Pulling Value Through the Beef Chain using carcass data: What can we learn for the sheep industry?

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Sheep Breeders Round Table 2015

EUROP Carcase Trait EBVs

- Levy board funded
- Using Abattoir Data and BCMS records for Carcase Trait Evaluations
  - Produce EBVs for EUROP carcase traits
    - Carcase weight
    - EUROP conformation class
    - EUROP fat class

Acknowledgements

- Many thanks
  - to those who supplied the data
    - ABP
    - Dovecote Park
    - Dunbia
    - McIntosh Donald
    - Morrison's
    - Stoddart's
    - BCMS
    - EGENES
  - and to those who funded the project 'Carcase Trait Evaluations'
    - AHDB Beef & Lamb
    - DairyCo
    - Hybu Cig Cymru

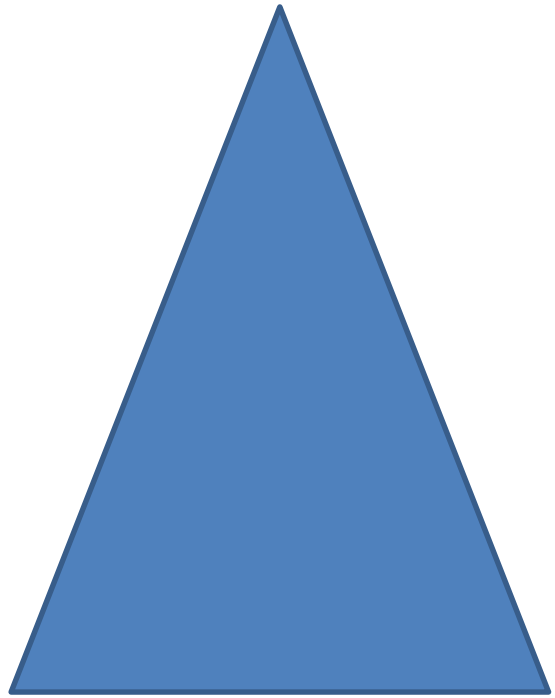
In the age of the genotype……

SRUC

#PHENOTYPE IS KING!

Genetic evaluation of industry records

- Pedigree > Commercial
  - Hundreds of records
- Contemporary groups
  - Often small
- Pedigree information
  - Sometimes poor but mostly good
- British Cattle Movement Service
  - Large number of animals born 1998+
  - Rich female parentage
    - Sires less so



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Utilising data from multiple sources

UK eartag
Carcase traits
Dates of birth & slaughter, sex, breed

British Cattle Movement Service

UK eartag
Dates of birth & death, sex, breed, pedigree (sire and dam), full movement information

UK eartag
Dates of birth, sex, breed, pedigree (sire and dam)

