



# Overview of the Mendelian Sampling Variance Test Pilot Study

V. Palucci, H. Jorjani, J. Dürr,  
A.-M. Tyrysevä





# Outline

- Behind the Scenes of the Pilot Study
- Data Call & Requirements
- Data Received
- General Results
- General Comments
- Acknowledgments





## Behind the Scenes of the Pilot Study

- ✓ **2012:** Test software developed for Interbull service users ([Tyrisevä et al, 2012](#))
- ✓ **2013:** During the IB meeting in Nantes got the ok to proceed for a pilot study
- ✓ **April 2014:** Data call and data reception
- ✓ **May 2014:** Results of the pilot study are discussed during the current ITC meetings
  - ✓ ITC will decide if include the Mendelian Sampling Variance Test as part of the Interbull validation procedures.



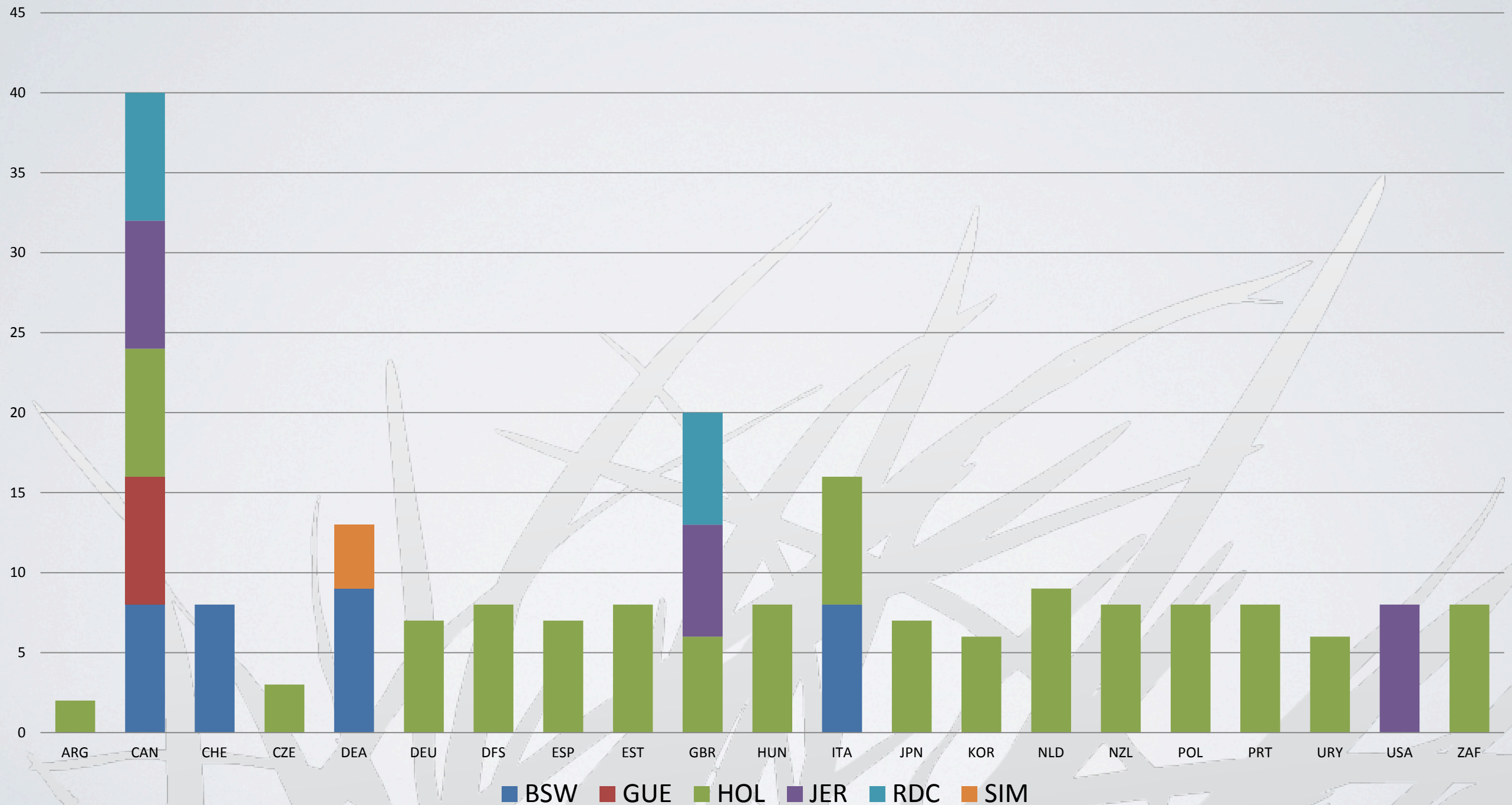


## Data Call & Requirements

- “**Mandatory**”: Protein, Somatic Cells Score, Stature
  - ✓ Traits with moderate-high  $h^2$  ok to test on bulls and cows
- “**Optional**”: two traits with  $h^2 < 0,1$ 
  - ✓ Low heritable traits to test on **BULLS** only
  - ✓ Software’s requirement of a minimum MS reliability of 0.1
- National Genetic Evaluation based on “Animal Models”



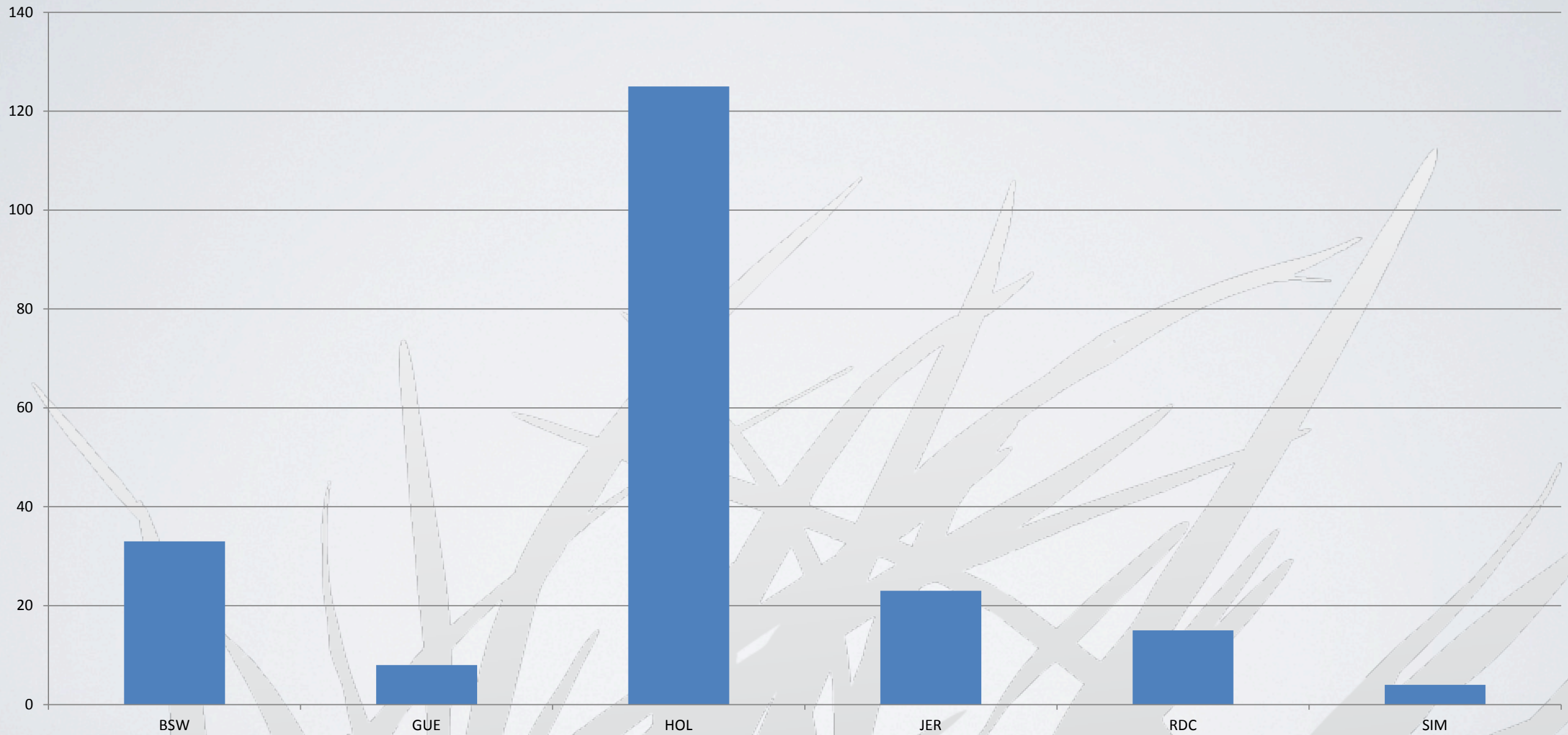
# Data Received: Countries & Breeds & Traits





