Various systems used to record and process AI data on farms: summary of the ICAR questionnaire

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Summary

Now days, laptops and PDA are very frequently used by AI technician in farm to record data and transmit them to central databases. This paper describes the situation in different countries and the reasons why AI centres decided to develop these tools.

***Key words**: Artificial insemination records, Laptops, Computing equipment, Data exchange.*

Introduction

The use of laptops computers and personal digital assistant (PDA) had a huge development during the past 20 years. They are now common tools for a large number of tasks including those in artificial insemination.

The ICAR working group on artificial insemination and relevant technologies (WG AI&RT) suggested getting a better view of use of these equipments by AI technician, the exchanges with central or national database and the use of additional technologies to have an identification of straws with an automatic reading. We sent a questionnaire to the major actor of AI in a very large number of countries. We present now the synthesis of the answers. The quite low number of answers is not enough to establish statistics but their variety is a good indicator to describe a large number of situations coming from different continents (Europe, Oceania, and America). Our picture is quite good for AI centres providing technician AI service. It's more difficult to have a good idea of the situation for farmers practicing Do It Yourself or for freelance AI technician.

Computing equipment of technicians of AI centers

From all the answers except one, all AI technicians use computing equipment on farm.

The 2 types of equipments (Laptops or PDA) are used. It's difficult to say if one system is more popular than the other one. For example, in France PDA is used about for a third of the services, but this proportion is increasing during the last 5 years. Technicians seems to use only laptop in Finland, and only PDA for Westgen in USA or LIC in New Zealand.

Table 1. type of equipment of AI technicians (employees or freelance)

Structure	Country	AI activity considered	Nb of technician	Freelance	PDA percent[1]	Laptop Percent[1]
A.N.A.F.I.	Italy	2 500 000	1 000		99	
Swissgenetics	Switzerland	922 033	186		95	
CIAQ	Quebec	57 800	205			100
FABA Service Coop	Finland		249			100
ABLN	Portugal	121 690	38		100	
Gencor	Canada		64		98	5
SHIUZ Sp. Z o.o.	Poland	537 720	1 595			
West gen	USA		7	1 200	100	
LIC	New Zealand	3 400 000	900		100	
UNCEIA	France	6 000 000	1 700		35	60
AI Services NI	North Ireland	50 000	30		100	
Genex	USA	2 000 000	400	10	55	25

[1]Percent of activity managed with.

Westgen has the specificity to integrate in his own information system the 1 200 freelancers who are working with their own equipment in western Canada.

The motivations to develop the equipment of the AI technicians are by descending interest for the countries:

1. To reduce processing delay.
2. To improve accuracy of data recording for the genetic system (pedigree-fertility EBV etc).
3. To avoid recording errors.
4. To save overhead or processing costs.

Others items like "To launch semen traceability systems", "To improve management (billing booking etc) at client level" or "To develop services to farmers directly by the organisation or on request of other organisations" are evaluated from different way by the different countries. Some of them is considering it as very important and others countries as below average.

Equipment and specific softwares are used:

1. To record and validate AI by checking against a data base (embedded on the device or remote computer)
2. To print AI forms on farm

With a lower frequency it's used to:

1. To store reproduction records of herds.
2. To match AI data with other data stored in the technician data base (calving, movements of straws)

These tools are also used to manage the semen storage and movements for the technician container only.

There is data exchange between technician's computers for all types of data (technical, financial, trade) with the Central data base of the company. In some situations, technician has a direct access to a central database (national or shared with other structures) different from the company data base for technical data. Exchanges are daily.

In all the situations, AI information participates to 3 types of valorisations: validation by the system processing data for genetic purposes (consistence-integrity….), use for genetic evaluation of fertility, use for parentage recording and pedigree printing.

An additional tool : the automatic reading of the straw

French and The Netherlands are the only two countries using automatic reading at large scale.

In France, the interest of the use of this computing solution is increased by the use of a bare code on the straw to facilitate the identification by automatic reading.

The French AI companies (Semen collecting centres and AI centres) agreed for a common bare code printed on straws consisting of:

- Sire ID (internal ID 5 digits).
- Date (number of days since 1rst of January 2002, 4 digits).
- Batch inside collect of semen (1 digit).

This code is 10 digits long and uses the standard 128C.

The reasons to develop this system were to improve semen traceability at the level of the batch and recording accuracy. It's also a tool to improve efficiency of tools recording AI data, to improve evaluation of male fertility by using ejaculates characteristics and to experiment semen processing methods.

Today about in a third of AI the straw with bare code is read automatically. This proportion is increasing quickly because a larger number of AI centres use now on field bare code readers.

The reading results are very good with about 98% of success with all the types of readers.

With this return of experience, Cattle QualiVet - Group (Witschi , 2006) and ICAR WG AI&RT (Malafosse, 2007) decided to propose a recommendation for a standardisation of bare code on straws. The propose is to propose a unique identification of semen collecting centres (SCC) based on NAAB code data base and a code allocated by ICAR for SCC that not participate in the NAAB program. The structure of the bare code will integrate this Identification of SCC and a free part of 10 digits. This proposal is in progress and a recommendation will be proposed to the general assembly of ICAR.

Computing equipment of breeders practicing do it yourself to manage and exchange AI data

It's very difficult to have sound information regarding the equipment of the DIY breeders and the way of management of AI activity.

In every the country, a part of the services of DIY farmers is notified by paper forms. But exchange of data using specific software's or internet portal is in progress.

Sending of data is less frequent for farmers than for the AI technicians, generally once a month. Data are generally transmitted to regional data base processing any technical records (parentage, milk recording...) or to herd book data base

The use of this information is exactly the same than for the information coming from AI companies (validation by the system processing data for genetic purposes, use for genetic evaluation of fertility, use for parentage recording and pedigree printing).

Conclusion

It should be worth to improve the description of the situation. New answers to the questionnaire are welcomed and the ICAR WG AI&RT will update the summary and publish it at the ICAR web site.

Computing solution using laptop or PDA is now very frequent for AI technicians. The functionalities are very similar except the adaptation of the specific country's legislation or database organisation.

The next steep will be certainly the standardisation of straw identification systems. Bare code is a first good example of the place of ICAR WG AI&RT in this field.

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