
Annex 1. Working documents

No performance recording activity is feasible before the implementation of an identification and registration system which must be accepted and followed by all farmers who participate in the recording programme and where each animal can be uniquely and always recognised.

The identification and registration system has to register all farms and all animals, all movements of animals and trace back of individual animals. Only a few countries worldwide have a national identification and registration system covering all animals. Many identification methods are possible:

eartag, tattoo, earnotching, branding, paint marking, transponders (injectable, eartag and bolus).

In order to help implementation of animal identification systems, the major points of the on-going regulations on identification devices (ICAR International Agreement of Recording Practices, Section 11 and EU Regulation 820/97) are reported below.

The International Committee for Animal Recording is responsible for registration systems used in animal recording which include individual animal recognition through reliable permanent identification devices.

SECTION 1 - APPENDIX A OF ICAR INTERNATIONAL AGREEMENT OF RECORDING PRACTICES: METHODS OF IDENTIFICATION

Basic Principles

1. The recorded animal identity, must be the official identity of the animal in the member country and must be unique to that animal.
2. Where the identity of an individual animal is not unique, the record must so state (e.g. flock identities for goats/sheep). The identity number used for a flock or herd must be unique for that flock or herd.
3. The animals' identity must be visible.
4. The animals' identity should be unique and never be re-used.
5. The animals' identification device/method, must comply with legislative requirements.

Animal identification

ICAR regulations on animal identification

Additional Details

- a) The animals' identity number may be attached to the animal by a tag, tattoo, sketch, photo, brand or electronic device.
- b) Animals which lose their identity device must be re-identified and wherever possible, with their original number, provided that there is evidence that the animal is being correctly identified (where this is not possible, a cross reference to the original number must be maintained).
- c) Animals moving from one member country to another should, wherever possible, continue to be identified using their original identity number and name.
- d) In the case of imported animals, where the number has to be changed, the official records should also show the original number and name. The original number and name must be reported in Export Certificates, AI Catalogues and in catalogues of important shows and sales.
- e) Where an animal is identified using an implanted 'electronic device, the animal must be marked in a way which indicates the presence of an "electronic identification" device.

Record of identification methods

- a) The member organization must maintain a record of the approved identification methods used in the member country.
- b) The member organization must determine, within the constraints of the member country legislation, the identification methods to be used on recorded animals and herds or flocks.

Standard Identities

The animal identity number will be a maximum of 12 digits (including check digits where used) and the ISO country code shall be added to identify the country of origin. Three digit numeric ISO codes must be used for data transfer and storage. In printed documents the ISO alpha country code should be used.

SECTION 11 - PERFORMANCE EVALUATION AND APPROVAL OF OFFICIAL PERMANENT IDENTIFICATION DEVICES (DRAFT)

Permanent identification devices are divided into two categories: simple identification devices such as conventional plastic or metal eartags, which may have machine readable symbology and electronic identification devices like RFID transponders and the corresponding transceivers.

Definitions concerning conventional permanent plastic eartags with or without machine readable printings.

Eartag

An eartag is composed of two or three principal elements:

- the front plate, which constitutes the so-called female part;
- the rear plate, which, when it includes the pin in the case of an eartag composed of two elements, constitutes the male part;

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- the pin, which constitutes the male part in the case of an eartag composed of three elements.

Manufacturer

The company or person that submitted the application or the approval of an eartag and accepted the conditions of ICAR for the control of production.

Reference colour

The colour of the eartags used in the laboratory tests is yellow with black printing. For field tests, the colour is the official colour used in the country in which the test takes place.

Reference eartag

The eartag model is used to show that test conditions on each farm are acceptable. Reference eartags are chosen by ICAR from among the models that have already been approved.

The Subcommittee on Identification of ICAR proposes a procedure for testing the performance and reliability of identification devices considering:

- ease of application and use;
- efficiency of animal recognition;
- durability and tamper-proof quality;
- issue of animal welfare.

The approval procedure is composed of different parts:

- a phase of formal application by the manufacturer where he undertakes to fulfil different requirements and provides technical information concerning the test product;
- a phase of laboratory tests;
- a phase of preliminary field tests, which can lead to provisional approval;
- continuation of the field test that can lead to full approval.

