Outbreak investigation and relevant data collection – initiative in Baltic States and Bulgaria

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Epidemiological enquiry
(AHL, Art. 57)

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1. The competent authority shall carry out an epidemiological enquiry in the event of the confirmation of a listed disease.

2. The epidemiological enquiry shall aim to:

   a) identify the likely origin of the disease and the means of its spread;

   b) calculate the likely length of time that the disease has been present *(High Risk Period);*

   c) identify establishments and epidemiological units therein, food and feed businesses or animal by–products establishments, or other locations….;

   d) obtain information on the movements of animals, persons, products, vehicles, etc. which could have spread the disease agent during the relevant period preceding the notification *(High Risk Period);*

   e) obtain information on the likely spread of the disease in the surrounding environment, including the presence and distribution of disease vectors.

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A) Postulate different hypothesis
B) Address each hypothesis separately
C) Exclude hypothesis one by one

Hypothesis for:

- **Way of entrance**: HOW did the pathogen enter the holding?
→ CHECK BIOSECURITY

- **HRP:** WHEN did the pathogen enter the holding
→ LAB RESULTS, MORTALITY DATA

Epidemiological road map

Hypothesis

Likely origin - way of entrance

H1: Trade of pigs
H2: Contact with wild boar environment
H3: Swill, contaminated food
H4: Others (people, vehicles, instruments…)
H5: Vectors (ticks, insects, ???)
H6 …

HRP
Date of entrance

H1: <50: 1w
H2: <150: 2-3w
H3: >150: >4w
H4…

Toolbox

- *Map of farm (village)*
- *Laboratory results*
- *Timeline of clinical events (Vet activities)*
- *Mortality /morbidity data*
- *Record of movements (animal, persons, vehicles, equipment…)*
- *Etc…*

Likely escape (secondary infections)

Biosecurity check

- Hardware
  - *Buildings*
  - *Filters*
  - *Fences*
  - *…*
- Software
  - *Management*
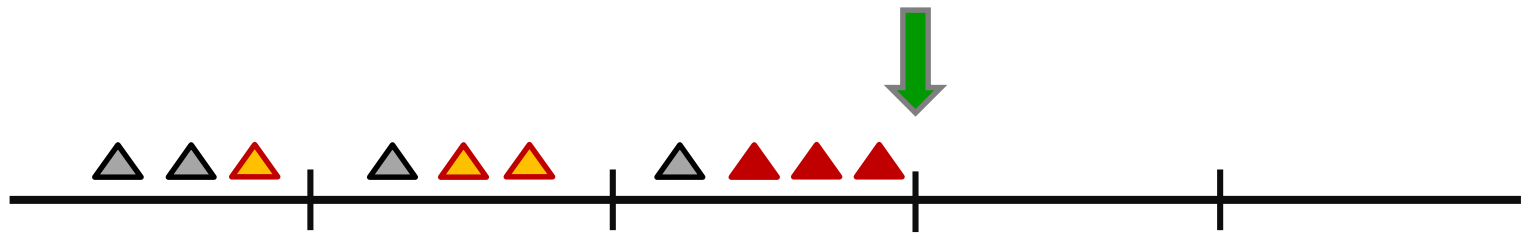 - *Awareness*
  - *…*

