

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 Tomassetti 3-1A, I-00161 Rome, Italy

Interbull Centre Activity Report 2004/2005¹

INTRODUCTION

With the addition of longevity and calving traits this year, the service portfolio of international genetic evaluations covers now five of the most important trait groups, and a sixth is on its way. This is a significant achievement in the relatively young history of Interbull. On the other hand, this year also underlined the importance of careful checks and verification of data and results at both national and international level in order to ensure the quality of national and international genetic evaluations and breeding values of bulls. At the Interbull Centre measures have been taken for more thorough verification of results prior to release, which you can read more about in the remainder of this document. At the same time it is important that similar activities are maintained at national level. In this context it is worth underlining that Interbull is nothing more than a cooperation of its members and it is this cooperation that is Interbull's strength and the reason for Interbull's success. This sense of responsibility of each member country is also of utmost importance for the value of international evaluations, which stands or falls with the consistency of national evaluations that are used as input.

This document describes the activities at the Interbull Centre since the last annual meeting of Interbull (May 29-31, 2004, Sousse, Tunisia). 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 June 2, 2005. The result for year 2004 was positive and thus slightly better than the budget. The budget figures were mistakenly based on the number of finished lactations rather than the number of cows in milk recording, which contributed to a slight increase in realized income in comparison with the budget. For 2005 (revised according to the actual situation) the budget shows a similar slight surplus, but budgets presented for 2006 and 2007 indicate small deficits. The accumulated balance is however at the same level as for 2004.

The service fees for 2005 – 2007 were computed according to the current fee structure, which was modified last year to accommodate for joint evaluations and to remove anomalies for conformation traits, but the level of service fees has not changed since 1999. Full Interbull service fees for the longevity and calving trait evaluations are in effect as of 2005. The EU commission has continued their support of the Interbull Centre. For 2004 the contribution increased with € 5,000 to € 65,000, and a similar amount has been decided for 2005.

Interbull membership fees are handled directly by the ICAR office, Rome, Italy, and reported at the official meetings of ICAR. For 2004 the membership income of Interbull amounted to EUR 44,112, and similar amounts are anticipated for 2005. Membership income is used to cover overhead costs for

¹ Presented at the 2005 Interbull Meeting, Uppsala, Sweden, June 2-4, 2005

ICAR/Interbull, some travel expenses, publications and information. The Interbull Centre also contributes about € 6,300 from service fees to cover these costs.

Overall, the financial situation means that no change in service fee is proposed for 2006.

PERSONNEL

Thomas Mark will leave the Interbull Centre in September 2005 to take a research position at the Royal Veterinarian and Agricultural University of Copenhagen, Denmark. Thomas spent nearly 5 years of dedicated work at the Centre, which he started with the development of international genetic evaluation services for udder health. Throughout these years he also contributed significantly to the development of the services for other traits. A replacement is being sought.

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 between March and August 2004. The topic of her studies was to investigate opportunities and consequences of applying structural models, principal component analysis and factor analysis in estimation of genetic correlations between countries.

SERVICE AND OPERATION

Routine international genetic evaluations for production traits were computed as scheduled in August and November 2004, and in February and May 2005, and test evaluation runs were performed in September 2004 and March 2005. Ireland participated for the first time with Simmental data in the production test evaluation run of March 2005, and entered the routine evaluations in May 2005. 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. First time participant in the Ayrshire conformation evaluation was Germany, Australia in the Guernsey conformation evaluation, and The Netherlands in Jersey conformation evaluations. Denmark, Finland and Sweden participated with Ayrshire and Holstein data from a joint evaluation in the May 2005 routine evaluation.

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 Rep. of South Africa in the Holstein and Ayrshire evaluations and Germany (including Austrian data) in the Brown Swiss evaluation. New Zealand participated for the first time with data for the Ayrshire, Brown Swiss, Guernsey, Holstein and Jersey evaluations. In May 2005, the first routine evaluation for Simmental was conducted, including data from France, Italy, The Netherlands and Switzerland. More countries are expected to participate with data in the near future.