Further details of ICAR regulations and updating are available at www.icar.org

The establishment of the Single Market in the EU and the implications for intra-communitary and other international trade has made EU regulations a very important tool to be known, both in the EU countries that must implement the legislation at national level without any change and for the non-EU countries that want to export livestock into EU countries.

EU regulations for cattle identification are included in the Council Directive 820/97, in force since 1.07.1997.

EU regulations

These regulations state that today cattle and buffalo can only be identified by eartags in the European Union (EU); however, it is foreseen that transponders can be used from 2001 in national programmes.

The articles and paragraphs of the mentioned regulation 820/97 that are relevant to animal identification for performance recording purposes are listed below.

COUNCIL REGULATION (EC) No 820/97 of 21 April 1997 establishing a system for the identification and registration of bovine animals and regarding the labelling of beef and beef products.

*Title I - Identification
and registration of
bovine animals*

Article 1

1. Each Member State shall establish a system for the identification and registration of bovine animals (hereinafter referred to as 'animals'), in accordance with this Title.
2. This Title shall apply without prejudice to Community rules for disease eradication or control purposes and without prejudice to Directive 91/496/EEC and Regulation (EEC) No. 3508/92. However, those provisions of Directive 92/102/EEC which relate specifically to bovine animals shall no longer apply from the date on which those animals must be identified in accordance with this Title.

Article 2

For the purposes of this Title:

- 'animal' shall mean a bovine animal within the meaning of Article 2 of Directive 97/12/EC;
- 'holding' shall mean any establishment, construction or, in the case of an open-air farm, any place situated within the territory of the same Member State, in which animals covered by this Regulation are held, kept or handled;
- 'keeper' shall mean any natural or legal person responsible for animals, whether on a permanent or on a temporary basis, including during transportation or at a market;
- 'competent authority' shall mean the central authority or authorities in a Member State responsible for, or entrusted with, carrying out veterinary checks and implementing this Title or, in the case of the monitoring of premiums, the authorities entrusted with implementing Regulation (EC) No.3508/92.

Article 3

The system for the identification and registration of bovine animals shall comprise the following elements:

- a) eartags to identify animals individually;
- b) computerised databases;
- c) animal passports;
- d) individual registers kept on each holding.

The Commission and the competent authority of the Member State concerned shall have access to all information under this Title. The Member States and the Commission shall take the necessary measures to ensure access to this data for all parties concerned, including consumer organizations which have a particular interest or which are recognised by the Member State, provided that the data confidentiality and protection prescribed by national law are ensured.

Article 4

1. All animals on a holding born after 1 January 1998 or intended for intra-Community trade after 1 January 1998 shall be identified by an eartag approved by the competent authority, applied to each ear. Both eartags shall bear the same unique identification code which makes it possible to identify each animal individually together with the holding on which it was born. By way of derogation from the above requirement, animals born before 1 January 1998 which are intended for intra-Community trade after that date may be identified in accordance with Directive 92/102/EEC until 1 September 1998. By way of further derogation from the above requirement, animals born before 1 January 1998 which are intended for intra-Community trade after that date with a view to immediate slaughter may be identified in accordance with Directive 92/102/EEC until 1 September 1999. Bulls intended for cultural and sporting events (with the exception of fairs and exhibitions) may, instead of by an eartag, be identified by an identification system offering equivalent guarantees that have been recognised by the Commission.
2. The eartag shall be applied within a period to be determined by the Member State as from the birth of the animal and in any case before the animal leaves the holding on which it was born. That period may not be longer than 30 days up to and including 31 December 1999 and not longer than 20 days thereafter. However, at the request of a Member State and in accordance with the procedure referred to in Article 10, the Commission may determine the circumstances in which Member States may extend the maximum period. No animal born after 1 January 1998 may be moved from a holding unless it is identified in accordance with this Article.
3. Any animal imported from a third country which has passed the checks laid down in Directive 91/496/EEC and which remains within Community territory shall be identified on the holding of destination by an eartag complying with the requirements of this Article, within a period to be determined by the Member State of at most 20 days of undergoing the aforesaid checks and in any event before leaving the holding. However, it is not necessary to identify the animal if the holding of destination is a slaughterhouse situated in the Member State where such checks are carried out and the animal is slaughtered within 20 days of undergoing the checks.

