaluations at predicting future performance?
  - Proofs taken from Autumn 2016, i.e., before animals own performance data was included in the evaluation. Animals ranked on this proof.
  - Subsequent performance for key profit traits assessed for key profit traits.
- 59,466 replacement females, calving for first time between 1st January 2017 and 30th June 2017.
  - With calving, cow live-weight, calf live-weight & progeny carcass data. With a minimum of 3 cows in the contemporary group.
- Initial "raw data" presented in paper. Statistical analysis applied by Teagasc (Dr Alan Twomey) and applied for this presentation.
  - Allows for correction of non-genetic effects, such as age, parity, heterosis etc.

Recap; €uro-Star Replacement Index.

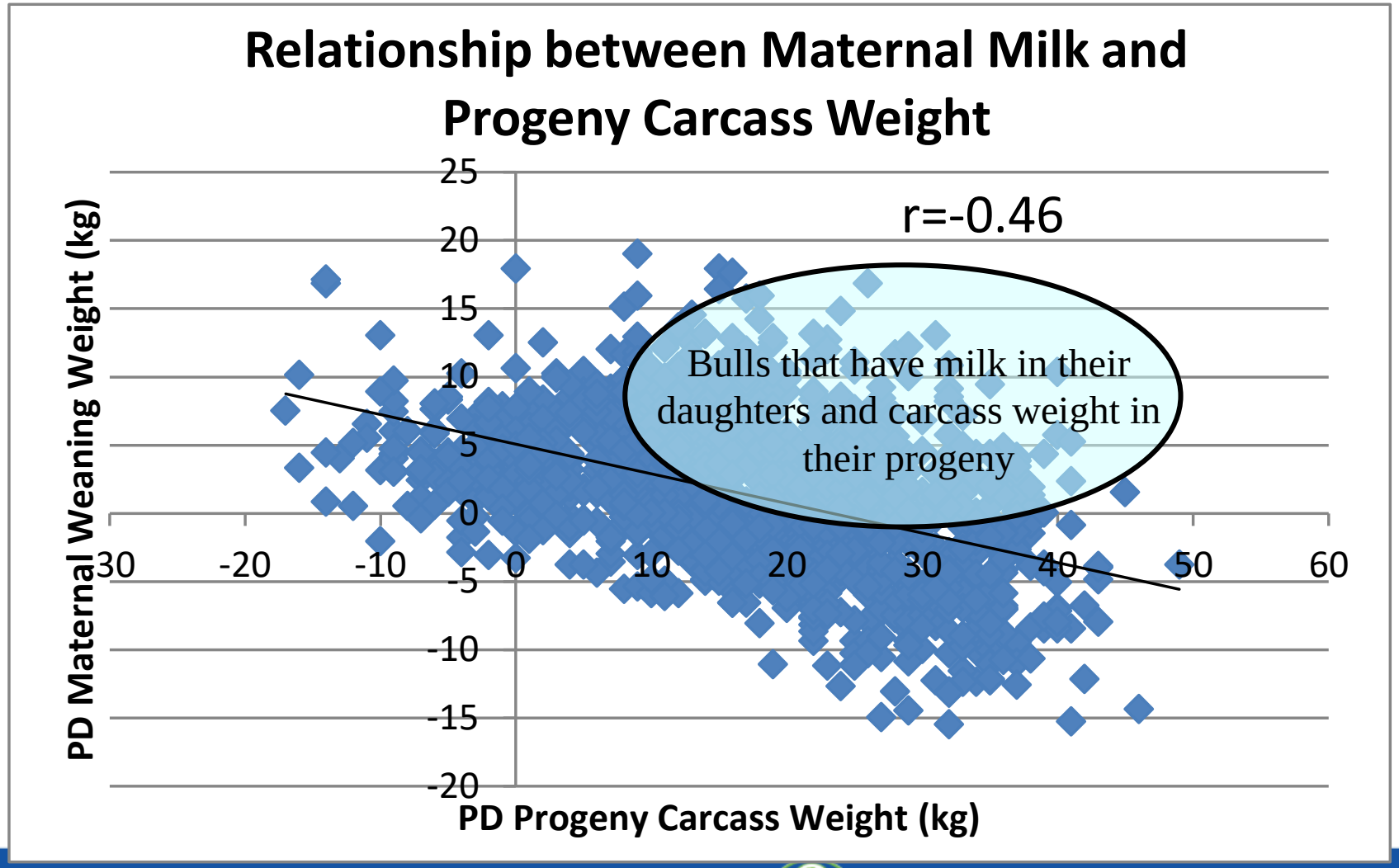
Trait	Goal	Relative wt
Calving	Less	16%
Cow size		%
Carcass		%
Materna		%
Female fertility	More	23%
Docility	More	4%

