

Zoning and compartmentalisation as risk mitigation measures: an example from poultry production

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Summary

This paper discusses the application of compartmentalisation in the Thai commercial poultry industry. The concept was adopted to address Thailand's inability to export fresh poultry meat because of endemic avian influenza. Owing to the nature of compartmentalisation, implementation required a strong partnership between government and the private sector (the Thai poultry exporters). The paper describes the processes implemented to ensure that appropriate risk mitigation measures were in place and to guarantee the continued biosecurity of the compartments. Other Members of the World Organisation for Animal Health may be able to adapt the compartment system used in Thailand to their own similar situations and the formal international recognition of such systems would be beneficial.

Keywords

Biosecurity – Compartmentalisation – Partnership – Poultry production – Risk mitigation – Thailand – Zoning.

Introduction

Poultry meat is a major animal protein source for the Thai people as it is cheaper than other meat due to the poultry industry's utilisation of modern technology and business integration. The Thai poultry industry provides significant employment (direct and indirect) in crop and fisheries production for animal feed, in poultry primary production at the farm level, and in the slaughter and further processing sectors. More than 1.2 million people are directly involved in the production of chicken meat in Thailand. The value of the broiler industry is about 100,000 million Baht (€2,403.2 million, US\$3,343.4 million) or about 1% of national gross domestic product in 2008 (6). It has also led to the establishment of related businesses such as the manufacture and importation of equipment for poultry farms and processing plants, animal health and pharmaceutical products, and transportation, communications and packaging.

The poultry industry has earned significant income for the country from the export of poultry meat and products since 1973. Poultry meat exports increased continuously until peaking in 2003, prior to an outbreak of avian influenza (AI) in Thailand, with a maximum export volume of 545,987 tonnes, valued at 48,418 million Baht (€1,163.6 million, US\$1,618.8 million). Since the AI outbreak in January 2004, the export of fresh poultry meat from Thailand has been banned, but cooked poultry meat is still permitted into international markets.

The Department of Livestock Development (DLD) of the Royal Thai Government (the government Veterinary Services) sought solutions to regain Thailand's fresh poultry meat export markets. Fortunately, in 2005 the World Organisation for Animal Health (OIE) recognised the difficulty some Members faced in eradicating animal diseases from their entire territory and maintaining an animal-disease-free status, and introduced the concept of compartmentalisation to assist disease control, particularly with regard to international trade. Compartmentalisation

enables a country to create 'compartments' that contain subpopulations of disease-free animals that may be in different locations but are kept under a common biosecurity management system. Within the framework of this concept, an OIE Member that has eradicated a disease from only part of its territory, or from a particular industry sector, may be able to resume trade under certain restrictions even though the rest of the country remains infected. The DLD recognised that compartmentalisation could be an alternative to zoning – which primarily defines a subpopulation on the basis of geography – as a means of accessing livestock commodity markets in situations where countrywide freedom is not recognised. The principles of compartmentalisation have now been adopted into Thai national policy for the control of notifiable avian influenza (NAI), both highly pathogenic avian influenza and low pathogenicity avian influenza (H5 and H7).

A feasibility study was conducted in 2005 under the auspices of the European Union (EU). Poultry farm and company visits were made by EU experts to explore the application of compartmentalisation in particular companies. The capacities and capabilities of the DLD diagnostic laboratories, and NAI surveillance and control systems, were evaluated. The experts were satisfied with the Thai systems and considered that compartmentalisation could be applied effectively in the Thai poultry industry.

International standards relating to compartmentalisation

International standards are set by those organisations recognised by the World Trade Organization as international standard-setting bodies (ISSBs), operating within the framework of the Agreement on the Application of Sanitary and Phytosanitary Measures. For commodities derived from livestock, the relevant ISSBs are the Codex Alimentarius Commission (for human food safety) and the OIE (for animal health).

In 2005, the OIE's *Terrestrial Animal Health Code (Terrestrial Code)* introduced the concept of compartmentalisation on the basis that domestic livestock could be effectively isolated from other mammals and birds, and that animals or products derived from livestock within these compartments could be safe to trade. A specific chapter on zoning and compartmentalisation (Chapter 4.3.) was later adopted by the OIE International Committee (now known as the World Assembly of Delegates).