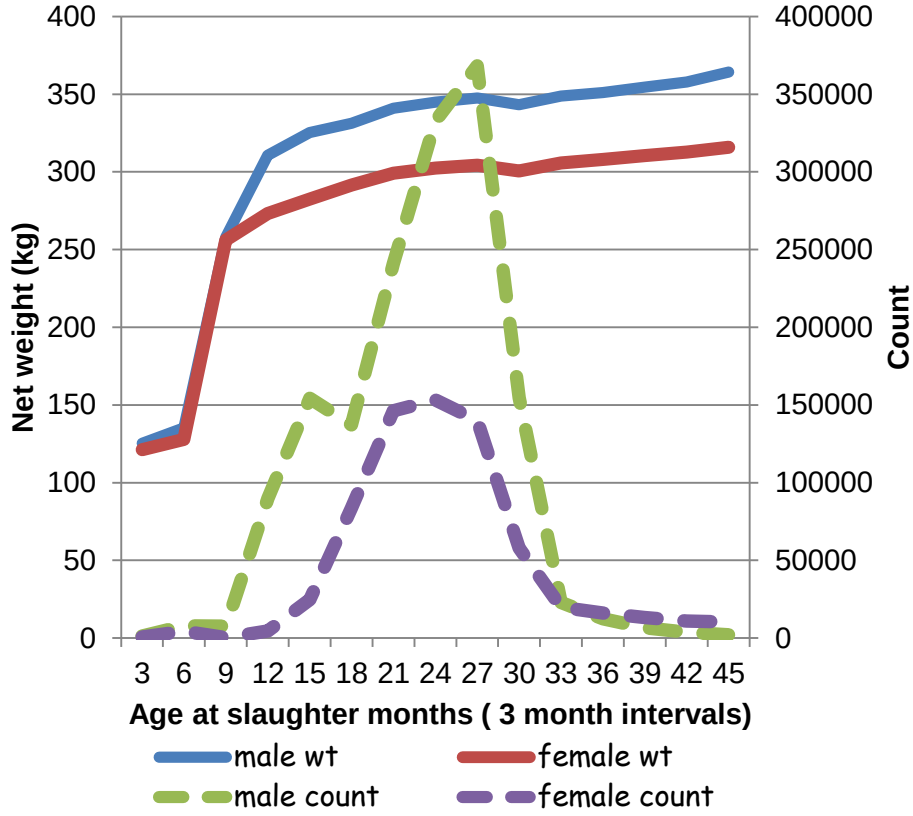
Carcase trait EBVs

Combined data – June 2014

- 3.5m carcase records
  - 6 (7) processors, multiple sites
- 89 % carcase records matched to BCMS (3.1 million animal records)
- 23% had sire recorded in BCMS (~0.71 million animal records)
  - 28% for 2012+ born animals
  - 33% for 2014+ born animals

