



Outbreak investigation and relevant data collection – domestic pigs – Lithuania example

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SGE ASF14

Sofia, 10 - 11 September 2019



Outbreak investigation: information flow and organization



National Food and Veterinary Risk assessment Institute

- ASF national reference laboratory
- Laboratory diagnostics



Emergency Response Department, SFVS / National disease control center

- Coordination, support and control

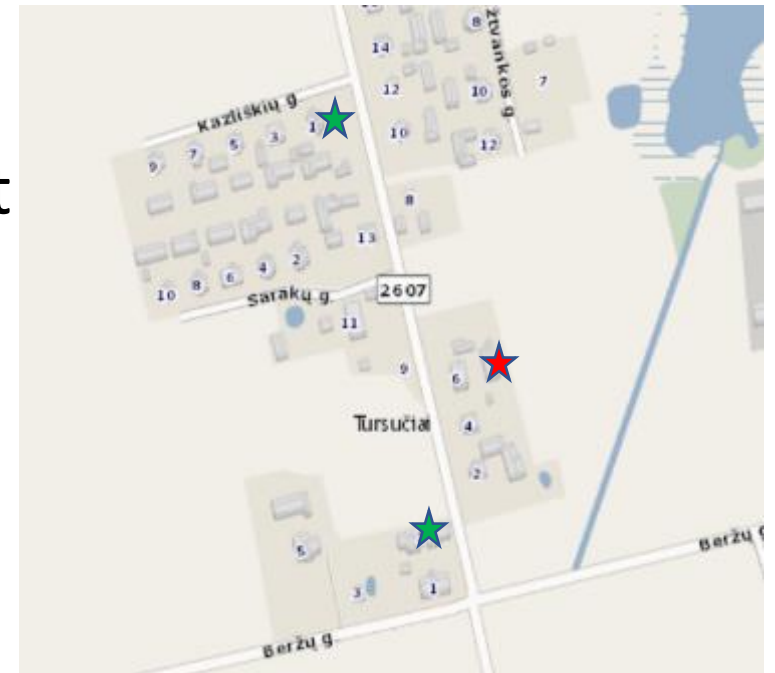


Regional diseases control centers and ASF Competence Center, LUHS

- Outbreak eradication and epidemiological investigation

Outbreak investigation: matched case control study

- In 2019 updated ASF Contingency plan
 - Including developed questioner
- Case control study for risk factors assessment
 - 1 case farm + 2 control farms
- Matching
 - On size:
 - Less than 10 pigs; 10-50 pigs; 51 and more pigs
 - Distance from the outbreak farm:
 - the 2 nearest similar size farms are chosen



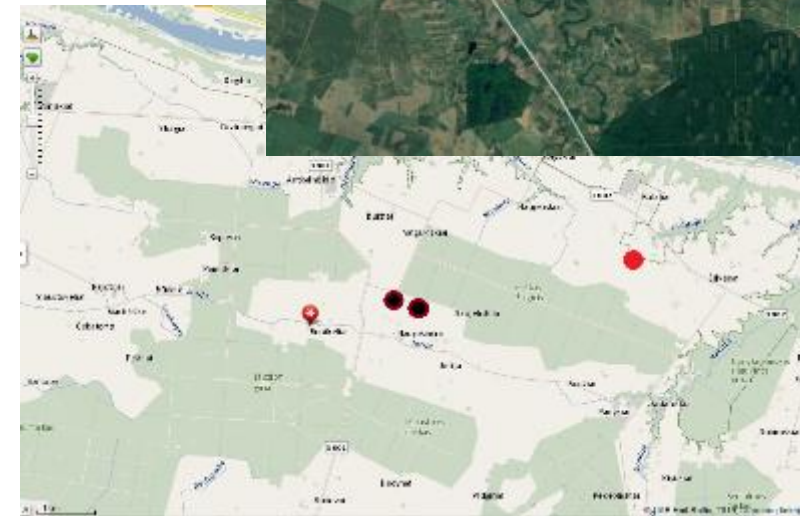


Outbreak investigation: possible risk factors

- Biosecurity evaluation
 - Physical measures on place, appropriate use of physical measures, understanding principles of biosecurity
- Pig feeding and bedding:
 - Feeding practices: own/purchased; non-animal origin/animal origin
 - E.g. cow milk, potatoes, grass
 - Feed storage: biosecurity, place on farm
- Movement of transport
 - From forests, pastures, sharing of transport and etc.
- Movement of personnel to forests and pastures/fields
 - Purpose, how often etc
- Farm visitors during 4 weeks (up to 2 months in large commercial farms)
- Other animals present on a farm:
 - Present/absent; kept in the same space with pigs or not; etc
 - Movement of other animals from pastures/fields/forests

