

Identifying superior carcasses through VIA and genomics

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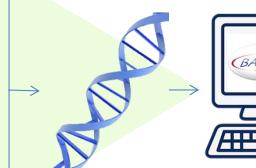


















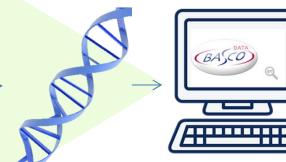








 In partnership with AHDB Dairy, Signet/AHDB beef and lamb & private companies to deliver EBVs & selection indices







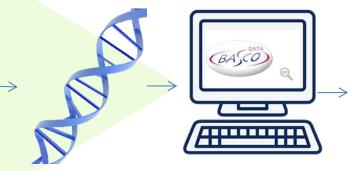








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 R & D & consultancy delivery SRUC

Genetic improvement



- Cumulative
- Effective
- Sustainable
- Cost effective





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

Projects



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 - 4 year project (2012-2015)
 - Limousin genomic breeding values for abattoir VIA carcass traits
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- 2. Beef profitability
 - Side project of VIA carcass traits
 - Investigating the effect of slaughter age on profit

Projects



- 1. VIA Carcass trait GEBVs
 - 4 year project (2012-2015)
 - Limousin genomic breeding values for abattoir VIA carcass traits
 - First UK genomic breeding values March 2016
- 2. Beef profitability
 - Side project of VIA carcass traits
 - Investigating the effect of slaughter age on profit
- 3. Fertility and calf survival GEBVs
 - 1 year project (began April 2016)
 - Genomic breeding values for female fertility traits and calf survival
 - GEBVs available in 2017



VIA carcass traits project

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Carcass Data



- VIA carcass data
 - 83,342 records
 - From July 2012
 - Net weight, conformation, fat and 6 primal cuts:
 - Topside
 - Silverside
 - Striploin
 - Fillet
 - Knuckle
 - Rump

British Cattle Movement Service



COMMERCIAL animals

	Cymraeg Accessibility Privacy Terms and Conditions Information for Keepers Contact BCMS						
British Cattle	the easy way to check and report your cattle information	Log In					
Neverther Service View Cattle Summary Register ON Movements Register OFF Movements Register OFF Movements Report Death of a Registered Animal View Animal Details and History Uploads and Downloads Problem Summary BCMS Accessibility BCMS Terms and Conditions Information for Keepers Contact BCMS Holding Enrolments	Image days way to check and report your cattle importation SPS 2013 – Apply online now! Join over 42,000 farmers who have already found how quick and easy it is to submit their Single Payment Scheme (SPS) applications online. If you already use CTS Online, why not try SPS Online? You'll benefit from an automatic check for common errors, an instant online receipt and the facility to track your claim online at any time. You don't need super fast broadband and getting started couldn't be easier – all you need is your SBI and the PIN number we have sent you. Visit gov.uk/single-payment-scheme-online and select 'Start now'. It really is that easy. If you have any questions, call us on 0845 603 7777 and we'll help you to get started. Manage your Single Payment Scheme online Tip of the Week Is information on your cattle passport incorrect? If any information shown on your cattle passport is incorrect, please return it to us. You must either showing the changes to be made. You cannot move the animal until you receive a corrected passport. Need help using CTS Online? We have created user guides to help guide you through the registration and enrolment process and some of the more advanced functions e.g. How to reout movements of cattle ON & OFF show premises on the	 How do I get started? Preparing to use CTS Online is a three step process. You will only need to go through the first two steps once. Register with the Government Gateway Enol for CTS Online Log in to CTS Online If you do not have a Government Gateway User ID, you will need to register for Government Gateway before you can enrol for CTS Online. For instructions on how to Register for Government Gateway follow the sector of the BCMS CTS Online service, you will need to be you you will need to be so You will need your CPH number and CTS Online. For instructions on how to enrol for the BCMS CTS Online service, to will need to be so You will need your CPH number and CTS Online berrol for the service. For instructions on how to enrol for the BCMS CTS Online service, to will need to be so You will need your CPH number and CTS Online service, to will need to be so You will need point of the service. For instructions on how to enrol for the BCMS CTS Online service, to will need to be so You will need your CPH number and CTS Online service, to will need to be so You will need your CPH number and CTS Online service, to will need to be accessfully enrolled for the BCMS CTS Online service, to will need your CPH number and CTS Online service, to will need your CPH number and CTS Online service, to will need your CPH number and CTS Online service, to will need your CPH number and CTS Online service, to will need your CPH number and CTS Online service, will need your CPH number and CTS Online service, to will need your CPH number and CTS Online service, to will need your CPH number and CTS Online service, will need your CPH number and CTS Online service, to will need your CPH number and CTS Online service, to will need your CPH number and CTS Online service, to will need your CPH number and CTS Online service. 					
	same day. To view the user guides, click <u>here</u>						

