



Minutes from the Interbull Business Meeting

Venue: Hilton Netherland Plaza, Cincinnati, Ohio.

Saturday, June 22nd 2019, 13.30-15.30

Sunday, June 23rd 2019, 13.00-15.00

Interbull Business Meeting Presentations are available on the Interbull website:

https://interbull.org/ib/bm_cincinnati_2019

General Agenda:

1) Welcome and Adoption of Agenda
2) ICAR, Interbull and Interbull Centre
3) Interbull Centre Report
4) Interbull Dairy Services (Evaluations and Validation) <ul style="list-style-type: none">a) MACEb) GMACEc) InterGenomicsd) New Services<ul style="list-style-type: none">i) Truncated MACEii) Mendelian Sampling Validation Testiii) WHFF Genetic Traits
5) Dairy R&D <ul style="list-style-type: none">a) International R&D on feasibility study to combine SNP solutions across countries; "SNPMACE"b) InterGenomics – Holsteinc) ITC Working Groups updates
6) Interbull Technical Committee Report
7) Governance <ul style="list-style-type: none">a) Chair and Vice Chair of Interbull SCb) Committee Membership
8) Patent for Artificial Selection Method and Reagents ("AVS patent")
9) Beef x Dairy
10) Infrastructure developments <ul style="list-style-type: none">a) GenoEx Platform<ul style="list-style-type: none">i) Parentage Discoveryii) GenoEx-GDEb) IDEA
11) Approaching new grounds <ul style="list-style-type: none">a) How to get input from Single Step National Evaluations into MACEb) New MACE traits (survey results)c) Business Models
12) Future events
13) Other matters
14) Close



1. Welcome and adoption of agenda - Reinhard Reents

Reinhard Reents, Chairman of the Interbull Steering Committee, welcomed everybody to the Interbull Business Meeting 2019 and acknowledged ICAR, ADSA, the Local Organizing Committee and all Interbull Community. He presented the agenda asking for a change in the order of the topics due to commitments of Interbull Technical Committee's chairman Gert Pedersen. The new agenda was accepted and the official delegates of Interbull Business Meetings presented.

2. ICAR, Interbull and Interbull Centre - Reinhard Reents

Reinhard Reents presented an overview about SLU, ICAR, Interbull and the connections between the organizations. He also explained the Interbull's structure and the development of its portfolio.

3. Interbull Centre Activity Report – Toine Roozen

Toine Roozen, Director of Interbull Centre, presented briefly Interbull Centre's activity report (available on Interbull website https://interbull.org/ib/bm_cincinnati_2019). The main topics were:

- a) 2018 Interbull Meetings (February: Interbull Meeting, ICAR and WCGALP in Auckland; June: Joint Interbull-ADSA Annual Meeting in Knoxville, Tennessee; August: Interbull Technical Workshop in Dubrovnik, Croatia; October: Interbeef Meeting in Padova, Italy).
- b) Interbull Centre team changes, leaving (Renzo Bonifazi, Monica Jansson, Eva Hjerpe and Hossein Jorjani) and new recruitments (Jan-Erik Strömqvist, Mohammed Abdallah Ahmed Sallam, Simone Savoia, Alexis Michenet).
- c) Interbull Centre and EU activities (from 1st November 2018 Interbull Centre is EU Reference Centre).
- d) New databases available: GenoEx and IDEA Performance Database.
- e) New services available: GenoEx-PSE, Truncated MACE, Mendelian Sampling Test, Exchange of WHFF Genetic Traits.
- f) New service users: ABRI Breedplan (Australia) for Interbeef, 9 for GenoEx-PSE and 3 replacements for Interbull.
- g) Interbull services improvements: Animal Identification (RED/HOL, SIM/BSM, USA/840), InterGenomics, Calculating and storage cluster, validation GEBV-Test, Interbeef pipeline and Interbull Bulletin website.
- h) Interbull Centre and ISO; maintained and improved the quality standard with re-certification in November 2018 with zero non-conformities.

5. Dairy R&D – Haifa Benhajali

Haifa Benhajali provided an update on Research and Development activities at Interbull Centre, highlighting the close collaboration between ITBC staff, ITC and Steering Committee.

