An overview of updates and modifications to the Irish suckler beef breeding indexes

with Dr. Paul Crosson,
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National Beef Conference 2023

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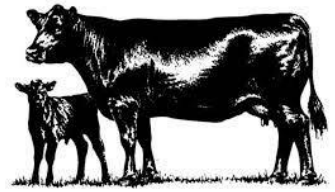
Shearwater Hotel, Ballinasloe, Co. Galway

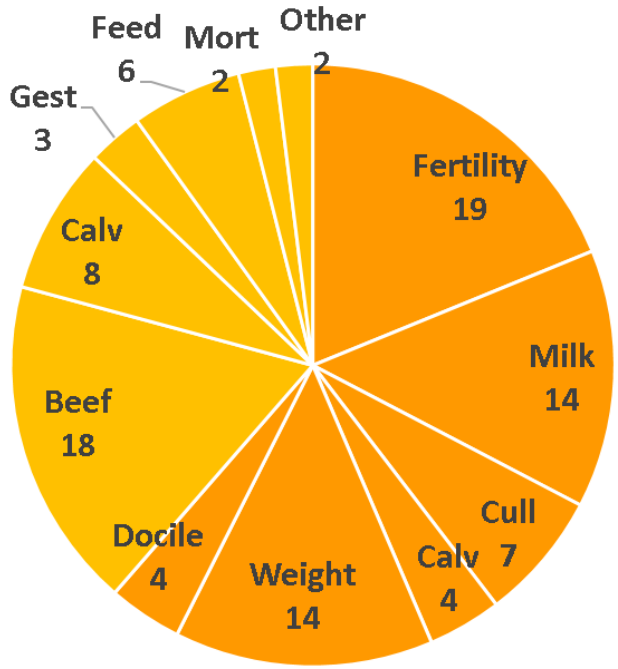
Teagasc
Agriculture and Food Development Authority

What are breeding indexes

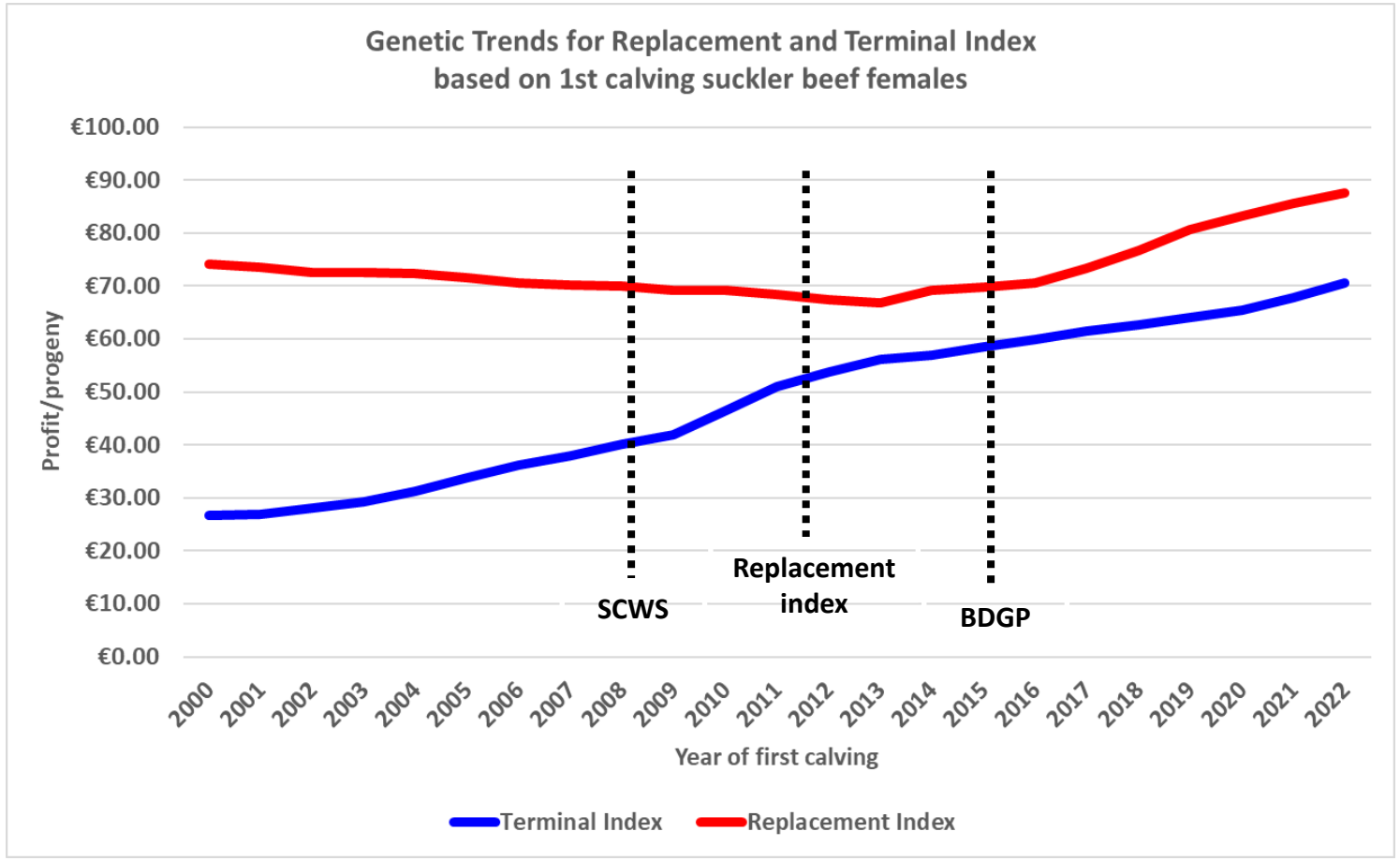
- A value that is assigned to all breeding beef animals, bulls and cows
- Indicates the expected profit generated from the progeny of that animal relative to the ‘average’
- Combines traits that are important in beef cattle
- Helps farmers to select bulls and cows to breed from
- **Terminal Index** – expected profit of finishing progeny
- **Replacement Index** – expected profit of female progeny when raised to be suckler cows