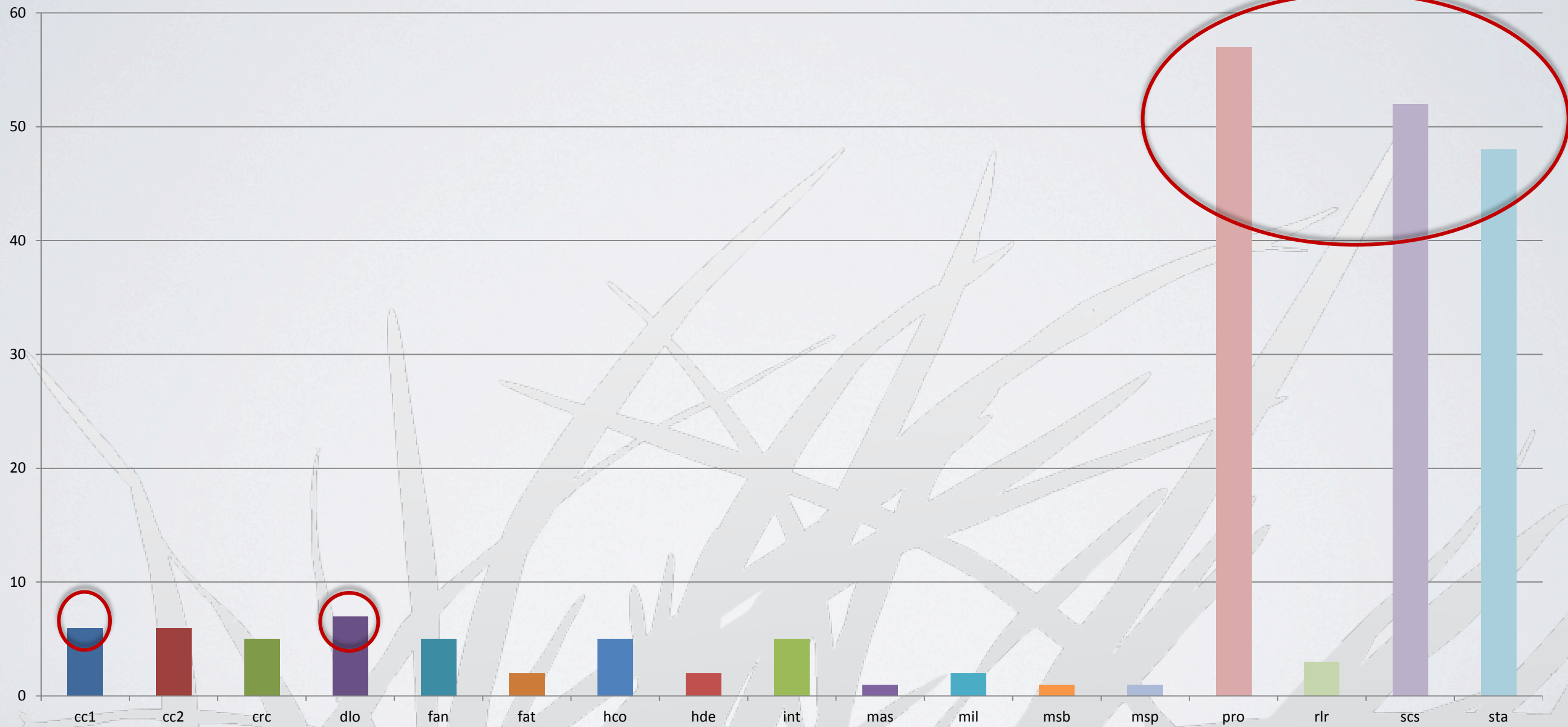


# Data Received: Information per Breed





# Data Received: Traits







# General Results for the Trend

| Trend outcome   | Frequency  | Percent (%) |
|---|------------|-------------|
| Trend did not deviated significantly from 0               | 82         | 42          |
| trend deviated significantly from 0 but within +/-2%      | 63         | 32          |
| trend deviated significantly from 0 and higher than +/-2% | 50         | 26          |
| <b>Tot PASSED</b>   | <b>145</b> | <b>74</b>   |
| <b>Tot FAILED</b>   | <b>50</b>  | <b>26</b>   |
| <b>Grand Total</b>  | <b>195</b> | <b>100</b>  |





