Recording of health and fertility to reduce costs

Tracey Pritchard

Mike Coffey, Raphael Mrode and Eileen Wall

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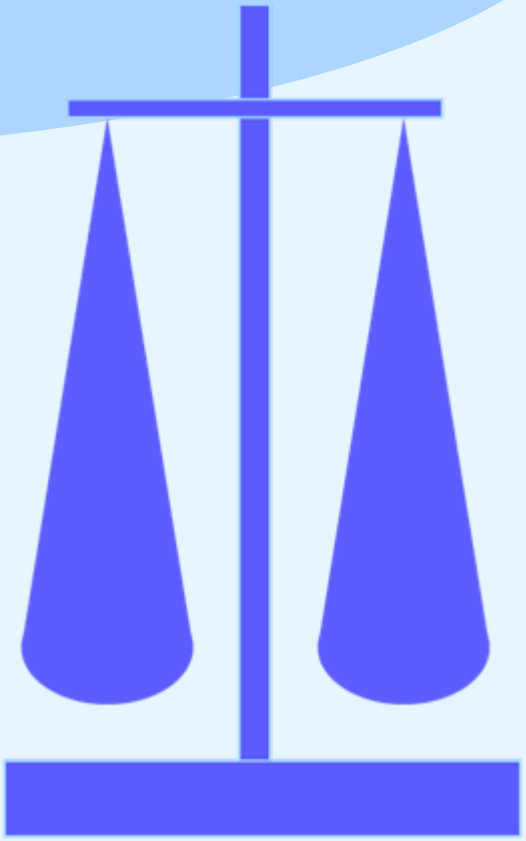
Background

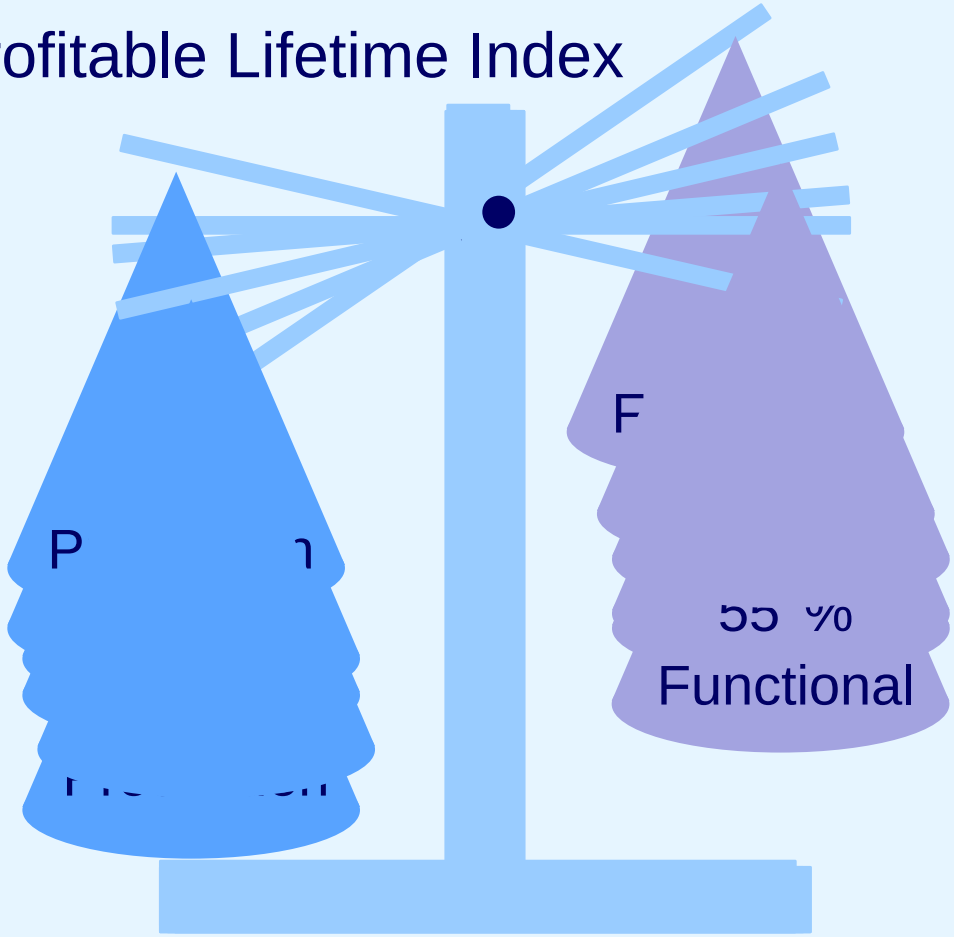
Increased milk production has been extremely successful through genetic selection and improvements in nutrition and management

