INTERBULL Centre

P.O. Box 7023
SE-750 07 Uppsala, Sweden

Telephone: +46-18-671000
Facsimile: +46-18-672648

INTERBULL is a sub-committee of the
International Committee for Animal Recording
(ICAR)
General Secretariat, ICAR
Via Nomentana 134, I-00161 Rome, Italy

Interbull Centre Activity Report 2003/2004[1]

TEN YEARS OF INTERNATIONA L GENETIC EVALUATIONS

August 25, 1994: the first routine international evaluation of dairy bulls is finished, and results are being distributed to four countries. The accompanying document starts with "*The first routine international genetic evaluation of dairy bulls took place at the Interbull Centre as scheduled. This first run considered Holstein bull records from Denmark, Finland, and Sweden and Ayrshire bull records from Finland, Norway, and Sweden. Single-trait analyses were performed separately for each breed.*" Today Interbull computes international evaluations for four groups of traits, and more than 125,000 bulls belonging to six breeds. The activities of Interbull has increased considerably over these ten years, which will be evident from this document that describes the activities at the Interbull Centre since the last annual meeting of Interbull (August 28-30, 2003, Rome, Italy). Workplans and future activities are also presented.

BUDGETS AND FINANCES

A complete financial report can be found in Appendix I+II. Budgets will be official pending approval by the Interbull Steering Committee on May 29, 2004. The result for year 2003 was slightly positive and thus much better than the budget, but the budget for 2004 (revised according to the actual situation) shows a slight deficit. Balanced budgets are presented for 2005 and 2006. The service fees for 2005 and 2006 were computed according to the current fee level and structure, which has not changed since it was put in practice in 1999.

Full Interbull service fees for the Brown Swiss and Guernsey conformation evaluations applies as of 2003, for Ayrshire conformation as of 2004, and for longevity and calving trait evaluations as of 2005. The EU commission has continued their support of the Interbull Centre. For 2003 a contribution of € 60,000 was received, while an amount of € 65,000 has been decided for 2004.

Interbull membership fees are handled directly by the ICAR office, Rome, Italy, and reported at the official meetings of ICAR. For 2003 the membership income of Interbull amounted to EUR 44,112, and similar amounts are anticipated for 2004 and 2005. Membership income is used to cover overhead costs for ICAR/Interbull, some travel expenses, publications and information. The Interbull Centre also contributes about EUR 6,300 from service fees to cover these costs.

PERSONNEL

Ulf Emanuelson left his position as Interbull Centre Director in February 2004 to take a position as professor in epidemiology at the Swedish University of Agricultural Sciences. Ulf spent five years of dedicated work at the Centre, a period during which the services were expanded considerably and several new traits were considered. **Freddy Fikse** has replaced Ulf as the Interbull Centre Director.

---

[1] Presented at the 2004 Interbull Meeting, Sousse, Tunisia, May 29-31, 2004

Eva Hjerpe started in March 2004 to work at the Interbull Centre, and will mainly provide support to functions related to the service of international genetic evaluations. In addition, she will be involved in research and information activities. Eva has a Master of Animal Science degree from the Swedish University of Agricultural Sciences (SLU), and has experience as project manager and computer administration from previous employments.

The complete staff of the Interbull Centre thus consists of 5.1 scientists, 0.5 programmers and 0.4 secretaries.

Hélène Leclerc from Institut National Agronomique Paris-Grignon (France) has been at the Centre as an exchange student since March 2004, and will stay until August 2004. She is working on a project studying the application of a structural model for estimation of genetic correlations between countries, and the implications of international genetic evaluations with singular genetic (co)variance matrix.

SERVICE AND OPERATION

Routine international genetic evaluations for production traits were computed as scheduled in November 2003, and in February and May 2004, and test-runs were performed in September 2003 and March 2004. Estonia participated for the first time with Ayrshire data in the production test-run of March 2004, and entered the routine evaluations in May 2004. Many changes in national evaluations have also been introduced during this period, and are all described in the service reports published on www.interbull.org after each routine evaluation.

