Squaring the Bovine Circle - An Irish Perspective

Ross Evans ICBF

ICAR: 27 April 2021

Session: Supporting Circular Economy: how does it affect the Breeding Goals?

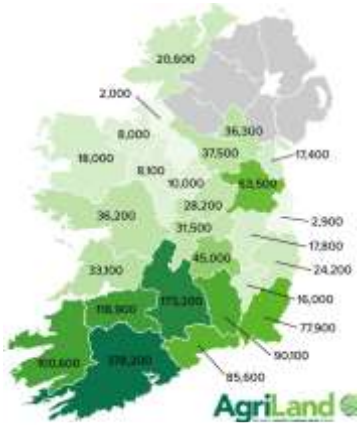
An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

AgTech - it's in our DNA

Overview

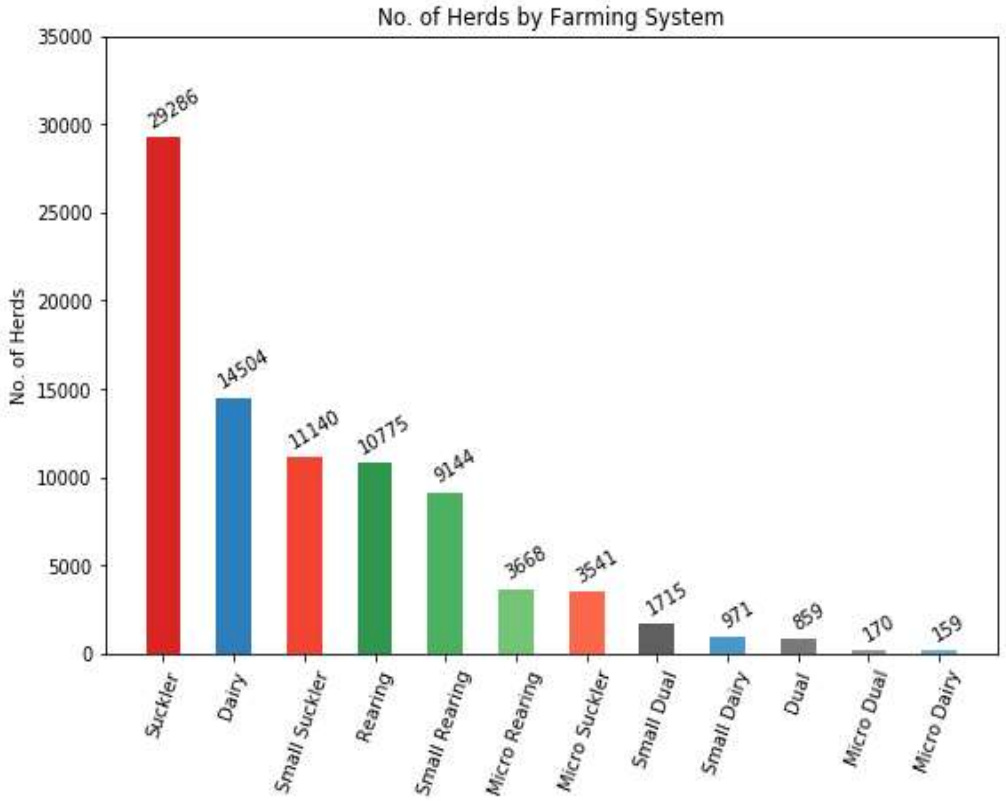
- Current Irish Bovine herd statistics
- Defining the Circle
- Climate and Environment and impact of breeding goals
- New initiatives on the horizon
- Summary

