



Tropentag, September 17-19, 2014, Prague, Czech Republic

“Bridging the gap between increasing knowledge and decreasing resources”

Sustainable Intensification: Implications for the Emergence and Maintenance of Zoonotic Diseases

DELIA GRACE¹, BERNARD BETT¹, HUNG NGUYEN², FRED UNGER², KATE JONES³

¹*International Livestock Research Institute (ILRI), Kenya*

²*International Livestock Research Institute (ILRI), Vietnam*

³*University College London, United Kingdom*

Abstract

Currently new human diseases are emerging at the rate of one every four months. Around 20% of human emerging diseases are caused by antimicrobial resistant pathogens and around 75% are zoonotic. Diseases are also emerging in livestock, companion animals, wildlife and plants.

A systematic literature review was conducted to synthesize best available scientific knowledge about zoonotic disease transmission through direct or indirect domestic livestock-wildlife interaction, with emphasis on risk factors, drivers and trajectories of transmission, and promising interventions for controlling important zoonoses based on managing livestock-wildlife interaction. The study found complex associations with agricultural intensification and disease emergence:

- Biodiversity, bush meat consumption, expanding ecotones, increases in synanthropic species, land use change and livestock intensification are commonly cited and inter-related causes of emerging infectious diseases.
- Societies with intensified agriculture bear a much lower burden of human endemic zoonotic disease and globally the burden of human endemic zoonotic disease is decreasing.
- Massive under-reporting constrains our ability to detect endemic and emerging diseases in livestock and wildlife.
- Since the 1930s most disease emergence has been reported from countries with intensive systems.
- In the last ten years, proportionally more emergence events are reported from developing countries.
- Countries most at risk for disease emergence from livestock intensification were India, Myanmar, Pakistan, Bangladesh and China.

Priorities identified for better understanding and managing the risks of agricultural intensification and disease emergence included: targeting hotspots and increasing surveillance in these areas; identification of risk factors and disease drivers in order to mitigate them; generating evidence on the costs of emerging disease and its prevention.

Keywords: Disease emergence, risk factors, sustainable intensification, zoonoses