



# Current ASF surveillance systems for domestic pigs to ensure early detection

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# STM

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## Aim of surveillance

Early detection of a specific animal diseases  
Has the infection been introduced?

Define the evolution of the infection  
Is the infection increasing in the population or fading out?

Assess if the applied strategy works as expected  
Is the applied control/eradication strategy working?

## Broad “official” definitions

Disease surveillance in animal health is the **on-going** systematic collection, analysis and interpretation of data and the **dissemination of information to those who need to know** *in order to take action*

Monitoring may share common features with surveillance programs with the main difference being that monitoring activities do not require a pre-specified action to be taken *although significant changes are likely to lead action*

Surveys usually directed to identify a specific problem (for instance a preliminary survey carried out to have an estimate of prevalence before implementing a surveillance system for a specific disease) and surveys are usually limited in time. Surveys may be one component of a surveillance system as a whole

# Surveillance in practice

**Surveillance:** to develop a strategy that **maximize the cost benefit ratio**

Highest probability **to detect** the introduction of emergent or -re-emergent infection in a free area (early detection);

Highest precision **in measuring** epidemiological parameters (i.e. prevalence, n. of seropositive animals etc.);

Sustainable from both **implementation and economical** terms;

Have a **practical approach** (actions are foreseen)

# The impact of ASF varies in different areas

The **surveillance strategy** needs to be tailored to the situation and take into account:

- Prevalent type of pig production system
- Presence of wild boar
- ASF situation in adjacent territories
- ASFV genotype



**Free status**



**Early Detection**



**Eradication/Endemicity**

# ASF Surveillance

***An increased likelihood of infection in particular localities or subpopulations exists, targeted surveillance could be appropriate. This may include:***

- Specific high-risk feral pigs populations
- Pigs reared outdoors
- Farms which feed swill
- Areas in which the disease has been previously detected
- ...



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# ASF Surveillance

Target Animals



**Domestic**

**Pigs:**

- commercial farms
- backyards

**Wild Boar**

## ■ Surveillance Methods:

**(a) clinical, (b) virological, (c) serological**



**Based on the situation**

## Passive (reactive)

The SUSPECT CASE DEFINITION is defined and well known among stakeholders;

Stakeholders report to Veterinary Service the SPECIFIC PROBLEM related to the Suspect case definition

The animals that belong to the "**Suspect case definition**" is tested

**Animal owners report** a suspect case to the Vets

## Active (proactive)

The Veterinarians directly collect animal health data using a defined protocol that has been decided in advance (sampling, tests etc.)

A population or a part of it (risk based) is actively investigated to detect an infection

Vets, go in the farm and take samples, check the animals

Vets know what they are looking for...



# Passive or active: which is better?

## Passive is better when

An official “suspect case”  
definition is available and well  
known among stakeholders

