Interbull Centre Activity Report

2014/2015

INTERBULL CENTRE ACTIVITY REPORT 2014/2015[1]

Contents

[1] Presented at the 2015 Interbull Meeting, Orlando, Florida, USA, July 90-12, 2015

INTERBULL CENTRE

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The Interbull Centre is the operational unit of the ICAR permanent sub-committee Interbull, and also holds the status of European Union Reference Laboratory (EURL) for Zootechnics (Bovine Breeding).

INTRODUCTION

The **Interbull Centre** is a section of the Department of Animal Breeding and Genetics (**HGEN**) of the Swedish University of Agricultural Sciences (**SLU**), and acts as the operational unit for Interbull and Interbeef, a permanent subcommittee and a working group of the International Committee for Animal Recording (**ICAR**), respectively. Additionally, the **Interbull Centre** holds the status of the European Union Reference Laboratory for Zootechnics. A significant increase in the workload of the center has taken place during the past years, both by the expansion of the international genetic evaluations to include new populations and new traits, and by the addition of new items to the service portfolio. The new scale of activities and responsibilities required a severe reorganization of the operations in order to respond to the new demands and be able to deliver world class services. Investments were made to streamline operations and to implement a quality assurance system, besides developing the new services demanded by customers. The transition is still undergoing, not only due to its permanent nature, but also because it requires a cultural change among staff members, stakeholders and customers. Nevertheless, significant achievements in the right direction have been made and this stimulates the **Interbull Centre** to continue pursuing its goal: providing genetic information services and applied research for improvement of livestock to a worldwide network and fulfilling its mandate as a reference laboratory for the European Union.

This document describes the activities at the Interbull Centre since the last annual meeting of Interbull (Berlin, Germany, May 14-21, 2014). Work plans, budgets and future activities are also presented.

BUDGETS AND FINANCES

A complete financial report and budgets can be found in Appendices I-IV. The report includes both Interbull and Interbeef activities. Although both Interbull and Interbeef are ICAR activities, they are managed separately, with distinct governances, work plans and budgets, and therefore specific clarifications are provided separately.

The Interbull Centre budgets and financial report for Interbull will be official pending approval by the Interbull Steering Committee after review by the 2015 Interbull business meeting in Orlando.

PERSONNEL

The Interbull Centre staff is employed by the Department of Animal Breeding and Genetics (**HGEN**) of the Swedish University of Agricultural Sciences (**SLU**) even though the work plans and budgets for the Centre and the Interbull Secretariat require the approval of the Interbull Steering Committee, the Interbeef working group and the European Commission.

The staff employed at the Interbull Centre during the period reported herein consisted of:

- Haifa Benhajali – Geneticist (from 2015 – 03 – 09)
- Eva Hjerpe (MSc) - Geneticist
- Hossein Jorjani (PhD)- Senior Geneticist, Service Manager, Deputy director
- Mohammad Nilforooshan (PhD) – Geneticist (up to 2015 – 09 – 30)
- Valentina Palucci (MSc) - Geneticist

- Petri Pennanen – Programmer and System Administrator (from 2014 – 05 – 01)
- Johanna Sendecka – Geneticist (from 2015 – 01 – 15)
- Erling Strandberg (PhD) - Interbull Secretary
- Carl Wasserman – Information Technology Manager
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- João Dürr (PhD) – Director (up to 2014 – 09 – 15)
- Dan Englund, System Administrator (part time) (up to 2014 – 05 – 31)
- Gerald Jansen (PhD) – consultant (up to 2014 – 12 – 31)

Petri Pennanen started working for the Interbull in May 1, 2014 to work as programmer and Linux system administrator. We welcome Petri into the team and wish he enjoys working with us.

The Interbull Centre maintained the research agreement with Service ICAR during 2014 to streamline the service operations and develop analytical software and Dr. Gerald Jansen, from Italy, had been acting as a part time consultant (25%) in the project, performing software development and system optimization at the Interbull Centre. Dr. Jansen has worked on streamlining the MACE and GMACE evaluations and the international correlation estimations, development of the sire-dam pedigree in MACE programs, development of Interbull Data Exchange Area (IDEA) modules and also on developing new software for validation procedures.

Dr Pete Sullivan (CDN, Canada) also worked as a part time consultant (25%) on the GMACE related issues

Dr. Joanna Sendecka and Dr. Haifa Benhajali joined the Interbull Center at the beginning of 2015. They will be working with all the service activities. We welcome them to the team and hope they will enjoy working with us.