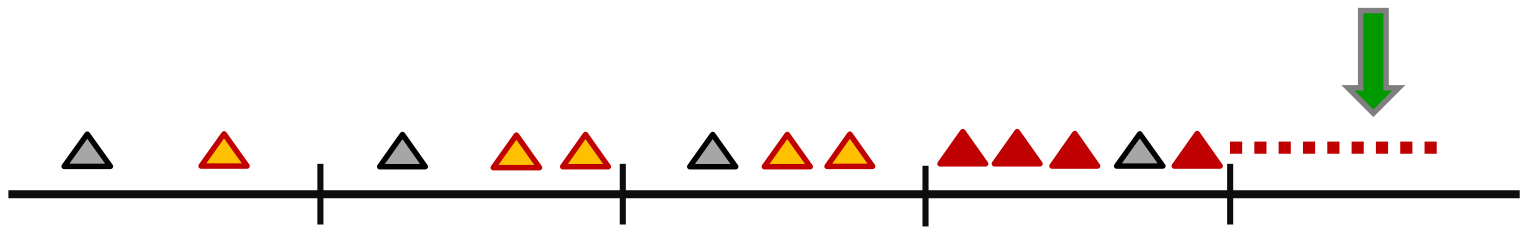# Mortality data

→ Cut-off for suspiscious mortality 3%

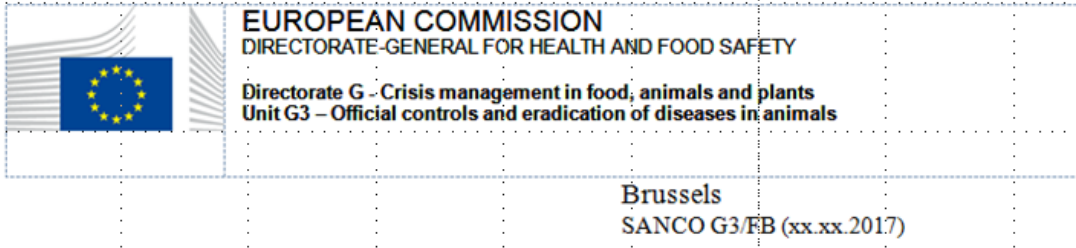A: 50 pigs
(M: <2)

B: 150 pigs
(M: <4)

C: 1000 pigs
(M: <30)

The larger the epidemiological unit, the longer the HRP!

SANTE/7113/2015 – Rev 6; WORKING DOCUMENT
ASF Strategy for Eastern Part of the EU

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SCoPAFF 6./7. April 2017; AHW_A.0!

EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR HEALTH AND FOOD SAFETY

Directorate G - Crisis management in food, animals and plants
Unit G3 – Official controls and eradication of diseases in animals

Brussels
SANCO G3/FB (xx.xx.2017)

2.1.5. Sampling for laboratory investigations will be performed
- ~~in~~ In case of clinical signs (such as fever or haemorrhagic lesions).
- Each week, virological testing of at least the first two death (post weaning pigs or pigs older than 2 months) in each production unit~~All dead pigs to be sampled and tested~~.
- Ante or post-mortem signs raising suspicion at home slaughtering at least within the area covered by Commission Decision 2014/709/EU.
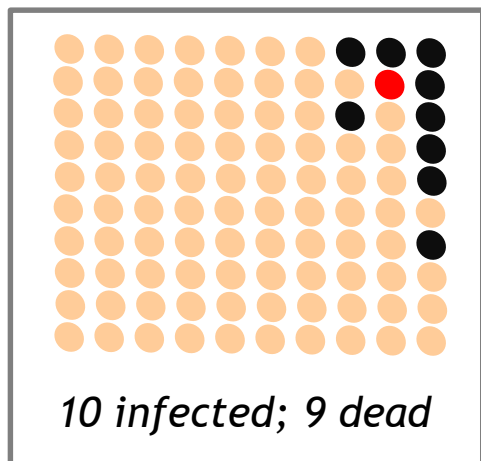
Increased mortality

threshold
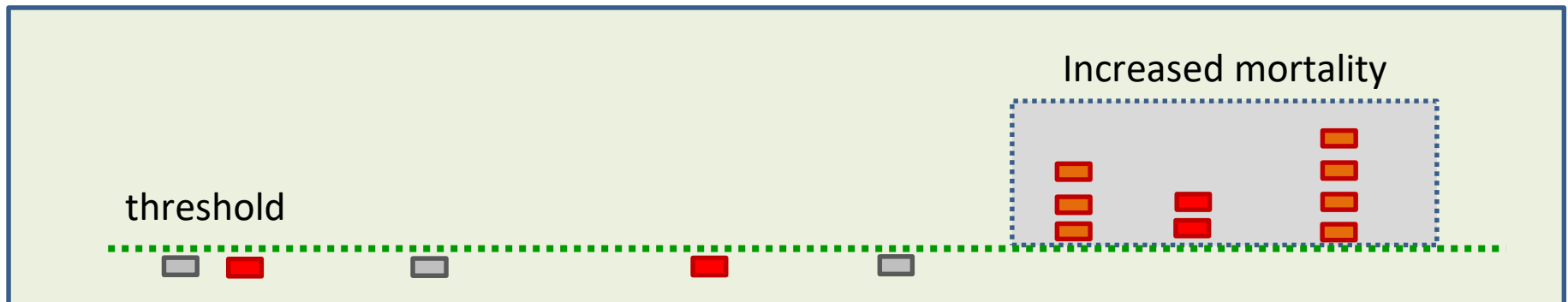
ASF - CSF - FMD
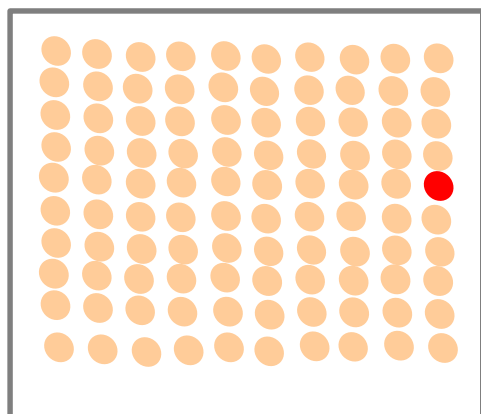
FMD