International genetic evaluations for Ayrshire, Guernsey, Brown Swiss, Holstein and Jersey conformation traits were computed according to the same schedule as for production traits. The routine conformation evaluation in November 2003 was the first time the Ayrshire breed was included, with data from Australia, Canada, Denmark, Finland, Norway, New Zealand, Sweden, United Kingdom, and the United States. First time participant in Holstein conformation evaluations was the Czech Republic, Italy in Jersey conformation evaluations, and Germany (including Austrian data) in Brown Swiss conformation evaluations. Rear teat placement was introduced as a new trait at the test-run in September 2003 for all breeds. The trait rear leg rear view was excluded from the Brown Swiss evaluation at the test-run in September 2003, and the traits pasterns and foot angle were combined (called pasterns/foot angle).

Udder health evaluations for Ayrshire, Brown Swiss, Guernsey, Holstein, and Jersey were also computed according to the same schedule. New countries/populations in these evaluations were Spain in the Holstein evaluation, Estonia in the Ayrshire evaluation and Rep. of South Africa in the Jersey evaluation.

The total numbers of populations in the most recent (May 2004) routine Interbull genetic evaluation services were as follows:

Breed	Production	Conformation	Udder health
Ayrshire	12	9	10
Brown Swiss	9	7	5
Guernsey	6	3	4
Holstein	27	22	21
Jersey	10	8	7
Simmental	9	-	-

Modifications in international evaluation procedures

The time edit for estimation of sire variances and prediction of breeding values is no longer annually updated in the February run, i.e. bulls born in 1986 and 1981 continue to be included in the international evaluation for Holsteins and other breeds, respectively.

Ayrshire conformation evaluation

International genetic evaluation for conformation traits for the Ayrshire breed was investigated in research and pilot studies during 2001-2003. Genetic ties were weak between some of the countries, and estimated correlations were viewed as inaccurate. Research was undertaken to use genetic correlations from Holsteins as prior information, and results were presented during the 2002 Interbull Open Meeting in Interlaken and the 2003 Interbull Workshop in Beltsville. Pilot runs were conducted during 2003 and were discussed among participating countries. The Interbull Technical Committee reviewed the report and the conclusion was that routine international genetic evaluations could be recommended. The test-run of September 2003 thus introduced conformation trait evaluation for the Ayrshire breed, including data from the nine previously mentioned countries and considering the same traits as for the Holstein breed. The first official routine evaluation was performed in November 2003.

Longevity evaluation

March 2004 the first test-run for direct longevity for the Holstein breed was computed. Ten countries participated with validated data (Canada, Denmark, France, Ireland, Israel, Italy, Sweden, Switzerland, United Kingdom, and the United States). Results from a pilot study for the colored breeds were distributed to participating countries in April 2004.

Calving ease evaluation

A new genetic evaluation service, calving traits, will start with a test-run in September 2004. This first test-run will cover the Holstein breed only, but pilot studies for other breeds will be conducted. The service will consider four traits: direct and maternal genetic effects for both calving performance and stillbirth. Details of the service will be described in more detail in a separate announcement. Countries wishing to participate in the test-run should make data and validation results available to the Interbull Centre by September 1, 2004, 17.00 CET.

Pedigree issues

To promote further improvement of pedigree information for bulls, the pedigree file used in the international genetic evaluation is made available to all countries, indicating whether or not information comes from the country that is part of the identification in the country of first registration of the bull. Each country is encouraged to provide the complete pedigree information for bulls identified with their country code. In addition, if invalid identifications are found, these can be reported back such that other countries that submitted invalid identifications can improve their pedigree database.

Up till now the pedigree handling and identification of potentially duplicate bulls by Interbull have been performed within "breeds of evaluation". With the increased number of crossbred animals it has become meaningful to compare pedigree information across breeds to ensure that the pedigree is as complete and correct as possible for each breed. Therefore we will make available a combined file with potentially duplicate bulls after each evaluation. Countries are encouraged to investigate files in order to identify dual-registered bulls and bulls that are actually different although they might look (name, birth data, pedigree) similar.

