Simulator to assess the economic impact of differences in pig farm technical performances

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Introduction
In field conditions, many decisions have to be evaluated, aiming to solve dysfunctions or to improve technical efficiency. They have a financial impact, which is very complex to estimate, especially when reproduction is involved. A simulator has been developed to assess the economic impact of changes in reproductive performance and/or in growth performance in the post-weaning and/or the fattening stages, between two stabilized situations.

Materials and Methods
Input data are technical-economic items for breeding herds and wean-to-finish phase provided by French technical and economic databases: *Gestion Technique des Troupeaux de Truies* (GTTT) and *Gestion Technico-Economique* (GTE). Descriptive data of the farm as the numbers of rooms and economic parameters as prices of feeds and selling prices of pigs are also considered.

For reproductive parameters, it is stated that farrowing units are fully used. Thus, reproduction, as far as sow culling and replacement are managed to reach this goal, is considered as managed with some consequence on the average number of present sows.

In the post-weaning and fattening stages, the calculation depends on changes in weights, mortality and feed conversion ratio of pigs. If feed efficiency is unknown, the simulator offers to estimate it, using a modeled value from growth (daily weight gain), based on various consumption profiles (feed restriction *vs ad libitum* patterns). In any way, it is supposed that no change is occurring regarding structural descriptors (barn capacities, sow herd organization etc.).

Results
The simulator has to estimate a cluster of technical items to perform the economic simulation: the numbers of present sows, the number of required replacement gilts and the number of culled sows (based on the conception rate and other reproduction criteria, including the farmer's choices as the number of unfertile estrus accepted before culling the sow), the number of pigs produced and the global feed consumption. The levels of inputs, outputs and gross margin are assessed using all these items as well as prices of feed and pork.

The gross margin difference (in €) between the two situations (both situations being assumed to stay stable) can be expressed with regards to different units depending on the case: per the farm in total, per sow per year, per pig produced or per kilogram produced. To explain the overall difference, the results from intermediate calculations are also available.

Conclusions and Discussion
While the back-office simulation model incorporates some interactions between criteria, most of the input parameters are considered independent enough to let the user choose their value.

This simulator is a quick and easy tool that provides a first estimate of the economic impact of changes in technical performances (1).

The simulator is available as a web tool and can be freely used online (www.ifip.asso.fr).

Reference
1. Corrégé I. *et al.* 2012. 22nd International Pig Veterinary Society Congress - Symposium Merial, 12 June 2012, South Korea, p 1-4.