- High yields per cow can be counter-productive
- Inefficiencies due to increased disease, declined fertility and reduced longevity
- A balance between maximising production and minimising costs

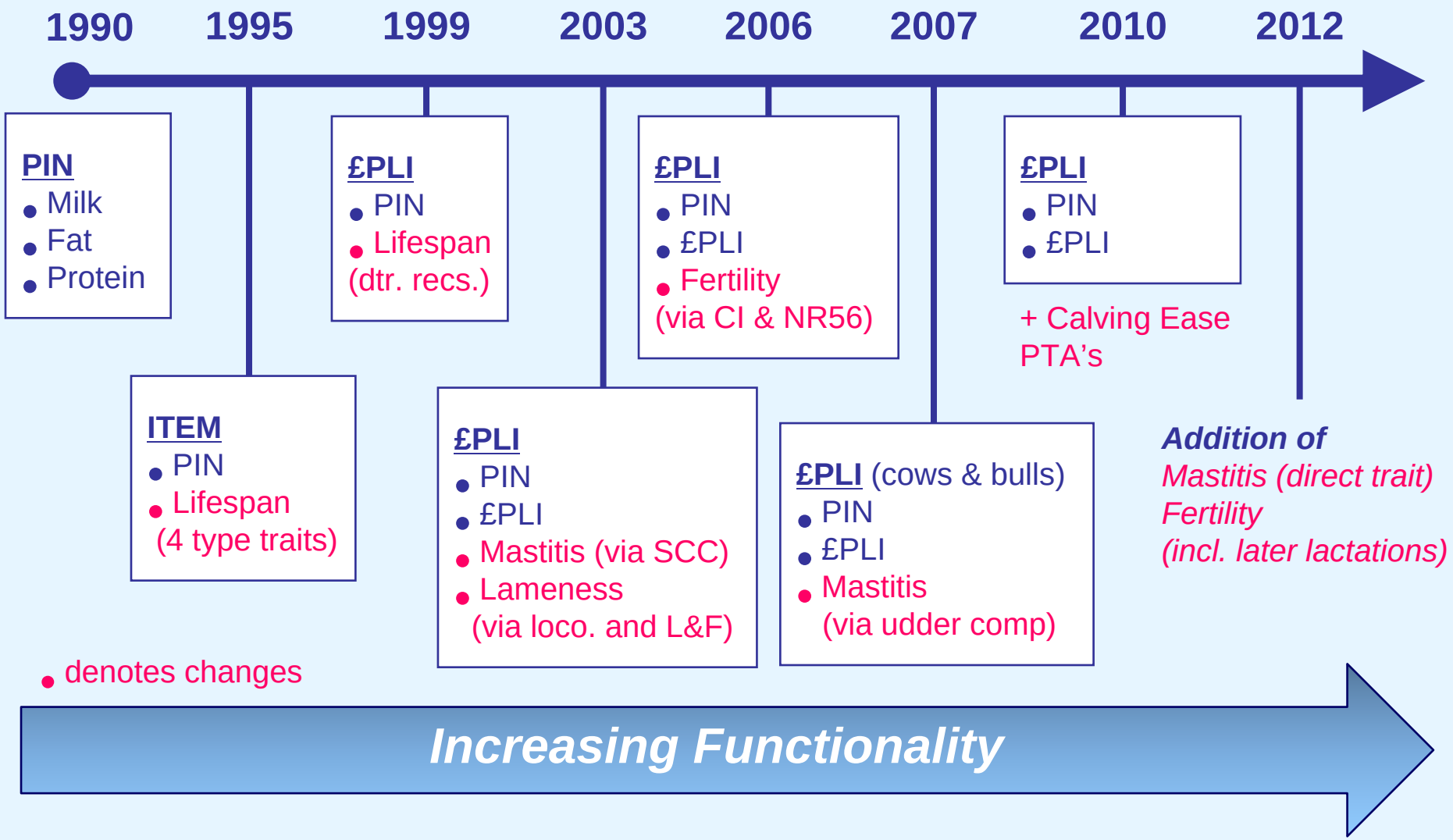


Selection indices have evolved worldwide

- In UK - Profitable Lifetime Index



A History: Development of UK dairy indices



The Present - Inclusion of Health Traits

