

IMPLEMENTATION AND MAINTENANCE OF ANIMAL TRACEABILITY IN THE AMERICAS: OVERVIEW OF CURRENT STATUS AND IMPACT FOR INTERNATIONAL TRADE

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Summary: *The level of interest and readiness in the development of a traceability system for bovine, caprine, equine, ovine and porcine animals and poultry and the impact the system may have on international trade have been reviewed through a questionnaire sent to OIE Member Countries in the Americas. The responses to the questionnaire show a higher level of interest and readiness in the development or enhancement of a bovine traceability system. Eleven countries indicated that their level of interest in the development of a bovine traceability system is greater than their readiness. The level of interest in the development of a traceability system for other farmed animal species is lower, especially for ovine and caprine animals. The lack of financial support and the lack of interest from industry have been identified as the two main impediments in the development of a traceability system. While an efficient traceability system would mitigate the impacts of a trade embargo in the event of a disease outbreak or food safety issue, it would not necessarily ensure access to foreign markets, which may include requirements other than traceability as an import condition.*

Keywords: *Americas – animal identification – traceability – trade.*

1. Introduction

During the 83rd General Session of the World Assembly of Delegates of the OIE in May 2015, the OIE Regional Commission for the Americas proposed the following technical item (with a questionnaire to Members) for inclusion in the agenda of the 23rd Conference of the OIE Regional Commission for the Americas: 'Implementation and maintenance of animal traceability: a challenge for international trade' [5]. In the development of the questionnaire by the speaker, requests were made by the OIE to broaden the scope of the presentation to include an analysis of the current level of development of animal traceability systems in the Americas. The title of the presentation hereunder reflects this new scope. The OIE Headquarters distributed the questionnaire to the 30 Member Countries of the OIE in the Americas; 27 of them responded (see list of the responding countries in [Appendix 1](#)). The countries that responded to the questionnaire represent a significant sampling pool, housing more than 99% of farmed animals raised in the Americas.

The scope of the study covers 'farmed animals', defined in the questionnaire as 'bovine, caprine, equine, ovine, porcine, and poultry raised in an agricultural setting to produce commodities such as food, fiber, and labor'. These species were chosen for their economic importance in the Americas. Other terminology used in the questionnaire is defined in [Appendix 2](#), following the

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definitions of Chapters 4.1. and 4.2. of the OIE *Terrestrial Animal Health Code* (hereafter referred to as the *Terrestrial Code*) [6, 7].

Objectives

There are at least two aspects by which farmed animal traceability may impact international trade: firstly, in mitigating the extent of a trade embargo resulting from a disease outbreak or food safety issue, and, secondly, in supporting new trade agreements by meeting import requirements of a foreign country that include farmed animal traceability requirements. In both of these cases, the level by which a farmed animal traceability system may influence trade is dependent on its efficacy in meeting performance criteria, such as those developed by Australia [1], and on whether it meets the performance expectations of trading partners, as documented in their import requirements. However, as shown by Charlebois *et al.* [2], the food and farmed animal traceability import requirements of OECD² countries vary greatly but will include, at a minimum, programme design elements for each of the three main components of a traceability system, i.e. the identification of animals and the registration of animal identification information; the identification of establishments where farmed animals are kept; and the registration of domestic and international movements of farmed animals.

The first objective of the study is to qualitatively review the performance, level of development (readiness) and level of interest in the development of farmed animal traceability in the Americas, more particularly for each of the three elements of farmed animal traceability.

The second objective of the study is to review the impetus and impediments in the development of a traceability system and, in particular, to review how farmed animal traceability systems in the Americas could support international trade.

Third-party certification to support export or import of agri-food products is not covered in this study.

Methodology

Nine single-answer questions for either all farmed animals or for each type of farmed animal species were asked in the questionnaire. In most questions, respondents were asked to choose among three levels of readiness and interest the one that best reflected the situation in their country (resulting in 3x3 matrix analyses), or among three levels of performance. The number of countries that gave the same answer to a given question is used as the indicator to represent the results of the questionnaire. The limitations of the study should be recognised inasmuch as the information provided on the level of interest, readiness, development and performance of farmed animal traceability from the questionnaire has not been reviewed through a third party evaluation.