Information

Dam _

- Breed
- Date of birth _
- Date of death
- Movement
- Sire (not compulsory) _

Benefits of industry data

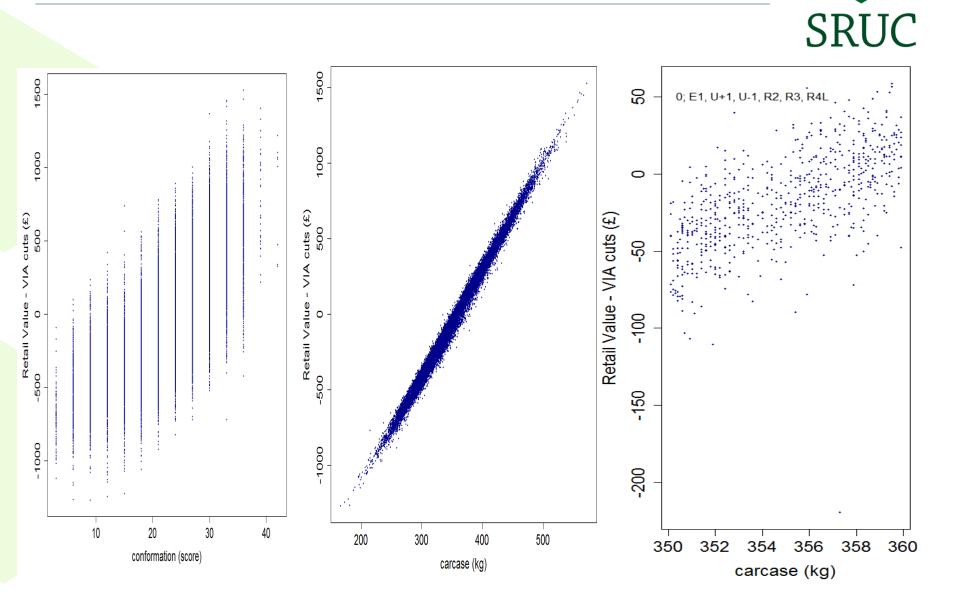


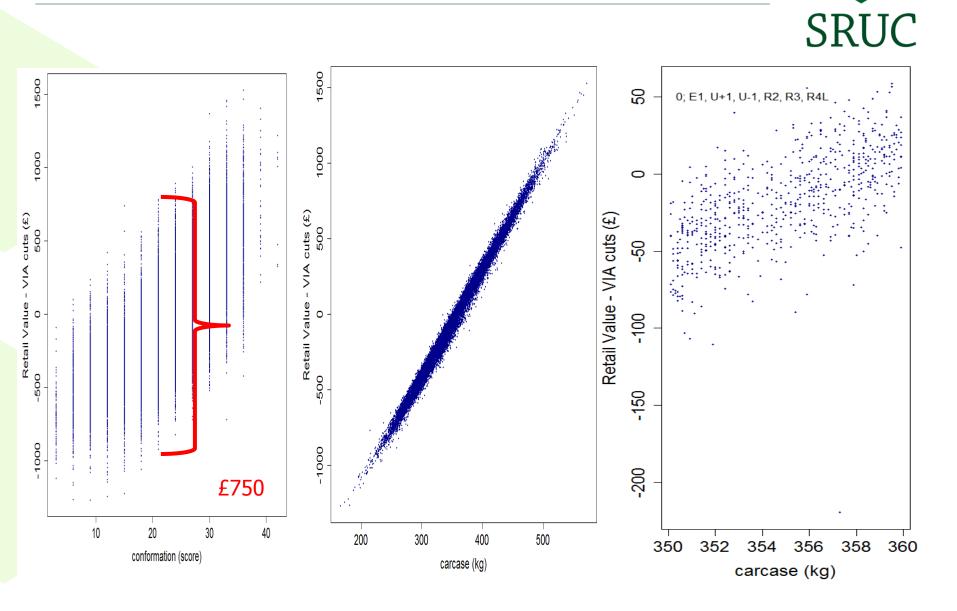
- Massive benefit to the industry
 - Large number of records
 - Traits of importance £
 - Stronger links in the supply chain
- 'Super-pedigree'
 - Most complete pedigree in the UK including all bovine
 - BCMS
 - Pedigree (beef and dairy)
 - Milk recording records

