

ICAR standards and guidelines on animal identification and performance recording and its role as ISO Registration Authority for RFID

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ICAR introduction

The International Committee for Animal Recording (ICAR) is the worldwide organization for the standardization of animal identification, recording and genetic evaluation. ICAR is based in Rome and was created in 1951. The main goal when ICAR was created was to support technically the rebuild of dairy sector in Europe after the last world war. FAO, established as United Nations Agriculture and Food agency few years before, was supporting the creation of an international group of animal breeders society to share data and expertise.

When ICAR was created the technologies for milk recording were old of almost seventy years. The first dairy performance recordings in USA were in fact done in 1883. The Europeans, to facilitate the exchange of information across countries made a first attempt to internationally standardize milk recording in 1923 during the Paris agriculture fair. Nevertheless, some long discussion, the following economic crisis and the world war delayed the foundation of the European milk/butter recording committee (the real first name of ICAR) till 1951. The early years developments were quite slow, the most important fact happened really in the '60s when the computerized systems were introduced. Certainly the introduction of computer speed up the storage, analysis and exchanges of data. In the late seventies there were the first discussion about international genetic evaluation by a group of people gathered together mainly in meetings in Uppsala University. ICAR was not the only one interested to international genetic evaluation, the European Federation for Animal Science (EAAP) and the International Dairy Federation (IDF) were supporting the creation of a structure allowing the international estimation of genetic values of sires. This structure was named Interbull, located in Uppsala University, and then was decided that should become part of ICAR. Interbull began its activities in 1988. More or less in the same period other species and traits than dairy cattle were introduced in ICAR responsibilities: beef cattle, sheep, goat and buffalo. Since then ICAR established and expand the international role of standard settings and of supporting the activities of breeders all over the world. The most recent introduction was the genomic evaluation by the Interbull centre.

Who does ICAR work for?

The question we want constantly to keep in mind is “whom does ICAR work for?” We work for the farmers. By establishing and finding methods of animal identification, performance recording and genetic evaluation we support breeders organizations worldwide to provide better services to their farmers. ICAR provide information and services to help its member organizations to develop, operate and manage their business. With our activities we intend to promote the benefits of identification, recording and evaluation to increase the demand for the services provided by ICAR member organizations. We finally provide exchange of information through ICAR member organizations so that they can work together to achieve shared objectives. Often technicians of different origin and nationality work together within the same group to achieve the same objective and the exchange of ideas is certainly very useful for the group to reach the goal but also to participants to have different perspectives and new ideas.

We can detail our fields of activities in *i.* identification, *ii.* performance recording (quantity and quality) and *iii.* genetic evaluation (Interbull). The species of our interests are cattle, both dairy and beef, sheep, goats, buffalo and more recently alpaca.

ICAR produces guidelines and standards. They are fully available in our website (www.icar.org) and often printed in a book. The groups of technicians, related to ICAR, update the guidelines constantly by proposing changes and additions to the General Assembly. In such a system that ICAR is always ahead of technical developments in the realm of animal farming. And for this reason our guidelines are widely appreciated. Nevertheless the guidelines and standards provided by ICAR should be applied to local conditions and there is not the intention to force the use of a specific method of performance recording, for instance. ICAR provides in fact the minimum requirements to ensure a satisfactory degree of uniformity of recording and allowing at the same time the maximum flexibility in the choice of methods. Every recording organization is obviously free to determine its particular recording methodology, depending on the local conditions.

ICAR structure

ICAR continues to expand the activities. In the last two fifteen years especially the services increased in quantity and quality. And from a limited group of Europeans and North Americans we can say that ICAR is now really a worldwide organization with 87 Member Organizations from 51 Countries. Certainly the number of countries where ICAR is present is still one quarter of the countries existing in the world. But we can be fully useful with our services where there is an existing animal breeding structure. In many developing countries we have difficulties to make useful our services. For this reason we have a specific group dedicated to developing countries having the objective to facilitate the structure where later the other services can be applied. ICAR works with a group of volunteers. There are around one hundred volunteer technicians and experts who give their time and expertise to ICAR. Those people work in groups, each of them has a chairman who reports to the Board. Currently ICAR has 4 Sub-Committees and 12 Working Groups. Those groups are the backbone of ICAR and without them no activities could be possible.

