USE OF GIS AS A MANAGEMENT TOOL IN MONITORING, SURVEILLANCE, AND CONTROL OF FOOT AND MOUTH DISEASE IN SRI LANKA

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ABSTRACT

Foot and Mouth Disease (FMD) is an economically important disease in livestock industry in Sri Lanka. GIS can be used to analyse the epidemiological pattern of FMD in order to plan control programmes and prevent the disease in cloven hoofed animals especially in cattle. The objective of this study was to describe the occurrence pattern of FMD in cattle in Sri Lanka and to detect the spatial clustering relationship of the new cases during the period of year 2002 to 2004.

Preliminary disease reports were collected to obtain the data on number of cases, susceptible cattle population and Cartesian coordinates of each infected village.Analysis was done in two ways; Observation Analysis and Statistical Analysis. In observational analysis, the FMD point cases were overlaid with available physical and natural features of digital maps of Sri Lanka. The FMD cases were also overlaid with maps of previous year vaccination ratios against the cattle population in each district. The Statistical Analysis was done primarily with qudrat analysis using Kolmogorov – Smirnov test. A SaTScan software programme was used to identify spatial clusters during the study period.

The results of the observational analysis revealed that the spreading of disease was correlated with road network and more cases re-emerged in DS ranges adjacent to the national parks and sanctuaries, which might be due to FMD *carriers*. Low level of vaccination indicated the chance of acquiring more infections compare to highly immunized areas. High cattle density areas showed high infection rates.

Spatial clusters were identified as well as high risk areas were observed with the overlaid maps. All findings of this study are important and would be used as guidance for revising vaccinating areas appropriately. Further, the final results would be useful for planning future prevention and control programmes for FMD in risk areas, in Sri Lanka.