

RESEARCH ARTICLE

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# A longitudinal survey of African swine fever in Uganda reveals high apparent disease incidence rates in domestic pigs, but absence of detectable persistent virus infections in blood and serum

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## Abstract

**Background:** African swine fever (ASF) is a fatal, haemorrhagic disease of domestic pigs, that poses a serious threat to pig farmers and is currently endemic in domestic pigs in most of sub-Saharan Africa. To obtain insight into the factors related to ASF outbreaks at the farm-level, a longitudinal study was performed in one of the major pig producing areas in central Uganda. Potential risk factors associated with outbreaks of ASF were investigated including the possible presence of apparently healthy ASF-virus (ASFV) infected pigs, which could act as long-term carriers of the virus. Blood and serum were sampled from 715 pigs (241 farms) and 649 pigs (233 farms) to investigate presence of ASFV and antibodies, during the periods of June-October 2010 and March-June 2011, respectively. To determine the potential contribution of different risks to ASF spread, a questionnaire-based survey was administered to farmers to assess the association between ASF outbreaks during the study period and the risk factors.

**Results:** Fifty-one (21 %) and 13 (5.6 %) farms reported an ASF outbreak on their farms in the previous one to two years and during the study period, respectively. The incidence rate for ASF prior to the study period was estimated at 14.1 per 100 pig farm-years and 5.6 per 100 pig farm-years during the study. Three pigs tested positive for ASFV using real-time PCR, but none tested positive for ASFV specific antibodies using two different commercial ELISA tests.

**Conclusions:** There was no evidence for existence of pigs that were long-term carriers for the virus based on the analysis of blood and serum as there were no seropositive pigs and the only three ASFV DNA positive pigs were acutely infected and were linked to outbreaks reported by farmers during the study. Potential ASF risk factors were present on both small and medium-scale pig farms, although small scale farms exhibited a higher proportion with multiple potential risk factors (like borrowing boars for sows mating, buying replacement from neighboring farms without ascertaining health status, etc) and did not implement any biosecurity measures. However, no risk factors were significantly associated with ASF reports during the study.

**Keywords:** African swine fever (ASF), Epidemiology, Incidence rate, Risk factors, Smallholder farmers

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