

# 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 2007/2008<sup>1</sup>

### INTRODUCTION

Twenty-five years ago the Interbull committee was officially formed, and twenty years ago Interbull became a permanent subcommittee of ICAR. What started with a vision of a group of young scientist that across-country comparison of genetic material would become crucial has grown into an international organization with an important role in dairy cattle breeding today. There is, however, not much opportunity to sit back and enjoy these achievements: the new era of genomic evaluation has really started and requires strategic choices from Interbull. These will be the ingredients of what is going to be an exciting future!

This document describes the activities at the Interbull Centre since the last annual meeting of Interbull (August 23-25, 2007, Dublin, Ireland). Workplans and future activities are also presented.

### BUDGETS AND FINANCES

A complete financial report can be found in Appendix I-III. Budgets will be official pending approval by the Interbull Steering Committee on June 16, 2008. The result for 2007 showed a deficit which was larger than the budget, mainly due to higher salary costs as a result of a delayed start of the Interbeef project and external activities at World Dairy Expo in Madison and at the FAO-conference at Interlaken. For 2008 (revised according to the actual situation) the prognosis shows a planned deficit, partly due to a two-year research agreement with MTT in Finland. The budget for 2009 shows a surplus, whereas the budget for 2010 shows a small deficit.

The service fees for 2007 – 2009 were computed according to the current fee structure. The level of service fees has not changed since 1999 and no change in service fee is proposed for 2009. The EU commission has continued their support of the Interbull Centre. For 2007 the contribution was equal to € 80,000, and an increase to € 90,000 has been decided for 2008. Starting 2007, Interbull Centre leads the development of a system for routine international genetic evaluations of beef breeds and traits (Interbeef). Funding has been secured for three years, and amounts to € 80,000 per year.

Interbull membership fees are handled directly by the ICAR office, Rome, Italy, and reported at the official meetings of ICAR. For 2007 the membership income of Interbull amounted to € 48,188. Membership income is used to cover overhead costs for ICAR/Interbull, some travel expenses, publications and information. The Interbull Centre also contributes € 6,854 from service fees to cover these costs.

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<sup>1</sup> Presented at the 2008 Interbull Meeting, Niagara Falls, NY, USA, June 17-19, 2008

## PERSONNEL

**Freddy Fikse** will leave his position as Interbull Centre Director in July 2008 to take a research position at the Department of Animal Breeding and Genetics at the Swedish University of Agricultural Sciences. A replacement is presently being sought.

The complete permanent staff of the Interbull Centre consists of 5.1 scientists, 0.5 programmers and 0.4 secretaries. Temporary staff amounts to two full-time equivalents.

**Romain Dassonneville** (AgroParisTech, Paris, France) stayed at the Centre from September to December 2007. He has been working on a project studying the level of connectedness in the international genetic evaluations.

## SERVICE AND OPERATION

Routine international genetic evaluations for production traits were computed as scheduled in January and April 2008. Test evaluation runs were performed in September 2007 and May 2008. Many changes in national evaluations have been introduced during this period, and are all described in the service reports published on [www.interbull.org](http://www.interbull.org) after each routine evaluation.

International genetic evaluations for Brown Swiss, Guernsey, Holstein, Jersey and Red Dairy cattle conformation traits were computed according to the same schedule as for production traits. A new population in these evaluations was the French Red (Pie Rouge des Plaines) for the Holstein breed.

Udder health evaluations for Brown Swiss, Guernsey, Holstein, Jersey, Red Dairy cattle and Simmental were also computed according to the same schedule.

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

Calving trait evaluations for Brown Swiss, Holstein and Red Dairy cattle were computed according to the same schedule as for production traits. Denmark, Finland and Sweden participated with Holstein data from a joint evaluation in the January 2008 routine evaluation.

Female fertility evaluations for Holstein were computed according to the same schedule as for production traits. Canada and Germany (incl. Austria) participated for the first time in the evaluations for Holstein in January 2008. In January 2008, the first routine evaluation for Brown Swiss, Guernsey, Jersey, Red Dairy cattle and Simmental was conducted, including data from 22 different populations.