Mohammad Nilforooshan will leave Interbull Centre for a research position in University of Otago, New Zealand at the end of September 2015.

Visitors

Friedrich (Fritz) Reinhardt from VIT visited the Centre on May 2015 to act as Interbull Centre internal auditor. Fritz received access to the Interbull Centre's WIKI system some days before the meeting to review the ISO quality manual and all the documents related to it. The outcome of the visit was extremely positive.

SERVICE AND OPERATIONS

Validation of National EBVs and GEBVs

One of the most important roles played by Interbull is to test the national genetic evaluation results for consistency before using them as input for the international genetic evaluations. This is part of the Interbull evaluations quality control measures, but also serves as a public recognition that the national data supplied by Interbull users is reliable. The Interbull Centre offered the validation services regularly during the period and service users are required to perform validation when:

- the national evaluation model or the genetic parameters change,

- a population participates for the first time in a specific Interbull evaluation, or
- it has been more than 2 years since the last validation results were submitted to Interbull.

Results of validation tests are confidentially kept between the Interbull Centre and the service user. The fact that a given population participates in the Interbull evaluation for a given trait implies that it has passed validation. The only exception are the results from the GEBV test for production traits, which are made public to comply with determination of the Directorate of Animal Health and Welfare of the European Commission, who has accepted Interbull/ICAR recommendation to consider genomic evaluations validated by the GEBV test as valid procedures within EU states (official communication).

Methods I, II and III for validation of classic EBVs (based on performance data) follow the official test evaluations calendar. Validation results are submitted at the data submission deadline and they are processed before the end of the test run. The GEBV test results can be submitted by service users to the Interbull Centre at any time. Results will be processed as received.

MENDELIAN SAMPLING TREND VALIDATION

The collaboration between the Interbull Centre, MTT and NAV has completed the research phase of developing a model validation test for routine use based on Mendelian sampling deviations at the end of 2013 and a pilot study for the application of the method to national data was launched by the Interbull Centre in February 2014 (https://wiki.interbull.org/public/ib4_data%20call?action=print). Results were presented during the Berlin meeting and reviewed by the ITC, which decided that the working group should continue to work on this subject. The working group will present a report to the ITC at the Orlando meeting.

MACE Evaluations

Interbull test evaluation runs were performed in September-October 2014 and January-February 2015. Many changes in national and international evaluations have been introduced during this period, and are all described in the service reports published on the Interbull website at http://www.interbull.org/ib/maceev_archive after each routine evaluation. Table 1 shows the current number of populations and bulls included in Interbull MACE evaluations. The former HACHE organization from Switzerland has been merged into QUALITAS in April 2015, which is affecting number of populations for all trait groups.

Routine international genetic evaluations for Brown Swiss, Guernsey, Holstein, Jersey, Red Dairy Cattle and Simmental production traits were computed as scheduled in August, 2014, December 2014, and April 2015. Croatia joined the Interbull community for the first time for Holstein and Simmental in December 2014. DEA has introduced a joined evaluation between Germany, Austria and Czech Republic for the SIM evaluation in December 2014. Australia joined the evaluation for Brown Swiss in April 2015.

International genetic evaluations for Brown Swiss, Guernsey, Holstein, Jersey and Red Dairy cattle conformation traits were computed according to the same schedule as for production traits. Slovenia participated for the first time with HOL rwi, bde and ang in December 2014.

Udder health traits evaluations for Brown Swiss, Guernsey, Holstein, Jersey, Red Dairy Cattle and Simmental were also computed according to the same schedule as production traits. DEA has introduced a joined evaluation between Germany, Austria and Czech Republic for the SIM evaluation in December 2014. GBR has joined the evaluation for the first time with SIM in December 2014, CAN has introduced a mastitis evaluation for HOL, JER and RDC in December 2014. Croatia joined the Interbull community for the first time for Holstein and Simmental in December 2014.

Direct Longevity trait evaluations for Brown Swiss, Guernsey, Holstein, Jersey, Red Dairy Cattle and Simmental were computed according to the same schedule as for production traits. GBR joined the evaluation with SIM in December 2014.

Calving traits evaluations for Brown Swiss, Holstein and Red Dairy cattle were computed according to the same schedule as for production traits.

Female fertility traits evaluations for Brown Swiss, Guernsey, Jersey, Holstein, and Red Dairy Cattle were computed according to the same schedule as for production traits. FRA joined the evaluation with HOL (int) in December 2014.