Revised Code of Practice

The code of practice for the international genetic evaluation of dairy bulls at the Interbull Centre has been rewritten. The original document was written in 1994, and several modifications and amendments had been described and provided as appendices to the original document. The revision made it possible to collect all these into one document, which has slightly modified structure that will be easier to update. In addition, some aspects of the international genetic evaluations have been written in more detail. Comments of the members of Interbull to the suggested revision were collected, and incorporated after review by two members of the Steering Committee.

An important change from the original code of practice is the inclusion of a statement limiting the liability of Interbull to at most one annual service fee for the member. The requirements for validation of genetic trends have been tightened: validation of estimation of genetic trend should be done before a country enters the international evaluation for the first time or when changes in the national evaluations are made that require participation in a test-run, *and* once every second year thereafter. The new code of practice is also more specific about the deadline for submission of data *and* validation results before each test-run: the first of March/September, 17:00 CET.

Information activities

The website of Interbull has been updated at several places. Two Interbull Bulletins, proceedings from the Interbull Workshop in Beltsville and the Interbull Open Meeting in Rome, have been added. The documentation for the new service for international genetic evaluation of longevity traits was made available, as well as descriptions of national genetic evaluation systems for longevity for countries participating, as provided in the various forms submitted by the countries (under “Genetic Evaluations/National GES information”).

The Centre staff participated in a one-day training in media handling, motivated by their interest to improve communication with the stakeholders of Interbull. This media training will be an advantage in writing popular press articles, a recent example of which can be found in a Dutch magazine (Veeteelt).

Workshop

The ITC organized a workshop in January 2004 in Uppsala, Sweden, to discuss estimation of genetic correlations among countries. The purpose was to get a proper working procedure for estimation of genetic correlations given the present state of knowledge, and to identify critical issues that need to be addressed with more research. Participants of the workshop were the Interbull Centre staff, the members of the Scientific Advisory Committee and other internationally renowned experts in the field in addition to the members of the ITC. Recommended changes will be decided by the Steering Committee during the Interbull Meeting in Sousse.

RESEARCH AND DEVELOPMENT

A document listing research topics in the field of international genetic evaluation, with priorities as identified by the Interbull Centre and Interbull Steering Committee, is available on the web site of Interbull under "Publications and Documentation/General information". One of the purposes of the document is to list ongoing research projects, but the document can only stay updated if all members provide information about ongoing research. The following is a brief summary of research activities conducted at the Interbull Centre or with the involvement of the Interbull Centre staff since August 2003.

Data connectedness and genetic correlation estimation

Estimates of genetic correlations between countries considerably influence international genetic evaluations. The need for improved correlation estimation procedures is also growing as new traits are considered in international genetic evaluations. The objective of this project is to improve the genetic correlation estimation process in international genetic evaluations.

A method to select sub-sets of data with the desired properties of providing a good measure of connectedness in international genetic evaluations and at the same time avoiding bias in the data selection process was developed. Hossein Jorjani was the principal investigator for this project. A final report has been submitted for publication in the Journal of Dairy Science.

Use of prior information in MACE for Ayrshire conformation

The aim of this project was to investigate the possibilities and impacts of using prior information in the estimation of across country (co)variance components and prediction of international genetic merit. Bayesian Mace was compared to more simple ways of incorporating prior Holstein information into across country analysis of Ayrshire conformation. Results were presented at the 2002 Interbull Open Meeting in Interlaken and at the 2003 Interbull Workshop in Beltsville. This work lead to the introduction of routine international genetic evaluations for Ayrshire conformation in November 2003. Thomas Mark carried out the research in cooperation with Freddy Fikse as well as Per Madsen and Just Jensen from the Danish Institute of Agricultural Sciences. A final report will soon be submitted for peer-review.

