The activities of ICAR

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Introduction

ICAR (International Committee for Animal Recording) is the worldwide organization for the standardization of animal recording and productivity evaluation. ICAR is registered in Paris as a non-profit international non-governmental organization, in accordance with French law. The Secretariat, under the direction of the Secretary general, is located in Rome (Italy). The official languages of ICAR are English, French and German.

ICAR history

First animal genealogy registration was performed on horse breeding for military cavalry, about two hundreds years ago. The first dairy performance recording was performed in USA in 1883 when the Holstein-Friesian Association was created. Routine milk recording began in Vejen in the Jutland peninsula (Denmark) in 1895. Denmark was, far ahead of the other countries, adopting milk recording. Between 1910 and 1925 milk recording systems diffused in many countries. The methodology was not yet firmly fixed, however, and there was much controversy over errors due to use of periodic testing as compared to daily tests. Early Attempt to Internationally Standardize Milk Recording was discussed at the International Congress in Agriculture held in Paris in 1923. The International Institute of Agriculture in 1924 listed twenty countries practicing milk recording, with a combined total of 1.8 million cows tested. The same Institute in 1935 updated the list showing that there were thirty-four countries and 4.5 million cows in 285 000 farms. After the Second World War some meetings of European livestock experts together with F.A.O. technicians prospected the unification of a cattle herd book methods. After a gestation period of almost thirty years, the International Organization designed to harmonize milk-recording methods and the “European Milk/Butter Recording Committee” was created. This was the first core of ICAR. The first attempt to introduce early computerized system was done in the early sixties. Milkability recording standards were then introduced in 1963. Further standards of new traits were approved to harmonize recording in each member country, and in 1968 was introduced the importance of recording devices for milk recording accuracy. In 1970 the European Milk/Butter Recording Committee changed itsname in “International Committee for Recording the Productivity of Milk Analysis” (ICRPMA). In 1972 the first studies and relative application of simplified recording

methods were discussed. Later on the ICRPMA enlarge its activities to other types of animal production. In 1982 Beef cattle performance recording was introduced. In early nineties due to many members countries from other continent then Europe and due to inclusion of other traits then milk, a new name was introduced "International Committee for Animal Recording" (ICAR). In 1988 the Interbull became operative as Sub-Committee. All new technological developments are currently sharply changing the traditional methods of milk recording; ICAR activities will change consequently.

Missions of ICAR

One of the ICAR main tasks is to provide information and services to help its member organizations to develop, operate and manage their business. Providing ICAR information and services will promote benefits of recording and evaluation, thereby breeders demand for the services, provided by ICAR member organizations, is consequently increasing. Guidelines and standards ICAR not only facilitate the provision of services, but also help the exchange of information by member organizations both nationally and internationally. Furthermore ICAR is a body through which member organization can work together to achieve shared objectives.

ICAR today

The associated members of ICAR are fifty-seven from forty-five countries. Technical activities are performed through technicians participating to three Sub-Committees, one Task Force and twelve Working Groups. While Sub-Committees are permanent and give a specific service to ICAR members, the working groups are formed for a specific mission and mainly when the purpose is fulfilled the group ceases the activity. Every technician, about one hundred, participate and work voluntarily in the Sub-Committees, Task Force and working groups, to fulfill ICAR objectives.

The oldest and probably the most known Sub-Committees is "Interbull", whose main goal is to develop international comparison for dairy cattle. The other two Sub-Committees are "Meters and Jars", for testing, approving and controlling recording devices, and "Identification", for testing, approving and controlling identification devices.

The task force named "Development Fund" works to expand ICAR activities beyond developed countries. Such activity is very important, not only to enlarge the membership of ICAR but because the introduction of animal production recording helps rural developments in particular areas of developing countries. For this reason ICAR task force often cooperates with international organizations, as FAO, which are active in developing countries.

The ICAR Working Groups are twelve. The "Quality Assurance" working group was established in 1998 to develop standards and guidelines for ensuring proper features of animal recording for each member

organizations. The “Lactation Calculation Methods” goal is to identify the accurate estimation procedures for obtaining the lactation yield. The “Animal Data Recording” helps to develop industry standard data model for animal recording and also to establish protocols for farm data management. The “Functional Traits” is a group recently establishes (1998) to stimulate development of functional traits recording. The group began working with five traits but the goal is to give standards for more traits.

“Milk Testing Laboratories” working group serves to improve efficiency and effectiveness of milk testing laboratories. A relevant coordination among all participating laboratories was established to homogenize accuracy level of analysis. The “Milk Recording in Goats” group was established in 1990 to ensure milk recording standards for goats. This group is particularly useful for Mediterranean countries where goat breeding is wide spread. The year after, in 1991, the “Milk Recording in Sheep” was formed to fulfill the same objectives of the goats group, but for sheep. The “Milk Recording of Buffalo” acts like the two previous groups, with the difference that buffaloes are bred in a partially different environment that is mainly Asian and European countries. Dairy buffaloes are bred in a belt that goes from Italy, in the west, to India in the east.