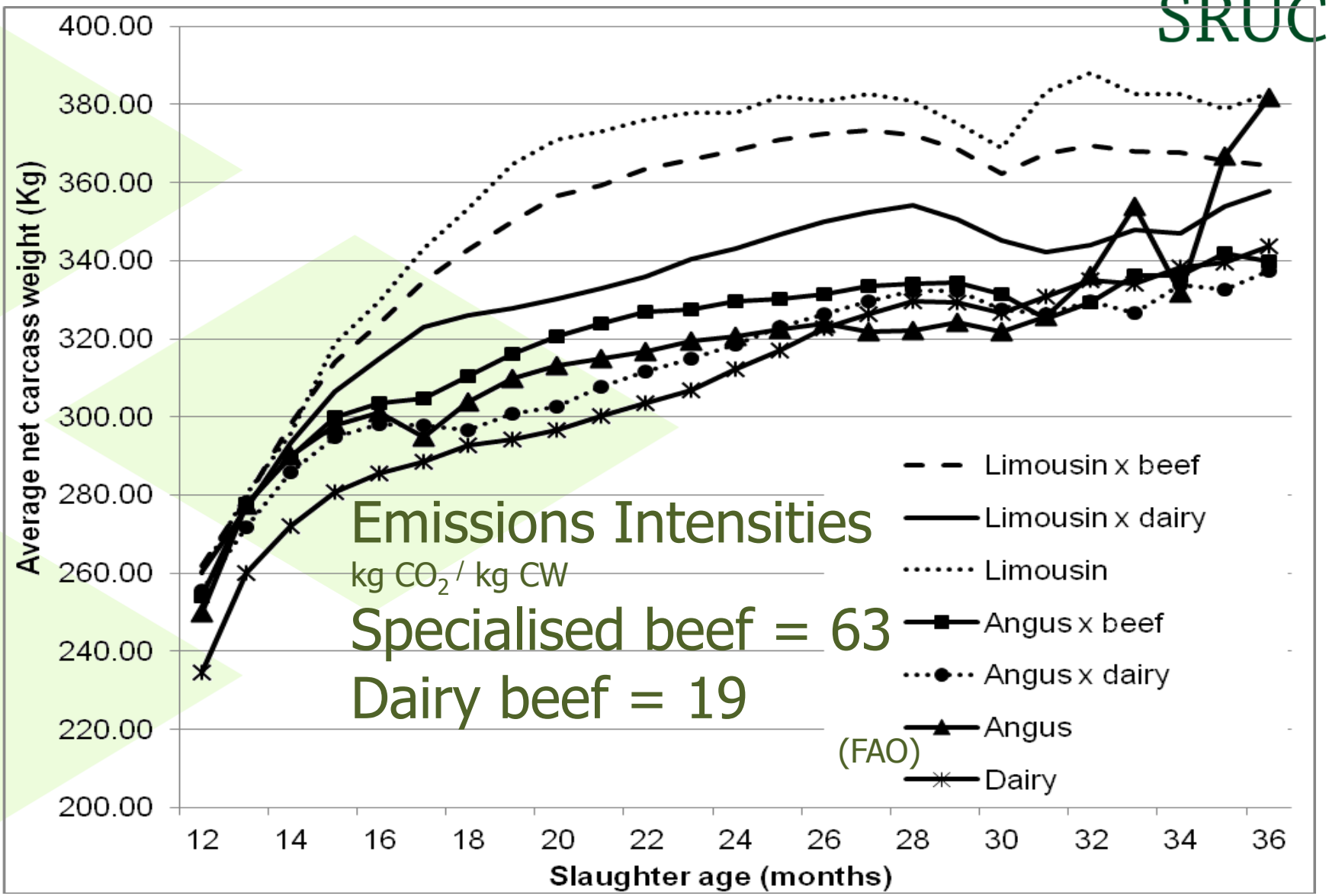
Age and weight at slaughter

- Greater proportion of males go to slaughter
- Records available on mature animals (i.e. suckler and dairy cull cows)
- Greater influence of mature animals in female subset



Age at slaughter and average net weight (kg)