Irish Bovine population stats

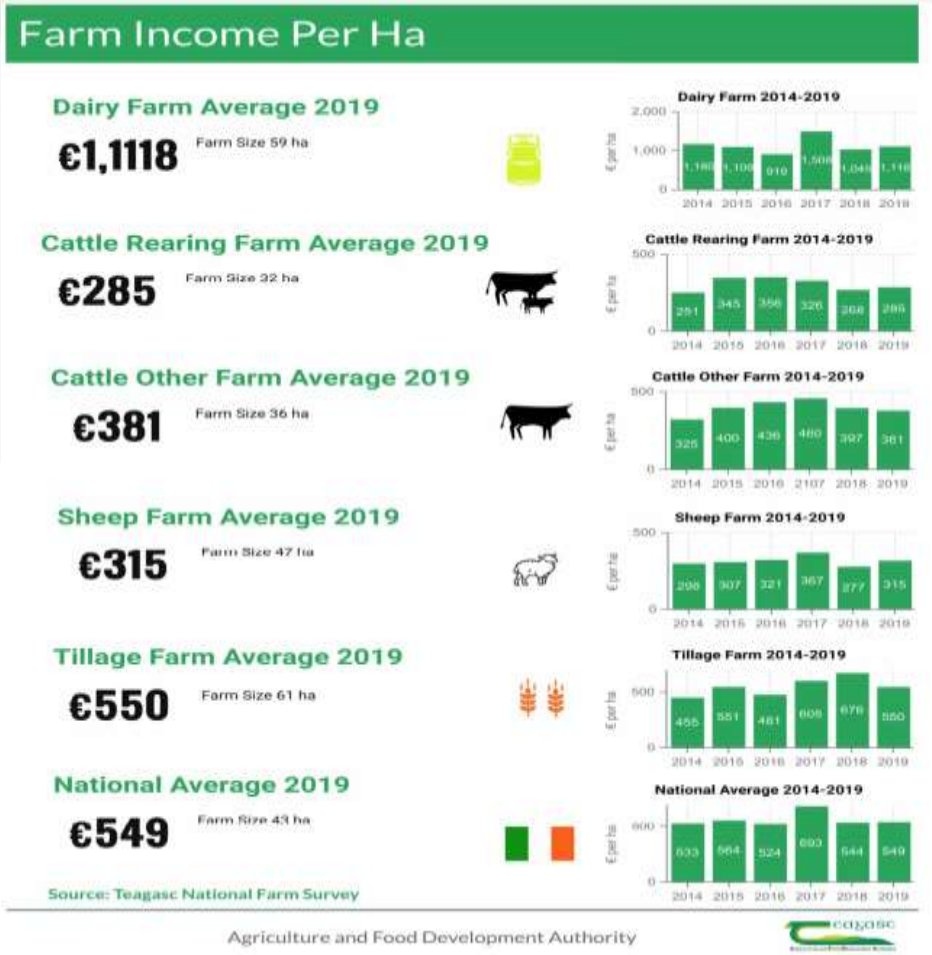


Dairy cows: 1.5m

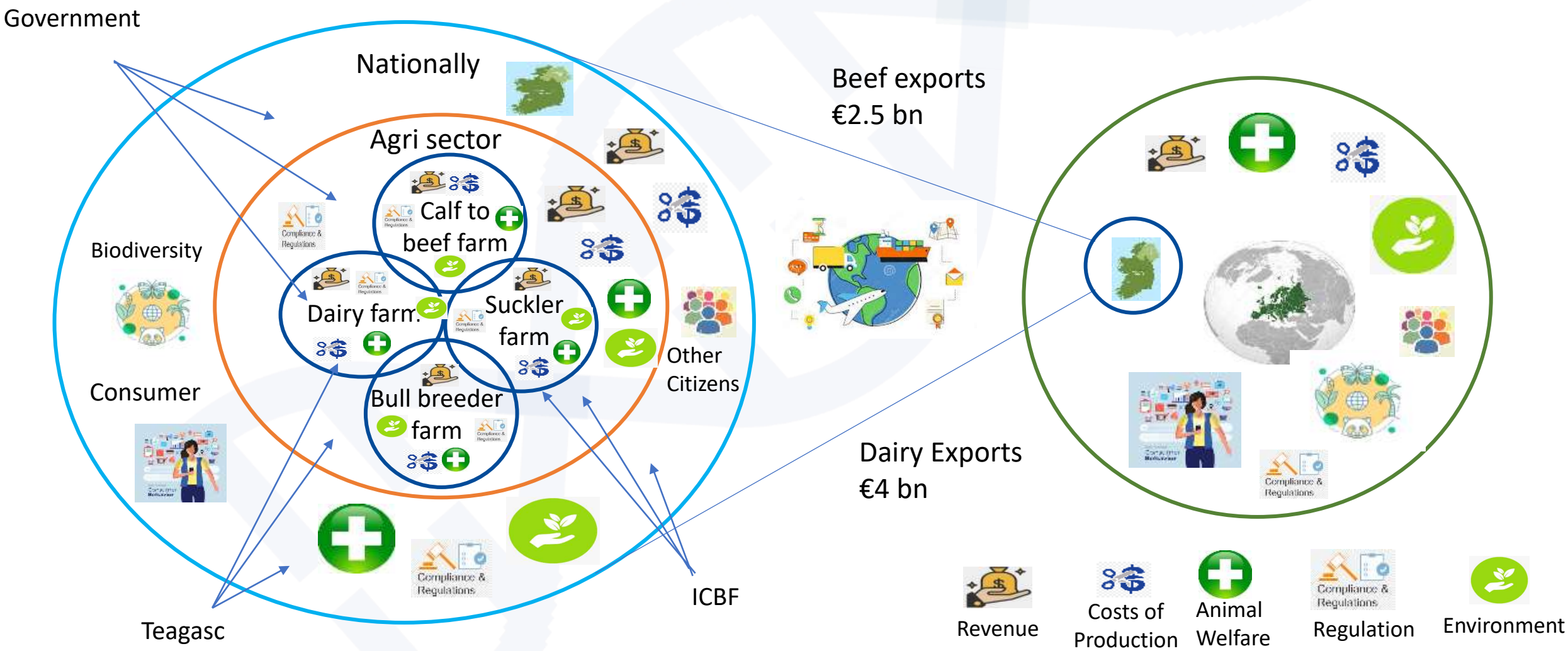
Suckler cows: 0.95m



Suckler >=10 cows, dairy >=20 cows
Seasonal system: 85% cows calve in the Spring



Defining the circle



Climate and the Environment

- Current Narrative
- National Mitigation Strategy
- Dairy Breeding Goals
- Suckler Beef Breeding Goals

The Climate and Environment narrative

Climate bill threatens national herd

HANNAH QUINN-MULLIGAN
NEWS CORRESPONDENT

A massive cut to the national herd could be on the cards for Irish farmers unless alternatives are found to dramatically cut agriculture's contribution to greenhouse gas emissions.

The climate bill published this week sets legally binding targets to ensure Ireland reaches net zero emissions by 2050.

Agriculture accounts for 34% of Irish emissions and, unless new technology or emissions calculations are introduced, the number of livestock in

The council previously suggested that up to 53% of the suckler herd (536,000 cattle) would have to be culled by 2030 to meet emissions targets, but increased afforestation and improved fertiliser use are also being pushed as solutions.

However, with a 51% target reduction by 2030, the livestock sector is facing significant challenges.

Launching the bill on Tuesday, Minister for the Environment Eamon Ryan highlighted the importance of biodiversity and promised that farmers "will be paid properly for looking after nature". All eyes will now be on Minister for Agriculture Charlie Mc-

Climate Bill is going to mean a decade of pain for Irish agriculture

The Climate Action Bill, due to be published by the government on Tuesday, is going to place a whole new set of legally binding constraints on Irish farming, writes Lorcan Allen.

Biogenic methane target needed or national herd faces cut – Department

HANNAH QUINN-MULLIGAN
NEWS CORRESPONDENT
EXCLUSIVE

If agriculture is not granted a separate climate target for biogenic methane then the national herd could be facing a 5m cut in numbers, an internal Department of Agriculture document reveals.

The document, seen by the *Irish Farmers Journal*, discusses climate targets in relation to greenhouse gas emissions and biogenic methane is necessary if net zero carbon ambitions are to be achieved.

Agriculture accounts for 34% of emissions in Ireland, with the bulk made up from biogenic methane, which is methane from livestock.

