Photographs as an education tool in linear description – experiences from the Franches-Montagnes horse

Ruedi von Niederhäusern, SNSF

The Franches-Montagnes

- The Franches-Montagnes (FM) is the last native Swiss horse breed with multiple use and good character

- The breed has developed from a heavy draught breed used in agriculture to a light draught breed that excels in leisure riding and in international driving competitions
Linear description and breeding value estimation in the FM breed

- Since 2006, breeding values are estimated for 43 traits using a multi-trait animal model ("BLUP").

<table>
<thead>
<tr>
<th>Traits (phenotypes)</th>
<th>Judged</th>
<th>Described</th>
<th>Measured</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conformation traits</td>
<td>3</td>
<td>24</td>
<td>1</td>
<td>28</td>
</tr>
<tr>
<td>Performance traits (Field test for driving and riding)</td>
<td>12</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White markings</td>
<td>3</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Linear description sheet
Phenotypes of the FM breed

- Breeding values of the stallions are published annually.

How judges are chosen

- Requirements
  - Being a successful breeder
  - Representative of a region (6)
  - Strong personality
  - Passed the basic education

- Election procedure
  - Candidate is proposed by the regional conference
  - Candidate is elected at the general assembly

- Judge gremium
  - 9 judges of the breed
  - Activity is restricted to 12 years
Judge training

- Ground work
  - Personal experience
  - Basic education course conformation & gaits FM (5 days)
- Continuing training (yearly)
  - ½ day on adult horses (in March)
  - ½ day on foals (in July)
  - 2h Feedback-session after the judging season (in November)

![Image of horse and people](image)

Problems...

- Distribution around the perceived optimal value
- But where is the optimum?

<table>
<thead>
<tr>
<th>Linear trait</th>
<th>Mean</th>
<th>Mode</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>21. Trot: Engagement</td>
<td>9.00</td>
<td>9.00</td>
<td>9</td>
</tr>
<tr>
<td>22. Trot: Elasticity</td>
<td>9.00</td>
<td>9.00</td>
<td>9</td>
</tr>
<tr>
<td>23. Correctness of gaits</td>
<td>5.00</td>
<td>5.00</td>
<td>5</td>
</tr>
<tr>
<td>24. Type</td>
<td>8.50</td>
<td>9.00</td>
<td>5-9</td>
</tr>
</tbody>
</table>

Pfammatter, 2017

![Graphs showing distribution of scores for Fesse and Jambe antérieure]

Bild: T. Tüscher 2018
New approach, using photographs to visualize breeding standards and to calibrate linear description

- First step; visualize the need for change (by bachelor thesis)
  - Convince the breeding commission
  - Convince executive board

- Second step; creation of a working group
  - Include concerned persons (judges) in a working group
  - Include deciders (president of the breeding commission) in the working group

- Step three; do the thing
  - As head of the working group; be a coach, not an expert!
  - Four full-day sessions to create the standards
  - Five full day sessions to build up – adjust the pics (with a pro)

Results 1/3

- New Sheets LBE
  - with Optima
  - new traits
  - Clearer trait description
Results 2/3

- Handout on paper (A3) for 19 traits on the standing horse

Results 3/3

- Series of pictures on a tablet for 19 traits on the standing horse
Implementation: March 2018

All judges received the following:

Implementation March 2018

Difficulties:
- 5 out of 9 judges had no previous experience with electronic tools
- Only 45 minutes for the theoretical introduction
- Only 60 minutes were available for the introduction of the new traits (2) and the discussion of the changes of the remaining traits

Positive:
- No general opposition from the judges of the breed
Implementation march 2018

Judging season from March to October
Evaluation of the results

- New traits

- Old traits with new resp. clearer optima
Evaluation of the results

- Old traits with unchanged optima and better distribution

![Graphs showing Widerristlänge and Ganaschen distributions](image)

- Around 2/3 of the traits had the same distribution as before

Feedback session November 2018

- Oral Feedback
  - 4/9 judges very positive
  - 4/9 judges undecided
  - 1/9 judge was opposed on «general principle»

- Positive
  - Good instrument to recalibrate oneself during the season
  - You can explain a decision to the breeder based on the pictures

- Negative
  - Some images are not entirely «right» yet
  - No one needs a template how an LBE should be done …..
Back to work

- The same working group:
  - Re-evaluation of images for 7 traits
  - Write explanatory texts for each trait
  - Refine the sheet

- What’s next?
  - Decision from board
  - Definitive introduction from 1.3.2019
  - Intensive training of the judges

Take home message

- Show with proven results that there is a problem
- Include, from the start of the project, the concerned people (judges)
- It takes time for the whole process to work
- Training of the judges is very important

= Good system to calibrate the judges and to get better phenotypes
Other ideas

- Skeleton morphing
  - Artificial intelligence
  - Using photographs (2D or 3D)
  - No more judges?

- Scan the horses in 3D?

Thank you for your attention