Mastitis

- Currently, indicator traits are used (SCC, Udder Composite)
- Beneficial to include mastitis as a direct trait
- Until now a lack of records

However, mastitis is recorded voluntarily by farmers as part of their milk recording and herd management

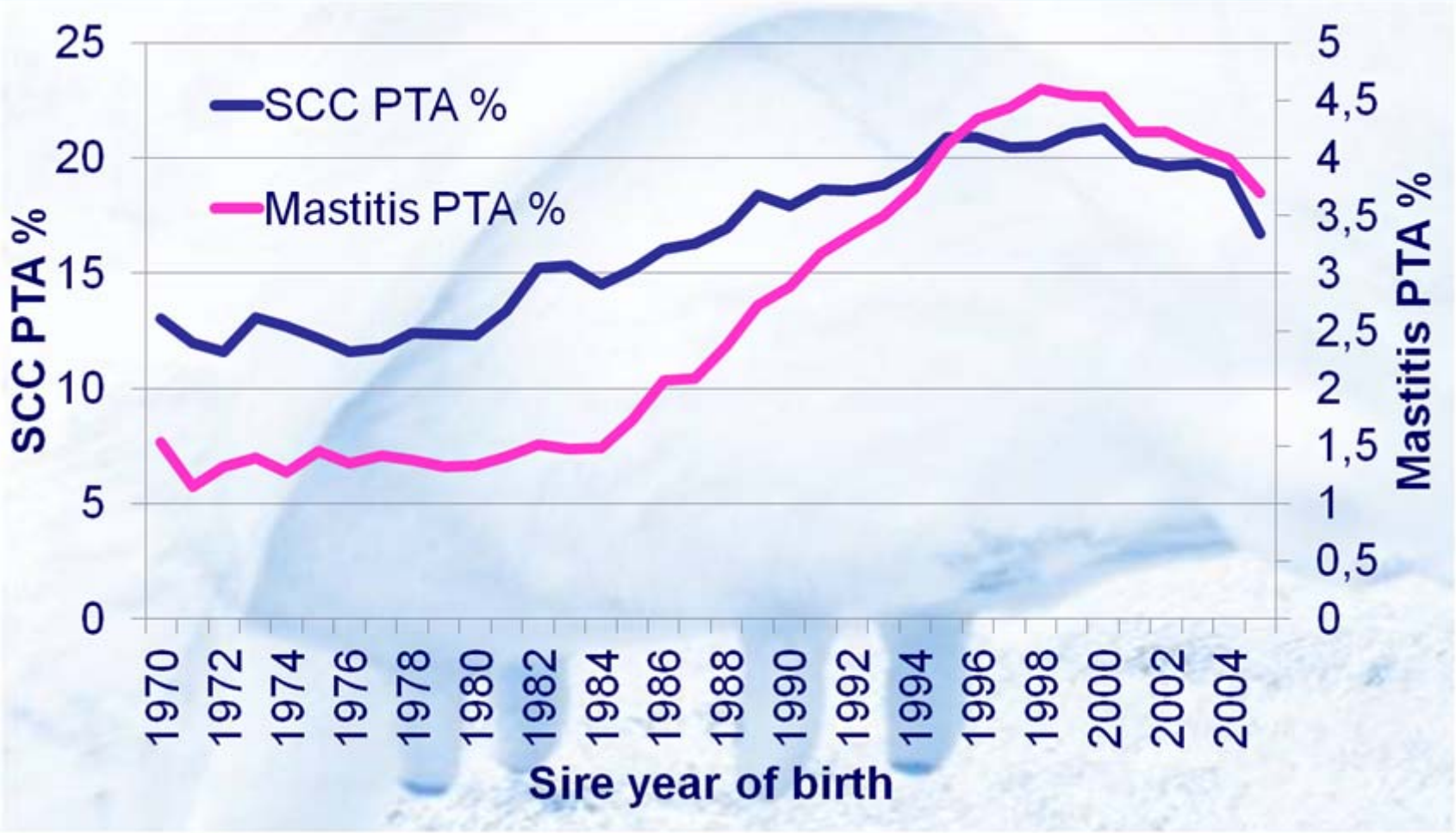
- Due to the quantity of data available genetic evaluations including mastitis as a direct trait seems feasible

