

Swine Disease Global Surveillance Report

Worldwide pork production is highly interconnected by trades between countries and markets, what could increase the risk of introduction of foreign pathogens into the US.

PROJECT

The aim of these reports is to have a support system for near real-time identification of hazards that will contribute to the mission of assessing risks to the industry and ultimately, early detect, identify, or prevent occurrence of events, in partnership with official agencies, and with our international network of collaborators.

Bi-monthly reports are created based on the systematic screening of multiple official data sources, such as government and international organization websites, and soft data sources like blogs, newspapers and unstructured electronic information from around the world that then are curated to build a raw repository. Afterward, a group of experts uses a multi-criteria rubric to score each event, based on novelty, potential direct and indirect financial impacts on the US market, credibility, scale and speed of the outbreak, connectedness, and local capacity to respond average is calculated. The output of the rubric is a final single score for each event which is then published in the report.

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Swine Disease Global Surveillance Report Bi-monthly Update

December 17, 2018

Highlights

Chinese ASF lessons learned

- The initial expression of African swine fever (ASF) in an ASF-free country like the US could be variable and unpredictable due to the myriad of factors including the epidemiology of ASF and the broad diversity of virulence among ASF virus isolates. Misinterpretation of clinical signs (ex. misdiagnosis of PRRS) will lead to the transfer of infected animals from one to multiple sites of the same company and/or to slaughterhouses.
- Antibody response elicited by infection doesn't begin to appear to detectable levels until at least seven days post-infection, which can make early antibody detection difficult and a challenge for surveillance programs. However, combining viral genome detection for early identification and antibody detection identification for detection as early as seven days post-infection provides reliable diagnosis for efficient surveillance during different stages of infection.
- Numerous illegal movements of breeding animals between provinces continues virus spread in China.
- Without a transparent indemnity plan in China, the effectiveness of stamping out ASF is highly dubious; i.e., in the absence of compensation, there is no incentive for pig owners to report, so they will then will instead sell or slaughter their pigs further spreading the disease.
- Animal contacts as source of the virus may decrease. Transport trucks, people contacts, and pick-up for rendering services may contribute equally in the spread of the disease between premises.

European Union ASF lessons learned

- ASF spread due to propagation in wild boar is relatively local and slow.
- ASF spread due to human interaction moves ASF large distances, overriding any effect of natural barriers.
- Surveillance of wild boar found dead is more dependable and efficient than surveillance in hunted boar.
- The probability of success from boar hunting/depopulation is increased after adding effective carcass removal.
- Hunting/depopulation is more effective than fencing, but fencing will be particularly useful in those areas where carcass removal or intensive hunting is difficult to implement.

US ASF producer actions

- Review biosecurity protocols with a focus on preventing risk from international visitors or workers. Prevent any introduction of possible foreign-sourced pork products.
- Strictly implement these biosecurity protocols every day.
- Foreign animal diseases, including ASF, may mimic a variety of domestic diseases. Always get a rapid, professional diagnosis in any abortions or death losses without expecting an explosive health event.
- Prepare your farm for business continuity by enrolling in the Secure Pork Supply plan. The Secure Pork Supply website is live at www.securepork.org.
- If you are NOT diverted for secondary screening after declaring you have been on a farm or in contact with animals in an ASF or other foreign animal disease positive nation when returning to the US, please contact Swine Health Information Center Executive Director Dr Paul Sundberg at psundberg@swinehealth.org.

AFRICAN SWINE FEVER UPDATE

Last week, Qinghai, a Chinese province in the center of the country, reported its first ASF outbreak, making it 21 out of a total of 34 Chinese provinces reporting to be affected by the epidemic (Map 1). Sichuan, the top pork producer in the country, reported its second outbreak, which was also one of the biggest until now with 26,241 destroyed animals. Concerns that ASF may have spread further, and that a high impact to pork suppliers may be seen in coming months, still remains.

Meanwhile, Russia reported four new classical swine fever (CSF) outbreaks in wild boars in its eastern provinces that border Heilongjiang province (China). While ASF has now spread across much of Romania, particularly in the south, the monthly number of outbreaks in domestic pigs in Romania appears to be reducing considerably since July. Similarly, in Poland, the number of outbreaks in domestic pigs was greatly reduced in the last three months with none reported in October-November.

