Form BEEF

DESCRIPTION OF BEEF NATIONAL GENETIC EVALUATION SYSTEM

Country (or countries)

Switzerland

Trait name:

Carcass conformation, carcass fat, carcass weight

<table>
<thead>
<tr>
<th>Breed(s)</th>
<th>Angus, Aubrac, Braunvieh, Charolais, Limousin, Simmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trait definition</td>
<td>Carcass conformation for calves and adults</td>
</tr>
<tr>
<td></td>
<td>Carcass fat for calves and adults</td>
</tr>
<tr>
<td></td>
<td>Carcass weight for calves and adults</td>
</tr>
<tr>
<td></td>
<td>Calves &lt;= 180 days</td>
</tr>
<tr>
<td></td>
<td>180 days &gt; Adults &lt; 700 days (adults = heifers, steers, young bulls)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Method and frequency of measurement</th>
<th>Carcass conformation grade (CHTAX classification), carcass fat grade, carcass weight, slaughter date are recorded at the end of the slaughter chain.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CHTAX classification for meat is scored as C to X by an expert [C (very good muscularity), H (good muscularity), T (average muscularity), A (poor muscularity), X (very poor muscularity)].</td>
</tr>
<tr>
<td></td>
<td>Carcass fat grade is scored on a scale of 1 to 5 by a classifier [5 (extremely fat), 4 (high fat coverage), 3 (regularly covered carcass), 2 (partially covered carcass), 1 (no fat coverage)].</td>
</tr>
</tbody>
</table>

Who does the performance recording? Graders of Proviande (Proviande - the trade association of the Swiss meat industry) in slaughtering house.

Method of collecting data Data are collected by Proviande and sent to Swiss Beef Cattle.

Which animals get recorded? All slaughtered animals in Switzerland

Is birthday recorded? Yes

Is day of recording available? Yes

Are the data adjusted and/or selected? If yes please describe the methodology applied Yes Carcass weight is measured in kilogram. In order to bring carcass weight to a similar scale as carcass conformation and carcass fat, carcass weight is transformed to deciton (1dt = 100kg).
<table>
<thead>
<tr>
<th>Time period for inclusion of records</th>
<th>Since 1994</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria (data edits) for inclusion of records</td>
<td>grader, slaughterhouse, slaughter age should be available Carcass conformation or carcass weight or carcass fat should be available Number of observations per breed ≥ 100 Number of observations per herd*year ≥ 5 Number of observations per grader ≥ 30</td>
</tr>
<tr>
<td>Is embryo transfer applied? How are ET animals been identified? Is recipient mother ID recorded?</td>
<td>The technique is rarely applied. The performance data of ET animals are included. ET is appended to the animal’s name. The recipient mother ID is recorded.</td>
</tr>
<tr>
<td>How do you treat incomplete data?</td>
<td>If the animal record doesn’t fill the criteria for inclusion, the animal record is not considered for the genetic evaluation.</td>
</tr>
</tbody>
</table>

**MODEL**

Model used for genetic evaluation[^a] MT-BLUP-AM-FR

Environmental effects[^b] (F) : sex, slaughterhouse, grader of Proviande for carcass conformation and carcass fat. (R) : herd*year, animal. Covariate: fixed linear and quadratic regression on age at slaughter.

Use of genetic groups and relationships genetic groups defined by breed, birth year and selection path

Genetic parameters in the model[^c] Appendix I BEEF

Adjustment for heterogeneous variance in evaluation model No

System validation Several data quality checks by Qualitas and Swiss beef cattle at different stages of the procedure, correlation between the previous and the current evaluation.

Definition of genetic reference base Rolling base includes animals born 3 to 8 calendar years prior to current evaluation. Adjusted every year.

Assessment of index quality (computation of reliability, connection) Reliabilities are computed by apax99.
**Expression of genetic evaluations**

Carcass conformation (F), carcass fat (FET) and carcass weight (SG) are calculated for calves (KV) and for adult (MT).