Beef ….dairy beef



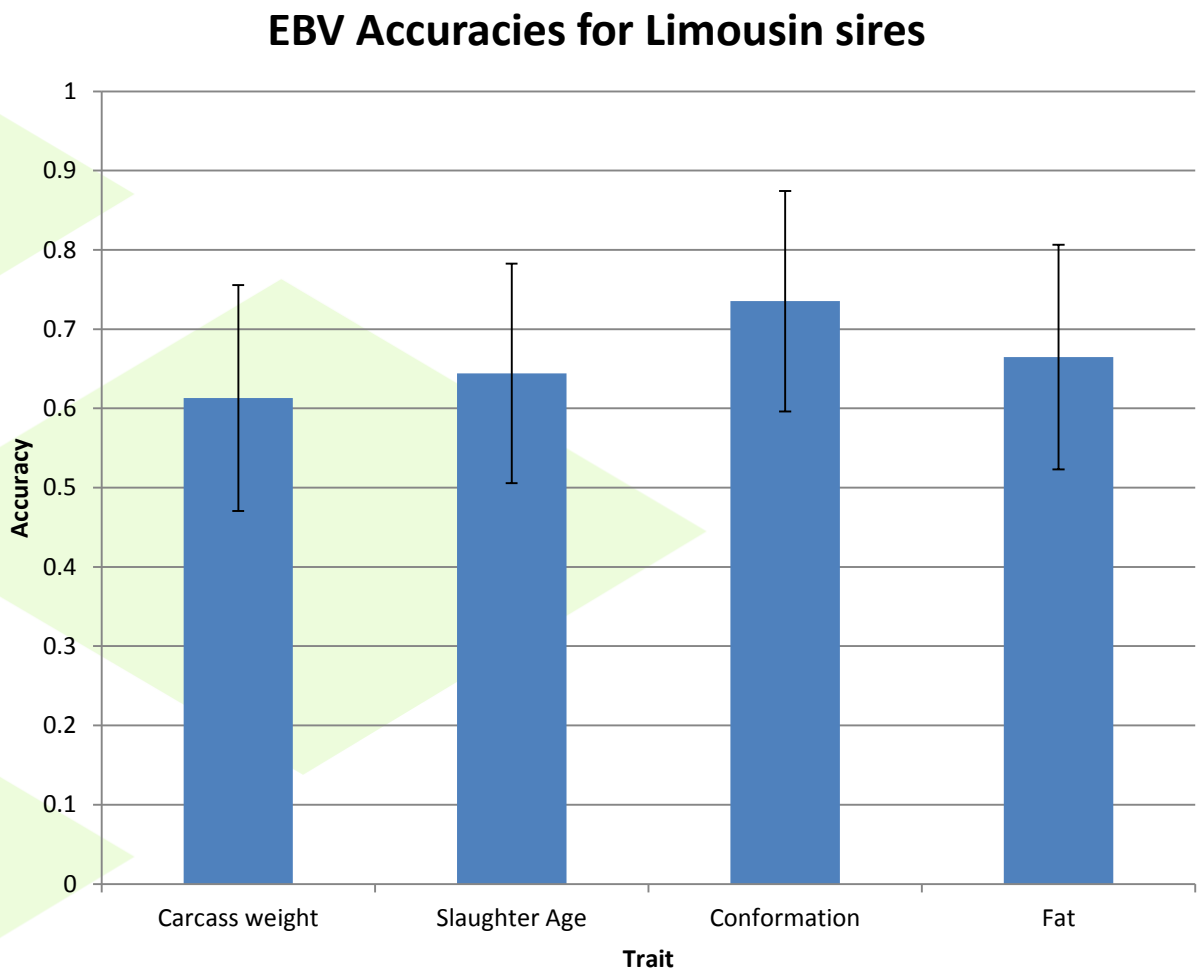
Breeds

- **Dairy genetics** are a **major** component of beef carcases
  - Holstein Friesian the most common dam breed of the slaughter generation (accounting for 46%)