Analysis of mastitis

- Mastitis analysed as either a binary or count trait
- Analysed affected animals and their contemporaries
  - In the same herd-year-season at calving
- Incidence increased with lactation number
  - 14% in lactation 1 to 26% in lactation 3
- Heritability ~ 4 to 5 %
- Genetically correlated with indicator traits of mastitis
  - ~0.68 with SCC and 0.28 with udder composite
- Favourable genetic correlation with other functional traits

Genetic trends

- Mean PTA's for SCC and Mastitis



- Reliabilities for mastitis and SCC at least 30 %

Analysis of mastitis

- Mastitis data might be expected to be poor as recording is optional
- However, incidence levels and genetic parameter estimates were in line with other studies
- Including mastitis as a direct trait in genetic evaluations may bring about a greater effort in recording

The Future

Lameness

- Lameness also a major cost to the dairy industry
- Indicator traits used rather than a direct trait
- Also recorded in a similar way as mastitis, but far fewer records at present!
- Other data which is recorded would be advantageous
  - hoof trimming records
  - mobility data from farm assurance schemes

The Future

Fertility

- Improvements to the Fertility Index
- At present only data from first lactation evaluated

Number of lactations available with fertility data in 2011

Lactation Number	Number of animals
1	169,161
2	135,205
3	101,057
4	73,413
5	49,016

