

Research Application Summary

Understanding the persistence of foot-and-mouth disease in Uganda: The case of western Uganda

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Abstract

Livestock, one of the important agricultural sectors in the lives of millions of people world over, is greatly affected by epidemics of Trans-boundary animal diseases (TAD). Foot-and-mouth disease (FMD) is one of the most important TAD that undermines livestock production, marketing and consumption. In Uganda, FMD outbreaks are on increase despite various control attempts. Little is known about circulating strains, effectiveness of control measures used and community attitudes and knowledge in management of FMD, which greatly contribute to FMD persistence. The community plays a very central role in spreading and controlling FMD given their engagement in livestock rearing and trade activities. This study is designed to investigate community knowledge and practices of FMD management and to characterise prevailing FMD viruses circulating in western Uganda where the highest number of cattle heads in the country is found. This research will generate information that will be valuable in the control of FMD in Uganda, with potential application in the East African Region and perhaps elsewhere.

Key words: Circulating strains, community management, control practices, foot-and-mouth

Résumé

L'élevage, l'un des secteurs agricoles important dans la vie de millions de personnes dans le monde entier, est grandement affecté par des épidémies de maladies animales transfrontalières (TAD). La fièvre aphteuse (FA) est l'une des plus importantes TAD qui porte atteinte à la production du bétail, la commercialisation et la consommation. En Ouganda, les apparitions de la fièvre aphteuse sont en augmentation en dépit des tentatives de contrôle différentes. On connaît mal les

souches en circulation, l'efficacité des mesures de contrôle utilisées et les attitudes ainsi que les connaissances de la communauté en matière de gestion de la fièvre aphteuse, qui contribuent grandement à la persistance de la fièvre aphteuse. La communauté joue un rôle très central dans la diffusion et le contrôle de la fièvre aphteuse étant donné leur engagement dans l'élevage du bétail et les activités commerciales. Cette étude vise à examiner les connaissances de la communauté et ses pratiques de gestion de la fièvre aphteuse et à caractériser les virus de la fièvre aphteuse en vigueur, circulant dans l'ouest de l'Ouganda, où se trouve le plus grand nombre de têtes de bétail dans le pays. Cette recherche permettra de générer des informations qui seront utiles dans le contrôle de la fièvre aphteuse en Ouganda, avec des applications potentielles dans la région Afrique de l'Est et peut-être ailleurs.

Mots clés: Souches en circulation, gestion communautaire, pratiques de contrôle, fièvre aphteuse

Background

In East Africa, livestock production and marketing is greatly affected by Trans-boundary animal diseases (TAD) yet the sector plays a vital role in the livelihoods of local communities and national economies in various ways. Livestock is not only a source of family income and food but also has very close links to the social and cultural lives of several million resource-poor farmers. A strong livestock sector is therefore very vital in poverty alleviation and food security. Unfortunately, epidemic diseases undermine efforts towards strengthening this sector through both direct and indirect losses. Foot-and-mouth disease (FMD) is one of the major diseases affecting livestock production and marketing globally (Perry and Rich, 2007). In East Africa, FMD is endemic with outbreaks occurring very frequently causing severe direct losses and limiting the marketability of domestic animal products as a result of movement and trade restrictions under stringent quarantines.

In Uganda, the control of FMD has mainly been through implementation of ring vaccination regimes, zoo sanitary measures and restrictions to movement of livestock and livestock products in the affected areas (Rweyemamu *et al.*, 2008). Despite this, the level of success has been limited with FMD outbreaks on a steady rise as indicated by MAAIF (2006). The control of FMD is further complicated by the inability of communities to adhere to prescribed control measures during disease out breaks. The persistence and increase in FMD

outbreaks could, among other reasons, be attributed to the farming systems like communal grazing and pastoralism that are still practiced by some communities; presence of in-contact reservoir wildlife; presence of carrier animals stimulated by environmental fluctuations; high evolutionary rates in the FMD viruses; and ineffective control measures.

