



Better Training for Safer Food Initiative

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Biosecurity in domestic pigs

BTSEF

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Belgrade, 27/02-01/03/2018

SUMMARY

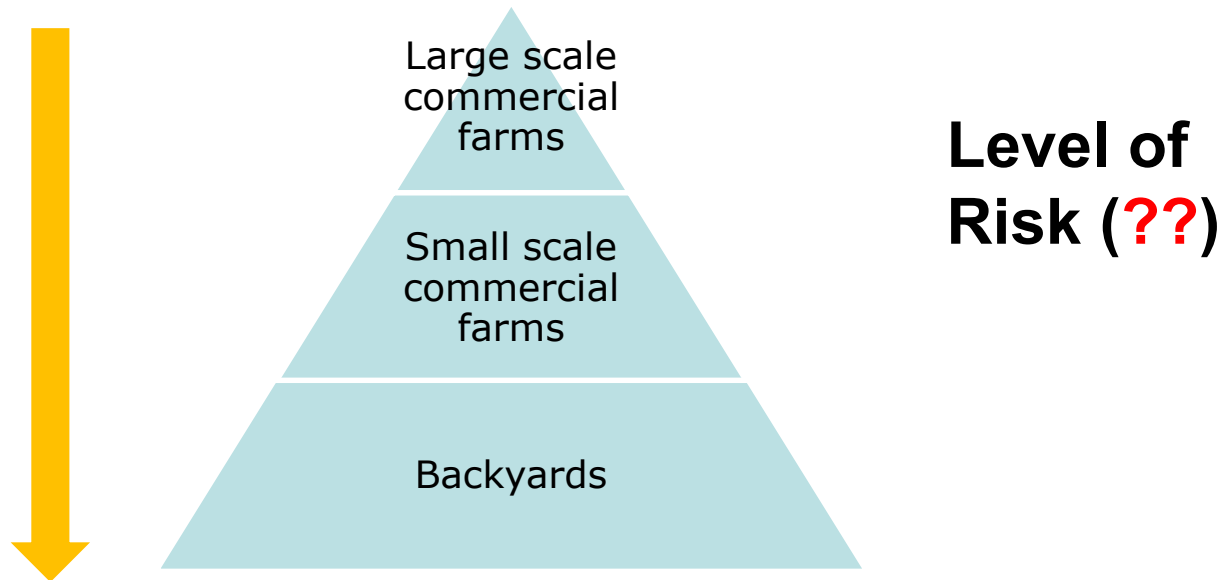
- *Biosecurity*
 - ✓ **Farm level**
 - ✓ **Within the framework of disease control**
- *Risk factors involved in the spread of African swine fever*
- *Biosecurity in the backyard system*

BIOSECURITY (1)

Definition:

“The implementation of measures that reduce the risk (1) of the introduction and (2) spread of disease agents; it requires the adoption of a set of attitudes and behaviours by people to reduce risk in all activities involving domestic, captive/exotic and wild animals and their products”
(FAO/OIE/World Bank, 2008 – Good Practices for Biosecurity in the Pig Sector)

Bio-Security Levels



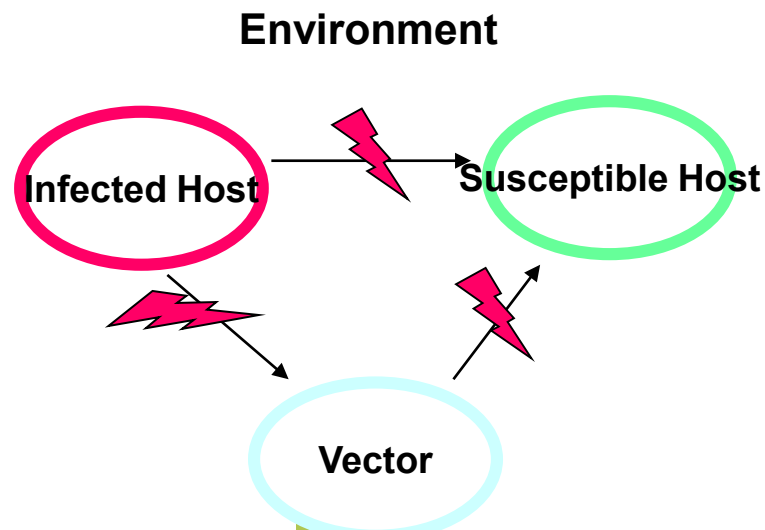
BIOSECURITY (3)