International genetic evaluations for workability traits for Brown Swiss, Holstein, Jersey and Red Dairy Cattle were computed according to the same schedule as for production traits. NZL joined the evaluation for the first time in April 2015 with HOL, JER, RDC and BSW (for milking speed) and with HOL and RDC for temperament.

Table 1 - Total number of populations per breed-trait group combination in the most recent (April 2015) routine Interbull genetic evaluation service. The number of traits by trait group is given in parenthesis. Number of bulls with published MACE EBVs for production traits is shown in the last column.

Breed Group	Production (3)	Conformation (23)	Udder Health (2)	Longevity (1)	Calving (4)	Female Fertility (5)	Workability (2)	TOTAL (40)	Increment in the period	publishable proofs (production)
Brown Swiss	11	9	10	10	5	9	6	**60**	0	10 242
Guernsey	6	4	6	6	0	6	0	**28**	0	1 079
Holstein	31	24	29	20	15	19	10	**148**	-3*	139 799
Jersey	11	9	8	9	0	9	5	**51**	1	11 479
Red Dairy Cattle	14	9	13	10	7	11	6	**70**	1	14 800
Simmental	12	0	11	5	0	0	0	**28**	2	29 823
TOTAL	**85**	**55**	**77**	**60**	**27**	**54**	**27**	**385**	**2**	**207 222**
Increment	1	-1	1	0	-1	-1	3	**2**		6 937

*The decrease in Holstein evaluation across traits is due to the inclusion of CHR in the CHE population for production, conformation, udder health, longevity, fertility and calving traits. Such reduction is compensated by the participation of HRV (production and udder health) and NZL (workability).

CHANGES INTRODUCED TO THE GENETIC CORRELATION ESTIMATION PROCEDURE

The effect of sub-setting was investigated using 3 levels of sub-setting (no sub-setting, sub-setting with a link group composed of 4 countries (CHE, FRA, NZL, USA), and sub-setting with a link group composed of 1 country (USA). The recommendation from the working group was to use a link group composed of 4 countries.

A working group of ITC has also reviewed the post-processing procedures, and among other things, has recommended an update of "windows" of correlations imposed during the post-processing. New values have been suggested by the Interbull Centre staff, and reviewed by the working group. The new values will be used during September 2015 test run upon approval of the ITC.

InterGenomics

International genomic evaluation of Brown Swiss populations follows the same time-table as the conventional MACE for submission of data and the distribution of results. Besides the original participants (AUT-DEU, CHE, FRA, ITA, SVN, and USA), Canada has joined the services in September 2014.

The number of genotyped animals has increased to more than 17,000. The number of country-trait combinations in the latest evaluation (April 2015) was 212.

GMACE

Since December 2013 GMACE pilot run, 6 GMACE runs have been conducted. After the January and April 2014 implementation runs, the first official GMACE routine evaluation was conducted in August 2014, followed by the September 2014 test run and December 2014 routine run. In 2015, so far, a test run has been conducted in January followed by a routine run in April.

In the runs since December 2013, the MP.5 option was adopted, according to the decision made by the SC, following the input from participating countries and the ITC. This option does not involve estimation of genetic variances. Genomic reliabilities are predicted as a combination of conventional MACE variances and national reliabilities provided by the countries.

Meanwhile, GMACE programs and scripts have been well maintained and fine-tuned.

Beside EBVs used as input for MACE, also used as input for GMACE, GEBVs from the following countries and traits were used in the latest (April routine) run.

Table 2. Number of traits and the number of countries submitting GEBVs in the April 2015 GMACE routine run, per trait group

Breed	PROD (3)	CONF (21)	UDER (2)	LONG (1)	CALV (4)	FERT (5)	WORK (2)
HOL	11	11	10	8	6	9	6

Validation of national GEBVs (GEBV-test)

GEBV-test has been the method of validation for national genomic evaluations (Mäntysaari et al., 2010). It has mainly served as a data quality control system for the GEBV data entering GMACE service. This service has been offered regularly, with no specific time-table.
Service users are required to perform validation when:

- the national evaluation model or the genetic parameters change,
- a population participates for the first time in a specific Interbull evaluation, or
- it has been more than 2 years since the last validation (PASS) results submitted to Interbull

According to the latest discussion with ITC, countries are required to have a GEBV-test (PASS) for both sta and usu, to be able to include all conformation traits in GMACE. In the absence of a GEBVtest (PASS) for any of these two traits, a GEBV-test (PASS) is required for each one of the conformation traits to be included in GMACE.

In the ITC meeting in Berlin (2014-05-18), it was decided that the same weight (EDC/(EDC + lambda)) should be used in the GEBV-test model whether the dependent variable is DYD or DRP. This decision was reflected in the GEBV-test program.