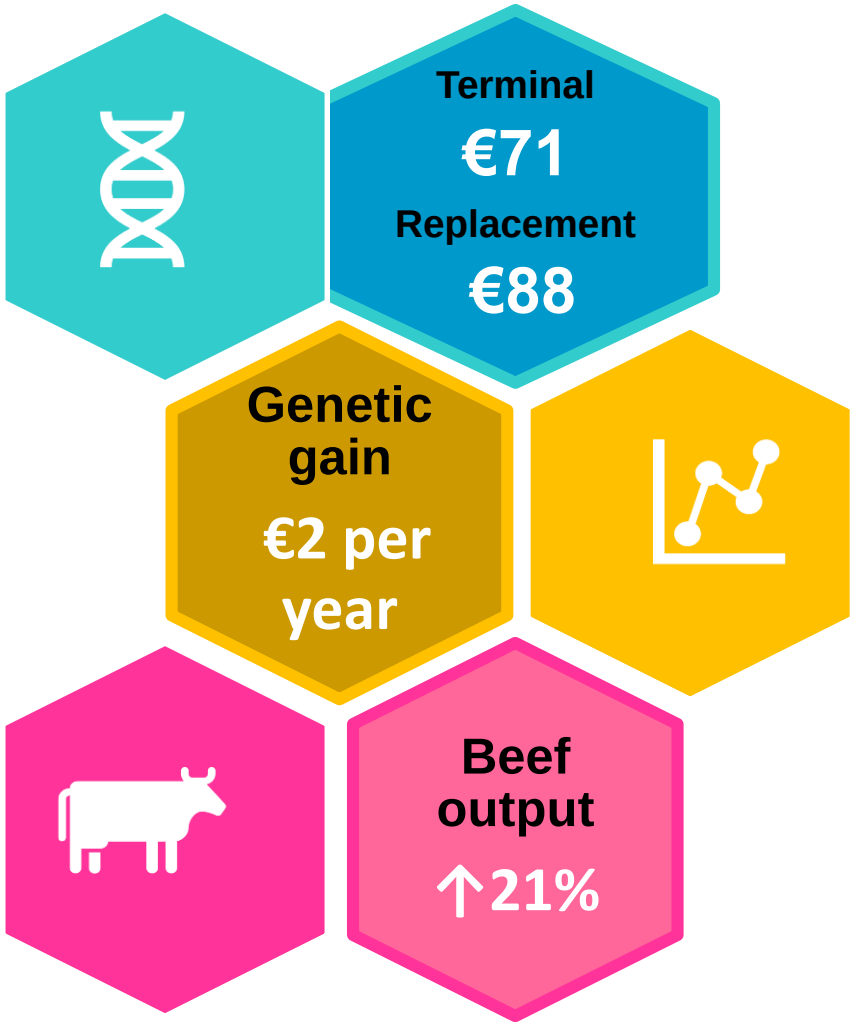


Replacement Index



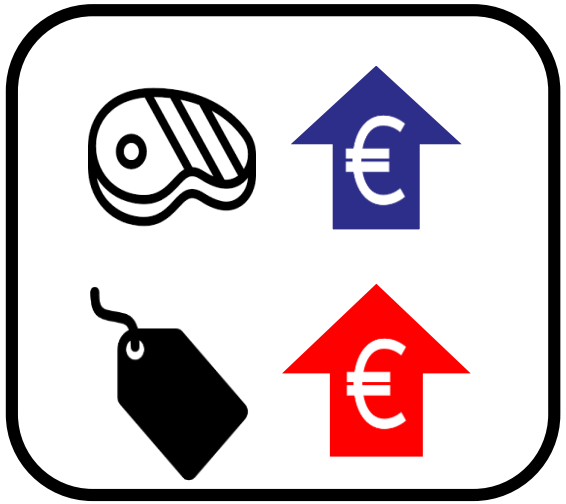
Suckler beef indexes: a timeline of progress





Eurostars selecting for more profitable & efficient animals for Irish beef farmers!

Why change?



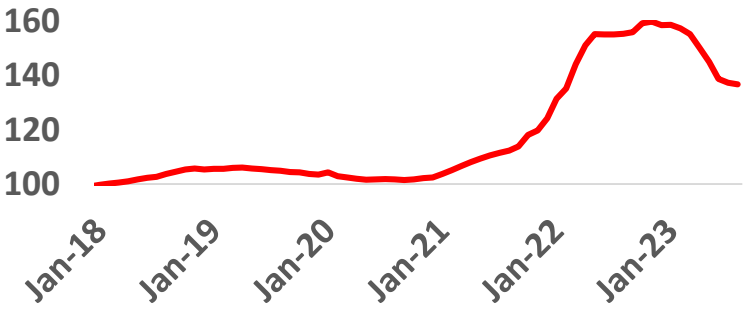
Market price changes

New traits, methods and technology

CO_2e by 25% 5.75 Mt CO_2e

2030

Policy changes



Source: CSO

Tax on farming emissions vital to Denmark's climate targets, says government adviser

Agriland

Carbon farming: Floor price needed to incentivise trading

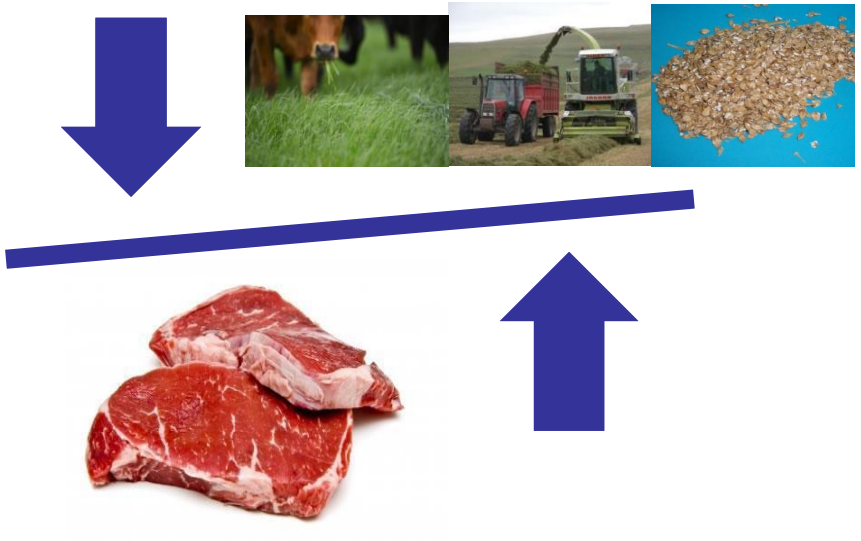
Main updates and objectives

- Reduce the cost of producing beef cattle
  - ✓ Cow size
  - ✓ Finishing age
  - ✓ Fertility
  - ✓ Fewer difficult calvings

2015	2022
€1094	€1546

Teagasc NFS: Total cost per cow unit for suckling farms

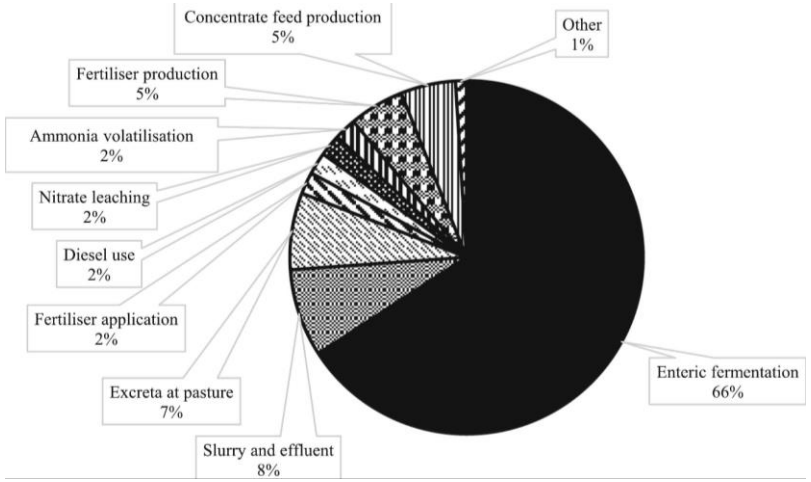
- Increase value of output
  - ✓ Higher live weight performance
  - ✓ More cattle meeting specs
  - ✓ Fertility also key for output