2. Analysis

Identification of animals and registration of animal identification information

The highest levels of interest and readiness in the identification of farmed animals and the registration of farmed animal identification information were reported for bovines. Twenty-two countries reported a high level of interest in the identification of bovines but only 12 countries reported a high level of readiness. Almost all the countries reported that bovines are identified individually; only three countries reported group identification (most likely with branding). The level of performance in the unique identification of bovines is reported to be high.

The level of interest and readiness in the identification of porcines and the registration of porcine identification information varies greatly among countries, with no clear trend.

The most common response was a low level of interest and readiness in the identification of equines (nine countries) and poultry (six countries). Not surprisingly, most poultry are either not identified or identified as a group, whereas for equines there is no level of identification (either individually or as a group) that predominates in the Americas region. The level of performance in the unique identification of equines is relatively low.

2 OECD: Organisation for Economic Co-operation and Development

The levels of interest and readiness in the identification of small ruminants (ovines and caprines) are the lowest recorded among the various types of farmed animals included in the study. The most common response was a low level of interest and readiness in the identification of caprines (nine countries) and ovines (8 countries). Half of the respondents reported that ovines and caprines are not identified in their respective country. The level of performance in the unique identification of ovines and caprines is consequently the lowest recorded among farmed animal species.

Identification of establishments where farmed animals are kept

Nineteen countries reported a high level of interest in the identification of establishments and either a high or medium level of readiness. The level of performance in uniquely identifying establishments where bovines, porcines and poultry are kept is higher than the corresponding level for ovines, equines and caprines.

Registration of farmed animal movements

The level of interest and readiness in the registration of domestic movement information was highest for bovines, poultry and porcines. The number of countries that reported a high level of interest and readiness in the registration of domestic movement information was higher for bovines (13 countries) and porcines (11 countries) than for poultry and equines (8 countries each) and for caprines and ovines (7 countries each). There seems to be a correlation between interest and readiness in the registration of domestic farmed animal movements, which would appear to suggest that stakeholders would take actions to register domestic movement information when there is a perceived interest in so doing.

The number of countries that reported a high level of performance in rapidly determining the last location where farmed animals were kept (i.e. trace-back); in rapidly determining the location where farmed animals were kept after transiting at a given site (i.e. trace-forward); and in rapidly assessing farmed animal contact information was as follows: 12 to 14 for bovines; 9 to 10 for poultry; 8 to 10 for porcines; and ranged from 6 to 9 for ovines, caprines and equines.

The level of performance in rapidly determining the location where a farmed animal was born is highest for bovines (11 countries reported a high level), next highest for porcines and much lower for caprines, ovines and equines.

The level of performance in rapidly determining if a given animal has been slaughtered was reported to be high for bovines and poultry (14 and 10 countries, respectively), but was most frequently reported to be 'medium' for caprines, equines, ovines and porcines.

The reported level of interest and readiness in the registration of farmed animal import and export information is very high for all farmed animal species. From 12 to 15 countries (depending on the farmed animal species) reported a high level of performance in being able to rapidly assess if farmed animals have been imported or exported.

Impetus, impediments and policy instruments used in the development of farmed animal traceability systems

The overall reported level of interest and readiness in the development of a traceability system is greatest for bovines (21 countries reported a high level of interest and either a high or medium level of readiness), followed by porcines and poultry (nine countries reported a high level of interest and readiness). The overall level of interest and readiness in the development of an equine, caprine and ovine traceability system is lower (only six countries reported a high level of interest and readiness for these species).

A total of 26 countries believe that farmed animal traceability is a priority for their country and 24 of them believe this topic will remain a worldwide priority in the coming years.

