Economic analysis of activities to prevent foot and mouth disease in Denmark

The latest foot and mouth disease (FMD) epidemic in Denmark dates back to 1982-1983. Hence, Denmark has not experienced an FMD outbreak in more than 30 years. Still this disease poses a serious threat either as a risk of introduction and spread in Denmark or as a risk of a ban on Danish export of pigs, pork, cattle, beef and milk products due to an outbreak in another country within the EU. It is estimated that a middle sized outbreak of FMD would cost around € 1 billion. It is evident that even though the probability of introducing FMD is very low the consequences are devastating for the agricultural sector and society because the expected costs are so enormous. Therefore, the industry and the public authority have implemented a number of mitigating and preventive activities. The costs of FMD and swine fever related activities in Denmark in 2013 were estimated to be approximately € 32 million. The purpose of the present study is to estimate how changes in resources allocated to the FMD related activities may affect the costs of an FMD outbreak. Nine alternative scenarios describing changes in the contingency plan were formulated by a group of experts from the livestock industry, universities and public authorities. A modified version of Davis Animal Disease Simulation model (DADS version 0.05) was used to estimate costs of FMD outbreaks in each of these alternative scenarios. The modified and updated version by the technical university of Denmark (DTU) is called DTU-DADS. The model simulations indicate that some changes in risk-reducing activities may significantly affect expected costs of an outbreak while other changes have no effect. Our results suggest that increased efforts in terms of efficiently restricting low-risk contacts between farms, such as non-professional visitors and trucks, might reduce the size and costs of an FMD outbreak. In addition, simulations indicate that current resources allocated to depopulation and surveillance could – but only to some extent – be reduced without affecting the size and costs of an outbreak.