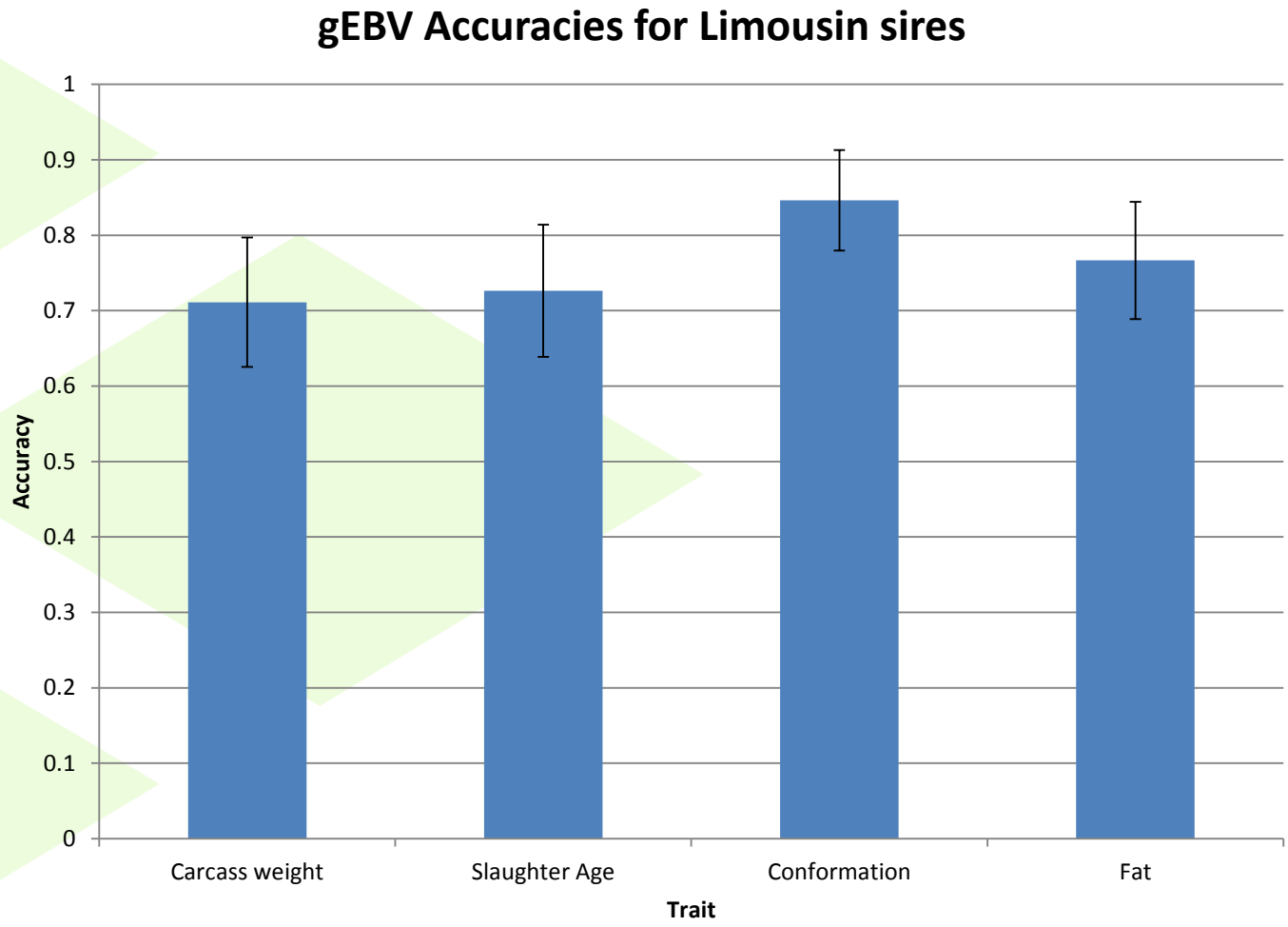
Ten most common dam breed types

	Breed code	Progeny Count	%		Breed code	Progeny Count	%
1	Holstein Friesian	1,078,469	45.7	6	Belgian Blue	90,459	3.8
2	Limousin	341,457	14.5	7	Charolais	85,118	3.6
3	Aberdeen Angus	225,330	9.6	8	Blonde d'Aquitaine	31,778	1.4
4	Simmental	175,326	7.4	9	Shorthorn	29,526	1.3
5	Hereford	117,247	5.0	10	Saler	26,363	1.1