The total numbers of populations in the most recent (May 2005) routine Interbull genetic evaluation services were as follows:

Breed	Production	Confor-mation	Udder health	Longevity	Calving
Ayrshire	12	8	12	8	-
Brown Swiss	9	7	7	6	-
Guernsey	6	4	5	4	-
Holstein	27	19	23	18	12
Jersey	10	9	8	6	-

Breed	Production	Confor-mation	Udder health	Longevity	Calving
Simmental	10	-	5	2	-

Modifications in international evaluation procedures

The workshop in Uppsala (January 2004) attended by the ITC and other invited experts resulted in several suggestions for changes in the procedures for estimation of genetic correlations. In short, the main changes were to switch to the Klei & Weigel approach to estimate correlations for all traits, and to formalize the post-processing of genetic correlation estimates. This new procedure was tested and fine-tuned in June-July 2004 when a research run for protein yield was done for all breeds. Results of this research run were distributed for review to members participating in the service. The new procedure was implemented in the September 2004 test evaluation run for all traits.

In the test evaluation run of September 2004 a new code for type of genetic merit was introduced. This new code, 22, can be used for bulls whose national evaluation is based on mostly (more than 50%) imported daughters or daughters from imported embryos. National evaluations of non-randomly used bulls (status equals to 20) with type of genetic merit equal to 22 will only be included in the international evaluations if the national evaluation is publishable.

Longevity evaluation

Routine international evaluations for direct longevity were computed for the first time for the Holstein breed in November 2004. Thirteen countries participated with data (Australia, Canada, Denmark, Finland, France, Germany, Ireland, Israel, Italy, Spain, Switzerland, United Kingdom, and the United States). Since this first routine evaluation Belgium, New Zealand, Sweden and the Netherlands have also subscribed to this service. Following a successful test evaluation run in September 2004, routine evaluations for the five other breeds started with the February 2005 routine evaluation.

Calving traits evaluation

Another new genetic evaluation service, calving traits, was started with a test evaluation run for the Holstein breed in September 2004. The service considers four traits: direct and maternal genetic effects for both calving performance and stillbirth. In the first routine evaluation, in February 2005, data from nine countries were included (Australia, Denmark, Finland, France, Italy, Sweden, Switzerland, The Netherlands and United States). Canada and Israel joined the evaluation in May 2005. In the second half of 2004 pilot studies for other breeds were conducted, a report of which was distributed to participating countries in the end of 2004. Based on a review of the results and the responses from the participating countries the ITC recommended proceeding with a test evaluation run for the Ayrshire and Brown Swiss breed groups, covering direct and maternal genetic effects for calving performance but not yet for stillbirth.

Pedigree issues

Much time is being spent during and between international evaluations on problems with invalid IDs and multiple registered animals at various levels. To be in a better position to deal with these problems, a survey was conducted asking member countries questions about their identification system. The idea of this survey was two-fold: firstly, to use the information to deal with invalid IDs as well as multiple registered bulls having the same registration number but different breed codes from different countries. The second goal is to make the forms available on the Interbull web site, making it possible for individual countries to solve identity problems (e.g. concerning cows). For these purposes, a Form ID including a guide for filling in this form was prepared. The result of this survey will soon be available on the web site of Interbull. Each country will then have the opportunity to update the information whenever necessary.

The handling of dam pedigrees was modified in the September 2004 test evaluation run. The maternal grandsire and granddam IDs were previously picked at random between non-missing IDs. Now we give priority to: 1) not missing ID, 2) information from the dam's country of first registration, 3) information from country of first registration of bull, 4) information from country with most complete pedigree for particular record, 5) first record read from list. At the same time, the code that indicates whether information came from the authoritative pedigree source in the 012 (pedigree) file was made more elaborate. Now five positions are used to indicate whether or not the particular ID came from the authoritative pedigree source. The first of these positions is for the bull followed by sire, dam, maternal grandsire and granddam. The authoritative pedigree source is the country of first registration of bull for bull, sire and dam ID. For maternal grandsire and granddam IDs it is the country of first registration of the dam.

