



The French bovine identification and traceability system, updated with the technology of RFID

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Individual identification and traceability

- **Over the sanitary control and veterinary purpose, individual identification and traceability are the keys for:**
 - A national and updated database of all the live cattle
 - Controlling, following and tracing their movements
 - Commercialization and marketing
 - International market approach
 - Identification from the origin
 - Breeding selection
 - Milk recording, parentage recording, pedigree keeping...



Individual identification and traceability

- **A national traceability system needs:**
 - A national identification system : each animal, farm and premises have an exclusive code
 - The record of **each movement** (entrance / exit) for every animal, and then meat pieces, **in their successive premises**
 - The record, the control and the centralizing of the whole animal information
 - In a national database
 - Thanks to an information system



French eartag

- Identification code = country code + national number

= FR + 10 digits

= FR 75 8212 3456



→ Country code

} → Barre code



Key data

- Premises:
 - farmers : 275 000
 - traders and cooperative : 1 500
 - markets : 100
 - slaughterhouses : 250
 - rendering plants : 70
- Number of notifications per year:
 - birth : 8 millions per year
 - movements (entrance and exit): 25 millions per year
 - slaughter : 6 millions per year
 - rendering plants : 1 million of animals
- BDNI:
 - more than 80 millions animals recorded
 - more than 250 millions movements recorded



Recording of births and movements (entry and departure)

➔ A huge development of electronic notification for farmers with specific Web software, in the last 10 years.





RFID on Farm : in the past

For many years, RFID used in private systems :

- **By breeders :**
 - For automatic feeders → allows individual ration
 - For herd management → specific interest of RFID is proportional to the number of animals in the herd
- **For animal performances' recording** → adapted RFID allows rapid identification and automatic link with the measure (weight, milk sample...)
- RFID tag adapted to each situation (neck lace, pastern tag, eartag...), RFID technology was specific and numbers were unique intra herd only.
- RFID tags used on many animals successively reducing the cost of RFID
- Correspondence between RFID and national number guaranteed by software
- Change of equipment or software obliged to change RFID devices

RFID on Farm : with official RFID

- **Becoming official, RFID must respect characteristics :**
 - Type of tag → for EU : eartag, ruminal bolus, pastern tag on leg
 - Technical RFID characteristic (transfer protocol, frequency...) and data structure conformed to ISO standards 11784 and 11785
 - RFID tag can be applied only on ONE animal
- **These constraints give new opportunities even on farm**
 - RFID number is unique (in France, it is directly national identifier) → no more correspondence of number
 - Breeder can change brand of equipments or software which are all able to read same RFID devices



RFID on farm : Minimal equipment to benefit from RFID interests

Chip on the animal

Eartag

Reading distance



Reader

BlueTooth connexion



Connexion (for cable and Blue Tooth)

Electric energy
Memory
Screen
Buttons

Computer functionalities

PDA or PC or intelligent reader



Software



RFID on farm : Transponders types and limits

- **Transponder's type depends on the operation to do :**
 - During milking or for AI insemination, behind the animal → pastern tag on a behind leg
 - During feeding in head blocks on the head → eartag
- **Experiences in French pilot projects show that individual RFID reading is not easy during manual individual operations like births, sanitary treatments, AI**



RFID allows automatisisation of weight recording

RFID in electronic scale for cattle

- A scale coupled with an ISO reader to weight the cattle entering in the pen.
- The door opens when the tag is read and the weight is obtained.
- If the tag is not read, the identification number is recorded manually or with a handheld reader.