Is also a key element for the control of diseases:

- **PREVENTION:**
 - **Direct: biosecurity**
 - **Indirect: ... (VACCINATION)**
- *EARLY DETECTION (surveillance)*
- *EARLY REACTION (eradication)*

To contain successfully the spread of a disease

1. To know the disease and its spreading pathways
2. Strict implementation of the disease control measures adopted to minimize the risk of spreading



Factors affecting the spreading pathways of a disease:

- ✓ **Characteristics of the host(s):**
susceptibility and contagiousness
- ✓ **Characteristics of the pathogen:**
infectivity, virulence and stability
- ✓ **Effectiveness of the contact**

Strongly Dependent on Population Density

Population Density



Potential Risk for Introduction/Spread of a disease

Sparsely Populated Livestock Areas (SPLAs):
low risk area, local potential risk < 1 , it does not allow the spread of the disease.

Densely Populated Livestock Areas (DPLAs):
high risk area, local potential spread > 1 , population density by itself allows the spread of the disease

Main Risk Factors for diseases introduction and spread:

- ✓ Introduction of animals into the holding
- ✓ Introduction of vehicles/means of transport:
 - Animals
 - Runts,...rejected pigs
 - Carcasses
 - Feed
- ✓ Personnel, veterinarians, inseminators and visitors
- ✓ Introduction of equipments
- ✓ Introduction of feed
- ✓ Manure
- ✓ Area: use of common area / pasture (use of manure on agricultural land as fertilizer)
- ✓ Presence of wildlife animals
- ✓ Presence of rodents, birds, insects..
- ✓ Introduction of semen
- ✓ Vaccine, water, air...

To address the farm biosecurity protocol it is necessary to know:

The Holding

Size (?)
Type of production
Management
Infrastructure/limits
Health Status

The Area

Location
Animal density
Health Status

The Situation

- **peace time**
- ***emergency***

To Identify the Risks

To Apply Proper Control Measures

..and the proper SURVEILLANCE

Main Elements of Biosecurity

Segregation:

- ✓ Controlling the entrance of pigs: from outside farms, markets or villages;
- ✓ implementing quarantine for newly purchased animals;
- ✓ limiting the number of sources of replacement stocks;
- ✓ fencing the farm area and controlling access for people, as well as wildlife, birds, bats, rodents, cats and dogs;
- ✓ maintaining adequate distances between farms;
- ✓ providing footwear and clothing to be worn only on the farm;
- ✓ using an all-in-all-out management system.

Cleaning and Disinfection

- ✓ buildings on the premises, but also vehicles, equipment, clothing and footwear
- ✓ **Disinfectants**

Biosecurity

in practice is implemented through:

Physical protection measures:

- Enclosing, fencing, roofing, netting
- Cleaning, disinfection and control of insects and rodents

Management measures:

- Procedures for entering and exiting the establishment for animals, products, vehicles and persons
- Procedures for using equipment
- Conditions for movement based on risk involved
- Conditions for introducing animals or products into the establishment
- Quarantine, isolation or separation of newly introduced or sick animals
- A system for safe disposal of dead animals and other animal by-products.



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Entrance

YES





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Cleaning and Disinfection





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YES





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NO



Biosecurity at farm level

EXTERNAL BIOSECURITY

- Isolation (barriers, fences, gate, signs..)
- Quarantine
- Area for the disinfection of vehicles (Equipment, disinfectants)
- Loading/Unloading area
- Movements management (animals, vehicles, waste, carcasses, feed)
- C&D: people, vehicles, equipment
- Recording of the movements: animals, people, vehicles
- Buying-in Policy
- Partnership
- Training