Parent averages

Starting with the routine run November 2004 files have been created with parent averages for all bulls included in the Interbull 030 file with predicted genetic merit for dairy production. Software to prepare similar files for the other trait groups has been developed, and for the routine evaluation in May 2005 files with parent averages for all trait groups were made available on the ftp-server of Interbull. Parent averages are computed as the sum of half the genetic merit of the sire, a quarter of the genetic merit of the maternal grandsire, and a quarter of the maternal granddam group effects.

Verification of international genetic evaluation results

Procedures to verify international genetic evaluation results have been implemented during the first half of 2005. We all do mistakes, but as long as the mistakes are discovered and at an early stage then the unfortunate consequences can be minimized. Three different kinds of verification methods have been implemented.

The first method is similar to the procedure used for national genetic evaluations (Klei et al., 2002) and compares current with previous international genetic evaluations. The change in genetic evaluations is related to the reliability of international genetic evaluations. The current implementation yields many false-negative warnings when countries have changed their national evaluations, but this problem could be alleviated by considering information about changes in national evaluations to relax the thresholds.

The second method compares international genetic evaluations across standardized country scales. The idea is that individual international breeding values should not change much across countries when genetic correlations are high. This method useful for detecting problems with wrong direction of certain country scales. It also can also highlight individual bulls that might have been preferentially used.

The last method compares national and international genetic evaluations. It utilizes the difference between national and international reliabilities to establish the criteria for probable changes in breeding values. The national reliability is approximated from the EDC's provided by the countries. Although, the approximation of national reliabilities could be improved, the method seems to work well for this particular purpose.

The motivation for the development of these tools is the concern about the quality and credibility of Interbull services. We trust that these tools will facilitate an improved quality assurance of national and international genetic evaluation in the future.

Information activities

The web site of Interbull has been updated at several places. One Interbull Bulletin, proceedings from the Interbull Open Meeting in Sousse, has been added. The addition of electronic versions of older Bulletins continues, and Interbull Bulletin numbers 16-32 published between 1997 and today are now

available on the web site of Interbull. Interbull printed one issue of the newsletter, Interbulletin, since last year's Interbull Meeting, and this newsletter is also available on the web site of Interbull.

As of last year the Code of Practice for the international genetic evaluation of dairy bulls at the Interbull Centre is available on the web site of Interbull (under "Publications and Documentation | Service documentation | General").

Course

A three-day course on international genetic evaluation methodologies was planned in conjunction with the Interbull and EAAP meetings in Uppsala, 2005. The course was targeted towards PhD students, employees at genetic evaluation centres and countries with the intention to join the Interbull services in the near future. More than 40 people have registered for the course.

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 June 2004.

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 a limited field data set, but disappointing results were found with poorly connected countries and for moderately correlated traits. A report of these studies has been submitted for publication.

Instead, focus was redirected and opportunities for principal component and factor analytical approaches were investigated. The purposes of these studies were to estimate genetic correlations using an approximate principal component or factorial approach, and to investigate the impact of reparameterization with various numbers of principal components or factors on international genetic evaluations. Both methods yielded very good approximations of estimated genetic correlations. The impact on international rankings was larger for the principal component than for the factorial approach. The principal investigator of this project was Hélène Leclerc, under supervision of staff at the Interbull Centre and INRA. Results of this study will be presented at the 2005 Interbull Meeting in Uppsala and a manuscript has been accepted for publication in Journal of Dairy Science.

Calving traits

A pilot study for direct and maternal effect of calving performance and stillbirth traits was performed during the second half of 2004 from data of 6, 3, 4, and 2 populations of Ayrshire, Brown Swiss, Jersey and Simmental breed groups, respectively. Heritabilities are low for calving traits – especially for stillbirth. That fact, together with poor links (some of the major link-providing countries were missing) may be the reason for questionable correlations for stillbirth traits. Also, links were too weak between the two countries that send calving data from the Simmental breed. Therefore, no international genetic evaluation can be performed for calving traits for the Simmental breed at the current stage. Estimated and postprocessed correlations were reviewed by the ITC that recommended

to proceed with an international genetic evaluation for calving performance for Ayrshire and Brown Swiss breeds only. A report of this project will be presented at the 2005 Interbull Meeting in Uppsala.

