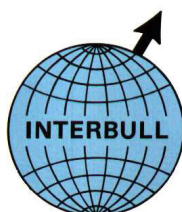


INTERBULL Centre

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INTERBULL is a sub-committee of the
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General Secretariat, ICAR
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Interbull Centre Activity Report 2002/2003¹

INTRODUCTION

The Interbull meeting in 2003 is, again, an anniversary! Twenty years ago, during the EAAP meeting in Madrid, it was decided to form Interbull and 10 years ago, at the Interbull meeting in Århus, it was decided to start international genetic evaluations. The activities of Interbull has increased considerably over these years, which will be evident from this document that describes the activities at the Interbull Centre since the last annual meeting of Interbull (May 26-27, 2002, Interlaken, Switzerland). 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 August 28, 2003. The result for year 2002 was positive and thus much better than the budget, but the budget for 2003 (revised according to the actual situation) shows in contrast a deficit. Balanced budgets are presented for 2004 and 2005. No increases in service fees are proposed, although a revision to better account for population structures may be performed, which may lead to changes in fees between countries.

Full Interbull service fees for the Brown Swiss and Guernsey conformation evaluations applies as of 2003 and possibly for Ayrshire conformation, longevity and calving trait evaluations as of 2004. The EU commission has continued their support of the Interbull Centre. For 2002 a contribution of EUR 60,000 was received and the same amount has been decided for 2003.

Interbull membership fees are handled directly by the ICAR office, Rome, Italy, and reported at the official meetings of ICAR. For 2002 the membership income of Interbull amounted to EUR 43,191, and similar amounts are anticipated for 2003 and 2004. 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

Jette Jakobsen filled in January 2003 a position at the Interbull Centre. Her main activities are to prepare and develop new services and to participate in the design and delivery of current services. Jette completed a PhD degree in Denmark in 2000, after which she worked at the Danish Agricultural Advisory Centre on the development of a test day model for milk production traits. The complete staff of the Interbull Centre thus consists of 5.1 scientists, 0.6 programmers, and 0.4 secretaries.

Stephanie Minery from Institute d'Élevage (France) stayed at the Centre between March and August 2003. She has been working on a project studying the application of a structural model for estimation of genetic correlations between countries.

¹ Presented at the 2003 Interbull Meeting, Rome, Italy, August 28-30, 2003

Hossein Jorjani spent two months at the University of Wisconsin-Madison, USA, working in collaboration with Daniel Gianola and Kent Weigel on projects related to data validation.

SERVICE AND OPERATION

International genetic evaluations for production traits were computed as scheduled in August and November 2002, and in February, May and August 2003, and test-runs were performed in September 2002 and March 2003. Japan participated for the first time in the production test-run of September 2002, and entered the routine evaluations in August 2003. The two parts of Belgium, the Flemish and Walloon regions, are treated as separate populations, although the Flemish data is evaluated jointly with data from the Netherlands. Austria and Germany provided data from a joint evaluation to the Brown Swiss and Simmental evaluations, which means that these countries now are regarded as one population in all breeds. 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 Brown Swiss, Holstein and Jersey conformation traits were computed according to the same schedule. Routine Guernsey conformation evaluations were performed for the first time in November 2002, with data from Canada, the United Kingdom and the United States. First time participants in Holstein conformation evaluations were Japan and Rep. of South Africa, while the Belgian data was treated as in the production trait evaluation. Three new traits (overall conformation, overall feet and legs, overall udder) were introduced in the Brown Swiss evaluation at the test-run in September 2002.

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 Belgium (Walloon region as a separate population, while data from the Flemish region was jointly evaluated with data from the Netherlands) and Japan in the Holstein evaluation and Switzerland in the Brown Swiss evaluation.

The total numbers of populations in the most recent (August 2003) routine Interbull genetic evaluation services were as follows:

Breed	Production	Conformation	Udder health
Ayrshire	11	-	9
Brown Swiss	9	6	5
Guernsey	6	3	4
Holstein	27	21	20
Jersey	10	7	6
Simmental	9	-	-

Modifications in international evaluation procedures

Several modifications were introduced at the September 2002 test-run and implemented for routine use at the November evaluation. Thus, a weighted bending procedure (Jorjani et al. 2002, Interbull Bulletin No. 29) was implemented to obtain positive definite correlation matrices (number of common bulls was used as weighting factor), and improved data verification procedures, following the ideas of Klei et al. (2002; Interbull Bulletin No. 29) were also introduced.

