

Epidemiology of foot and mouth disease in Ethiopia

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Introduction

Foot and mouth disease (FMD) is endemic in Ethiopia with an occurrence of several outbreaks a year. Information on the national epidemiology of FMD to design appropriate control measures is seriously lacking.

Objectives

- Determination of national FMD outbreak incidence and risk factors in Ethiopia.
- Identification of geographic and temporal distribution of FMD outbreaks.
- Identification of frequency and distribution of FMD virus serotypes.

Materials and Methods

Data collection

- District level FMD outbreak occurrence of 5 years (2007/08-2011/12) and risk factor data collected by questionnaires administered to the animal health officers of 115 randomly selected districts out of 750 districts in the country.
- Serotype data compiled from national disease registration reports.

Data analysis

- Mixed effect logistic regression modelling to assess the district risk factors.
- Geographic mapping to evaluate the geographic distribution of outbreaks.
- Time series and runs test of randomness to detect presence of any secular and/or seasonal trends.

Results

- The national incidence of FMD outbreaks was 1.45 outbreaks per five district years.
- Outbreaks were geographically widespread and more frequent in the central, southern, and south-eastern parts of the country (Figure 1)

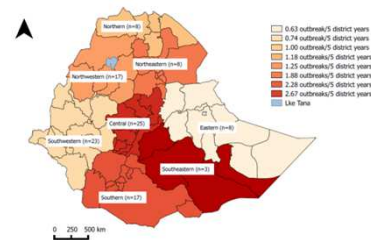


Figure 1. Incidence of FMD outbreaks per five district years.

- Neither secular nor seasonal trends were observed.
- Production system (**market oriented system** versus subsistence systems), **presence** of major livestock markets and/or routes, and **adjacency** to national parks increased risk of FMD outbreaks.
- Serotype O dominated followed by SAT 2 (Table 1).
- Serotypes O and A were country-wide distributed, while SAT 1 & 2 were limited in central and southern Ethiopia.

Table 1. Serotypes of FMDVs causing FMD outbreaks from 2007/08 through 2011/12 (compiled from NAHDIC and NVI)

Year	No. samples tested	Culture positive samples	Serotypes and their frequencies
2007/8	98	21	13O, 3A, 5SAT 1
2008/9	45	25	19O, 6A
2009/10	77	52	31O, 2A, 19SAT 2
2010/11	44	28	11O, 17SAT 2
2011/12	115	47	47O
total	379	173	121O, 36SAT 2, 11A, 5SAT 1

Conclusions

- High FMD risk areas such as market oriented system, areas along livestock trade routes, and central and south eastern parts of the country could be targeted for strategic FMD control in Ethiopia.
- Using trivalent vaccine (serotype O, A and SAT 2) in the southern half and bivalent vaccine (serotype O and A) in the northern half could be a rational vaccination approach for FMD control in Ethiopia.