# Protein – Trend Results for M&F- HOL

| PROTEIN   | Frequency |           | Percent (%) |            |
|---|-----------|-----------|-------------|------------|
|   | Males     | Female    | Males       | Female     |
| Trend did not deviated significantly from 0               | 7         | 0         | 41          | 0          |
| trend deviated significantly from 0 but within +/-2%      | 3         | 11        | 18          | 69         |
| trend deviated significantly from 0 and higher than +/-2% | 7         | 5         | 41          | 31         |
| <b>Tot. PASSED</b>  | <b>10</b> | <b>11</b> | <b>59</b>   | <b>69</b>  |
| <b>Tot. FAILED</b>  | <b>7</b>  | <b>5</b>  | <b>41</b>   | <b>31</b>  |
| <b>Grand Total</b>  | <b>17</b> | <b>16</b> | <b>100</b>  | <b>100</b> |



## Somatic Cells – Trend Results for M&F- HOL

| Somatic Cells Score                                       | Frequency |           | Percent (%) |            |
|---|-----------|-----------|-------------|------------|
|   | Males     | Female    | Males       | Female     |
| Trend did not deviated significantly from 0               | 11        | 0         | 73          | 0          |
| trend deviated significantly from 0 but within +/-2%      | 4         | 11        | 27          | 100        |
| trend deviated significantly from 0 and higher than +/-2% | 0         | 0         | 0           | 0          |
| <b>Tot. PASSED</b>  | <b>15</b> | <b>11</b> | <b>100</b>  | <b>100</b> |
| <b>Tot. FAILED</b>  | <b>0</b>  | <b>0</b>  | <b>0</b>    | <b>0</b>   |
| <b>Grand Total</b>  | <b>15</b> | <b>11</b> | <b>100</b>  | <b>100</b> |





## Stature– Trend Results for M&F- HOL

| Stature   | Frequency |           | Percent (%) |            |
|---|-----------|-----------|-------------|------------|
|   | Males     | Female    | Males       | Female     |
| Trend did not deviated significantly from 0               | 11        | 1         | 79          | 8          |
| trend deviated significantly from 0 but within +/-2%      | 3         | 8         | 21          | 61         |
| trend deviated significantly from 0 and higher than +/-2% | 0         | 4         | 0           | 31         |
| <b>Tot. PASSED</b>  | <b>14</b> | <b>9</b>  | <b>100</b>  | <b>69</b>  |
| <b>Tot. FAILED</b>  | <b>0</b>  | <b>4</b>  | <b>0</b>    | <b>31</b>  |
| <b>Grand Total</b>  | <b>14</b> | <b>13</b> | <b>100</b>  | <b>100</b> |



# Longevity– Trend Results for HOL Males

| Direct Longevity   | Frequency | Percent (%) |
|--|-----------|-------------|
|  | Males     | Males       |
| Trend did not deviated significantly from 0              | 2         | 0,2         |
| trend deviated significantly from 0 but within +-2%      | 1         | 17          |
| trend deviated significantly from 0 and higher than +-2% | 3         | 50          |
| <b>Tot. PASSED</b>                                       | <b>3</b>  | <b>50</b>   |
| Tot. FAILED  | 3         | 50          |
| <b>Grand Total</b>                                       | <b>6</b>  | <b>100</b>  |





## CC2– Trend Results for HOL Males

| Lactating cow's ability to conceive                       | Frequency | Percent (%) |
|---|-----------|-------------|
|   | Males     | Males       |
| Trend did not deviated significantly from 0               | 1         | 20          |
| trend deviated significantly from 0 but within +/-2%      | 1         | 20          |
| trend deviated significantly from 0 and higher than +/-2% | 3         | 60          |
| <b>Tot. PASSED</b>  | <b>2</b>  | <b>40</b>   |
| <b>Tot. FAILED</b>  | <b>3</b>  | <b>60</b>   |
| <b>Grand Total</b>  | <b>5</b>  | <b>100</b>  |





## General Comments

- Software tested by 21 countries, no major difficulties encountered by the users
- The majority of data has passed validation, only 26 % has failed it (50 out of 195 available data).
- Inbreeding correction rarely applied (4 countries out of 21)
- Adjustment for heterogeneous variance applied by the majority of the countries participating to the pilot study.
- Female reliabilities mostly calculated by: Approximate reliability source method, K. Meyer and Misztal & Wiggans