INTERNAL BIOSECURITY

- Isolation of animals
- Grouping of animals: age, health status..
- **Removal of dead animals**
- Manure
- Vaccination (I/E)
- Feeding
- Procedures for internal control: feed, water..
- Recording: animal testings, diseases, treatments, productions..
- C&D
- Rodents control
- Training

Container for dead pigs

NO



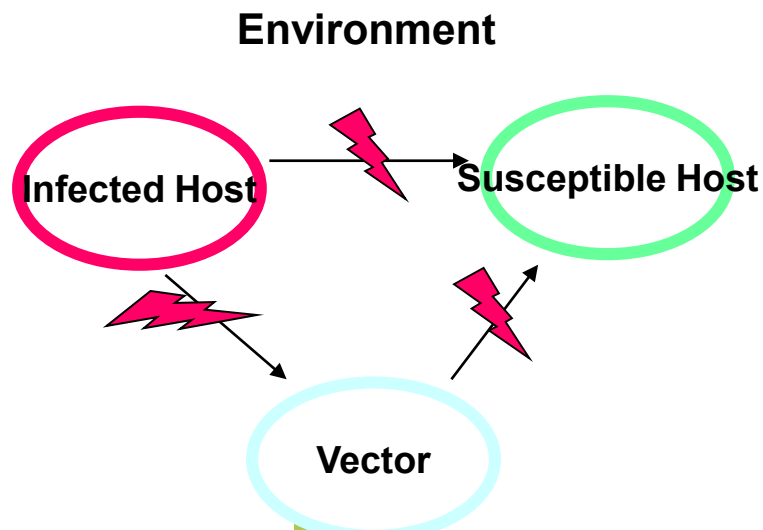
Container for dead pigs & surrounding area

YES



To contain successfully the spread of a disease

1. To know the disease and its spreading pathways
2. Strict implementation of the disease control measures adopted to minimize the risk of spreading





The ASFV: large enveloped DNA virus genus *Asfivirus*, family *Asfviridae*, one serotype but 16 genotypes and different strains of different virulence.

The virus is very stable, and survive in excretion, carcasses, pig meat, pig meat products...

African Swine Fever:

Spreading Potential:

- Very long viremic period
- ASFV is resistant in the environment
- A range of wild and domestic pigs species are susceptible
- ASFV can remain infectious for 3–6 months in uncooked pork products
 - **Chilled meat: at least 15 weeks**
 - **Frozen meat: ..years**
 - **3 to 6 months in hams and sausages**
- Soft ticks of the genus *Ornithodoros* may act as biological vector, within the vector: trans-stadial, trans-ovarial, and sexual transmission occur

Possible risk factors for ASF spread

- Introduction of infected pigs in the herd
- Swill feeding with contaminated pork (spread and maintenance)
- Wild boar – Domestic pigs interface
- Contaminated vehicles, people or feed
- Infected ticks (*Ornithodoros* genus)

Scientific Opinion on African swine fever (*EFSA Journal 2014;12(4):3628*)

Table 1: Main sources and routes of transmission established during the outbreaks of ASF in domestic pigs in years 2008-2012

Source and transmission of virus	Number	%
Selling infected pigs	1	0,3
Neighbourhood (infected pigs in backyards)	5	1,7
Direct contact with humans (having a meal right at the farm)	1	0,3
Contact during transportation, shipping, movement	108	38
ASFV infected wild boar	4	1,4
Swill feeding	100	35
Not established	65	23
Total:	284	100

Source: Belyanin, 2013

ASF Biosecurity:

Main measures related to:

- **Segregation**
- **Replacement (buying in policy)**
- **Movement management**
- **Facilities and husbandary**
- **Geographical location**



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Risk Factors



Entrance and surrounding area

YES





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Surrounding Area

NO



Buying-in Policy

- Careful evaluation of the health status of the supplier(s)
- Low number of supplier(s)
- Transport management
- C&D loading/unloading area
- Quarantine

