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Measuring general animal health status: Development of an animal health barometer

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ABSTRACT

The development of an animal health barometer, an instrument to measure the general health of the Belgian livestock population on a yearly basis and to monitor its evolution over time, is described. The elaboration of a set of 13 animal health indicators (AHIs) as the basis for the animal health barometer is discussed. These indicators were weighted by experts – including scientists, policy makers and agro-industrial representatives – to determine their relative weight in the barometer. The result of the barometer is expressed as a comparison with a previous year. Based on the results of the 13 AHIs, it is concluded that general animal health in Belgium shows a positive evolution since 2008. The animal health barometer provides a composite view of the status of livestock health in Belgium and is a tool to communicate in an intelligible, comprehensible manner on aspects of animal health to consumers and professional stakeholders in the animal production and food chain. Together with the food safety barometer (Baert et al., 2011. Food Res. Int. 44, 940) and the plant health barometer (Wilmart et al., 2014. Eur. J. Plant Pathol. doi: 10.1007/s10658-014-0547-x), the animal health barometer is one of the three instruments to provide a holistic view on the overall status of the safety of the food chain in Belgium.

1. Introduction

A number of epidemic disease outbreaks that occurred in the European Community in the 1990s and later (e.g. Bovine Spongiform Encephalopathy, Classical Swine Fever, Foot-and-Mouth Disease, Avian Influenza) have shown that ensuring animal health – and by extension food safety and security – can best be achieved by using a farm to fork approach, in which all stakeholders of the food and feed chain bear their own responsibility for product safety as a whole. In parallel with the steady growth of the European Community and with the increase in animal trade and risk of disease transmission a progressive harmonisation of animal health measures and systems of disease surveillance, diagnosis and control have been put in place (EU Animal Health Strategy 2007–2013).

Animal health and food safety are closely linked as animal diseases transmissible to man (zoonosis) affect public health. Poor hygiene and disease occurrence at the different stages of the animal production chain can affect the quality and the safety of animal products (Singer et al., 2007).

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The safety of the food chain has been reinforced by the general implementation of procedures based on the 'Hazard Analysis and Critical Control Points' (HACCP) principles treated by the General Food Law (Regulation (EC) 178/2002) and the European Hygiene legislation (Regulation (EC) 852/2004). In the various EU Member States competent authorities inspect and audit the implementation of 'Good Agricultural Practices' (GAP) and HACCP based procedures. These procedures are also applicable in the animal production chain and have an indirect effect on animal health as such.

The Belgian Federal Agency for the Safety of the Food Chain (FASFC) was created in 2000 as a response of the government to the dioxin crisis (Royal Decree of 4 February 2000) which had revealed the lack of coordination between different inspection services of the food chain. The expectations regarding the organisation of the food chain control system were clearly defined and were meant to cover the entire food supply chain from farm to fork (starting from the raw materials and the feed to the rearing of food production animals up to their transformation into food), with the objective to protect public health, animal health and plant health.

All respective segments within the food chain bear their own responsibility to ensure that safe food is offered to the consumer, without the hazardous presence of biological, chemical or physical agents. Controls and inspections concerning the sanitary status, hygiene and infrastructure, animal health and welfare and safety of animal products are important tasks performed by the FASFC. The results are published in annual activity reports which can be consulted on the website (http://www.favv-afsca.fgov.be/rapportsannuels/). However, these results do not provide a quick general picture of the safety evolution of the food chain. Therefore, the 2009 FASFC business plan mentioned the need to identify a set of indicators to measure and follow-up the safety within the food chain (Houins, 2009). This task was dedicated to the Scientific Committee of the FASFC (an independent scientific consultation body). The idea to develop a barometer to measure the safety of the food chain fits within the context of the prevailing trend towards measurable objectives, performance indicators, assessments, score systems and the like. This idea was also inspired by the introduction of similar notions in other sectors, such as the Belgian Inter-federal Poverty Barometer (2011) and the Belgian sustainability barometer (Sustainable Development Task Force, 2009).

The concept of the measurement of the safety of the food chain and the illustration of the case study of the food safety barometer has been described by Baert et al. (2011, 2012). Next to the food safety barometer two other barometers were developed by the Scientific Committee of the FASFC: the plant health (phytosanitary status) barometer (Wilmart et al., 2014) and the animal health barometer. The present paper describes the development of the latter as a practical tool for measuring and monitoring the general health situation of the national livestock population (14 animal groups or species). Animal health in the context of this paper is considered as the general sanitary status of the animal production chain as observed from the standpoint of the FASFC which is responsible for the control of the complete food chain from farm to fork.

2. Material and methods

2.1. Objective and scope of the barometer

Animal health, within the framework of the animal health barometer, is defined as the sanitary health status (including infectious diseases and zoonoses but excluding metabolic diseases) of the livestock population (14 animal groups or species including bees and fish but excluding pets and wildlife) including the compliance to standards related to animal husbandry, hygiene and welfare conditions in the primary production. Although most of the data used for the calculation of the animal health barometer are collected by the FASFC during its control and inspection activities, it has to be clear that the concept of animal health is not limited to the aspects that are related to food safety. Nevertheless, the authors are convinced that there is a strong link between animal health and food safety as also mentioned by Singer et al. (2007).

The goal of the animal health barometer is to conduct a measurement of the level of animal health of the national livestock population at the end of a calendar year and to monitor its evolution over time. In the present study, the outcome of the animal health barometer basically relates to the presence of hazards (animal diseases and zoonoses) within the animal production chain affecting the health and well-being of the production animals and posing a threat for the safety of the animal products. It relates also to the existence and functioning of preventive or mitigating systems for limiting the probabilities that such hazards occur or pose a threat to animal and public health. Information about the animal health status is collected yearly via the core activities of the FASFC and external partners.

2.2. Definition and selection of animal health indicators

Numerous controls and inspections are routinely conducted by the FASFC in order to monitor and control animal health and the related activities by the operators. It would be too complex and unworkable to incorporate all the results into the barometer, the more that an overview of most of these data is published in the annual reports of the FASFC (http://www.favv-afsca.fgov.be/rapportsannuels/) or other authorities, institutions or organisations. Therefore, it was decided to work with a set of indicators.

An indicator synthesises or simplifies relevant data about the status or evolution of a number of phenomena or symptoms. An indicator can assume either a quantitative or a qualitative (nominal or ordinal) form (Sustainable Development Task Force, 2009). Each indicator provides information about a partial aspect of the animal production chain and the monitoring of each indicator enables to achieve a trend analysis of this particular aspect.

The animal health indicators (AHI) used in the animal health barometer are not performance indicators, in the sense that they are not meant for evaluating the performance level of a certain set of activities neither of the performance of the Veterinary Services as is often done in