Form BEEF

DATA COLLECTION

Country (or countries)	UK
Trait name	Carcass Conformation (CCO)
Breed(s)	Simmental and Charolais (taken from across breed evaluation including on phenotypes from 89 other breeds)
Trait definition	The carcase is graded under the EUROP system, defined by 5 main classes E, U, R, O, and P. which through European Union regulations allow for 3 further subdivisions (e.g. E+, E, E-) of each conformation, thus 15 classes in total. These classes were converted to numerical values 1 to 15 as shown in Table 19, and multiplied by three to be line with a conversion table supplied by Signet (scale 3 to 45). A 15 point scale with values 1 to 15 as used by Hickey et al (2007[1]) would result the same as the values 3 to 45.
Method and frequency of measurement	One measurement per animal
Who does the performance recording?	Abattoir
Method of collecting data	Carcass is scored according to the EUROP grading system
Which animals get recorded?	Any passing through abattoir
Is birthday recorded?	Yes
Is day of recording available?	Yes
Is the data adjusted and/or selected? If yes please describe the methodology applied	All breeds are adjusted to a common variance by scaling the records on an individual for each trait using the following formula where i is the appropriate breed and sex and j is the appropriate sex but breed type=2. Scaled phenotype = Average(i) + [(phenotype – average(i)) *(std(j)/std(i))] Breed types are defined as 1= Dairy, 2=Native beef, 3=Continental beef, 4=Other
Time period for inclusion of data	02/01/2001-19/10/2018
Criteria (data edits) for inclusion of records	Remove duplicates killdate supplied by the abattoir must be within 10 days of BCMS Sex must be recorded Age at slaughter must be recorded and 365<slage<1095 Carcass weight>0kg Conformation and fat class recorded and valid EUROP classification Must be a heifer, steer or young bull Dam age>540 days at calving Dam must be present in BCMS

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[1] Hickey, J.M., Keane, M.G., Kenny, D.A., Cromie, A.R., and Veerkamp, R.F. 2007. Genetic parameters for EUROP carcass traits within different groups of cattle in Ireland. Journal of Animal Science 85:314-321.

	Dam birthdate missing Sire and maternal grandsire unknown Carcass weight within ±3sd (for sire-breed, sex and age group) Average daily carcass gain ±3sd (for sire-breed, sex and age group) BCMS birth recorded Died in the same herd as born No location change from birth herd Last BCMS movement was not death Finishing herd could not be assigned to be death herd Must have spent >60days in finishing herd BCMS kill location was not a slaughter house Birth herd year season must contain> 3 animals Kill herd year season must contain> 3 animals
Is embryo transfer applied? How are ET animals identified? Is recipient mother ID recorded?	ET animals removed
How do you treat incomplete data?	Whole record removed if any of the above criteria are not met
MODEL	
Model used for genetic evaluation	MT-AM-FR
Environmental effects	BirthHYS, 242666 (F) Slage (X) Sex (F) Killsite,7 (F) KillHYS (F) Sex*KillHYS,182750 (F) Killsite*killHYS,137750 (F) Dam age (X) Once bred heifer,3 (F) Dampercentagedairy (X) Slage2 (X) Het 1 (X) Het 2 (X) Het 3 (X) Het 4 (X) Het 5 (X) Het 6 (X) Rec 1 (X) Rec 2 (X) Rec 3 (X) Rec 4 (X) Rec 5 (X) Rec 6 (X)
Use of genetic groups and relationships	A standard relationship matrix is formed based on available pedigree information. Genetic groups are based on the animal's breed type.

1 Hickey, J.M., Keane, M.G., Kenny, D.A., Cromie, A.R., and Veerkamp, R.F. 2007. Genetic parameters for EUROP carcass traits within different groups of cattle in Ireland. Journal of Animal Science 85:314-321.

	Breed types are defined as Dairy, Continental beef, Native beef, other.
Genetic parameters in the model	See appendix I
Adjustment for heterogeneous variance in evaluation model	Heterosis and Recombination coefficients were calculated from the breed type proportions of the animal’s sire and dam and the formulae are as follows: 〖heterosis〗_ij= ((〖sire〗_i* 〖dam〗_j)+(〖sire〗_j* 〖dam〗_i))/100 〖recombination〗_ij= ((〖sire〗_i* 〖sire〗_j)+(〖dam〗_i* 〖dam〗_j))/100 Breed types are defined as 1= Dairy, 2=Native beef, 3=Continental beef, 4=Other Het 1 and Rec 1 = breed types 1 and 2 Het 2 and Rec 2 = breed types 1 and 3 Het 3 and Rec 3 = breed types 1 and 4 Het 4 and Rec 4 = breed types 2 and 3 Het 5 and Rec 5 = breed types 2 and 4 Het 6 and Rec 6 = breed types 3 and 4 These 12 terms are then fitted as covariates in the model
System validation	Pre evaluation data quality checks and formation of contemporary groups. Genetic evaluation undertaken using MiX99. Post evaluation checks include adjusting for the genetic base, quality assurance checks and data summaries.
Definition of genetic reference base Next base change	Genetic reference animals are those animals that are born in 2010.
Assessment of index quality (computation of reliability, connection)	Reliabilities are computed using the mix99 software using the Mistztal and Wiggans (1988) calculation method.
PUBLICATION	
Expression of genetic evaluations	EBVs are produced and published on http://egenes.co.uk/carcassdata/ on behalf of AHDB
Criteria for official publication of evaluations	None
Number of evaluations / publications per year	3 times a year
Anticipated changes in the near future	None
Key reference on methodology applied	The mix99 software package is used for the genetic evaluations (Lidauer and Stranden, 1999; Vuori et al., 2006)

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Key organization : contact person, address, phone, fax, e-mail, web site	Scotland's Rural College (SRUC) contact persons : Abbygail Wells and Samir Id-Lahoucine Roslin Institute Building Bush Estate Penicuik, EH25 9RG abbygail.wells@sruc.ac.uk samir.idlahoucine@sruc.ac.uk https://www.sruc.ac.uk

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Parameters used in genetic evaluation

Country: United Kindgom

Main trait group:Carcass conformation (CCO)

Breed:Simmental and Charolais

Trait[(1)]	Definition	h_d^2	h_m^2	$r_{g(d,m)}$	c^2	σ_p^2
CCO	Carcass conformation	0.42	-	-	-	0.97

$h_d{}^2$: direct heritability; $h_m{}^2$: maternal heritability; $r_{g(d,m):}$ genetic correlation between direct and maternal effects; c^2 : repeatability of (maternal) permanent environmental effects; $\sigma_P{}^2$: phenotypic variance. 1) If you have more than one trait provides the correlations between traits.

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1 Hickey, J.M., Keane, M.G., Kenny, D.A., Cromie, A.R., and Veerkamp, R.F. 2007. Genetic parameters for EUROP carcass traits within different groups of cattle in Ireland. Journal of Animal Science 85:314-321.

Form BEEF

Appendix II BEEF

Sample of ET animal IDs

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1 Hickey, J.M., Keane, M.G., Kenny, D.A., Cromie, A.R., and Veerkamp, R.F. 2007. Genetic parameters for EUROP carcass traits within different groups of cattle in Ireland. Journal of Animal Science 85:314-321.