Structural models for estimation of genetic correlations

Estimation of genetic correlations among countries is a challenging task due to the increasing number of countries and traits. Recently structural models have been suggested to exploit patterns in the genetic correlation matrix and to reduce the number of parameters. One such model, developed as part of the PROTEJE initiative, poses that each country can be identified by a set of unobservable characteristics that can be presented as a point in a space. The genetic correlation between two countries is defined as a function of the distance between points. This model was validated successfully with simulated data, and an application to field data (milk yield) was presented at the Interbull Meeting in Rome 2003. Further studies have concentrated on estimation of genetic correlations among a large number of countries. In addition, application of the structural model to other traits (foot angle) has been investigated. Results will be presented at the Interbull Meeting in Sousse.

The principal investigators of this project were Hélène Leclerc and Stephanie Minery, under supervision of staff at the Interbull Centre and INRA.

Longevity and calving traits

Due to a demand for international genetic evaluations for longevity and calving traits, pilot studies for the Holstein populations were performed by René van der Linde (NRS) and Erik Pasman (VIT), respectively. Results were presented at the Interbull 2002 open meeting in Interlaken and at the Interbull 2003 workshop in Beltsville. The results showed feasibility of international genetic evaluation for longevity and calving traits. The first test-run for direct longevity for the Holstein breed was performed in March 2004, and in parallel pilot studies for direct longevity for colored breed were done. The first test-run for calving traits for the Holstein breed will take place in September 2004, when also pilot studies for international evaluation for calving traits for colored breeds start.

Results of the investigations for longevity traits, carried out by Jette Jakobsen, will be presented at the Interbull meeting in Sousse.

Weighting factors

Studies on international genetic evaluation for calving performance has so far used number of daughters with records as weighting factors. The nature of the statistical models used to analyse these traits does not allow for a straightforward application of the current procedure to compute weighting factors. A working group consisting of Freddy Fikse, Jette Jakobsen, Zengting Liu, Pete Sullivan and Paul VanRaden has worked on the development of weighting factors for these traits since the

workshop in Beltsville. Several optional procedures have been designed, and a beginning has been made to evaluate these procedures using field data. The contribution by Inge-Riis Korsgaard (Denmark) was helpful to adapt these procedures for threshold models. A revision of the current procedure for computation of weighting factors for multiple-trait models is also being prepared.

Validation

Estimated sire variances have a large influence on international genetic evaluations. The presence of any trends in genetic variances therefore make international evaluation sensitive to time period of data used for estimation of sire variances. The plan of the Interbull Technical Committee to address this issue has three components: 1) devise a procedure to validate trends in genetic variances, 2) determine whether the trend in the genetic variance computed at national and international level agree, and 3) modify the model for international genetic evaluations if trends in genetic variances occur only at international level. A working group consisting of Freddy Fikse, Zengting Liu and Pete Sullivan has been formed to address items 1 and 2.

The working group outlined a procedure that can be used to estimate the genetic variance for a cohort (e.g., animals born in year t). The core of the procedure is to compute the Mendelian sampling (MS) deviations and approximate their prediction error variances for all animals in the cohort. These can easily be combined into an estimate of the genetic variance, because MS deviations for all animals are independently and identically distributed. A sensitivity study indicated that the estimated genetic variance was not very sensitive to the approximation of prediction error variances. The procedure has been applied on data from a limited number of countries. Several details of the procedure, like which animals to consider and which level for a trend in the genetic variance can be tolerated are being addressed, and a complete description of the procedure, to be incorporated in the code of practice, is under development.