The difference between Sub-Committees and Working Groups is that the first are permanent and offer a permanent service to our members and the second are not theoretically permanent and their service is mainly to develop guidelines and standards according to the technical development of the field they deal with.

The ICAR Sub-Committee, Interbull, make use of the Interbull centre located, as we described already, in Uppsala University. Currently is the European Union official centre for dairy cattle genetic evaluation. In the Interbull centre the very expert staff provides the international genetic comparison of cattle for productive and for morphology traits. Recently the genomic application has been applied for protein yield and, in spring 2012, will be performed also for milk and fat yield.

Another very important Sub-Committee is the Recording Devices. The role of it is to ensure the acceptable working level of recording devices by testing and approving recording devices depending on their performances. The objective is also to control maintenance and accuracy of approved recording devices. ICAR believes that this activity is very relevant for farmers from all over the world. The knowledge of the production level of every cow in the farm is crucial for a satisfactory herd management. For this reason we recommend to our members to accept, for official recording, the use of milk recording devices that are tested and approved

by ICAR. The tests provided by ICAR has high reputation because of the level of expertise of the reference laboratories and of all the members of the Sub-Committee but also because ICAR is a neutral agency for such tests, meaning that there are not any direct interest in approving or not any device.

Similar activities, but for the identification of animals, is made by the ICAR Sub-Committee on identification. The role of it is to ensure the acceptable working level of identification devices by testing and approving them, as for the recording devices, depending on their qualities and performances. Likewise for recording devices and even more this activity is very relevant for farmers. The proper identification of the animals is essential for herd management, sanitary control and is the base of any efficient activity in the farm. ICAR became, as will be explained later in the document, the registering authority for ISO on radio frequency identification devices.

Another Sub-Committees, the most recently created, is the Milk Analysis SC. The objective of this Sub-Committee is to improve the efficiency and effectiveness of milk testing laboratories. The Sub-Committee also provide an international ring-test to improve the quality of milk analysis on international scale.

Besides the Sub-Committees, ICAR has many working groups. They are: dairy cattle milk recording, animal data recording, genetic analysis, functional traits, milk recording in goats, developing countries, milk recording in sheep, beef recording and evaluation, artificial insemination and relevant technologies, conformation recording, fibre recording and parentage recording. Those groups are made each by a limited group of people, between 4 and 12 and their role is to be a sentinel in the development of technology in their field of expertise. They updated the guidelines and the standards accordingly. They meet more rarely than Sub-Committee, but at least once per year, and they rarely have any financial implications.

Services to members

The standards about identification, performance recording and genetic evaluation are provided by ICAR for supporting animal industry. We believe that those are extremely important to develop the business of our members. ICAR also provide, to achieve the same objectives, any possible way to exchange information and to disseminate. We organize technical workshops. What we also do is to facilitate the networking activity among our members through our meetings, workshops and through working together in our technical groups. Actually our groups are also the most important tool to achieve our goals, like updating with technical developments of our standards and services to members. ICAR also provide international representation and lobbying activities, we interface with the International Dairy Federation, FAO, relevant directorates and functionaries of the European Union, with international scientific organizations and with many other international organizations that are relevant for our member business but that will be difficult to contact directly. Moreover ICAR can have a stronger force in front of the international organization because represents many members having similar, if not really the same, objectives. Another important service that ICAR gives to its member is the possibility to have the international genetic evaluation. ICAR does it through the activities of the Interbull Sub Committee. Dairy traits are evaluated on international basis. Interbull utilizes national or local genetic evaluations of sires to make international indexes. With advanced statistical approaches, data coming from all participating members are utilized to produce tailored evaluation for every single country. With more precise genetic evaluation, every country can increase the

efficiency of their selection scheme. Dissemination activities of ICAR is not done only by the annual meetings or workshops, but also through newsletter that are produced routinely and by technical books that can be downloaded for free.