Evident Clinical Symptoms

High lethality rate

High animal owners awareness

High Veterinary Service  
awareness

## Active is better when

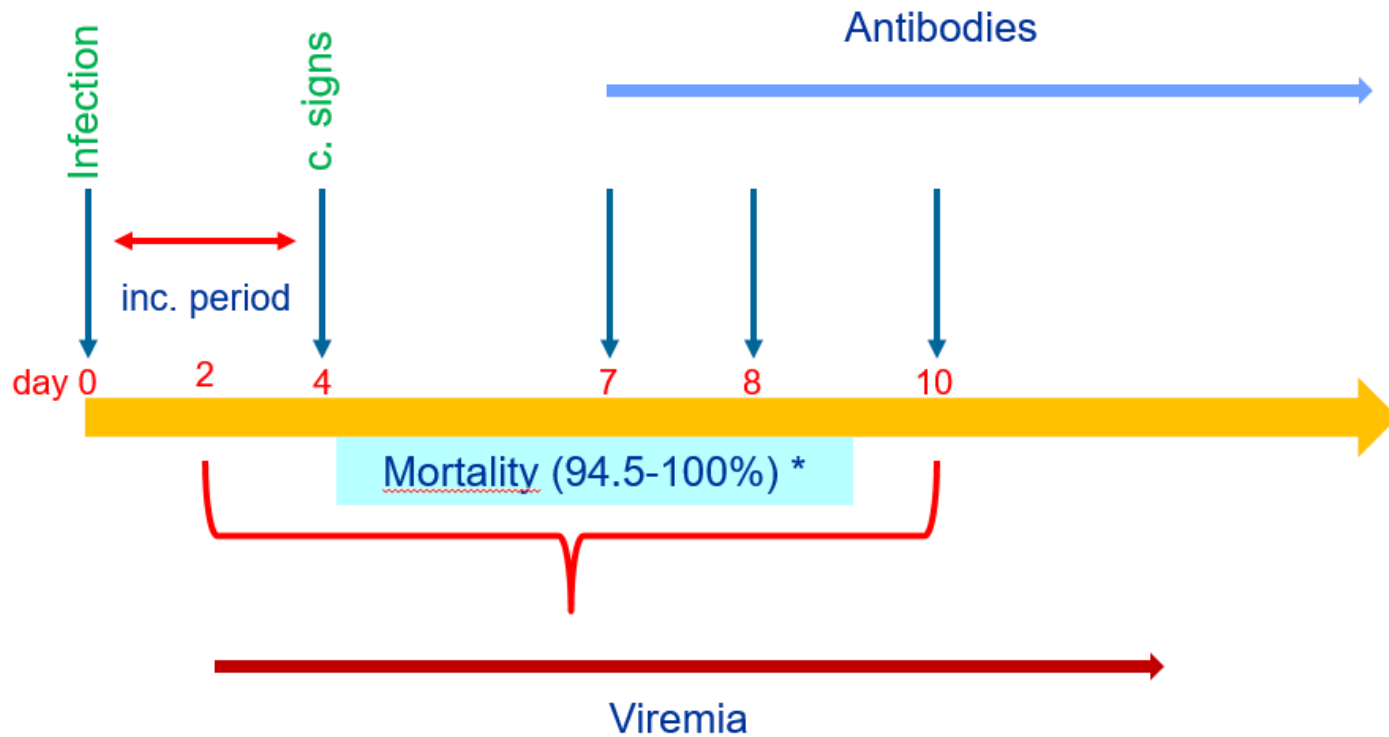
Clinical symptoms are not  
evident, episodic or short lasting

Low/null lethality rate

Low animal owners awareness



# ASF pathogenesis



\*Gallardo C., et al. 2014; Blome S., et al 2012..

# ASF Surveillance



Due to the characteristics of ASF: High Morbidity and Lethality

## Passive Surveillance

**Key role in Early Detection  
And virus detection in already infected areas**



**any cases where clinical signs or lesions are suggestive of ASF should be investigated without delay**



# Clinical Surveillance

Is the most effective tool for detecting ASF [Mortality (94.5-100%)]. However, due to the clinical similarity with other *diseases*, other activities could be foreseen in DOMESTIC PIGS

## ***In Commercial Holdings***

- *Strict health monitoring programme of pig holdings (pigs sick/dead examined and tested)*

## ***In Backyards***

- *Vet inspection on pig slaughtering for own consumption (pigs with lesions/symptoms examined and tested)*

## Virological Surveillance

It is important for early detection, differential diagnosis and for systematic sampling of target populations. It should be conducted:

- ✓ to investigate clinically suspected cases
- ✓ to monitor at risk populations
- ✓ sentinel animals (to confirm eradication after stamping-out)

# Passive surveillance: critical points I

## Suspect case definition:

broad definition will increase the sensibility of the surveillance (many false positive cases) whereas narrow definition will reduce the number of false positive cases but might enhance the number false negative cases and thus leaving undetected for some time the infection in the area.

The suspect case definition could be adjusted according to the (perceived or assessed) risk of the area.

**Low risk areas** => narrow case definition (**possibly undetected positive cases**)

**High risk areas** => broader case definition (many negative animals investigated but **high probability to early detect the virus**)

# Passive surveillance: critical points II

**Communication chain:** passive surveillance is based on reporting, hence a person willing to report must know to whom to report and how (green lines, mobile of a responsible person, avoid reporting to “Veterinary Service”)

**To whom it should be reported the finding of a dead wild boar in the forest?**

**Awareness and acceptance:** is the most important step of any passive surveillance. I.e. nobody will report what is unknown, or a disease for which a stamp out policy without compensation will be applied.