Zoning applies to an animal subpopulation which is defined primarily on a geographical basis, whereas compartmentalisation applies to an animal subpopulation

defined primarily by management and husbandry practices related to biosecurity. The glossary of the *Terrestrial Code* defines a 'compartment' as 'an animal subpopulation contained in one or more establishments under a common biosecurity management system with a distinct health status with respect to a specific disease or specific diseases for which required surveillance, control and biosecurity measures have been applied for the purpose of international trade'. The fundamental requirement for compartmentalisation is the implementation and documentation of management and biosecurity measures to create a functional separation of subpopulations. Thus, the principles of compartmentalisation are appropriate for application to the Thai poultry industry for NAI control and prevention.

The *Terrestrial Code* now also provides a chapter on the application of compartmentalisation (Chapter 4.4.). This chapter provides guidance for Members on the establishment of a compartment, including recommendations on how to protect a compartment from potential sources of infection, the physical or spatial factors that affect the biosecurity status of a compartment, infrastructural factors, biosecurity plans and traceability systems.

The glossary of the *Terrestrial Code* defines a biosecurity plan as a plan that 'identifies potential pathways for the introduction and spread of disease in a zone or compartment, and describes the measures which are being or will be applied to mitigate the disease risks, if applicable, in accordance with the recommendations in the *Code*'. A comprehensive biosecurity plan should be developed for each compartment. It should describe the standard operating procedures, contingency plans, surveillance and reporting systems, and training programmes.

The Food and Agriculture Organization of the United Nations (FAO)/World Bank/OIE paper *Biosecurity for Highly Pathogenic Avian Influenza: Issues and Options* (4) states that 'Biosecurity is the implementation of measures that reduce the risk of the introduction and spread of disease agents, which requires the adoption of a set of attitudes and behaviours by people to reduce risk in all activities involving domestic, captive exotic and wild birds and their products'. The paper also describes three principal elements of biosecurity, namely segregation, cleaning materials and disinfection. It notes that biosecurity programmes must be designed and established with the active participation of those who will implement them and that programmes should avoid complex procedures, which may not be able to be readily applied. FAO also published a *Biosecurity Toolkit* (3) as a practical guide to developing and implementing biosecurity principles and components and assessing biosecurity capacity, and as a manual for biosecurity risk analysis.

Important elements of a biosecurity plan include quality assurance schemes, procedures for animal and human movement control, poultry health measures (including vaccinations, medications and other veterinary care), control over vehicles, security of feed and water sources, and control of pests and wild bird populations.

Preparation for compartmentalisation in the Thai poultry industry

The DLD is responsible for establishing compartmentalisation in the Thai poultry industry, and the DLD and poultry meat export companies, including related associations and relevant stakeholders, have worked together closely to implement poultry compartmentalisation. Experts from the Ministry of Public Health have also been involved.

Principles for defining a compartment

The first principle in defining a compartment is that there should be a clear definition of the animal subpopulation contained in the compartment, to ensure recognition and traceability (7). As the export commodities most affected by the NAI outbreak were poultry meat and related products, the stakeholders agreed that the compartments should comprise broiler and meat-type duck establishments. Therefore, a compartment was defined as: 'a broiler or meat-type duck subpopulation contained in one or more establishments under a common biosecurity management system with the health status of NAI-free without vaccination, for which required surveillance, control and biosecurity measures have been applied for the purpose of international trade in raw or uncooked chicken and duck meat and their products'.

The second principle is that there should be an epidemiological separation of the subpopulation in the compartment from other populations and potential sources of infection through the implementation of a sound biosecurity plan. The stakeholders agreed to adopt the previous OIE recommendation on creating a 1-km radius buffer zone around the perimeter of the establishment (8), although the concept of a buffer zone is not present in the current edition of the *Terrestrial Code*. The presence of a buffer zone is considered essential to provide early warning of the presence of NAI virus near the compartment (5).

The DLD has taken full responsibility for NAI surveillance and control in the buffer zone, with the measures taken

being those recommended in Article 4.3.3. of the *Terrestrial Code*. Within each compartment, biosecurity measures (including surveillance) are the responsibility of the owners or managers of the establishments in the compartment; these are approved and monitored by the DLD. Each establishment in a compartment must have a perimeter fence with a single entrance furnished with biosecurity barriers for vehicles and humans to limit the access of visitors, vehicles and equipment. A set of biosecurity barriers at the entrance into each poultry-raising area is also required. Only essential visitors are allowed to enter and they must undertake further biosecurity measures such as showering, changing into clean clothing, wearing a mask and hair net, and wearing dedicated footwear. Only essential vehicles and equipment are allowed entry. Facilities for cleaning and disinfection must be provided at the entrance to each poultry house. The poultry houses must be wild-bird-proof. Storage facilities for feed and veterinary products must be provided separately.

