



CASE STUDY: SUSPECTED PATHWAYS OF ASF TRANSMISSION OF TESTED POSITIVE FARMS IN BULACAN

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OBJECTIVE OF THE STUDY :

- ❑ To understand ASF as a disease and its mode of transmission.
- ❑ To determine the farm risk factors and suspected pathways of ASF transmission in Bulacan.
- ❑ By knowing the suspected pathways of ASF transmission we can implement specific biosecurity plans for each production system.

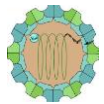
African Swine Fever (ASF)

- An economically important disease.
- It is hemorrhagic disease of pig that produces a wide range of clinical signs and lesions
- Incubation period is 4- 19 days
- Death is 4-10 days, sometimes even before the post clinical signs are observe.

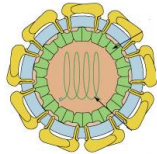


Causative Agent:

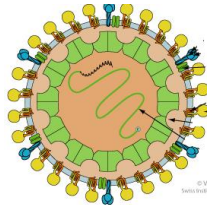
ASFV is a large, enveloped, double-stranded DNA virus that replicates primarily in cells of the mononuclear phagocytic system. It is currently classified as the only member of Asfarviridae, genus Asfavirus



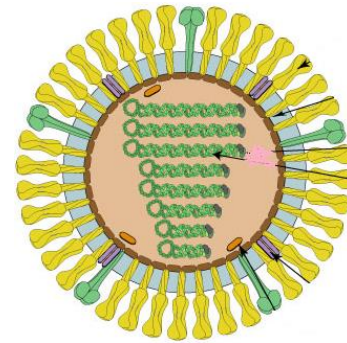
FMDV
30 nm



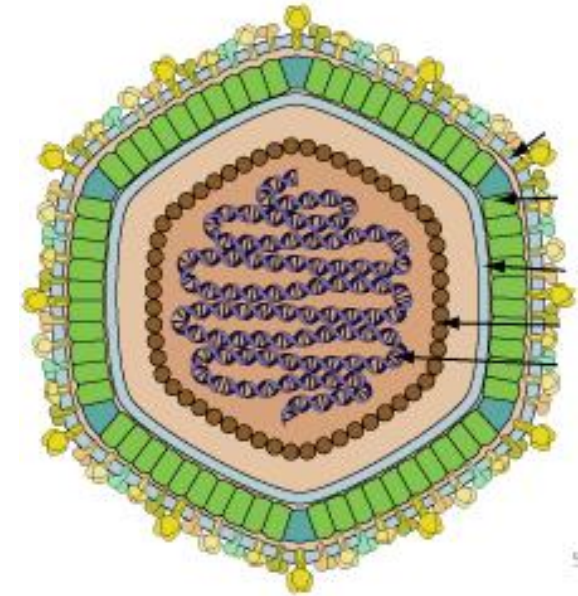
CSFV
50 nm



PRRSV
45-65 nm



Influenza
80 -120 nm



ASFV
175-215 nm

ASF update (A. Manabat PIC Philippines Inc)

https://viralzone.expasy.org/28?outline=all_by_species

Differences in Spleen lesions of ASF vs CSF



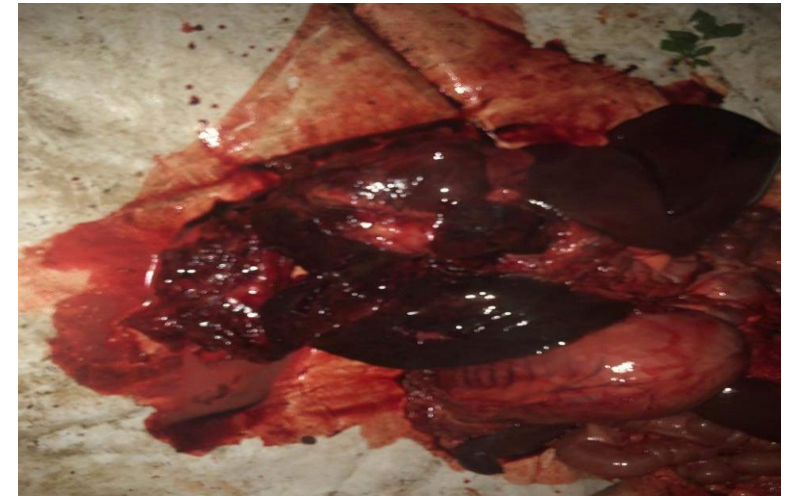
CSF

ASF

Normal

African Swine Fever – Sanchez-Vizcaino, J.M., Mur L.,
Arias, M.