- Further reduce GHG emissions

Carbon in the breeding indexes

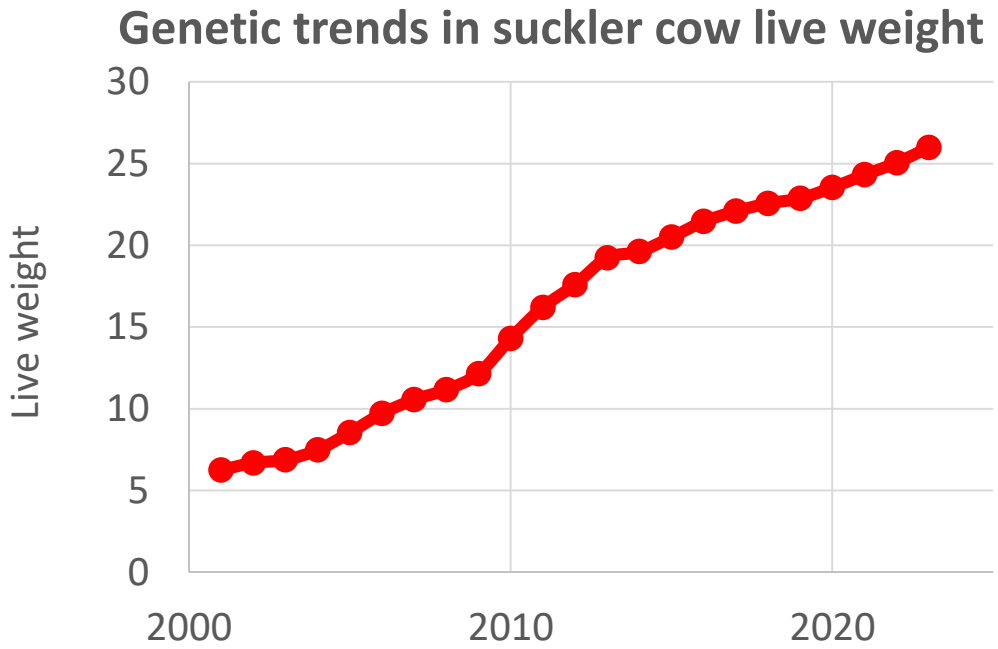
- Deployed in EBI (dairy) and DBI (dairy-beef) in 2023
- Absolute carbon emissions
  - ✓ Framework to deploy methane gEBVs
  - ✓ Assumed carbon price; €80/t
- Example: age at first calving
  - ✓ All else being equal, earlier first calving age → less carbon (plus lower costs)



Production economic value €/d	Carbon Output (kg/d)	Economic value (€/d)	Combined economic value (€/d)
-1.76	+1.40	-0.11	-1.87

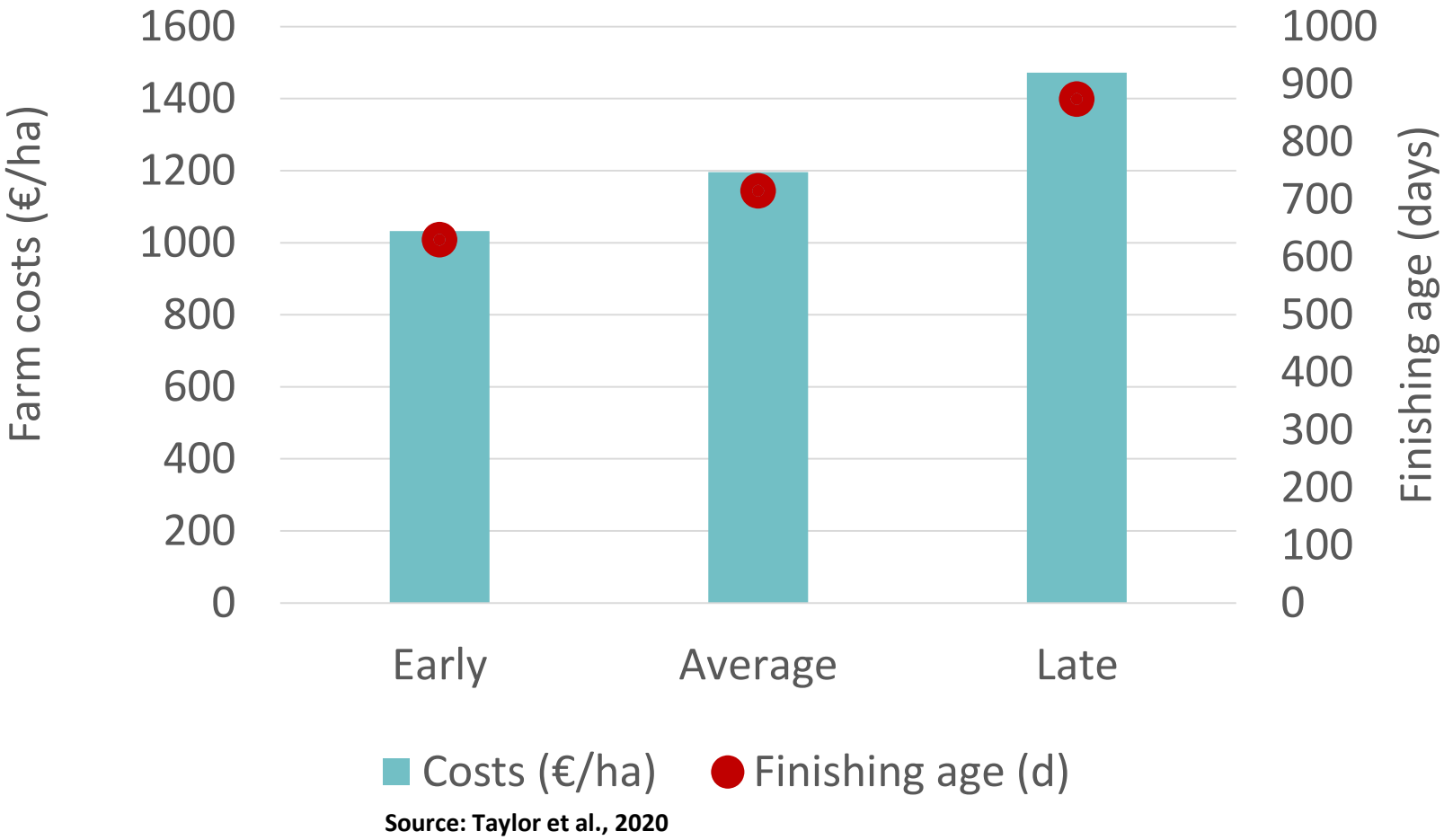
Reducing costs – lower feed demand

- Feed contribution
  - ✓ Grazed pasture, 68%
  - ✓ Grass silage 26%
  - ✓ Concentrates 6%
- Average cost of feeding
  - ✓ Cow, 13 c/kg DM
  - ✓ Calf to finish, 18 c/kg DM



