Animal identification and traceability in the European Union and international trade

S. Pavón
Directorate General for Health and Consumers, European Commission, Brussels, Belgium

Summary

International trade for food products is rapidly changing and tariff barriers do not represent anymore a major element for market access. Non-Tariff barriers (NTB) have emerged during recent years as a major tool for international trade for food agriculture products. Among NTB, Sanitary and Phytosanitary (SPS) standards- and related animal identification and traceability protocols- are those playing a leading role when international trade of food products is involved.

Animal identification and traceability systems became an essential part of the European Union's basic infrastructure to manage not only public and animal health but also consumer information, the functionning of a single market (composed of 27 Member States), crisis management and the prevention of fraud.

Major animal diseases (and related animal identification and traceability programs) may have a major impact on international trade. Animal identification programs able to provide animal origin and age verification are becoming a potential requirement for future access to specific beef export markets[1]. For this reason, many countries worldwide have put in place animal identification and traceability programs.

However, animal identification and traceability import requirements should not be seen by exporting countries as a trade concern, but as way to strength their national food production systems and to make them more competitive in the international arena. Animal identification and traceability requirements are important for current and future bilateral trade negotiations. Countries that have well-developed mandatory animal identification and traceability programs should not only be better prepared to prevent and control animal diseases, but also enjoy comparative advantages in terms of exports in relation to countries without such systems. The lack of a proper system of animal identification and traceability may result in lost of competitiveness and access to certain markets. Although differences in identification and traceability systems occur across countries and even across species within a single country, the underlying theme is that farm-to-retail traceability is rapidly becoming an international requirement for protecting human and animal health and ensuring consumer's confidence.

Bovine identification and traceability in the EU

The development of animal identification and traceability programs in the EU was closely linked with the appearance of Bovine Spongiform Encephalopathy (BSE). BSE is a disease affecting the brain and central nervous system of adult cattle. It was first diagnosed in Europe (UK) in 1986 subsequently in other EU member states and later in several third countries. As there is no in-vivo test for the early detection of BSE, eradication of BSE relies on an efficient system of Animal Identification (AI). In the light of the BSE crisis (1997), the European Commission developed rules aiming to re-enforce individual identification and traceability of bovine animals. Some of these rules were the monitoring

[1] Economic Assessment of evolving red meat export market access requirements for traceability of livestock meat –project report submitted to US meat export federation –March 2011

via rapid testing of all slaughtered bovine animals above certain age and the need for full traceability for beef meat ("from the farm to the table"). These two measures obliged the system to provide information on animal source and age verification. Identification alone does not ensure traceability. Traceability is ensured in the EU by a system able to act as a real time bovine-tracking-system allowing to trace individually all bovine movements from "birth to slaughter"[2]. In addittion, this traceability was extended to individual beef cuts and so reflected on the label at the level of retailer point.

The EU system managed to provide the identity of any other bovine which may have been in risk of contact or living for some period in the same holding that a positive animal. Even more the EU system is able to trace back on the genealogy of a bovine animals since information of the dam is also available. This is crucial in order to perform the identification, isolation and culling (destruction) of risk animals potentially linked to positive cases.

Regulation (EC) No 1760/2000 establishes a regime based on individual traceability of cattle by means of four main elements: individual identification of animals with two eartags, registration of animals in a holding register on each holding (e.g. farm, market, slaughterhouse), individual passport for each animal containing data on all movements and the reporting of all movements to a computerised database (managed by the competent authority of every EU Member State) that is able to quickly trace animals and identify cohorts in the case of disease. Member States established computerised databases where information is to be recorded in an electronic format. The role of the database is crucial since they must be able to supply, at any time, a list of identification numbers for all bovine animals present on a holding and a list of all changes of holding for each bovine animals, starting from the holding of birth or holding of importation. The final test of an effective traceability system is finally reflected at the level of a computerised national databasis for bovine animals. But the last responsibility to feed the database with the necessary information lays on animal keepers.

In addition, for any labelling system to be credible, a comprehensive AI and traceability system is a pre-requisite. In order to extend traceability to individual beef cuts, the EU legislation contains special provisions for beef under Regulation (EC) No 1760/2000, which includes a reference number which allows the trace-back till the holding of birth and the obligation to provide precise information about the origin of the beef. Any piece of beef found at an EU supermarket must achieve information on where the animal was born, raised and slaughtered.

Traceability can not be achieved without costs and it is therefore necessary that identification and traceability systems are proportionate to the objectives or goals to be achieved. Setting an AI and traceability system will depend mainly on the goal to be achieved (e.g. animal health, food safety, market access objectives) and second, on the animal species. In general, running a traceability system it would be less cost and easier to implement by batch (group of animals) than on the basis of individual identification.