"Emissions from agriculture will never reach zero," the document says and points to the need to establish a separate target that still aligns with international standards.

agriculture would be expected to reduce emissions by 7mt per annum.

This would mean either a 5m reduction in cattle numbers or a combined 150,000ha of bog rewetting and roughly an extra 700,000ha of forestry by 2050, according to the report.

Specific targets for each sector under the Climate Bill are expected to be announced this autumn, and although the "distinct characteristics" of biogenic methane are recognised, it

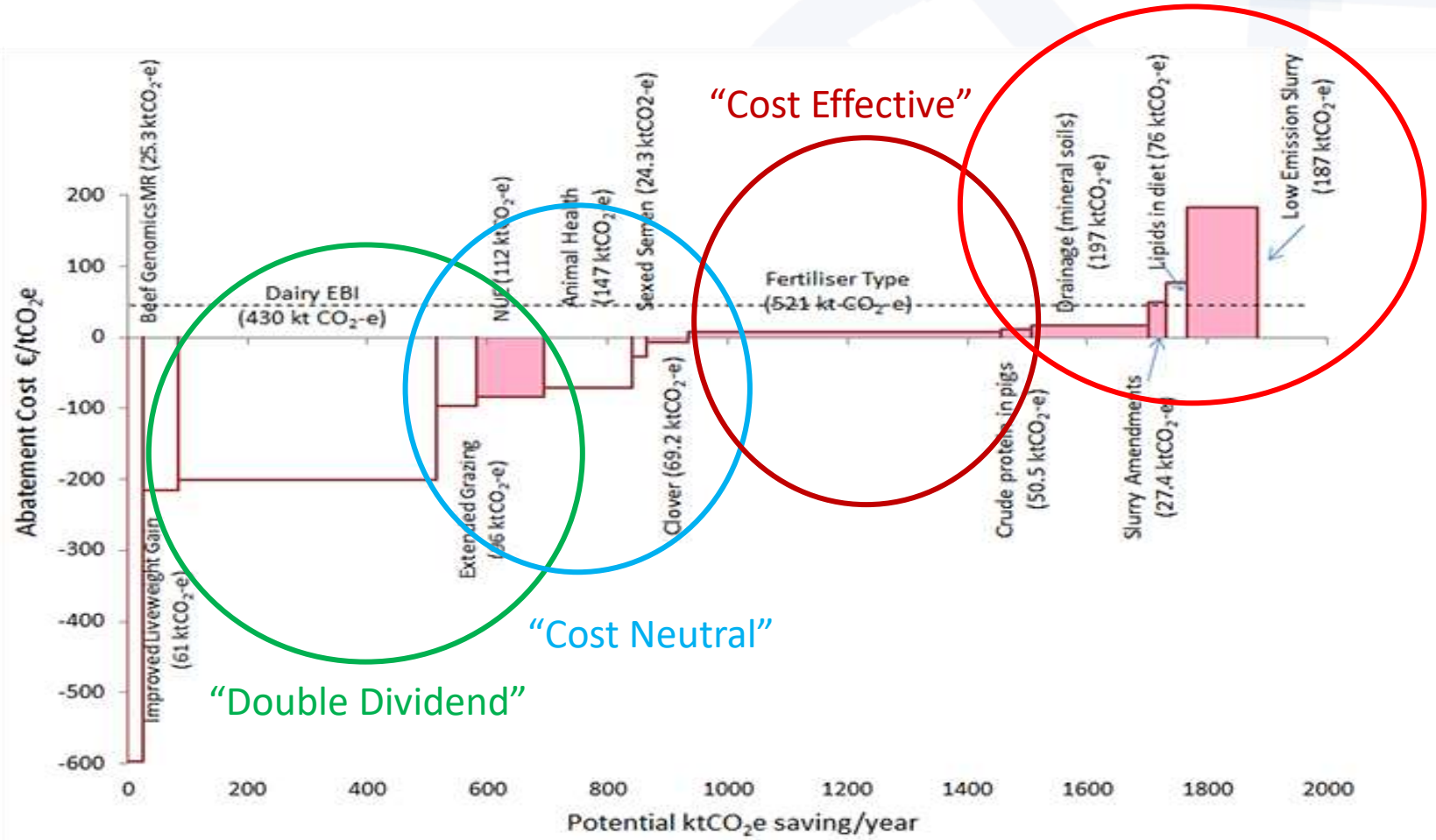
An internal report shows the Department of Agriculture has worked out worst-case scenarios for the cattle sector.
\ Claire Nash