Outbreak investigation: home work

- Outbreak farm check in database
 - No. of animals and categories
 - Movements
 - Other information
- Printed maps with information on:
 - ASF in wild boars, pigs
 - Forests
 - Pastures, fields
- Selection of control farms
 - Address
 - Contact information





National database on animal register

(information on names, addresses, number of pigs is provided)

ŪKŲ ŽEMĖS ŪKIO INFORMACIJOS IR KAIMO VERSLO CENTRAS Ūkinių gyvūnų registras

Registravimas - Ataskaitos - SGV žemėklos - Duomenų kontrolė ir taisyntas - Pagalba ALVYDAS MALAKAUSKAS

Ūkinių gyvūnų registravimo grupėmis ataskaitos

Ataskaitos tipas
Ūkinių gyvūnų registravimas grupėmis pagal amžių

Ūkinių gyvūnų registravimas grupėmis pagal laikytojus

Įrašų sąrašas

Įrašų rūšis: Kaulės

Bandų rūšies grupė: Visos

Įrašų data: 2019-01-01 - 2019-09-04

Įrašų sąrašas

Įrašų rūšis: Kaulės

Įrašų data: 2019-01-01 - 2019-09-04

Įrašų sąrašas

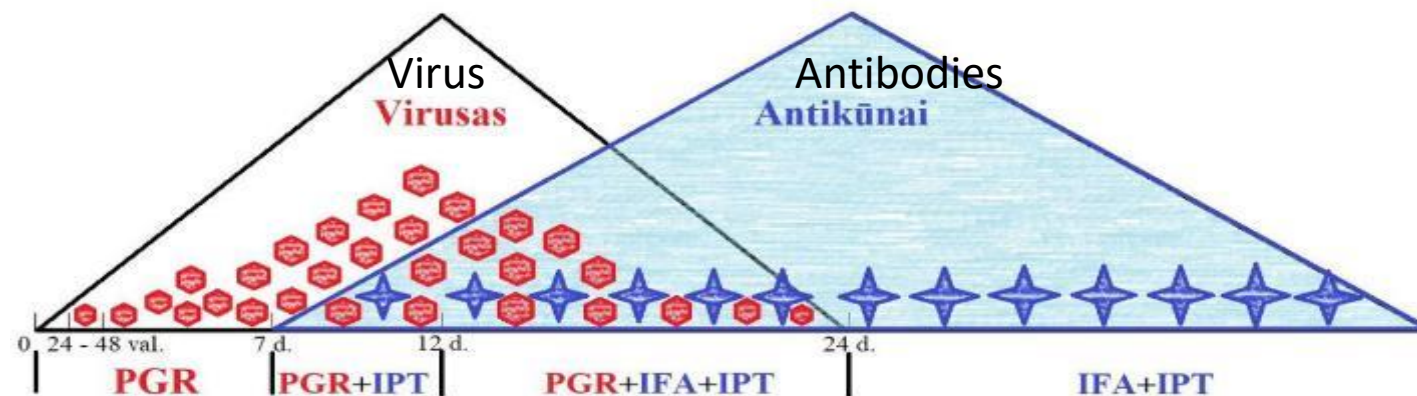
Įrašų rūšis: Kaulės

Įrašų data: 2019-01-01 - 2019-09-04

Savininkystė	Seniūnija	Vietovė	Asmens kodas	Veidas	Pavardė	Bandų rūšies grupė	Bandų grupė	Registruojamų gyvūnų skaičius	Motavimo vienetas
Kazlų Rūdos sav.	Antanavo sen.	Antanavo k.				4 - Kaulės	1 - Iš viso	8	vnt.
Kazlų Rūdos sav.	Antanavo sen.	Antanavo k.				4 - Kaulės	2 - Paažėliai iki 3 mėnesių	7	vnt.
Kazlų Rūdos sav.	Antanavo sen.	Antanavo k.				4 - Kaulės	6 - Paažėdės	1	vnt.
Kazlų Rūdos sav.	Antanavo sen.	Antanavo k.				4 - Kaulės	1 - Iš viso	3	vnt.
Kazlų Rūdos sav.	Antanavo sen.	Antanavo k.				4 - Kaulės	3 - Kaulės nuo 3 iki 8 mėnesių	3	vnt.
Kazlų Rūdos sav.	Antanavo sen.	Antanavo k.				4 - Kaulės	1 - Iš viso	1	vnt.
Kazlų Rūdos sav.	Antanavo sen.	Antanavo k.				4 - Kaulės	4 - Kaulės virš 8 mėnesių	1	vnt.

Outbreak investigation: estimation of ASF virus introduction

- Investigation efforts more concentrated on the probable exposure time period
 - if serology results are not available yet, infection time is re-estimated
- General consideration: in small farms sick pigs are noticed quickly, while in large farms it could take same time



Val. – hours ; d. – day; PGR – PCR (polymerase chain reaction; IFA – ELISA (enzyme-linked immunosorbent assay; ipt – Indirect immunoperoxidase test (IPT)

Outbreak investigation: on arrival

- Zoning: infected/clean area
 - Do not rush to the pigs!!!
- Visual inspection
 - Biosecurity
 - Signs of various activities eg, new firewood's, silage bales, hay, construction work
 - Burial site assignment
 - Data and onsite situation checking
- Pictures
 - Sometimes you find some details which was not noticed on spot





