

RESEARCH NEEDS FOR THE MANAGEMENT OF FOOT-AND-MOUTH DISEASE: AN INTERNATIONAL AND INTERDISCIPLINARY PERSPECTIVE

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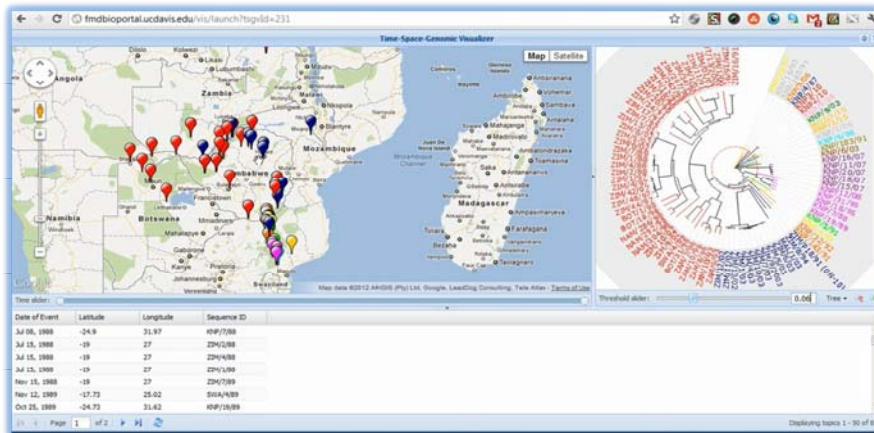
Wild African buffalo (*Syncerus caffer*). Photo: F. Jori

Introduction

The experience acquired by research institutions and reference laboratories during the last few years in the study of foot and mouth disease (FMD) in southeast Asia and southern Africa has resulted in the identification of prerequisite priorities for improving the control of FMD in endemic settings. Those priorities could be the basis of a pilot study to demonstrate the implementation of a control programme coordinated by a multidisciplinary team and a network of collaborations.

Material and Methods

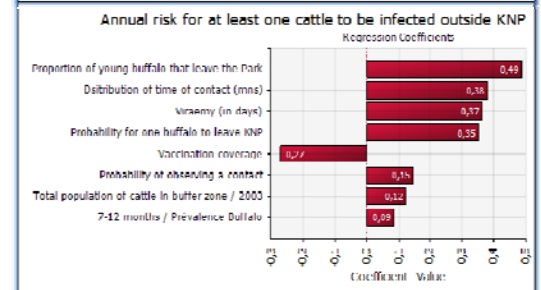
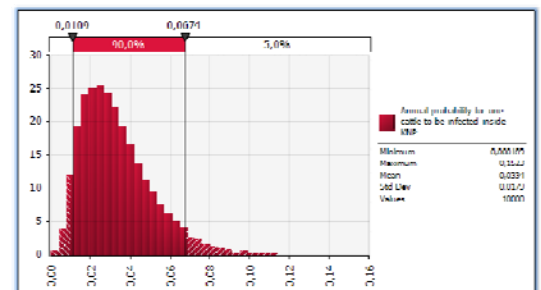
Protocols for evaluation of vaccination programs will be developed and implemented using data collected from longitudinal serological surveys of vaccinated animals, along with modelling and risk analysis. Participatory methods and pilot studies on commodity-based trade will be used to engage rural communities on FMD management programmes. A database of 2,000 viruses collected in southern Africa by ARC-OVI will be used to assess the spatio-temporal dynamics of FMD viruses at the buffalo-cattle interface. Epidemiological modelling will be used to quantify the association between metrics of vaccination success, epidemiological determinants of disease, and protection conferred by available vaccine strains.



Locations of isolated FMD strains in Southern Africa and related genetic trees in FMD Bioportal database from UC Davis.

Expected Results

1. Validated protocols to measure the effectiveness of vaccination programmes and their association with epidemiological factors;
2. Knowledge on FMD virus diversity and variation;
3. Knowledge on the perception and socio-economic impact of FMD among local communities;
4. An integrated epidemiological-economic-molecular approach to evaluate the implementation and improve the effectiveness of FMD control programmes in southern Africa and southeast Asia.



Annual probability and corresponding sensitivity analysis of the risk of cattle becoming infected from buffalo when entering Kruger National Park.

Discussion

The development of tools to improve our understanding of FMD in the field, communicate better with diverse stakeholders and improve market access for rural communities will need an overlapping of different disciplines such as ecology, social and economics sciences, epidemiology, molecular biology and computer modelling and international collaborations with the ultimate goal of establishing long term, sustainable control programmes in endemic settings.



Participative approach to collect information among fence workers in Kruger National park. Photo: F. Jori



Water buffalo (*Bubalis bubalis*) at Ba Be, Vietnam. Photo: Nicolas Antoine-Moussiaux © Cirad.