The rule for inclusion of national evaluations based on only 2nd crop daughters was also changed. Such national evaluations are now included if they are identified as meeting the standard national rules for official publication in the country sending the information, or if they meet a minimum number of daughters and herds (minimum 150/30/80 daughters in 50/10/20 herds (Holstein/Guernsey/other

breeds). The number of second country breeding values included in the evaluation increased for most populations.

The Holstein conformation evaluation subcontract

The genetic evaluation for Holstein conformation traits has been run under a sub-contract with a North-American consortium since the services began in 1999. The original contract covered only the Holstein evaluation, but other breeds have nevertheless been introduced. A review of the contract by an independent group was favourably received by the Steering Committee and a new contract covering all breeds was signed in December 2002. The recent change in personnel at the Holstein Association USA, when Bert Klei left his position, is not expected to affect the contract or the genetic evaluations of conformation traits.

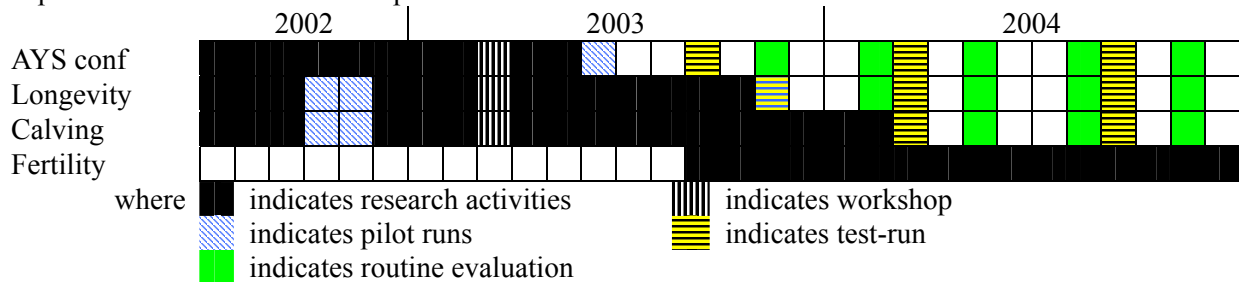
Guernsey conformation evaluation

International genetic evaluation for conformation traits for the Guernsey breed was investigated in research and pilot studies during 2002. Results were presented during the Interbull Open Meeting in Interlaken and evaluation results 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 2002 thus introduced conformation trait evaluation for the Guernsey breed, including data from 3 countries (Canada, United Kingdom and USA) and considering the same traits as for the Holstein breed. The first official routine evaluation was performed in November 2002.

Service expansion plans

Several research projects on international genetic evaluations are currently planned or under way, such as conformation traits for the Ayrshire breed, longevity traits, calving traits, and female fertility traits. The research activities are summarized later in this document. It is expected that at least the Ayrshire conformation studies will lead to expanded evaluations already in 2003, although further development is needed for other of the traits.

A possible scenario for future expansion could be as follows:



National data issues

The methods for verification and validation of national genetic evaluations has been further developed since last year, and countries are encouraged to apply the available methods before submitting data to the Interbull Centre for inclusion in routine evaluations. Such suggestions should possibly be included in the Interbull guidelines for national and international genetic evaluation systems, and as requirements in a revision of the Interbull code of practice.

Correct and unambiguous identification of animals is a definite requirement for successful (inter)national genetic evaluations. Animals are frequently re-coded in importing countries, even if it is against both ICAR and Interbull guidelines, which might lead to multiple records for the same animal. Starting with the September 2002 test-run, Interbull Centre has provided files with potentially duplicate bulls on the Interbull FTP-server, and has asked participating countries to investigate these

files in order to identify dual-registered bulls and bulls that are actually different bulls although they might look (name, birth date, pedigree) similar. Many countries have been very cooperative and it is with pleasure we can see that the number of records in these files have now begun to decrease for most breeds!

