

## **IMPLEMENTATION OF BIOSECURITY IN THE PIG INDUSTRY: SOCIAL AND INSTITUTIONAL FACTORS**

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Spread and establishment of infectious diseases is a challenge for the livestock industries, as it can significantly affect animal and public health, on-farm productivity and trade arrangements. Implementation of biosecurity pre-border, at the border and post-border is crucial for the prevention of disease introduction and spread at a farm, region or country level and to minimize the impact of disease outbreaks. International and national organizations have developed and implemented biosecurity policies to prevent the spread of emergency animal diseases from infected to non-infected countries or regions within a country; however, at a farm level biosecurity implementation is in most cases responsibility of the industry and the individual farmers (Enticott et al. 2012; Higgins et al. 2016; Hernandez-Jover et al., 2016).

Farm biosecurity is defined as a set of measures to prevent properties from the entry and spread of pests and diseases, with the level of farmer engagement with farm biosecurity being affected by a diverse range of factors. Biosecurity is important for all type of livestock enterprises; however, intensive production systems, such as pig production, where transmission of disease is more likely due to higher animal density and contacts, appropriate implementation of biosecurity plays a significant role in preventing disease spread.

There is a significant number of studies that have investigated biosecurity implementation at a farm level among different types of livestock producers, including commercial and non-commercial enterprises and different animal species (e.g. Boklund et al., 2004; Barclay, 2005; Casal et al., 2007; Brennan and Christley, 2012; Garforth et al., 2013; Lambert et al., 2012; Sahlström et al., 2014; Schembri et al., 2015; Hernandez-Jover et al., 2016). Some of these studies have gone a step further and investigated not only the level of implementation of biosecurity but also the institutional and social factors influencing producers' engagement with and attitudes towards biosecurity. In general, findings from these studies indicate that livestock producers are highly committed to the health of their animals; however, their knowledge and implementation of biosecurity and their understanding of their responsibility as part of the biosecurity system is limited, with the perception that biosecurity risk originates externally and as such, should be managed by government.

On-farm biosecurity implementation is not solely influenced by economics and rational judgements, but rather by a multitude of influences and factors, including internal and external factors and socio-economics and demographic factors. This is true for all livestock production systems. For example, some of the internal factors identified are the level of knowledge of principles of disease transmission, the perceptions of the potential risks and the perceptions of responsibility in preventing disease. These factors are in turn affected by external factors, such as the level of available information and support for producers (e.g. industry, government), the regulatory context, the producer networks, the media, etc. Furthermore, impacting on these factors and perceptions, there are demographic characteristics and economic drivers that will have a strong influence on what producers do and believe.

Research in biosecurity within the pig industry confirms pig producers have similar drivers than other livestock producers for decision-making in relation to biosecurity. Some key farm characteristics influencing producer biosecurity engagement is herd size and the motivations for keeping pigs. In general, pig farms with bigger herd sizes, which would also be considered commercial, have better biosecurity than small-scale pig properties (Norémark et al., 2010, Lambert et al., 2012, Sahlström et al., 2014, Schembri et al., 2015). In relation to motivations for keeping pigs, those producers identifying income as a reason for raising pigs, mainly among non-commercial producers, are more likely to follow biosecurity principles in their property than those who keep pigs for other reasons, such as family tradition or home consumption (Schembri et al., 2015). However, more complex factors or drivers such as trust in those providing advice on biosecurity have also been identified as crucial for practice adoption in the pig industry (Hernandez-Jover et al., 2012).

The reasons for adopting biosecurity practices is complex, with producer knowledge on biosecurity and diseases, perception of risk, attitudes in relation to animal health and trust all playing a significant role, and any program to improve biosecurity engagement need to consider this complexity (Hernandez-Jover et al., 2014).

The current paper will explore the findings from some these studies and discuss them in the context of pig production, identifying key social and institutional factors to consider for improving engagement of producers with biosecurity.