All surveillance samples are sent to DLD's NAI Reference Laboratory, the National Institute of Animal Health, and seven subsidiary Regional Veterinary Research and Development Centres. The test methodologies used comply with the relevant sections of the *OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals* (11).

Biosecurity for Highly Pathogenic Avian Influenza: Issues and Options (4) recommended that biosecurity should be formulated in terms of measures that are readily able to be complied with. Three principal elements of biosecurity are:

- segregation: the creation and maintenance of barriers to limit the potential opportunities for infected animals and contaminated materials to enter an uninfected site. This step, properly applied, will prevent most infection;
- cleaning materials: vehicles and equipment that have to enter (or leave) a site must be thoroughly cleaned to remove visible dirt. This will remove most of the contaminating virus;
- disinfection: properly applied, disinfection will inactivate any virus that is present on materials that have already been thoroughly cleaned.

Application of the principles

As the integrity of the compartment relies on effective biosecurity, each biosecurity plan has been designed by the DLD working in close collaboration with the relevant companies, associations and stakeholders. All potential pathways for introduction and spread of NAI into the compartment (Fig. 1) and the associated risk factors are assessed in accordance with guidelines provided in the *Terrestrial Code* and in *Biosecurity for Highly Pathogenic*

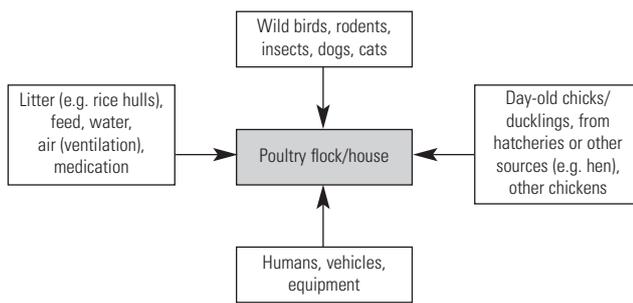


Fig. 1
Potential pathways for the introduction and spread of notifiable avian influenza in a compartment

Source: Food and Agriculture Organization of the United Nations

Avian Influenza: Issues and Options (4). Essential biosecurity measures were determined to mitigate exposure from each possible pathway.

All poultry farms within a compartment practise a common, standard biosecurity management system that covers the following points (each of which is discussed in a separate section below):

- the location of each farm
- a farm management system to prevent disease spread
- feed management
- personnel and visitor management
- poultry health management
- pest control
- water supply
- environmental management
- existence of a valid traceability system
- biosecurity management in an emergency.

The location of each farm

Poultry farms must be located on an appropriate site away from breeding farms, hatcheries, feed mills, slaughterhouses (other than those in the same compartment) and live bird markets. A separate area must be provided on the farm for cleaning and disinfection of vehicles, personnel and materials before their entry to and exit from the farm. Office and residential buildings should be separate from poultry-raising areas.

A farm management system to prevent disease spread

The system needs to address the management of poultry houses and equipment, poultry house surroundings, vehicles, data records and documentation. Poultry housing

should be based on an all-in and all-out system with downtime of at least 14 days. After flock harvesting, each poultry house must be thoroughly cleaned and disinfected. Replacement flocks need to be collected from within the compartment or directly from reputable NAI-free sources, i.e. flocks of a higher or comparable health status, outside the compartment. Litter must be purchased from reliable sources. Fresh litter must be used for each flock. Every vehicle entering a farm must be cleaned and disinfected. Records of all operations in farm management must be kept to assist in the investigation of any disease outbreak.

Feed management

Feed should be derived from feed mills that have been certified for Good Manufacturing Practice (GMP) by the DLD. The route of feed transportation to poultry farms should be determined based on the likelihood of contamination en route. Feed transport trucks must be cleaned and inspected before being loaded. Feed storage facilities must be cleaned, dried and protected from pests.

Personnel and visitor management

Farm personnel are not permitted to come into contact with birds in places other than the farm. Farm personnel and technical service personnel must be trained in the farm biosecurity system and training records must be kept. Visitors should not have any contact with other birds or avian facilities for at least 24 h before visiting the compartment. Visitors from high-risk areas, such as infected farms, should be prohibited or, if the visit is essential, must wait for five days before entering. Every person entering the farm must be recorded in a logbook, shower and wear protective clothing supplied by the farm.