Carbon-neutral suckler scheme on the cards for next CAP

- Mainstream agriculture under intense scrutiny as regards GHG emissions (32% of national total)
- ➢ Climate and Environment issues are here to stay

Potential mitigation strategies

Teagasc Marginal Abatement Cost Curve for Irish Agriculture (MACC)



Source: Lanigan et al. 2018 'An Analysis of Abatement Potential of Greenhouse Gas Emissions in Irish Agriculture 2021-2030'. Teagasc Greenhouse Gas Working Group

Dairy Breeding Goals

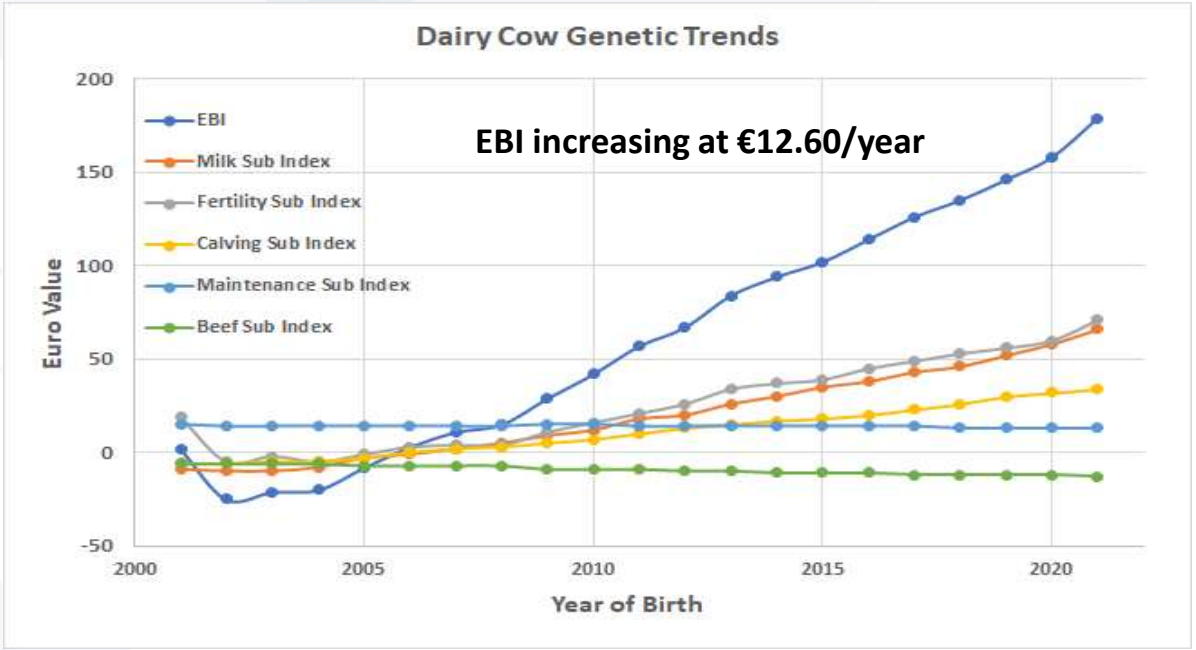


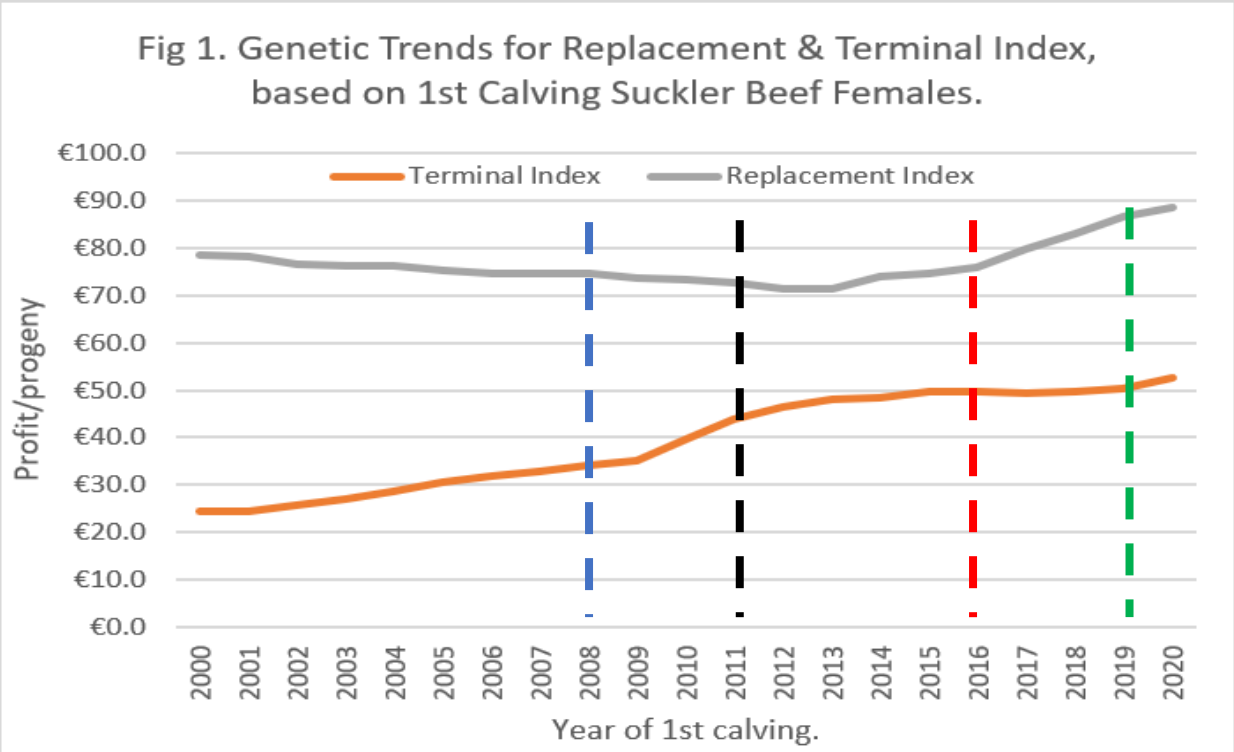
Table 1. Change in performance of the national dairy herd (2010-2019).

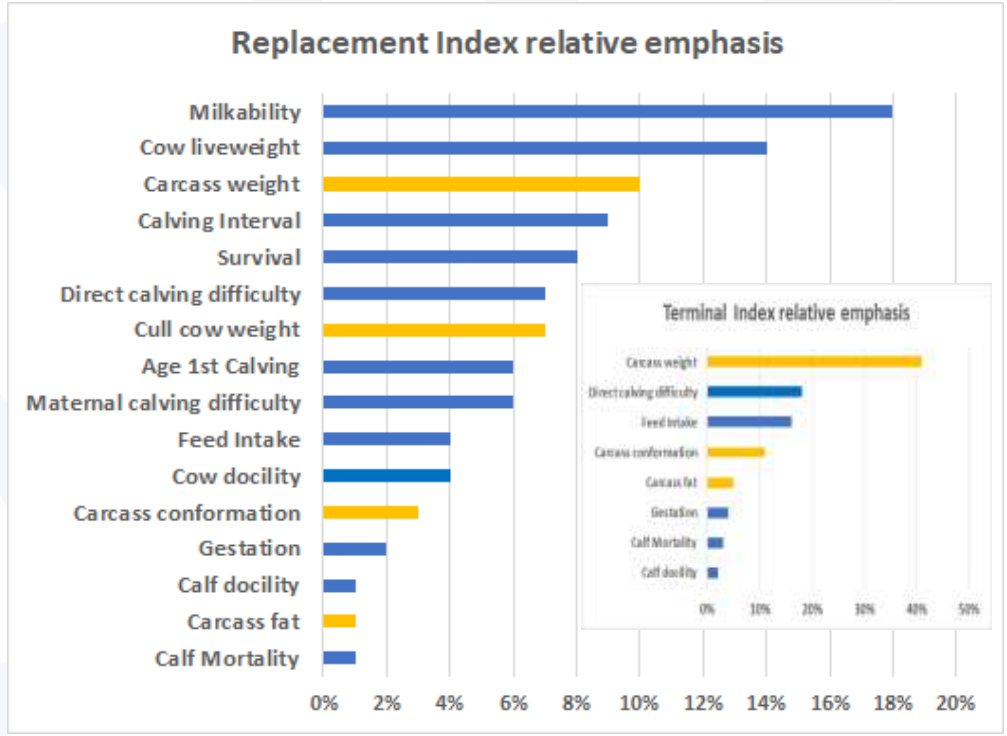
Year	Milk (l/cow)	Fat%	Protein%	F+P kg/cow	6 week calving rate%
2010	4,966	3.85%	3.37%	359	52%
2019	5,446	4.17%	3.53%	419	65%

