



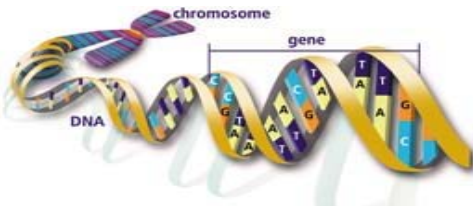
Genomic breeding values of carcass, female fertility and calf survival traits for UK Limousin Cattle

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Leading the way in Agriculture and Rural Research, Education and Consulting

VIA carcass traits gEBVs

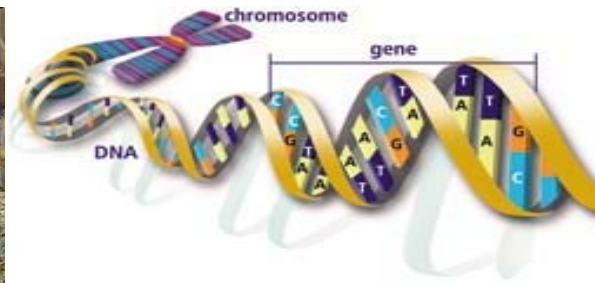
- 4 year project (2012-2015)
- Limousin genomic breeding values for abattoir VIA carcass traits
- First UK genomic breeding values March 2016



Fertility and survival gEBVs



- 1 year project (2016-2017)
- Limousin genomic breeding values for female fertility and calf survival traits
- gEBVs to be made available 2017



Building the Limousin reference population



- Have > 4,000 Limousin genotypes
 - 716 HD SRUC
 - 960 HD Ireland
 - 2,490 project 50k
 - 200 LD (IDB – 19k)
- Use One-Step approach
 - Allows breeding values to be estimated for genotyped and non-genotyped animals

British Cattle Movement Service



COMMERCIAL animals

The screenshot shows the CTSonline website interface. At the top, there is a navigation bar with links for Cymraeg, Accessibility, Privacy, Terms and Conditions, Information for Keepers, and Contact BCMS. The main header includes the British Cattle Movement Service logo and the CTSonline logo with the tagline 'the easy way to check and report your cattle information'. A 'Log In' button is visible in the top right of the header area.

The left sidebar contains a menu with the following items: View Cattle Summary, Register Births, Register ON Movements, Register OFF Movements, Report Death of a Registered Animal, Report Death of Unregistered Animal, View Animal Details and History, Uploads and Downloads, Problem Summary, BCMS Accessibility, BCMS Privacy, BCMS Terms and Conditions, Information for Keepers, Contact BCMS, and Holding Enrolments.

The main content area is divided into two columns. The left column features a 'SPS 2013 – Apply online now!' section with a 'Log In' button. Below this is a 'Tip of the Week' section. The right column features a 'How do I get started?' section with a 'Log In' button. Both sections contain detailed text and numbered lists of steps for registration and enrolment.