Poultry health management

Each poultry farm must have a veterinarian qualified through a DLD training course and licensed by the DLD to supervise animal health. Records of vaccination and medical treatment must be kept. Active surveillance (clinical and laboratory) of poultry health status must be conducted regularly according to the agreed protocol and disease control programme. Contingency plans must be in place.

Pest control

An effective pest control programme must be in place to reduce the risk of disease being introduced into farms through pest vectors. Records of pest control must be maintained.

Water supply

Water needs to be supplied from clean sources in which cross-contamination is prevented. Water quality should be checked annually by an accredited laboratory.

Environmental management

Manure and used litter should be moved in a closed vehicle to prevent contamination during transportation. Waste water from poultry houses and equipment cleaning must be properly treated before being discharged. Dead birds must be disposed of in an appropriate manner to prevent disease spread. Garbage must be kept in closed containers and properly destroyed.

Existence of a valid traceability system

The DLD has promulgated a Regulation on Traceability of Livestock Commodities B.E. 2546 (1), the scope of which extends from the poultry farm to the processing plant. This far-reaching regulation enables retail/exported poultry products to be traced back to the flock of origin. Detailed records are required to be kept, on feed and litter, vaccines, veterinary medicinal products and other chemicals, poultry health management (including all test results), and poultry movements onto and off the farm.

Biosecurity management in an emergency

Each farm operator needs to establish standard operating procedures (SOPs) for biosecurity management in case of suspicion or occurrence of NAI on the farm or in the buffer zone surrounding the farm. These SOPs are in addition to the normal SOPs and they must comply with the relevant legislation and regulations that apply during emergencies. These SOPs cover security of farm entrances; human, vehicle and equipment entry and exit; farm personnel; entry and exit of birds; handling of feed, litter and manure; and cooperation with DLD officers. These SOPs would need to be applied for at least 90 days after destruction of the diseased flock and cleaning and disinfection of the premises.

Roles and responsibilities of the public and private sectors

The concept of compartmentalisation is based on the recognition of an enterprise as free from specific disease or diseases. The concept necessitates very close cooperation between the public and private sectors. The private sector is responsible for setting up compartments and operating them so as to maintain the biosecurity of individual compartments, while the public sector is responsible for

setting the minimum requirements (in the form of model biosecurity plans), monitoring and auditing the operating procedures, conducting international negotiations and providing the relevant health certification for commodities exported from the compartments.

The credibility of poultry compartmentalisation depends on full collaboration between the DLD and the commercial poultry sector, in partnership. A Memorandum of Understanding (MOU) on poultry compartmentalisation between the DLD and each of 24 enterprises applying for official recognition of their compartmentalisation arrangements was initiated in July 2006 to clearly identify the roles and responsibilities of all parties. Specific roles and responsibilities for the supervision and control of the compartment and NAI virus surveillance are described here.

Responsibilities of the Department of Livestock Development

The responsibilities of the DLD are as follows:

- a) establishing criteria for the implementation of compartmentalisation in the commercial poultry industry, in accordance with the DLD Proclamation on Case Definition for Notifiable Avian Influenza (2):
 - poultry farming standards for compartmentalisation
 - guidelines for biosecurity management for broiler farms and meat-type duck farms
 - NAI surveillance and control measures on poultry farms and in the buffer zones of the compartment
 - traceability systems
- b) drawing up a protocol for auditing the biosecurity management of these poultry farms
- c) conducting audits and managing the certification of the poultry farms
- d) designating the 1-km buffer zone around each compartment, conducting NAI surveillance four times a year in the buffer zone and testing samples in designated laboratories
- e) establishing training courses related to compartmentalisation, i.e. biosecurity management and surveillance, for the public and private sectors.

Role of the enterprises

Each company has established a compartment team led by a compartment manager who acts as the focal point for communications with the DLD. Their tasks are as follows:

- a) establishing the biosecurity management manual for the compartment

- b) selecting the poultry farms that comply with the standards
- c) cooperating with the DLD to survey the poultry population in the buffer zone
- d) conducting NAI surveillance in poultry farms in the compartment in collaboration with the DLD in order to:
 - verify the NAI-free status of each poultry farm every 12 months through testing in designated laboratories
 - maintain the NAI-free status of the compartment
- e) operating the compartment in accordance with the biosecurity management manual.

Since the MOU was signed, the DLD has issued a proclamation on the implementation of compartmentalisation in the commercial poultry industry to improve farm biosecurity systems in general as well as to maintain the NAI-free status of such farms.