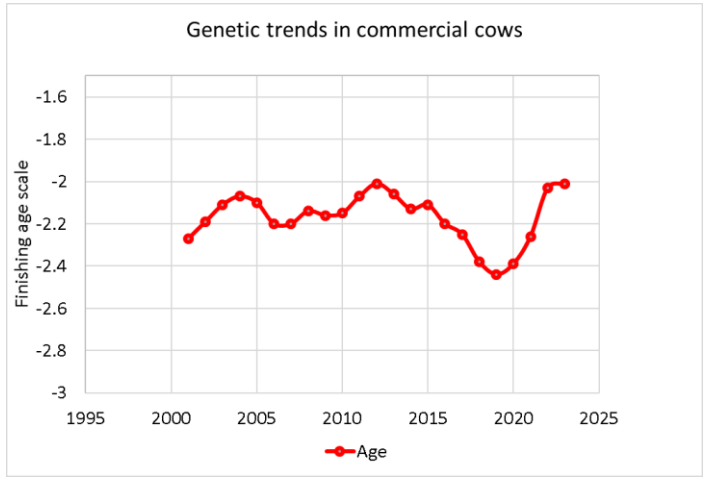
- Cow size, finishing age, intake EBVs and fertility components

Reducing costs – finishing age



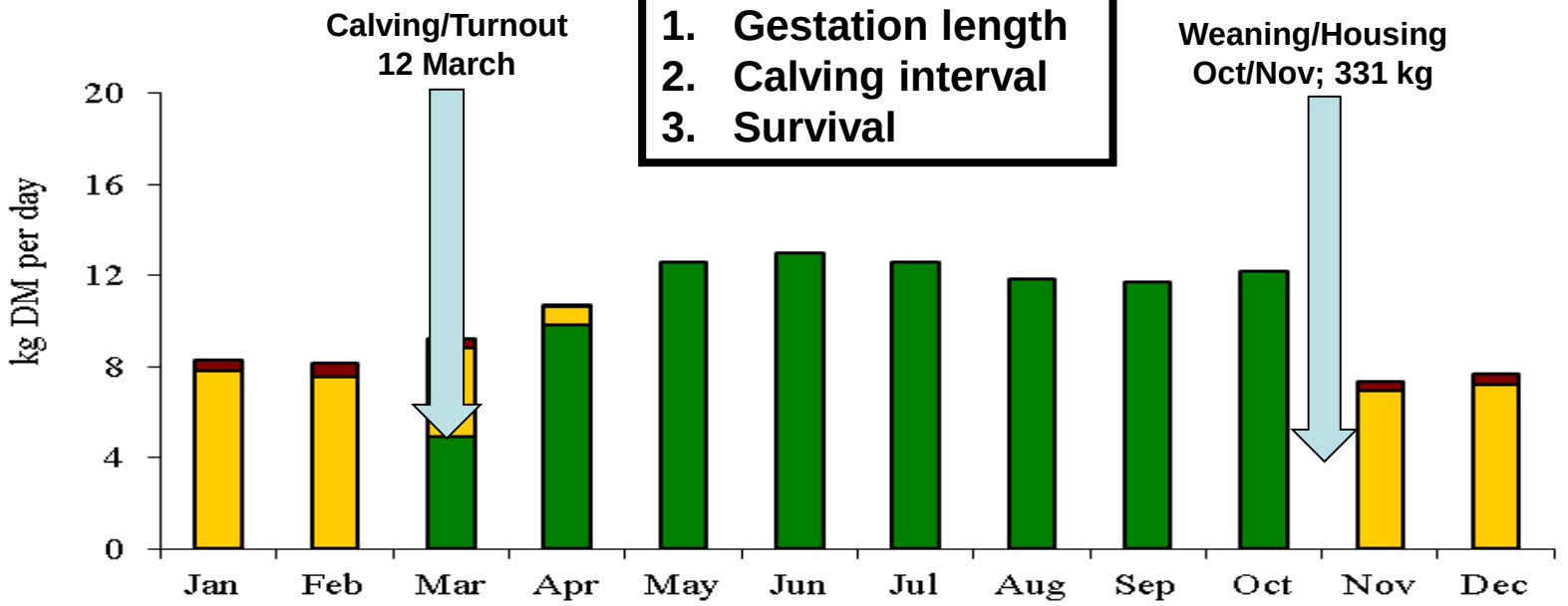
Source: Taylor et al., 2020

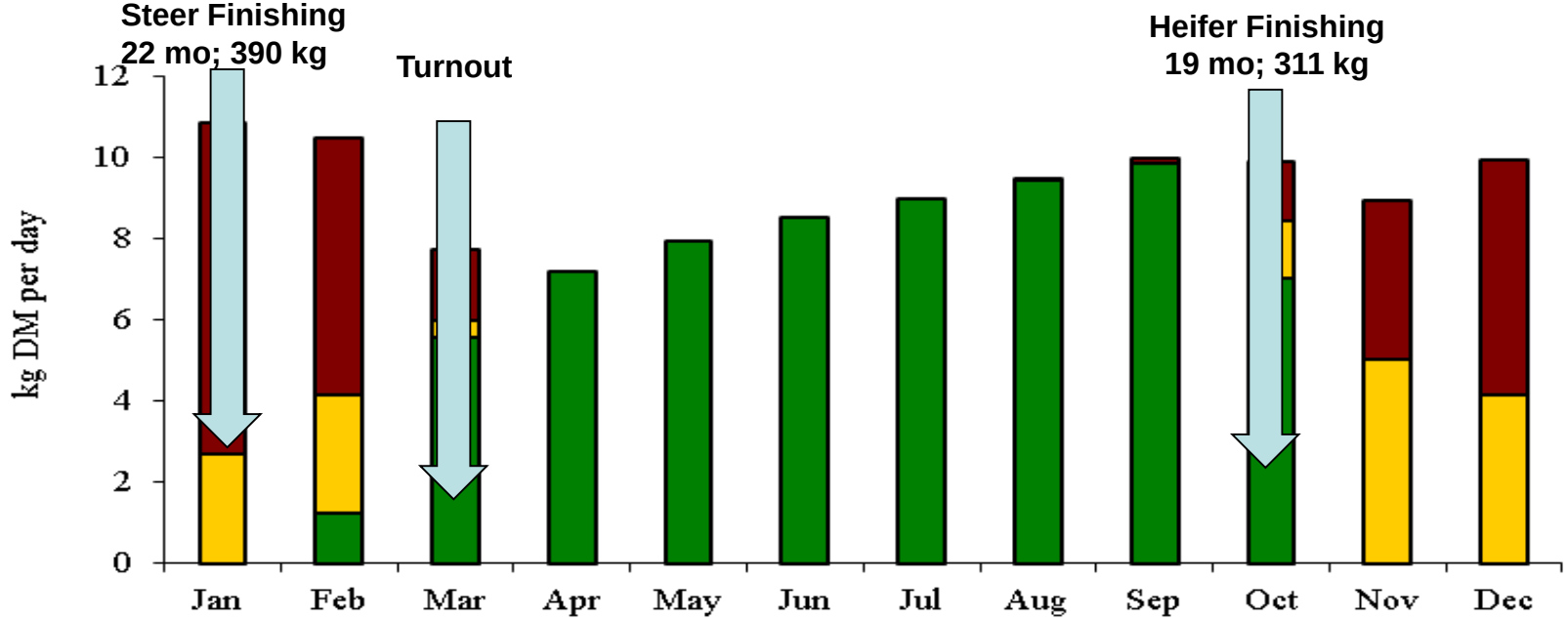
Source: Berry et al., 2017



Reducing costs - fertility