Prevalence: 100%
Mortality: 2%
Lethality: 2%

Contagiousity: **+++**

100 infected; 2 dead

● Infected   ● dead

ASF

P: 10%
M: 9%
L: 90%

10 infected; 9 dead   *Contagiousity:* **+**

CSF

P: 50%
M: 25%
L: 50%

50 infected; 25 dead   *Contagiousity:* **++**
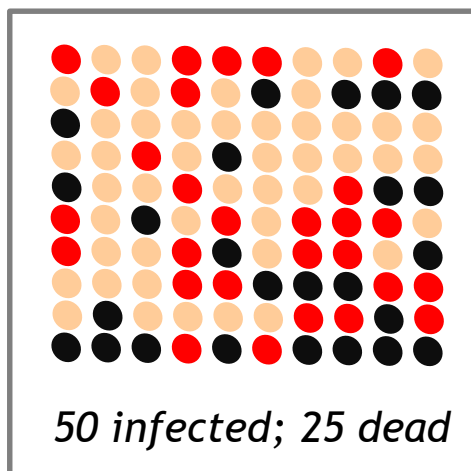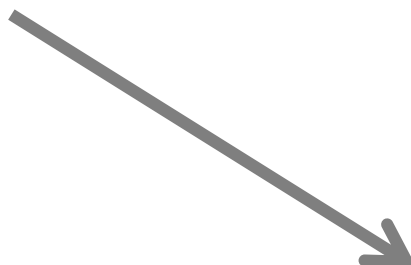
Epi-investigations in industrial farms in Bulgaria

- **Scope:** investigations in 5 ASF affected industrial farms

- **Period of events:** 19/07 – 01/08 2019

- **Period of investigations:** Aug 2019

- **Location:** Ruse, Silistra, V.Tarnovo regions, North Bulgaria (*farms in AFS high-risk areas*)