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. The last outstanding details of the procedure, like which animals to consider and which level for a trend in the genetic variance can be tolerated, have been addressed, and a complete description of the procedure, to be incorporated in the Code of Practice for international evaluations, is under development. Results of this project will be presented at the 2005 Interbull Meeting in Uppsala.

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 two-fold: 1) Allow for lactation specific breeding values for some countries; 2) improve evaluations by utilizing within-country correlated information. Multiple-trait MACE software developed by Peter Sullivan has been tested on udder health field data and compared to single-trait-multiple-country results. The information source reliability method of Harris and Johnson has been extended to consider multiple traits per country and the parameters to use in different steps of the international genetic evaluation procedure have been outlined. Thomas Mark and Peter Sullivan are the principal investigators in this project and results will be presented at the 2005 Interbull Meeting in Uppsala and the 2005 ADSA Meeting in Cincinnati.

Estimation of parameters and prediction of breeding values for weakly linked populations

Different strategies to estimate genetic correlations among weakly linked bull populations were compared. A final report has been accepted for publication in the Journal of Dairy Science. The report about Bayesian inference of location and dispersion parameters was also completed and has been accepted for publication in the Journal of Dairy Science. Thomas Mark was the principal investigator in this joint project with the Danish Institute of Agricultural Sciences.

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) promised 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. A preliminary report will be presented to the 2005 Interbull Meeting in Uppsala.

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 2004 Interbull meeting:

Interbull Bulletin No. 32. Proceedings of the 2004 Interbull meeting, Sousse, Tunisia, May 29-31, 2004.

Interbulletin. The Official Newsletter of the International Bull Evaluation Service (Interbull) August 2004.

Fikse, W.F. 2004. Comparison of performance records and national breeding values as input into international genetic evaluation. *J. Dairy Sci.* 87, 2709-2719.

Fikse, W.F. 2004. Interbull guides through the labyrinth of national genetic evaluations. *Proc. 55th Annual Meeting of the EAAP*, Bled, Slovenia, Sept 5-9, 2004. *Book of Abstracts*, p. 326.

Jakobsen, J.H. & Emanuelson, U. 2004. International genetic evaluation of longevity traits. *Proc. ADSA/ASAS/PSA*, St. Louis, Missouri, USA. *J. Dairy Sci.* Vol. 87, Suppl. 1. Abstract no. 731, p. 411.

Jakobsen, J.H., Fikse, W.F. & VanRaden, P.M. 2004. Feasibility of MACE for longevity for colored breeds. *Proc. Interbull Meeting*, Sousse, Tunisia, May 29-31, 2004. *Interbull Bulletin* 32, 59-64.

Jakobsen, J.H., Fikse, W.F. & Mark, T. 2005. Breeding value estimation of the functional traits. *Proc 26th Eur. Holst. Conf.*, May 18-22, 2005, Prague, Czech Republic, 9 pp.

Jorjani, H. & Fikse, W.F. 2004. Conversion equations revisited: Single and multiple-trait conversion equations and comparison with simple-MACE. *Proc. Interbull Meeting*, Sousse, Tunisia, May 29-31, 2004. *Interbull Bulletin* 32, 25-30.

Jorjani, H. & Fikse, W.F. 2004. Estimation of the total merit index for foreign bulls. *Proc. 55th Annual Meeting of the EAAP*, Bled, Slovenia, Sept 5-9, 2004. *Book of Abstracts*, p. 328.

Jorjani, H., Emanuelson, U. & Fikse, W.F. Data subsetting strategies for estimation of across-country genetic correlations. *J. Dairy Sci.* 88, 1214-1224.

Kolmodin, R., Strandberg, E., Danell, B. & Jorjani, H. 2004. Reaction norms of protein yield and days open in Swedish Red and White dairy cattle in relation to various environmental variables. *Acta Agric. Scand., Sect. A, Anim. Sci.* 54, 139-151.

