

# Symptoms and Prevention and Control Measures of African Swine Fever

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**Abstract:** African swine fever is one of the main infectious diseases of large-scale pig farms. Once it occurs, it is bound to reduce the yield and quality of live pigs and affect the economic income of farmers. The prevention and control of ASF and the measures and specific implementation plans taken by small and medium-sized pig farms in various regions will further reduce the incidence of ASF, thus improve the economic benefits of pig farms, and finally realize the healthy, safe and sustainable pig industry.

**Keywords:** African Swine Fever; Small and Medium-Sized Pig Farms; Epidemiology; Prevention and Control

## 1. Introduction

The new requirements for ASF prevention and control are to improve the prevention and control system of the ASF at the community level in combination with local prevention and control practices and breeding practices. Aim to stabilize pig production capacity and stabilize pig production capacity. To provide new information for the prevention and control of African swine fever in small and medium-sized breeding farms. On this basis, the pathogenesis, epidemiology, etiology, control and prevention measures of ASF were investigated to provide further reference suggestions.

## 2. Epidemiology of African Swine Fever

ASF is mainly caused by ASF virus with viral particles of 175 - 215 nm in diameter and a genome of double-stranded linear DNA. Capable to replicate in mononuclear macrophages, with an overall genome size of 170 - 200 nm. 190 kb, ASF virus was propagated in bird mites and distributed in visceral, interstitial fluid, blood and feces. It does exist. African swine fever virus has a strong resistance to the outside world, can

survive in the blood in the cold room for 6 years, but its resistance to the thermal environment is not clear, can also inactivate the virus, 60 °C heating for 10 minutes with lipid solvents can also inactivate the virus darkness. ASF is an infection caused by an intrinsically filtered virus. The symptom is fever, which is characterized by a short and acute disease course. Pigs of all ages are naturally susceptible to this virus. Viruses move directly into the respiratory tract. The virus invades the pig body causes tonsil infection, and through the mandibular lymph nodes, lymph fluid and blood, make the pig whole body is covered with virus. Bacterial pathogens have a very strong vitality. Viral pathogens compared with bacteria have their ability to survive more in the natural environment and do not distinguish between chance and vector. For example, air, water, and soil are all potential habitats for bacterial pathogens. They are more sensitive to the outside world, and their living conditions are not high, which need to cull in conventional feeding places, which is also one of the key ways to cut off the source of infection in susceptible sites. Bacterial diseases in diseased pigs are mainly transmitted through the digestive tract or broken skin surfaces. Bacterial diseases caused by gastrointestinal infections are mainly caused by *Pasteurella*, and skin lesions are mainly tetanus. Before obvious stimulation in the herd, pig cells have generally died and undergone mitosis<sup>[1]</sup>.

## 3. Main symptoms of African Swine Fever

ASF is an infectious disease caused by domestic pigs and various wild boars (African wild boar, European wild boar, etc.) infection. Beyond the extent of the disease. African swine fever has been actively prevented, and the monitoring of African swine fever has been fully implemented. Once the pigs are infected, the mortality rate has reached 100%, causing huge economic losses to the farmers. Heart rate and respiratory distress. The body temperature of pigs infected with ASF

ranged from 40 °C to 42 °C, and some pigs developed serous or myxoid symptoms. There is purulent in the body, secretions in the eyes and nose, and some pigs can also have cough. The vital signs of pigs infected with ASF are cyanosis of the skin, lymph nodes, kidneys, gastrointestinal tract, and obvious bleeding in the mucous membranes<sup>[2]</sup>. The incubation period of infection is often as short as 5 to 9 days, but the survey statistics of ASF cases everywhere since 2018 show that the incubation period of cholera infection in African pigs in clinical trials tends to be short, ranging from 2 to 5 days. At the early stage of the disease, the body temperature of the sick pigs continued to rise and their appetite decreased. Some weak pigs and piglets just lay in the corner of the pigsty, very weak, and the symptoms lasted for 3-4 years. Further, even very ill pigs have difficulty breathing, curly hind legs, mucus from the mouth and nose, causing diarrhea and vomiting, and then gradually drops from around the seventh day of fever.