Outbreak investigation: relevant data collection

- Pig keepers are avoiding to disclose some information
 - Visits to forests, visitors on the farm and etc.
- How to ask an intelligent question to acquire information:
 - Are there a lot of wild strawberries in Žalgirio forest?
 - Probably there are very few mushrooms in the surrounding area recently?
- Cross check questions in the questioner
 - Movement of farm personnel is checked by several different questions through the questioner.



Biosecurity: improper



- All in controls !



Biosecurity: proper





Biosecurity: proper





Outbreak investigation: biosecurity evaluation

- Formal requirements
 - Fences, disinfection math's, working cloths
- Culture of biosecurity
- Reliever's' opinion on quality

26. Biosecurity assessment in the holding

Measure	Information	Is there a risk?	
		YES	NO
ial biosecurity			
Fence and gate quality		x	
Manure keeping place is fenced			x
Disinfectant barriers (quality and use)		x	
Fomites (only for pigs or not)		x	
Appropriate environment (clean and etc)		x	

How reliably can be concluded that disinfection maths, rubber boots and working clothes for biosecurity purposes are in good conditions, are used properly and regularly (assessment by the rewiever)

Not reliable	1	2	3	4	5	6	7	8	9	10	Reliable
						x					



Outbreak investigation: search for risk factors

7. Are other animals present on the farm (indicate number for each species): Yes X No ;

if "Yes" what animals:

- X bovines__2 cows and calf__ sheep_____
- goats_____ X poultry____31_____
- X dogs __1__ cats__6_____
- horses_____ other_____
- (specify)

- The other animals leave farm territory (Indicate species)_____cow__ Yes X No
- Other animals are kept together in the same premise (the same room/space)(Indicate species)__ calving!_____ Yes X No
- Is there a physical barrier (solid walls without holes, gaps and etc.) between pigs and other animals in the building? Yes X No
- Can pigs and other animals have direct contact with each other Yes X No
- Can pigs and animals have indirect contact with each other Yes X No
- Additional information **one cow calved on 11th June**

Movement of animals from pasture/forest to farm in the last 4 weeks Yes X No

Which species ____cow for calving, kept inside for 2 days _____

- Every day
- Several times per week
- Once per week and less X



Outbreak investigation: search for risk factors

- Other animals on a farm (15 cases / 30 controls)
 - 100% of cases / 86% controls
- Other animals in the same space
 - 40% of cases / 31% controls
- Cattle in a pig holding
 - 67% of cases / 57% controls
- Cattle in the same space
 - 20% vs. 6%



