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“Bridging the gap between increasing knowledge and decreasing resources”

Using a System Dynamics Framework to Assess Disease Risks of Pig Value Chains in Vietnam

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Abstract

In Vietnam, there are more than 4 million households producing pigs and pork. This accounts for 57% of quantity of meat consumed. One of the most critical constraints to pig production is the presence of animal disease. Pig disease outbreaks are a regular occurrence in various parts of the country, with the industry affected by diseases such as foot and mouth disease, porcine reproductive and respiratory syndrome, classical swine fever, porcine high fever disease, and swine influenza. In addition, food safety issues related to pig diseases and pork-borne diseases have also increasingly become more important concerns for consumers. Recent studies have shown significant changes in consumption behaviour in response to disease outbreaks. For instance, at least half of urban consumers stop consuming pork in times of pig disease epidemics and/or shift consumption to other meat substitutes such as poultry or fish. Disease risks thus have both public health and livelihoods impacts that are important to understand for appropriate policy and practice response.

A proposed methodology for investigating disease risks uses a system dynamics analysis framework. System dynamics models are particularly relevant in the study of livestock systems, as they capture the diverse actors and feedbacks present in value chains and their interface with disease risk and behaviour. A system dynamics model is developed that will describe different scenarios of disease risks and the consequences of different interventions to mitigate these risks.

Data from a sample of 1000 farmers and value chain actors including all actors in the pig value chain in Vietnam was collected with support from an ACIAR-funded project on Reducing Disease Risks and Improving Food Safety in Smallholder Pig Value Chains in Vietnam. We propose to test the hypotheses that disease risk is affected by type of production system, feeding system and types of feed uses, access to inputs and services, and selected socio-demographic variables associated with farmers and location.

Keywords: Disease risk, pig value chain, system dynamics model