

Intergenomics: Business Rules and Transition into Services

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Abstract

The Intergenomics project, started in 2009 and ending in 2011 had the final goal of developing a common genomic evaluation program for the Brown Swiss breed at Interbull but also to improve knowledge on genomic methodologies simultaneously at Interbull and at participating countries.

The Project, on track from a timeline point of view, will end in April 2011 with the first official evaluation done at Interbull. The costs of the new service will be divided by participating countries following a scheme based both on fixed and variable parts in order to take into account the needs of both small and large countries.

1. Background

The Intergenomics project started in 2009 when the Steering Committee of Interbull decided to give a positive feedback to a request received from the European Federation of Brown Swiss breeders.

The initial input was given at the beginning of 2009 from Interbull itself when at the workshop in Uppsala the document of the genomic task force was discussed and approved. In that document, exploring the possible future possible involvement of interbull in the genomic era, the first possible scenario was envisioned with Interbull having access to national EBVs and bull genotypes with genotypes access restricted to ITBC.

That scenario was seen at that time “particularly attractive for small populations...” but also difficult to follow due to some challenges like getting genotypes to Interbull, setting up a new framework of analysis at ITBC, meeting country needs of SNPs effects estimation and assuming everyone was using the same chip.

Following that workshop after a series of meetings the European Federation of Brown Swiss breeders formalized a request to Interbull in order to follow that specific scenario for the BSW breed with a project jointly led by the European Federation and by Interbull. Soon the project, with the inclusion of the USA, become a world project.

2. Goals of the project

Given the positive feedback from Interbull the project started officially with a startup meeting held in late November 2009.

The Overall aim was set as to develop a common genomic evaluation program for the Brown Swiss breed at Interbull with Specific objectives as:

establish an international data base of genotypes for the Brown Swiss populations at Interbull Centre, develop methodology to estimate SNP effects for economically important traits in each participating country scale using a common reference population, establish an international genetic evaluation incorporating genomic information for the Brown Swiss breed and improve knowledge on genomic methodologies simultaneously at Interbull and at participating countries.

Governance of the project

Within the project two committee were formed, the first called “Management committee” was put in charge of all business related issues while the other, the “Technical committee”, was put in charge of technical developments.

In general the strategic goal was defined as the need to reach a better prediction ability for genetic evaluation systems at international level using new technologies and to reduce GxE due to “technicalities” (different statistical methods,

different data preparation, etc..). In this vision genotypes and phenotypes are only tools to be used in order to get to the final goal.

The management committee worked in a first phase in order to address setup problems and to keep the project on track while in a second phase the main effort was put on how to manage the transition from research to service.

Transition from a research project to service posed essentially three questions: first, the type of service needed from member countries had to be clearly defined, second: the timing of the service during the year had to be discussed, third: a cost sharing system had to be agreed upon.

The type of service needed has been clearly defined as a set of prediction equation for all traits available at Interbull for the BSW breed, based on all genotypes available and the application of such equations to all genotypes present in the joint database plus a validation system that passes the international checks.

The timing needed more discussion but at the end the committee agreed on some focal points. First: each Genetic evaluation unit continue to be responsible for genomic evaluation at home. Second: each GEU needs a set of prediction equations based on last EBVs available in order to provide service for candidate bulls or young bulls.

Given the fact that EBVs are computed 3 times/year (MACE) the service has been defined as a set of prediction equations to be released 3 times/year after the MACE runs plus the results of the applications of such prediction equations on the genotypes present in the joint database (excluding candidate bulls only).

Cost sharing has been discussed in length and a scheme has been agreed upon with fixed part to acknowledge the bigger efforts done by bigger countries and a variable part to charge more for countries having more potential benefits. At the end the relative weight of the two parts have been set as 50% - 50% and the rationale used in order to compute the variable part has been indicated as the number of cows under control in each country.

The next steps of the project are a pilot run to be delivered before the end of march, 2011 and a first official run, pending the interbull Steering Committee approval, to be released in April 2011.

5. Conclusion

Intergenomics is a project completely driven by breeders and their organization aiming at a world genomic evaluation of a specific breed (BSW). The success of the project and its transition to service has been largely due to a collaborative scheme among countries and ITB centre.