Assurance of reliability and validation of yield values in milk recording according to immediately previous history of records
Why?

- Economic pressure
- Technology progress
- Accuracy of breeding
## Economic pressure

<table>
<thead>
<tr>
<th></th>
<th>1998</th>
<th>2018</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk - gate price</td>
<td>7,89</td>
<td>8,62</td>
<td>109</td>
</tr>
<tr>
<td>Mik - supermarket price</td>
<td>12,07</td>
<td>19,67</td>
<td>163</td>
</tr>
<tr>
<td>Diesel</td>
<td>16,92</td>
<td>31,80</td>
<td>188</td>
</tr>
<tr>
<td>Salary</td>
<td>11 801</td>
<td>31 885</td>
<td>270</td>
</tr>
</tbody>
</table>
New technology

- Big farms
- On-line milk analyzers
- Information technologies
Accuracy of breeding

Only genomic feedback is milk recording!
BEFORE

Orange cones and dirty sand in your vacation pic? Gone.

Common male requests buffer biceps...

...and a muscular, hair-free chest. Plus a six-pack!

AFTER

Flawless skin, bigger boobs... and Kardashian hair

(Nice rock!)

Suddenly slimmer waist (who needs ribs?) and thighs
Breeding business become a fake
Max. I.: úraz jako jalovice, bez užitkovosti

Max. I.: matka uhynula po prvním otelením
Genomic

- A fake?
- Business with accuracy
- 30 % of risk was turned over to the farmers
- Progress versus accuracy
What is the accuracy of genomic?

- 60%?
- 70%?
- Accuracy of breeding values based on progeny testing
- Accuracy of (milk) recording
Accuracy of milk recording

- Paternity errors - up to 10%?
- Parlour errors - up to 10%?
- Do we start to estimate breeding values already with 20% errors?
What we do?

More genomic tests!
Who wants to see the truth?

- Labs?
- Breeding associations?
- Breeding organizations?
- Stud farmers?
1. Milk recording

2. Breeding values estimation

3. Genomic breeding values estimation
How to increase an accuracy and decrease the cost

- Five values previous to the official recording day (6 days in total)
- Average
- Standard deviation
- Confidence field
- Excluding data out of the confidence field
- Validation
What happened

- All values in the confidence field - 90%
- One or more days are excluded from the confidence field (not the official one) - 5%
- The day of milk recording is excluded - the days that are in confidence field are used to calculate an average and the average will replace the milk recording day - 3%
- If there are less than 3 days, the day of milk recording is used - 2%
Results

- 4 farms were used for the test (273 - 266 - 241 - 253)
- Insignificant difference between validated and not validated milk yield
- Identified error rate was between 0 and 6.64% (2.99% average)
**Example**

<table>
<thead>
<tr>
<th>Control day</th>
<th>23,1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>21,75</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>3,2141873</td>
</tr>
<tr>
<td>Confidence field (90%)</td>
<td>$1,64 \times 3,21 \pm 21,75$</td>
</tr>
<tr>
<td>Lower limit</td>
<td>16,49</td>
</tr>
<tr>
<td>Upper limit</td>
<td>27,01</td>
</tr>
</tbody>
</table>

99.7% of the data are within 3 standard deviations of the mean.

95% within 2 standard deviations.

68% within 1 standard deviation.
# Protocol

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No data excluded, milk from CD is used</td>
<td>90</td>
</tr>
<tr>
<td>2</td>
<td>One or more values are excluded, not the value from CD, milk from CD is used</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>CD day is excluded, average is used (minimum 3 days)</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Other situation</td>
<td>2</td>
</tr>
</tbody>
</table>

*CD - control day*
Conclusion

- Higher accuracy
- Lower cost

by excluding the human factor from a part of milk recording process.
Breeding Cooperative Impuls

- Fleckvieh breeding since 2001
- Quality with reliability
- Genomic selection - YES
- Genomic marketing - NO

Why is high accuracy our number one priority?
Robot ready

High accuracy = Lower variability
Thank you!

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