

**Towards a regional approach for animal health provision: The economics of the CaribVET network** (oral presentation) D. Tago, R. Lancelot, T. Lefrançois, N. Surujbally, C. Lazarus, P. Morales, MT Frias Lepoureau, S. Vokaty, J. Pradel

**Context:** The Caribbean Animal Health Network (CaribVET) has a bottom-up technical and scientific model recognized by CARICOM Secretariat and official veterinary services (VS) in the region. It garners the efforts of VS, labs, universities, research institutes, and international organizations for co-planning and optimizing the cost effectiveness of coordinated efforts. It interacts with surveillance and research to assist in decision making and to advise on best management practices to mitigate the impact of animal diseases on livestock production and health, human health and welfare and to provide sustainable livelihood to the rural economies.

**Purpose:** To show how the coordination of efforts associated with a regional animal health network can lead to more efficient equilibria than an individual approach where countries do not collaborate with one other. Moreover, to identify the sources of benefits and the biggest challenges associated with a regional animal health network.

**Methods:** Based on the CaribVET objectives and a set of its most relevant activities (prioritization, needs assessment, capacity development and evaluation), we propose an economic model in which VS choose the amount of resources to allocate on their control and surveillance strategies.

**Results:** The provision of animal health services by a country generates positive externalities that benefit other countries in the region. Such externalities are generally not considered when planning resources allocation to disease surveillance and control, leading to equilibrium with less resource allocated to animal health provision than what is optimally required in the region.

**Conclusions:** Supranational animal health networks facilitate the flow of relevant information by connecting national VS and other organizations together and propose mechanisms to deal with the under-provision problem taking into account the high disparity among countries in a region.

**Relevance:** The economic benefit assessment is expected to increase advocacy of the network at the highest government and industry levels in the Caribbean countries. The economic model is generic and methodology can be applied to other contexts and regions.

**Preliminary assessment of acaricide resistance in cattle tick (*Rhipicephalus (Boophilus) microplus*) populations from the Caribbean island of Martinique** (poster) S. Depraz, M. Hamon, P. Pelonde, L. Lovis, L. Felixine, M-C Timir, C. Dalibard, R. Miller, A.A Pérez de León, L Christian, R. Pegram, V. Aimey, B. Bradford, P. Dupre-Ryfer, R. Thomas, B. Marie, E. De Clercq, N. Vachiery, J. Pradel.

**Context:** Ticks and Tick-borne diseases (T&TBD) remain major constraints to livestock development in the Caribbean. The continuous use of acaricides to control ticks is costly for livestock producers. Chemicals were used extensively in the Caribbean during Tropical Bont Tick programs between 1995 and 2005. The Cattle Fever Tick (CFT), *Rhipicephalus (Boophilus) microplus*, is known to develop multiresistance to acaricides. However little is known about acaricide resistance epidemiology in the Caribbean, where CFT is endemic. Recently, several countries reported to the T&TBD working group of the Caribbean Animal Health Network (CaribVET) increasing cases of lack of acaricide efficacy on ruminants, especially in Martinique.

**Purpose:** A 2-year project “ResisT” involving researchers, tick experts, veterinary services and farmer associations has been established to address resistance in CFT Caribbean populations . Results of a pilot study conducted in Martinique are reported here.

**Methods:** The Larval Tarsal Test, an innovative test developed by Novartis, was implemented at CIRAD laboratory in Guadeloupe. An exploratory survey was conducted in early 2015 to collect engorged female ticks from cattle, and to study tick control practices of 50 volunteer farmers. Five acaricides from 3 major classes commonly used in the French West Indies were tested: synthetic pyrethroids, amidines and organophosphates. A susceptible strain maintained at the USDA-ARS CFTRL in Texas was used as reference to calculate resistance ratios.

**Results:** Preliminary results will be reported during this presentation.

**Conclusions:** Study results and other epidemiological data on acaricide resistance and information on control practices will be integrated to develop tools and awareness materials for Caribbean farmers.

**Relevance:** Studies like the one reported are needed to formulate strategies to prevent acaricide resistance development by adopting integrated tick control strategies. Knowledge gaps identified during the study enabled CaribVET to prioritize relevant avenues of research and to build collaborations in support of the veterinary services in the region to improve T&TBD surveillance and control.