Estimability of Mendelian sampling terms and "ignorability of selection"

Use of the MS and its variance is justified by the usual assumption that under the infinitesimal model variance of MS terms is constant across generations (except for the effect of inbreeding). Theoretically, this is true only if all decisions leading to selection are included in the analysis of data from an unselected, non-inbred base population to the youngest animals. In other words, this is true if and only if the amount of "missing data" is small or has not lead to the data being "selected" (hence the term "ignorable selection"). Therefore, a legitimate scientific question is whether we are basically in the position to estimate MS terms while we know that "missing data" is common in animal breeding in the form of correlated traits, multiple trait selection and single trait evaluations, missing pedigree, and so on. The initial stages of this project rely on investigations of some common animal breeding situations in simulated populations. Hossein Jorjani is the principle investigator and is collaborating with Daniel Gianola, University of Wisconsin-Madison, USA, in this project. Preliminary results were presented to the Interbull Open Meeting in Rome. Further work is underway.

Survey on genetic evaluations for production and functional traits

Knowledge of the status of national genetic evaluations are important to facilitate transparency as well as harmonization and improvements in trait definition and evaluation procedures which can lead to improvement of both national and international genetic evaluations. A survey of genetic evaluation systems for all traits considered in all Interbull member countries was carried out. Results were made available on the Interbull web site and this information is continuously being kept up to date. Furthermore, the results were summarized and discussed in relation to research results. The principal investigator in this project was Thomas Mark. The final report was presented at the 54th EAAP meeting in Rome 2003 and has been accepted for publication in the "Our Industry Today" section of the Journal of Dairy Science.

Multiple-trait multiple country genetic evaluations

Current, single-trait, MACE assumes residual correlations to be zero and single-trait MACE allows only one trait per country. The purpose of this study is twofold: 1) Allow for lactation specific breeding values for some countries; 2) improve evaluations by utilizing within-country correlated information. The plan is to test the multiple-trait MACE software developed by Peter Sullivan (CGIL, Canada) using udder health data and to compare multiple-trait MACE results (international genetic merit as well as genetic correlations and their standard errors) with single-trait MACE results. Thomas Mark and Peter Sullivan are the principal investigators in this project.

Estimation of overall indexes for foreign bulls

Selection of bulls in many countries is based on aggregate breeding value comprising several traits combined in an overall index. A recently discussed example is overall conformation traits. The number and nature of the constituent traits may vary considerably among countries. Further, it might be the case that only a small proportion of active bulls in each country have overall indexes, because overall indexes are calculated only for the elite bulls that have evaluations for all constituent traits. Therefore, number of bulls with overall indexes in more than one country is by far smaller than equivalent numbers for other traits. The purpose of this project is to assess the effectiveness of simpler methods, such as conversion equations and Simple-MACE, to estimate overall indexes for foreign bulls. Hossein Jorjani is responsible for this project.

International genetic evaluations for female fertility

Fertility traits are among the most economically important traits in dairy cattle, partly because of costs due to unnecessary multiple inseminations and fertility treatments, and partly because of prolonged lactations and reduced milk production which may eventually lead to involuntary culling. Despite its importance there has not been any international genetic evaluation for it, mainly because of the complex nature of the trait, i.e. lack of a single measure that can describe the entirety of the fertility complex in heifers and cows, and for interval and insemination records. However, during the past years the research results on multiple-trait MACE (MT-MACE) promises new opportunities for dealing with fertility traits. The aim of this project is to prepare the stage for an international genetic evaluation of fertility traits at the Interbull level. Hossein Jorjani is responsible for this project.

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), Swedish Farmers' Foundation for Agricultural Research, the European Union, and the World Guernsey Cattle Federation (WGCF).

Contributions of the above organisations to the future development of Interbull services are gratefully acknowledged.

INTERBULL PUBLICATIONS/PRESENTATIONS

The following Interbull-related publications/presentations were produced since the 2003 Interbull meeting:

Interbull Bulletin No. 31. Proceedings of the Interbull meeting, Rome, Italy, August 28-30, 2003.

Banos, G., Mitkas, P.A., Abas, Z., Symeonidis, A.L., Milis, G. & Emanuelson, U. 2003. Quality control of national genetic evaluation results using data mining techniques; a progress report. Interbull Bulletin 31, 8-15.

Emanuelson, U. 2004. Interbull services in the Brown Swiss breed: history and perspectives. Proc. 7th World Conferences of the Brow Swiss Cattle Breeders, Verona, Italy, March 3-7, 2004 (U. Emanuelson).