Necropsy Result of ASF Positive pigs



Pictures courtesy of Dr. E. Gonzales Sept 2019

ASFV Survival Time

• Meat with and without bone and ground meat	-	105 days
• Salted meat	-	182 days
• Cooked meat (min of 30 minutes at 70 °C)	-	0
• Dried meat	-	300 days
• Smoked and deboned meat	-	30 days
• Frozen meat	-	1000 days
• Chilled meat	-	110 days
• Offal	-	105 days
• Skin/Fat (also dried)	-	300 days
• Blood stored at 4 °C	-	18 months
• Faeces at room temperature	-	11 days
• Putrefied blood	-	15 weeks
• Contaminated pig pens	-	1 month

Mode of Transmission



- In ASF free area, probably the biggest route of spread seen in the Philippines, and globally, is by people feeding their animals swill or uncooked food waste/garbage that contain infected pork products (Bantay ASF sa Barangay Outline of Biosecurity & Surveillance Plan A. Manabat, 2019)

- Followed by exposure of pigs to infected meat, fecal, urine, and other discharges/fluids spread is through direct pig to pig contact
 - Pigs can shed the virus **for at least 24 hrs before** clinical signs appear
 - Virus can be shed in saliva, tears, nasal secretions, urine, feces and secretions from the genital tract
 - Blood contains large amount of virus
 - Aerosol transmission only on very short distance
 - During outbreaks pigs can be infected with contaminated feed, drinking water and bedding

Mode of Transmission



- People are can also spread the disease through contaminated clothes, shoes, equipment they brought inside the farms and near pigs.
- Spread can also via vehicles.
- Recovered animals from acute or chronic infections may become persistently infected, acting as virus carriers and are the biggest problem to control the disease.
- In other countries wild boars are very susceptible to infection and are persistently infected for long period with no disease signs. Soft ticks of the Ornithodoros species, *O.erraticus* and *O.moubata* act as reservoir and transmission vectors of ASFV.



Chronological Events of ASF case in Bulacan

- July 2019 DA reported ASF positive case in Rodriguez Rizal area. Initial report stated the affected pigs were fed on swill or garbage that contain infected pork products.
- August 15, 2019 – PVO- Bulacan was alerted that ASF infected pigs were brought in Pritil, Bulacan Stockyard. Thus they inspected and tested all the pigs in the facilities.
- August 17, 2019 - PVO – Bulacan then implemented 1-7-10 protocol in all affected area. They closed and disinfected the premises. They conducted sero- surveillance in Pritil, Calumpit, Malolos and Plaridel to check on the health status of the pigs in the district.
- 2 weeks after they closed Pritil stockyards, a case of all native pigs in one farm in Malolos died. But since it was not tested thus poisoning was pointed as a cause of mortality. However, the test result of samples from sero- surveillance in the area were ASF positive.

- September 2019 - More farms in Malolos, Plaridel and Calumpit reported ASF like symptoms and increase of herd mortalities. Blood samples were tested ASF positive.
- Municipalities around the affected district set up check point and disinfection zone to limit movement of livestock in the area.
- October 2019 PCSP for Bulacan (PVO-Bulacan and Private sector initiative) was launched to support the Municipalities in their check point and disinfection effort. Veterinarians volunteer to do Epidemiological survey in some affected farms.



Pictures courtesy of: PVO-Bulacan



Case Study : Suspected Pathways of ASF Transmission

- The case study was conducted to identify the pathways of ASF transmission in Bulacan
- The team Identified the risk factors based on Bantay ASF sa Barangay: Outline of Biosecurity & Surveillance Plan (A. Manabat, 2019)
- Provincial Veterinary Office of Bulacan provided 35 commercial farms that were tested ASF Positive (PCR test), showed clinical signs and were culled according to 1-7-10 protocol.
- The data were gathered in Bulacan 35 selected farms from August to October 2019
- Risk factors of each farm were objectively assessed by PVO Bulacan tech. team based on interview and actual observation after the herd were infected and culled.