Leclerc, H., Minéry, S., Fikse, W.F., Ducrocq, V. & Druet, T. 2004. Estimation of genetic correlations using a structural model for milk and type traits: limits and opportunities. *Proc. Interbull Meeting*,

Sousse, Tunisia, May 29-31, 2004. *Interbull Bulletin 32*, 65-69.

Mark, T. 2004. Applied genetic evaluations for production and functional traits in dairy cattle. *J. Dairy Sci.* 87, 2641-2652.

Mark, T., Madsen, P., Jensen, J. & Fikse, W.F. 2004. Multiple-trait across country evaluations of weakly linked bull populations. *Proc. 55th Annual Meeting of the EAAP*, Bled, Slovenia, Sept 5-9, 2004. *Book of Abstracts*, p. 328.

Philipsson, J., Jakobsen, J. & Fikse, F. 2004. Functional traits and their importance in modern dairy breeding programs. Some Scandinavian experiences and implications for the Guernsey breed. 11th World Guernsey Conference Issue. Bath, UK. *Guernsey World, July 16-19 2004*, pp. 18-20+31-35.

Sullivan, P.G., Kistemaker, G.J., Jakobsen, J. & Fikse, F. 2004. MACE weighting factors for direct and maternal EBVs from multiple-trait models. *Proc. Interbull Meeting*, Sousse, Tunisia, May 29-31, 2004. *Interbull Bulletin 32*, 53-58.

Van der Linde, R. & Fikse, W.F. 2004. Interbull compares. www.interbull.org. 2 pp.

Wilmink, H. & Fikse, W.F. 2004. Report from workshop in Uppsala. *Proc. Interbull Meeting*, Sousse, Tunisia, May 29-31, 2004. *Proc. Interbull Meeting*, Sousse, Tunisia, May 29-31, 2004. *Interbull Bulletin 32*, 33-36.

WORKPLANS

Services

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

2005	August 8
	November 14
2006	February 13
	May 8
	August 7 (NB First Monday in August)
	November 13

Test evaluation runs for production, conformation and udder health, longevity and calving traits:

2005	September
2006	March
	September

Test evaluation runs for fertility are likely to commence in 2006.

Pending on the discussions on international genetic evaluations for beef breeds and traits and availability of financial resources, various activities may take place during the period 2005-2007.

Research

Project	Stage
<i>Hossein</i>	
Validation of complex statistical models	Data analysis
International genetic evaluations for female fertility	Data analysis

Thomas

Project	Stage
Multiple-trait MACE	Data analysis & reporting
<i>Jette</i> Weighting factors for complex statistical models	Data analysis
<i>Eva</i> Verification of international breeding values	Data analysis & reporting
<i>Freddy</i> Validation of genetic variance Reduced rank genetic correlation matrix for international genetic evaluations	Reporting Data analysis

Meetings

Annual Interbull meeting, 2006, in conjunction with the 35th ICAR session in Kuopio, Finland, June 4-6, 2006.

Workshops

Pending on pilot studies on international evaluation of fertility traits a workshop will be arranged in 2005 or early 2006. Due to the increasing problems with quality controls of data delivery to the Interbull Centre and procedures developed for data validation and result check routines a workshop should be arranged for people at evaluation centres of participating countries in 2005.

Planned Publications

Interbull Bulletin: Proceedings Interbull Open Meeting June 3-4, 2005, Uppsala, Sweden.

Interbulletin July 2005.

Interbull Centre Finances and Budgets, May 2005

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 2004 in comparison with the budget for 2004 and with the results for 2003. The budget for 2005 is revised according to the expectations as of the end of April 2005. A budget for 2006 is presented for approval together with a provisional budget for 2007, 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:

- Services now include all six breed groups for production, conformation, udder health and longevity. For calving traits Holstein was included in 2004 and in 2005 Ayrshire and Brown Swiss will be included.
- The negative impacts of the new fee structure implemented in 2005 are camouflaged by the larger service income: in the original budget for 2005 mistakenly the number of recorded lactations instead of number of recorded cows was used.
- No changes in fee levels are proposed for 2006 because of increased services at unchanged personnel costs.