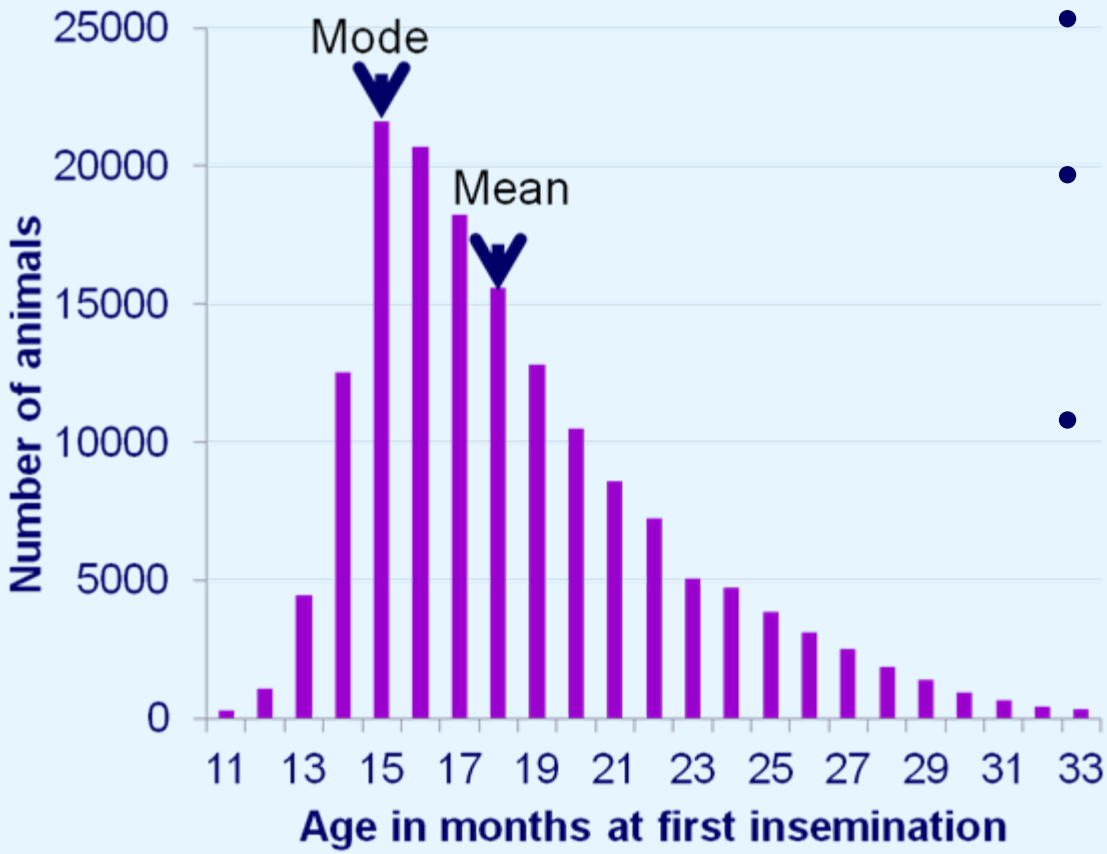
The Future

Fertility

- First lactation is not the only function of fertility
  - Mature cows, maiden heifers, the inseminating sire
- Currently analysing fertility traits as repeated measures across lactations
- Similar heritability estimates as first lactation but would expect an increase in accuracy
- Information is available on maiden heifer fertility, but the feasibility of its use has not yet been investigated

The Future

Maiden heifer fertility – 2011 data



- Raw data (only edit age at insemination)
- Over 250,000 heifers with insemination data each year (up until 2011)
- Mean age at first insemination has decreased (2005 = 20.2 months, 2011 = 18.7 months)

Concluding remarks

- *Breeding goals and economic conditions change with time*
- *Functional traits are expected to be always an essential component*