In terms of the desired outcomes of farmed animal traceability, the outcomes that the highest numbers of countries considered important were as follows: 'support disease control and surveillance activities' (24 countries), 'mitigate the impacts of a food safety issue' and 'meet foreign market demands' (19 countries each); 'meet domestic demands from consumers'

(16 countries) and ‘mitigate’ the impacts of a natural disaster (10 countries). Protecting against animal theft was also identified by some countries as a desired outcome.

The policy instrument used to support the desired outcomes of a traceability system is largely reported to be national regulations. The numbers of countries that have adopted national regulations covering the three elements of traceability described in this study are as follows, for each animal species: 19 countries for bovines, 10 countries for ovines, and 8 countries for porcines, caprines, poultry and equines. National regulations are mainly used to implement farmed animal identification and identity registration requirements, and to identify the establishments where farmed animals are kept. Identification is voluntary in 2 countries for bovines, 3 countries for porcines, 4 countries for ovines, 5 countries for equines, 7 countries for caprines and 7 countries for poultry.

The impediments in the development of a farmed animal traceability system most frequently reported as important were as follows: ‘lack of financial resources to support implementation’ (25 countries), ‘lack of interest from industry’ (20 countries), ‘lack of infrastructure to read, report and collect farmed animal traceability information’ (19 countries), ‘lack of legislative support’ (18 countries), ‘lack of technical support for implementation’ and ‘unwillingness to modify current practices in identifying farmed animals’ (16 countries). Other potential factors, such as concerns over privacy (15 countries), lack of cooperation between governments and industry (14 countries), lack of interest from government (14 countries), lack of adoption of international standards (11 countries) and domestic linguistic barriers (5 countries), were also reported.

Eleven countries reported that their level of interest in developing a bovine traceability system is greater than their level of readiness. These 11 countries reported the same impediments in the development of an animal traceability system as those listed above.

Eight countries reported a higher level of interest than their level of readiness in the development of a porcine, caprine and ovine traceability system; 5 countries reported the same situation for poultry and equine traceability systems.

Impact of animal traceability on trade

A high level of cooperation with trading partners was reported, namely in clearly specifying import and export requirements (21 countries); in providing veterinary support in response to a disease outbreak, in recognising zones through the implementation of farmed animal traceability requirements and, in maintaining the identity of farmed animals crossing international borders (15 countries each); and in enabling the exchange of farmed animal traceability information to support disease control response and disease surveillance (12 countries).

Among the 11 countries whose level of interest in developing a bovine traceability system is greater than their reported level of readiness, three export beef. In reviewing responses from the remaining eight countries, the reported cooperation with trading partners to support farmed animal traceability is also relatively good. Therefore, the fact that their readiness is not on a par with their interest is not due to lack of cooperation with trading partners.

Sixteen countries believe requirements set by trading partners for the import of animals and animal products to their country are justified (five countries disagreed including two important meat exporting countries) while 18 countries agreed that these foreign requirements limit their export of farmed animals and farmed animal products to these countries (five countries disagreed). This mixed sentiment towards the justification of traceability requirements as a condition for import was also apparent when countries were asked for their opinion on the statement that farmed animal traceability is a non-tariff trade barrier. Whereas 14 countries disagreed that farmed animal traceability is a non-tariff barrier, eight countries agreed with the statement.

3. Discussion

Member Countries wishing to develop a farmed animal traceability system should review the recommended key elements of a system listed under Chapter 4.2. of the *Terrestrial Code* entitled ‘Design and implementation of identification systems to achieve animal traceability’ [7].

Based on the responses from the questionnaire, the level of development and performance of farmed animal traceability systems varies greatly among Member Countries in the region. There are approaches that, once adopted, would not require significant financial investments and could further support trade of farmed animals and food products: the adoption of standards to support interoperability, the development of an export-oriented farmed animal traceability system, technical cooperation and the ratification of zoning agreements.