Accounts for 2004

The final accounts for 2004 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 2004 was slightly better than the projections in the budget. Incomes were slightly higher than expected, due to increased service fees, although research funding was less. Budgeted service fees were smaller than the realized fees because they were mistakenly based on number of recorded lactations instead of recorded cows. The previous USDA research funding has been phased out, but supports of Swedish organizations and WGCF have been maintained. The EU contribution increased by € 5,000 compared with 2003. Costs were close to expectations.

The result for 2004 led to a positive balance of € 4,780, which means that the accumulated balance at the end of 2004 was € 137,891.

Revised budget for 2005

Comments refer to the numbers in the table and points at deviations or new information since last meeting. Corresponding figures for 2004 are given within parenthesis when appropriate.

1. Service fees are for production 317,025 (326,700), conformation 87,750 (84,905), udder health 41,595 (38,190), longevity 36,345 (26,238; $\frac{2}{3}$ of the fee for a full year) and calving traits 25,785 (5,214; $\frac{1}{4}$ of the fee for a full year).
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 2005. 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.
7. For 2005 fewer travel costs are expected as the Interbull meeting is in Uppsala. A workshop may be arranged late 2005.

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 2005 results will be slightly positive, in accordance with the budget approved last year.

Budget for 2006 and provisional budget for 2007

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

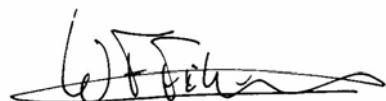
1. Service fees for production are expected to 316,650, for conformation to 87,750, for udder health to 39,935, for longevity traits 36,300, and for calving traits 26,265. The reduction for 2006 and 2007 is due increase in joint evaluations. No fee is set out for fertility evaluations, although these are likely to commence in 2006.
2. Research grants from SLU, the WGCF and other sources will be applied for.
4. Salary costs are included for unchanged number of staff.
7. Higher costs compared to 2005 are expected in 2006 due to both the ICAR and Interbull meeting in Kuopio (Finland) and the WCGALP in Brazil, where Interbull arranges the dairy genetics session. One workshop may also be arranged in 2006.

It is expected that both 2006 and 2007 will yield small deficits, but the accumulated balance will be at the same level as that of 2004.

Uppsala, May 12, 2005



Jan Philipsson
Interbull Secretary



Freddy Fikse
Interbull Centre Director

Interbull Centre Finances and Budgets (Euro), May 2005

	2003 Actual	2004		2005		2006 Budget	2007 Prov. Budget
	Budget	Actual	Budget (original)	Budget (revised)			
<i>Income</i>							
1. Service fees	421,330	456,200	481,247	487,000	508,500	506,900	506,900
2. Research grants	156,573	116,000	93,356	84,800	68,200	73,000	86,000
3. EU grants	60,000	65,000	65,000	65,000	65,000	65,000	65,000
4. Other income	-	-	-	-	-	-	-
Total	637,903	637,200	639,603	637,400	641,700	644,900	657,900
<i>Expenses</i>							
5. Salary costs	339,995	335,400	337,313	339,500	339,600	348,400	360,600
6. Computer costs	43,206	45,000	43,438	45,000	45,000	45,000	45,000
7. Travels, conferences	34,881	35,000	33,206	25,000	25,000	40,000	35,000
8. Publications	13,432	10,000	10,210	14,000	14,000	10,000	14,000
9. Phone, fax, postage	15,332	15,000	15,616	14,000	14,000	14,000	14,000
10. Steering Comm. and ICAR	6,374	8,000	6,314	8,000	8,000	8,000	8,000
11. Miscellaneous	3,535	5,000	7,218	5,000	5,000	5,000	5,000
12. Outsourced activities	49,500	56,600	50,000	53,200	56,500	50,000	50,000
13. Office and univ. adm. costs	131,603	128,000	131,508	128,000	128,000	128,000	128,000
Total	637,858	637,900	634,823	631,700	635,100	648,400	659,600
Balance	45	-700	4,780	5,700	6,600	-3,500	-1,700
Accum. Balance	133,156	132,456	137,936	143,636	144,536	141,036	139,336

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 2004 the membership income of Interbull amounted to EUR 44,112 and for 2005 membership fees are budgeted at 44,997. 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.