Emphasis:

Cow traits 71%

Calf traits 29%

Rec-cap; Identifying the “curve-benders!”



Validation Results for Key Profit Traits*.

Stars	Rep Index	Age 1st calving	CI Days	Cow surv%	Calf Live-wt	Cow Live-wt	Carc wt	Carc Conf	Carc Fat
5 stars	€114	816	365	0.89	271	672	335	7.8	9.7
4 stars	€82	812	367	0.88	267	674	333	7.8	9.6
3 stars	€65	824	367	0.87	267	680	333	8.0	9.5
2 stars	€49	830	370	0.86	266	683	334	8.0	9.5
1 star	€23	846	371	0.84	267	690	334	8.0	9.6

** Expressed relative to a 3rd parity cross-bred suckler cow.*

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Diff 5 vs 1	€91	-30	-6	0.05	4	-18	1	-0.2	0.1

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Diff 5 vs 1	€91	-30	-6	0.05	4	-18	1	-0.2	0.1
E Value (€)		-0.99	-5.07	8.86	5.58	-0.55	2.1	10.2	-5.4
Overall (€)		€29.7	€30.4	€44.3	€22.3	€9.9	€2.1	€-1.7	€-0.5

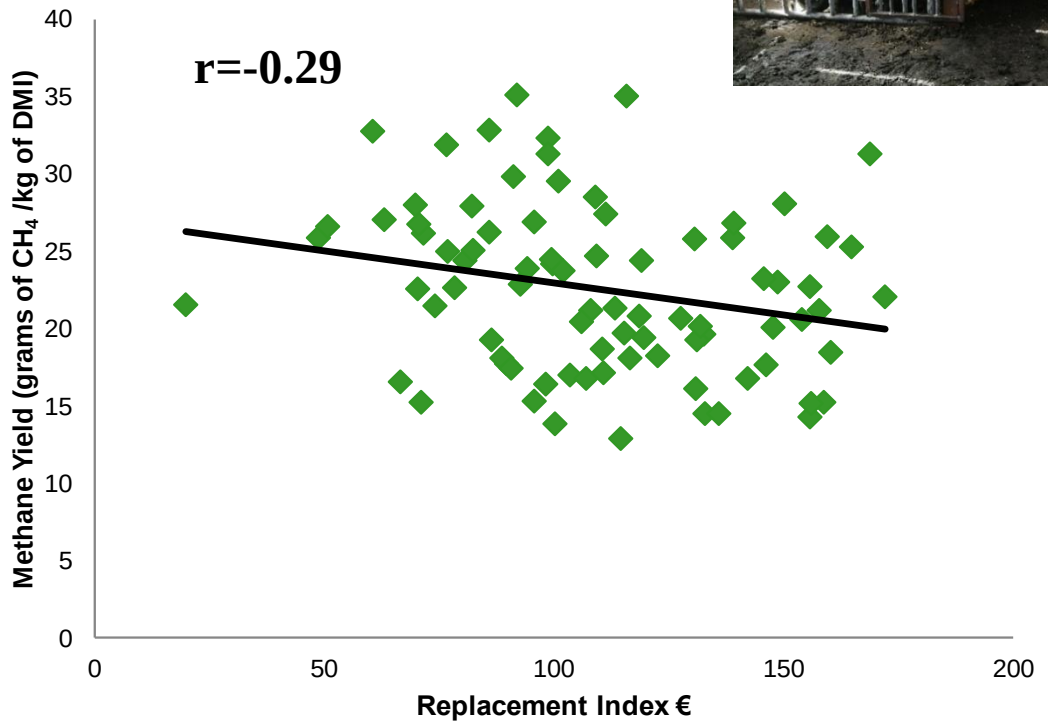
- Indexes predicted a difference of €91. Actual was €137.

