HP-PRRS in Southeastern Cambodia: an epidemiological study

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The aim of our study was to investigate the presence of highly pathogenic PRRS in the Cambodian pig population. Six provinces in the southeastern part of the country were selected. Between July and September 2010 a cross-sectional study (Study 1) was carried out, to estimate the prevalence of the disease in semi-commercial farms (SCF), while a second, parallel study was designed to detect the disease in villages, sampling backyard farms (BF) only. Questionnaires on husbandry practices and spatial coordinates were collected from each farm. The target population for Study 1 were the entire SCF in Takeo province. A sampling frame with all active SCF was available and farms were randomly selected. Pigs were then selected through systematic sampling in each farm. For this particular study lot quality assurance survey (LQAS) method was chosen to calculate the number of farms to be sampled. The target population for Study 2 were all the villages in the six provinces. A sampling frame of villages by district was available. A qualitative assessment for a-priory risk of viral introduction at district level was designed to prioritize district to be sampled. Within prioritized district, villages were selected by simple random sampling. Within village the selection of individual BF was done through random walking method and the selection of the single pigs through systematic sampling. Our results showed that the virus was present in the semi-commercial pig population (herd prevalence ≥85%), but appeared very sporadically in the backyard pig population in that region. Presence of sow and gilts in the farm, farms density and water contamination were significantly associated ($P<0.05$) to the introduction and the presence of PRRS in SCF. The identification of risk factors associated with the introduction and the presence of the virus in the farm, and the spatiotemporal visualisation of our results, gives valuable insight into potential viral transmission patterns.

Cattle trade network in Madagascar highlands and Rift Valley fever virus circulation

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In 2008-2009 a RVF outbreak occurred in the Anjozorobe area, a temperate and mountainous area of Madagascar highlands. A serological study conducted there in 2009 showed an IgG seroprevalence rate of 28%. Data analysis suggested a recurrent circulation of RVFV. The objectives of this study were to describe the cattle trade network in this area and analyze the link between network structure and RVFV circulation. Questionnaire survey among 386 breeders from 47 villages was carried out to collect trade data. Yearly village-level seroconversion rate was estimated in 2010 by testing 516 cattle negative in 2009. Association between the occurrence of seroconversion and network centrality parameters, distance to the nearest water point and 2009 seroprevalence level was tested. Due to the non-independence of the centrality parameters, a bootstrap procedure was used to assess the effects of the independent variables. Average village-level seroconversion was 7%, ranging from 0-20%. Two types of trading practice were observed: exchanges and buy/sale. The corresponding networks appeared both scale-free, and a significant but low correlation was observed between them. A negative association was observed between the occurrence of seroconversion in the village and the 2009 seroprevalence level, as well as the distance to the nearest water point. After RVFV introduction, vector-based transmission may support the within-village circulation. The node degree in the exchange network was positively linked with the occurrence of seroconversion. It was not the case for the buy/sale network. Both networks could thus have distinct roles in RVFV circulation. The exchanges network could be the support for RVFV introduction in villages, the buy/sale network being probably rather implicated in the introduction of RVFV in the area, from other parts of Madagascar.