
ICAR roles, activities and services related to animal identification and performance recording

A.Rosati

*International Committee for Animal Recording (ICAR),
Via Tomassetti 3, 00161 Rome, Italy*

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 primary reason ICAR was created was to provide technical support to rebuild the dairy sector in Europe following World War II. The Food and Agriculture Organization (FAO), established as the United Nations Food and Agriculture agency a few years earlier, was in support of creating an international group of animal breeders societies to share data and expertise.

When ICAR was created, the technologies for milk recording had been developed nearly seventy years ago. The first dairy performance recordings in USA were performed in 1883. To facilitate the exchange of information across countries, the Europeans first attempted to internationally standardize milk recording in 1923, during the Paris agriculture fair. However, a prolonged discussion period, the following economic crisis, and the world war delayed the foundation of ICAR (initially named the European milk/butter recording committee) until 1951. While the early-year developments were quite slow, the most important milestone occurred during the sixties when the computerized systems were introduced. Certainly, the introduction of the computer accelerated the processes of data storage, analysis, and exchange. In the late seventies, the first discussion about international genetic evaluation took place by a group of people gathered together often during meetings at Uppsala University in Sweden. Other groups joined ICAR in their interest of international genetic evaluation. For example, 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 international network, named Interbull, was located in Uppsala University and its inclusion in ICAR was decided. Interbull began its activities in 1988 which coincided with the introduction of new ruminant species and traits, other than dairy cattle, into ICAR's responsibilities. Since then, ICAR has established and expanded its international role of standardizing and supporting the activities of breeders all over the world. The most recent introduction was the genomic evaluation by the Interbull centre in 2010.

The question which deserves ongoing consideration is "whom does ICAR work for?" The answer is simply the farmers. Through establishing and finding methods of animal identification, performance recording and genetic evaluation, breeders' organizations worldwide are supported to provide better services to their farmers.

Introduction to ICAR

Whom does ICAR work for?

ICAR provides information and services to help its member organizations develop, operate and manage their businesses. The benefits of identification, recording and evaluation are promoted to increase the demand for the services provided by ICAR member organizations. Lastly, an exchange of information through ICAR member organizations is encouraged so they can work together to achieve shared objectives. Often technicians of different origins and nationalities work together within the same group to achieve the same objective.

The fields of activities of ICAR can be defined as:

1. Identification.
2. Performance recording and
3. Genetic evaluation (Interbull).

The species of interest are cattle (both dairy and beef), sheep, goats, buffalo and most recently alpaca.

ICAR produces guidelines and standards, which are fully available on the website (www.icar.org/pages/recording_guidelines.htm) and often printed in book format. These guidelines are constantly being updated by technicians, who collaborate with ICAR, by proposing changes and additions to the General Assembly. As a result, ICAR is always ahead of technical developments in the realm of animal farming, and its guidelines are widely appreciated. The guidelines and standards provided by ICAR should be applied according to local conditions, since no single method may be suitable for all situations. Every recording organization is able to select its particular recording methodology, depending on the local conditions. In fact, ICAR provides the minimum requirements to ensure a satisfactory degree of uniformity, allowing at the same time, the maximum flexibility in the choice of methods.

ICAR structure

ICAR continues to expand its activities. In the last fifteen years, ICAR's services increased in both quantity and quality. What began as a limited group of Europeans and North Americans, ICAR has now become a worldwide organization with 87 member organizations from 51 countries. While ICAR is present only in one quarter of the world, its services can be fully useful wherever there is an existing animal breeding structure. To raise awareness about the usefulness of ICAR services in many developing countries, a specific working group dedicated to such countries was created. Nearly one hundred volunteer technicians and experts contribute their time and expertise to ICAR's work. Volunteers work in groups, whereby each has a chairperson who reports to the Board. Currently ICAR has four Sub-Committees and 12 Working Groups. These groups are the backbone of ICAR and without them, no activity could be possible.

The difference between Sub-Committees and Working Groups is that the first are permanent and offer an everlasting service to members. The latter are theoretically not permanent, and their task is mainly to develop guidelines and standards according to the technical developments in the field they are involved in.

Interbull is one of the ICAR Sub-Committees, and as indicated above its centre is located in Sweden at the Uppsala University. It is the European Union official Reference Laboratory for dairy cattle genetic evaluation. Interbull provides the international genetic comparison of cattle for productive and morphological traits. Recently, genomic evaluation has been performed for protein yield and soon it will be extended to milk and fat yield.

Another important Sub-Committee is the Recording Devices Sub-Committee. Its role is to ensure an adequate working level of recording devices by testing and approving those with acceptable performances. For official recording, ICAR recommends to members to use milk recording devices that are tested and approved by ICAR. The tests available through ICAR have a high reputation due to the level of expertise of the reference laboratories and members of the Sub-Committee, but also because ICAR is a neutral agency for such tests, meaning that it has no direct interest in approving or not any device.

Similar activities are conducted by the ICAR Sub-Committee on identification. Its role is to test identification devices and approve those that meet the required level of quality and performance. This activity is very relevant for farmers, perhaps greater than for recording devices, as the proper identification of animals is essential for herd management, sanitary control and is the base of any efficient activity on the farm. ICAR is the registering authority for ISO on radio frequency identification devices.