Further opportunities.

- Opportunity to further increase genetic gain in the future;
  - Direct measurement of Methane.
  - Age at Slaughter Traits.
  - Further expansion in level of genotyping.

1. Direct measurement of Methane.

	N	FCR	ADG	Terminal Index	Replacement Index
CH_4 g/d	83	NS	NS	-0.27	-0.26
MY	83	NS	-0.22	NS	-0.24
gCH_4/kgBW	83	NS	NS	-0.32	-0.29
MI	83	NS	Ns	-0.23	-0.37



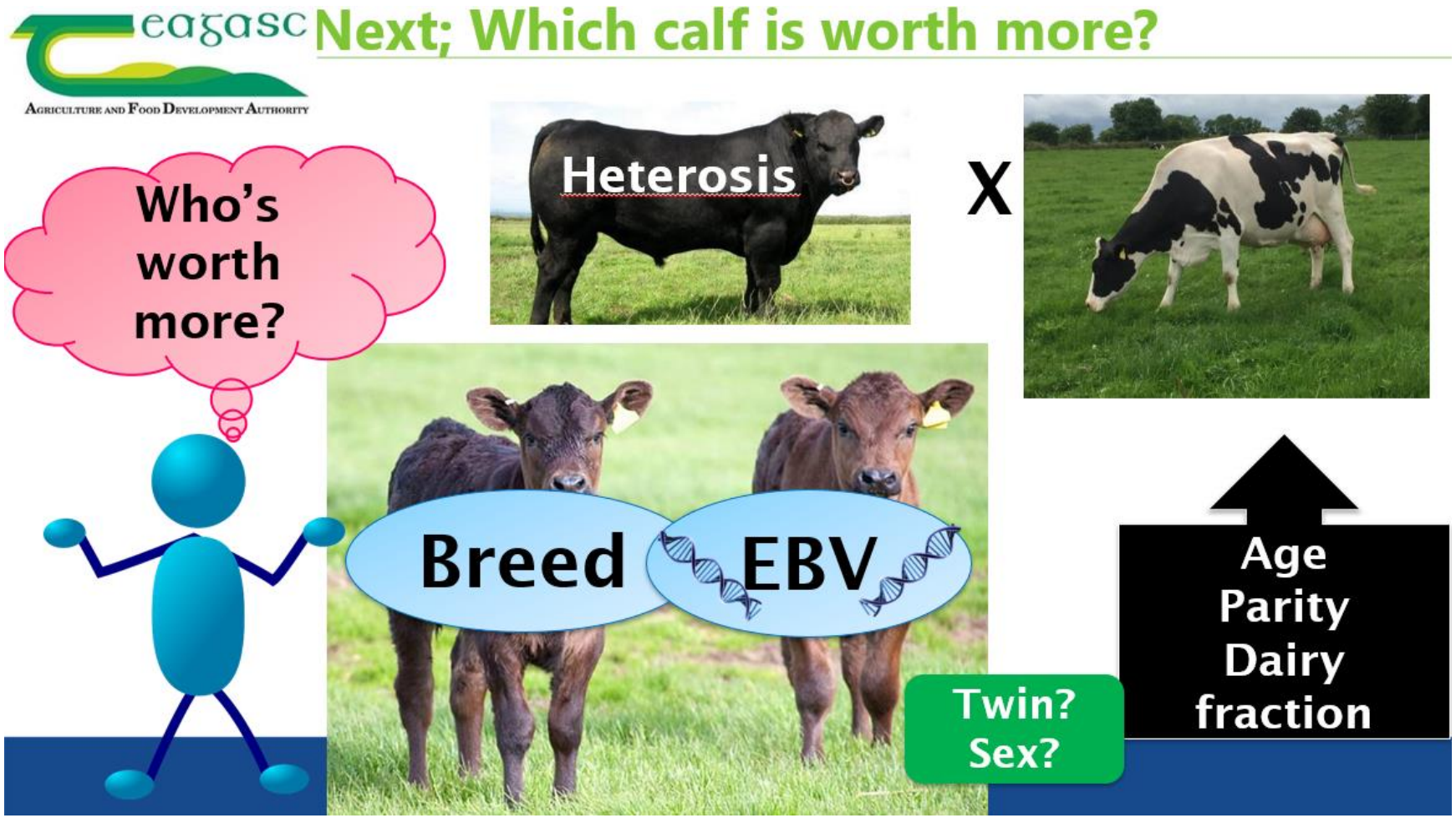
- Direct measurement of methane now part of G€N€ IR€LAND program at Tully, Kildare. Linked with various DAFM/Teagasc/UCD funded projects.
- Confirmation that selection for Rep Index => more carbon efficient cow (~-20%). Hugely significant outcomes for Irish beef (& dairy) industry.

