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Minutes from Interbeef Technical Committee Meeting

Uppsala, December 6-7, 2012

Department of Animal Breeding and Genetics, SLU, Uppsala, Sweden

Participants

Brian Wickham (WG Chairman), Lubos Vostry, Pavel Bucek, Zdenka Vesela, Clara Diaz Martin, Maria Jesús Carabaño, Eric Venot, Ross Evans, Thierry Pabiou, Jan-Åke Eriksson (Dec. 7), Emma Carlén (Dec. 6, by PowWowNow), Raphael Mrode (by PowWowNow), Anders Fogh (by PowWowNow), Valentina Palucci, Mohammad Nilforooshan and João Dürr.

1. Opening and adoption of agenda

The Interbeef Chairman welcomed the participants and informed that the meeting would be conducted by João Dürr on behalf of the Interbull Centre. Kaisa Sirkko, from Finland, tried to join the meeting by PowWowNow on Dec. 8 but did not succeed to connect to the audio conference. The Interbull Centre apologizes for the inconvenience.

Given that the weather conditions caused delays for Clara Diaz, Maria Carabaño and Eric Venot, it was decided to change the order of the agenda to allow their participation in the discussion of the results from the test run. Two items were added to the agenda: research infrastructure and use of Interbeef results by participating countries.

ADOPTED AGENDA

1. Opening and adoption of agenda
2. Administrative matters
 - a. Technical Committee terms of reference
 - b. Calendar of TC meetings
 - c. Research infrastructure
3. Calving traits pilot run
 - a. Data formats
 - b. Research plan (CMSCH, VUZV)

4. Other research projects:
 - a. Genetic correlations (ICBF)
 - b. Inclusion of crossbred animals (ICBF)
 - c. Carcass traits (SRUC)
 - d. Fertility traits (INIA)
5. Calendar of evaluations for 2013
6. AWW Test run results:
 - a. Description of implementation flow
 - b. Description of pedigrees
 - c. Phenotypic data editing
 - d. Correlation matrix
 - e. Summary of results
 - f. Country reports on test run results
7. Recommendations of changes:
 - a. Guidelines
 - b. International genetic evaluation
8. Publication rules and use of Interbeef results
9. Other matters
Adjourn

2. Administrative matters

a. Technical Committee terms of reference

Terms of reference (ToR) are needed for the Interbeef technical committee (TC-Beef) in order to clearly define the mandate of this group. The Interbeef WG ToR already describe the main roles of the TC-Beef and the Interbull Technical Committee ToR can also be used as a reference. A proposal will be posted in the TC-Beef discussion forum by the Interbull Centre (ITBC) for discussion before being sent to the WG for approval.

b. Calendar of TC meetings

The group agreed to have ordinary meetings once a year at the ICAR annual meetings, preferably before the WG meets. Eventually, if more urgent matters require, extraordinary meetings may be organized

according to the TC-Beef members.

It is suggested that the TC-Beef can help the WG organizing technical sessions focused on genetic evaluation of beef breeds and traits during the ICAR meetings.

c. Research infrastructure

- As it was previously agreed, research will be carried out by research partners and not by the Interbull Centre. Mix99 was successfully used by the ITBC to calculate international breeding values and variance components for adjusted weaning weight. The software is very efficient and takes only about two hours for EBV estimation. Also other genetic centers, like ICBF and SRUC, have had a positive experience with Mix99. Some other genetic centers, like Sweden and Denmark, have positive experience with DMU instead.
- A secure access to data for the research partners has been discussed. Due to very large amount of data that need to be made available to the research partners and also due to the concern from the service users about its security, the ITBC proposed to provide access to a virtual machine in the cloud with the same environment used at the ITBC (Linux, Fortran compiler, Mix99) as well as access to research data (pedigree and phenotypes). The cost for such virtual machine is not accounted for in the Interbeef budget, and therefore should be covered by the research partner.
- Mix99 doesn't necessary need to be the software used by the research partners. Interbull Centre simply offers the partners the possibility to use it.
- It is very important to have research agreements. One type of agreement should regulate the use by research partners of the Mix99 programs licensed to the ITBC. MTT has agreed to allow access to Interbeef research partners as long as they agree not to use the software for other purposes outside the project. Interbull Centre has already a similar agreement with Holstein USA which could be taken as a model. The other type of research agreement will have clearly stated that data are used for research purposes only. Brian Wickham will prepare a first draft of it as well as of a research agreement with each partner. The research agreement should be made available soon.
- About publications, Raphael reported on the practice at Interbull: the organization that does the research should refer back to all organizations that have provided data which should have access to the paper and the results prior to publication.