The original identification established by the third country shall be recorded in the computerised database provided for in Article 5 or, if this is not yet fully operational, in the registers provided for in Article 3, together with the identification code allocated to it by the Member State of destination.

4. Any animal from another Member State shall retain its original eartag.
5. No eartag may be removed or replaced without the permission of the competent authority.
6. The eartags shall be allocated to the holding, distributed and applied to the animals in a manner determined by the competent authority.
7. Not later than 31 December 2000 the Council, acting on the basis of a report from the Commission accompanied by any proposals, shall decide on the possibility of introducing electronic identification arrangements in the light of progress achieved in this field.

Article 5

The competent authority of the Member States shall set up a computerised database in accordance with Articles 14 and 18 of Directive 97/12/EC.

The computerised databases shall become fully operational no later than 31 December 1999, after which they shall store all data required pursuant to the aforementioned Directive.

Article 6

1. As of 1 January 1998 the competent authority shall, for each animal which has to be identified in accordance with Article 4, issue a passport within 14 days of the notification of its birth, or, in the case of animals imported from third countries, within 14 days of the notification of its re-identification by the Member State concerned in accordance with Article 4 (3). The competent authority may issue a passport for animals from another Member State under the same conditions. In such cases, the passport accompanying the animal on its arrival shall be surrendered to the competent authority, which shall return it to the issuing Member State.

However, at the request of a Member State and in accordance with the procedure referred to in Article 10, the Commission may determine the circumstances under which the maximum period may be extended.

2. Whenever an animal is moved, it shall be accompanied by its passport.
3. By way of derogation from the first sentence of paragraph 1 and from paragraph 2, Member States:
which have a computerised database which the Commission deems to be fully operational before 1 January 2000 in accordance with Article 5, may determine that a passport is to be issued only for animals intended for intra-Community trade and that those animals shall be accompanied by their passports only when they are moved from the territory of the Member State concerned to the territory of another Member State, in which case the passport shall contain information based on the computerised database.

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- In these Member States, the passport accompanying an animal imported from another Member State shall be surrendered to the competent authority on its arrival which may, until 1 January 2000, authorise the issue of collective animal passports for herds moved within the Member State concerned provided that such herds have the same origin and destination and are accompanied by a veterinary certificate.
4. In the case of the death of an animal, the passport shall be returned by the keeper to the competent authority within seven days after the death of the animal. If the animal is sent to the slaughterhouse, the operator of the slaughterhouse shall be responsible for returning the passport to the competent authority.
 5. In the case of animals exported to third countries, the passport shall be surrendered by the last keeper to the competent authority at the place where the animal is exported.

Article 7

1. With the exception of transporters, each keeper of animals shall:
 - keep an up-to-date register;
 - report to the competent authority, once the computerised database is fully operational, all movements to and from the holding and all births and deaths of animals on the holding, along with the dates of these events, within 15 days and as from 1 January 2000, within seven days of the event occurring. However, at the request of a Member State and in accordance with the procedure referred to in Article 10, the Commission may determine the circumstances in which Member States may extend the maximum period.
2. Where applicable and having regard to Article 6, each animal keeper shall complete the passport immediately on arrival and prior to departure of each animal from the holding and ensure that the passport accompanies the animal.
3. Each keeper shall supply the competent authority, upon request, with all information concerning the origin, identification and where appropriate, destination of animals which he has owned, kept, transported, marketed or slaughtered.
4. The register shall be in a format approved by the competent authority, kept in a manual or computerised form and be available at all times to the competent authority, upon request, for a minimum period to be determined by the competent authority but which may not be less than three years.

Article 8

Member States shall designate the authority responsible for ensuring compliance with this Title. They shall inform each other and the Commission of the identity of this authority.