- Information:
 - Dam
 - Breed
 - Date of birth
 - Date of death
 - Movement

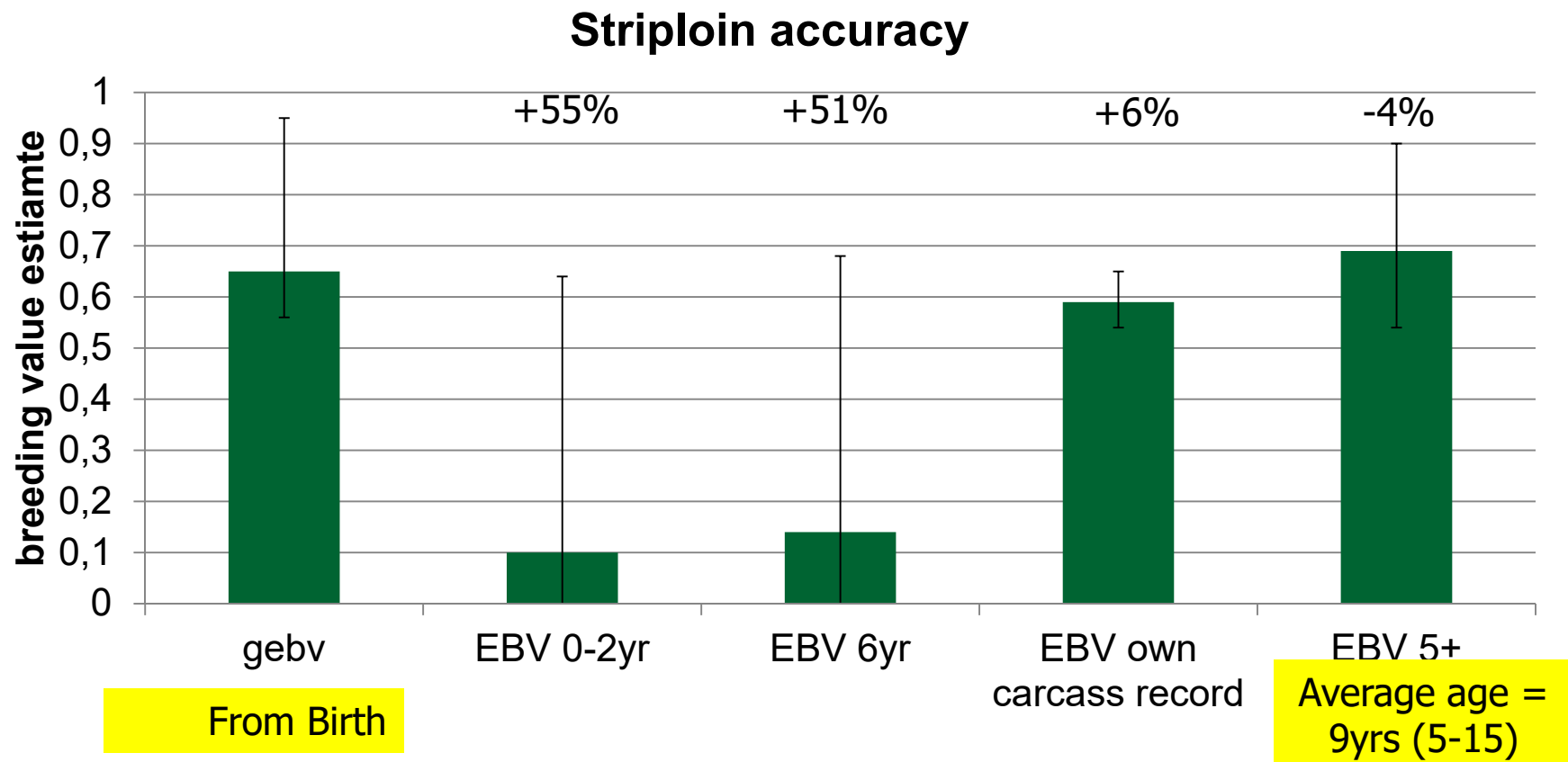
- Not compulsory:
 - Sire

Benefits of industry data



- Massive benefit to the industry
 - Large numbers of records – thousands not hundreds
 - Traits of importance £
 - Stronger links in the supply chain
- ‘Super-pedigree’
 - Most complete pedigree in the UK including all bovine
 - BCMS
 - Pedigree (beef and dairy)
 - Milk recording records

Striploin accuracy



Project Aims



- Using national records (BCMS)
- Produce GEBVs for
 - Age at first calf (age in days at first calf)
 - 548 & 1460 days (18-48m)
 - Lifespan (number of parities when aged 6.5 years)
 - Calving interval (days between 1st and 2nd calf)
 - Calf survival (20 days to 10 months)
- Started with ~12 million animal records (45%+Limousin)