In Uganda, information about the prevailing FMD virus strains is scanty and not clear. Farmer or community practices towards spread and or control of FMD are also unclear, scanty and not adequately documented. This study was therefore designed with a socio-technical framework to investigate community knowledge and management of FMD, and to characterise prevailing FMD viruses circulating in western Uganda where the highest number of cattle heads in the country is found. The overall objective of this study is to generate empirical information, through skilled manpower development, that will guide the implementation of appropriate FMD control strategies so as to boost the livestock sector in Uganda.

Literature Summary

Foot-and-mouth disease (FMD), a highly contagious viral disease caused by Picornavirus, is one of the major diseases affecting livestock production and marketing globally (Perry and Rich, 2007). In Africa, FMD has been successfully managed in South Africa (Knowles and Samuel, 2003) but is more prevalent in the sub-Saharan region (Vosloo *et al.*, 2002). Uganda is one of the countries in the sub-Saharan Africa with increasing prevalence (MAAIF, 2006) and serious socio-economic impacts on farmers (Rutagwenda, 2003). Movement of cattle and cattle products with inadequate diagnostic capacity to guarantee the serological status of animals before issuance of permits (Vosloo, 2002) communal farming and concealment of epidemics by some farmers (Nkuranga, 2002) contribute to FMD frequent outbreaks. Efforts to control FMD outbreaks in Uganda (Rweyemamu *et al.*, 2008) have achieved very limited success (MAAIF, 2009). This could be attributed to the high levels of genetic and anti-genetic variations of the serotypes and topotypes (Sobrino *et al.*, 2001) and use of vaccination as a means to prevent economic losses rather than to prevent spread of infection (Aidaros, 2002) yet the available FMD control vaccines are inadequate in controlling all topotypes (Thomson *et al.*, 2003). Other socio-political factors further curtail effectiveness of the disease management intervention.

Study Description

Western Uganda is the purposive site for this socio-technical study due to its possession of very high numbers of cattle heads

and currently serving as the main source of animals and animal products (cattle) sold elsewhere in the country. The study districts include Kasese, Mbarara (communal method of herding, and frequent occurrence of FMD) and Bushenyi (sedentary oriented herding with herds confined in paddocks, registers lower FMD outbreaks).

Owing to the socio-technical nature of the study, by design, the overall strategy was to recruit and train two MSc. students to handle the different and complimentary components. The first student (on the sociological component) is studying the occurrence of the FMD and traditional management practices being used by the communities. The second student (on the technical component) is focusing on characterisation of the FMD viruses and evaluation of the efficacy and effectiveness of selected FMD vaccines currently being used in controlling prevailing FMD virus strains in Uganda.

Research Application

Findings from this study will generate information and knowledge that is vital for the improvement of FMD control, thereby contributing to achievement of one of Uganda's development objectives of food security and poverty alleviation through securing the livelihoods of resource-poor farmers who depend on livestock. This study will also contribute towards the East African regional goal contained in the East African Community Development Strategy of 2006-2010 that calls for the control of animal diseases in order to promote cross border trade for sustainable food security. Additionally, the project addresses one of RUFORUM's strategic goals of training a critical mass of MSc. students who are responsive to stakeholder needs at all levels thereby being more relevant in contributing towards attainment of national and regional development goals.

It was important that the study took on a socio-technical framework. Characterization of the prevailing FMD viral strains and evaluation of the effectiveness of the main FMD control strategies used (technical), and what the communities are actually doing to promote and control FMD occurrence in western Uganda (social) are important for developing more effective FMD management strategies. The importance of FMD, the high level of genetic and antigenic variation of the FMD virus, inadequate development of vaccines against all topotypes, community FMD practices that promote occurrence of FMD all point towards the need to establish first base-line information, integrate communities in designing management

options, linking to policy frameworks to enable administration of technical control measures.

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