3. Calving traits pilot run

a. Data Format

A question was raised on how to handle calves that are born dead without an identification and thus without an entry in the pedigree database. To avoid populating Interbull database with fake IDs for dead animals and to avoid creation of multiple file formats, Interbull Centre proposed to report data such as stillbirth and birth weight as a maternal trait. Therefore, for such traits the record sld refer to the dam. Effect of the sire, sex of the calf, ID of the calf (if available) can be entered as environmental effects. In the current file format description for file 602 the environmental effects are reported with length of 10 characters. It was therefore agreed to expand their length to 20 characters to allow inclusion, for instance, of the sire international ID with 19 characters. The ITBC will take care of updating the Interbeef guidelines with the corrected file format and add a specification on how to report calving traits since the field interpretation varies.

b. Research plan (CMSCH, VUZV)

Pavel Bucek presented the research plan for calving traits that will be carried out in Czech Republic. He showed that his research team has got enough finances to cover all research steps. As for research infrastructure Pavel informed the group that they will start working first with SAS, BLUPF90 family then move to MIX99 when available as they do not have MIX99 and it will take time for his group to get acquainted with it. They have sufficient hardware at the research institute, and have also access to CMBC hardware and to their own IT specialists. Timetable: they will start as soon as they will receive the data. The research will take approximately 1 year considering a starting day of end of January 2013. It would be useful to have discussions on partial results, this can be done via forum, emails and/or special meetings. He envisions a summary report every two months to inform the group about the research progress.

The following is a summary of what each country will be able to provide:

<i>Country</i>	<i>Breed</i>	<i>Calving ease</i>	<i>Stillbirth</i>	<i>Birth weight</i>
France	CHA, LIM	X	-	X
Czech Republic	CHA, LIM	X	-	X
Ireland	CHA, LIM	X mostly on crossbreeds	Few observations	Few observations
Denmark	CHA, LIM	X	X	X
Sweden	CHA, LIM	X	?	X
Spain	LIM	-	-	x
Finland	?	?	?	?
Great Britain	LIM	X	-	X

4. Other research projects

a. Genetic correlations (ICBF)

ICBF should provide guidelines for parameter estimation from start to finish. It will be a very useful document as there is no such a thing available in today's literature. There is certainly the risk that data may not be balanced among countries: some countries with large amount of data some others with very few data. The initial recommendation is to create a subset of well-connected animals from which estimate variance components.

b. Inclusion of crossbred animals (ICBF)

We need to be sure to have a pedigree deep enough to allow detection of breed composition. Ross Evans will provide a list of animals with phenotypes in Ireland (pure and crossbreds) from which the ITBC will extract a pedigree. The Irish will then check how good the calculation of breed composition is using the extracted pedigree. It would be important to be able to determine the breed composition of ancestors in case of truncated pedigree. One solution would be to rely on farmer declaration of the breed of sire. It will be useful to gather information on how countries evaluate breed composition. Then Ireland will study the inclusion of crossbred animal on a trait of their choice among the ones considered in Interbeef.

c. Carcass traits (SRUC)

Raphael Mrode informed that GBR has started collecting data and genotypes for carcass traits for Limousine. He will have an updated report ready for the next meeting in Stansted.

d. Fertility traits (INIA)

There is a problem in Spain with budget cuts for cattle federation. Before committing to any timeline for research Clara Diaz needs to see how the budget problem gets solved. Clara has received information from the ITBC (Hossein Jorjani) about international fertility evaluation in dairy breeds and the Spanish team is currently studying it, and the intention is to have a report ready for the meeting in Stansted.