Information activities

Descriptions of national genetic evaluation systems for countries participating in Interbull evaluations, as provided in the various forms submitted by the countries, were previously made available on the web site of Interbull under "Genetic Evaluations/National GES information". As of this year (2003), descriptions for traits other than those presently included in the Interbull evaluations and for member countries not yet participating are also made available. Accuracy and completeness of information relies, however, on the active participation of member countries, and countries that have not yet provided the relevant information are encouraged to do so.

The Interbull Centre is in the process of adding electronic versions of older Interbull Bulletins, and Interbull Bulletin numbers 17-30 published between 1998 and today are now available on the web site of Interbull.

The breed code list established by ICAR for the identification on semen straws for international trade has now also been made available on the web site of Interbull. Procedures for assigning codes to new breeds entering the international trade of bull semen remains, however, to be formulated.

Workshop

An international technical workshop was held in March 2003, in Beltsville, MD, USA. The workshop focused mainly on functional traits, but had also a session about improvements to MACE. Most of the presentations are published in Interbull Bulletin 30, and minutes from the workshop are available on the Interbull business discussion forum.

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.

International genetic evaluation using performance records

International genetic evaluations are currently based on national evaluation results; hence, they depend on national genetic evaluation procedures. Despite standardisation efforts, the latter still vary from country to country thereby introducing sources of inconsistency in international evaluations. In addition, only bulls can be included in the current analysis and receive international breeding values. Demands for international evaluation and selection of cows, mostly to be used as bull dams, increase. International genetic evaluation based on individual performance records could alleviate these problems. The objectives of this project were to assess the feasibility and merit of an international genetic evaluation based on cow performance records, develop methods for genetic parameter estimation and conduct a pilot study analysing field data of Guernsey cows from several countries.

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. A final report will soon be submitted for publication in the Journal of Dairy Science.

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. The objective of this project was to apply the structural model for estimation of genetic correlations on field data.

The principal investigator of this project was Stephanie Minery, under supervision of staff at the Interbull Centre, Institute d'Elevage, and INRA. Results of this study will be presented at the 2003 Interbull meeting

Genetic groups

Experiences with MACE at several evaluation centres have indicated the sensitivity of international genetic evaluations results to genetic groups. The aim of this project is to investigate strategies for genetic group definition and treatment of genetic groups in the statistical model for genetic evaluations. Emphasis will be on minimum group size, rules for merging small groups, use of information of 'adjacent' genetic groups, and constraints on solutions for genetic group effects. Some results were presented at the Interbull 2003 workshop in Beltsville.

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 Interbull 2002 open meeting in Interlaken and at the Interbull 2003 workshop in Beltsville. Pilot runs were conducted during 2003 and a test-run is scheduled for September 2003. Thomas Mark carried out the research in cooperation with Per Madsen and Just Jensen from the Danish Institute of Agricultural Sciences.

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 evaluation for longevity and calving, but it was concluded that some issues required further investigation. It was decided that the Interbull Centre staff should carry out continuation of the pilot studies for longevity and calving. Main issues that have been investigated after the workshop are:

- Effect of right and left censoring of longevity records
- Effect of relaxation factors in iterative procedures
- Effect of tracing a joint pedigree (and forming phantom parent groups accordingly) across unbalanced and balanced data within trait group versus tracing pedigree trait-wise
- Calculation of EDC's (cooperation-project for EDC-working group)

Results of the investigations, mainly carried out by Jette Jakobsen, are provided on the Interbull discussion forum for international genetic evaluation systems.

A survey of the interest in international genetic evaluations for longevity and calving traits for breeds other than Holstein was conducted in the spring of 2003. The results showed that there is interest in participation in pilot studies for longevity and calving from most other breeds as well, and it is expected that such studies will be performed parallel to test-runs for the Holstein breed.

Weighting factors

Studies on international genetic evaluation for longevity and 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, and preliminary results will be presented at the 2003 Interbull meeting. 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, Bert Klei, 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. The procedure has been compared with exact estimation of the genetic variance using US Guernsey data. The next step is to conduct a pilot study to apply the procedure on data from a limited number of countries. In this study details of the procedure, like which animals to consider and which level for a trend in the genetic variance can be tolerated, will be addressed.