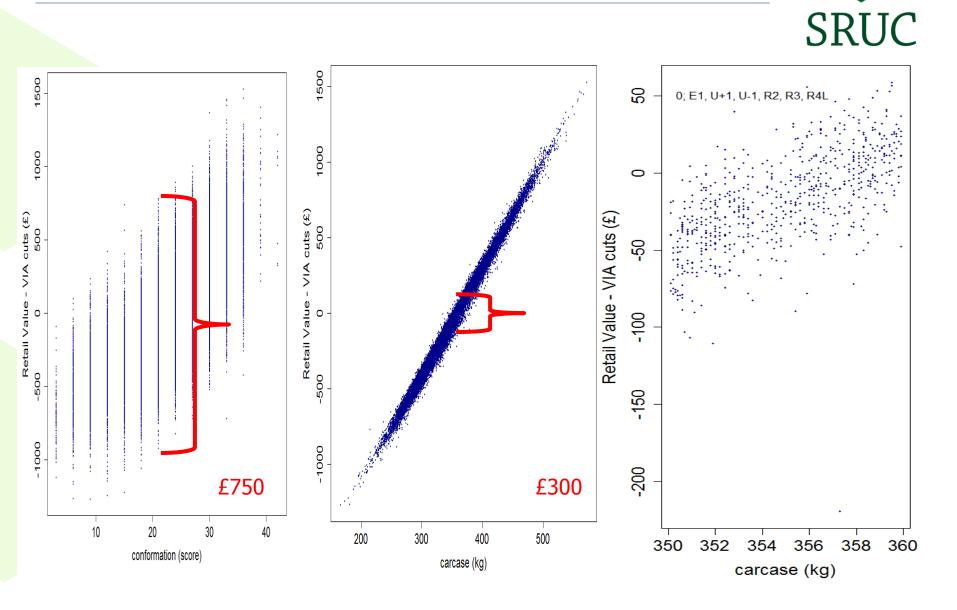
What does the raw VIA data tell us

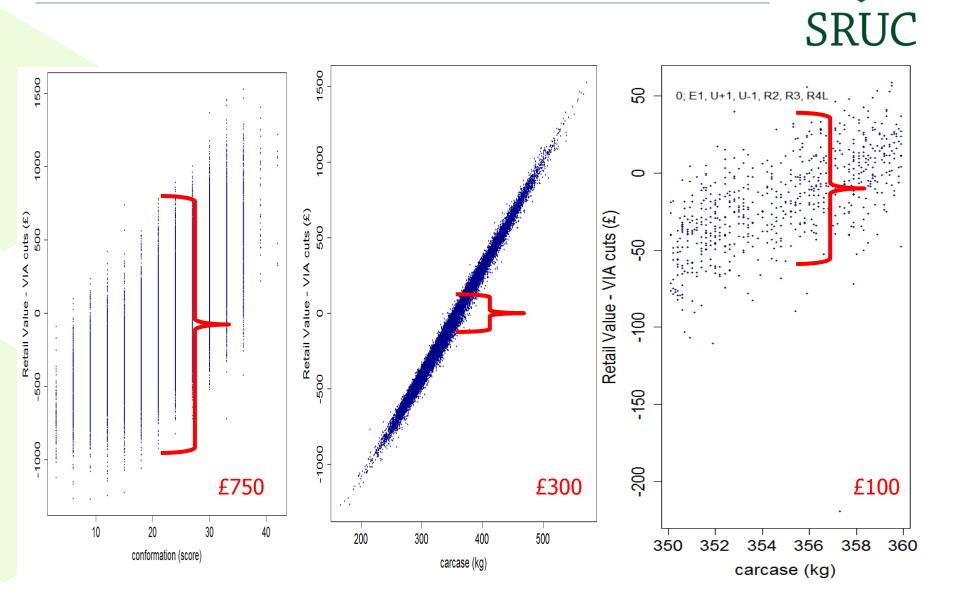


- VIA technology allows us to better assess carcass yields for the valuable primal cuts
 - Large variation for the all VIA traits even when considering similar EUROP grades and weight
- Selecting for a favourable primal cut yield for 1 VIA trait is not at the expense of other VIA traits









We can use EBVs to breed for abattoir carcass traits



- Variation and heritable
 - good rate of genetic progress
- BUT
 - Measured at the end of life
 - Not measured on breeding animals
 - Selection decisions made before actual carcass data on progeny is available
 - EBVs based on parent averages (less accurate EBV compared to when actual phenotypes available)
 - Affects the rate of genetic progress