5. Calendar of evaluations for 2013

The wish from the Technical Committee members is to have two evaluations per year, possibly in January and August. João pointed out the fact that in August Interbull Centre is already committed with a dairy routine run beginning late July - early August and right after a dairy test run in September. There is also the need to enable holidays in late June-early July for the Interbull Centre team. Time of evaluation will be further discussed in January in Stansted.

6. Adjusted Weaning Weight Test run results

Most of the work for data preparation and data analysis presented at the meeting was performed by Eva Hjerpe from the Interbull Centre. Unfortunately, due to a minor surgery, she was not able to attend the meeting.

a. Description of implementation flow

- Check on incoming data: Interbull Centre has prepared a Python program to check correctness of incoming data. In particular the program checks the correctness of file format. The program can be made available to the service users in the future. Many thanks to Spain for providing performance data in advance so that Eva could test the correct functioning of the program.
- Software used: Python for creation of input file and Mix99 for VCE and EBV estimation.
- Correlations between countries: the proposal was that we should start by estimating EBVs adopting arbitrary correlations, but since MIX99 requires a (co)variance matrix as input the ITBC was forced to estimate them from the data.

b. Description of pedigrees

Valentina reported on the database activity during the period June-September 2012. All countries succeeded on uploading new pedigree files, verifying pedigree records reported by other countries and update their own database according to the feedback received by IDEA. Limousin and Charolais pedigrees were then traced back starting with animal with performance record. The Charolais pedigree used for the analysis contained 3,681,308 while the one for Limousine contained 2,203,324 pedigree records. Interbull Centre thanked all the countries for the effort they made on uploading pedigree and recommended to keep the verification process active all the time. Eric reported on a possible error in the French pedigree as appearing in the Interbull database. For some reason pedigree information are not fully displayed for some French animals despite the fact that France had uploaded full pedigrees. Eric and Valentina will further investigate on what could have caused the problem.

c. Phenotypic data editing

Mohammad presented all the editing that were further applied to the countries' performance data before entering the EBV estimation.

- the applied editing were:
 - Discard animals in performance file without an entry in the Interbull pedigree database
 - Birth year kept between 1991 - 2011
 - Exclusion of Twins and ET
 - Kept adjusted weaning weight records between 50 and 500 kg.
 - Check on consistency of sire(dam)/breed
 - Covariates check_ no edit, report to country
 - Contemporary group with at least 3 observation
 - Minimum 3 progeny per sire
 - Minimum 10 records per fixed effect

The Technical Committee agreed that each country should provide to Interbull Centre only edited data used in the national evaluation. Therefore Interbull Centre should no longer apply extra editing on the data received. Nevertheless, Interbull Centre still has the need to check that the data received by each country has indeed being edited.

- New editing rules were agreed:
 - Animals in performance file with no record in Interbull pedigree database: exclude animals from the evaluation and send the list of animal IDs to the country
 - Birth year edit: no editing. Reinforce that country should send to Interbull Centre only edited data used in national evaluation.
 - Twins: some countries, such as Sweden, Denmark and Czech Republic, do include twins in the model. Countries will specify in the parameter file if they include or not twins. If they say yes then the checking program will leave the twins in the file.
 - E.T.: each country will create an additional file listing all embryo-transferred animals without a performance record. This list will be used to include such animals in the breed-specific pedigree. E.T animals performances will be excluded from the evaluation but as they are included in the pedigree they will receive an international EBV.
 - Biological range: no edit is to be applied in the dependent variable. Calculate AWW distribution and send result back to the countries for verification.
 - Check on consistency of sire(dam)/breed: check that sire and dam are from the same breed (either both CHA or LIM). If sire is missing and dam is of the same breed as the calf (either CHA or LIM) then the record will be kept. If the dam is missing the record will be deleted.
 - Covariates: no edit, send distribution back to country.
 - Ireland should from now on provide only non-adjusted weaning weight because that is the

trait used in national evaluations (most animals have only one weight recorded and AWW needs at least two).

