
A French consultant's view of the Mexico planning experience of cattle identification and traceability

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Early in 2002, the Ministry of Agriculture General Secretariat for Livestock (SAGARPA) and the National Confederation of Livestock Farmers' Organisations (CNOG) of Mexico jointly decided to implement without delay a national system of cattle identification and traceability, the SINIIGA ("National System For the Individual Identification of Bovine Animals").

On the principle of the compulsory identification of keepers of bovine animals and livestock holdings on the one hand, and of the bovine animals on the other, the objective shared by Public Authorities and livestock farmers' representatives is to make it possible to develop information systems, based on individual, unique and generalised identification of the animals, to reinforce in particular:

- the epidemiological monitoring and health inspection of the national herd;
- the control of animal movements;
- the genetic management of populations (registration and management of performances and genealogies),
- the promotion of the products (traceability from farm to slaughter-house, indication of origin)
- the management of financial subsidies per head of cattle.

From the time the decision was taken, this voluntarist approach of the SAGARPA and the CNOG implicitly meant that roles and financing would be shared: SAGARPA, the decision-making authority, would be

**A declared
intention
shared by
SAGARPA
and CNOG**

The authors wish to express their thanks to the Mexican managers of the SAGARPA and the CNOG for their confidence and for the quality of the relationships now established for more than year. They would also like to thank the various French experts who are working in this project for their technical contributions and their availability.

responsible for the initial investments; the field project management and the operational costs of the SINIIGA returning eventually to the CNOG, the Regional Livestock Farmers' Associations and to all the farmers.

Advisory support by the Institut de l'Élevage and French Professional Organisations for the implementation of the identification system

In the spring of 2002, the SAGARPA and the CNOG officially requested the intervention of the French Herbivores Technical Institute and the Bureau of International Technical Cooperation of French professional livestock organisations (BCTI). The purpose of this intervention is long term advisory support for the conception and implementation of the national cattle identification system and its uses for the genetic improvement and commercialisation of products.

So the request concerned neither a preliminary technical and financial feasibility study, nor the transfer of a «technological package» or of a «model». It concerned guidance and advisory support for the progressive construction of a system appropriate to the realities, needs and resources of Mexican livestock.

So, on the basis of a transfer of experience and know-how, the Institut de l'Élevage and the BCTI have since January 2003 been providing technical assistance to the system decision-making authority and to the master of works body; namely guidance and advisory support for Mexican decisions-makers in making a succession of decisions and in the actual translation of these decisions in technical terms.

For this purpose, an engineer from the Institut de l'Élevage is providing permanent and overall support in engineering the SINIIGA project, as well as providing the interface with the different French experts mobilised from time to time at the request of the SAGARPA and the CNOG.

The conception of a Mexican individual and generalised identification system for bovine animals

The definition and implementation of an individual and generalised identification system for bovine animals, as well as its various uses, involve a large number of players (directly or indirectly), at different geographical levels (national, regional, local) and with different time limits. The success of such a project requires that this complexity is taken fully into account. The management by the SAGARPA and the CNOG of this long term project and with different stages has been structured, since work was launched in January 2003, around 3 main directions of work:

1. *the overall engineering of the project*: setting up a National Steering Committee and a National Technical Committee, definition and running of the project plan, programming the work, system of follow-up and inspection, training the different players and communication.
2. *the organisation of the system architecture and its information system*: events and types of data registered; procedures and flows of materials/information; functions and responsibilities of the different players concerned; relations with other existing information systems; regulatory and financial framework.

3. *the technological resources of the system*: identification media (ear tags, microchips...); physical media and conditions for transmitting information, management of information (software and data bases).

The composition of national strategic and technical decision-making authorities reflects the desire of the SAGARPA and the CNOG to share the construction and steering of the national identification system, to ensure that it is suitably adapted to the needs and resources of Mexican livestock. Constituted when work first started, the Steering Committee and the National Technical Committee are in fact composed of a combination of deciders and technical experts both from the SAGARPA and from the CNOG.