R&D activity was described following three main axes:

- a. Developing new services:
 - i. SNPMAce, with the creation in April 2018 of SNPMAce WG
 - ii. IgHOL
- b. Improving current services:
 - i. VALIDATION Tests, with the creation in August 2018 of Trend Validation Tests WG with the aim of reviewing current methods and develop new tests for validations looking at changes from consecutive evaluations.
 - ii. MACE, with the creation in August 2018 of Genomic Pre-Selection ("GPS") and FutureMAce WG, with the aim developing and testing international methods for genomic era.
- c. Providing tools and assistance to the countries: standardized methods to be used in national evaluation. The Genomic Reliability WG developed a standardized method to calculate Genomic Reliability and is now working on fine-tuning the method.

• International R&D on feasibility study to combine SNP solutions across countries; "SNPMAce" - Enrico Santus

Enrico Santus, Chair of the SNPMAce Working Group, gave a short background of the project followed by its benefits and challenges.



Phase 1 of the feasibility study for SNP-MACE is due to end in November 2019, and a final report is expected at that stage. The meta-analysis software is available but not in perfect agreement with Multiple-Trait Analysis results. During the following discussion, it was reiterated that the business model and how organizations can collaborate through SNP-MACE is still to be addressed. A decision on Phase 2 will be made upon completion of Phase 1.

6. Interbull Technical Committee Report – Gert Pedersen Aamand

Gert Pedersen Aamand, Chair of Interbull Technical Committee (ITC), presented the following topics addressed by the ITC in its meeting on 21 June 2019:

a) Inter-genomics Holstein (IgHOL)

Achieved results: Reliability of GEBV higher than reliability of PA.

Next Steps: Validate that IgHOL evaluation gives extra information compared to within-country genomic evaluation. Assess the gain from inclusion of foreign bulls and investigate the bias and reliability of GEBV.

b) Genomic Reliabilities (G-REL)

Achieved results: allele frequencies of genotyped population don't affect the reliabilities of genomic predictions. A new adjustment factor (f) was proposed for handling high reliabilities.

Next Steps: investigate the effect of the adjustment factor on cows' reliabilities.

c) Validation methods (TREND-VALIDATION)

The validation WG has made a nice overview over current methods and is exploring new ideas for validations looking at changes from consecutive evaluations.

d) Genomic pre-selection bias (GPS) & FutureMACE

Achieved results: the framework of simulation of GPS bias was established and the results were presented in the Interbull Open Meeting on 22 June.

Next steps: investigate how FutureMACE will deal with GPS bias.

e) Agenda for ITC meeting 2

Main topic of ITC meeting 2 was presented. The focus was on establishing a joint overview on how to serve Interbull's members in the next 5/10 years with respect to genetic evaluations. Key elements to discuss were: FutureMACE and SingleStep evaluation.

During the following discussion, Sophie Eaglen (NAAB) asked whether Interbull's users could join the debate about the future on international evaluation and Brian Van Doormaal (Lactanet) asked if in the future the current MACE will be still needed. The Chairman noted that members would be included in the development of future strategy and service offerings.

4. Interbull Dairy Services (Evaluations and Validation) – Valentina Palucci

An overview of the current and new services was provided.

- **EU Reference Centre and Quality Assurance:**

4 methods available for EBV validation.

1 method available for GEBV validation.

Interbull Centre provided 320 validation tests between March 2018 – June 2019.

- **MACE:**

New country-trait combinations for HOL, JER and RDC in 1904r, the last routine run (398 country-trait combinations).

- **GMACE:**

Hungary joined for the first time GMACE evaluation in 1904r, the last routine run (67 country-trait combinations).

- **InterGenomics:**

No new entries for the service in 1904r, the last routine run (45 country-trait combinations).

- **Improvement of Identification System:**

The improvement of identification system to resolve the following ID issues was presented:

- HOL/RED → conversion from RED to HOL, RED breed code banned from IDEA.



- USA/840 → proposal to Steering Committee: all IDs with 12-numerical digits < 3 billions = “USA”, >= 3 billions = “840”; aim for completion by January 2020.
 - SIM/BSM → official breed code SIM, BSM code will be banned from IDEA for preventing uploads.
 - João Dürr (CDCB’s CEO) advanced a proposal for the assignment of a constructed ID to the unknown dam of genotyped animals. The aim is to link the animal to its MGS found thanks to genomic information.
The format of proposed id was “BRDXXXFDAM012345678” (where “012345678” is the id of genotyped animal).
The proposal has been discussed with ITC but a final decision still to be taken.
During the following discussion, Sophie Eaglen (NAAB) and Brian Van Doormal (Lactanet) asked clarification about the risk of duplications and about the added value to share this information between countries. João Dürr highlighted the possibility to have more connected pedigrees with an improvement of evaluation process.
Sophie Mattalia, member of Steering Committee, suggested also to assess the impact of using constructed dam IDs on the national databases.
- **New Services**
 - Truncated MACE (is based on current genetic model applied to 4 years old data. The First evaluation is scheduled for October 2019, based on voluntary participation and the application of an extra breed-based fee).
 - Mendelian Sampling Validation Test (After a test period during 2017/2018, it was officially introduced as Interbull validation test IV, compulsory from January 2019).
 - WHFF Genetic Traits (After a test period involving VIT, SRUC and CRV, WHFF & Interbull agreed on exchanging Genetic Traits, with the service officially launched in May 2019. The data will be collected via AnimInfo and the sharing of information regulated by “*Letter of Understanding for AnimInfo*”).