Interbull Centre decided to discontinue providing support for gtconvert.py, which was used to convert the old file formats to the current file formats.

BULL CONTROLLING COUNTRY

The SC decided to request additional information from the service users regarding which bulls are controlled by companies/stud within the area of influence of each country participating in Interbull international comparisons and the information was used on the GMACE publication rules in April 2014. More details on the bull controlling country list can be found at https://wiki.interbull.org/public/file734?action=print. The SC will discuss more details on this topic during the 2014 Interbull meeting, in Berlin.

Table 3 present the number of populations sending national GEBVs included in the April 2014 GMACE run and the total number of publishable young bulls after considering the publication status in the bull controlling country.

Table 3 - Total number of populations per breed-trait group combination in the most recent (April 2014) implementation GMACE evaluation. The number of traits by trait group is given in parenthesis. Number of bulls with publishable international GEBVs for production traits is shown in the last column.

Breed Group	Production (3)	Conformation (23)	Udder Health (2)	Longevity (1)	Calving (4)	Female Fertility (5)	Workability (2)	TOTAL (40)	Number of publishable proofs (production)
Holstein	10	10	9	7	6	3	5	**50**	7149

IDEA - Interbull Data Exchange Area

During spring 2015, Interbull Centre has been working on the module for additional animal information. This module will allow member organizations to upload additional information about animals to IDEA. To collect information about what kind of information member organizations register and to what extent members are willing to share this information, a questionnaire was sent to 46 member organizations. In total there were 29 replies. Based on the result from the survey, Interbull Centre is currently working on business rules for international abbreviations and coding for additional information such as coat color and genetic defects etc. There is also an ongoing investigation for a future collaboration/exchange of information between OMIA (Online Mendelian Inheritance in Animals) and IDEA.

Quality assurance

Interbull Centre has made contact with the ISO certification body Bureau Veritas for obtaining the ISO 9001 certification. Created in 1828, Bureau Veritas is a global leader in Testing, Inspection and Certification (TIC), with offices in 140 countries.

The first meeting with Bureau Veritas is scheduled for August 2015.

Interbull Bulletin

During the period comprehended by this report one issue of the Interbull Bulletin has been published (No 48) with the proceedings of the 2014 Interbull meeting in Berlin.

Customer's Satisfaction Survey Result

In August 2014 Interbull Centre sent out its second customer's satisfaction survey. The survey was sent out to all NGCs participating to the Interbull evaluations as required by our quality standard to assess the degree of satisfaction of our customers in relation to the quality of our job. The overall outcome of the survey was very positive showing that Interbull Centre has already improved some of its services compared to the outcome of the very first costumer survey sent in 2011 and we thank all GCs for their trust and collaborations.

Some demands of improvements were shared among NGCs who took part in the survey; such demands were mostly oriented towards implementing new features in IDEA database such as:

a) Having access to the verify program also outside IDEA (stand-alone verify);

b) Could perform a search of an animal by its name;

c) Could perform a search of more than one animal at the same time;

We are pleased to inform you that such demands have been implemented and are now available.

About the stand-alone verify, a non-database depended version of the verify program is now available for downloading from the IDEA homepage https://idea.interbull.org/software.

An overall python program called VerifyProofs.py will run a pre compiled version of the same verify program used for checking uploaded MACE and GMACE data to IDEA. The program requires two zip files (current and previous data files) created by the CheckProofsPara.py program. Since there is no connection between the stand alone verify program and the pedigree information in IDEA, the distributed pedigree file from the previous evaluation should be used (e.g. pedigree_BRD.csv.zip). More information and instructions on how to run the program, together with the system requirements, is available on https://idea.interbull.org/software/index

Interbeef activities

ADJUSTED WEANING WEIGHT

The first official Interbeef evaluation for adjusted weaning weight (aww) was performed during January 2015 and the results were distributed to participating countries on the 3rd of February 2015. Participating countries per breed and trait are shown in Table 4. The breeding values were estimated

using MiX99 package and the variance components used in the evaluation were estimated by ICBF using DMU package. A previous report from FRA indicated an overestimation of Interbeef reliability values using MiX99 package compared to the FRA national evaluation reliabilities estimated by MTEDC5 (CDN, Canada). A decision was therefore made to use MTEDC5 for prediction of international beef reliabilities. Time plan for the next Interbeef evaluation will be discussed during the Interbeef Working Group Meeting in Krakow, Poland (8-9th of June 2015). Suggested time plan by the Interbull Centre is deadline the 13th of August for sending the data, prerelease of the results on the 19th of October, and the official release of the results on the 2nd of November.

