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## African Swine Fever – Georgia

**Note:** Defra Food and Farming Group - International Animal Health (FFG-IAH) monitors outbreaks of high impact diseases around the world. African swine fever (ASF) is among those diseases of major concern.

### Disease Report

Outbreaks of African swine fever (ASF) were reported from several locations throughout Georgia (OIE, 2007a). The outbreaks, which started in late April, were originally considered to be classical swine fever (CSF) but mortalities in CSF vaccinated stock



were as high or higher than unvaccinated stock. Following laboratory tests the outbreaks were reported to the OIE as postweaning multisystemic wasting syndrome (PMWS) in mid-May (OIE, 2007b). Subsequent testing by the OIE African Swine Fever Reference Laboratory in Pirbright, UK, confirmed that the outbreaks were due to ASF. Control measures include stamping out and movement controls.

## Situation Assessment

ASF is a viral disease that affects the members of the pig family (Suidae). ASF virus, a DNA virus, is the sole member of the genus *Asfivirus*, family Asfiviridae. Virus isolates are differentiated by sequence analysis of genomic fragments. A number of different genotypes can be differentiated by this method and these are also antigenically distinct.

Virus isolates may vary in their ability to cause the disease (Institute for Animal Health, Pirbright, 2007). ASF is the only DNA virus that is transmitted by vectors (ticks). There is no effective vaccine against the disease.

The virus is endemic in many countries in sub-Saharan Africa where warthogs, bushpigs, and giant forest hogs appear to be natural reservoir hosts of the virus (Anderson and others, 1998; Zsak and others, 2005). In sub-Saharan Africa the ASF virus is “maintained either in a sylvatic cycle between warthogs and ticks of the *Ornithodoros moubata* complex or in a domestic cycle that involves pigs of local breeds, with or without tick involvement” (FAO, 2004b).

In endemic areas, infection in natural hosts is largely asymptomatic. However, levels of viraemia in natural hosts considered sufficient to infect the tick vector when feeding are usually maintained for the initial two to three months (Anderson and others, 1998). The virus replicates in ticks and is maintained in the tick population through the tick life stages (trans-stadial) and trans-ovarial transmission (American Veterinary Medical Association, 2006). The soft tick *Ornithodoros moubata* is considered the main tick vector in sub-Saharan Africa (Anderson and others, 1998). The genus *Ornithodoros* has a world-wide distribution and other species in the genus are also considered to have the potential to serve as vectors in different parts of the world (Hess and others, 1987; Wilkinson, 1984) and *Ornithodoros erraticus* acted as a virus reservoir in areas of southern Spain and Portugal when the disease was endemic in Iberia. The initial introduction of the virus from wildlife into domestic pigs may be by bites from infected ticks. Pigs are readily infected by ingestion of infected material and this may also be an effective route for introduction from wildlife. Following introduction, transmission within herds can be caused by direct and indirect contact. Further spread to unaffected areas in a country is usually from movement of infected live pigs, swill feeding of their products and contaminated fomites (e.g. trucks, equipment).

Infection with the virus may result in several forms of the disease in domestic pigs and European wild boar, ranging from sub-acute to acute and chronic (Defra, 2007). Initial introductions into susceptible animals are usually characterised by severe clinical signs and high mortality (Institute for Animal Health, Pirbright, 2007) depending on contributing viral and host factors.



The ASF developments in Georgia are of significant epidemiological importance. It remains uncertain at this stage when and how the virus may have been introduced to Georgia. However, determining the source of introduction is usually one of the most difficult tasks to accomplish. These developments in Georgia again highlight the importance of maintaining effective field surveillance and disease control measures and appropriate laboratory capabilities.

Historically, ASF was first reported from Kenya in 1921. Although mainly confined to sub-Saharan

East, West and Central Africa it also extends into the northern parts of Southern Africa. The disease first entered Portugal in 1957 and again in 1960. Following the introduction in 1960, there were repeated outbreaks of ASF in the Iberian Peninsula until the mid 1990s. In the meantime, sporadic outbreaks were also recorded in some other European countries (i.e. France, Belgium, the Netherlands, Italy). Disease was eradicated from all of these except the island of Sardinia in Italy where it has remained endemic since 1982. ASF entered Central and South America (Cuba and Brazil) in the late 1970s with the last outbreak in the early 1980s. Uncontrolled introduction of pigs from unknown sources and feeding waste containing pork to pigs are suspected to be the major factors for these disease introductions. While in all of these countries the disease has been successfully eradicated, in each case eradication has taken considerable period of time (several years to a few decades) and can be particularly difficult when wildlife reservoirs and tick vectors are present.

Since the beginning of 2005, there have been outbreaks in domestic pigs in sub-Saharan Africa (Namibia in January 2005; Tanzania in January and February 2005; Burkina Faso in February 2005; Nigeria in August 2005; Zambia in April 2006 and Kenya in May 2007). Sporadic ASF outbreaks continued to be reported from Sardinia during this period.

The virus may survive for a long period in blood (70 days), faeces (11 days) and tissues (140 days in dried hams and 150 days in boned meat at 4°C) (American Veterinary Medical Association, 2006) and for years in frozen carcasses. The virus is inactivated at temperatures of 56°C for 70min and 60°C for 20 minutes and is deactivated by pH levels of less than 3.9 and greater than 11.5 (OIE, 2002). The virus may also occur in semen (Guerin and Pozzi, 2005) and on or in zona pellucida-intact porcine embryos (Singh and others, 1984). ASF developments and survivability of the virus in products highlight the importance of adhering to international standards for trade in susceptible animals and their products to prevent disease dissemination via legal trade. At the same time, these events also highlight the importance of the appropriate disposal of international catering waste (e.g. from ships or aircraft) and the enforcement of feed control (i.e. swill feeding) measures at national levels.

On the basis of the emerging evidence from Georgia the virus seems to be present in different locations across the country. Significant mortalities reported in this outbreak in Georgia could suggest that a recent introduction of the virus into a naïve population resulted in a relatively quick spread within the country. Should this be the case, this could resemble the recent experiences in Tanzania, where the feeding of pigs on swill containing infected pork products was implicated in a relatively quick spread of the disease within the country. Uncontrolled movement of live pigs would be another means by which the disease is spread. There is also a possibility that the ASF virus may be mechanically transferred to susceptible pigs by use of contaminated biologicals, surgical equipment or hypodermic needles.

It also remains uncertain whether the environmental and ecological conditions may allow the establishment of ASF virus within the local soft tick population in Georgia or in wild boars. Should this be the case, sporadic cases of ASF may occur and the dynamics of outbreaks could be difficult to predict not only in Georgia but also in the wider region.

## **Conclusion**

On the basis of emerging epidemiological evidence and uncertainty, the current epidemiological developments in Georgia still present an overall low likelihood of the introduction of ASF virus to the UK from the currently affected areas.

That means, the likelihood would remain negligible by legal trade in susceptible livestock because the EU rules (and the UK) prohibit imports of susceptible animals and their

products from Georgia. The likelihood of the introduction of the virus by illegal imports remains and is difficult to estimate. This emphasises the importance of ensuring appropriate disposal of international catering waste, ensuring that enforcement agencies are vigilant and that a ban on swill feeding in the UK is effectively applied. At this time, FFG-IAH does not intend to carry out and publish a full risk assessment on this outbreak and will continue to monitor the situation.

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