2. Age at slaughter.

	24-month		30+	
	ANxDairy	LMxBeef	ANxDairy	LMxBeef
N animals	48,731	12,164	20,738	13,738
N weights	52,707	22,965	21,157	23,534
Life DMI	5,191	5,610.00	7131	7847
Sl Age	732	738	972	984
DMI/day (kg)	7.1	7.6	7.3	8
Sl LWT (estim. from CWT)	625	701	662	730
Sl LWT (estim. growth curve)	626	696	674	730
CWT	319	386	344	408
Conform. (1-15)	5.5	8.9	5.2	8.8
Fat (1-15)	8.8	8.4	8.8	8.2
CO_2e/lifetime (kg)	3,026	3,271	4,134	4,575
CO_2e/kg CWT (kg)	9.49	8.47	12.09	11.21

- Work undertaken as part of G€N€ IR€LAND program to quantify GHG gains from breeding & systems changes (with Teagasc & ABP).
  - Suckler beef better than dairy beef, when expressed on a Cwt basis.
  - 24-month systems are ~ 25% more efficient than 30+ month systems.
  - 5-star animals ~15% more efficient, within systems (results not shown).
- Reducing age at slaughter from our suckler herd by 1 month is equivalent to not having to slaughter 50k suckler cows.

3. Increased level of genotyping.



- Genotyping now wide-spread in suckler herds. Now growing in dairy herds.
- Once a calf is born (suckler beef or dairy beef) => generate a "beef value" based on its genotype.
- Updates through an animals lifetime, with additional weight data.
- Available through mart screens.
- Means of animals (especially dairy beef) with confidence.

Summary.

- BDGP and BEEP are two initiatives that have delivered increased profitability and sustainability for suckler beef industry.
  - Genetic gain for industry – Rates of gain (0.2 gsd/year).
  - Genetic gain for farmers – Validation using on farm data (€137/prog).
  - Genetic gain for consumers/society – Direct measurement of methane (-~20% reduction in GHG output/animal).
- Despite many challenges, our suckler beef (and dairy beef) industries are in a uniquely strong position to capitalize on ongoing technical improvements.
- Close collaboration amongst many industry partners a key aspect of this (ICBF, DAFM, Teagasc, Bord Bia, AHI, meat processors…).