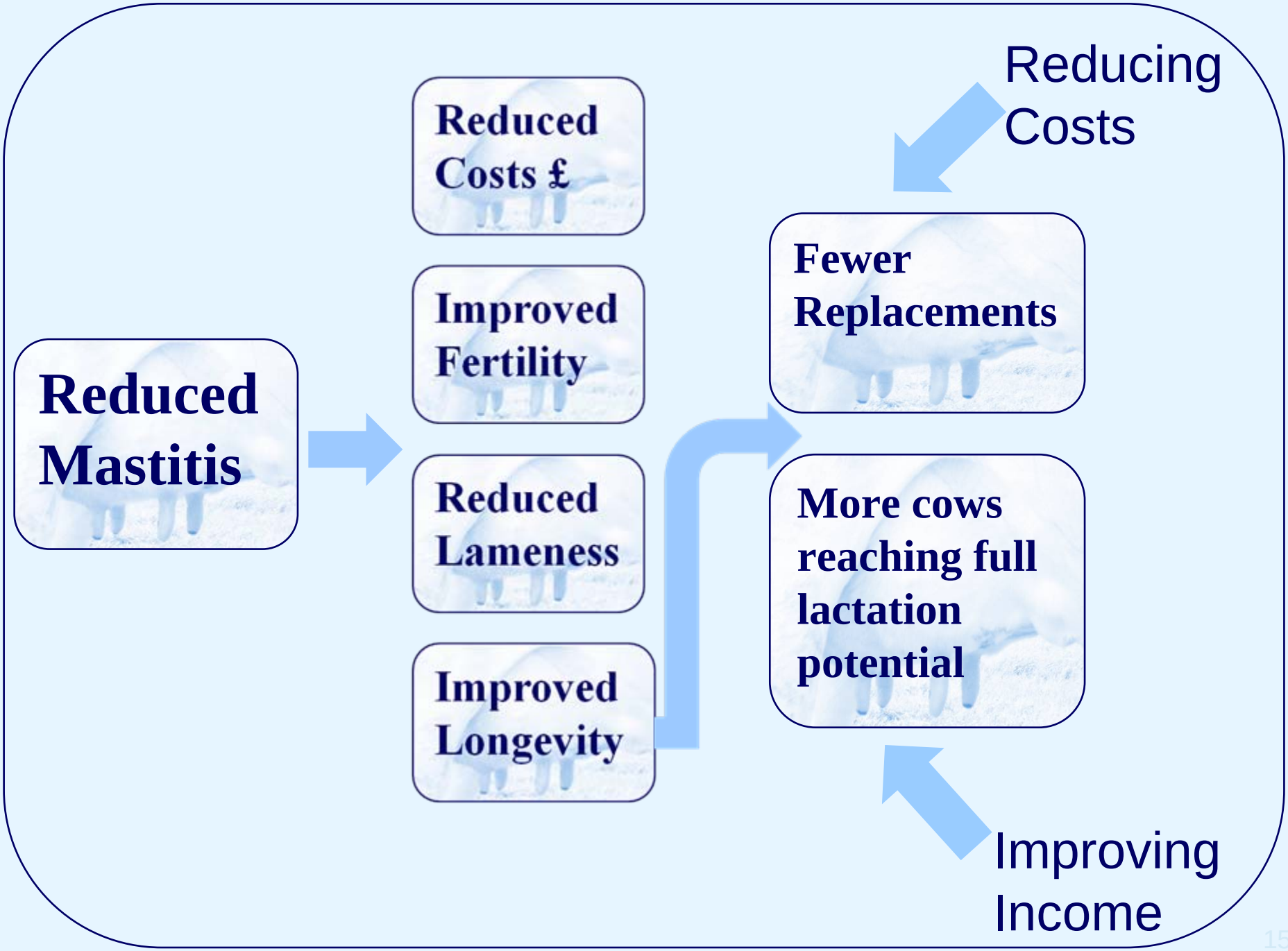
- *Recent improvements have been made possible through recording done by farmers (Fertility, Calving Ease)*

- *Using farmer-recorded mastitis data for genetic evaluations appears promising*

*Mastitis – indirect **+ direct** selection*

*Fertility – first **+ later** lactations*

} *Improved accuracy of proofs*


Reducing Costs
Reduced Costs £
Improved Fertility
Reduced Lameness
Improved Longevity
Reduced Mastitis
Fewer Replacements
More cows reaching full lactation potential
Improving Income

- *Encourage recording for herd management purposes*
  - *Better management decisions*
  - *Pinpoint problems more easily*
  - *Made more aware of costs*

- *Standardised protocols of recording*

- *Recording is time consuming*
  - *Should try not to overburden farmers*
  - *But in the long-term should be time-saving*

- *Make best use of existing data*
  - *Capture data from hoof-trimming, mobility scoring etc.*

- *Link sources together*

Thank you for your attention

Acknowledgements

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