#### **4. Prevalence Causes of African Swine Fever in Small and Medium-Sized Pig Farms**

##### **4.1 Diverse Modes of Transmission**

From an objective point of view, the main reasons for the outbreak of ASF in small and medium-sized farms are the high transmission, strong transmission power and diverse transmission routes. Ticks, maggots, wild boars and other domestic pigs, and contact with pigs can cause infection. The ASF virus is highly contagious and therefore can kill these insects, flies and wild animals. Intermediate hosts, the virus can be stored in the herd for a long time, and healthy pigs can become carriers of the ASF virus. Therefore, if the disinfection in the breeding process is not thorough, a large number of fly maggots will be produced. ASF virus can be transmitted through feed. Plasma protein powder is frequently used in the pig industry. This kind of feed is made from animal plasma processed by spray drying protein feed, especially in pig farms of a certain scale, all use this kind of feed. The production and processing procedures of this kind of feed are more complicated, and the quality of the feed products produced by different manufacturers is limited by the technical conditions. Some do not produce. Controlling the specific production links through the quality inspection of the feed

manufacturers will produce more serious quality problems. The search found that a local manufacturer of plasma protein powder had tested positive for the African swine fever virus, suggesting that pigs eating the feed could lead to the spread of a severe outbreak<sup>[3]</sup>.

##### **4.2 Quarantine and Transportation Are Not Strict**

In general, small and medium-sized pig farms should adopt the principle of self-propagation and self-breeding to ensure the health and safety of the whole pig herd. Transport also increases the prevalence of ASF. ASF is caused by long-distance and trans-regional transportation of live pigs. It has been reported in Henan, Inner Mongolia and China before, and it has also occurred in other regions."The process of pig transportation is not thorough, some illegal workers in order to seek more economic benefits, there are illegal transport of pigs, pig cross infection and other rising incidence of swine fever<sup>[4]</sup>.

Depending on the region, population reproduction may not be possible. However, during the introduction process, instead of imposing strict quarantine on foreign species, the authorities crossed wild boar carrying ASF with farm sows, which were infected, resulting causing a large outbreak. About African swine fever. Interstate and intercity traffic phenomena may occur during the transit process. Small and medium-sized farms, in particular, are impossible to stick to them, and in the field, we do not check the qualifications of the transport company to reduce transportation time and costs, and we do not require vehicles and tools. Poor sanitation may lead to swine fever virus infection in African pigs. During long-distance and long-distance transportation, the virus can cause large outbreaks of ASF and occur endemic in the areas along the transportation route and in the breeding farms<sup>[5]</sup>.

##### **4.3 Purification and Culling Subsidies Are Not in Place**

Currently, there is no targeted treatment plan for ASF, and the farms can only control the outbreak through vaccination and daily disinfection management. Pigs and pigsties need to be culled to avoid mass outbreaks or spread."" However, culling all pig herds and the entire fence can have serious economic consequences for the entire farm. Damage is inevitable, and

farms may even have no harvest for the rest of the year. In response, the Ministry of Finance has decided to actively respond to the severe and complex pig production situation and take multiple measures to strengthen prevention and control. The central government has allocated relevant special funds to provide targeted subsidies to ASF slaughterhouses and cleaning farms, and continue to carry out the prevention and control of ASF. However, in some areas, especially in remote areas and small farms, it is impossible to fully enjoy the statutory ASF epidemic.

The culling subsidy policy is favored, and the fund distribution and settlement cycle is longer. Therefore, small and medium-sized farms are under great financial pressure. When suspected cases of ASF are found, some farms are false, underreported and missed reports, leading to the further spread of ASF epidemic. May lead to the transmission of ASF.

#### **4.4 Lack of Vaccine**

An ASF vaccine is still in development, but the development has been slow, due to its complex protein structure. The innovation team at the National Key Research Institute has started development work on a vaccine, and the researchers' ASF candidate vaccine has shown promising results in clinical trials, but such vaccines are not yet available.