Application for poultry compartmentalisation

In Thailand, the adoption of compartmentalisation is not compulsory but compartmentalisation provides industry with an opportunity to limit the risks associated with commercial production and eventually to re-establish export markets for fresh poultry meat. It is a tool that may assist potential exporters, encourage small producers to improve their management, increase the number of contracted farmers, train villagers living in buffer areas, and contribute to reduced AI incidence at the national level.

The DLD provides an opportunity to all poultry owners or enterprises to establish a compartment. Anyone who wishes to establish a broiler or meat-type duck compartment must have a farm that complies with the criteria set out by the DLD. The Farm must:

- have efficient animal disease control with no history of NAI
- be operated under a common biosecurity management system
- be a closed system farm which has already been certified as a ‘standard establishment’ by the DLD
- be applying an animal identification and traceability system
- be supplied only by related functional units (parent breeders, hatcheries, feed mills, slaughterhouses and processing plants) which are certified, through specific quality assurance schemes, as ‘standard establishments’ by the DLD

- have a record of the exact locations of each component of the compartment (by geographical information system)
- have an identified poultry subpopulation.

There are three steps in the process of gaining and maintaining official accreditation of compartments:

- a) approval of farm biosecurity standards
- b) surveillance for accreditation as an NAI-free compartment
- c) surveillance to maintain the compartment’s NAI-free status.

Step 1: Approval of farm biosecurity standards

A poultry company needs to submit an application for compartmentalisation approval, together with its biosecurity management manual, to the Bureau of Livestock Standards and Certification (BLSC) (Fig. 2). The application committee will thoroughly inspect all the submitted documents, especially the biosecurity management manual. If the documents are found to be complete, the company will be informed and the company managers will decide which individual farms may then apply to the Provincial Livestock Office (PLO) for farm standards accreditation and inclusion in the compartment. The Regional Bureau of Animal Hygiene and Sanitation (RBAHS) and the PLO form a committee for farm standards accreditation. A farm inspection will be carried out to determine whether it complies with the DLD criteria and the submitted biosecurity management manual. If the farm is accredited, the BLSC, the Bureau of Disease Control and Veterinary Services and the diagnostic laboratory in the area will be informed so that they can prepare for the next steps, which involve surveillance activities.

Step 2: Surveillance for accreditation as a compartment free of notifiable avian influenza

A manual for NAI surveillance and control in compartments has been developed by the DLD. Workshops for DLD officers and producers are conducted to ensure a common understanding of surveillance and operations relating to compartments. Surveillance for NAI is conducted in the compartment and in poultry in the buffer zone around each compartment for the purposes of certifying and maintaining NAI-free status, in accordance with the *Terrestrial Code* recommendations (9, 10).

Surveillance for evaluating NAI-free status is a part of the mechanisms of approval of a compartment (Fig. 3). Surveillance is conducted for a 12-month period immediately after farms have passed the farm standards accreditation. This involves active clinical and serological surveillance on every farm in each compartment as follows:

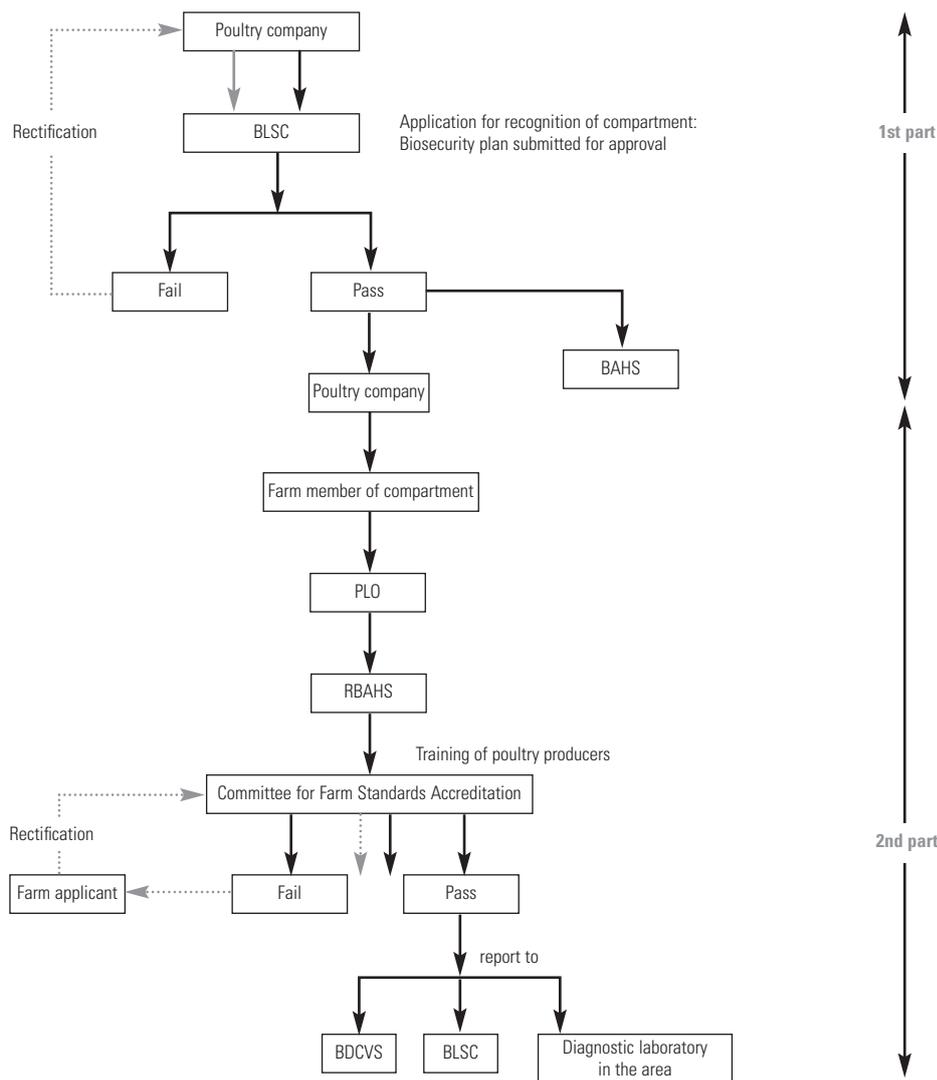


Fig. 2
Application for poultry compartmentalisation accreditation: Step 1 – Approval of farm biosecurity standards

BAHS: Bureau of Animal Hygiene and Sanitation
 BDCVS: Bureau of Disease Control and Veterinary Services
 BLSC: Bureau of Livestock Standards and Certification
 PLO: Provincial Livestock Office
 RBAHS: Regional Bureau of Animal Hygiene and Sanitation

a) active clinical surveillance by the farmer is conducted daily. If any birds have clinical signs of NAI as described in the Case Definition for Notifiable Avian Influenza (2), the farmer must immediately report the findings to the nearest DLD office. An official investigation will follow to confirm or rule out the presence of the disease. If NAI is officially confirmed on that farm, DLD measures for NAI control are undertaken;

b) random sampling by DLD officials is carried out in every poultry house on every farm during the 8-10 days before birds are harvested, to test for NAI virus in designated laboratories. This provides a 95% level of confidence of detecting NAI at a target prevalence of 20%;

c) when negative results are confirmed, the compartment is certified as an NAI-free compartment.

Step 3: Surveillance for maintaining status as a compartment free of notifiable avian influenza

After the compartment has been certified as NAI-free the final part of the mechanisms of compartment approval must be conducted (Fig. 4). Routine surveillance is performed by the DLD in collaboration with the farm operators. Veterinary officers from the RBAHS and the PLO will conduct surveillance as follows:

a) active clinical surveillance is carried out as described in Step 2 (a);

b) five poultry houses from individual farms in each compartment are randomly selected for sampling to give a 95% level of confidence of detecting NAI at a prevalence of