Age at First Calf



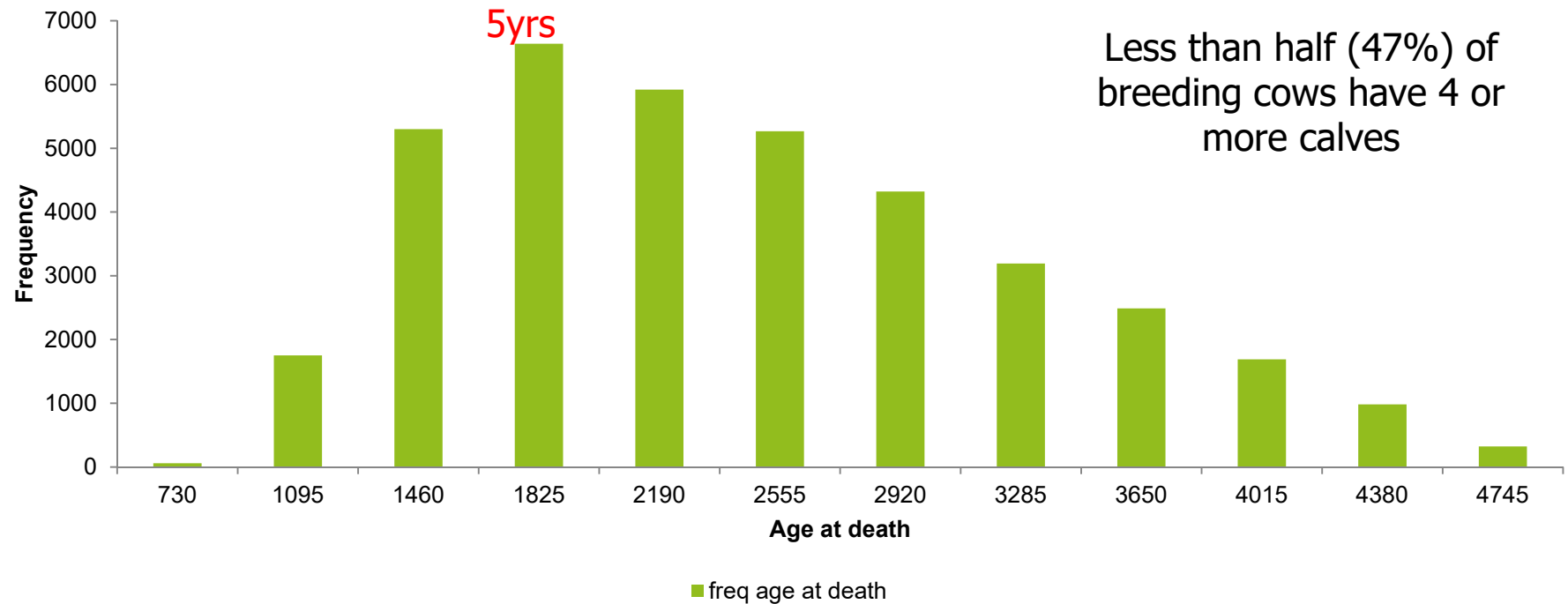
Distribution of Age at First Calving **3yrs**