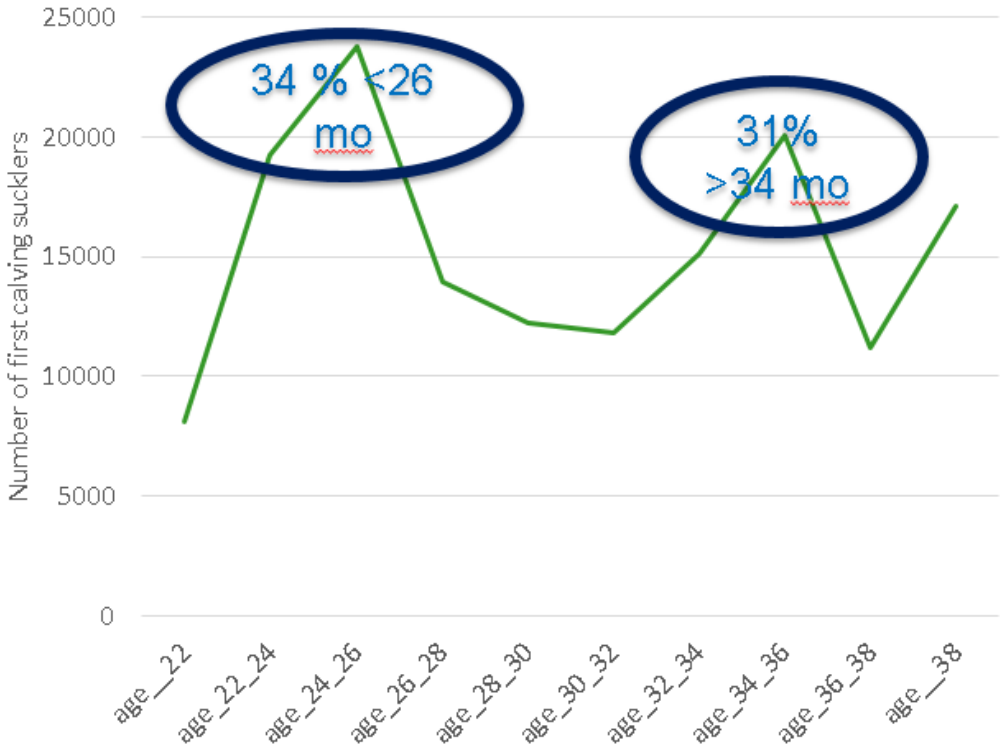
1. Gestation length
2. Calving interval
3. Survival

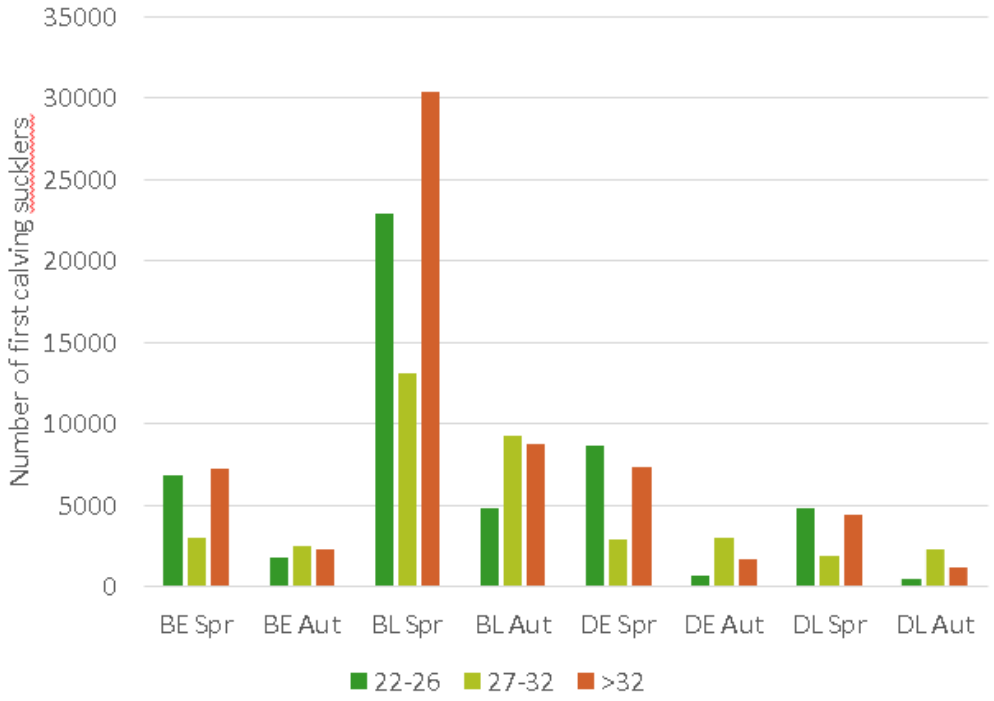




Reducing costs – earlier first calving age

- Comparison of 24 and 36 months of age at first calving
  - ✓ Increase in feed demand and land area farmed