Fikse, W.F. 2003. Fuzzy classification of phantom parent groups in an animal model. Proc. 54th Annual Meeting. of the European Association Animal Production. Book of abstracts 9, p. 77.

Fikse, W.F., Klei, L., Liu, Z. & Sullivan, P.G. 2003. Procedure for validation of trends in genetic variance. Interbull Bulletin 31, 30-36.

Jakobsen, J.H. Status of International Breeding Evaluation of Longevity and Calving Traits. Paper presented at the International Cattle Breeders Roundtable, Edinburgh, Scotland, December, 15-17, 2003.

Jakobsen, J.H. 2003. Effect of right and left censoring of longevity records as input to MACE. www.interbull.org. 7 pp.

Jakobsen, J.H., Emanuelson, U., Fikse, W.F., Jorjani, H. & Mark, T. 2003. Status of MACE for calving traits. www.interbull.org. 6 pp.

Jakobsen, J.H., Fikse, W.F., Liu, Z. & Sullivan, P. 2003. Outline of a procedure to calculate weighting factors for models with maternal effects. Interbull Bulletin 31, 65-69.

Jorjani, H. and Gianola, D. 2003. A test of ignorability of selection under the infinitesimal model: A preliminary report. Interbull Bulletin 31, 37-44.

Jorjani, H. 2003. Development of genetic evaluation systems. ***In:*** Båge, R. & Januskauskas, A. (Editors) Farm Animal Reproduction: Conserving Local Genetic Resources. Proceedings from a mini-symposium at Lithuanian veterinary Academy, Kaunas, Lithuania. September 13-15, 2003. CRU Report 17, p. 6. (also available through URL: www-cru.slu.se).

Mark, T. 2003. Survey of genetic evaluations for production and functional traits in dairy cattle. Proc. 54th Annual Meeting of the European Association Animal Production, Book of abstracts 9, p. 74.

Mark, T. 2003. Interbull report of activities. *Livest. Prod. Sci. 84,* 268-270.

Minéry, S., Fikse, W.F. and Ducrocq, D. 2003. Application of a structural model to estimate genetic correlations between countries. Interbull Bulletin 31, 175-179.

Mocquot, J.C., Emanuelson, U. & Philipsson, J. 2003. Interbull Report for 2000 and 2001. ***In:*** Performance recording of animals. State of the art, 2002. Proc. 33rd Biennial Session of ICAR. Interlaken, Switzerland, May 26-31, 2002. *EAAP publication No. 107,* 253-262.

Van der Linde, R. & Fikse, W.F. 2003. Interbull vergelijkt [Interbull compares]. Veeteelt October 2, 36-37. [in Dutch]

Weller, J.I., Emanuelson, U. and Ezra, E. 2003. Validation of genetic evaluation methodology using the nonparametric bootstrap method. Interbull Bulletin 31, 26-29.

WORKPLANS

Services

Routine evaluations for production, conformation, udder health and longevity
Release dates (second Monday each of the following months):

2004 August 9 (no longevity)
November 8
2005 February 14
May 9
August 8
November 14

Test runs for production, conformation and udder health, longevity and calving:
2004 August (longevity only)
September (no longevity)
2005 March
September

Research

Project	Status	Contact person at Interbull Centre
Data connectedness and genetic correlation estimation	work in progress	Hossein Jorjani
Software development for national evaluation auditing purposes	work in progress	Hossein Jorjani
Validation of genetic variance	work in progress	Freddy Fikse
Validation of complex statistical models	work in progress	Hossein Jorjani
Weighting factors for complex statistical models	work in progress	Freddy Fikse
Multiple-trait MACE	work in progress	Thomas Mark
Treatment of genetic groups in MACE	work in progress	Freddy Fikse
International genetic evaluations for longevity and calving traits	work in progress	Jette Jakobsen
International genetic evaluations for female fertility	work in progress	Hossein Jorjani
Prediction of overall indexes for foreign bulls	work in progress	Hossein Jorjani
Reduced rank genetic correlation matrix for international genetic evaluations	to be initiated	Freddy Fikse
Verification of international breeding values	to be initiated	Eva Hjerpe

Meetings

Annual Interbull meeting, 2005, in conjunction with the EAAP meeting in Uppsala, June 2-4, 2005.