Outbreak investigation: data collection

12. Pig feeding:

X fed non-animal origin feed produced by themselves and purchased

fed non-animal origin feed produced by themselves

fed non-animal origin feed which is purchased

X green fodder is used (grass, **potatoes** and etc)

fed with purchased feed of animal origin (e. g.: blood, fish meal and etc.)

fed with milk of cows (goats, sheep) from own farm

X feeding with milk processing products or by products from enterprises milk from neighbours cows

other feeding practices _____ **Purchased feed from Kalvariju market.** _____

12.1 In-depth information on feeding (diet, technology, feed suppliers):

Flour from own grown grain Is it steamed Yes No

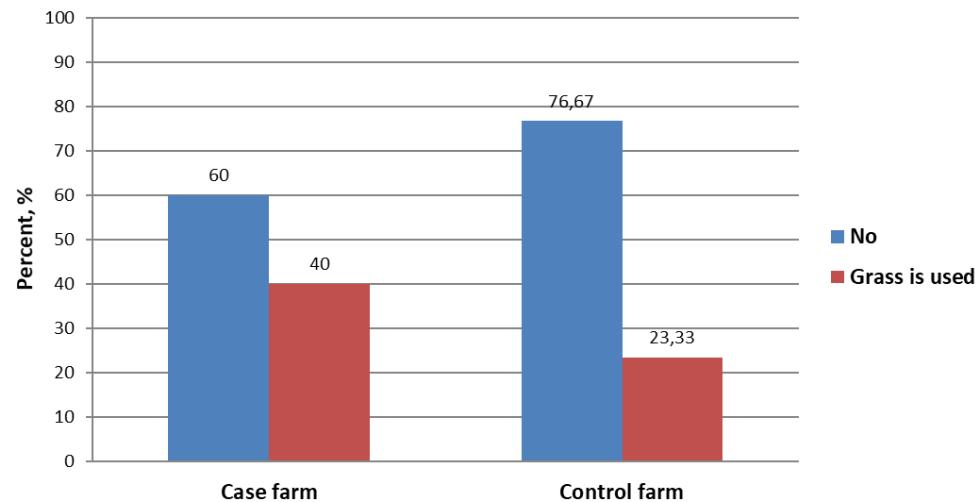
Bought flour X Is it steamed Yes X No

Comments _____

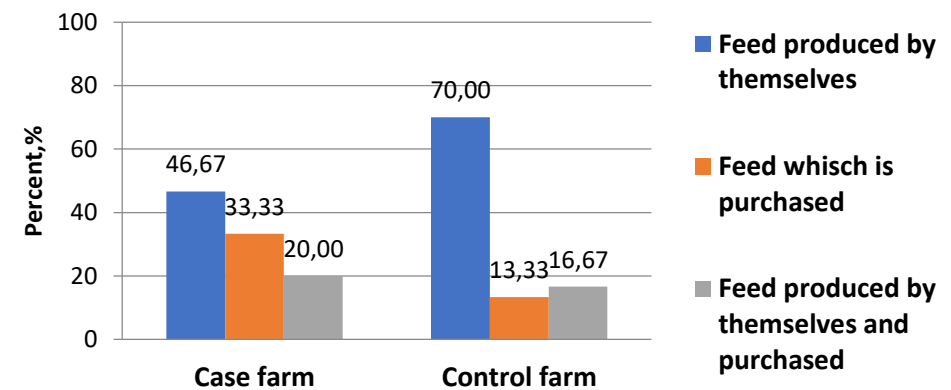


Outbreak investigation: search for risk factors

Grass feeding practices in case and control holdings
(15 case holdings, 30 controls)



Pig feed origin 2019 (15 case holdings,
30 controls)





Outbreak investigation: data collection

12.5 Feed storage:

- In the same space/room where pigs are kept
- In the same building next to pig holding space
- In the same pig keeping building, but you have to bring feed from outside the building
 - Biosecurity is good
 - Biosecurity is bad
- In a separate building with good biosecurity
- In a separate building with bad biosecurity
- Grain is ground in a pig holding space Yes No
- Other _____
- Comments _____

12.6 Beddings: X homemade acquired or bought

- X straw sawdust No bedding

12.7 Storage place of beddings (other information):

- In the same space/room where pigs are kept
- In the same building as pigs
- In the same pig keeping building, but you have to bring feed from outside the building
- Another building:
 - With good biosecurity
 - With bad biosecurity
- Additional information _____