As a general rule, cattle traceability is more complex than in other animal species (e.g. pigs) because of the production systems and the commercial trends existing in every sector: pigs are produced and marketed in large groups which tend to remain together throughout the production phase while cattle production systems often implies considerable mixing of cattle from different sources. Furthermore, age verification which is an important component of beef trade (but not pork trade) requires individual animal identification because animals are sorted and regrouped frequently under normal production practices. Another issue to be considered is whether those systems should be implemented on a mandatory or a voluntary way. Major beef exporters have often in place animal traceability systems which are largely mandatory. A minority of them have in place voluntary systems. In addition, animal movement recording is common among countries with mandatory tracing systems. This movement traced across property (and therefore ensuring full traceability) seems to be better achieved by the use of Electronic Identification (EID) (e.g. Australia, Canada).

[2] Including animal movements via markets, dealers, slaughterhouses, holdings or imports

In the EU, the major goal for establishing this sophisticated system of individual animal identification and traceability was to re-establish consumer confidence in beef and beef products through transparency and full traceability of bovine animals and the respective food products. Human health is an important goal to be achieved since EU consumers are reasured that food products can rapidly be traced throught the food chain more quickly and withdrawn from the market in case a public health problem has been identified (e.g. residues, dioxin crisis). Other major goals were to localise and trace animals for veterinary purposes (of crucial importance for the control of infectious diseases), crisis management and the prevention of fraud. There is an addittional goal which is peculiar to the EU: the functioning of a single market. The AI and traceability system in the EU should ensure free (and safe) movements of live animals and the placing on the market of animal products between 27 member states. Between four to five million of cattle are subject to intra-EU trade every year[3] and the number tends to increase. With a view to achieve these objectives, the regime can be considered nowadays to be a success. In fact, not only BSE has been put under control and nearly eradicated in the EU and consumer confidence re-gained[4], but its usefullness has also been demonstrated for the control of several other transmissible diseases (e.g. Bluetongue, Foot and Mouth) and to ensure traceability of bovine food products.

Animal Identification, traceability and international trade

BSE risk status based on OIE (and therefore AI and traceability systems) is a substantial market access issue for international trade not only for meat but also for other bovine derivate products (e.g.: dairy products, hides, meat and bone meal, skins, cosmetics, etc...).

Animal identification systems "are becoming prerequisites to international trade"[5] since they facilitate source and age verification programs. Delaying the adoption of traceability programs could reduce access to specific international markets but at the same time it increases costs for livestock producers. On this basis, many countries have developed animal identification and traceability systems. The systems differ in characteristics, protocols, technologies, implementation, depth, breadth, and precision[6]. Studies illustrate that animal traceability systems are becoming widespread around the world not only in the EU but also in more than 18 different countries (including the 8 currently largest beef exporters worldwide[7]).

It is difficult to analyse the full impact of animal and meat traceability on international trade and to quantify its benefits. However, the presence of a traceability system might facilitate exports to certain markets while its lack thereof might limit or ban the access. Its presence might contribute to lift temporary restrictions faster.

The EU is not only an importer of beef. EU exports of beef to third countries amount between 170 and 220 millions of tonnes per year[8]. The EU share of world beef exports (and other bovine derivate products) declined dramatically following the first cases of BSE in 1989.

Most of EU trade partners imposed bans or import restrictions for beef and other bovine derivate products during the nineties. Since then, recovery of EU exports has been slow but many of these restrictions have been finally lifted by major trade partners. A determining factor was the implementation of a proper system of AI and traceability system for bovine in the EU (from the farm to the fork). The EU was in a position to present to its trade partners one of the most developed systems for cattle identification and traceability worldwide, due in part to the experience gained in the eradication BSE and other animal diseases. EU cattle identification and traceability system were

[3] Source: European Commission (TRACES)
[4] COM (2005) 322 Final-TSE Road Map: http://ec.europa.eu/food/food/biosafety/tse_bse/docs/roadmap_en.pdf
[5] Murphy et al. (2008) (page 284)
[6] (Golan et al., 2004)
[7] Brazil, Australia, United states, India- buffalo meat-, New Zealand, Canada, Argentina, Uruguay-2010 data).
[8] Source: European Commission (Eurostat)

crucial to restore confidence to our business partners in terms of food safety and animal health. However, till today some third countries continue to impose restrictions to EU exports regardless of the recommendations contained in the OIE Terrestrial Animal Health Code.