Adoption of standards to support interoperability

While the adoption of standards was not identified by the responding countries as an important impediment in the development of a farmed animal traceability system, a further analysis of this option merits attention. The unique identification of bovines, caprines, ovines and potentially porcines across the Americas would be supported through the adoption of the ISO 11784 standard. The uniqueness of 11784 standard identification numbers is ensured with the inclusion of a code that corresponds to the country (according to ISO 3166-1 numeric standard) where the animal indicator has been issued, and the allocation of unique identification numbers by the Veterinary Authority within the country (as recommended under Chapter 4.2. of the *Terrestrial Code*). The level of adoption of this standard in the Americas has not been reviewed in the course of this study. As the adoption of this standard is free, it would address the financial limitation identified by 25 countries as the main impediment in the development of a traceability system for farmed animals. However, it should be recognised that interoperability between animal indicators is not ensured solely through the adoption of a single identification number standard, as animal indicators adopted under a traceability programme may be made from different, non-interoperable technologies (e.g. low frequency versus ultra-high frequency).

The level of adoption of standards to uniquely identify establishments where farmed animals are kept was not reviewed in the questionnaire. A unique establishment identification number could also be used to identify a group of farmed animals (e.g. porcines) originating from this establishment. Free-of-charge national standards for the unique identification of establishments are used in the Americas. In order to support the uniqueness of those identification numbers, the first two characters of the identification number could correspond to a country sub-division following the ISO 3166-2 standard.

Global Standards 1 (GS1) also provides a family of standards to support traceability (e.g. Global Location Number, Global Trade Identification Number), with, however, a user fee. The lack of interoperability between ISO and national traceability standards used to support farmed animal traceability and GS1 standards used to support food traceability is a pending issue that remains to be addressed.

Narrowing the scope of the farmed animal traceability system

With the observed lack of interest from producers in the development of a farmed animal traceability system, there could be more appetite for a traceability system oriented for export. As such, the identification and registration of movements would be required only for farmed animals, and products derived from them, intended for export. However, such an approach, adopted by some countries in the Americas, does not fully support an efficient response to a sanitary issue.

Another approach would be to develop a book-end traceability system where animals would be uniquely identified; their origin and death, export and import would be reported, but not their movements between farms or through assembly points (one of the most expensive components of a traceability system). While not covering the most significant risks from an epidemiological perspective, such a programme could satisfy the expectations of some trading partners.

Technical cooperation

Animal indicators used under a farmed animal traceability programme should meet retention and readability performance standards in order to maintain the identity and history of the animals. Conducting laboratory and field tests for animal indicators against performance standards may be quite expensive. Countries with financial limitations should be made aware that non-electronic and electronic ear tags have already been tested for their performance by the International Committee for Animal Recording [3]. While cooperation between countries in jointly purchasing animal

indicators would likely not constitute a cost-saving measure, a joint effort in requesting that manufacturers of animal indicators adopt quality assurance and control evaluations by third parties would be valuable.

In order to maintain the history of farmed animals imported into a country, Competent Authorities should explore recognising indicators approved by other countries as equivalent (if the indicators use the same technology and bear an identification number of the same standard) to those approved domestically and, as a consequence, not requiring the imported farmed animals to be re-identified with an indicator of the importing country. The ability to maintain the lifetime history of farmed animals is a beef importing requirement set by the European Union.

The technical ability to exchange farmed animal traceability information would support enhanced detection and control of transboundary disease outbreaks and food safety issues. To support this objective, the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT), a subsidiary, inter-governmental body of the United Nations Economic Commission for Europe's (UNECE) Committee on Trade, has developed a data exchange protocol for farmed animal traceability information [10]. This initiative was initiated by France, the Netherlands and Canada.

Ratification of zoning arrangements

Under the *Terrestrial Code* [8], it is specified that the Veterinary Services of an exporting country which is establishing a zone or compartment within its territory for international trade purposes should clearly define the subpopulation in accordance with the recommendations in the relevant chapters in the *Terrestrial Code*, including those on surveillance, and the identification and traceability of live animals. The implementation of a farmed animal traceability system would ensure that animals in the protection zone are clearly distinguishable from other populations.