The total numbers of populations in the most recent (April 2008) routine Interbull genetic evaluation services were as follows:

Breed group	Production	Conformation	Udder health	Longevity	Calving	Female fertility
Brown Swiss	9	7	8	6	4	5
Guernsey	6	4	5	5	-	4
Holstein	25	21	23	19	9	16
Jersey	10	9	8	7	-	6
Red Dairy Cattle	11	8	10	9	5	7
Simmental	10	-	8	2	-	2
Total	71	49	62	48	18	40

### ***Modifications in international evaluation procedures***

A new grouping of female fertility traits was introduced in the January 2008 routine evaluation. The service comprises of five traits that reflect: ability to conceive (maiden heifers), ability to start cycling (lactating cows), ability to conceive as a rate and as an interval trait (lactating cows) and interval calving-conception. The new trait grouping reduced the mixing of interval and rate traits, and allowed combined traits (days open, calving interval) to be included in the sub-traits for the specific components of female fertility. Overall, these changes led to a general increase in genetic correlations among countries.

### ***Data quality***

Data quality continues to be of importance and the earlier one detects problems, the better it is. With that view, Interbull Centre released the software used for comparing two sets of national evaluation results (Nverify) so that countries can perform these checks before submitting the data to Interbull. The SC decided at the 2007 Interbull Meeting in Dublin to make it compulsory for countries to supply the results from these verifications when new data is submitted for inclusion in the Interbull evaluation, and this practice was started from the May 2008 test evaluation.

A common source of problems in the international evaluation process was handling of parameters (heritabilities, standardization factors), mainly due to the manual intervention required because of the wide variety of formats used to report the parameters. Starting May 2008, Interbull requires countries to submit a file with parameters when a file with new genetic evaluation results is submitted. Once certain checks are passed (e.g. change compared with previous evaluation) these parameters are used in the evaluation process, without any manual intervention.

### ***Information activities***

The web-site of Interbull has been updated at several places. One Interbull Bulletin, proceedings from the Interbull Open Meeting in Dublin, has been added. In addition, an updated version of the Code of Practice has been put on the web-site. New on the web-site is a separate page with information and deadlines about changes in the Interbull evaluation ([www.interbull.org](http://www.interbull.org) → Publications and Documentation → Service Documentation → Changes).

The results of an extensive questionnaire about publication policies of national and international breeding values are available on the web-site. The results were entered in a new form, Form\_PUB, and countries are expected to send an updated Form\_PUB every time the publication policies are changed in their country.

The Interbull Centre organized upon request by FAO a side event in conjunction with the International Technical Conference on Animal Genetic Resources in Interlaken, Switzerland (September 2007) to discuss genetic diversity and functional traits and aspects of sustainable breeding in commercial dairy cattle breeds. The mainstream dairy breeds play an enormous role for global food security as producers of both milk and meat, and maintaining genetic variation is crucial; the role Interbull could have in monitoring genetic diversity for these breeds was appreciated. PowerPoint presentations and a summary of the side event are at the web-site of Interbull.

A one-day seminar/workshop with AI industry and world breed societies was organized in conjunction with the World Dairy Expo in Madison, WI, USA (October 2007). The workshop provided a platform to intensify the dialogue with the cattle breeding industry about Interbull and Interbull evaluations, and was attended by nearly 50 participants. The Interbull Chairman and Centre Director both gave presentations about Interbull and three industry stakeholders discussed the strengths of international bull evaluations and Interbull services, and areas of improvements where Interbull can do better. The value and intention to organize similar events in the future was expressed. PowerPoint presentations and a summary of the side event are at the web-site of Interbull.

## **RESEARCH AND DEVELOPMENT**

A document listing research priorities in the field of international genetic evaluation, as identified by the Scientific Advisory Committee and endorsed by the 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. 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 2007.

### ***Female pedigree in MACE***

A research study comparing the use of sire-dam pedigree in stead of sire-MGS pedigree was completed by NRS in 2005. ITC recommended adopting this approach for breeding value prediction keeping the sire-MGS pedigree for correlation estimation, and implementation was initiated at the Interbull Centre. Countries submitted pedigree information for bulldams in February 2007. The software developed by NRS has been installed and tested on the Interbull computers, but scalability turned out to be an issue when considering 25 countries and nearly 400 thousand animals in the pedigree. The three most critical parts of the software, deregression, sire variance estimation and prediction of breeding values, were modified and/or rewritten to meet the constraints of a routine evaluation. A report of the results will be presented at the 2008 Interbull Meeting in Niagara Falls.