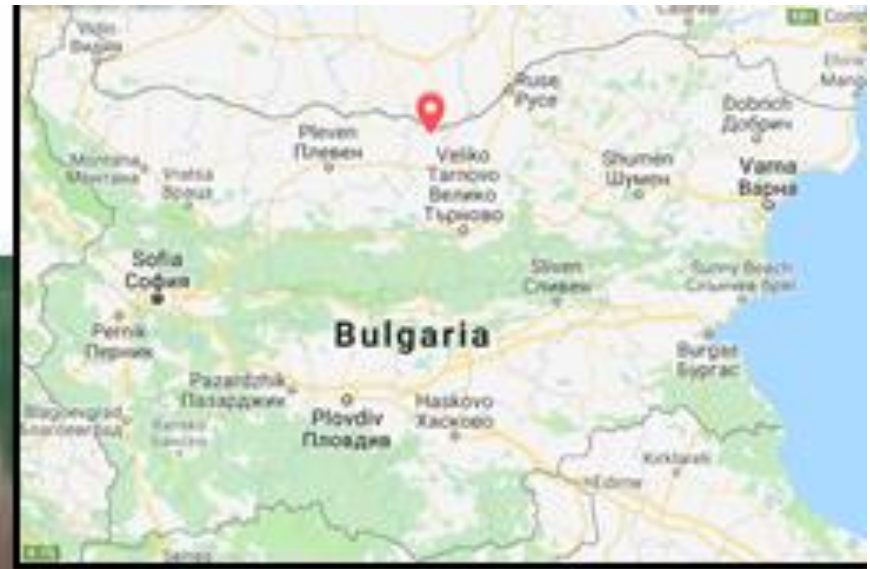- **Background:** ASF outbreaks and WB cases confirmed in backyard farms in North Bulgaria
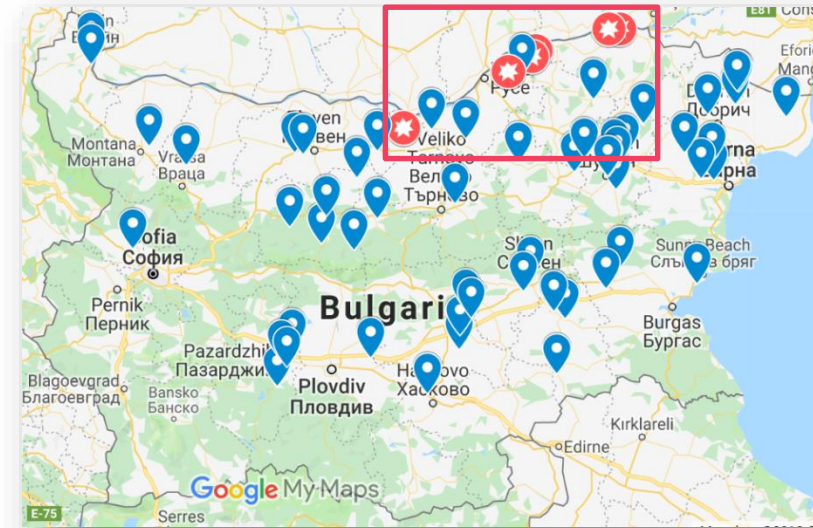
Industrial farms
Affected industrial farms
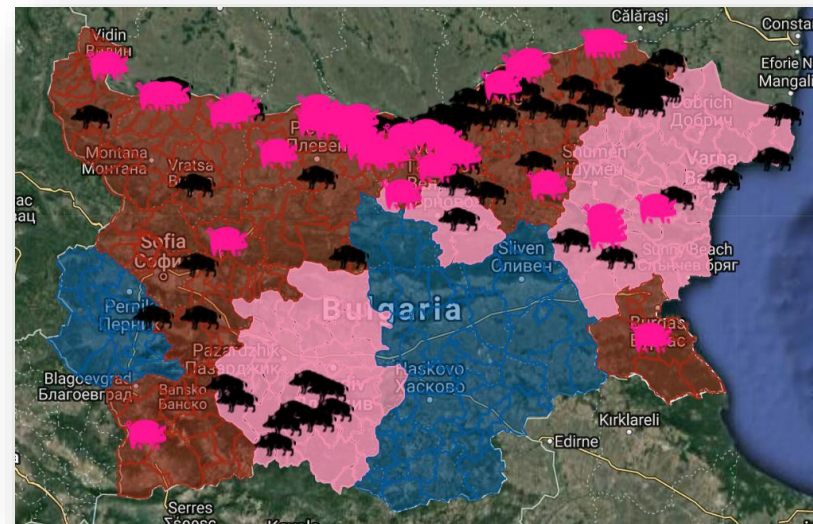
Farm BILIANA, Balgarsko Slivovo, Svishtov

Balgarsko Slivovo, Veliko Tarnovo region

Биляна ООД 🛍️ Shopping Centre 📍

- 18.000 pigs, closed production cycle, own slaughterhouse + meat processing, feed mill, medium biosecurity level, 120 employees
- ASF cases in wild boar and backyards around the farm → high viral load of the environment
- ASF confirmed July 31 after suspicious clinical signs and lesions in 2 fattener sections

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<u>Working hypothesis:</u>

- <u>Human factor/biosecurity breaches – high probability</u>
- Feed/water – moderate probability of secondary contamination (heat treatment during processing of the feed; own well)
- Transport vehicles – moderate probability (own vehicles used inside the farm)
- Animal movement – ruled out (no movements to the farm in the past months)
- WB contacts – ruled out

- **<u>Introduction hypothesis of the owner:</u>** contaminated dust from feed processing, biting insects