Reducing costs & maintaining output - fewer difficult calvings

Labour

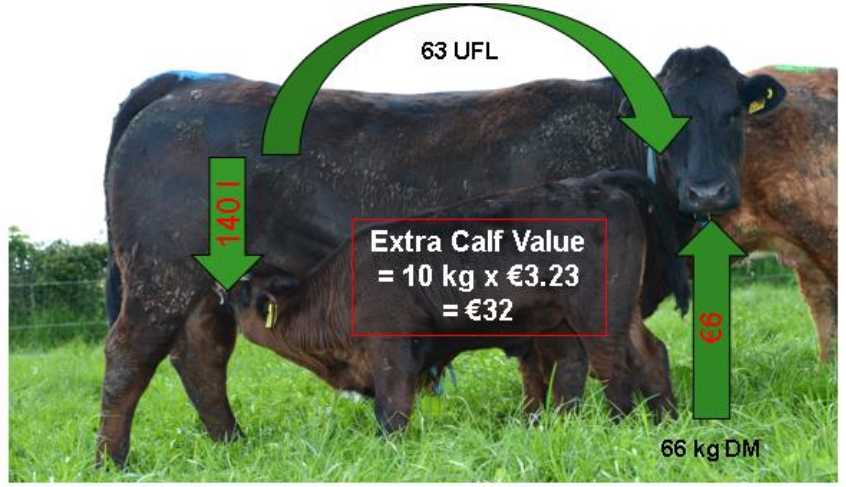
Vet

Subsequent performance

Increase value of output

- Live weight performance
  - ✓ Each kg increase in carcass weight, €4.68
  - ✓ More animals within specification

- Weaning weight performance (‘milk’ effect)
  - ✓ Value of the calf at weaning
  - ✓ Cost of milk & heavier weanlings to finish

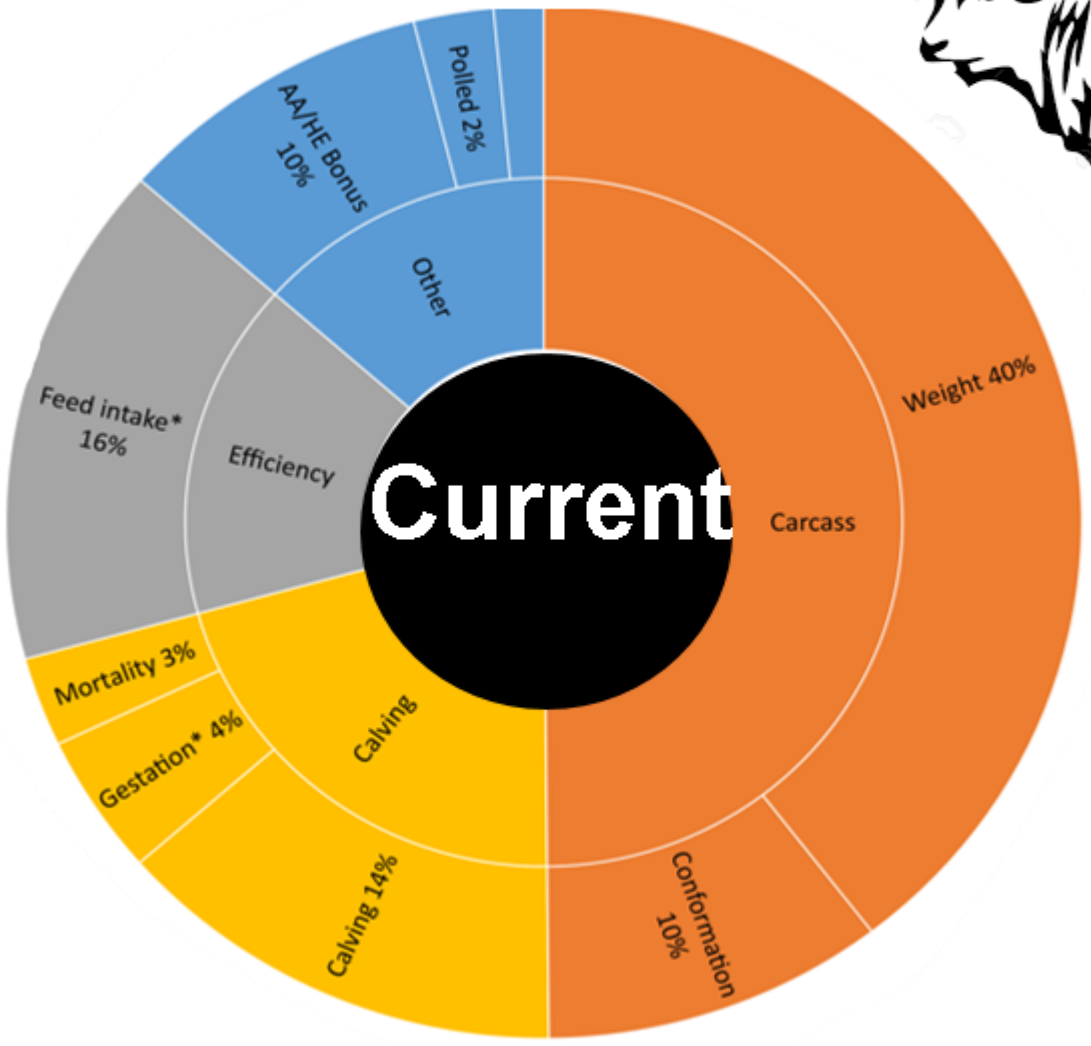


Economics of higher weaning weight = (32 – 6) / 10 = €2.61/kg

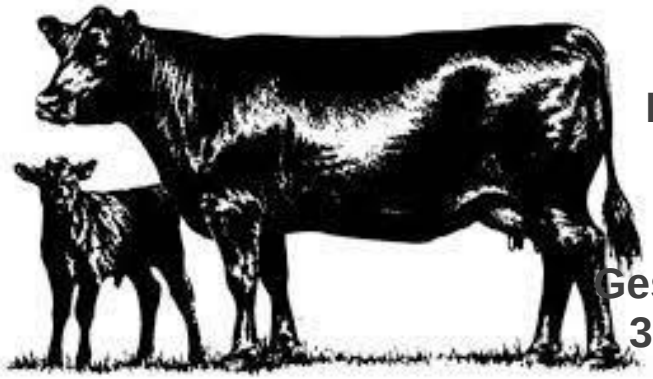
- Fertility
  - ✓ National average calving interval currently 390 days