Course

A three-day course on international genetic evaluation methodologies is planned in conjunction with the Interbull and EAAP meetings in Uppsala, 2005. The course will be targeted towards PhD students, employees at genetic evaluation centres and countries with the intention to join the Interbull services in the near future. The course will precede the Interbull meeting.

Planned Publications

Interbull Bulletin: Proceedings Interbull Open Meeting May 30-31, 2004, Tunisia.

Interbulletin July 2004.

Interbull Centre Finances and Budgets, May 2004

COMMENTS TO ACCOUNTS AND BUDGETS

The financial situation of the Interbull Centre is presented in Appendix 1. All figures are given in Euros. The table includes the final accounts for 2003 in comparison with the budget for 2003 and with the results for 2002. The budget for 2004 is revised according to the expectations as of the end of April 2004. A budget for 2005 is presented for approval together with a provisional budget for 2006, in order to have an opportunity to project the economy on a longer term.

Some important assumptions for the budgeting procedure have been made. They will be given into some detail below, but the most important facts are:

- The service for longevity started with a test-run in March 2004. The first routine run is scheduled for November 2004, following a test-run in August 2004. The first test-run for calving traits is scheduled for September 2004, and the first routine run for February 2005 pending the outcome of the test-run.
- New countries are expected to enter the service (Argentina), and more countries are expected to join the evaluations for longevity.
- The same fee structure has been practiced as for previous years and no fee increase has been adopted since 1999.
- It is assumed that if a new fee structure is decided upon the total income should be unchanged in order to obtain the balanced budget proposed.

Accounts for 2003

The final accounts for 2003 are presented in Appendix 1, according to the same format as in previous years. The accounts have also been audited within the normal procedures for the Swedish University of Agricultural Sciences (SLU). The result for 2003 was considerably better than the projections in the budget. Incomes were slightly higher than expected, due to a remainder from the USDA financed research project that was received during 2003. Costs for publication and Steering Committee & ICAR were lower than budgeted. Availability of Interbull bulletins on the homepage of Interbull and clean-up of the database with addresses has lead to a decrease of the number of bulletins that are distributed.

The result for 2003 led to a balance of € 45, which means that the accumulated balance at the end of 2003 was 133,156.

Revised budget for 2004

Comments refer to the numbers in the table and points at deviations or new information since last meeting. Corresponding figures for 2003 are given within parenthesis when appropriate.

1. Service fees are for production 313,600 (313,000), conformation 79,181 (72,780), and udder health 35,455 (35,550). Service fee for longevity and calving traits will be 22,030 and 5,906, respectively, i.e. equal to the ⅔ and ¼ of the fee for a full year. This accounts for most of the difference with the budget for 2004 that was accepted in the previous business meeting of Interbull, where fees for longevity and calving traits for the whole of 2004 was counted on.
2. SLU provides funds for a 0.5 researcher position for four years, which started April 2002. A research grant has been received from the Swedish Farmers' Foundation for Agricultural Research (SLF) for a two-year period starting in July 2003. Continued support (£ 5,000) by the World Guernsey Cattle Federation (WGCF) is expected.
3. An EU grant of 65,000 has already been decided for 2004. 70% is paid the actual year and 30% the next year after an approved report.

