

Model-based surveillance of CSF in backyard pigs: an example from Bulgaria

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Based on official data of backyard pigs and backyard pig holdings at the municipality level in Bulgaria, a simulation model for surveillance of these holdings with respect to Classical Swine Fever (CSF) occurrence was developed. In the context of this paper, backyards are small-scale holdings with limited numbers of pigs and few trade contacts. In the first scenario of a suspicion or an outbreak of CSF within a limited area, the authorities have to enforce CSF control measures according to the Council Directives 2001/89/EC and 2002/106/EC. These measures were designed for and have been derived from domestic pigs kept in larger, non-backyard holdings, therefore, the implementation of these preventive or control measures in backyard holdings is more difficult to achieve. Our analysis led to the detection of short-comings that occur only in backyard holdings. In some simulation runs, for example, a considerable number of infected farms remained undetected depending on the used test systems (including a new DIVA-ELISA). A second surveillance scenario deals with the detection of the disease and the certification of freedom from disease, respectively. For the surveillance at municipality level, it is difficult to detect very low levels of herd prevalences due to the herd size distribution. Enlarging the surveillance units from municipality to province level, an approach that may be attractive as it could save resources, leads to a high number of undetected outbreaks, even if high herd prevalences are tested. All simulated scenarios show the importance of the problem of missing registration of backyard pigs, farms and holders.