

Status as of: 2010 – 08 – 17

Form BEEF

DESCRIPTION OF BEEF NATIONAL GENETIC EVALUATION SYSTEM

Country **Germany**

Trait name: **Maternal Reproduction Traits**

DATA COLLECTION

| | |
|---|--|
| Breed(s) | Charolais, Limousin, Angus, Simmental, Blonde d'Aquitaine, Salers, Hereford, Uckermärker Scottish Highland Cattle, Galloway, Red Highland Cattle |
| Trait definitions | Age at first calving (AC1), Calving interval (CI), Calving ease (CE), Still birth rate (SB), Number of calvings (NC) |
| Method and frequency of measurement | |
| Who does the performance recording? | Calving ease is scored by the breeder. All data are collected according to general ICAR performance recording rules (ICAR 2009) |
| Method of collecting data | Data are collected on farms |
| Which animals get recorded? | Pure breed |
| Is birthday recorded? | Yes |
| Is day of recording available? | Yes |
| Are the data adjusted and/or selected? If yes please describe the methodology applied | No |
| Time period for inclusion of records | Since 1982 onwards |
| Criteria (data edits) for inclusion of records | |
| Is embryo transfer applied? How are ET animals been identified? ¹ Is recipient mother ID recorded? | No |
| How do you treat incomplete data? | Relevant information describing environmental effects must be available otherwise the record is excluded from genetic evaluation. Multiple trait model with missing traits allowed. |

MODEL

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|--|--|
| Model used for genetic evaluation ^{2a} | Multiple trait repeatability animal model (AC1, CI, CE, SB) Survival analysis : NC |
| Environmental effects ^{2b} | Herd x year (fix), sex of calf (fix), year of calving (fix), calving number |
| Use of genetic groups and relationships | Genetic groups are defined for unknown parents of animals based on breed, selection paths, year of birth of the animal |
| Genetic parameters in the model ³ | See table 1 |
| Adjustment for heterogeneous variance in evaluation model | No |
| System validation | <ul style="list-style-type: none"> - checks on data quality (raw data, pedigree information, etc.) - checks on results: checks in EBV between evaluations, genetic trends, stability on EBV over time - the whole evaluation is a ISO 9001 certified process. |
| Definition of genetic reference base Next base change | Yearly rolling base (actually all bulls born 2001 – 05) December 2010: (→ bulls born 2002 – 2006) |
| Assessment of index quality (computation of reliability, connection) | For AC1, CI, CE, SB, reliabilities are calculated with own programs considering multiple traits with repeated information. For CN calculation of reliability is included in the Survilval Kit package. |

PUBLICATION

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|---|---|
| Expression of genetic evaluations | <p>Single trait EBVs on original scale are not published. Instead, relative breeding values (RBV) are published:</p> <ul style="list-style-type: none"> • RBV AC1 • RBV maternal CI, • RBV maternal CE, • RBV maternal SB, • RBV NC, • Total RBV (RZL) <p>RZL is a linear Index of RBV CI (40%), RBV SB (30%) and RBV NC (30%). All RBVs are standardized with mean 100 and standard deviation 12 for base bulls. Desired EBVs are above 100.</p> |
| Criteria per official publication of evaluations | <p>Bulls: Minimum 30% reliability for RZL Dams: Minimum 2 calvings</p> |
| Number of evaluations / publications per year | Once per year in December |
| Anticipated changes in the near future | None |
| Key reference on methodology applied | Website of vit (under construction): www.vit.de |
| Key organization: Contact person, address, phone, fax, e-mail, website | <p>vit Dr. Wolfgang Ruten & Friedrich Reinhardt Heideweg 1, D-27283 Verden, Germany Phone: +49-(0)4231-95510, fax: +49-(0)4231-955166 e-mail: ge@vit.de, web-site: http://www.vit.de</p> |

- 1) Use Appendix II BEEF for sample ID of ET animals
- 2a) Use abbreviation listed in the attached list of abbreviation to define the type of model.
- 2b) Use abbreviation for most common effects as listed in the attached list of abbreviation indicating, also, if the effect is treated as random (R) or fixed (F).
- 3) Use Appendix I BEEF for heritability/genetic variance estimates.

Parameters used in genetic evaluation

Country: Germany**Main trait group: Maternal Reproduction traits****Breeds: Charolais, Limousin, Blonde d'Aquitaine, Salers, Hereford, Uckermärker, Galloway, Scottish Highland Cattle, Red Highland Cattle**

| Trait ⁽¹⁾ | Definition | h_d^2 | h_m^2 | $r_{g(d,m)}$ | c^2 | σ_p^2 |
|----------------------|--------------------------------------|---------|---------|--------------|-------|--------------|
| Age at first calving | | 0.54 | | | | 118 |
| Calving interval | Time between two calvings | | 0.03 | | 0.10 | 15.5 |
| Calving ease | Scores 1 - 5 | | 0.05 | | 0.16 | 0.06 |
| Still birth rate | Still birth or dead after 48 h (0,1) | | 0.04 | | 0.11 | 0.05 |
| Number of calvings | | 0.15 | | | | 3.10 |

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; σ_p^2 : phenotypic variance.

1) If you have more than one trait provide the correlations between traits.

Correlations used in multi trait analysis above the diagonal, heritabilities on the diagonal

| | | (1) | (2) | (3) | (4) |
|------------------------|-----|------|------|------|------|
| Age at first calving | (1) | 0.54 | 0.10 | 0.10 | 0.10 |
| Calving interval (mat) | (2) | | 0.03 | 0.00 | 0.00 |
| Calving ease (mat) | (3) | | | 0.05 | 0.20 |
| Still birth rate (mat) | (4) | | | | 0.04 |

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Appendix II BEEF

Sample of ET animal IDs

Country:
Main trait group:
Breed:

ET animal ID