As the project progresses, these Committees are gradually expanding to include representatives of regional (Regional Livestock Farmers' Associations, regional delegations of the SAGARPA) and national (National Council for Genetic Resources -CONARGEN-,...) authorities. Similarly, the constitution of thematic working sub-groups (system technology, training/communication, relations with other information systems...) is already envisaged.

To provide a methodological framework for consideration of the project and managing it, a reference document has been drawn up by our Cooperation Bureau on the basis of more than 30 years of experience, acquired by the Institut de l'Élevage and professional livestock organisations, in the implementation of the French identification and traceability system.

In addition to matters related with programming objectives, phases of work and time limits, the purpose of this draft project is to list and rank the various elements to be defined for organising the system and its information system: events (birth, movements, slaughter,...), type of data to be registered and flows of information for each event; national, regional and local functions to be taken on...

Periodically updated by the Mexican authorities, additions are gradually made as a result of meetings of the Committees, on-the-spot missions by French experts and missions by Mexican experts in France. It is in fact the framework for the construction of the system architecture and for the operation of the whole information system.

The launch of this individual and generalised cattle identification project benefits from a programme of financial assistance to livestock farmers set up by the Mexican Ministry of Agriculture (the PROGAN), one of the lines of action of the «Official Sectional Programme for Agriculture and Livestock 2001-2006». With the objective of improving forage production and reducing the erosion of grazing land, the PROGAN plans to provide financial assistance to livestock farmers, based on a diagnosis of the

Overall project engineering

Decision-making authorities

Reference framework document for the definition of the system architecture

Objectives, programming and time limits

holding and in return for commitments, in particular on the identification of their animals, and on participation in national health campaigns and improvement in grazing land management.

- The first phase of the SINIIGA was launched in the second quarter of 2004. It concerns the identification of cows and heifers of farmers who are members of PROGAN, animals serving in the calculation of the amount of premiums received by a farmer in the framework of this programme, and of all the animals belonging to members of Herd-Books. The farmers concerned will obtain these identification tags free of charge. For 2004, according to available data, this phase concerns 100 000 farmers and about 4 million animals.
- The second phase of the SINIIGA concerns the compulsory identification of all other bovine animals belonging to farmers benefiting from the PROGAN. It should be launched in the last quarter of 2004. The corresponding identification tags will be paid for by the farmer. Identification should then concern 10 million animals for the 100 000 member farmers in the PROGAN in 2004.
- The third phase of the SINIIGA concerns the identification with SINIIGA type tags of all animals in the health inspection. The plastic "SINIIGA" tags with the national number then also become the official tags for the health system, replacing the old metal tags with a number specific to each State. This 3rd phase should be initiated in 2005 with the promulgation of an official federal decree.

Public awareness and training

In addition to constituting national decision-making authorities and gradually completing this framework document, an important part of the activities has been devoted to raising the awareness of the different players involved in the project and in initiating the training of technical managers for the system.

- Study trips and visits by delegations have been organised in France for mixed groups composed of Mexican players and decision-takers (national and regional livestock farmers' representatives, Herd Books, commercial operators, fatteners and slaughterers, support services for production and SAGARPA veterinary services,...), to present to them the challenges of an individual generalised identification system and traceability, its organisation and its various developments.
- Six members of the Technical Committee attended a specific 3-week training course in France (in Paris then in various French regions) in October 2003, with the participation of experts from the Institut de l'Élevage, different services of the French Ministry of Agriculture and various French livestock professional organisations directly involved in implementing the French system and its developments (EDE, ARSOE, cooperatives, commercial operators, slaughterers, etc...).
- Similarly, several expertise and technical support missions carried out in Mexico have been the opportunity to present, jointly with the Mexican Technical Committee, the principles and possible uses of an identification and traceability system, lessons learned from French

experience, the methods envisaged for implementation in Mexico, etc... at General Meetings of the CNOG, and the CONARGEN, meetings of Herd-Books, meetings of Regional Directors of the SAGARPA, meetings of livestock farmers' managers of Regional Associations,...

In addition to branding, bovine animal identification in the framework of the health inspection of animal movements was already generalised in Mexico with the use of metal tags. Nevertheless, some farmers are already using plastic marker tags, whether in the context of Herd Books or for the internal management of their herd.

