

International data exchange for the recording and traceability of worldwide artificial inseminations: a new and modern concept

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The “Artificial Insemination and Related Technologies” Working Group (AI & RT WG) is a body of ICAR. One of its main missions consists in maintaining, updating, promoting and extending universal guidelines for recording data associated with artificial breeding (for both male and female gametes, primarily in cattle) and its use to assess reproductive success (F. Schmitz-Hsu, 2019). Within this frame, the Group is working on a new concept of AI data exchange platform which is described in the present document.

Abstract

Key words: Data exchange platform, traceability, proof of concept.

Big Data can provide new efficient decision making tools for helping agricultural development as well as biodiversity protection.

Introduction

In the sector of Artificial Insemination (AI), semen production from the semen collection center to the field and then insemination of cows require reliable recording and strict traceability. During the last 20 years, many countries have developed national barcodes printing systems on straws in order to provide such a rigorous traceability. Unfortunately, these technologies only work at a national scale and are hardly usable in other technical environments. On the other hand, worldwide trade of semen has regularly increased and safe traceability has become a main issue, especially when considering sanitary security issues and reliable origin of genes.

In the frame of its missions, the ICAR Artificial Insemination and Related Technologies Working Group (AI&RT-WG) is aiming at implementing an international data exchange system gathering all information regarding any proven bovine sire used anywhere in

the world and whatever the Semen Collection Centre (SCC) where the semen was produced. The goal is to provide reliable statistics and information about genes exchanges all around the planet and to secure linked sanitary issues.

This document aims at describing the different steps that have to be followed and achieved before this project can be fully implemented. It is also a call to good wills who would be interested by it and would like to join the AI&RT-WG.

Ins and outs of the project

As a first step, the following concept has to be proven:

- Any AI technician in the fields inseminating a bovine female can connect himself to the international query system from a mobile connected device.
- Key entrance code to the international database will be three digits NAAB code identifying any SCC in the world added to the current barcode used by the SCC.
- Any SCC will be free, in addition to the information printed on straw, to include various information within its own file using dedicated application programming interfaces (API) in the exchange system: genetics, genomics, sanitary, genealogy,...
- Connection from the fields to the databases will be done thanks to an API giving access to individual SCC information.
- Minimum information will be the full deciphered content of the printed barcode.
- Maximum information available will have no limit and will be property of the SCC owner of the sire.

The second step will consist in:

- Finding partners to develop and evaluate the technical feasibility of the concept: two or three different countries (not limited) representatives from different continents (if possible).
- Evaluating the total costs, advantages and drawbacks of the system.

The third step will deal with the funding of such a project, if possible, via official international institutions like regional funding agencies, European Bank for Reconstruction and Development : EBRD, ICAR or Interbull.

However, we have to keep in mind that the success of a digital project depends as much on technological mastery as on the willingness of the teams to implement it.

And as a conclusion:

“When you’re trying to reach a goal, data not only tells you if you’re succeeding, but it also suggests which activities you should do more of in order to improve your results.”
(Bill Gates)