### **5. Prevention and Control Measures for African Swine Fever in Small and Medium-Sized Pig Farms**

#### **5.1 Strictly Implement Disinfection and Cut Off the Source of Infection in Time**

ASF virus can be transmitted to healthy pigs through mosquitoes, flies, ticks, wild boar and other domestic pigs. Therefore, small and medium-sized farms should strengthen disinfection management measures to ensure that disinfection is in place. Drugs and disinfection methods should be selected to eliminate bacterial breeders, tuberculosis bacteria and microbial viruses in the field. Establish a mechanism. Staff of pig farms should establish safety supervision awareness and implement pig safety management in combination with the latest African swine fever prevention and control concept. Management must have. We will conduct a comprehensive inspection of the pig farm and its surrounding

areas, and take effective measures in time for problems in the inspection process. For example, control weeds around the pig farm in time to avoid overgrowth of weeds and increase the risk of disease transmission; strictly control the personnel, vehicles and materials entering and leaving the pig farm and ensure traceability; disinfect; clearly mark the dirty areas; wear indoor shoes and clothing when entering the pig living area; disinfect and sterilize the pig farm regularly; and implement classified management. Strictly control the vehicles entering the pig farm, do a comprehensive inspection of the vehicle cleaning and disinfection work, and allow the vehicles to enter the pig farm only after completing the planned slaughter operation. Prevent vehicles from entering the pig farm. Mosquito and flies carry a large number of bacteria to prevent the breeding of mosquitoes and flies and other pests; Ensure the specificity and uniqueness of transport vehicles, avoid the misuse of vehicles, leading to the spread of pathogenic bacteria everywhere; harmless treatment of pig feces, but the excrement must be strictly controlled to prevent random excrement pollution of the surrounding environment and virus transmission. Clean the cab, body and wheels with 3% caustic soda for passing vehicles, dry naturally, dilute 200 times by sand temperature, and carry out secondary spray disinfection. 10% povidone iodine were diluted 200 times to wipe the vulva and breasts of clinical sows. After transferring the pigs, clean the vacant piggery, station, yard and surrounding environment with 2% caustic soda water, and rinse for 2-3 times. After air drying, with 250 times diluted quicklime spray sand temperature ~ twice a week piggery equipment, ground and cement wall, using bleach powder solvent add 5%~10% bleach suspension or use 3% caustic soda water, 20%~25% lime milk, disinfection clarification is suitable for piggery bacteria, bacteria, can effectively reduce the pathogen content, one of the measures to prevent African swine fever is to strengthen feed management. Japan's Ministry of Agriculture, Forestry and Fisheries announced that the Feed Production Department has banned the use of blood products as basic raw materials for pig feed, and has banned the use of cyclones in pig breeding in and around areas with a high incidence of African swine fever. Prohibited areas, which are explicitly prohibited. This is prohibited. Other areas that use swill as feed

farms must fully mature the swill to prevent ASF due to incomplete swill ripening. The African swine fever virus testing in pig feed will be fully implemented, and the relevant departments have the right to demand that the farms with positive test results be closed and prohibit the continued processing and production of pig feed.

### **5.2 Strengthen Regional Linkage and Crack Down on Illegal Distribution and Transportation**

In terms of ensuring the safe and effective supply of pigs and other important livestock products, in order to effectively promote the refinement and refinement of the breeding and transportation industry. The principle of priority control of epidemic situation and epidemic disease ".Focusing on the prevention and control of African swine fever, focusing on the prevention and control of African swine fever in accordance with the requirements of scientific prevention and control, supply guarantee and operation, and following the principle of joint prevention and control and risk reduction" to implement targeted local prevention and control. We will strengthen regional coordination and departmental cooperation, and constantly innovate ways and methods to form a joint force to respond to changes in the prevention and control of major animal diseases.