- Contemporary group: it is country responsibility to send to Interbull Centre data with enough number of observations per contemporary groups. Interbull Centre should check their distribution. Countries will specify in the parameter file the minimum number of observation per contemporary group to be adopted in the evaluation.
- Number of progeny per sire: no edit
- Number of records per fixed effects: check distribution and report to country.

d. Correlation matrix

A new estimation of variance components was done at Interbull Centre using Mix99. Variances and co-variances were re-estimated for all participating countries for both breeds. There was no problem in setting up the model. Computationally speaking the two jobs were quite heavy and had to be discontinued after a couple of weeks. Judging from the little changes in the estimates, convergence shouldn't be too far to reach. Variance and co-variances as estimated at the time of last iteration were used for the breeding values prediction. Full data were used to analyzed VCE. Correlation matrix looks much better than earlier although some combinations are still too low (.30). Lack of connectedness can still be the major issue. Technical Committee advised to re-estimate VCE using a smaller better-connected data set. Reduction on the amount of data would probably give better estimates and speed up analysis.

e. Summary of results

Good activity uploading and verifying pedigree data. Variance and co-variances estimable with Mix99, Interbull Centre should consider re-estimating them using a smaller, well-connected subset. Country should also try to improve connectedness by keeping active the verification process in the pedigree database. New set of editing rules for Interbull centre were agreed. Countries should send only edited data used in national evaluation in the next data submissions.

f. Country reports on test run results

- France: can send to Interbull Centre more info on how smaller well-connected subset were obtained in the previous evaluation.

It would be helpful if Interbull Centre can provide a table of statistics.

- Czech Republic: nothing to report because results were distributed too close to the meeting.
- Spain: correlation national/international ebv is low (.65) while it seems ok for accuracy (.90). The scale in both cases is similar. They have received only very few animals back (only 5,000 out of 52,000).
- UK: They received fewer animals than than expected (4,000 instead of 6,000). Mean was lower than the national evaluation. Correlations were also low. Look at correlation – all animals .08 but high rel animal 0.9. JD – new run with amended editing rules. Results will be distributed.

7. Recommendations of changes

a. Guidelines

Interbull centre will update Interbeef guidelines with the new agreed file formats and specification on how

to report calving traits. The new guidelines will be available on the ICAR website as soon as possible.

b. International genetic evaluation

Interbull Centre will re-estimate international EBV for adjusted weaning weight applying the new set of editing rules agreed during this meeting. Results will be distributed back to countries. Review estimation of reliabilities: female reliabilities indicate a probable overestimation that might be related to the way maternal effects are accounted for.

8. Publication rules and use of Interbeef results

- Distribution of Pedigree: there is no agreement to send back pedigree information used in the evaluation.
- Different rules should be applied for distribution of males and females.
- Two set of files should be distributed: a distribution file containing all animals, and a publication file containing only animals that are publishable in all countries.
- Publication decided by each Service User based on transparent criteria.
- Final decisio to be taken by the WG in Stansted.

9. Other matters

There were none

10. Adjourn

Brian shortly summarizes the main outcome of the current meeting:

- Due to changes in the file format decided at the current meeting countries will need to re-send calving data. Countries should aim at sending new data to Interbull Centre by mid-January 2013.
- Have a research agreement ready and finalized at Stansted meeting.
- Ireland will provide cross bred animals to Interbull Centre so that the Centre could trace back a pedigree file from which Ireland will to study heterosis/recombination. Based on the results, Ireland will provide recommendations to the technical committee on what is needed to include cross bred and will choose a trait to carry out research.
- João will provide report and recommendations to the working group meeting on 17th January.
- Next meeting for the Working Group is scheduled for January 17th at Stansted airport.

Brian thanked all participants and closed the meeting.

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