Sustainable intensification?: Implications for the emergence of diseases

Delia Grace, Bernard Bett, Fred Unger and Hung Nguyen

Introduction

Currently new diseases are emerging at the rate of one every four months and three out of four of these diseases jump species from other animals. Many of these diseases are associated with agriculture. ILRI led two systematic reviews of disease emergence and burden to help in prioritisation.

Materials and methods

The objective of our studies was to synthesise 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.

Results

There are strong associations with environmental change and disease emergence. Increased disease is associated with habitat fragmentation and ecotones, reduced wildlife biodiversity, and encroachment of humans and agriculture into natural ecosystems.

There are complex associations with agricultural intensification and disease emergence.

• Societies with intensified agriculture bear a much lower burden of zoonotic disease.

• Since 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.

Research into use

Understanding the relations between agricultural intensification and disease emergence has practical implications:

• Targeting hotspots: Identification of hot spots for emergence and increasing surveillance in these areas

• Disease proofing: Identification of risk factors and avoiding them as far as possible

• Costing intensification: Factoring in the costs of emerging disease control and prevention

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Delia Grace
d.grace@cgiar.org • P.O. Box 30709-00100 Nairobi, Kenya • +254 20 422 3000

http://aghealth.wordpress.com • www.ilri.org

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