Article 9

Member States may charge to keepers as referred to in Article 2, the costs of the systems referred to in Article 3 and of the controls referred to in this Title.

Article 10

The Commission shall adopt detailed rules for the implementation of this Title in accordance with the procedure laid down in Article 13 of Regulation (EEC) No 729/70. These detailed rules shall cover in particular:

- a) provisions concerning eartags;
- b) provisions concerning the passport;
- c) provisions concerning the register;
- d) minimum level of controls to be carried out;
- e) application of administrative sanctions;
- f) transitional provisions for the start-up period of the system.

The full text of EU Regulation 820/97 is available at <http://europa.eu.int/eur-lex>

**Methods of
recording
performances**

SECTION 1. APPENDIX C OF ICAR INTERNATIONAL AGREEMENT OF RECORDING PRACTICES

1. The ICAR Agreement under Section 6 allows organizations a degree of freedom in deciding recording practices.
2. For each type of recording the predominant traits being recorded shall be used to determine the appropriate ICAR method classification.

Method A.

All the recordings are undertaken by an official representative of the Recording Organization. This includes recordings undertaken by approved on-farm systems that are supervised by an official representative of the recording organization and that cannot be manipulated by the farmer or his nominee;

or

Method B.

All the recordings are undertaken by the farmer or his nominee;

or

Method C.

The recordings are undertaken by the farmer or his nominee and by an official representative of the Recording Organization.

3. For official records an ICAR approved supervisory system must be maintained and check data regularly documented to provide authentication for the records.
4. ICAR Members must ensure that any of their associate recording organizations fully comply with ICAR approved recording methods and practices.

SECTION 1. APPENDIX D OF ICAR INTERNATIONAL AGREEMENT
OF RECORDING PRACTICES

**Individual
animal
certificates**

Basic Principles

1. An official certificate must contain all the information essential to establishing the identity and value of an animal.
2. An official certificate must clearly indicate the recording methods used to produce the official record.
3. An official certificate must contain the latest information available on the date of issue.
4. Where any 'estimated' information is included in an official certificate, this must be clearly indicated.

The following details must be reported:

- a) The ICAR member organization issuing the certificate.
- b) The date of issue of the Certificate.
- c) The identity number and name of the animal.
- d) The animal's "original number" and name, if different.
- e) The name of the register in which the record is held.
- f) The date of birth of the animal.
- g) The identity and names of the animal's sire and dam and of its grand sires and grand dams.
- h) The breed of the animal, or in the case of cross-bred animals, the main breed percentages in the animal's breeding.
- i) The sex of the animal.
- j) The animal's genetic evaluation.
- k) The animal's records of production.
- l) The animal's type classification evaluations.
- m) That the animal is a known carrier of a genetic defect, defined by the International Breed Federation concerned.
- n) Any events which have significantly affected the animal's records e.g. Alpage, sickness and hormonal treatments.
- o) The location of the animal on the date of the last recording.
- p) The methodology used in the production of the record, where this is other than the Reference Method.

The following details may be reported:

- a) The name and address of the breeder of the animal.
- b) The date of the animal moved to the present location, if other than the date of birth.
- c) The date of commencement and the end date for each period production record.
- d) The events which started and ended each production period.
- e) The individual recording day production records.
- f) Any health event recorded for the animal.
- g) The dates and service sire of any recorded services.
- h) The identity and sex of any progeny of the animal.
- i) If the animal has been flushed to produced ova, the flushing dates and the number of viable ova collected.

- j) If the animal has been used as a ‘recipient’ following ET, the date of transfer, the genetic sire and dam of the embryo and the sex of the embryo.
- k) The fertility records of the animal, including its current fertility status.
- l) Additional trait records and evaluations, such as milkability and locomotion scores.
- m) The death of the animal.
- n) The number of true recordings (no missing values) contained in the record for each production period.

Milk recording

Symbols used on records

Two milkings per recording day is the reference method.