Farm BILIANA, Balgarsko Slivovo, Svishtov
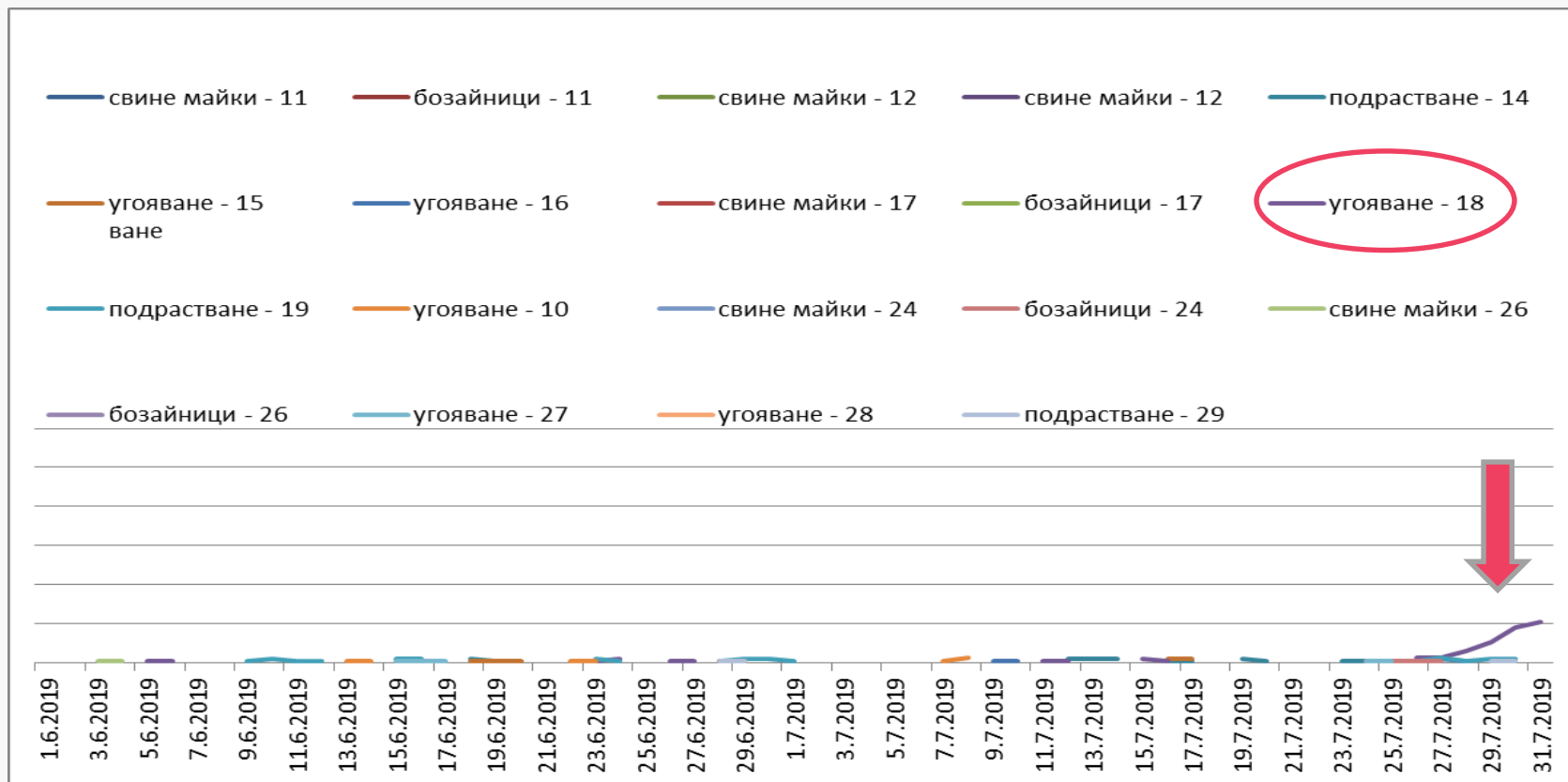
- Assesment of unit mortality data