For countries that have already developed a farmed animal traceability system, the ratification of zoning arrangements could mitigate the impact of disease outbreaks on trade. However, an international OIE survey conducted in 2002 showed that while '74% of the countries that replied to a questionnaire apply the methodology of regionalisation as a disease-prevention strategy, [...] only 56% of the countries indicate a boost to their foreign trade due to regionalisation, and their dependence on support from the private sector for its implementation' [9].

4. Conclusion

Measures in the development or enhancement of farmed animal traceability could be adopted at a relatively low cost, such as the adoption of internationally recognised standards and technical cooperation. To address the observed lack of interest from industry in the development of a traceability system, the development of programmes solely tailored for export could be explored. However, while farmed animal traceability could impact trade by potentially reducing the duration of embargos resulting from a sanitary issue, it should be recognised that traceability is only one factor that may come into play in signing trade agreements with other countries.

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With the concurrence of the OIE, the results of the questionnaire could be used to support academic work in the Americas.

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List of OIE Member Countries responding to the questionnaire

Argentina
Bahamas
Barbados
Bolivia
Brazil
Canada
Chile
Colombia
Costa Rica
Cuba
Dominican Republic
Ecuador
El Salvador
Guatemala
Guyana
Haiti
Honduras
Jamaica
Mexico
Nicaragua
Panama
Paraguay
Peru
Suriname
United States of America
Uruguay
Venezuela

Glossary

Animal: means a mammal, reptile, bird or bee.

Animal identification: means the combination of the identification and registration of an animal individually, with a unique identifier, or collectively by its epidemiological unit or group, with a unique group identifier.

Animal identification system: means the inclusion and linking of components such as identification of establishments/owners, the person(s) responsible for the animal(s), movements and other records with animal identification.

Animal traceability: means the ability to follow an animal or group of animals during all stages of its life.

Competent Authority: means the Veterinary Authority or other Governmental Authority of a Member Country having the responsibility and competence for ensuring or supervising the implementation of animal health and welfare measures, international veterinary certification and other standards and recommendations in the *Terrestrial Code* and in the *OIE Aquatic Animal Health Code* in the whole territory.

Desired outcomes: describe the overall goals of a programme and are usually expressed in qualitative terms, e.g. 'to help ensure that animals and/or animal products are safe and suitable for use'. Safety and suitability for use could be defined in terms such as animal health, food safety, trade and aspects of animal husbandry.

Establishment: means the premises in which animals are kept.

Farmed animals: means bovines, caprines, equines, ovines, porcines and poultry raised in an agricultural setting to produce commodities such as food, fibre and labour.

Performance criteria: are specifications for performance of a programme and are usually expressed in quantitative terms, such as 'all animals can be traced to the establishment of birth within 48 hours of an enquiry'.

Policy instrument: refers to interventions made by government or the public sector which are intended to achieve outcomes that conform to the objectives of public policy.

Poultry: means all domesticated birds, including backyard poultry, used for the production of meat or eggs for consumption, for the production of other commercial products, for restocking supplies of game, or for breeding these categories of birds, as well as fighting cocks used for any purpose. Birds that are kept in captivity for any reason other than those reasons referred to in the preceding paragraph, including those that are kept for shows, races, exhibitions, competitions or for breeding or selling these categories of birds as well as pet birds, are not considered to be poultry.

Registration: is the action by which information on animals (such as identification, animal health, movement, certification, epidemiology, establishments) is collected, recorded, securely stored and made appropriately accessible and able to be utilised by the Competent Authority.

Scope: specifies the targeted species, population and/or production/trade sector within a defined area (country, zone) or compartment that is the subject of the identification and traceability programme.

Zone/region: means a clearly defined part of a territory containing an animal subpopulation with a distinct health status with respect to a specific disease for which required surveillance, control and biosecurity measures have been applied for the purpose of international trade.