Age at death



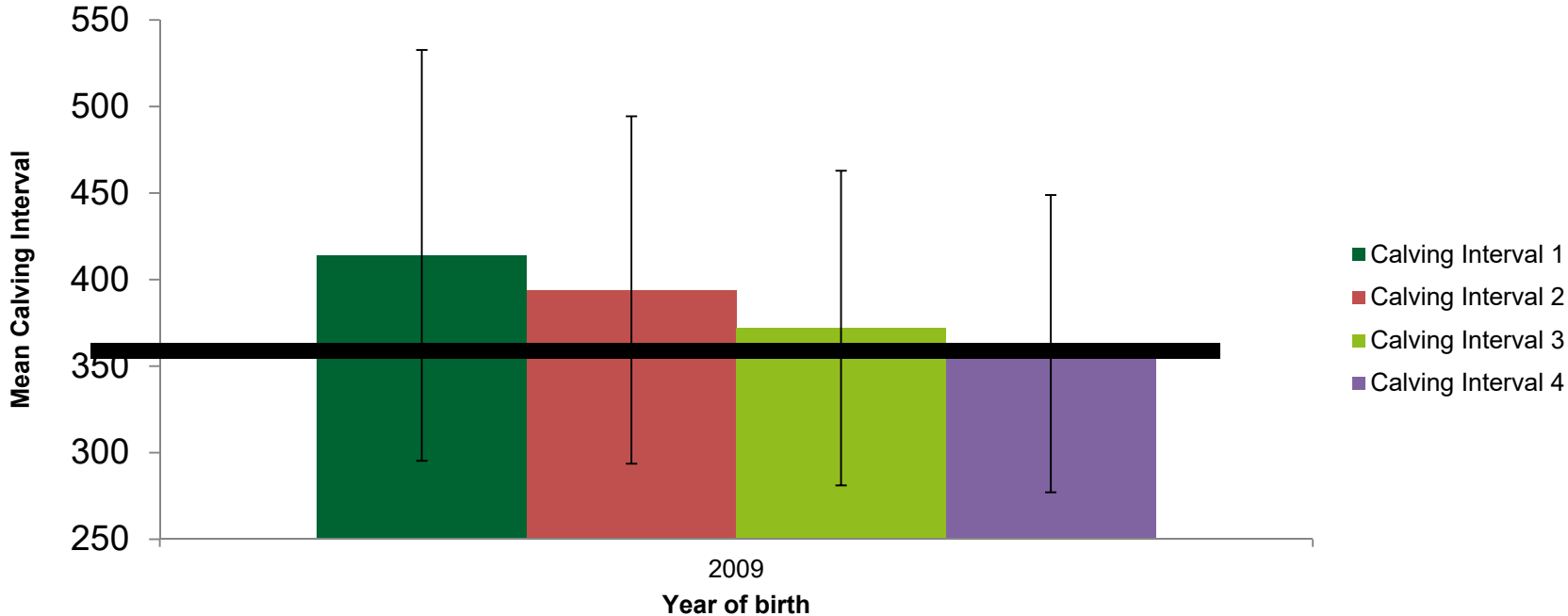
Distribution of age at death and mean age at first calf for dams



Calving interval



Mean calving interval by year of birth



Parameter Estimation



- 12,719,326 BCMS records (45%+ Limousin)
 - 2003 – 2009 born
 - Complete record
 - Sire or maternal grandsire known
- 1,771,907 BCMS records remained
 - 160-180k Female fertility phenotypes
- Removed ET records, small (<5) or single sire CG & outliers within CG
 - AFC Birth herd, year season (6 month) CG
 - CI & LS First calf herd, year season (6 month) CG

Parameter Estimation



Trait	N	Phenotypic variance	Heritability
AFC	58,148	15057 (99.4)	0.13 (0.01)
CI	27,861	10448 (96.0)	0.05 (0.02)
LIFESPAN	34,307	1.191 (0.01)	0.05 (0.01)

Conclusion

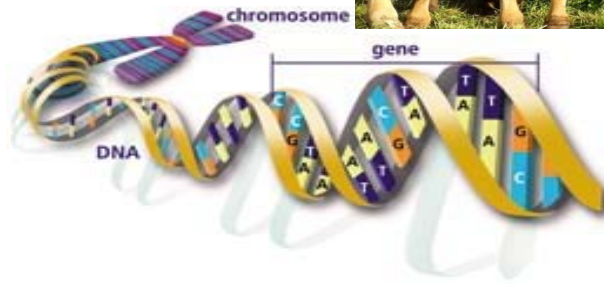


- UK are using national datasets for genetic evaluation
- GEBVs implemented for carcass traits
- GEBVs being developed for female fertility and calf survival
 - Parameter estimation for female fertility started
 - Work on models for calf survival started
 - GEBVs expected 2017

Thank you



Food Group



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Technology Strategy Board