We will dynamically adjust the prevention and control strategies and key measures of small and medium-sized breeding farms, adhere to the current effective prevention and control measures, build a long-term local prevention and control mechanism, and improve the agricultural guarantee capacity to safely supply live pigs and other important animal products.① Guide small and medium-sized breeding farms to strictly implement the information reporting system and abide by the relevant provisions of the Animal Husbandry Law of the People's Republic of China."When buying or introducing varieties, we must seek" pig performance indicators ". Strengthen the quarantine of producing areas, carry out the scientific assessment of risk assessment of animal infectious diseases under the joint guidance of the municipal Supervision Bureau and the Animal Husbandry Bureau, and timely report the situation of "three" live pigs found. Local health regulators to strengthen farm management. ③ The relevant municipal

regulatory bureau and the transportation department will jointly enforce the law, conduct a thorough investigation on the origin of breeding pigs transferred across provinces and regions, strengthen the approval of electronic certificate account, strengthen the transfer link, and strengthen supervision., Strict control of arrival and reception. At the same time, we should do a good job in the whole supervision chain, consider gradually establishing a platform for the number of immunization pigs and quarantine declaration, further smooth reporting channels, severely crack down on illegal transfer behaviors, so as to avoid transporting African pigs as far as possible, carry out Seine investigation on illegal transfer behaviors, and enter pigs infected with swine fever virus into the farms.

### **5.3 Support the Epidemic Prevention and Control of African Swine Fever and Market Supply**

We will fulfill the responsibility of detoxification and resolutely provide financial support and subsidies. Under the comprehensive supervision of the supervision and management department and the epidemic prevention department, livestock and poultry farms become the first responsible person. The heads of the epidemic management department, in accordance with the principle of overall planning and local responsibility, constantly optimize the deployment of local prevention and control plans to reduce the disease transmission rate. For farmers, the distribution of subsidies will be adjusted to once every six months, and incentives should be increased to make small and medium-sized farms quickly convert the potential of pig production into actual capacity and continue to increase production. In order to expand the scale, further stimulate the vitality of pig production, expand the insurance coverage of finishing pigs. We will do a good job in controlling the epidemic of African swine fever and market supply, and grasp the implementation of various subsidy policies, including African swine fever. Local governments can also adjust the subsidy standards according to the size of pigs.

## **6. Conclusion**

This paper mainly focuses on small and medium-sized breeding farms, analyzes the causes of the occurrence and prevalence of

African swine fever, and puts forward relevant prevention and control strategies. Timely disinfection to prevent the source of infection in the farm. Only cut off slaughterhouses to correct illegal transportation problems, can effectively reduce the incidence of African swine fever, under the guidance of the municipal animal husbandry department, establish regional prevention and epidemic prevention system, regular technical exchanges, improve the level of epidemic prevention work to promote pig breeding products basic balance between supply and demand, finally realize the healthy development of pig breeding. ASF requires both vaccination and clinical treatment."Mountain county aquaculture is given priority to with retail farming, infrastructure conditions are uneven, lack of standardized management, problems, mountain county is studying regulators will report the African swine fever outbreak and solutions, so that stakeholders can effectively operation aquaculture, reduce the impact on industry safety and quality, promote regional economic development. In addition, regulators will also analyze the current summary, asF is a serious infectious disease, causing serious losses to the farms.

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#### **References**

- [1] Chen Teng, Zhang Shoufeng, Zhou Xintao, et al. Discovery and prevalence analysis of the first ASF outbreak in China [J]. Journal of Chinese Veterinary Medicine, 2018,38 (9): 1831-1832.
- [2] Wang Kai, Fan Zhixin, Tian Haolun, et al. Prevalence profile and prevention and control strategies of ASF [J]. Chinese Journal of Veterinary Medicine, 2019,39 (5): 1027-1034.
- [3] Green, Sun Yan. Experience and reference of ASF eradication in Spain [J]. World Agriculture, 2019 (8): 121-125.
- [4] Hu Yanlong, Zhu Jiangang. Discussion on the prevalence change and prevention and control countermeasures of African swine fever [J]. China Animal Husbandry, 2022 (8): 117-118.
- [5] Wang Zuli. The impact of the African Swine Fever epidemic on the development of the pig industry and its future outlook [J]. Northern Animal Husbandry, 2018 (18): 6-7.