RFID allows automatisisation of milk recording



Lactocorder

Individual antenna over the head (**one per place**)



Truetest EMM

2 models of electronic milk measurers linked with animal RFID

RFID on farm : transition from no RFID or private systems to official RFID

- **To benefit from official RFID interests, farmers need at least minimal equipment:**
 - What about farmers without any reader and enable to use such equipment surely and well.
 - What about farms without any corridor or handling pen to maintain small groups of animals
 - **Farms with private systems have to be adapted:**
 - Animal tags must be replaced by official ones
 - Readers must be in compliance with ISO standards 11784 – 11785 : all results of devices on the website www.icar.org
- Software must be adapted to :
- National RFID number automatically recorded, instead of system with private number, herd number and control
 - Link a common data to a group which has been all RFID read

Existent equipment must be adapted



Automatic feeders
(ex : for calves as this
one) must be adapted
to
ISO standard 11784 –
11785
for RFID tags as well as
for fixed reader





RFID on market for Trade and Sanitary security

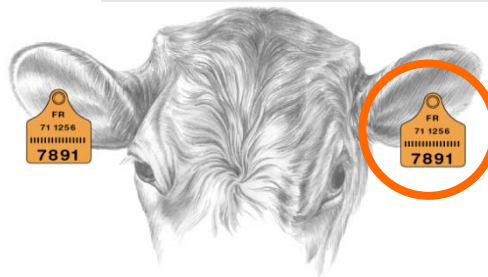
Individual identification already exists for cattle with barcodes...

- **RFID allows GENERAL individual identification, but for trade and traceability 100 % animals must be identified → a strong constraint to benefit from RFID :**
 - To automate entries and exits recording with RFID 100% animals must be identified by RFID
 - Reading ratio, will never be 100 % :

If animal is weighted while RFID tag is read (like usually for cattle), door doesn't open before identification and weight are recorded.



Transfer of information all down the line till slaughter



Slaughterhouse register		
Number of birth's farm	Identity number	Slaughter number
FR 71 012345	71 1256 7891	10873



PASSEPORT DU BOVIN

N° DE TRAVAIL: 7891, CODE PAYS: FR, N° NATIONAL: 71 1256 7891, SÈXE: M, TYPE RACIAL: Charolais, DATE DE NAISSANCE: 04.06.98

EXPORTATION DE NAISSANCE: FR 71 012 345, EXPORTATION DE NAISSANCE: 38 38, DATE DÉCISION: 02.07.98, N° NATIONAL DE LA MÈRE: FR 71 1234 5679

En l'absence de l'attestation sanitaire ou du laissez-passer sanitaire délivré par le Directeur des Services Vétérinaires, ce bovin ne peut pas circuler

EMPLACEMENT RÉSERVÉ À L'APPOSITION DE L'ATTESTATION SANITAIRE OU DU LAISSEZ-PASSER SANITAIRE

Coller en A et B les extrémités de l'attestation sanitaire ou du laissez-passer sanitaire



In the slaughterhouse, an own traceability system is applied. This generally includes the allocation of an order number of slaughter for each animal, read with a barcode and entry in the slaughter register.



RFID on Slaughterhouse

- On slaughterhouse individual identification is already compulsory. Interest of RFID is automation of arrival recording, on alive animal and on carcass → the constraint of 100% reading is extremely strong
 - No organisation to benefit from RFID when animal **with and without RFID** arrive together on the chain
 - Carcasses are identified with a specific number, different from alive animal → software must be adapted to link RFID official identifier from arrival till the end of the slaughtering chain, and in some cases till the packed meat ready for the supermarkets



Institutional actors' responsibilities in the national system

The French Ministry of Agriculture aims to :

- **The national rules in application of EU regulations**
(definition of responsibilities, agreement of each institutional actor, agreement of official eartags' models, forms and documents), *the controls and the inspections*
- **Procedures and local implementation :**
approval of the Institut de l'Élevage proposal
- **Standards for electronic data transfer :**
definition with the Institut de l'Élevage
- **Management, operation and quality controls**
of the National Database (BDNI)



Conclusion : Interests shared by the whole industry suppose an official RFID

- **RFID on farm has existed for a long time with private systems used by few farmers interested in technology**
- **Such private systems present no interest for other actors of animal industry**
 - Only an official RFID presents a common interest
- **This interest supposes a wide use of the RFID by at least a big majority of farmers**
- **The challenge is to help non technologic farmers to accept RFID by making them directly benefit from its interests.**