EBV standardized using

\[
RBV = \left(\frac{\text{Raw EBV} - \text{Base}}{\sigma}\right) \times 12 + 100,
\]

where \( \sigma \) is the genetic standard deviation and Base is the breeding value’s mean of the rolling base.

**Criteria per official publication of evaluations**

EBVs are publishable for all animals included in the evaluation that belong to the breeds mentioned above.

**Number of evaluations / publications per year**

2

**Anticipated changes in the near future**


**Key reference on methodology applied**


**Key organization:**

**Evaluation Center:**

Qualitas AG
Chamerstrasse 56, CH-6300 Zug, Switzerland
Phone: +41 (0)41 768 92 60

E-mail: sophie.kunz@qualitasag.ch

[http://www.qualitasag.ch](http://www.qualitasag.ch)

**EBV’s published by herdbook organisation:**

Swiss Beef Cattle
Stapferstrasse 2, CH-5201 Brugg
Phone: +41 (0)56 462 33 54

E-mail: svenja.strasser@mutterkuh.ch


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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:
Main trait group:
Breed:

<table>
<thead>
<tr>
<th>Trait(1)</th>
<th>Definition</th>
<th>$h_d^2$</th>
<th>$h_m$</th>
<th>$r_{g(d,m)}$</th>
<th>$c^2$</th>
<th>$\sigma_p^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$F_{KV}$</td>
<td>Carcass conformation calves</td>
<td>0.50</td>
<td></td>
<td></td>
<td></td>
<td>0.7995</td>
</tr>
<tr>
<td>$F_{MT}$</td>
<td>Carcass conformation adults</td>
<td>0.56</td>
<td></td>
<td></td>
<td></td>
<td>0.7175</td>
</tr>
<tr>
<td>$FET_{KV}$</td>
<td>Carcass fat calves</td>
<td>0.31</td>
<td></td>
<td></td>
<td></td>
<td>0.3936</td>
</tr>
<tr>
<td>$FET_{MT}$</td>
<td>Carcass fat adults</td>
<td>0.36</td>
<td></td>
<td></td>
<td></td>
<td>0.7209</td>
</tr>
<tr>
<td>$SG_{KV}$</td>
<td>Carcass weight calves</td>
<td>0.22</td>
<td></td>
<td></td>
<td></td>
<td>0.0141</td>
</tr>
<tr>
<td>$SG_{MT}$</td>
<td>Carcass weight adults</td>
<td>0.30</td>
<td></td>
<td></td>
<td></td>
<td>0.0639</td>
</tr>
</tbody>
</table>

$h_d^2$: 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 provide the correlations between traits.

<table>
<thead>
<tr>
<th></th>
<th>$h_d^2$ diagonal, $r_{g}$ offdiagonal</th>
<th>$F_{KV}$</th>
<th>$F_{MT}$</th>
<th>$FET_{KV}$</th>
<th>$FET_{MT}$</th>
<th>$SG_{KV}$</th>
<th>$SG_{MT}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$F_{KV}$</td>
<td>0.50</td>
<td>0.83</td>
<td>-0.05</td>
<td>-0.17</td>
<td>0.52</td>
<td>0.29</td>
<td></td>
</tr>
<tr>
<td>$F_{MT}$</td>
<td>0.56</td>
<td></td>
<td>-0.03</td>
<td>0.15</td>
<td>0.36</td>
<td>0.38</td>
<td></td>
</tr>
<tr>
<td>$FET_{KV}$</td>
<td>0.31</td>
<td></td>
<td></td>
<td>0.73</td>
<td></td>
<td>-0.03</td>
<td>0.09</td>
</tr>
<tr>
<td>$FET_{MT}$</td>
<td></td>
<td>0.36</td>
<td>-0.20</td>
<td>0.26</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$SG_{KV}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.22</td>
<td>0.63</td>
<td></td>
</tr>
<tr>
<td>$SG_{MT}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.30</td>
<td></td>
</tr>
</tbody>
</table>
Form BEEF

Appendix II BEEF

Sample of ET animal IDs

Country:
Main trait group:
Breed:

ET animal ID

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