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.

National data quality

A joint project between the Interbull Centre and the University of Göttingen (Hermann Swalve), Germany, with the objective to develop flexible software to provide a simulation environment for testing and comparing breeding value estimation programmes, was initiated in 2001. An initial survey on evaluation procedures and data structures in a sample of countries was performed. The answers were used in developing algorithms to generate observations according to country specific data structures and results were presented during the 2002 Interbull Meeting. However, the project has been delayed due to unforeseen changes in staffing, but is expected to continue with new personnel.

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. The principal investigator in this project is Thomas Mark and a report will be presented at the 54th EAAP meeting in Rome 2003.

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 2002 Interbull meeting:

Interbull Bulletin No. 29. Proceedings of the 2002 Interbull meeting, Interlaken, Switzerland, May 26-27, 2002.

Interbull Bulletin No. 30. Proceedings of the Interbull technical workshop, Beltsville, MD, USA, March 2-3, 2003.

Interbulletin. The Official Newsletter of the International Bull Evaluation Service (Interbull) August 2002.

Interbulletin. The Official Newsletter of the International Bull Evaluation Service (Interbull) August 2003.

Emanuelson, U. 2002. International genetic evaluation of dairy cattle – past, present and future. Paper presented at seminars in Balice and Jastrzebiec, Poland, November 2002, 7pp.

Fikse, W.F. 2002. Merits of international genetic evaluations using performance records. Proc. 7th World Congr. Genet. Appl. Livest. Prod. 29, 91-94.

Fikse, W.F. 2003. Comparison of performance records and national breeding values as input into international genetic evaluations. (submitted).

Fikse, W.F. 2003. Breeding for different production systems. Proc. 25th Eur. Holst. Conf., June 16-17, 2003, Bad Zwischenahn, Germany, 6pp.

Fikse, W.F. 2003. Approaches to incorporate genetic groups in Mace. Paper presented at Interbull Workshop, Beltsville, MD, USA. March 2-3, 2003.

Fikse, W.F., Rekaya, R. and Weigel, K.A. 2003. Assessment of environmental descriptors for studying genotype by environment interaction. *Livest. Prod. Sci.* 82, 223-231.

Fikse, W.F., Rekaya, R. and Weigel, K.A. 2003. Genotype by environment interaction for milk production in Guernsey cattle. *J. Dairy Sci.* 86, 1821-1827.

Jorjani, H. 2002. Data sub-setting and assessment of bias in estimation of genetic correlations among countries. *J. Dairy Sci.* 85 (suppl. 1), 32-33 (Abstr.).

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Klei, B., Mark, T., Fikse, W.F. and Lawlor, T. 2002. A method for verifying genetic evaluation results. *Interbull Bulletin* 29, 178-182.

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Kolmodin, R., Strandberg, E., Jorjani, H. and Danell, B. 2002. The role of phenotypic plasticity in animal breeding. Proc. 53rd Annual meeting of the European Association for Animal Production, Book of Abstracts.

Kolmodin, R., Strandberg, E., Jorjani, H. and Danell, B. 2003. Selection in the presence of a genotype by environment interaction: Responses in environmental sensitivity. *Animal Sci.* 76: 375-385.

Kolmodin, R., Strandberg, E., Madsen, P., Jensen, J. and Jorjani, H. 2002. Genotype by environment interaction in Nordic dairy cattle studied by use of reaction norms. *Acta Agric. Scand., Sect. A, Anim. Sci.* 52, 11-24.

Madsen, P. and Mark, T. 2002. Estimation of across country genetic parameters for MACE based on DYD's or deregressed proofs. *Interbull Bulletin* 29: 28-31.

Mark, T. 2002. Interbull: MACE for yield, type traits, cell count and other traits. Paper presented at the 16th World Jersey Cattle Bureau international conference in Odense, Denmark, June 23-28 2002, 3pp.

Mark, T. and Madsen, P. 2002. Bayesian MACE for Ayrshire conformation traits. *Interbull Bulletin* 29: 22-27.

