



A Cross-Sectional study to quantify the extent of African Swine Fever (ASF), potential exposure factors and likely consequences in affected farming households and animals using a questionnaire and serology in Neverland, September 2021.

Papua New Guinea country team:

Mr. Thompson Walambo, Ms. Elaine Hevoho, Dr. Tania Areori

Objectives & Expected outcomes

- Investigate and Determine the extent of ASF virus distribution
- Investigate potential sources, establish transmission routes between households, villages and regions
- Establish contributing risk factors to ASF virus transmission
- Determine approximate economic loss associated with ASF
- of virus introduction into the country

Target group and case definition

Target Group →

Smallholder backyard farmers in affected administrative regions in Neverland that have experienced outbreaks in the last 3 months and at present.

Case-definition →

1 or more pigs in HH showing 1 or more of these clinical signs visibly weak and inappetant, fever 40-41 temp, bloody diarrhea, distinct hyperaemia on chest, neck and extremities, cyanosis at the tips of the ears, necrotic lesions on skin of abdomen, neck and ears, bleeding from orifices and death within 1-4 days of showing clinical signs, and or tested positive on serology

Stepwise approach of investigation

1. Confirm the outbreak
2. Develop case definition
3. Identify risk factors
4. Develop hypothesis
5. Develop cross-sectional survey and questionnaire
6. Implement survey
7. Sample collection and serological testing
8. Analyze findings and test results
9. Confirm hypothesis
10. Report findings

Hypothesis: Households that practice free ranging and do not practice farm biosecurity are at higher risk of their pigs becoming infected with ASF?

Controls: HH in the affected regions that have not been affected with ASF and who also pen their pigs and have on-farm biosecurity measures in place

Study size

- Need to identify estimate of villages in the 15 administrative regions that have been experiencing outbreaks in the last 3 months- use paravet data/ community leader knowledge
- **Total Population:** 15 administrative regions in Neverland
- **Sampling frame:** Small holder Farmers in the regions that have been affected in the last 3 months
- **Selection criteria:** Selecting every second household within infected area

- Sample size calculation

Sample size estimation

- For a single estimate

$$\text{Mean : } n \geq \frac{Z^2 s d^2}{L^2}$$

$$\text{Proportion : } n \geq \frac{Z^2 P(1-P)}{L^2}$$

Stakeholder involved

How are pig households and/or piggeries accessed (who is sampling, who administers a questionnaire)

- Identified through paravets and accessed with community leader support
- Paravets engaged can take sample
- Community leaders can be engaged to do questionnaire and you can be there to provide support and QA

Who provides information, who are local people to be involved.

- Paravets
- Community leaders
- District livestock officers/ provincial livestock officers

Source and transmission

Husbandry Practices

Do you have fencing around your farm?

What type of farming system do you practice? Tethered/ penned/ free ranging?

Do wild pigs or other animals have access to your pens?

What do you feed your pigs?

Do you still feed your pigs? Have you still fed them in the last 3-4 months

Do you have an isolation pen?

What do you feed your pigs?

Where do you obtain supplement feed?

Where do you store supplement feed?

Do you breed using AI or natural?

Where do you source your boars? Other regions/villages

Hygiene practices

Do you have a wash in and wash out station for people entering and leaving pig pens?

Does each pen have separate food and water bowls?

Are the food and water bowls washed and disinfected regularly?

Do you slaughter pigs on farm?

If yes, where and how do you dispose of leftover carcass?

What do you do with sick or dead pigs?

Where do you dispose waste from pig pens?

Biosecurity Practices

Have you introduced pigs in the last 3-4 months from other regions or villages?

Do you quarantine new incoming pigs/piglets?

How long do you quarantine new animals for?

Do you have a separate quarantine pen?

How far is the quarantine pen from your other pig pens?

Do you have restrictions on vehicles and people moving in or out of your property?

Do vehicles and people entering farm get disinfected before and after leaving farm?

Does your pig pens have designated boots and overalls?

Production loss

Revenue	Costs	ASF Losses
Do you sell live pigs or pork meat or both? How much revenue is made from the sales of a piglet?	What are your major costs How much spent on feed every month?	How many pigs have you lost to ASF this year? - Weaners/growers - Piglets - Adults
How much revenue is made from the sales of a weaner/grower?	How much on average is spent on Veterinary care by paravet/ vet every year?	How much revenue have you lost due to loss of the number of pigs this year?
How much revenue is made from the sales of a sow/gilt/boar?	How much do you spend buying a piglet to replace stock?	How much money have you spent on veterinary care for your pigs that have been infected with ASF?
If you sell pork meat at markets also, How much would you make from the sales pork meat from an adult, grower/ weaner pig?		How many pigs do you have on your farm - Weaners/growers - Piglets - Adults

Summary/discussion

Challenges

- Participation of farmers given their reluctance to disclose information
- Training of community leaders and paravets for accurate data collection.
- Community leaders engaged maybe farmers themselves or related to participants so there may be bias

Bias

- Recall bias
- Selection bias