3. Interbull Finance Report – Toine Roozen

Toine Roozen presented the Finance Report of Interbull Centre, previously discussed with Steering Committee. The Financial accounts of each of the 4 sections (Dairy, Beef, GenoEx, Interbull Centre) was reported, with details on income, costs and summary. The data related to actual 2018, forecast 2019 and budget 2020 were presented.

Considering the year 2018, Total Costs are slightly larger than Total Incomes for Dairy, Beef and Interbull Centre, producing very small negative total balances. The total balance for GenoEx, launched last year with grants from ICAR and SLU, showed more substantial losses due to start-up investment. During 2019 the first income is expected.

7. Governance – Reinhard Reents

Reinhard Reents introduced the new Terms of Reference which had been reviewed and adopted by ICAR board. He also presented the new rules of procedures for Interbull Committees, adopted by Steering Committee.

a) Chair and Vice Chair of Interbull Steering Committee

Reinhard Reents noted that his term as member and as Chair of Interbull Steering Committee was complete after today’s meeting. He presented the new Chair of Steering Committee, Matthew Shaffer (Australia), and the new Vice-Chair, Brian Van Doormaal (Canada). Reinhard Reents explained that Matthew Shaffer would be taking over the Chair at the end of the first Business Meeting.

b) Committee Membership

Reinhard Reents presented the members of the Steering Committee with their starting and ending time for their mandates. He acknowledged Marco Winters (GBR) was at the end of his mandate and noted that Gerben de Jong (Netherlands) had been nominated to fill Marco’s position. Gert Pedersen Aamand (Denmark) was also at the end of his term and was re-nominated. Finally, Urs Schnyder (Switzerland) was nominated to replace Reinhard Reents on the Steering Committee.



Reinhard called for any additional nominations, and there being none, he welcomed the new Steering Committee members. The three nominations would be sent to the ICAR Board for endorsement at its next meeting.

Matthew Shaffer assumed the Chair from this point on in the agenda.

8. Patent for Artificial Selection Method and Reagents ("AVS patent") – Reinhard Reents

Reinhard Reents presented the latest update on the AVS patent providing general information to the audience on how and when it started. The patent has been granted in some countries and was still under appeal in other countries. Therefore, there could have been three possible scenarios to pursue for various countries: either ignore it, challenge it again or try to negotiate with AVS. Given the results of the previous challenging attempt, the Interbull Steering Committee preferred to start a negotiation channel. The communication with AVS turned out to be extremely positive and productive and, among the three different groups available (pure academic, not for profit and commercial organizations/companies), the SC decided to focus their negotiation on the group most closely related to Interbull community, i.e. not for profit organizations'.

The excellent negotiation work done by Brian Van Doormaal and Reinhard Reents led to the construction of a template agreement. If any participants would be interested in accessing such agreement they should contact Toine Roozen by email, by doing so they will first receive a confidentiality agreement which will need to be signed. By signing of the confidentiality agreement they will get access to the template agreement specifically made by AVS for the Interbull community. Reinhard noted the need for all details of the template agreement to be kept confidential.

9. Beef from Dairy – Andrew Cromie

Andrew Cromie gave a general overview of the Interbeef service and the reason why such evaluation is important for Ireland: find the best bulls available globally in the most accurate way possible.

He presented the latest trends in Ireland of the increased number of beef bulls selected for AI on dairy cows based on their calving ease breeding value. This has had a negative effect on the genetic and phenotypic trend of some beef traits like, for example, carcass quality for both dairy and beef animals. This was the reason why Ireland has focused on developing a new dairy-beef genetic index in order to address such new trend and at the same time try to reduce the negative effect it could have on pure beef traits. He proposed to extend the current Interbeef R&D activity by expanding to new breeds/traits including dairy and beef breeds used on dairy evaluations.

Andrew informed the audience that a specific meeting will be held right after the business meeting on such subject and everybody will be very welcome to attend.