Services on demand

In recent years, ICAR tried to satisfy other requirements of the members and new services were planned and rendered available. Those service were offered to an additional costs and were therefore offered only to those members requesting. The benchmark service gets together, in anonymous form, performance and structural data of all participating members. Using specific statistical approach, we create and unnamed rank and we will be able to give to every participating member its position in the rank. Every participating member will, therefore, be able to know its position in the rank and know, by comparison with other similar organizations, which service need to be improved. With this service our members will be able to know what to do increase their efficiency. The comparison can be done also nationally, if a group of local agencies within the same national organization will participate. The comparison for the benchmarking is for the performance about services, about customer service, the efficiency, precision and quality of milk laboratory analysis. Data processing is also very important to perform and is a good measure of efficiency and relevance of a recording organization and therefore is part of the benchmark. The financial aspects, overhead, service costs, are also measured in a way that can be compared agencies participating from different countries.

Another important ICAR additional service on demand is the Certificate of Quality. What we offer is a professional supervision and consultancy to asses quality in the activities of the requesting agencies. By this service the agencies know how to improve their services to farmers. Moreover ICAR offer quality of services certification that is different and specific for species, for activities, identification, recording and finally for genetic evaluation.

Another additional service is the Patenting Sentinel and Action Service (PSAS) which is a website offering information on patenting. This site is possible by sharing news among members. ICAR hire an expert to support the service. The expert proposes themes, verifies information and eventually answers to questions. This service is for free.

The future

ICAR gained a relevance worldwide with the importance of its activities to its members and, more general, to animal industry. But in the fast developing world ICAR operates, the possibility to continue to offer important services to members is connected with the ability of updating and improving the activities. For the next years ICAR Board thought that some specific field should be fully considered: health and welfare traits, data exchange and genomic application. Also consideration to new species and types of production will be a crucial point, as the interest of ICAR will go beyond the usual countries of application (Europe, North America and Oceania).

ICAR activity in animal identification sector

The interest of ICAR for animal identification started since the early years of the organization, around sixty years ago. Identifying properly animals is he base for any activities and services supporting herd management and genetic evaluation. Recently the increasing demand for traceability of animals for mainly sanitary reasons and also traceability of food relocated the centre of importance for identification from the herd and the farm to national agencies. But during the many years of ICAR activities we developed a competence that is regarded as very

important to establish national identification system. The vicinity to farmers' necessities is also an important competence belonging to ICAR. ICAR plays also an important role to set the identification standards, being an international organization and the entire animal industry will benefit by utilizing international standards of developing and testing identification devices. The national authorities will benefit by having an international approval that is based on highly reputed technicians and laboratories and also by saving the cost of national tests.

The history of the working of identification devices within ICAR began in the eighties by the creation of a working group on "animal identification and registration". When, more than ten years later the importance of the activity of the group was assessed, the working group was modified into a Sub Committee for "animal identification". Like every ICAR Sub Committee, there has been since then permanent services to our members.

During the following years several contacts with ISO (International Standard Organization) were created and that followed (in 2006) into an agreement in which ICAR became the Registration Authority for ISO on ISO 11784 and 11785 conforming "radio frequency identification devices" and also for this reason ICAR developed independent procedures through which compliance of RFID systems with the standards can be verified.

ICAR always operates technically with volunteer technicians to develop the system. The entire ICAR system operates to guarantee high expertise and full neutral attitude to a delicate issue like this one having many logic commercial interests. The tests are done in laboratories approved by ICAR and known to have the necessary technology and expertise. The laboratories need to use standard test protocols. The reports of the laboratories are sent to the ICAR Sub Committee that independently take the decision based on the laboratory reports. To develop the protocol for testing the RFID, the ICAR Sub Committee worked together with the ISO/SC19/TC working group 3.

Within this agreement with ISO tested hundreds of identification devices and approved most of them certifying therefore their quality to the animal industry worldwide. The list of approved identification device is freely available from ICAR website. The incredible huge amount of visits to our website gave the clear idea about the importance of our activity within animal identification.