Recordings other than by the reference methods must be indicated using the appropriate following symbols:

Number of milkings per day	Symbol
Once a day milking	1 x
Three milkings	3 x
Four milkings	4 x
Continuous milking (e.g. robotic)	R x
Regular milkings not at the same time on each day (e.g. 10 milkings per week)	1.4 x
Animals that are both milked and suckled	S x
Where the herd is recorded at one milking at one recording visit and a different milking at the next recording visit	T
Where the herd is recorded at the same milking at one recording visit	C

Method for lactation calculation (A4)

Milk recording intervals

The A4 method is the only method at present applied for milk performance recording in buffalo to obtain the official ICAR stamp. According to this method, the acceptable interval between recordings is a maximum of 33 days (average of all recording intervals in the lactation).

The A6 method (acceptable interval between recordings is a maximum 46 days) was proposed to ICAR in the International Agreement for Milk Recording in Buffalo (June 1999).

For simplified methods, refer to Section 2.1 of ICAR International Agreement of Recording Practices at www.icar.org

General rules (A4)

- Milk recordings must be effected during the whole lactation;
- official lactation starts the day after the calving date;

- first milk recording cannot be performed before the 5th and after the 75th day of calving;
- interval between two recordings must be minimum 26 days and maximum 33 days;
- for justified reasons, only one interval up to 75 days (but not longer) can be accepted in each lactation; if this longer interval reaches 100 days, the lactation can be calculated but mention of the irregular recording must be done;
- when at the recording visit, the animal is found to have dried-off, the date of the dry-off of that animal is fixed at 14 days after the date of the last milk recording when still in milk;
- in case the animal is found to have dried-off after the longer recording interval (33-75 days), the milk recorder is requested to ask the farmer the effective date for the dry-off. If the effective date falls within 30 days from the last recording, the date of the dry-off of that animal is fixed at 14 days after the last recording; otherwise, it is fixed at 44 days after the date of the last milk recording when the animal was still in milk.

Calculation of lactation production:

- Partial production from calving to first milk recording: multiply milk production at first recording by the number of days from calving to first recording.
Example: date of calving 25 March; date first recording 6 April; milk production on 6 April: 8.2 kg. Therefore, partial production from calving to first milk recording = 8.2 kg x 12 days = 98.4 kg.
- Partial production during all milk recordings: multiply the average milk yield of two subsequent recordings by the interval between the two recordings.

Example:

Date of recording	Interval	Milk yield kg	Average kg milk of two subsequent recordings	Total yield of two subsequent recordings kg
6 April		8.2		
6 May	30	12.5	10.3	309.0
5 June	30	14.6	13.5	405.0
7 July	32	15.5	15.0	480.0
2 August	26	10.0	12.7	330.2
30 August	28	7.0	8.5	238.0
Sum				1 762.2

- c. Partial production from last milk recording to dry-off day: multiply milk production at last recording by the number of days from last milk recording to dry-off:
- 1) The date of milk recording when the animal is found to have dried off is 25 September: multiply milk production of last recording by 14 = $8.5 \text{ kg} \times 14 = 119 \text{ kg}$.
 - 2) The date of milk recording when the animal is found to have dried off is 10 October: multiply half of the milk production of last recording by 44 = $4.25 \text{ kg} \times 14 = 187 \text{ kg}$.
- Total lactation production is given by the sum of partial lactations (a) + (b) + (c).
Therefore:
Case 1: animal found to have dried-off on 25 September: $98.4 + 1\,762.2 + 119 = 1\,976 \text{ kg}$
Case 2: animal found to have dried-off on 10 October: $98.4 + 1\,762.2 + 187 = 2\,044 \text{ kg}$

Lactation duration

For buffalo, as for cattle, two lactation durations and corresponding milk production are reported for each animal on the lactation certificates and on the various publications:

- total lactation production;
- standard lactation production.

Total lactation production is the milk effectively produced by the animal during all the days it has been milked.

Standard lactation production is the milk effectively produced by the animal during a number of days corresponding to the average lactation duration of the buffaloes in that country.

Standard lactation duration is fixed by each country or recording organization.

Standard lactation production is useful to compare production of different animals having different lactation duration.

Calculation of the standard lactation production:

- partial lactation (a) and (b) are calculated as for the total lactation production;
- partial lactation (c) is calculated as for the total lactation production if the date of the dry-off falls before the fixed number of days for standard lactation.