Mark, T., Fikse, W.F., Emanuelson, U. and Philipsson, J. 2002. International genetic evaluations of Holstein sires for milk somatic cell and clinical mastitis. *J. Dairy Sci.*, 85: 2384-2392.

Mark, T., Fikse, W.F., Emanuelson, U. and Philipsson, J. 2002. Short communications: Effect of phantom parent grouping and properties of deregression for a low heritable trait. *J. Dairy Sci.*, 85: 2393-2395.

Mark, T., Fikse, W.F., Jorjani, H. and Philipsson, J. 2002. Monitoring changes in the structure of global dairy cattle populations. *Proc. 7th World Congr. Genet. Appl. Livest. Prod.* 33, 505-508.

Mark, T., Madsen, P., Jensen, J. and Fikse, W. F. 2003. Mace for Ayrshire conformation: Impact of different uses of prior genetic correlations. *Interbull Bulletin* 30: 124-133

Philipsson, J. 2002. Interbull – 20 years young! Paper presented at Genetics Commission, EAAP, Cairo, Egypt, September 4, 2002.

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INTERBULL STEERING COMMITTEE MEMBERSHIP

Steering Committee members should have industry support in the regions they represent. Candidate names are put forward by the Steering Committee to the Business meeting in Rome for nomination and are then appointed by the ICAR board. Service terms for Jarmo Juga and Reinhard Reents expire this year. Both were, however, willing to renew their service terms and have received support to do so.

WORKPLANS

Services

Routine evaluations for production, conformation and udder health

Release dates (second Monday each of the following months):

2003 November 10
2004 February 9
May 10
August 9
November 8

Test runs for production, conformation and udder health:

2003 September
2004 March
September

Test runs for international genetic evaluations for additional traits may take place during 2003, pending the outcome of current research.

Research

Project	Status	Contact person at Interbull Centre
Data connectedness and genetic correlation estimation	work in progress	Hossein Jorjani
International genetic evaluation based on individual performance records	work in progress	Freddy Fikse
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	to be initiated	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	to be initiated	Hossein Jorjani

Meetings

Annual Interbull meeting, 2004, in conjunction with the ICAR meeting in Tunisia, May 29-31, 2004.

Planned Publications

Interbull Bulletin: Proceedings Interbull Open Meeting August 29-30, 2003, Italy.

Interbulletin July 2004.

Interbull Centre Finances and Budgets, August 2002

COMMENTS TO ACCOUNTS AND BUDGETS

The financial situation of the Interbull Centre is presented in Appendix II. All figures are given in Euros. The table includes the final accounts for 2002 in comparison with the budget for 2002 and with the results for 2001. The budget for 2003 is revised according to the expectations as of the end of July 2003. A budget for 2004 is presented for approval together with a provisional budget for 2005, 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:

- New countries are expected to enter the service, but a continued decrease in number of recorded cows per country and other structural changes is assumed to counterbalance the increased service income resulting from more countries participating.
- Conformation evaluations will most likely start for the Ayrshire breed in 2004.
- Promising results from collaborating research groups in Germany and the Netherlands on international evaluations for calving and longevity traits were presented at the Interlaken meeting and at the technical workshop in Beltsville. Research has continued at the Interbull Centre during 2003 and it is expected that a service for international evaluations of these traits will be developed for use during 2004.

Accounts for 2002

The final accounts for 2002 are presented in Appendix II, 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 2002 was considerably better than the projections in the budget. Incomes were higher than expected, especially external research grants received from SLU, while costs were marginally down. The costs for outsourced activities were slightly higher than budget, because more breeds entered the conformation evaluation services and because a part of the software development for the project on Bayesian estimation of dispersion parameters was covered by Interbull.

The result for 2002 led to a balance of 26,519, which means that the accumulated balance at the end of 2002 was 133,111.

Revised budget for 2003

Comments refer to the numbers in the table and points at deviations or new information since last meeting. Corresponding figures for 2002 are given within parenthesis when appropriate.