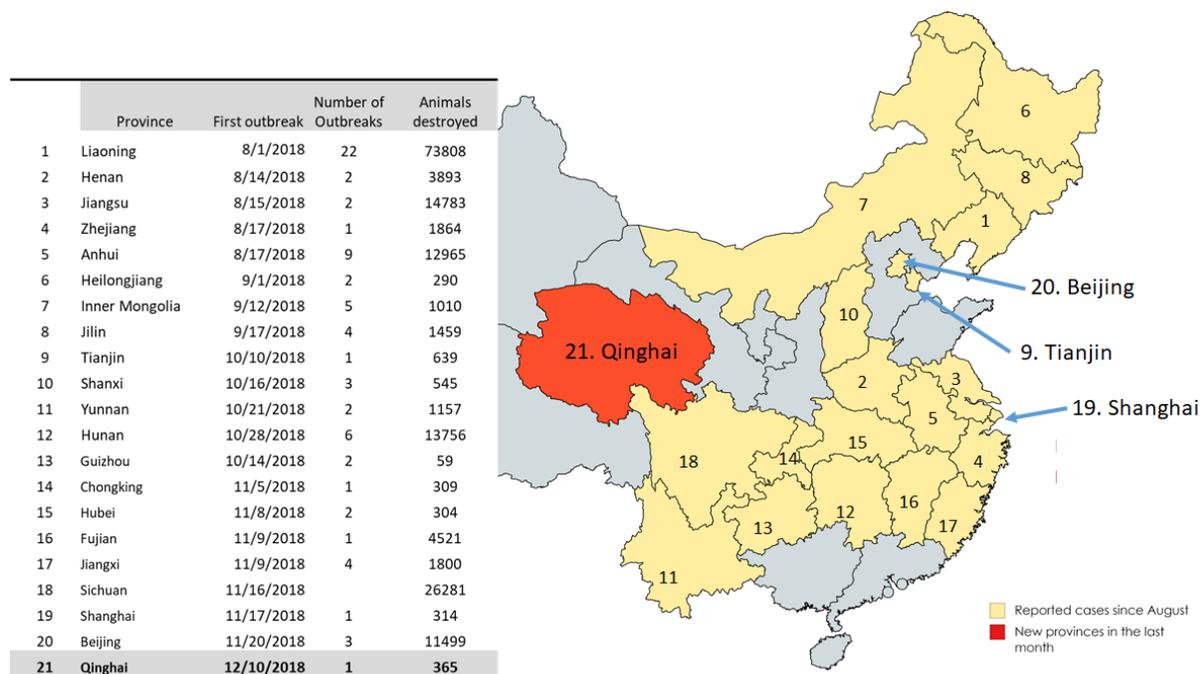
ASIA

Reshaping China swine industry:

A national conference on ASF control was held in Beijing this month. The need for strengthening ASF prevention and control in a comprehensive way was emphasized, and short and mid/long term priorities were listed, including (1) increasing the strictness of the implementation of current measures, (2) taking strong actions against all kind of violations, and (3) improving regional control coordination (e.g., zoning efforts) and supervision mechanisms. The need to adjust and optimize the production and

movement of pigs, which would require setting up a rationally designed plan to layout pig breeding, to effectively increase the adjustment of slaughtering capacity layout, and to support the construction of modern cold meat circulation and distribution system limiting the transportation through long distances, were presented.

Farmers with fewer than 500 pigs a year account for 40 percent percent of China's production, and ASF seems to be catalyzing a change in the industry structure, as those farms have been more heavily affected by the epidemic in comparison to large-scale farms with higher biosecurity protocols. Recently, Rabobank released a report presenting an acceleration of the consolidation trend.



Map 1: Chinese provinces that have reported ASF outbreaks since last August.

Lessons learned - risk awareness:

On December 7, the Chinese General Office of the Ministry of Agriculture and Rural Affairs released a report on the typical cases of violations of law and regulations in the prevention and control of ASF in China since August. After the epidemiological investigation, and based in the traceability of the epidemic sources, it has been stated that illegal operations, like illegally transferring and selling pigs, are an important cause for the epidemic spread. Some key examples of this report may serve as lessons learned to inform preparedness plans and raise industry awareness in ASF-free countries in the region and worldwide.