The most recently created Sub-Committee is the Milk Analysis Sub-Committee. Its objective is to improve the efficiency and effectiveness of milk testing laboratories. This Sub-Committee also provides an international ring-test to improve the quality of milk analysis on international scale.

In addition to the Sub-Committees, ICAR has many working groups. These 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. Each group is composed of four and 12 people, and their role is to be a sentinel in the development of technology in the field of their expertise. They update the guidelines and standards accordingly. They meet less frequently than the Sub-Committees, but at least once a year.

The standards for identification, performance recording and genetic evaluation are provided by ICAR to guide the farm animal industry, as these variables are extremely important for the business development of members. Additionally, ICAR provides a variety of means to exchange and disseminate information. For example, the organization of technical workshops, the facilitation of networking amongst members through meetings, workshops and our technical groups. The latter is our most important tool for the achievement of ICAR's goals, such as updating technical developments of standards and services to members.

ICAR also provides international representation and lobbying activities; collaborate with the International Dairy Federation, FAO, relevant directorates and functionaries of the European Union, international scientific organizations and many other international organizations relevant to members which may be difficult to contact directly. Another important service that ICAR offers to its members is access to the international genetic evaluation, through the Interbull Sub-Committee. Interbull utilizes national or local genetic evaluations of sires to make international indexes. With advanced statistical approaches, data coming from all participating members worldwide are utilized to produce a tailored evaluation for each country. With more precise genetic evaluation, each country may increase the efficiency of their selection scheme.

Dissemination activities of ICAR is done through annual meetings and workshops, and additionally through newsletters that are produced routinely, and technical books that can be downloaded for free.

Services to members

Services on demand

In recent years, new services were planned and made available, in response to requests of ICAR members. The benchmark service compiles, in an anonymous form, performance and structural data of all participating members. Using a specific statistical approach, an unnamed ranking was created and each participating member receives their position in this ranking. Every participating member is therefore able to know which services he needs to improve, through comparing its ranking with other similar organizations. The comparison can be done nationally as well, if a group of local agencies within the same national organization participate. The comparison for the benchmarking is based on performance of services; e.g. customer service, efficiency of the services provided and precision and quality of milk laboratory analysis. Data processing is a good measure of efficiency and relevance of a recording organization, and therefore it is part of the benchmark. The financial aspects, overhead, service costs, are also measured and can be compared across agencies participating from different countries.

Another important ICAR additional service on demand is the Certificate of Quality. ICAR offers professional auditing and consultancy to assess the quality of requesting agencies' activities, which would help them improve their services to farmers. This quality of services certification is different and specific for each species and activity. Another additional service is the Patenting Sentinel and Action Service (PSAS), which is a website offering information on patenting. This site serves to disseminate news among members. ICAR hired an expert to support this service who proposes themes, verifies information, and eventually responds to questions. This service is offered at no cost.

The future

ICAR gained relevance worldwide thanks to the services it offers to its members and, more generally, to the farm animal industry. However, in the fast developing world where ICAR operates, the possibility to continue to offer such services depends on its ability to update and improve its activities. For the next few years, the ICAR Board is considering to include specific field-like health and welfare traits, data exchange and a genomic application. In addition, the consideration of new species and production systems will be a crucial point, as the interest of ICAR is to expand beyond its typical countries of application (Europe, North America and Oceania).

ICAR activity in the animal identification sector

ICAR's interest in animal identification started since the early years of the organization, nearly sixty years ago. The proper identification of animals is the basis for all activities and services supporting herd management and genetic evaluation. Recently, the increasing demand for traceability of food and animals, mainly for sanitary reasons, resulted in the focus of identification to shift from the herd and the farm, to national agencies. However, during the many years of ICAR activities, a capacity was developed that is regarded as very important to establish national identification system. ICAR, as an international organization, plays an important role to set identification standards, 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 by saving on costs associated with national testing.

ICAR first began working on identification devices in the 1980s, through the creation of the Animal Identification and Registration Working Group. More than ten years later, the importance of the group's activity was assessed, and the working group

became the Animal Identification Sub-Committee. Since then, like every ICAR Sub-Committee, permanent services on this topic have been made available to our members.

After the establishment of the Animal Identification Sub-Committee, several contacts within ISO (International Standard Organization) were established, which materialised into an agreement (2006) in which ICAR became the Registration Authority for ISO on ISO 11784 and 11785 conforming "radio frequency identification devices". For this reason, ICAR developed independent procedures through which compliance of RFID systems with the standards can be verified.

ICAR operates technically with volunteer technicians. The entire ICAR system serves to guarantee high expertise and a neutral attitude. Testing of RFID systems can be sub-divided in conformance tests and performance tests. To develop the protocol for RFID testing, the Animal Identification Sub-Committee worked together with the ISO/SC19/TC working group 3. These tests are done in laboratories approved by ICAR and known to have the necessary technology and expertise. The laboratories reports have to be sent to the ICAR Sub Committee, which takes the final decision of approving or not the tested RFID systems.

Within the agreement with ISO, ICAR has tested hundreds of identification devices and approved most of them certifying therefore their quality to the animal industry worldwide. The list of approved identification devices is freely available from ICAR website. The interest in ICAR's activity within animal identification is evident through the large number of visitors to its specific section of the ICAR website.