Surveillance and early warning systems for climate sensitive diseases in Vietnam and Laos

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INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

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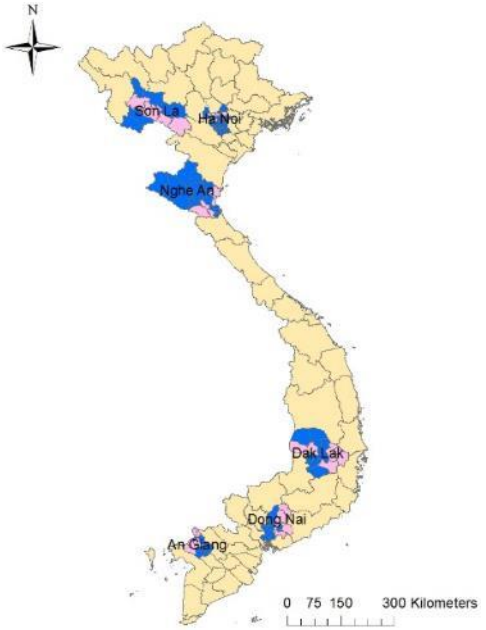
Overview

Clusters of activity

1. Develop and disseminate **maps of hotspots of climate-sensitive diseases (CSDs)**
2. Develop a **real-time prediction system** for CSDs
3. Develop **weather-based forecasting for aflatoxin** mitigation in Vietnam



Partners

- MARD (DAH and PPD) & MOH (GDPM)
- NIVR (veterinary institute): animal diseases
- PPRI (plant protection institute): plant diseases
- Hanoi School of Public health and NIHE: human diseases
- IMHEN (MONRE): climate data
- Provincial DARDs and DOHs: impact pathway

***CSD**: Climate Sensitive Diseases

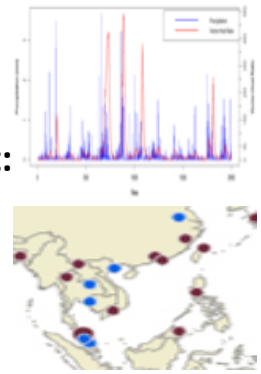
Early warning and forecasting system concept

One Health approach to CSDs

i) History (30 years) and original data
ii) Tools for early warning of CSDs (risk maps and prediction models)
iii) To evaluate the seasonal patterns of CSDs

Met-Data

Model development:
Forecast, mapping



Decision support tools

Notification to farmers

Public and Farmers

Climate sensitive diseases data
- Surveillance system
- Field survey

Japanese encephalitis
- A vector-borne virus disease
- 3 billion people live in endemic areas
- Pigs are the main amplifying hosts

Leptospirosis
- A bacterial disease, outbreak is associated with heavy rainfall
- Rodents, pigs, horses, dogs and sheep/goats are the common reservoirs.

Aflatoxin-associated diseases
- Toxin produced by Aspergillus spp.
- Fungi infect crops and animals via feed
- Responsible for around 1 in 4 human cases of live cancer

Responses
- Vaccination
- Harvesting
- Selling
- …

Adapted from ICRAF (2014)

Research contributions to date

- **New knowledge on CSDs pattern & climate changes**

Human diseases pattern associated with climate variability from secondary data (JE, shigellosis, dengue and malaria), new data on animal and plant diseases (JE, leptospirosis and aflatoxin) at national scale for the first time in Vietnam

- **Event-based surveillance and response to CSDs are established and functional**

Raised awareness of CSDs among farmers and farm related workers based on the studies and findings → example of ILRI work on RVF in East Africa.

- **One Health research partnership truly established**

Trans-disciplinary team working with other stakeholders at local level to work on animal and plant pest, ensuring the application of tools developed to reduce/prevent the CSDs in future

Main knowledge-related challenges

- **Surveillance and early warning systems tools**

Reliability of risk maps / prediction models for application

- **Lack of national data & pushed back on the priority list**

Human, animal, plant disease data: lack of diagnostic method and under-reporting

Climate sensitive diseases (mainly zoonotic diseases) vs. human diseases and lack of awareness among farmers and policy makers

- **Limited recourses and awareness to implement tools**

Most farmers are smallholders and poor, little investment for preventive measures (such JE vaccination) in humans/animals.

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