**The detection of ASF in wild boars poses several restriction when hunting: are hunters willing to participate?**

# Passive surveillance: critical points III

**Evaluation of the passive surveillance efficiency:** no reports does not mean no cases; the number of suspected cases to be investigated has to be estimated in advance, same figures should be used to evaluate the efficacy of the surveillance in place;

**In peace time, how many dead wild boars should be found in at risk areas?**

**Duration:** it is always difficult to maintain an high level of passive surveillance for any disease absents for a long period in an area or totally unexpected.

**When France, Hungary, UK should put in place a efficient surveillance system for the early detection of ASF in wild boars and how long it should run?**



# An Effective Passive Surveillance

Requires: **REPORTING**

*the trust of pig owners that report the disease to the  
Veterinary Authorities:*

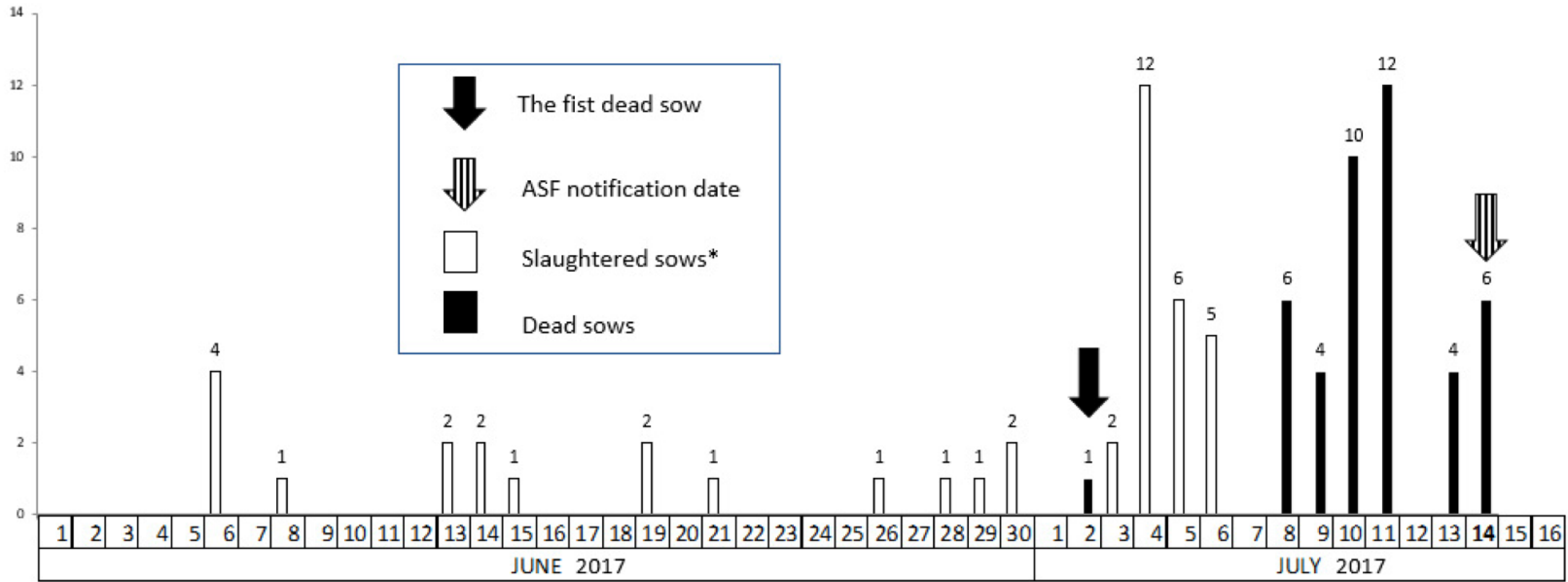
*..rapid diagnosis, eradication*



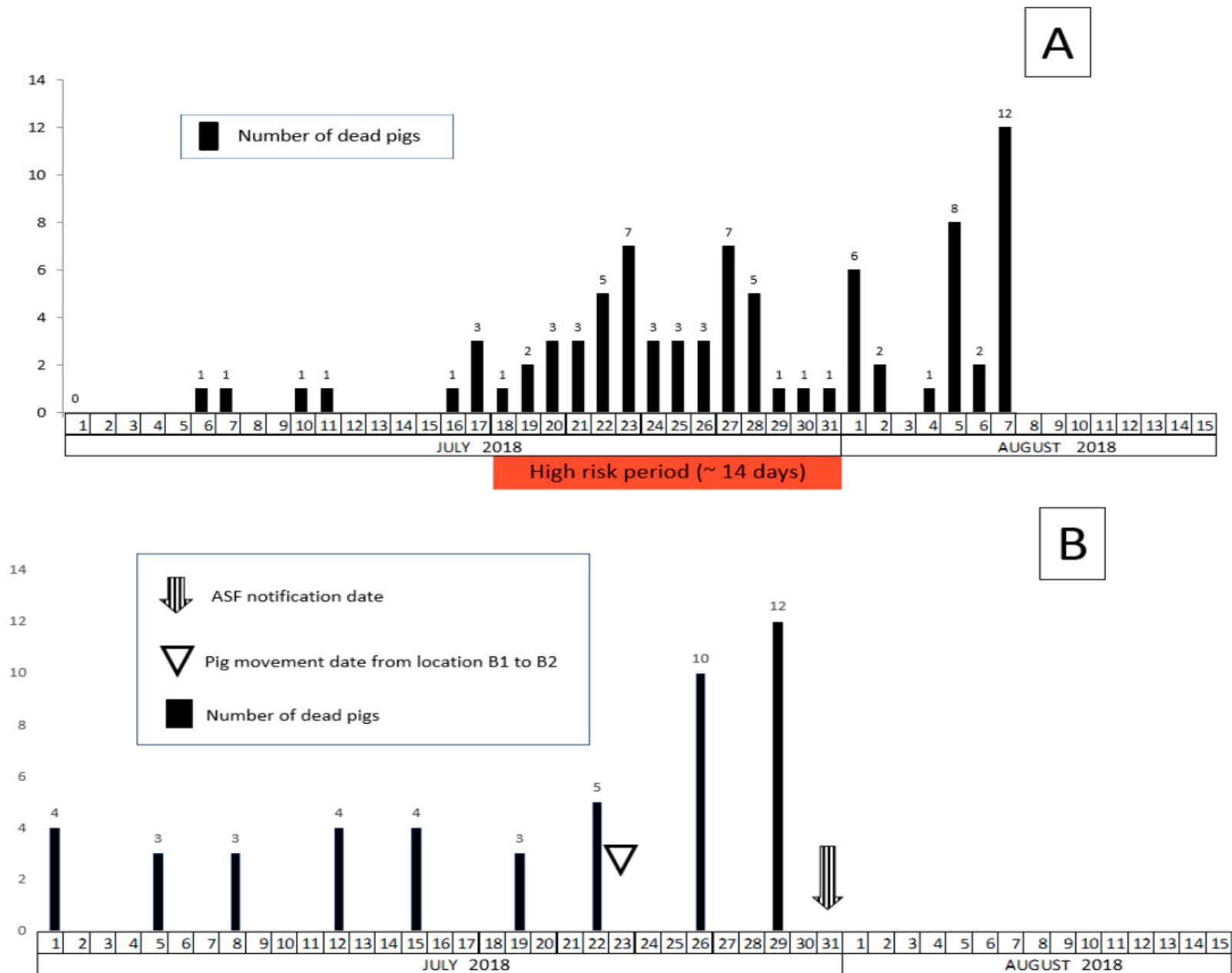
**AWARENESS CAMPAIGN**



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High risk period (~ 23 days)



**Figure 3.** Timeline of the disease event in location B2 stable 4 (A) and B1 stable 4 (B) and the estimated high risk period for farm B.

# Passive surveillance in practice

In infected areas: all dead pigs

Neighbouring free areas: all dead pigs

Free areas:

*Small farms (<30)* all dead pigs

*Commercial farms*: 2 dead pig/week; any abnormal increase in mortality

ASF has always to be suspected and rule out



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Thank You  
for Your Attention



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