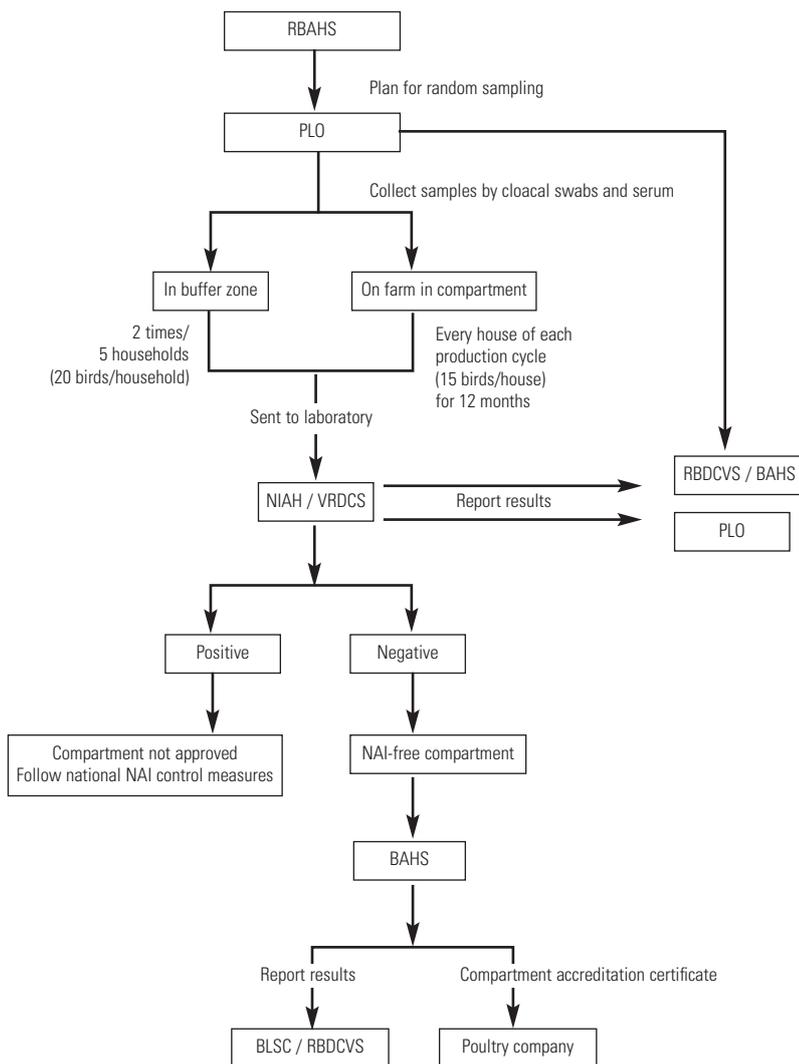


Fig. 3

Application for poultry compartmentalisation accreditation: Step 2 – Surveillance for accreditation as a compartment free of notifiable avian influenza

BAHS: Bureau of Animal Hygiene and Sanitation

BDCVS: Bureau of Disease Control and Veterinary Services

BLSC: Bureau of Livestock Standards and Certification

NAI: notifiable avian influenza

NIAH: National Institute of Animal Health

PLO: Provincial Livestock Office

RBAHS: Regional Bureau of Animal Hygiene and Sanitation

RBDCVS: Regional Bureau of Disease Control and Veterinary Services

VRDCS: Veterinary Research and Development Centres

20% during the 8-10 days before birds are harvested. Sampling is carried out every two production cycles;

c) the NAI-free compartment status is maintained as long as surveillance provides negative results.

Notifiable avian influenza surveillance in buffer zones

To reduce the risk of NAI being transmitted into the compartment, surveillance for NAI in buffer zones is routinely performed by the DLD in collaboration with farm operators. Surveillance activities are as follows:

a) active clinical surveillance in the buffer zone is carried out in the same manner as described in Step 2 (a)

b) when the compartment has been certified for NAI-free status, poultry raised in the households/farms in the buffer zone must be sampled on a quarterly basis by the veterinary officials from RBAHS and PLO, with sampling sufficient to give a 95% level of confidence of detecting NAI at a target prevalence of 20%.

Discussion

Twenty-three poultry export companies from six regions of the country have applied for recognition of their compartmentalisation arrangements for one or more compartments. Sixteen of the applicants have been

approved for compartmentalisation, resulting in a total of 46 NAI-free compartments without vaccination, comprising 294 farms which produce about 74 million birds per cycle. Five of the 46 compartments are meat-type duck compartments, producing a total of approximately 500,000 ducks per cycle.

The reluctance of other poultry meat export companies to participate (especially the partly integrated ones, i.e. those that do not have their own feed plants, breeding stock, slaughter facilities, etc. and must rely on outside suppliers at certain points in the production process) may be due to the fact that, at present, there is no mechanism for an independent evaluation of the Thai compartmentalisation system that would lead to international recognition. Many believe that only fully integrated compartments would be endorsed by importing countries. Furthermore, maintaining the biosecurity of a compartment requires a huge investment in both human and financial resources, without a guaranteed return.

Thailand has initially established compartmentalisation in broiler and meat-type duck establishments only; however, all related sectors linked to the compartments, such as feed mills, breeder farms, hatcheries and slaughterhouses, meet international standards for Good Agricultural Practice, GMP and Hazard Analysis and Critical Control Points. As a result, if any companies wish to expand their compartments in the future to cover other sectors or to be a completely integrated compartment, they can do so utilising existing standards under the supervision of the DLD.