To implement the national identification system, the choice of the type of animal identification media by the SAGARPA and the CNOG has been made on 2 principal criteria:

1. its accessibility (cost, application, use and legibility...) to the greatest number of farmers and notably to the smallest holders.
2. the experience acquired (rate of loss...) and the reliability of the logistics (order, delivery, retagging...) of the manufacturer able to supply them.

On this basis, the choice fell on yellow visual plastic tags, for a dual identification of the animal: on one ear a pair of large tags, on the other a pair of button tags. Every farmer who so wishes can replace one of the visual button tags by an electronic button tag, by paying the extra charge. The Allflex company was selected in December 2003 as the supplier after an international invitation to tender, and the delivery of 4.3 million pairs of ear tags and 30 000 applicators is planned for 2004.

The type of official numbering is MX + 2 State figures + 8 consecutive figures (+ barcode).

To assess the quality of the type of tags chosen, a national testing and inspection system is being organised by the CNOG: tag application and the operation of applicators have been tested in two abattoirs; loss rate and tag legibility will be specifically monitored on 4 500 animals spread over 30 holdings and 3 regions, chosen for their diversity in terms of herd management, breeds and climate and pasture conditions.

The SINIIGA information system has to carry out the registration, transmission, utilisation, inspection and management of the data associated with the identified animals. To determine its architecture and operation, Specifications of Field Operations (SFO) are being defined by the SINIIGA Technical Committee. This technical document will define and describe the responsibilities, tasks and procedures to be respected by the different players of the SINIIGA, as well as the format and content of the flows of information associated with its implementation (see following section).

Until this document is available and the corresponding information system established, only data concerning the material accounts of the tags (numbers manufactured and location of corresponding tags: in stock,

Technological resources used

Animal identification media

Information system and data base(s)

within the farm, placed on the animal,...) are presently being managed. The data associated with animal identification are stored and archived in paper form until they can be registered in the future information system. On the other hand, the SAGARPA and the CNOG may choose to divide up the data bases (each State with a database, hosted within each Regional Livestock Farmers' Association) with periodic centralisation of information in a national data base. Even if this configuration involves investment and maintenance costs that are higher than a single centralised data base, it is less sensitive to malfunctions, specific uses are easier to develop at individual State level, and it adapts better to steering shared between livestock farmers' organisations and the public authorities.

The organisation of the SINIIGA and its information system

Although aspects associated with the technology used by the identification system usually attract all the attention, the first key factor for success seems to lie in the overall operational organisation of the system: what types of information for what types of events? Who does what and how? What is the regulatory framework (whether promulgated by a country in the case of a generalised identification as in Mexico or defined by a private player, for example in the case of identification of animals for a specific marketing sector)? What relations with other existing information systems (genetics, health...)?

What types of information for what events? Who does what and how?

The organisation of the SINIIGA depends first of all on the definition of:

- the different events taken into account, and for each of them, the various information registered and managed in the information system;
- the format and content (type of codification...) of the different official material media used (identification tags, documents notifying events, documents for ordering tags, farm register,...)
- the responsibilities and tasks of the official players in the system at grass roots level, regional project manager and keepers of bovine animals (allocation of identification numbers; ordering, distribution and material accounting of tags animal tagging and retagging, collection, registering and transmission of information, publication and dispatch of official documents, etc...)
- the procedures for time limits to be respected for each task to be carried out, the content and format of the flows of information and materials at each stage of identification, and of corrective measures in the event of non compliance.

These different elements, which are being defined by the Technical Committee, will be combined in Specifications of Field Operations (SFO), which will be the reference document for applying the regulatory framework promulgated by the Federal Ministry of Agriculture. Although the Federal Ministry specifies the essential of each player's responsibilities, the SGO specifies much more "how" the player must carry them out.