Identified Risk Factors

(Bantay ASF sa Barangay: Outline of Biosecurity & Surveillance Plan A. Manabat, 2019)



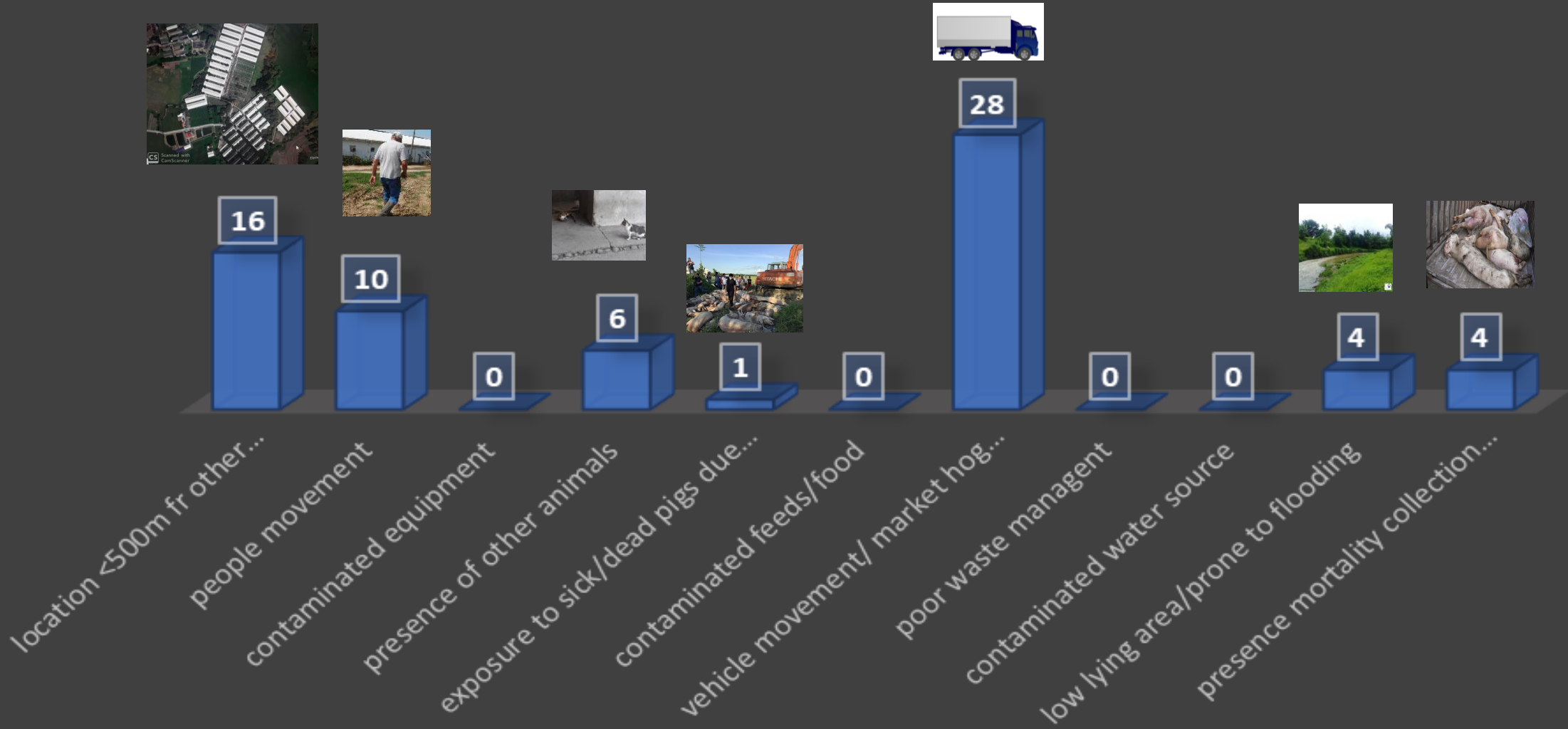
- A. Location of the farm <500 m from nearby farm
- B. Farm located in low lying area or near body of water that might be contaminated with ASFV
- C. People Movement – entry of virus via contaminated clothing's etc
- D. Entry of virus via contaminated equipment / supplies
- E. Presence of other animals in the farms and no pest control program
- F. Entry of virus via contaminated feed/food
- G. Entry of virus via contaminated vehicles
- H. exposure to the burial site of condemned pigs
- I. Presence of mortality collection trucks in the area
- J. Poor hygiene and sanitation practice
- K. Contaminated water source