### ***International evaluations for female fertility traits***

Evaluation of female fertility traits is a recent addition to the list of traits evaluated by the Interbull Centre and by many of Interbull's member countries. Choice of the traits, evaluation models and routines for calculation of national evaluations are still evolving and new countries are joining the Interbull services. As the result there is a continuing need for re-appraisal of different aspects of the internal genetic evaluation of fertility traits. In one research project the impact of using number of daughters or effective daughter contribution (EDC) on estimated genetic correlations and international genetic merit and reliability were investigated. Even though, using number of daughters (instead of EDC) lead to some increase in estimated genetic correlations, using EDC lead to higher international reliability and better alignment of national and international reliabilities. In a different research project the use of multiple-trait MACE for female fertility traits is being investigated. For this project data from eight countries and 12 traits from March 2007 test evaluation has been used. In this preliminary impact of single trait versus multiple trait EDCs are being investigated.

### ***Assessment of connectedness in the international genetic evaluations***

Connectedness between countries is a critical prerequisite for accurate international genetic evaluations. A new method to measure strength of genetic ties in the context of international evaluations was presented and applied to the Simmental populations considered in the Interbull evaluation by a French research group in 2006. The purpose of the present project was to study characteristics of this approach, apply it to the other breed groups considered in the Interbull evaluation, and make comparisons to other, simpler measures of connectedness. The principal investigator of this project was Romain Dassonneville, under supervision of the Interbull Centre staff.

### ***Feasibility study of international evaluations for milking speed and temperament***

After positive reception of a pilot study about international genetic evaluation for milking speed and temperament conducted by ANARB, whose results were presented during 2007 Interbull Meeting in Dublin, a more comprehensive pilot study with new data was conducted at the Interbull Centre. The results are presented to the 2008 Interbull open meeting in Niagara Falls.

### ***Feasibility study of international evaluations for locomotion and body condition score***

A pilot study of international genetic evaluations for locomotion and body condition score was conducted by Holstein-USA during the second half of 2007. As locomotion and body condition score are relatively new traits in many countries it was decided to ask countries to send updated files

together with other conformation data for the May 2008 test evaluation. Results look promising and a report will be presented at the 2008 Interbull Meeting in Niagara Falls.

### ***Interbeef***

A letter of agreement between ICAR and Institut National de la Recherche Agronomique, Irish Cattle Breeding Federation and Interbull Centre has been signed. A letter of agreement between Interbull Centre and data providing organizations regulating use and confidentiality of data has been finalized. These agreements were preceded by a feasibility study and a workshop in Paris in March 2007 to lay out the project details. The Interbeef project is led by a management committee with Brian Wickham as convenor.

The domain [www.interbeef.org](http://www.interbeef.org) has been registered, and is automatically forwarded to the Interbeef section on the Interbull web-site. The Interbeef web-site has been updated in several places. Documents about file formats, validation process and the description of national evaluation system for Charolais and Limousin breeds have been added.

In 2007 Interbeef started a collaboration with Eildert Groeneveld and his team for the construction of a database. This database will handle pedigree and performance data for beef and dairy breeds. A fully exhaustive description of the data (pedigree and performance) flows in and out the database, was presented during an Interbeef working group meeting in Edinburgh early this year.

Participating organizations in the project have started to provide data, and much effort is spent on validating pedigree and cross-references for international animals. The research partners in the project, INRA and ICBF, worked also on improvement of pedigree and cross-reference for these animals. At ICBF, work has been completed to develop conversion equations between France, UK and Ireland. At INRA, ongoing studies focus on connectedness among beef cattle populations, approximation of reliabilities for international evaluations, and incorporation of genetic groups in the evaluation model.

### ***R&D funding***

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

Funding for the three-year project to develop a system for international genetic evaluation of beef breeds and traits is provided by ICAR, Institut de l'Élevage (France), Irish Cattle Breeding Federation (Ireland), British Limousin Cattle Society (UK) and Nordic Cattle Genetic Evaluation (Denmark, Finland and Sweden).

Contributions of the above organisations to the future development of Interbull services are gratefully acknowledged. Contributions made to R&D activities in other countries and organizations leading to improved or expanded Interbull services are also much acknowledged.

### **INTERBULL PUBLICATIONS/PRESENTATIONS**

The following Interbull-related publications/presentations were produced since the 2007 Interbull meeting:

**Interbull Bulletin No. 37.** Proceedings of the 2007 Interbull meeting, Dublin, Ireland, August 23-25, 2007.

Bagnato, A., Rossoni, A., Nicoletti, C., Jakobsen, J. & Santus, E. 2007. Milkability and temperament MACE correlation and pilot study in dairy cattle populations. *Interbull Bulletin* 37, 95-97.