Table 4. Breeds and participating countries in the first international evaluation for adjusted weaning weight (aww).

Breed	Trait	Countries
CHA	aww (8)	IRL,CZE,DNK,SWE,FRA,FIN,DEU,CHE
LIM	aww (10)	CZE,DNK,ESP,GBR,IRL,SWE,FRA,FIN,DEU,CHE

More information on Interbeef can be found at:
http://www.icar.org/pages/working_groups/wg_interbeef.htm.

CALVING TRAITS

Research project for calving traits, birth weight (bwt), calving ease (cae), and stillbirth (stb) is performed by Czech Beef Breeders Association (CMBCB). Variance components have been estimated using the same program package as for animal weaning weight. Genetic correlations were estimated in April 2014 for CHA and October 2014 for LIM. For an easy transition from research to routine evaluations, CMBCB has been given access to the Interbull servers and all the Interbull program packages for estimation of breeding values and reliabilities. Participating countries per breed and trait are shown in Table 5.

Table 5. Breeds and countries participating in the research project for calving traits body weight (bwt), calving ease (cae), and stillbirth (stb).

Breed	Trait	Countries
CHA	bwt (4)	CZE,DNK,SWE,FRA
	cae(5)	CZE,DNK,IRL,SWE,FRA
	stb(2)	DNK,IRL
LIM	bwt (6)	CZE,DNK,ESP,GBR,SWE,FRA
	cae(6)	CZE,DNK,GBR,IRL,SWE,FRA
	stb (2)	DNK,IRL

FEMALE FERTILITY

Deadline for sending data to Interbull Center for the research project for female fertility was the 9th of March 2015. The research project for fertility traits including Age at 1st Calving (afc), Calving interval (cai) and Number of Calvings (nca) will be performed by VIT. All data with renumbered animal ids has been sent to VIT for further analyses. Participating countries per breed and trait are shown in Table 6. A preliminary progress report will be given by VIT representatives in the Interbeef Working Group Meeting in Krakow, Poland (8-9th of June 2015).

Table 6. Breeds and countries participating in the research project for female fertility traits age at first calving (afc), calving interval (cai) and number of calvings (nca).

Breed	Trait	Countries
CHA	afc (4)	DFS, IRL, DEU, CHE
	cai (4)	DFS, IRL, DEU, CHE
	nca (3)	FRA, DEU, CHE
LIM	afc (5)	DFS, GBR, IRL, DEU, CHE
	cai (5)	DFS, GBR, IRL, DEU, CHE
	nca (4)	GBR, FRA, DEU, CHE

CARCASS TRAITS

Development of international evaluations for beef carcass traits is under the responsibility of SRUC (GBR). There has not yet been any data call for carcass traits.

More information on Interbeef can be found at
http://www.icar.org/pages/working_groups/wg_interbeef.htm.

Interbull webpage

Improvements have been made for visitors to easily locate the information they are looking for. Links to the most requested information have now been put on the main page and a tutorial on how to navigate through the site is also made available.

Meetings

Interbull Technical workshop and Industry meeting, Verden, Germany, February 23-26, 2015

Interbull Technical workshop was attended by 75 people, and the Industry meeting by 90 people. Several important topics were discussed at these meetings: Genomics related issues (national experiences with GMACE, uptake of GMACE results, genomic reliability, selection bias, genetic characteristics and their use in breeding programs), estimation of international genetic correlations, and an international genomic data exchange platform (GENOEX, especially for parentage SNP exchange, PSE). The GENOEX project received enthusiastic support

RESEARCH AND DEVELOPMENT

The following is a brief summary of research and development activities conducted at the Interbull Centre or with the involvement of the Interbull Centre staff since August 2013.

GENOEX – PSE

The ICAR/Interbull Appointed task force for preparation of the GENOEX- PSE business rules has worked during fall 2014 and spring 2015 to prepare such business rules that can be flexible and capable of adjusting to industry needs. The last version (6th in the order) were discussed and endorsed by the ICAR Board during its meeting in Krakow, Poland in June 2015. Interbull Centre is working on implementation plans to be realized during fall 2015.

MACE robust to bias in trends

Research collaboration between INRA, Institute de l'Elevage and Interbull Centre has been studying the impact on international breeding values of using a MACE model robust to bias in trends of national genetic evaluations.