- Passive surveillance samples collected on weekly basis
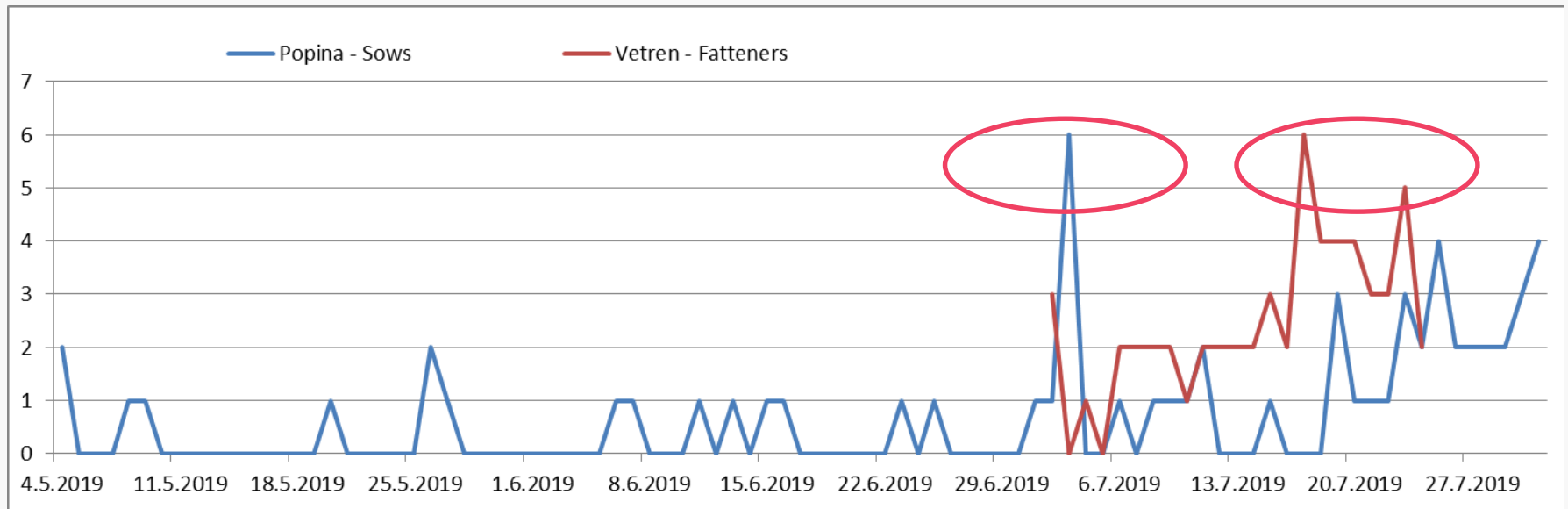- Estimated high-risk period: 6 weeks