As a general rule, identification and traceability systems are more developed in importing than in exporting countries[9]. From the trade perspective, the requirements of major importers are the most important as they establish the minimum standards that exporters will need to satisfy for having access to their markets. That is, major importers with ID and traceability systems could establish similar or equivalent WTO-compliant standards for access to their domestic markets[10]. Each country imposes their own system based on specific goals while employing different systems[11]. Traceability systems applied by major beef importing countries responds usually to needs like animal disease control and food safety assurances (e.g. in the EU, Japan, Korea), while traceability systems applied by major beef exporters may respond to different needs like increasing market access or in less extent food safety or animal health (mainly fight against Foot-and-Mouth disease –FMD-Brazil, Argentina or Tuberculosis-New Zealand). Consumers in European and Asian markets increasingly require traceability protocols. Access to these markets will depend upon demonstrated individual animal traceability.

The EU system has influenced some third countries in developing red meat trace back systems[12]. However, the EU is not the only major importer demanding AI and traceability's import requirements. Importing countries also ask for similar or even higher standards than the EU. Asian countries (Japan, Korea, and Hong-Kong) also ask for animal source and age verification. For many importing countries, the "place of dispatch" does not necessarily imply the source or the origin of the animal, it would not be enough in terms of traceability and it may not be accepted as adequate origin documentation in future. In terms of traceability and labeling requirements, major importing countries (e.g. Japan, Korea) consumers could quickly access information about where an animal was raised, its sex, breed, birth date, locations where the animal lived throughout its lifetime, and slaughter location, by entering an unique 10-digit number of the individual animal identification code on the package label.

AI and traceability standards agreed with third countries are not limited to a BSE perspective, as some of the main EU trade partners enjoy an optimal health status of BSE. The perspective of regionalisation applied in relation with animal diseases such as Foot and Mouth Disease needs also to be taken into account. Regionalization is not only a disease control tool but also a Trade Facilitation tool. This policy allows trade flows to continue into the European market, especially from developing countries or emerging economies, regardless of the presences of quite sensitive animal diseases in their territory. Regionalizing a country implies systems of animal identification and traceability able to ensure the origin from safe areas for those animals whose food products are to be exported. The EU has been one of the most pro-active actors in promoting regionalization at the international level and it has provided regionalisation to a large number of trade partners for important animal diseases. A clear example is the policy followed by the EU in certain South American countries as regards foot-and-mouth disease. With other trade partners, the EU has promoted a policy of regionalization for other animal diseases such as Classical Swine Fever, Newcastle Disease or Avian Influenza. Unfortunately, only a few of these trade partners have accepted to apply regionalization to EU exports despite the identification and traceability systems in place.

[9] Economic Assessment of evolving red meat export market access requirements for traceability of livestock meat –project report submitted to US meat export federation –March 2011

[10] Economic Assessment of evolving red meat export market access requirements for traceability of livestock meat –project report submitted to US meat export federation –March 2011

[11] Major importers of beef worldwide are United States, Russia, Japan, European Union, Mexico, Korea, Vietnam, Canada, Egypt, and Hong-Kong- data of 2010-).

[12] E.g.: Canada, Australia, New Zealand, Uruguay

International standards

The World Organization for Animal Health (OIE[13]) has published general principles for animal identification and traceability for disease prevention and control in its *Terrestrial Animal Health Code*. The 2010 *Terrestrial Animal Health Code* recognizes *Animal identification and animal traceability are tools for addressing animal health (including zoonoses), food safety issues and the strong relationship between animal identification and the traceability of animals and products of animal origin."* The OIE indicates that animal identification, animal movement, and changes in numbers of livestock or livestock establishments should be reported to a central authority. A significant component of livestock and meat trade is conditional on certification of animal health status to reduce the likelihood of disease transmission through meat or animal trade. Animal identification and movement traceability enables the certification of animal health.

Codex Alimentarius Commission[14]*-Code of Hygienic Practice for Meat (Code)* indicates that a principle of meat hygiene involves animal identification practices that "allow trace-back to the place of origin to the extent practicable, to allow regulatory investigation where necessary" (p. 9). The *Code* stresses the importance of animal or group identification capable of tracing back from abattoirs and dressing plants to the place of origin. The focus of the *Code* is to develop hygiene provisions for meat from live animal production systems through retail. The FAO (2004) published *Good Practices for the Meat Industry* as a guide to the meat industry for implementing rising quality and safety standards for trade. The document details animal identification and traceability system mechanisms as a new standard that is becoming a norm in animal health management and consumer assurances.

ISO-ICAR: More technical standards and guidelines for identifiers (including electronic) have been laid down by the international organisation for standardisation (ISO) and the International Committee for Animal Recording (ICAR).ISO standards 11784 and 11785 ensure compatibility between electronic identifiers and readers and ISO standards 24631 lays down the test procedures for conformance and performance of electronic identifiers and readers. Since 1995 ICAR has established and continuously updated its guidelines on animal identification, methods, performance recording and genetic evaluation, in particular in the bovine sector. Quality standards for conventional plastic ear tags were also published.