- Underreporting due to misinterpretation of clinical signs (ex. misdiagnosis of PRRS) lead to the transfer of infected animals from one to multiple sites of the same company and/or to slaughterhouses.
- Numerous illegal movements of breeding animals between provinces, ignoring control measures in place.
- Absence of requirement of Animal Quarantine Certificates (mandatory) by market stakeholders.

Aligned with the challenges reported by the Chinese authorities recently, the Global ASF Research Alliance (GARA) released a GAP analysis report, where their main weaknesses of current countermeasures were identified.

- The initial expression of ASF in an ASF-free country like the U.S could be variable and unpredictable due to the myriad of factors including the epidemiology of ASF and the broad diversity of virulence among ASF virus isolates. ASF is usually suspected based on clinical signs, but clinical evidence may be nonspecific and difficult to differentiate from other infectious diseases of swine.
- Antibody response elicited by infection with highly virulent strains of the virus does not begin to appear to detectable levels until at least seven to 14 days post infection, which can make early detection difficult and a challenge for surveillance programs. However, combining viral genome and antibody detection provides reliable diagnosis from the end of the incubation period, or even a little earlier.
- Recent experience with ASF outbreaks due to the smuggling of contaminated feed strongly warrants the onset of a new branch of testing and validating methods to detect ASF in foods, food scraps, and agricultural processed products as part of the laboratory-based surveillance programs. However, caution with this kind of testing needs to be considered due to vulnerabilities associated with sampling size and the fact that a negative result does not tell you anything, while conversely a viral genome positive result does not provide sufficient information to judge the true risk of a possible introduction.
- The effectiveness of stamping out in the absence of a fair and timely compensation scheme is highly dubious; i.e., in the absence of compensation there is no incentive for pig owners to report, so they will then instead sell or slaughter their pigs further spreading the disease. There is a need to come up with sustainable and effective alternatives to stamping out for countries that cannot afford compensation.
- Animal contacts as source of the virus may decrease, and transport trucks, people contacts, and pick-up for rendering services may contribute equally in the spread of the disease between premises.

EUROPE

The European Food Safety Authority (EFSA) recently published a report updating the epidemiology situation of ASF in the European Union (EU). The report provides detailed insights regarding the dynamic and trends of ASF in the Baltic States and Eastern European countries. Specific analysis along features of ASF transmission in the region are presented, that can help to paint the larger worldwide transmission risks of ASF.

- *Two distinct ASF spread processes were identified across the region, namely, (1) continuous spread through wild boar populations, for which the speed of propagation is notably slower than for some other infectious diseases in wild boar (between eight and 17 km/year), and (2) human-mediated translocations leading to the establishment of new ASF clusters distant from areas of previous ASF occurrence.*
- *The proportions of wild boar testing positive are much higher in animals found dead than in hunted animals. That confirms surveillance of dead wild boar as the most efficient method for ASF surveillance.*

The report highlights the disease pattern of ASF in Romania as an exception to other affected countries. Compared to other European countries, Romania had a higher incidence of reported ASF in their domestic herd compared to wild boar. They concluded that the vast majority of introductions was caused by indirect contact (fomites or environment) rather than direct contact with infected pigs or wild boar and inadequate biosecurity contributed in most but not all cases.

The effectiveness of current control strategies of wild boar population was evaluated.

- *Regarding the implementation of control measures in the wild boar management zones following a focal ASF introduction, it was reported that intensive hunting around the buffer area might not always be sufficient to eradicate ASF. However, the probability of success is increased after adding effective carcass removal. Also, establishing a wider buffer area leads to a higher success probability. If these two measures are effectively implemented, fencing is more useful for delineating zones, rather than adding substantially to control efficacy. However, segments of fencing will be particularly useful in those areas where carcass removal or intensive hunting is difficult to implement.*
- *It was not possible to demonstrate an effect of natural barriers on ASF spread. Human mediated translocation may override any effect of natural barriers.*

Recommendations for ASF control in four different epidemiological scenarios regarding wild boar population were presented, based on three features: the ASF status of the area, the presence of neighboring infected areas, and how recent is the ASF introduction to the area.

Underpinning the biosecurity recommendation should be consideration of the virus's ability to survive in carcasses/the environment (pork products, carcasses, contaminated fomites) and the experiences during the current epidemic with evidence of human-assisted movement of virus, on several occasions over long distances.

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