Popina, Silistra region

- Two farm facilities, 22.000 (A) + 8.000 (B) pigs, not technologically linked - closed production cycles, own slaughterhouse + meat processing + selling, high biosecurity level

- ASF confirmed simultaneously on both farms:

→ 27 July (A) sows affected then weaners

→ 30 July (B) fattener section affected

Farms Popina and Vetren, Silistra

- Assesment of unit mortality data (in two affected farms)
- Estimated high-risk period: 6 weeks
- Passive surveillance sampling on weekly basis

Working hypothesis:

- Feed/water –secondary contamination of feed – high probability

- Transport vehicles – high probability (common feed trucks and live animals trucks)

- Human factor/biosecurity breaches – modarate probability

- Animal movement – ruled out (no movements to the farm in the past months)

- WB contacts – ruled out

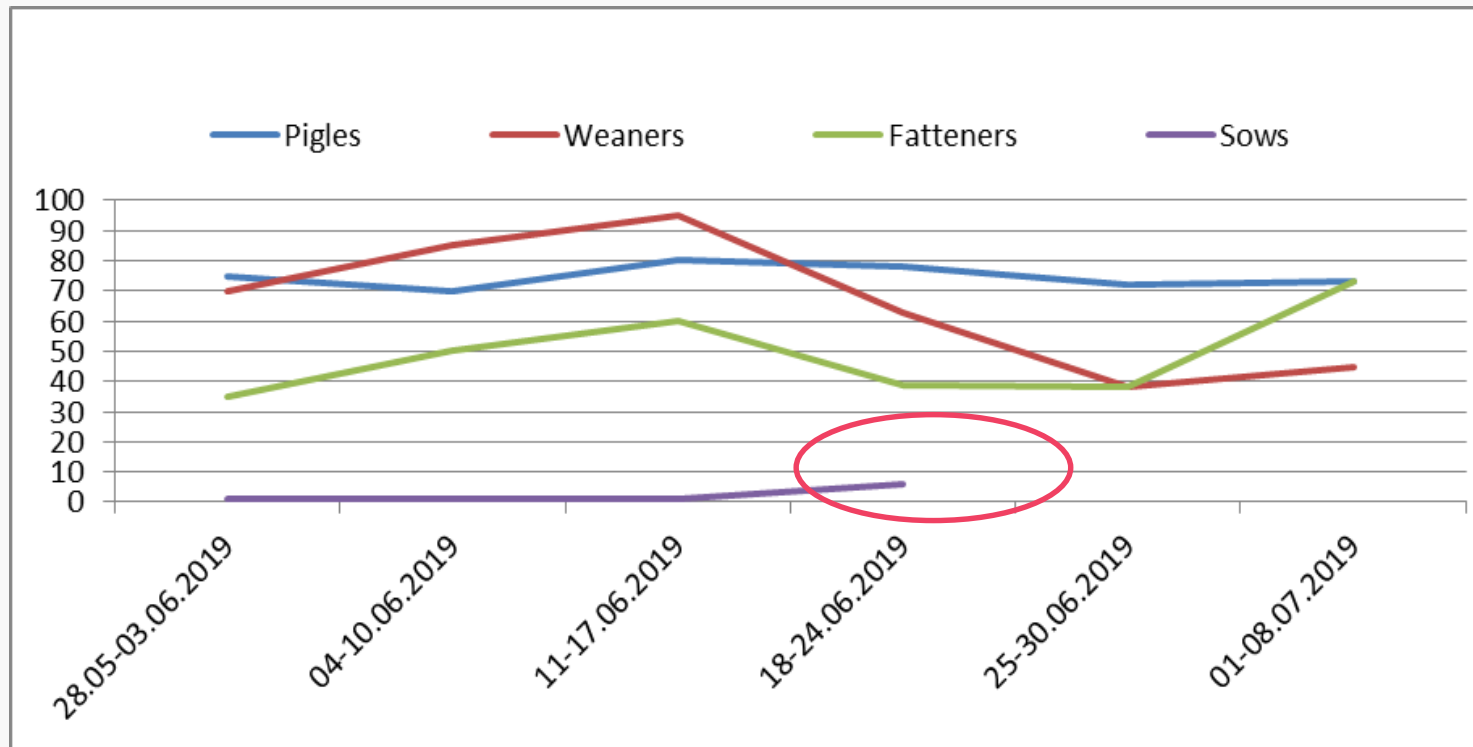- Introduction hypothesis from our side: secondary contamination of feed

Farm Nikolovo, Ruse

Nikolovo, Ruse region

- 18.000 pigs, closed production cycle, poor biosecurity level, on-farm production of semen

- ASF confirmed July 13 after sampling of dead sows/boar and weaners

Farm Nikolovo, Ruse region

- Sow section was most probable already affected in May/June

- Passive surveillance sampling each week

- Estimated high-risk period: 8 weeks

Farm Nikolovo, Ruse

<u>Working hypothesis:</u>

- <u>Biosecurity breaches – high probability –</u>

→ old facilities with poor biosecurity that require a lot of manual work (feeding/cleaning)

- Transport vehicles – moderate probability (own vehicles used inside the farm, dedicated feed truck for the farm, common slaughterhouse vehicles)

- Feed/water – moderate probability of secondary contamination (heat treatment during processing of the feed; own well)

- Animal movement – ruled out (no movements to the farm in the past months)

- WB contacts – ruled out

Farm Golyamo Vranovo, Ruse

Golyamo Vranovo, Ruse region

- 30.000 pigs, closed production cycle, own slaughterhouse + meat processing + selling, since winter in surveillance area (regioalisation)

- ASF confirmed July 26 by passive surveillance (targeted sampling of dead pigs)

Farm Golyamo Vranovo, Ruse

- Estimated high-risk period: 2 weeks
- Farm inspection impossible due to living pigs on the farm (ongoing culling process currently)

- Introduction hypothesis from our side: breaks in biosecurity (ASF started in the single unrenovated stable section) + human factor

Brashlen, Ruse region

- 38.000 pigs, closed production cycle
- ASF confirmed on July 22 after suspicious clinical signs and lesions
- Farmer did not allow farm inspection
- Estimated high-risk period: 6 weeks
- Introduction hypothesis from our side: human factor, feed related
- Introduction hypothesis of the owner: wild boar related

- Breaks in biosecurity together with human factors are the most common hypothetical introduction routes

- Targeted and regular sampling of dead pigs reduced the high-risk period
→ But still quite long HRP in large-scale pig farms

- Very limited spreading within farms
→ In most cases only one or two sections were affected
→ leads to low acceptance of culling procedure

THANK YOU!