Cooperation with the World Guernsey Cattle Federation

Continuing a long partnership, the WGCF has requested the development of an inbreeding monitoring service for the breed as a whole. An initial study was carried out with the existing pedigrees in IDEA and results are under analysis by the WGCF. During the WGCF conference in July 2013, a broader request for an international information portal for the breed was designed and a formal proposal is currently under analysis.

R&D Funding

In addition to funds raised from service fees, research and development activities at the Interbull Centre are financed by grants from the Swedish University of Agricultural Sciences (SLU), the European Union, and the World Guernsey Cattle Federation (WGCF).

Contributions of the above organizations to the future development of Interbull services are gratefully acknowledged. Contributions made to R&D activities from participating organizations leading to improved or expanded Interbull services are also much acknowledged.

WORKPLANS

Services

Routine evaluations for production, conformation, udder health, longevity, calving, female fertility and workability traits are scheduled with the following release dates:

2014 August 12
December 2
2015 April 7
August 11
December 1

Test evaluation runs for production, conformation, udder health, longevity, calving, female fertility and workability traits take place as follows:

2014 September
2015 January
September

Meetings

The 2015 Interbull meeting will precede the 2015 ADSA®-ASAS Joint Annual Meeting. Orlando, Florida, USA, July 9 to 12, 2015.

Planned Publications

Interbull Bulletin No. 49. Proceedings of the Interbull Open Meeting, Orlando, Florida, the USA, July 9-12, 2015.

PUBLICATIONS

Interbull publications

Interbull Bulletin No. 48. Proceedings from the 2014 Interbull meeting, Berlin, Germany, May, 2014.

Publications Interbull Centre staff as authors or co-authors

2014

Ahlman, T., Ljung, M., Rydhmer, L., Röcklinsberg, H, **Strandberg**, E. & Wallenbeck, A. 2014. Differences in preferences for breeding traits between organic and conventional dairy producers in Sweden. Livestock Science 162, 5-14. doi.org/10.1016/j.livsci.2013.12.014

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Palucci, V. & **Dürr**, J. 2014. Trend validation procedures applied by Interbull - historical overviewProceedings, 10th World Congress of Genetics Applied to Livestock Production. Vancouver, BC, Canada, August 17-22, 2014. Article no. 832.

Palucci, V., **Jorjani**, H., **Dürr**, J. & Tyrisevä, A.-M. 2014. Overview of the Mendelian sampling variance test pilot study. Interbull Bulletin 48, 58-62.

Sayed, A.I., **Strandberg**, E. & Løvendahl, P. 2014. Automated estrus traits: higher heritability and better suited to study GxE. Proc. NordGen conference. Genetic resources for Food and Agriculture in a Changing Climate. 27-29 Jan 2014. Lillehammer, Norway. Book of Abstracts, p. 70.

Sullivan, P.G. & **Jakobsen**, J.H. 2014. GMACE pilot #4: Adjusting the national reliability input data. Interbull Bulletin 48, 40-45.

Sullivan, P.G. & **Jakobsen**, J.H. 2014. GMACE without variance estimation. Interbull Bulletin 48, 46-49.

Tenghe, A.M.M., Bouwman, A.C., Berglund, B., **Strandberg**, E. & Veerkamp, R.F. 2014. Genetic Parameters for Endocrine Fertility Traits from In-line Milk Progesterone Records in Dairy Cows. Proceedings, 10th World Congress of Genetics Applied to Livestock Production. Vancouver, BC, Canada, August 17-22, 2014. Article no. 151.

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Appendix I

INTERBULL CENTRE FINANCES AND BUDGETS, July 2015

Comments to accounts and budgets

The financial situation of the Interbull Centre is presented in Appendices II (complete budget), III (specific for Interbull activities) and IV (specific for Interbeef activities). The budgets and financial reports follow exactly the same format adopted in previous years. The accounts have been audited within the normal procedures for the Swedish University of Agricultural Sciences (SLU). All figures are given in Euros. The tables include the final accounts for 2014 in comparison with the accounts for 2013 and the budget for 2016. A prognosis for 2015 is made according to the expectations as of July 2015.

Accounts for 2014

The result for 2014 was significantly better than budgeted, causing in a final balance of € 369,512 instead of a projected balance of € 44,956. The main reasons for the difference were:

On the income side:

- Previous years' fee were paid by some customers;
- There was a net addition of populations joining the service;
- Fluctuations in exchange rate were both large and favorable; and
- SLU's contribution to the Interbull Centre activities in the area of databases (including GENOEX) increased. The increased SLU contribution will continue in 2015 and 2016.