Genomic breeding values

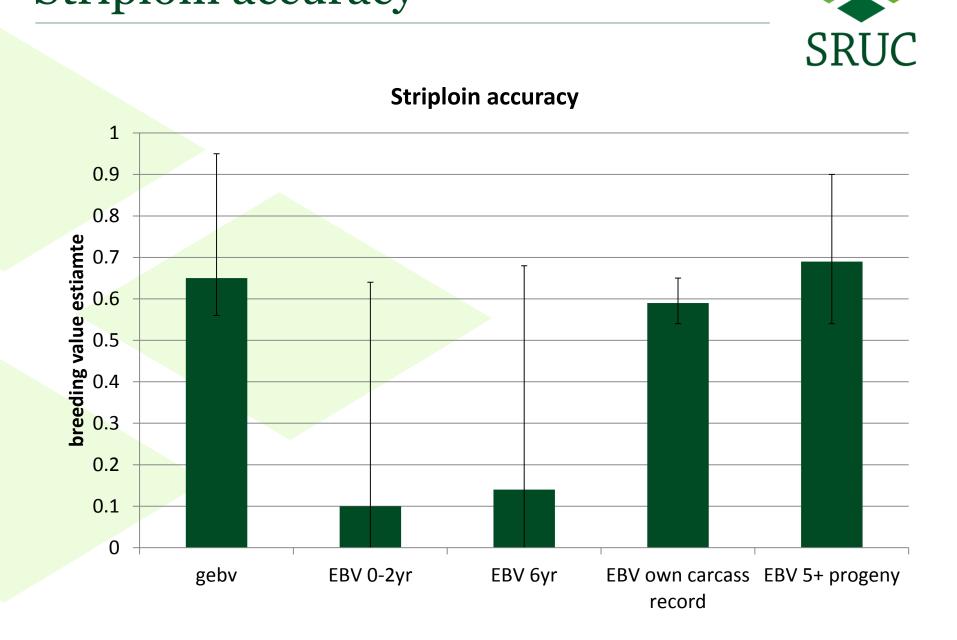


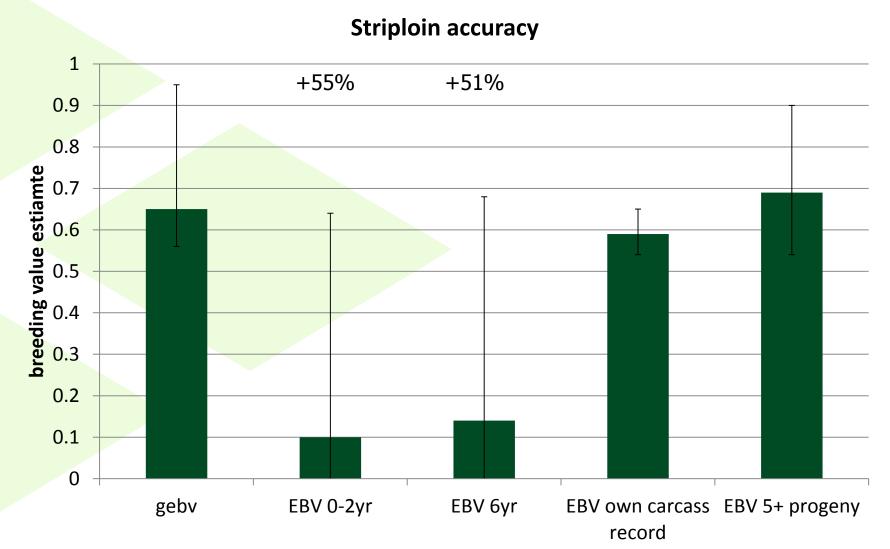
- Carcass traits are ideal for genomic selection
- A GEBV is used in exactly the same was as an EBV
- BUT it is available at BIRTH with good accuracy
- Improving the rate of genetic progress

Limousin reference population



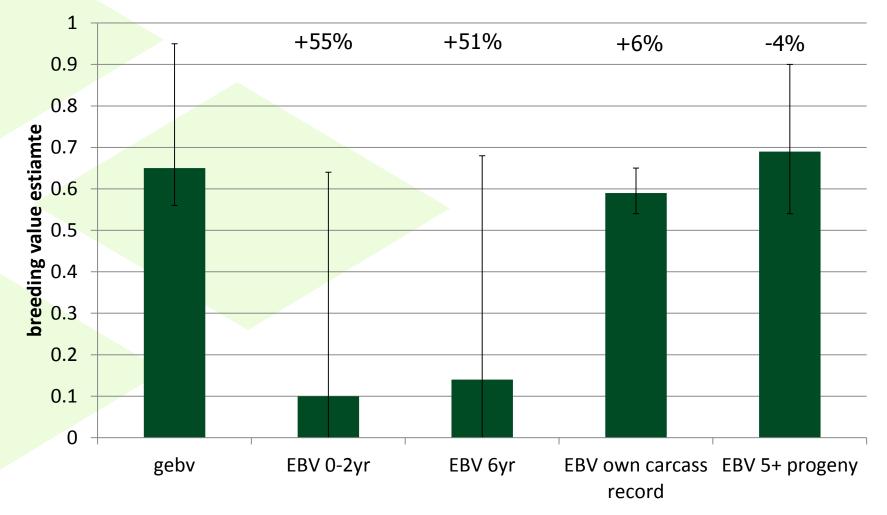
- >4,000 Limousin genotypes
 - 716 HD SRUC
 - 960 HD Ireland
 - 2,490 project 50k
 - 200 LD (IDB-19k)