5. Salary costs incl. social benefits are included for on average 5.1 scientists, 0.5 programmers, and 0.4 secretaries. This is the same number of people as in the previous budget, but the total costs are expected to be slightly lower due to staff changes.
7. 2004 includes one main conference, the ICAR and Interbull meeting in Sousse. In addition, the members of the SAC have been compensated for travel costs to participate in the workshop in Uppsala (January 2004).
12. The contract established between Interbull and the North-American consortium on outsourcing the conformation evaluations, assumes an annual basic fee of 47,000 with 1,000 for each additional breed not included in 2001. Costs for outsourced activities also include external participation in the project funded by SLF, but are fully covered by the research grant.

It is expected that the 2004 results will be slightly negative (-700), in accordance with the balanced budget for 2003 approved last year. The primary reason for lower income and costs being that a full year of routine evaluations for new traits was budgeted for 2004 but the start of these routine evaluations was delayed. The accumulated balance at the end of the year 2004 is expected to be about 119,000.

Budget for 2005 and provisional budget for 2006

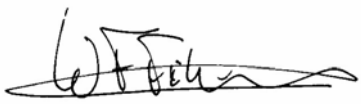
Specific comments are given when essential deviations from previous years are expected.

1. Service fees for production are expected to 313,600, for conformation to 79,200, for udder health 35,400, for calving traits 23,600, and for longevity traits 35,800. The increase for 2006 is due to one extra country (Argentina).
2. Research grants from SLU, SLF (only 2005), and the WGCF are included.
4. Salary costs are included for 5.1 scientists, 0.5 programmers, and 0.4 secretaries.
7. The budget for 2005 accounts for the fact that the Interbull/EAAP meeting will be arranged in Sweden.

It is expected that the 2005 will yield a small surplus, but that 2006 will be in balance.

Uppsala, May 16, 2004

Jan Philipsson
Interbull Secretary



Freddy Fikse
Interbull Centre Director

Appendix II

Interbull Centre Finances and Budgets (Euro), May 2004

	2002	2003		2004		2005	2006
	Actual	**Budget**	**Actual**	**Budget** (original)	**Budget** (revised)	**Budget**	**Prov. budget**
Income							
1. Service fees	398,593	421,330	421,330	487,000	456,200	487,600	497,000
2. Research grants	133,221	150,500	156,573	126,600	116,000	84,800	79,600
3. EU grants	60,000	60,000	60,000	60,000	65,000	65,000	65,000
4. Other income	16,724	-	-	-	-	-	-
Total	**608,538**	**631,830**	**637,903**	**673,600**	**637,200**	**637,400**	**641,600**
Expenses							
5. Salary costs	287,567	335,200	339,995	353,000	335,400	339,500	342,700
6. Computer costs	39,030	45,000	43,206	45,000	45,000	45,000	45,000
7. Travels, conferences	46,874	35,000	34,881	35,000	35,000	25,000	35,000
8. Publications	14,169	17,000	13,432	15,000	10,000	14,000	14,000
9. Phone, fax, postage	10,778	14,000	15,332	15,000	15,000	14,000	14,000
10.Steering Comm. And ICAR	12,627	14,000	6,374	14,000	8,000	8,000	8,000
11.Miscellaneous	5,249	5,000	3,535	5,000	5,000	5,000	5,000
12.Outsourced activities	51,618	50,000	49,500	56,600	56,600	53,200	50,000
13.Office and univ. adm. costs	114,107	130,000	131,603	135,000	128,000	128,000	128,000
Total	**582,019**	**645,200**	**637,858**	**673,600**	**637,900**	**631,700**	**641,700**
Balance	**26,519**	**-13,370**	**45**	**0**	**-700**	**5,700**	**-100**
Accum. Balance	**133,111**	**119,741**	**133,156**	**133,156**	**132,456**	**138,156**	**138,056**

Note: Interbull membership fees are not included in this table because they are handled directly by the ICAR office, Rome, Italy, and reported at the biennial meetings of ICAR. For 2003 the membership income of Interbull amounted to EUR 44,112 and for 2004 membership fees are budgeted at 44,112. They contribute to cover overhead costs for ICAR/Interbull, some travels, publications and information work. The Interbull Centre also contributes (EUR 6,300) annually to ICAR from service fees to cover these costs.