1. Service fees are for production 313,000 (302,000), conformation 72,780 (63,953), and udder health 35,550 (32,640). No service fee for longevity and calving traits will be received, which accounts for most of the difference with the budget for 2003 that was accepted in the previous business meeting of Interbull.
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 60,000 has already been decided for 2003. 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 (4.1) scientists, 0.6 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.

7. 2003 includes two main conferences, the technical workshop in Beltsville and the Interbull/EAAP meeting in Rome. The latter is likely to show a deficit of about 3,000 that Interbull will have to cover.
12. The contract established between Interbull and the North-American consortium on outsourcing the conformation evaluations, assumes an annual basic fee of 47,000 for the Holstein and Jersey evaluations, with additional 1,000 for each added breed.

It is expected that the 2003 results will be negative (-13,370), in contrast to the balanced budget for 2003 approved last year, but much less than the positive balance achieved for 2002. The primary reason being that the technical workshop budgeted for 2002 was delayed until beginning of 2003, and that routine evaluations for new traits were budgeted to start in 2003 but will be delayed until 2004. The accumulated balance at the end of the year 2003 will thus decrease and is expected to be about 120,000.

Budget for 2004 and provisional budget for 2005

The target has been to present balanced budgets for these two years. This means that expanded services must pay for the increased needs for personnel and related R&D and service costs. Specific comments are given when essential deviations from previous years are expected.

1. Service fees for production are expected to 321,000, for conformation to 79,000, for udder health 35,000, for calving traits 22,000, and for longevity traits 30,000. No change in service fee per trait/breed/country is foreseen for already existing services.
2. Research grants from SLU, SLF, and the WGCF are included.
4. Salary costs are included for 5.1 scientists, 0.6 programmers, and 0.4 secretaries.
7. The provisional budget for 2005 accounts for the fact that the Interbull/EAAP meeting will be arranged in Sweden.
12. Costs for outsourced activities include external participation in the project funded by SLF, but are fully covered by the research grant..

It is expected that the result for 2004 will be in balance, but that 2005 may yield a small surplus.

Uppsala, August 18, 2003



Jan Philipsson
Interbull Secretary



Ulf Emanuelson
Interbull Centre Director

Interbull Centre Finances and Budgets (Euro), August 2003

	2001	2002		2003		2004	2005
	Actual	Budget	Actual	Budget (original)	Budget (revised)	Budget	Prov. budget
Income							
1. Service fees	387,462	404,000	398,593	485,000	421,330	487,000	487,000
2. Research grants	102,707	100,000	133,221	90,000	150,500	126,600	116,800
3. EU grants	58,304	60,000	60,000	60,000	60,000	60,000	60,000
4. Other income	810	14,690	16,724	-	-	-	-
Total	549,283	578,690	608,538	635,000	631,830	673,600	663,800
Expenses							
5. Salary costs	254,773	294,000	287,567	352,000	335,200	353,000	363,500
6. Computer costs	34,648	38,000	39,030	45,000	45,000	45,000	45,000
7. Travels, conferences	17,330	55,000	46,874	25,000	35,000	35,000	20,000
8. Publications	10,655	13,000	14,169	15,000	17,000	15,000	14,000
9. Phone, fax, postage	12,554	13,000	10,778	14,000	14,000	15,000	14,000
10. Steering Comm. And ICAR	14,437	12,000	12,627	14,000	14,000	14,000	14,000
11. Miscellaneous	4,214	5,000	5,249	5,000	5,000	5,000	5,000
12. Outsourced activities	53,705	48,000	51,618	50,000	50,000	56,600	53,300
13. Office and univ. adm. costs	100,732	110,000	114,107	115,000	130,000	135,000	130,000
Total	503,348	588,000	582,019	635,000	645,200	673,600	658,800
Balance	46,235	-9,310	26,519	0	-13,370	0	5,000
Accum. Balance	106,592	97,282	133,111	133,111	119,741	119,741	124,741

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 2002 the membership income of Interbull amounted to EUR 43,191 and for 2003 membership fees are budgeted at 44,112. They contribute to cover overhead costs for ICAR/Interbull, some development work, travels, publications and information work. The Interbull Centre also contributes (EUR 6,300) annually to ICAR from service fees to cover these costs