- Use one-step approach
 - Allows breeding values to be estimated for genotyped and non-genotyped animals



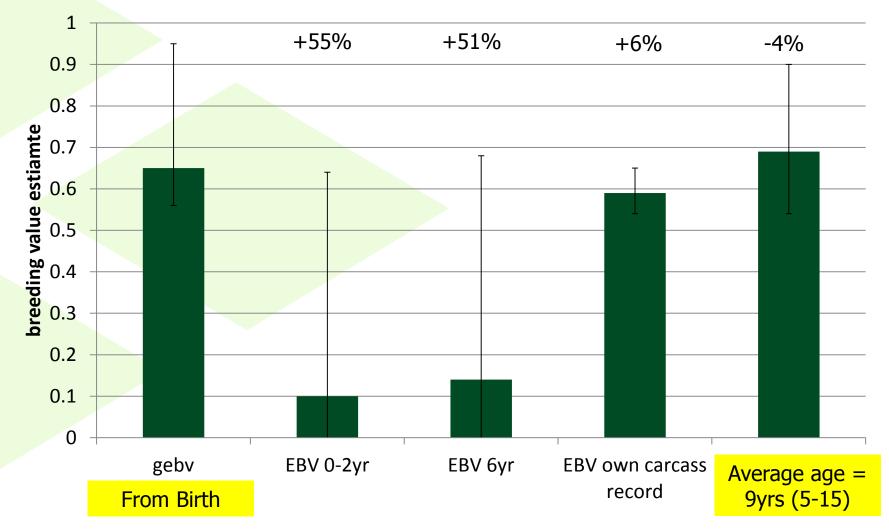












Conclusion



- Commercial data is enabling the production of selection tools on traits for which farmers are paid for
- VIA has facilitated the targeting of high value primal cuts
- Genomics has improved accuracy from an early age-increased genetic gain
- The first GEBVs were made available to Limousin cattle in March 2016