Representatives from UK and Norway expressed their potential interest in participating in the proposed project and recognized its potential importance.

10. Infrastructure Developments – Toine Roozen

Toine Roozen summarized the different informations on GenoEx, performance database, Interbull Centre infrastructure which were already presented during previous sessions of this meeting. He welcomed any feedback or questions the audience may have.

Germany remarked that the information reported in the ICAR Guidelines regarding number of SNPs to be used in GenoEx-PSE do not seem to be very clear. Brian Van Doormaal, member of the DNA working group, clarified that the service agreement for PSE required a submission of a total number of 200 SNPs for all the animals considered as target animals. In case a given organization would not have all 200 SNPs available then fewer number of SNPs can be submitted as well. This exception to the rule has been added in order to be more inclusive towards all types of organizations.



11. Approaching New Grounds – Valentina Palucci

Valentina Palucci presented the results of the two surveys that were distributed to national genetic evaluation centres' representatives earlier this year about possible expansion of MACE portfolio to new novel traits. Both surveys got a very good response rate and she expressed her thanks to the audience. The results she presented were based on 30 responses. Claw health, metabolic disease, calf survival, fertility disorders, cow live-ability, persistency of lactation, udder health (expanding the current mastitis evaluation to early/late lactation mastitis and combined mastitis) were included in the survey.

Results showed good potential for most of the traits, more investigation would be needed to better understand what countries would prefer between expanding within currently evaluated traits/breeds or different services. Based on the results and the overall priority ranking expressed by the participants, one scenario could be to focus on the inclusion of early/late mastitis and hoof health.

Matthew Shaffer informed the meeting that the Steering Committee would need to consider what appropriate business model should be implemented for the new traits, especially these for which a considerable investment has been put forward by the countries for collecting the necessary phenotype. Brian Van Doormaal (Canada) asked if calf survival was extended to also include stillbirth, which is currently included in the Interbull evaluation. Valentina clarified that it was not the case as all participant report a similar definition for such trait which was the number of days the calf appeared to be alive within a given interval of time. Andrew Cromie (Ireland) asked about traits where countries do not have national genetic evaluation and where we share phenotypes rather than EBVs. The best way to address a possible interest in such traits would be via a new survey Interbull Centre could distribute. Paul VanRaden commented that in his opinion the question about overall ranking was not well expressed as he interpreted the question as expressing which was the most important trait in his opinion rather than the most important trait for Interbull to focus on. Suggestions were given on showing the overall ranking results in a slightly different way so to offer visibility to the different alternatives reported for each ranking.

Matthew Shaffer noted that the overall ranking results would be distributed to the Interbull community and thanked Valentina for her work on the surveys.

New business model for SNP Mace and new traits

The subject is currently being discussed in the Steering Committee. Some more information will be discussed and shared with the audience during next year's annual meeting. Matthew Shaffer asked for feedback or questions from the audience but none were raised.

12. Future events – Matthew Shaffer

Matthew Shaffer reported on future Interbull meetings: Next year Interbull will be back with ICAR, the meeting will be held in Leeuwarden in June 2020. A video introducing the city was shown. The ICAR meeting will be focusing on circular economy and the different impacts/challenges related to recording of animal performances.

In 2021 the Interbull Meeting will be hosted in Davos during the month of August, in conjunction with the EAAP.

13 Other matters

Brian Van Doormaal was pleased to inform the audience that Canada is planning to host a future Interbull-ICAR Meeting in early June 2022.

Andrew Cromie informed that a survey has been conducted by ICBF and sent to EFFAB, poultry and fish industry. He expressed his intentions to also send this to the Interbull, Interbeef and ICAR Community. The survey focuses on potential barriers to genetic improvement and measures to help overcome these. The results from such survey will be sent to the participants afterwards and will be made public in due course.

Matthew reminded the participants that the ADSA Meeting will start today at the Duke Energy Convention Centre. Tomorrow, Monday June 24th, there would be two joint Interbull/ADSA Symposia focusing on "Ten years of genomic selection" and "Data pipelines for implementation of genomic evaluation of novel traits".



14. Close of the meeting – Matthew Shaffer

The new SC chairman thanked all the members of the Steering Committee, a special thank you was expressed to Reinhard Reents and Marco Winters for their years of contribution, many thanks to Gerben de Jong who offered to help chairing the second ITC meeting and all the ITC and SAC members for their invaluable help and support.

Another special thanks for the Interbull Centre team, the local organizers and sponsors, CDCB and Select Sires, and Marjorie Faust who made the meeting possible.