List of Farms and Identified Risk Factors



Farm Code	location <500m fr other farm/market	people movement	contaminated equipment	presence of other animals	exposure to sick/dead pigs due to ASF	contaminated feeds/food	vehicle movement/ market hog truck	poor waste management	contaminated water source	low lying area/prone to flooding	presence mortality collection truck
AM							x				
CFE	x						x				
CG		x								x	
FC		x		x						x	
FP							x				
FTH							x				
JDE							x				
FA											
FF	x						x				
TRL	x						x				x
PR	x						x				
FA	x						x				
CPB							x				
SSEK				x			x				
FRB	x										
FW							x				
IGAT							x				x
FD	x			x							
FR											
FR							x				
FBPNQ							x				
HM	x						x			x	x
IFP	x				x		x				x
CE	x						x				
FM	x						x				
GF	x			x			x				
FGA	x						x				
AS	x						x				
JN	x						x				
IFIF	x						x				
FMGA		x					x			x	
MH							x				
FEG							x				
FF				x			x				
FA3				x			x				

Suspected ASF Pathways of Transmission



Occurrence of Risk factors in ASF Positive farm



➤ Farm have 1 or more identified risk factors

- Vehicle movement - 83% (28/35)
- Location of the farm - 46% (16/35)
- People movement or behavior of the farm personnel 28% (10/35)
- It was also noted that 17% (6/35) of the farms have other animals inside the premises and no pest control measures
- Farm in low lying area that are exposed to contaminated water 11% (4/35)
- Presence of mortality collection trucks near the farm 11 % (4/35)
- 1 farm was exposed to the burial site of condemned pigs 3% (1/35)



Suspected Pathways of ASF Transmission #1



ASF infected pig



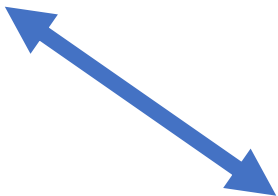
www.alamy.com - D424A6



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HUAWEI P30 Pro LEICA QUAD CAMERA



phireadygiga



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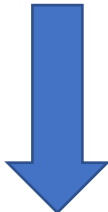
Suspected Pathways of ASF Transmission #2



ASF infected pig



www.alamy.com - D424A6



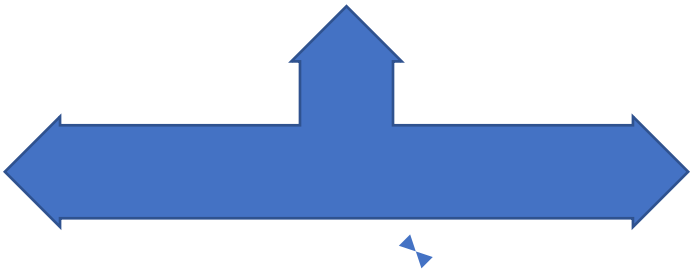
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Backyard Farming Philippines



Suspected Pathways of ASF Transmission #3



ASF infected pig



www.alamy.com - D424A6



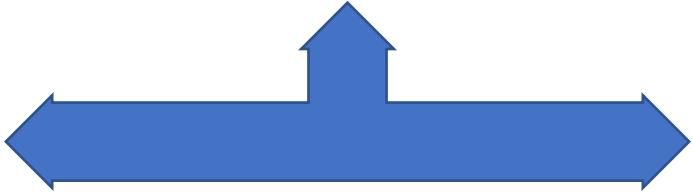
www.alamy.com - D424A6



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Backyard Farming Philippines



SUMMARY

Based on the survey , the top 4 risk factors common in ASF affected farms are:

- **83 %** vehicle and hauler movement in the area
- **46%** farm location of <500 m from other farm
- **28%** biosecurity non compliance of farm personnel and visitors
- **17%** have other animals inside the farm and no pest control



RECOMMENDATION

- Provinces even with no reported case must conduct surveillance in the area to determine first, where the swine farms are, second their biosecurity preparedness to prevent ASF.
- For farms affected and depopulated wanting to repopulate, they should conduct their audits to check any biosecurity risk areas in their operations.
- For future study we would like to highlight the success story of those farm who remain ASF negative within the red zone.

Thank you