Fikse, W.F. & Philipsson, J. 2007. Development of international genetic evaluations of dairy cattle for sustainable breeding programs. *Animal Genetic Resource Information Bulletin* 41, 31-45.

- Forabosco, F., Palucci, V. & Fikse, W.F. 2007. Report from the Interbull workshop in Paris. *Interbull Bulletin 37*, 16-17.
- Forabosco, F. Interbeef activity report. Paper presented at the International Cattle Breeders Roundtable, Cork, Ireland, February, 19-21, 2008.
- Jakobsen, J.H., Forabosco, F., & Fikse, W.F. 2007. International genetic evaluation of dairy bulls. Agrovouga, Portugal, October 19, 2007.
- Jorjani, H. 2007. International genetic evaluation of female fertility traits in five major breeds. *Interbull Bulletin 37*, 144-147.
- Jorjani, H. 2007. There and back again: A tale of choosing female fertility traits. *Interbull Bulletin 37*, 148-151.
- Jorjani, H., Jakobsen, J.H., Forabosco, F., Hjerpe, E. & Fikse, W.F. 2007. An international perspective on breeding for robustness in dairy cattle. *58th Annual Meeting of the EAAP*, Dublin, Ireland, August 26-29, 2007. Book of Abstracts 1:4.
- Mark, T., Fikse, W.F., Sullivan, P.G. & VanRaden, P.M. 2007. Prediction of genetic correlations and international breeding values for missing traits. *J. Dairy Sci.* 90, 4805-4813.
- Oldenbroek, K., Fikse, W.F. & Hiemstra, S.J. 2007. Mondiale verspreiding HF-genen: spermahandel wereldwijd jaarlijks goed voor 100 miljoen euro [ Worldwide dissemination of Holstein genes - global semen trade annually more than 100 million Euro ]. *Veeteelt November 1*, 12-15.
- Philipsson, J. & Bårström, L-O. 2007. Rött är rätt! International Red Cow Conference 2007 (IRCC). *Avelskuriren 3*, s. 16.
- Philipsson, J. 2007. Breeding healthy cows. Workshop Report from the 12<sup>th</sup> World Guernsey Conference, September 2007. *Guernsey World, September 2007*, p.12.
- Philipsson, J., Jorjani, H., Jakobsen, J., Hjerpe, E., Forabosco, F. & Fikse, F. 2007. Breeding for health and fertility in dairy cattle. *Guernsey World, September 2007*, 2-8.
- Schneider, M. del P. & Fikse, W.F. 2007. Principal components analysis for conformation traits in international sire evaluations. *Interbull Bulletin 37*, 107-110.
- Schneider, M. del P. & Fikse, W.F. 2007. Principal components analysis for conformation traits in international sire evaluations. *58th Annual Meeting of the EAAP*, Dublin, Ireland, August 26-29, 2007. *Book of abstracts EAAP vol. 13*, p. 5.
- Torsell, A. 2007. Prospects of performing multiple-country comparison of dairy sires for countries not participating in Interbull international genetic evaluations. *MSc thesis no 293, Dept. of animal breeding and genetics, SLU, 750 07 Uppsala*.
- Torsell, A., Jorjani, H. & Fikse, W.F. 2007. Prospects of performing multiple-country comparison of dairy sires for countries not participating in Interbull international genetic evaluations. *Interbull Bulletin 37*, 111-114.
- Torsell, A. International evaluation of female fertility traits. Paper presented at the International Cattle Breeders Roundtable, Cork, Ireland, February, 19-21, 2008.

## WORKPLANS

### Services

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

2008	August 19
2009	January 13
	April 7
	August 18

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

2008	September
2009	May
	September

Pending the discussions about the pilot studies for body condition score & locomotion and milking speed & temperament, test evaluations may be scheduled for 2008/2009.

### ***Research and Development***

Project	Stage
Female pedigree in MACE	Implementation
Database	Implementation
Multiple-trait MACE (for female fertility)	Data analysis
Beef international genetic evaluation	Data analysis
VerifyBEEF	Data analysis
Reduced rank genetic correlation matrix for international genetic evaluations	Data analysis
Predictive ability of Interbull evaluations	Data analysis
MT-EDC for calving traits	Data analysis

### ***Meetings***

Annual Interbull meeting, 2009, in conjunction with the 60<sup>th</sup> Annual Meeting of the EAAP in Barcelona, Spain, August 21-23, 2009.