EBV accuracies



gEBV accuracies



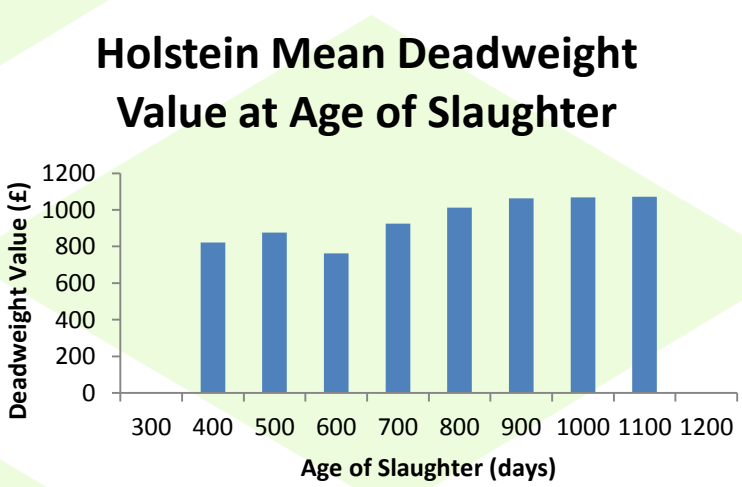
Top bulls slaughter age

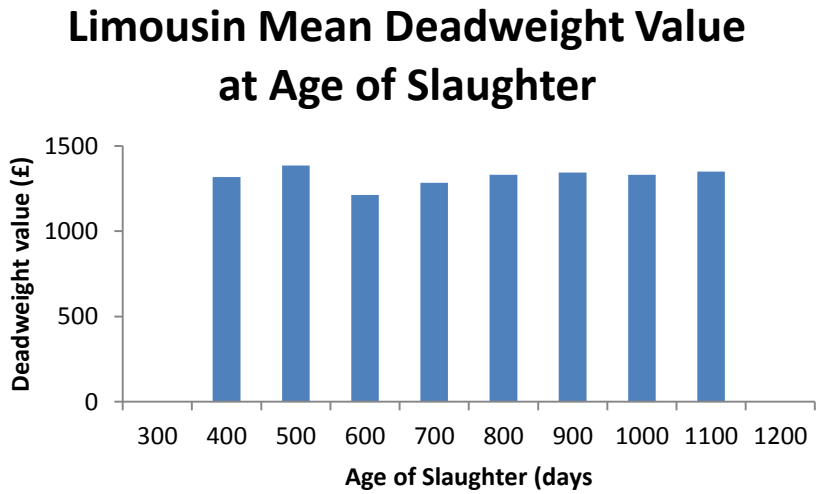
ID	BASCOID	Slaughter age Ebv	PREFIX	NAME	Slaughter Age Accuracy
39165017	8966435	-25.359	BURNBANK		0.573
40609849	9107081	-25.312	RONICK		0.742
40254253	9046564	-23.907	NORMANDE		0.764
41537096	9186978	-18.558	KNOCK		0.564
38842938	8960496	-16.683	NEWHOUSE		0.574
39320629	8966286	-15.013	SPITTALTON		0.514
39174397	8970181	-12.134	GREENHAUGH		0.617
39087716	8964815	-10.161	ALAGILS		0.628
39604247	9034820	-9.816	UPPERNISBET		0.467
41105770	9166327	-8.02	NETHERHALL		0.493

These are the Limousin bulls (>87.5%) which were born after 2010 with an accuracy greater than 0.4

Mean Deadweight Value at Age of Slaughter

Deadweight value at age of slaughter calculated from price grid based on conformation and fat scores, carcass weight, sex , breed and age at slaughter.





Holstein cattle have the highest deadweight value on average between 900 and 1100 days

Limousin cattle have the highest deadweight value on average between 400 and 500 days.

Implications

- Massive benefit to the industry
  - Large numbers of records – thousands not hundreds
  - Traits of importance £
  - Stronger links in the supply chain
  - Increased efficiency ~ greenhouse gas emissions
  - First EBVs of their kind in the UK
    - Genetic improvement
    - Stimulate the industry
  - First gEBVs for beef in UK

Where to next

- What can we do building on our platform?
  - Meat quality
    - Proposal in
  - Fatty acids (saturated fat)
    - Proposal on Holstein sired beef cattle
  - Feed efficiency
    - Defra project partners

Conclusions for beef

- Developments Industry focused
  - Driven by abattoir
- Large scale with big data sets
  - Quality less of an issue
- Carcase traits and genomics
  - projects that are the first of their kind in the UK
  - Results November 2015
- Provides a solid platform to expand and address further areas for improvement
  - Feed efficiency
  - Female fertility traits
  - Meat quality

What are the blockages for sheep?

- Willingness is biggest block
- Industries are different
  - Opportunity NOT excuse
- The industry structure will have to change to exploit emerging DNA technologies
  - Individual sheep ID
  - Sire identified (BCMS sorts that in cattle)
  - Genotyping could sort in sheep
  - Phenotype farms?
  - Nucleus breeding schemes/companies?

Conclusions for sheep

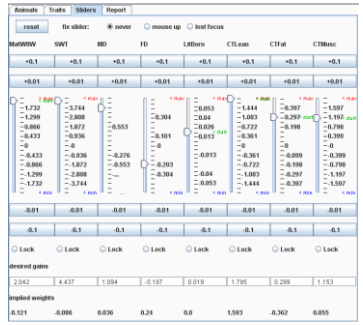
- Similar initiative already happening
  - Dunbia and Aberystwyth University
- Discussions happening in Scotland on phenotype farms
  - Concentrate recording in few flocks
  - Source of revenue for new entrants
  - Could be owned by a company
  - Could be a threat to national evaluations
    - Might be a good thing like in poultry and pigs?
- Things are moving fast!

Edinburgh Genetic Evaluation Services

SRUC

Providing genetic evaluations to the UK dairy (on behalf of Dairy Co), beef and sheep (on behalf of Signet) industries

Database providers of the BASCO database and fish breeding companies



Implementing genomic breeding values for UK dairy and beef cattle

New web tools to assisting in managing selection decisions

DairyCo Breeding+