Otherwise, if the animal is still in milk at the recording following the end of the fixed standard lactation duration, the average milk production of the two recordings (before and following the standard end of the lactation) is multiplied by the number of days from the recording before the standard end to the date of the standard end.

Standard lactation production must be equal to or lower than total lactation production, never higher.

(Draft agreed by the ICAR member countries of the ICAR WG on Buffalo Recording, June 1999)

Purpose

Milk recording in buffalo concerns:

- milk yield produced in lactation;
- fat content (optional);
- protein content (optional).

Organisation in charge

Milk recording is supervised in every country by the ICAR member organization. This organization is responsible for:

- preparing sheets and books for data collection;
- processing the data;
- printing of the lactation certificate;
- publishing an annual report;
- supervising all activities in the farm and in the offices.

Farmers' duties

The farmer wanting to participate in milk recording must:

- accept the regulations of the recording organization of his country;
- identify his buffaloes with the required method (uniquely numbered eartag);
- milk record all buffalo of the herd.

Technicians

The milk recording activity is performed by trained technicians who have the following tasks:

- provide all new-born calves with the identification mark within the established deadline;
- perform monthly recording;
- register inseminations, calving, deaths.

Milk recording

- milk recording has to be carried out during the whole lactation;
- milk recording has to be carried out on all the buffaloes of the herd;
- milk yield must be registered;

International agreement for milk recording in buffalo

- fat and protein percentage can be determined;
- standard lactation duration is established in 270 days; in any case, also total lactation duration and production must be indicated for all buffaloes;
- lactation starts on the first day after the day of calving;
- the first milk recording cannot be performed before the evening of the seventh day after calving;
- interval between two tests should be either 28-33 days (A4 method) or 38-46 days (A6 method). The method should be chosen by the farmer and must cover all buffaloes during the whole lactation. The method must also be stated in the documents in which the lactation records are reported;
- due to proved and justified reasons, one record in one lactation can be skipped, provided that the number of days between two consecutive records does not supersede 75; in case the skipped record is the first, it must be performed no later than the 60th day from calving;
- the milk record must be performed on all 24 hours milkings of the recorded herd; time at which record is performed must be registered; if necessary according to the opinion of the technician, another record will be performed at milking before those officially recorded;
- milk yield can be expressed either in kg or in litres;
- milk must be weighed on a scale with sensitivity of at least 250 g or volumetrically with calibrated measures. Milk meters and recording jars can be approved by the ICAR member organization of each country after appropriate trial. Results of the trial will be sent to ICAR. Approved milk meters and recording jars as well as the country in which they were approved are indicated in the appendix of the present regulations;
- in case fat/protein contents are determined, samples must be collected from all buffaloes and for the whole recording duration. Samples may be taken by any of the following methods:
 - a) a sample for each milking;
 - b) a proportional composite sample for all milkings within the 24 hour test period;
 - c) alternate (i.e. am/pm) samples on consecutive sampling days;
 - samples must all be added with the allowed preserving drug according to the analysis system used;
 - milk analysis must be performed no later than four days from the day of recording;
 - methods for the analysis of milk components are the official ones approved by ICAR for cattle.

Data processing

The following items will be registered and considered in the data processing:

- age at calving;
- date of calving and calving number;
- days open;

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- days of lactation;
 - number of milkings in 24 hours;
 - diseases during the recording;
 - lactation yield is calculated using the Fleischmann method;
 - calculation of fat yield (kg) and protein yield (kg) will be done in the same way as for milk;
 - average fat and protein percentage will be calculated as follows:
(kg fat (or protein) * 100)/kg milk;
 - the following parameters are suggested for processing and publication of statistics:
age at first calving; calving interval; number of calvings and total yield for each buffalo in the whole life-span; number of inseminations/pregnancy; date of first estrus after calving.

Authorised milk measuring systems.

Name	Type	Country of approval
Milko Scope II	Milk meter	Italy
Alfa-Laval 7274031-80	Recording jar	Italy
Tecnozoo	Recording jar	Italy