### ***Workshops***

A workshop may be arranged for the end of 2008 or early 2009 to discuss technical improvements in the method for international genetic evaluation.

### ***Planned Publications***

**Interbull Bulletin:** Proceedings Interbull Open Meeting, June 17-19, 2008, Niagara Fall, NY, USA.

**Interbulletin August 2008.**

## Interbull Centre Finances and Budgets, May 2008

### 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 2007 in comparison with the budget for 2007 and with the results for 2006. A prognosis for 2008 is made according to the expectations as of the end of May 2008. A budget for 2009 is presented for approval together with a provisional budget for 2010, 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 include all six breed groups for production, conformation, udder health, longevity, and fertility, and three breed groups for calving traits (Brown Swiss, Holstein and Red Dairy Cattle)
- More countries are expected to join the Interbull evaluations for production and female fertility.
- Expansion of the service portfolio to include workability traits (milking speed and temperament) and two new conformation traits (body condition score and locomotion) as well as the outcome of the review of the conformation subcontract is not considered in the budgets presented.
- Estimated costs for the activities related to the development of international beef evaluations are presented separately (Appendix III).
- The reservations made in the past years due to favourable exchange rates, publication costs covered by ICAR from the Interbull membership fees and some vacancies have been used for a junior scientist and research collaboration with MTT in Finland for a period of two years.

#### *Accounts for 2007*

The final accounts for 2007 (excl. Interbeef activities) 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 negative result for 2007 was larger than the projections in the budget despite that SLU grants for R&D was higher than expected. The support of WGCF has been maintained, and the EU contribution was € 80,000, an increase of € 15,000 compared to 2006. Salary costs were higher than budgeted due to a delayed start of the Interbeef project. Travel and conference costs were higher due to external activities at the World Dairy Expo and at the FAO conference at Interlaken. Office and university administration costs were conservatively budgeted, but the actual result was close to 20% of the total costs, as has been the case in previous years. Publications and phone, fax, postage could be kept at a low level because Interbull membership fees were utilized to cover costs for printing and distribution of Interbull Bulletins 36 and 37.

The result for 2007 led to a negative balance of € 19,687, which means that the accumulated balance at the end of 2007 was € 138, 456.

#### *Prognosis for 2008*

Comments refer to the numbers in the table and points at deviations or new information since last meeting. Corresponding figures for 2007 are given within parenthesis when appropriate.

1. Service fees are for production 309,291(310,317), conformation 86,402 (87,160), udder health 42,524 (42,909), longevity 37,027 (37,382), calving traits 28,173 (28,318) and female fertility 46,826 (37,988).
2. SLU has preliminary decided to provide support amounting about € 90,000. Continued support (£ 5,000) by the World Guernsey Cattle Federation (WGCF) is also expected.
3. EU has decided to increase their grant for 2008 to 90,000. 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 6.1 (6.4) scientists, 0.5 programmers, and 0.4 secretaries. This is the same number as in the previous budget.
7. Higher costs compared to 2007 are expected in 2008 because the one main conference (Interbull Meeting in Niagara Falls, NY, USA) is on another continent. In addition, (part of) the staff will participate in the EAAP meeting in Vilnius (Lithuania).
8. Publication costs are expected to be similar for 2007 and 2008. One Interbull Bulletin and one Interbulletin (newsletter) will be published in 2008. Since 2005, part of the Interbull membership income is used to cover publication costs.
9. Phone, fax and postage are expected to be similar for 2007 and 2008. Since 2005, part of the Interbull membership income is used to cover postage costs.
12. The contract established between Interbull and the North-American consortium on outsourcing the conformation evaluations, assumes an annual basic fee of 50,000. Costs for outsourced activities also include the research collaboration with MTT in Finland.

It is expected that the 2008 results will be negative. The primary reason is the planned use of reservations from 2005 and 2006 to fund the research agreement with MTT in Finland. The accumulated balance is still expected to be similar to the one originally approved for 2008.

#### ***Budget for 2009 and provisional budget for 2010***

Specific comments are given when essential deviations from previous years are expected. No change in service fees for 2009 is proposed.