Outbreak investigation: data collection

22. Other contacts within the last 4 weeks: Yes No

Possible contact with wild boars Yes No _____

Common use of machines or parts of machines (e.g. grass or silage choppers) Yes No

Sharing of fomites with neighbours/friends within the last 4 weeks _____ Yes No

Other possibilities of the contact:

(specify)

2.1 Movement of farm personnel to forest in the last 4 weeks Yes No

Purpose of movement _____

Once per week

2-3 times per week

More than 3 times per week

Date of last visit

22.3 Movement of farm personnel to pastures in the last 4 weeks Yes No

Purpose of movement _ works on fields ____

Once per week

2-3 times per week

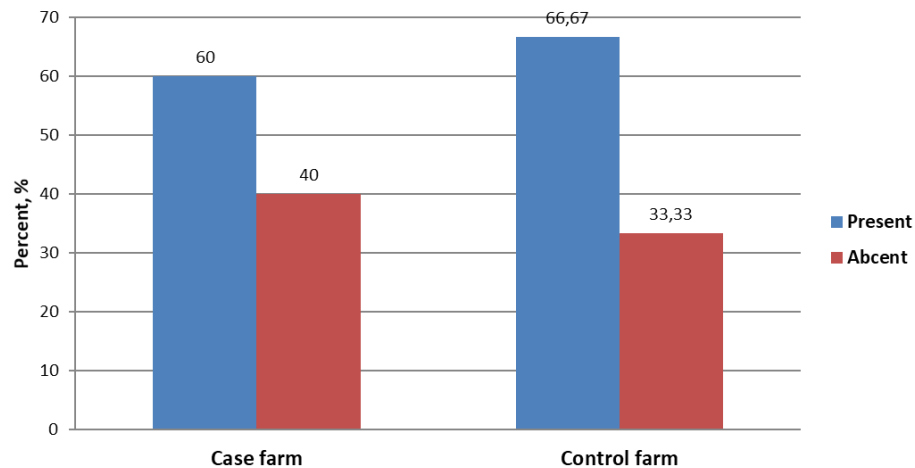
More than 3 times per week

Date of last visit 2019-07-17

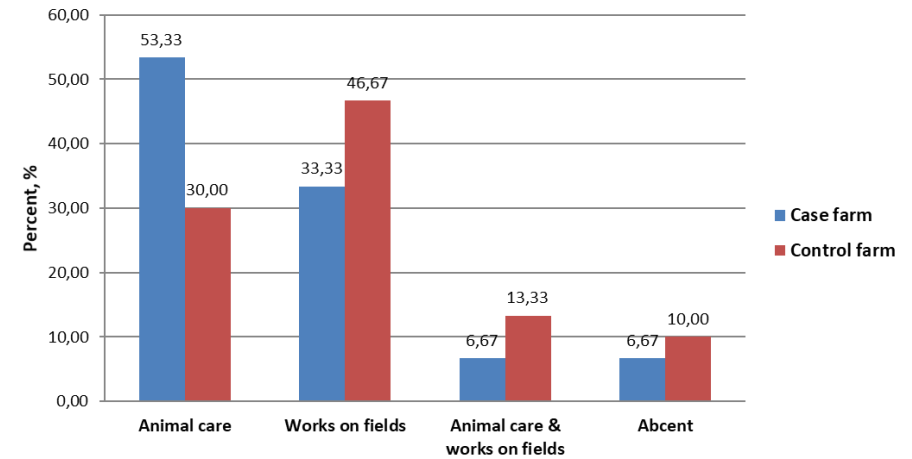


Outbreak investigation: search for risk factors

Movement of transport to pig farm area for last 4 weeks (15 case holdings, 30 controls)



Purpose of visiting pastures/fields in the last 4 weeks (15 case holdings, 30 controls)





Outbreak investigation: summarizing

- Impact of visitors, visits to forests and swill feeding could be underestimated due to purposive or unintentional faults of memories
- Biosecurity should be improved
- In case farms there is stressful situation, it is difficult to remember for the locals
- In several hours very difficult to know trust or not the pig owners
- Try to contact neighbors, they can provide valuable information
- Risky behavior occurs more often in case farms comparing to control



Thank you for attention!