**Caribbean Veterinary Information System (C-VIS), a pilot GIS platform for regional Avian Influenza surveillance** (oral presentation) EM De Clercq, B. Sanford, E. Ducheyne, C. Lazarus, P. Alfonso, M. Trotman, N. Pages, D. Ali, V. Gongora, D. Chavernac, R. Lancelot, J. Pradel

**Context:** The Caribbean is a complex region particularly vulnerable for animal and zoonotic disease emergence and spread. Situated along migratory birds' flyways, the region is at high risk of Highly Pathogenic Avian Influenza (HPAI) strains introduction from North America, where HPAI emerged early 2015. This threat is important in the Caribbean, as poultry production is the most rapidly growing subsector, and some countries have the capacity to be self-sustaining in poultry meat production.

**Purpose:** Though animal health surveillance is implemented in the countries, the collection of georeferenced data, their management and their analysis is poorly developed, and not fit for epidemiological studies or risk mapping. We aim to provide the official veterinary services (VS) with tools to alleviate the lack of manpower, competence and databases as well as gaps in geographic detail, as evidenced by preliminary surveillance network assessments conducted in the region in 2008-12. The tools are developed along with the regional HPAI surveillance by the Caribbean Animal Health Network (CaribVET).

**Methods:** A Caribbean Veterinary Information System (C-VIS) is being developed to optimize collection and systematic organization of georeferenced data using smartphones or tablets, ensuring homogenous data collection and topographic integrity. It will use open source software such as KoboToolbox®, QGIS® and VECMAP®. Online data storage and sharing will be provided by a GeoNetwork platform. An educational programme has been planned to increase basic knowledge on GIS through a monthly newsletter and the organization of regional workshops.

**Results:** A protocol has been developed to formalize the regional organization of the data collection, centralization, analysis and reporting at the regional level.

**Conclusions:** These tools will be integrated in the regional early warning systems for the surveillance of HPAI and other emerging diseases with a similar epidemiology, such as West Nile or Saint Louis encephalitis. It will also provide opportunities to develop the national GIS capacities.

**Relevance:** The technology and know-how can be transferred to other developing regions with limited resources.

**Risk analysis tool developed to assist with decision-making on prevention of swine diseases. Application to Porcine Epidemic Diarrhea in Caribbean countries.** (back-up oral presentation) MI Percedo, J Casal, J Guitián, C. Zepeda, V. Góngora, G. Ellis, MT Frías, A. Alba Casals, F. Calvo, J. Pradel

**Purpose:** Classical Swine Fever (CSF) and Teschovirus Encephalomyelitis (TE) have been identified as priority diseases for the Caribbean because of their sanitary, economic and social repercussions in affected countries, together with their high diffusion potential. After the emergence of Porcine Epidemic Diarrhea (PED) in the USA in 2013 and its further dissemination to other countries in the Americas and the Dominican Republic, the Steering Committee of the Caribbean Animal Health Network (CaribVET) added PED as a new priority for the region. This work aimed to develop a tool for risk analysis (RA) of swine diseases introduction/dissemination at national levels and applicable to the Caribbean region.

**Method:** This tool was initially developed for CSF and TE, and revised and adapted in 2015 for PED. The trilingual tool is a user friendly Excel Spreadsheet including the guidelines and questions for the risk assessment, is divided in three sections: 1) Release assessment of the pathogen from the affected country, 2) Exposure (dissemination) assessment of the susceptible pig population and 3) Consequence assessment of the pathogen introduction.

**Results:** A flexible RA tool has been designed. In section 1, the disease situation of the affected country and routes of pathogen introduction in the exposed country are considered. In section 2, the sanitary vulnerability in the exposed country is analyzed (control in external quarantine, performance of surveillance and diagnostic system, structure of the swine industry). Section 3 includes assessment of potential disease impacts in different swine production sectors. Values of scores for each criterion have been defined by an expert group for the disease being evaluated and the tool has been tested and validated in two Caribbean countries at risk.

**Conclusion:** Harmonization of sanitary risk assessment at national levels contributes to improve regional prevention and control strategies.

**Relevance:** The use of this tool is expected to trigger communication of threats and vulnerability detected with all stakeholders involved in the swine industry and to facilitate decision-making process to solve the problems identified in the countries.