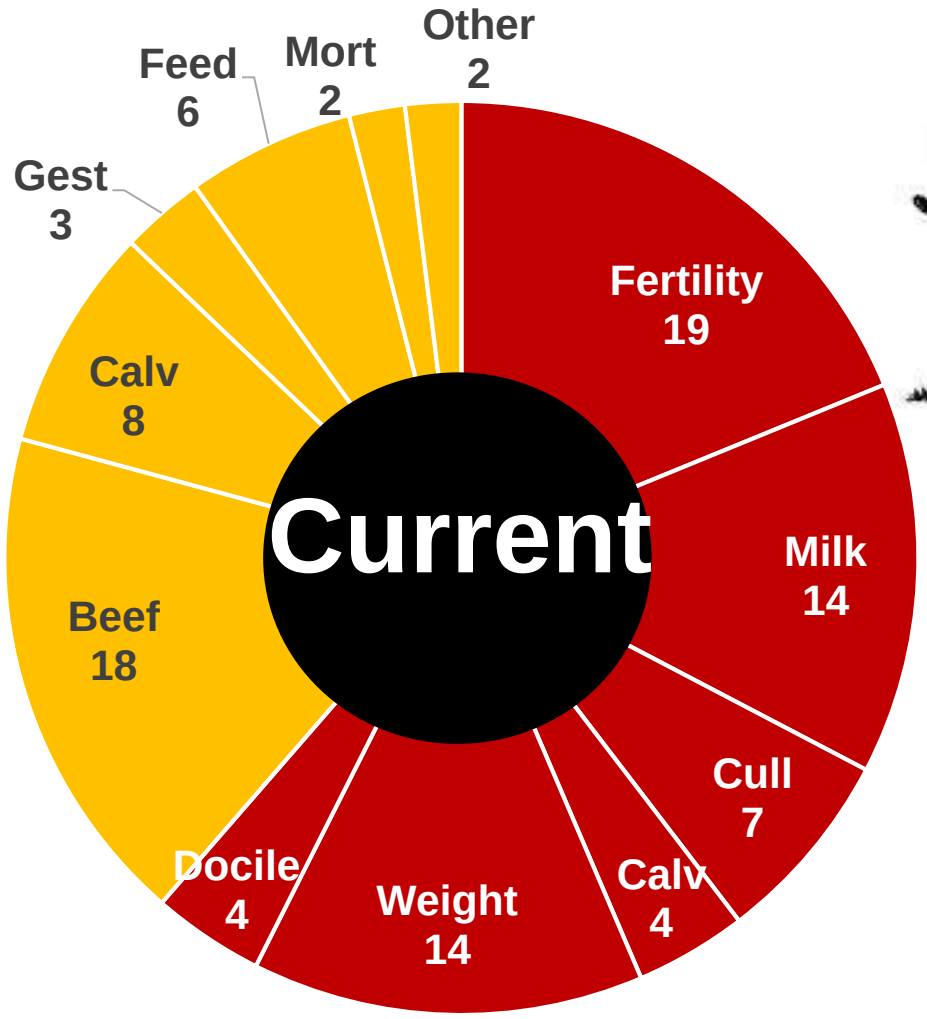
-> 300 kg weanling = 280 kg weaned output per year, loss of €65/weanling

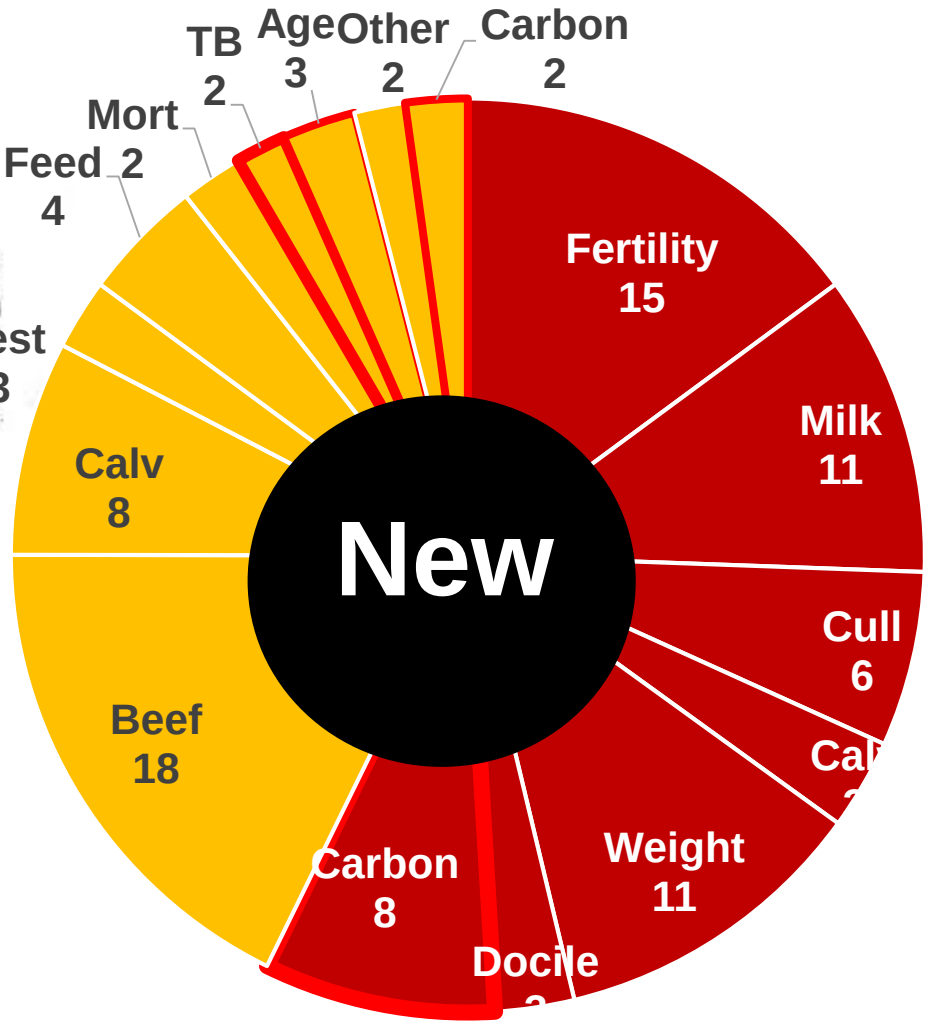
Impact on Terminal Index
Relative Emphasis