The benefits gained from establishing compartments are not only recognition of freedom from NAI (and potentially other poultry diseases such as Newcastle disease and infectious bursal disease), but also facilitation of poultry movements from the compartments by the DLD. Although importing countries have yet to officially endorse Thai poultry compartmentalisation there are still indirect benefits for companies operating compartments, because within Thailand the food safety of these companies is viewed more positively than the food safety levels of companies that have not implemented compartmentalisation.

Conclusion

As compartmentalisation cannot be implemented without significant resource inputs from the public and private sectors, a framework for assessing, organising and supporting the resources needed to implement and maintain compartmentalisation (for example, financial, human, organisational and technical resources) needs to be developed at national and sub-national levels. It is difficult

to provide the necessary assurance that there are no epidemiological links from outside that may compromise the biosecurity of a compartment. Good cooperation and understanding between government and the private sector in implementing biosecurity plans (including staff training, operational procedures and surveillance) are required.

Training is essential to enable public and private sector agencies/organisations to improve their understanding of international standards and their application, and to raise awareness among small farmers of basic biosecurity, particularly in buffer zones around compartments.

For further progress to be made, an independent evaluation of the compartmentalisation system in Thailand must be conducted, under the auspices of the OIE. The OIE could carry out such an assessment as part of an evaluation of the Thai Veterinary Services using the OIE Tool for Evaluation of Performance of Veterinary Services (PVS Tool). After a positive PVS evaluation, the Thai approach to compartmentalisation could serve as a model for other OIE Members seeking to implement a system of compartments.

In 2010, the DLD and the poultry industry agreed to expand the concept of compartmentalisation to include poultry breeder establishments (including hatcheries), with a view to the approval of fully integrated compartments in the future.

Furthermore, the DLD is examining the application of compartmentalisation in the commercial pig industry, where production methods are similar (vertically integrated businesses and intensive farming systems), by carrying out a preliminary study on establishing compartments that are free of classical swine fever and foot and mouth disease (FMD) with certain interested companies. However, the major barrier to international trade in Thai pigs and swine products is FMD, which is not yet included in the OIE list of diseases for which compartmentalisation is applicable.



L'application du zonage et de la compartimentation en tant que mesures d'atténuation du risque : un exemple dans le secteur aviaire

L. Ratananakorn & D. Wilson

Résumé

Les auteurs étudient un exemple d'application de la compartimentation, qui concerne le secteur de l'élevage commercial de volailles en Thaïlande. La Thaïlande a adopté ce concept afin d'apporter une solution à l'impossibilité dans laquelle elle se trouvait d'exporter de la viande de volaille fraîche en raison de la présence endémique de l'influenza aviaire dans le pays. Compte tenu des exigences de la compartimentation, le gouvernement et le secteur privé (exportateurs thaïlandais de volailles) ont mis en place des partenariats efficaces afin de réussir l'application du concept. Les auteurs décrivent les processus mis en œuvre pour s'assurer que les mesures appropriées d'atténuation du risque sont appliquées et pour garantir un niveau constant de biosécurité au sein des compartiments. Le système de compartiments appliqué en Thaïlande pourrait être repris par d'autres Membres de l'Organisation mondiale de la santé animale et adapté à des situations similaires ; c'est pourquoi il serait intéressant de reconnaître officiellement ces systèmes au niveau international.

Mots-clés

Atténuation du risque – Biosécurité – Compartimentation – Partenariat – Production aviaire – Thaïlande – Zonage.



Zonificación y compartimentación como medidas de atenuación del riesgo. Ejemplo de la producción avícola

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Resumen

Los autores examinan la aplicación de medidas de compartimentación al sector avícola industrial de Tailandia. Dicho concepto fue adoptado ante la imposibilidad de que el país exportara carne fresca de aves de corral por la existencia de influenza aviar endémica. Dadas las características de la compartimentación, para ponerla en práctica se requirió una estrecha colaboración entre el sector público y el privado (los exportadores tailandeses de productos avícolas). Asimismo, los autores describen los procesos instituidos para asegurar que se aplicaran las adecuadas medidas de atenuación del riesgo y garantizar la seguridad biológica permanente de los compartimentos. Quizá otros Miembros de la Organización Mundial de Sanidad Animal puedan adaptar el sistema de compartimentos utilizado en Tailandia a sus propias circunstancias, cuando éstas sean similares, en cuyo caso resultaría beneficioso un reconocimiento internacional oficial de tales sistemas.

Palabras clave

Atenuación del riesgo – Compartimentación – Colaboración – Producción avícola – Seguridad biológica – Tailandia – Zonificación.



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