Each €10 increase in EBI ↓ 24.9 kg CO_2 equivalents less per lactation
Fertility and Longevity are key drivers of reduced emissions intensity

Shalloo et al. 2021 (preliminarily presented at Irish Grassland Conference 2020)

Suckler Beef Breeding Goals





SCWS scheme
- Ancestry
- Phenotypes
- Welfare

BDGP scheme
- Genotyping
- Phenotypes
- Genetic improvement
- Environment

BEEP scheme
- Cow weights
- Calf weights
- Efficiency
- Environment


Revenue


Costs of Production

Each €10 increase in Replacement Index ↓
Enteric methane EI by 0.09 kg CO_2e kg/meat/cow/year
Each €10 increase in Terminal Index ↓
Enteric methane EI by 0.21 kg CO_2e kg/meat/cow/year

Quinton CD, Hely FS, Amer PR, Byrne TJ, Cromie AR. Prediction of effects of beef selection indexes on greenhouse gas emissions. Animal. 2018 May;12(5):889-897

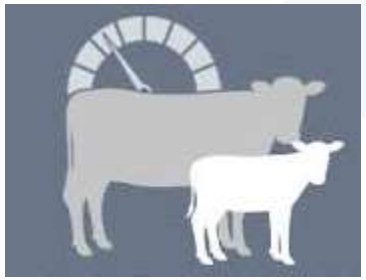
New initiatives

- Accelerating current genetic gain
- New Traits

Accelerating existing genetic progress

- Increasing AI usage and sire recording
  - Dairy sired calves: 73% AI sired, 17% unrecorded sire
  - Beef x dairy calves: 26% AI sired, 40% unrecorded sire
  - Suckler calves: 19% AI sired, 24% unrecorded sire

- Increased milk recording
  - 55% of cows currently recorded



- Increased liveweight recording
  - Dairy cows: < 10%
  - Beef cows: 35%
  - Country wide technician service

- DNA based calf registration pilot

Enhanced training populations

- Harmonisation of bio-economic models across dairy and beef

New Traits

Dairy Beef Index

BREEDING HIGH QUALITY BEEF CATTLE FROM THE DAIRY HERD

ICBF.com

Test EBVs phase

Age at Slaughter EBVs

Age

Routine EBVs phase

New health trait EBVs

icbf

TB

Liver Fluke

Genetic Resistance

Trained panel MEQ EBVs

Meat Eating Quality

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Data gathering phase

Direct measures CH_4 CO_2

Indoor

At pasture

Potential 17% increase in Mitigation by including directly in profit indexes

eagase

ahi Animal Health Ireland

abacusbio.

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

VistaMilk

Summary

- Important to think about the larger circle
  - Sector level to national level and beyond
- Climate and the Environment is the biggest challenge
- Broad breeding goals are delivering GHG mitigation
  - Need to accelerate with better selection accuracy and new traits
- Large opportunities to collaborate across many disciplines