Impact on Replacement Index
Relative Emphasis



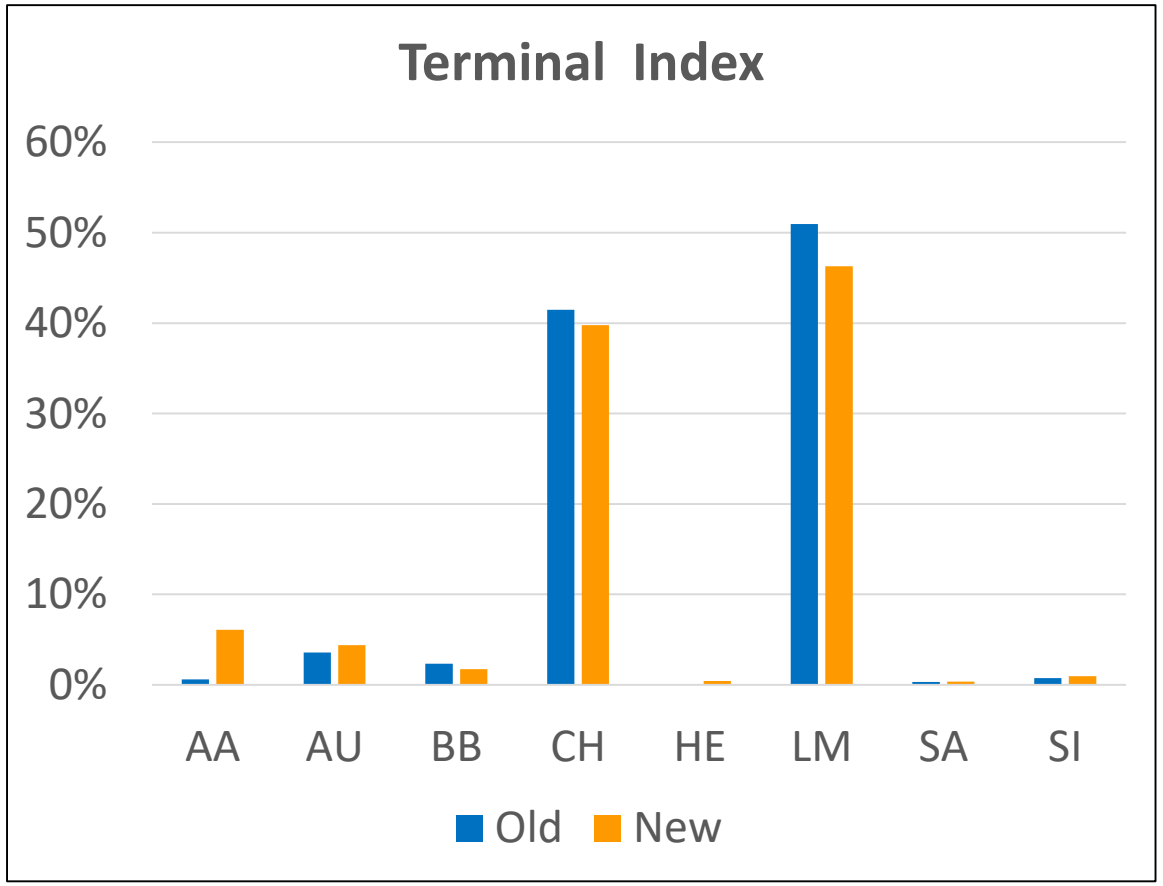


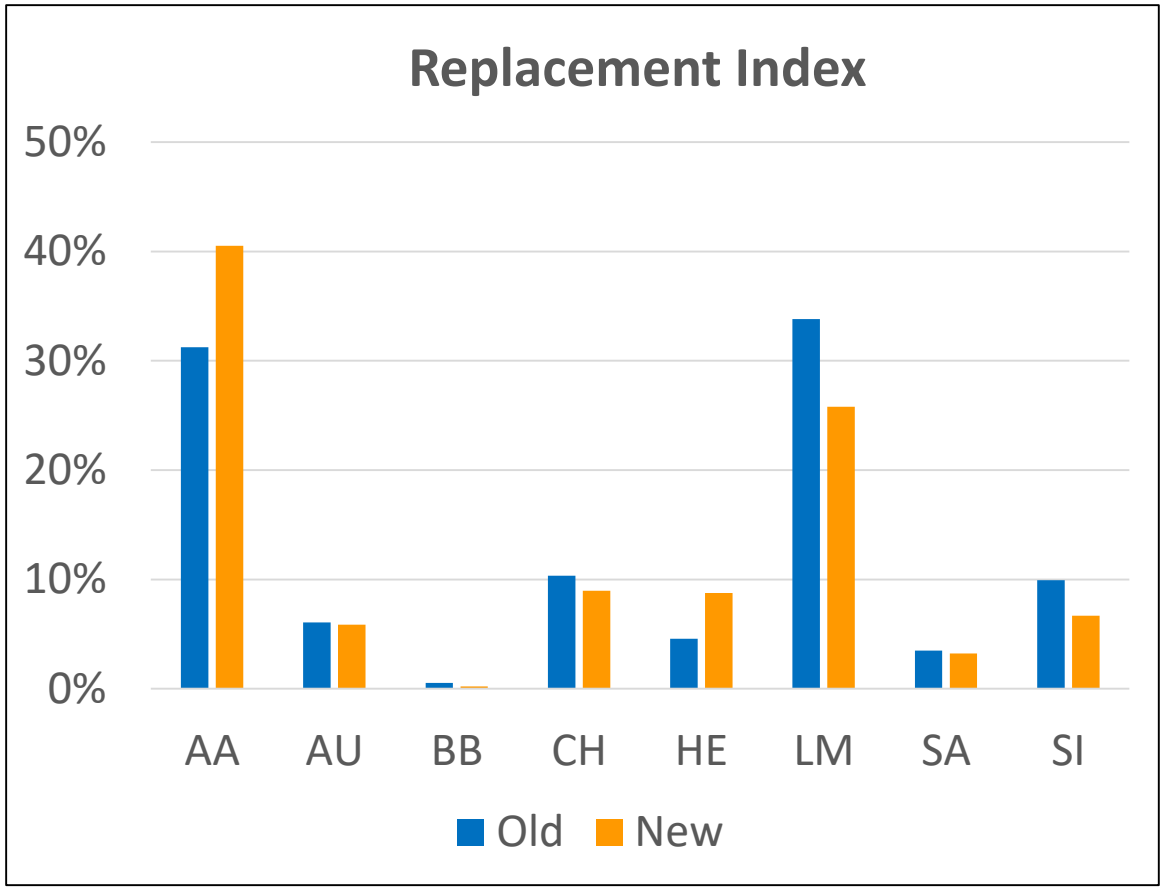


Calf traits, 39% | Cow traits, 61%

Calf traits, 43% | Cow traits, 57%

Impact – Percentage of four and five star bulls





- Cows – 84% of 4 and 5 star cows retain status after these changes

Summary – impact of breeding index changes

Trait	Direction
Fertility	Better
Calving difficulty	Less
Calf mortality	Less
Gestation length	Shorter
Feed costs	Lower
Weaning weight	Heavier
Carcass traits	Better
Docility	Quieter
Polled	More
Meat eating quality	Breed bonus
Age at finish	Earlier
Tuberculosis	Less

Revenue

- Greater weaned weight
- Heavier and better conformed carcasses with the appropriate fat cover

Cost

- Lower suckler cow and calf costs
- Better fertility and greater use of grazed pasture
- Lower finishing costs

➢ Overall aim – improve the profitability suckler beef systems for **all breeds**

Thank you
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- Beef indexes working group:
  - ICBF - Ross Evans, Siobhan Ring & Margaret Kelleher
  - Teagasc – Paul Crosson, Alan Twomey and Donagh Berry