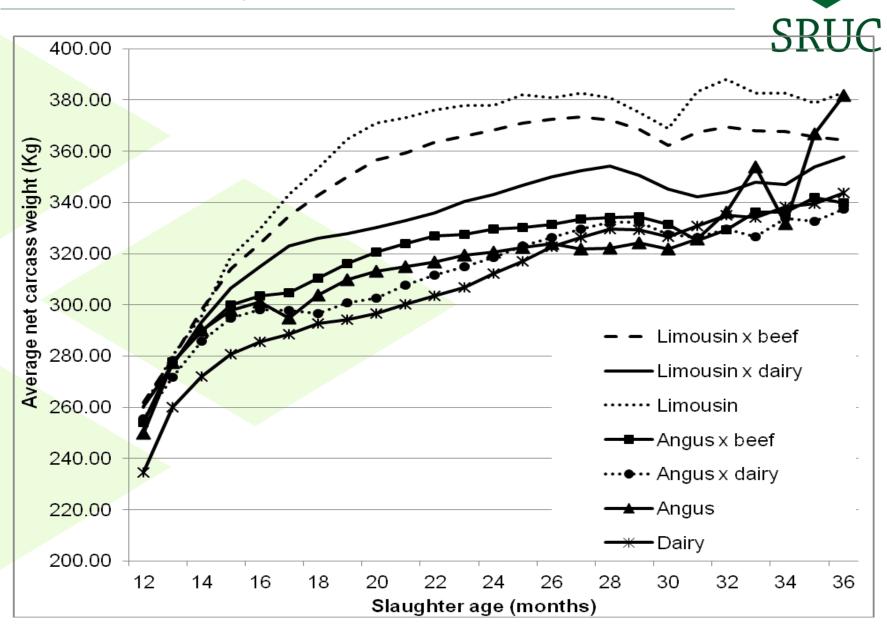
Optimal Slaughter Age of UK Beef Cattle to Increase Profitability

A. Moran¹, K. Moore¹, P. Amer² and M. Coffey¹

¹SRUC, Penicuik, Scotland ²AbacusBio, Dunedin, New Zealand

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Beefdairy beef



Data

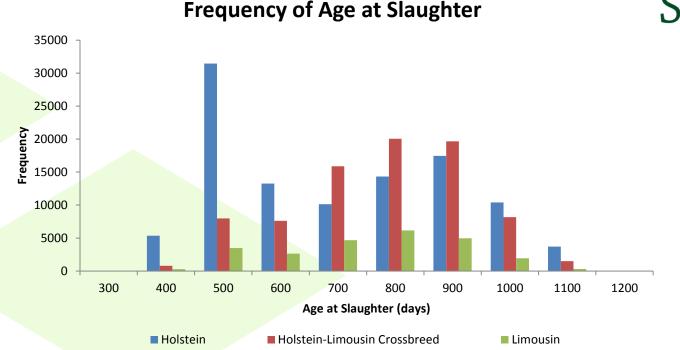


- 1 million records from 7 UK abattoirs between 2001 and 2013:
 - Carcass weight (mean 325kg)
 - Conformation score
 - Fat score
 - Date of birth
 - Date of slaughter (mean 715 days)
 - Breed



Slaughter Age

SRUC



- Beef and beef-dairy crossbreeds are most frequently finished on 24 month systems
- Holsteins are frequently finished on 18 month systems

Calculating carcass value



- Carcass value calculated from price grids
 - Base price £3.66/kg
 - Penalised if
 - Outside weight range 260-420kg
 - Older than 30 months