The working group of “Beef Performance”, established in 1982, is one of the oldest and traditionally, one of the more active especially because the subject to cover is very wide. The group acts to facilitate beef recording development. The “Artificial Insemination and Relevant Technologies” is active to improve data collection associated with artificial insemination and with all linked technologies. To stimulate recording of conformation traits in each breeds and species was recently created the “Conformation Recording” working group. A different industry, very important in the Southern hemisphere, but also somewhere in the Northern, is the lamb meat, as well as the animal fiber. Thus in the year 2000 was decided to establish the “Sheep Meat, Fiber and Reproduction Traits Recording” to develop guidelines and standards for meat, fiber and reproduction traits in sheep.

What ICAR provides

ICAR services, programs and activities assist each member in developing a sound basis for rules and legislation relative to animal production industry. The international goal of ICAR services is to promote uniformity of animal recording and genetic evaluation practices. Services mainly consist in furnishing technical information for each single aspect of animal performance recording for each trait of cattle, goats, sheep and buffaloes. ICAR do not deal with poultry and swine industries. Just recently began to consider the possible implication in performance recording of horse breeding. About genetic evaluation, ICAR, through its Sub-Committee Interbull, renders available not only the international performance recording standards, but also the international guidelines of genetic evaluation. ICAR also provides newsletter with on-going research,

standards development, technical meetings and everything else related to activities of “ICAR groups”. There have been already five numbers of ICAR technical Series that mainly are proceedings of workshops organized by ICAR to develop animal recording industry. Furthermore ICAR organizes biennial technical meetings that are considered an essential rendezvous for all technicians related to the animal industry activities. In the last meeting held in Bled (Slovenia) in May 2000, more than 400 technicians participated to the meeting. The proceeding of the meetings are also very interesting giving a “state of the art” of animal recording around the world.

Performance recording activities

Both the international agreement of recording practices and the ICAR guidelines represent minimum requirements to ensure a satisfactory degree of uniformity of recording and maximum flexibility in the choice of methods. In other words ICAR tries to homogenize the recording activities methodologies among different countries and breeding types ensuring a minimum level of recording accuracy. Furthermore ICAR wants to inform its members what type of recording methodology is applied for each species in each member country. Each record should be a true indication of the identity, sex, breed, ancestry and date of birth of the recorded animal. Recording organization is, of course, free to decide the particular recording methodologies provided agreement with ICAR rules. The recording organization has a wide range of type of recording among which to choose the one that best fits with the local animal industry conditions.

The used identification device systems must have specific technical requirements ensuring accuracy and trustworthiness of collected data. ICAR manages testing and, eventually, approving of the identification devices. Approval is needed to utilize the device for official recording used in herd book keeping. All ICAR member organizations are obliged to use, for official recording, only approved identification devices. Tests for identification device are conducted following detailed testing procedure in specific laboratory test centers cooperating with ICAR. As for identification devices, also recording device systems must fulfill minimum technical requirements for milk yield measurement and for obtaining a correct milk sampling. All milk yield records must be taken by an approved recording device. Recording devices are tested by one of the ICAR six test centers, specialized in milking devices that are currently working in cooperation with ICAR. The test centers are located in Denmark, France, Germany, Italy, the Netherlands and USA. If the test of the recording devices is positive the milk meter can be approved by the relevant ICAR Sub-Committee and by the ICAR Board, so that the recording device can be used for official performance recording.

The recording standard method adopted by ICAR is the A4, that is, one day of recording on the average every four weeks. Recording can be done at one or more milkings of the day. The standard method observes both milkings of the recording day. Only ICAR approved devices can be used

to guarantee correctness of sampling. Milk samples should represent the production of the twenty-four hours milking period. Once the records are obtained for the day milk yield and milk composition, the total lactation yield in milk, fat and protein shall be calculated by using one of the methods described in the ICAR guidelines. Only ICAR approved lactation periods can be considered. Results publication should also be done by an approved method to furnish a true indication of an animal's performance. Only member organizations are allowed to produce and distribute the parentage and genetic merit official records and certificates.

ICAR recording practices rules

ICAR is currently revising the general rules of animal performance recording, to adjust the complete body of rules to the new technological developments and to the modifications expressed and approved in the last years. The complete book of rules is currently available in the ICAR web site. It is divided in several chapters, each one dealing with a different subject of animal performance recording, like methods of identification, parentage recording methods, methods of recording, performance individual certificates, supervision of recording, registration of recording methods, general milk recording rules, recording intervals, symbols used on records, methods of lactation calculation, lactation period, missing results and abnormal intervals.

