

African Swine Fever: Economics vs Pathology

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Keypoints:

- The disease appears to be relatively easy to identify, control and eradicate in the US
- Introduction of African Swine Fever (ASF) would result but relatively few infected pigs
- The immediate loss of export markets would nonetheless result in catastrophic economic losses

The establishment of ASF in pig populations in Eastern Europe and China has significantly increased the likelihood of the introduction into the US pig population. Its ability to survive for long times in a variety of materials, including pork products, makes it a real threat to travel the distance and infect US pigs. Indeed, with the trillions of ASF viral particle already produced, it is not hard to imagine that one or more of them has already found its way to North America, but subsequently did not find its way into a pig.

The multiple effects of Emerging Infectious Diseases (EID's), especially hemorrhagic diseases such as ASF, have been mostly studied in human populations, but many of the generalities are appropriate in our preparations. Over the past 9 years the University of Minnesota's College of Veterinary Medicine has led efforts in capacity building in USAID's Emerging Pandemic Threats program of USAID. This, in turn, was part of the a broader set of efforts called the Global Health Security Agenda, which expends billions of dollars annually to control and prevent diseases such as MERS, Ebola and SARS.

In negotiating, planning and implementing strategies I came to a number of realizations, but a few came up repeatedly. The first is that population or public health is in short supply in many parts of the world. It is a central part of our swine medicine, but those thought processes are often not evident in human medicine, outside agencies such as the CDC. Many countries lack the luxury of such capabilities, both for human and veterinary medicine. Many countries are dependent on international collaboration, and such veterinary collaborations are underfunded.

The other major lesson is that people rarely act rationally in the face of potential epidemics. The combination of fear, rumors, misinformation and ignorance results in damage that goes far beyond the costs of the disease and its control. Economies are often severely affected, with fear driving a restriction in commerce, tourism and even basic policing. The resultant or exacerbated poverty can result in as much of an insult on health as the infectious disease of concern.

A challenge with the introduction of ASF, or any novel reportable disease, into the US swine herd is that we have a good idea on the behavior of the disease. Frankly, there are many diseases in our pigs that are more difficult to control. ASF moves relatively slowly and can be putatively recognized through its and excellent capabilities to isolate, trace and eradicate the disease. We lack, mostly, the major risk factors of feeding food products and backyard herds. The one concern is our extensive feral pig population, but concerted methods to reduce that exposure are available.

Inasmuch as we understand the behavior of the disease, the behavior of farmers, governments, business and farmers are more difficult to predict. With a loss of 25% of the market (plus any exports in transit being returned), those farmers dependent on public price discovery face the prospect of having no market. The devaluation of inventory and farms will result in decreased ability to finance operations. One or more farms will be affected directly by an ASF infection with rapid depopulation. If more farms are close to the infected farms, they too will be depopulated. However, for some time all farms will be severely affected by the elimination of export markets. Transport, especially between states, will often be stopped. Pigs will back up on the farms, with those that go to slaughter being highly devalued. Money for feed, disease control and other inputs will be hard to secure. Payrolls will not be met and employees will look for more promising jobs in other industries.

Much of our planning has been on disease readiness, and rightly so, as the speed and competence in which the disease is brought under control will determine the speed under which markets will be reacquired. Markets are quick to shut down borders and slow to open them. Most scenarios have regaining of all historic markets measured in years, however. Thus, we not only need disease management but supply management. The economics of pig production are brutal, with oversupply resulting in what can be described as death matches, with the survivors also compromised by the times of low prices and the industry stripped of many of its capabilities.

The industry is now completing many simulations of disease management in the face of the identification of pigs infected by ASF in the US. Depopulation to control disease is readily discussed and modelled to regain markets. Beyond this purpose, depopulation and restriction of production is often ignored, but it may be as important to regain market equilibrium and perhaps even price discovery. For the aggregate industry, there is real benefit to create strategies to combine the benefits of both, actively depopulating all potential contacts, not only through location but also through transportation and management networks.

A term in human health management is the "social determinants of disease". Of these social determinants, none looms larger than poverty. In the same way, we need to recognize that disease affects economics, but economics also affects disease. Competent and invested care is best delivered on farms that are financially healthy. A rapid restabilization of the industry serves not the owners and employees, but also pigs and the public.

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