	1	2	3	4L	4H	5L	5H
Е	5	10	10	5	-15	-50	-50
U+	BASE	5	5	BASE	-15	-50	-50
U-	BASE	5	5	BASE	-15	-50	-50
R	-5	BASE	BASE	BASE	-15	-50	-50
0+	-10	-5	-5	-10	-20	-60	-60
0-	-20	-15	-15	-25	-40	-70	-70
P+	-30	-25	-25	-35	-40	-80	-80
P-	-30	-25	-25	-35	-40	-80	-80

Calculating cost



Concentrates @£170/tonne





Silage



Straw

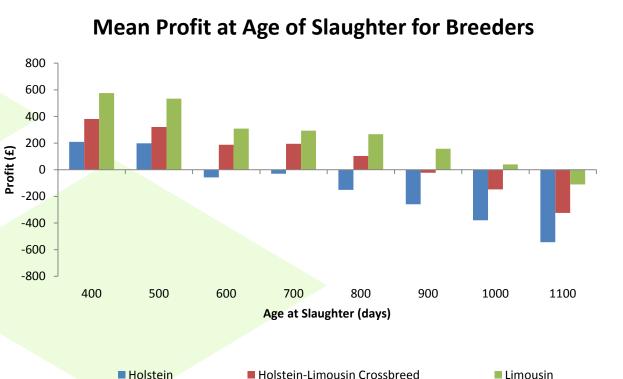
@£67/tonne



Other costs (Summer £1.06/day, winter £1.18/day)

- Season of birth
- Vet fees
- Machinery
- Haulage
- Labour
- Overheads
- Emissions calculated from finishing system

Profitability

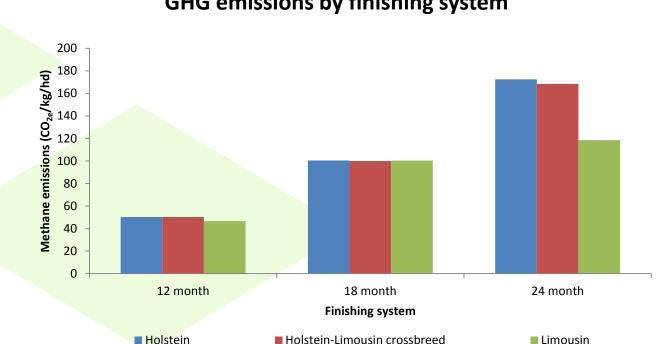


- All breed types most profitable on a 12 month system.
- Profit does not account for purchase price



12 month systems reduce emissions





GHG emissions by finishing system

- 12 month systems reduce emissions by up to 3 times
- Increasingly important factor for the future

Impact (On the farm)





 Profit could be increased by as much as £700/head

Emissions could be reduced by 33%





 Productivity could be doubled

Impact (Wider industry)



1.5 million beef animals slaughtered each year



 Beef produces twice the enteric emissions of dairy or lamb



- Worth almost 1 billion to economy
 - Self sufficient production

Conclusion



- We have the potential to:
 - Improve profitability
 - Improve productivity
 - Reduce emissions
- Optimal slaughter age is 12 months

Conclusion



- We have the potential to:
 - Improve profitability
 - Improve productivity
 - Reduce emissions
- Optimal slaughter age is 12 months
- Aim to slaughter as soon as possible





Improvement of fertility and calf survival in the UK beef industry

Abbygail Moran, Kirsty Moore

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Background



- Fertile suckler cows and low calf mortality are essential for profitable beef production systems
- Little genetic progress in the industry for these traits
- Currently EBVs are produced for
 - Age at first calf
 - Lifespan
 - Calving interval



 Limousin are the most dominant breed and accounts for a third of the UK breeding herd

Project Aims



- To provide tools for the accurate selection of fertility and calf survival traits
- Produce GEBVs for
 - Age at first calf
 - Lifespan (number of calves before 6.5 years)
 - Calving interval
 - Calf survival (20 days to 10 months)
- Use national records (BCMS)
- Create a blueprint for other breeds



Acknowledgements



















Food Group

Thanks also to those who provided data