Besides the general chapters, ICAR rules have more specific chapters as the special recording rules for milk recording for dairy sheep and the rules for milk recording for goats. When, in 1982, ICAR began to deal to other than dairy traits, then recording standards for meat recording, or beef performance recording, were issued. Therefore the beef traits, as other production traits, have specific chapters in the book. Conformation recording of cattle is also contemplated, but at the moment only for black and white cattle. The book also will consider the fertility traits recording rules in cattle as well as the health recording and other non-productive traits recording.

More specific aspects of animal recording are also tackled as data definitions and data transfer. The list of breed for cattle and semen straw identification is the chapter tied to the activities of the working group "Artificial Insemination and Relevant Technologies". "Interbull" instead should manage the chapter relative to methods of genetic evaluations in cattle. Approval of test centers, devices and equipment approval and checking of milk recording equipment belong to the rules assuring a correct working level of the recording devices to utilize for official milk recording as milk meters and jars. Regarding the identification system devices there is a chapter about equipment electronic identification guidelines for transponder injects and attachments.

Technological development

ICAR is recently tackling many technological developments and the most important effort that is currently trying to fulfill is to keep up-to-date standards and services. Electronic recording devices, for instance, are rendering possible to store data in a more efficient way than in the past. Such electronic devices also reduce working-time for every recording activity and increase accuracy of recorded milk yield. In presence of the automatic milking systems cows are milked without the presence of an operator, therefore new technique of data collecting and storing is required. Milk samples collection seems to be the main issue for herds with a milking robot.

With the new electronic identification systems the animals identification procedure is easier and the identification systems are often more durable and resistant. Such systems are quite frequently connected with a farm computer system. In fact farm computer systems connect together advanced technological devices as electronic identification system, electronic milk meter and, whenever present, automatic milking system. The main purposes for a well-equipped farm computer system are: herd management and milk data recording. The already available new computer technologies allow a more efficient data management for data recording, as well as the Internet application for data transferring to and from farms, data management centers, milk laboratories, etc. New devices for milk analysis and conformation recording, that are already in the market, will sharply change the animal recording system. The devices are, for example, new milk analyzers for fat, protein, protein fractions, somatic cells, urea, etc., as well as, ultrasound scanner, photogrammetry and other devices to better get conformation records.

Planned future of ICAR and milk recording

The fast development of animal industry renders uneasy to keep up-date ICAR activities. Nevertheless, all institutional bodies, Board, sub-committees and working groups, are working to reach this goal. Among the many new aspects nowadays present in animal industry there are new traits to consider, both productive and non-productive, as health traits, reproduction traits, conformation traits, fiber, etc. In the future ICAR will need to give more efforts to species, traits and type of recording more specifics to countries potentially new ICAR members, like some developing or South American countries. To reach this goal ICAR organizes, often jointly with FAO and other relevant organizations, workshops related to specific animal production recording problems in definite environments.

Nowadays ICAR delivers to its member organizations interesting information about current animal industry and recording systems. Annual inquires of milk and beef performance recording are produced. Every two years there is the ICAR General Assembly; the proceedings of the technical meetings, held during the General Assembly, are issued having title “Performance Recording of Animals”. To achieve delivering of important information relative to development of animal production and recording

ICAR also sponsors books belonging to a technical series. At the moment five books have been issued: “International workshop on animal recording for smallholders in developing countries”, “Cattle identification and milk recording in central and eastern European countries”, “Developing breeding strategies for lower input animal production environment”, “Animal recording for improved breeding and management strategies for buffaloes” and “The role of the state and breeders’ organization in animal identification and recording in central and eastern Europe”. Another book is going to be published in few months, regarding “Automatic milking systems and their impact on animal recording”. Another interesting publication is the “Interbull Bulletin“ and above all the “Interbull” meetings proceedings. ICAR plans to increase the information activity. The ICAR Web site (*www.icar.org*) is already active. Specific space for each sub-committees, task force and working groups will be organized. At the moment only some groups, on a pilot basis, are available. Most of the publications, among which those books belonging to Technical Series, are available on-line. Technical information about approved recording and identification devices are also available on line, to inform world-wide which devices can be used to perform official records. Among the increased amount of information that will be delivered in the future there is the new edition of the Newsletter, which will be issued three times per year. The Newsletter contains information on recent activities, on-going research, performance recording standards development, technical and scientific meetings, vacancy announcements, etc.

Besides the improvement of information delivery ICAR plans to increase other types of services. The massive development of technology relative to animal production recording promotes also the firm request to reduce recording costs. Farmers wish to acquire more and more immediate information from data management centers, and from recording organizations. ICAR will give new and different service to its members also for the model of organizations is sharply changing: different organizations, often private companies, became recently members, as well as organizations from countries that are new for the “ICAR world”. The benefits of recording requested by ICAR member are going beyond genetic progress, in fact improvement in herd management is often considered, by breeders, the biggest and most immediate benefit of herd recording.

The main ICAR mission remains to assist members to develop a sound basis for rules and legislation relative to animal production industry. Working together and sharing experiences with technicians coming from worldwide animal breeding conditions is also a very important benefit of each expert participating to ICAR activities.