The World trade Organization (WTO): SPS measures are by definition, measures applied to protect the life and health of humans, animals and plants from certain specific SPS risks within the territory of the importing country[15]. Traceability is not mentioned as such in the SPS Agreement. The decisive element here is the *objective* of the measure in question – accordingly, if a traceability requirement is adopted for any of the above-mentioned objectives or against any of the above-mentioned risks, it could certainly be considered as an SPS measure[16]. Another important aspect is Equivalence[17]. Equivalence is a trade-facilitation tool for which if an exporting country can demonstrate that the measures it applies to its exports achieve equivalent level of health protection as in the importing country, then the importing country is expected to accept the exporting country's standards and methods. These statements indicate that if a country adopts an animal traceability system for their domestic livestock production sector to protect animal or human health, they may also apply the same standards to imports if appropriate justifications are made. General at international trade is that importing countries could impose their own domestic standards on countries from which they import, under the respect of WTO provisions. These import requirements should not discriminate in relation to

[13] The OIE's international standards are referred by the WTO-SPS Agreement as the ones to be used when trying to reach harmonised SPS measures between WTO Members

[14] The Codex's international standards are referred by the WTO-SPS Agreement as the ones to be used when trying to reach harmonised SPS measures between WTO Members

[15] Annex A of the WTO-SPS Agreement

[16] measures must be based on an assessment of the risks and be scientifically justified, appropriate to the circumstances, no more restrictive of trade than required and applied consistently, including between the country imposing the measure and other countries.

[17] Art 4 of the SPS Agreement

domestic/national standards. An importing country should not require to the exporting country higher standards than those apply for domestic or national production. The EU does not expect trade partners to replicate the EU system of AI and traceability, but expects at least some minimum equivalent standards able to deliver the guarantees we need. Reaching those minimum standards has resulted in trade irritants with some trade partners. In order to address these trade irritants, the EU has provided technical assistance and cooperation (mainly under the obligations contained in Article 9 of the SPS Agreement) by means of providing infrastructure and international seminars aiming to better explain the EU system of AI and traceability and improve their market access conditions.

Future perspectives

Animal identification and traceability undergo continuous adaptations to the technical developments. The EU is looking at systems based on radio frequency identification (RFID). Electronic identification provides among others, a faster and more accurate reading of individual animal codes saving labour costs for manual reading but at the same time, increasing equipment costs. A legislative proposal to introduce EID as an official means of identification of cattle in the EU is currently under discussion in the European Parliament and in the Council. Bovine EID will bring a simplification vis-à-vis the manual work as well as a faster and higher reading accuracy than classical ear-tags, easing the procedure to report animal movements to the central data base and therefore improve better and faster traceability of infected animals and/or infected food.
Preliminary reflections suggest that information about the origin of animals could be also extended to food products derived from pigs, sheep, goats, and other farm domestic animals. This could result on existing systems of animal identification and traceability to be revised and up-graded, where necessary.

Conclusion

AI and traceability systems are becoming an increasingly important tool for international trade. The lack of a proper system of animal identification and traceability may result on lost of access to certain markets and thus of competitiveness. Animal identification and traceability import requirements should not be seen by exporting countries as a trade barrier but as way to strength their national meat production systems and to make them more competitive in the international arena. ICAR and ISO should a play a major role in relation to AI in relation to technical standards and guidelines for identifiers (including electronic) and including their manufacturing, suppliance and distribution.
The development and strengthening of guidelines, procedures and recommendations for AI and traceability will help to prevent that these standards are used as international trade barriers. WTO, OIE, FAO and ICAR (for animal identification) should play as appropriate, a key role as facilitating actors for international trade, including by establishing and promoting the use of mechanisms and tools for the solution of disputes between trade partners with the goal of promoting the understanding between the parties

References

1. Commission staff working paper impact assessment accompanying the document "Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EC) No 1760/2000 as regards electronic identification of bovine animals and deleting the provisions on voluntary and beef labelling"
2. Benefits on animal identification and traceability (First OIE global conference on animal identification and traceability "from farm to fork"; Buenos Aires, 23-25 March 2009)
3. Identification and traceability: the European Union perspective (First OIE global conference on animal identification and traceability "from farm to fork"; Buenos Aires, 23-25 March 2009)
4. COM (2005) 322 Final-TSE Road Map: http://ec.europa.eu/food/food/biosafety/tse_bse/docs/roadmap_en.pdf
5. Economic Assessment of evolving red meat export market access requirements for traceability of livestock meat –project report submitted to US meat export federation –March 2011