On the cost side:

- The major cause was unexpected changes of personnel, and delays in new recruitments, which also affects office rents and overhead costs;
- Lower "office rent" due to a temporary re-allocation of resources within SLU, leading to the lower rents for 2014.

The EU commission has continued its support of the Interbull Centre with € 150,000, as well as the World Guernsey Cattle Federation has continued its valuable support with £3,000.

Projected results for 2015

There is a substantial reduction of costs compared to the initial budget which has been caused by delays in the recruitment, and the fact that two members of Interbull Centre worked part time during 2015.

Budget for 2016

For 2016, all incomes are assumed to stay in the same level as in 2015. The level of the EU contribution is expected to continue, as well as the continued support by SLU and WGCF.

The salary costs are higher than for 2015 because of full staffing, and regular salary increases and all other costs are assumed to follow the same pattern as in 2015.

Interbeef

The specific budget for Interbeef is shown on Appendix IV. The Interbeef working group has established a new service/research agreement in 2012, and the Interbull Centre is once again contracted to be the operational unit. Management of the finances will follow a different model than Interbull, being under the responsibility of Service ICAR instead of the Interbull Centre. Service fees are therefore not defined/handled by the Interbull Centre, which instead invoices Service ICAR for the full year for a value agreed on € 100 000 for 2012 and 2013. For this reason, the Interbeef income and costs are included in the overall budget of the Interbull Centre.

Appendix II

Interbull Centre (Interbull + Interbeef) overall Finances and Budgets (€), July 2015

		2013	2014		2015		2016
		Actual Account (Dec 13)	Budget (Dec 13)	Actual Account (Dec 14)	Budget (May 14)	Projected result (Jul 15)	Proposed budget (Jul 15)
Income							
1)	Service fees[a]	714 642	809 558	856 746	810 000	815 088	815 000
2)	SLU grants[b]	71 588	69 045	84 114	70 000	91 496	91 000
3)	WGCF grant[c]	6 480	5 800	3 480	5 800	3 480	3 480
4)	InterGenomics	28 852	30 000	35 345	32 322	35 000	35 000
5)	EU grants[d]	142 958	150 000	140 595	150 000	150 000	150 000
6)	Interbeef	98 630	100 000	100 969	100 000	100 000	100 000
7)	**Total:**	**1 063 149**	**1 164 403**	**1 221 249**	**1 168 122**	**1 195 064**	**1 194 480**
Costs							
8)	Salaries + social costs[e]	571 354	630 030	462 012	635 435	480 000	650 000
9)	Other personnel expenses[f]	9 046	31 502	14 349	31 772	35 000	50 000
10)	Office rent[g]	49 932	111 305	61 877	133 441	82 410	126 000
11)	Computer costs	4 626	40 000	29 479	20 000	50 000	50 000
12)	Travels, conferences, training	30 237	40 000	21 878	40 000	40 000	40 000
13)	Publications	0	3 000	250	3 000	250	250
14)	Phone, fax, post	3 800	5 000	250	5 000	250	250
15)	ICAR	7 011	7 000	7 000	7 000	7 000	7 000
16)	Miscellaneous	19 004	10 000	3 232	15 000	15 000	15 000
17)	Outsourced activities[h]	106 780	33 700	75 740	35 000	25 000	25 000
18)	Overheads[i]	201 116	207 910	175 670	209 693	165 142	231 000
19)	**Total:**	**1 002 907**	**1 119 447**	**851 737**	**1 135 341**	**900 052**	**1 194 500**
20)	*Balance*	60 243	*44 956*	*369 512*	32 781	*295 012*	*-20*
21)	*Accum. Balance:*	60 466	*105 422*	*429 978*	234 467	*724 990*	*724 970*
22)	*Exchange rate (SEK:€)*	*8.94*	*9.03*	*9.15*	*8.99*	*9.29*	*9.29*

a. Updated MACE, GMACE and GEBV test fees approved by the Steering Committee in December 2013
b. Increased contribution from SLU towards Interbull Centre's activities related to databases
c. Contribution from World Guernsey Cattle Federation £5000 for 2013, and £3000 for 2014
d. The Interbull Centre holds the status of European Union Reference Laboratory for Zootechnics (96/463/EC: Council Decision of 23 July 1996)
e. Personnel changes during 2014 and 2015. Full staffing will be achieved during 2016
f. Other personnel expenses include travel allowances, expenses with people not employed by SLU, medical expenses, etc.
g. In June 2014, the Interbull Centre moved to new facilities and office rents are expected to increase. The full effect of the new rent levels will be observed in 2016
h. 2014: Gerald Jansen's consultancy (400 h); research agreement with CDN for GMACE development (440 h). Cost of procuring the database to be used for the GENOEX project is included in this item
i. 15%, 5% and 13% (multiplied by item 8) for the university, faculty and department levels, respectively

