Rift Valley fever in a temperate and mountaneous area of Madagascar

Chevalier, V.[1], Rakotondrafara, T.[2], Jourdan, M.[1], Heraud, J.M.[3], Rasamoelina, H.[2], Durand, B.[4], Ravaomanana, J.[2], Rollin, P.[5] and Rakotondravao, R.[2], [1]CIRAD, France, [2]FOFIFA-DRZV, Madagascar, [3]Institut Pasteur Madagascar, Madagascar, [4]ANSES, France, [5]CDC, USA; chevalier@cirad.fr

A serological study was performed in 2009 in Madagascar highlands to evaluate the point prevalence rate of RVF antibodies in ruminants and identify environmental and trade factors potentially linked to RVF persistence and transmission. Nine hundred ruminants were randomly selected among 51 villages and sampled. Sera were analysed using a commercial validated ELISA test. For each ruminant, the following variables were recorded: age, location of the night pen, minimum distance from the pen to the closest water point and the forest, water point type, and the way owners use to renewal their herd: auto-renewal vs purchase. Serological data were analysed using a generalized linear mixed model, the individual serological status being the binomial response, and the above-mentioned variables the explicative factors, and the breeder as random effect. The overall IgG seroprevalence rate was 28% [IC95% 25-31]. The main effect on prevalence was due to age ($P=10^{-4}$) suggesting an endemic RVF circulation in this area. The distance to the closest water point was a protective factor ($P=5\times10^{-3}$) but the type of water point had no effect on the prevalence rate: a substantial part of the transmission is due to vectors and several mosquito species are probably involved. Ruminants belonging to owners renewing their herd by purchase were significantly more infected than others (P=0.04), suggesting that cattle trade may contribute to the circulation of the virus in this area. This is the first evidence of a recurrent transmission of RVFV in such an ecosystem which associates a wet, temperate climate, high altitude, paddy fields, and vicinity to a dense rain forest. Persistence mechanisms need to be further investigated.

Managing FMD hotspots in the Mekong region

Windsor, P.A.[1], Nampanya, S.[1], Rast, L.[1] and Khounsy, S.[2], [1]University of Sydney, Faculty of Veterinary Science, Australia, [2]Ministry of Agriculture and Forestry, Department of Livestock anf Fisheries, Lao Peoples Dem. Rep.; peter.windsor@sydney.edu.au

FMD is endemic in the Mekong region and recent studies in northern Lao PDR and southern Cambodia have confirmed that although outbreaks of mainly O serotype do occur widely, they have tended to recur in particular 'hotspots' where significant trading of mainly large ruminants from adjacent countries exist. As the epidemiology of FMD in these 'hotspots' is poorly understood, we conducted a longitudinal study in the 'hotspot' area of Paek district in Xiengkhoung province in northern Lao PDR, where a major FMD outbreak occured in early 2009 that was largely prevented in 2 villages by prior vaccination, and again in early 2010 when vaccination was unavailable. On both occasions, collection of tissue samples from infected animals confirmed infection with FMD virus serotype O (Myanmar topotype) and surveys documented high morbidity in unvaccinated cattle and buffalo (>90%), with occasional mortality. We also identified the risk factors of increased trading in animals after the end of the rice harvest and failures of biosecurity at the village level as major contributors to the severity of disease expression. A pre and post vaccination serological study conducted of the large ruminant population in late 2010 and early 2011 (n=40 and 72 serum samples respectively) analysed by serotype-specific LPB-ELISA assay to detect antibodies to serotype O, A and Asia1 FMD virus structural proteins, confirmed both previous exposure to FMD virus, plus significantly rising post-vaccination titers indicating likely protection against future infection. It was concluded that to manage future FMD outbreaks in this 'hotspot', regular annual vaccination of the majority of the adult large ruminant population prior to the peak risk period in December-January, plus improved farmer knowledge of disease transmission risks to address failures in biosecurity are required.