As an example, the different events taken into account in the SINIIGA and the information registered for one of them are shown in the following tables:

Events taken into account in the first phase of the SINIIGA

- Request by a physical or moral person for registration as keeper of bovine animals
- Request by a physical or moral person for registration of a livestock holding
- Notification of birth or import of a bovine animal
- Entry of a bovine animal into the holding
- Departure of a bovine animal from the holding
- Request for tags for identification
- Request for tags for retagging
- Notification of slaughter
- Request for registration as identifying agent

Information notified for the event “entry of a bovine animal into the holding”

- SINIIGA identification number of the bovine animal
- SINIIGA identification number of the holding
- SINIIGA identification number of the holding of origin
- Date of entry
- Cause of entry

In the transition phase, if the entering bovine animal is not identified with a SINIIGA number, tags must be placed on it and the following information (as for an event “notification of birth or import”) are notified:

- Country of origin
- Official identification number in country of origin (if imported bovine animal)
- SINIIGA identification number allocated
- Previous identification number(s) (health, Herd Book...)
- Breed type
- Date of identification
- Code of the identifier

It should be noted that other information (SINIIGA number of the sire and dam, breed type of the sire and dam, birth weight, result of tuberculin test, etc...) associated with the different uses of the SINIIGA (strengthening the genetic management of populations, health inspection...), will only be taken into account in a second phase of the project.

In the case of the SINIIGA, with an eventual objective of obligatory individual and generalised identification of cattle, the Mexican Ministry of Agriculture plays a determining role, even if the implementation is delegated to the private professional sector. After taking the decision jointly with the CNOG, it gave the impetus and support for the definition and launch of the system. Regulation and guidance in the development

Which regulatory framework?

of the system according to needs, as well as the maintenance of national consistency in its application, will also be under its control in the years to come.

A preliminary regulatory framework, which will be promulgated by decree in consultation with the CNOG, is in the process of being defined. It will approve the various specifications of the system (field procedures, responsibilities and obligations of the different players, identification media to be used...) and will define the conditions of management and access to data, inspections and sanctions... after that, it will be modified and complemented according to the experience acquired and the way the system develops.

What relations with other existing information systems?

For some time now, public and private players in Mexico have already been developing identification and information systems, using media (plastic or metal tags, tattoos) and types of numbering that may differ considerably one from the other. The health services and the Herd Books are the main examples of these.

As in every individual and generalised identification project, the programmed and gradual movement of these different systems to one single type of identifier and to homogeneous operational methods, is a delicate phase, both to have them accepted and to ensure their smooth transition without undue disruption.

In 2003, listing the operational methods of these systems and the practical experience of the players concerned was a task in itself for the SINIIGA Technical Committee. With this in mind, one of its members, belonging to the Mexican National Council for Genetic Resources (CONARGEN), was more particularly in charge of relations with Herd Books, which were to join the SINIIGA in 2004. In the same way, a member of the Technical Committee will in future be more particularly in charge of relations with the public veterinary services, to organise the transition in 2005/2006 of the present identification and health inspection system.

Conclusions

As in the Mexican experience, the definition and implementation of an individual identification system and traceability is a complex project, involving a large number of players (private and public), concerning different geographical levels (national, regional, local) and offering various possibilities of use.

Its success depends of course on technological aspects (type of identification medium, software and data bases, method of transmitting information...)... but above all on rigorous attention to the overall engineering of the project, to the organisation of the system itself and of its information system.

This organisation of the system and its information system is specific to each country, depending on the objectives sought, the time limits fixed, the resources available, the existing organisations, etc.

So the purpose of present advisory support for such projects by the French Herbivores Technical Institute (*Institut de l'Élevage*) and the Bureau of International Technical Cooperation of French professional livestock organisations (BCTI), is not to transfer a “technological package” but to transfer experience, know-how and expertise on overall project engineering as well as technological and organisational aspects.

Whether the principals are Public Authorities (in the case of an obligatory and generalised system) or private players (in the case, for example, of a system limited to a sector), we advise the Steering Committee and Technical Committee in their decision taking, then in their actual translation in technical and practical terms. To make this possible, we can rely on 30 years' experience acquired in the implementation and evolution of the French system and in cooperation on this theme with other countries.

The situation in each country is different: no one model !