Appendix III

Interbull specific Finances and Budgets (€), July 2015

		2013	2014		2015		2016
		Actual Account	Budget	Actual Account	Budget	Projected result	Proposed budget
		(Dec 13)	(Dec 13)	(Dec 14)	(May 14)	(July 15)	(July 15)
Income							
1)	Service fees[a]	714 642	809 558	856 746	810 000	815 808	815 000
2)	SLU grants	71 588	69 045	84 114	70 000	91 469	91 000
3)	WGCF grant[b]	6 480	5 800	3 480	5 800	3 480	3 480
4)	InterGenomics	28 852	30 000	35 345	32 322	35 000	35 000
5)	EU grants[c]	142 958	150 000	140 595	150 000	150 000	150 000
7)	**Total:**	**964520**	**1 064 403**	**1 120 280**	**1 068 122**	**1 095 064**	**1 094 480**
Costs							
8)	Salaries + social costs	510 462	570 300	400 261	571 777	422 500	590 000
9)	Other personnel expenses[d]	8 207	28 515	12 671	29 862	34 071	49 000
10)	Office rent[e]	45 300	102 346	52 315	120 073	71 433	115 320
11)	Computer costs	4 197	36 374	25 967	18 288	48 400	48 500
12)	Travels, conferences, training	27 432	36 374	17 562	36 576	36 500	37 500
13)	Publications	0	2 728	250	2 743	250	250
14)	Phone, fax, post	3 447	4 547	250	4 572	250	250
15)	ICAR	7 011	7 000	7 000	7 000	7 000	7 000
16)	Miscellaneous	17 241	9 093	3 232	13 716	14 200	14 300
17)	Outsourced activities[f]	106 780	33 700	75 740	35 000	25 000	25 000
18)	Overheads[g]	182 459	188 199	152 917	188 686	141 300	208 890
19)	**Total:**	**912 537**	**1 019 175**	**748 165**	**1 028 293**	**800 404**	**1 096 010**
20)	*Balance*	51 983	*45 228*	*372 115*	39 829	*294 660*	*-1 530*
21)	*Accum. Balance:*	55 662	*25 217*	*427 777*	239 413	*722 437*	720 907

Appendix IV

Interbeef specific Finances and Budgets (€), July 2015

These budgets are extracted from the overall budget for the Interbull Centre (Appendix II) to illustrate to the Interbeef service users how the incoming service fees will be spent.

		2013	2014		2015		2016
		Actual Account	Budget	Actual Account	Budget	Projected result	Budget
		(Dec 13)	(May 13)	(Dec 14)	(May 14)	(July 15)	(July 15)
	Income						
1)	Service fees	100 000	100 000	100 969	100 000	100 000	100 000
2)	**Total:**	**98 630**	**100 000**	**100 969**	**100 000**	**100 000**	**100 000**
3)	*(% of total income – Appendix II)*		*9.1%*		*9.1%*	*8.6%*	*8.6%*
	Costs						
4)	Salaries + social costs[a]	60 891	59 730	61 751	63 658	57 500	60 000
5)	Other personnel expenses[b]	839	2 987	1 678	1 910	929	1 000
6)	Rents	4 632	8 960	9 562	13 368	10 977	10 680
7)	Computer costs	429	3 626	3 512	1 712	1 600	1 500
8)	Travels, conferences, training	2 805	3 626	4 316	3 424	3 500	2 500
9)	Publications	0	272	0	257	0	0
10)	Phone, fax, post	353	453	0	428	0	0
11)	Miscellaneous	1 763	907	0	1 284	800	7 00
12)	Overheads[c]	18 658	19 711	25 753	21 007	23 842	22 110
13)	**Total:**	**90 370**	**100 272**	**103 753**	**107 048**	**99 148**	**98 490**
14)	*Balance:*	8 259	*-272*	*- 2 603*	-7 048	*852*	*1 510*
15)	*Accum. Balance:*	4 804	*4 532*	*2 201*	-4 847	*-3 995*	*-2 485*

a. 10% manager + 10% staff 1 + 25% staff 2 + 30% staff 3 + 10% programmer

b. Other personnel expenses include travel allowances, expenses with people not employed by SLU, medical expenses, etc.

c. 33% of salaries