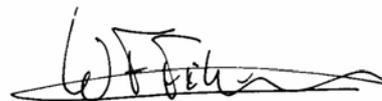
1. Service fees in 2009 for production are expected to 325,958, for conformation to 86,389, for udder health to 42,520, for longevity traits 37,027, for calving traits 25,694, and for female fertility traits 49,598.
2. Research grants from SLU, the WGCF and other sources will be applied for.
4. Salary costs are included for 6.1 scientists, 0.5 programmers, and 0.3 secretaries for 2009 and 2010.
7. Similar costs compared to 2008 are expected in 2009 and accounts for two meetings, the EAAP and Interbull meeting in Spain and one workshop.
12. For 2009, costs for outsourced activities just includes the subcontract for the conformation evaluations.

It is expected that 2009 will yield a surplus and 2010 a small deficit.

Uppsala, June 5, 2008



Jan Philipsson  
Interbull Secretary



Freddy Fikse  
Interbull Centre Director

### Interbull Centre Finances and Budgets (Euro), June 2008 (excl. Interbeef)

	2006	2007		2008		2009	2010
	Actual	Budget	Actual	Budget (original)	Projected result	Budget	Prov. Budget
<b><i>Income</i></b>							
1. Service fees	511,807	544,074	544,074	564,100	550,250	567,200	567,200
2. Research grants	67,605	66,000	87,290	73,000	98,900	90,000	100,000
3. EU grants	65,000	80,000	80,000	80,000	90,000	90,000	90,000
4. Other income	-	-	5,500	-	-	-	-
<b>Total</b>	<b>644,412</b>	<b>690,074</b>	<b>716,864</b>	<b>717,100</b>	<b>739,150</b>	<b>747,200</b>	<b>757,200</b>
<b><i>Expenses</i></b>							
5. Salary costs	339,665	378,600	400,642	402,600	409,600	420,200	437,200
6. Computer costs	44,421	45,000	45,443	45,000	45,000	45,000	45,000
7. Travels, conferences	43,792	35,000	41,105	40,000	45,000	45,000	45,000
8. Publications	6,739	10,000	9,671	10,000	10,000	10,000	10,000
9. Phone, fax, postage	10,839	10,000	9,630	10,000	10,000	10,000	10,000
10. Steering Comm. and ICAR	7,025	7,000	6,854	8,000	8,000	8,000	8,000
11. Miscellaneous	4,052	8,000	5,482	5,000	5,000	5,000	5,000
12. Outsourced activities	50,000	74,100	73,321	74,100	73,700	50,000	50,000
13. Office and univ. adm. costs	133,484	135,000	144,403	135,000	145,000	148,000	150,000
<b>Total</b>	<b>640,017</b>	<b>702,700</b>	<b>736,551</b>	<b>729,700</b>	<b>751,300</b>	<b>741,200</b>	<b>760,200</b>
<b>Balance</b>	<b>4,395</b>	<b>-12,626</b>	<b>-19,687</b>	<b>-12,600</b>	<b>-12,150</b>	<b>6,000</b>	<b>-3,000</b>
<b>Accum. Balance</b>	<b>158,143</b>	<b>145,517</b>	<b>138,456</b>	<b>125,856</b>	<b>126,306</b>	<b>132,306</b>	<b>129,306</b>

*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 2007 the membership income of Interbull amounted to € 48,188. They contribute to cover overhead costs for ICAR/Interbull, some travels, publications and information work. The Interbull Centre also contributes (EUR 6,854) in 2007 to ICAR from service fees to cover these costs.

## Costs for the Interbeef project

Through the agreement with ICAR and a number of national organizations an annual amount of € 80,000 is available for a period of three years. Salary costs incl. social benefits are included for one scientist. Activities for the Interbeef project did not officially start until June 2007, hence the salary costs pertain to 7 months in 2007, and an extra 5 months are considered for 2010. On average, the costs are € 92,200 per year. Additional funding will be sought from SLU and other possible sources, especially for the development of a database system.

	2007		2008	2009	2010
	Budget	Actual			
<i>Expenses</i>					
Salary costs	45,000	31,369	54,100	55,500	24,000
Computer costs	8,000	7,558	8,000	8,000	3,500
Travels, conferences	4,500	11,265	5,500	5,500	3,500
Miscellaneous	1,000	648	1,000	1,000	1,000
Office and univ. adm. costs	15,000	14,229	16,000	17,000	8,000
<b>Total</b>	<b>73,500</b>	<b>65,069</b>	<b>84,600</b>	<b>87,000</b>	<b>40,000</b>