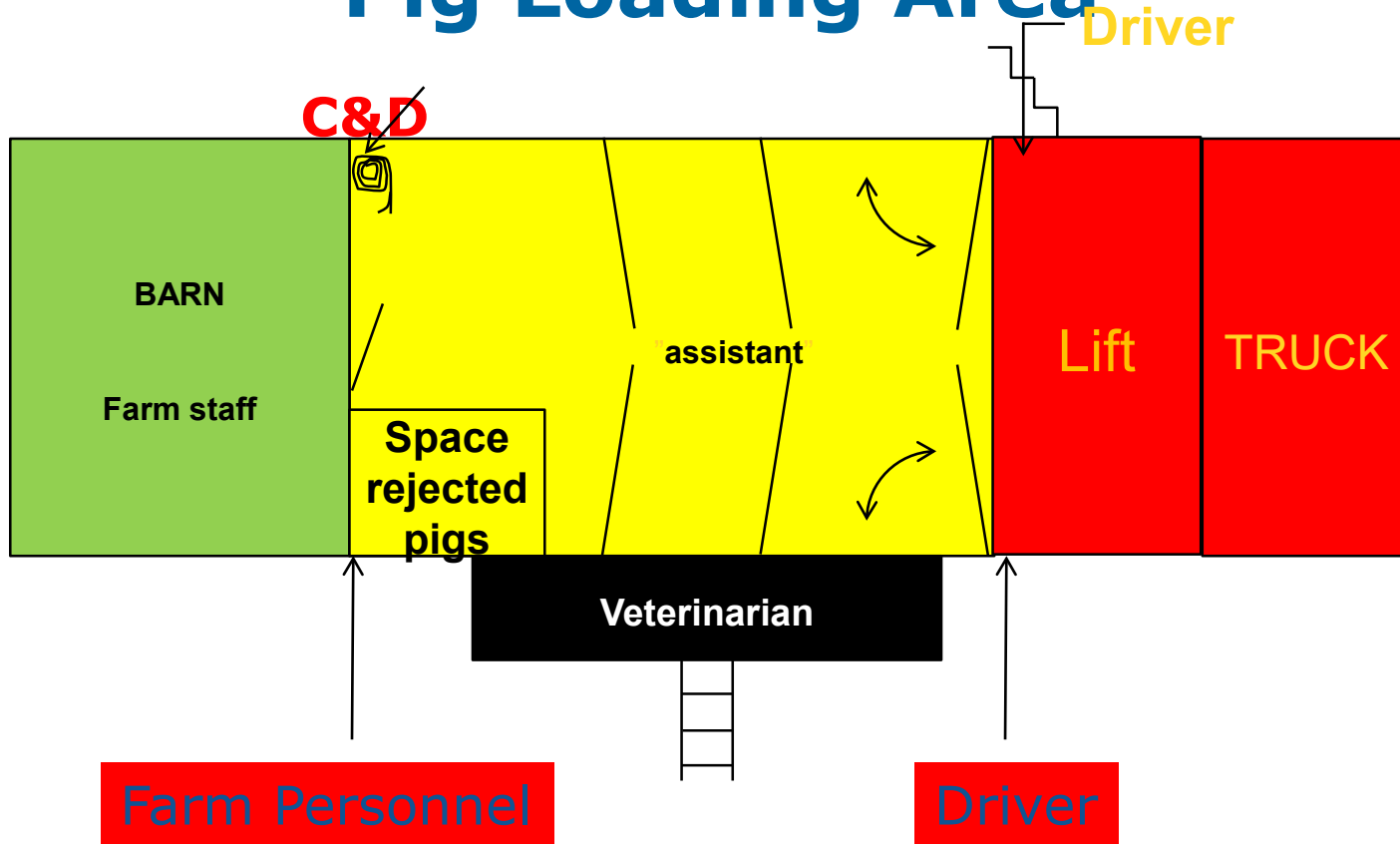
Quarantine

- 30 days
- Animals in quarantine or physically isolated from the rest of the herd
- Frequency limited
- Animals frequently checked to early detect the presence of ASF
- Passive surveillance, supplemented when necessary by lab testing



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Pig Loading Area



Loading Area

NO





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Loading Area

YES



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Ramp and Gate

YES





ASF Strategy for Eastern Part of the EU

(Working Document SANTE/7113/2015 - Rev 7)

ASF measures to be applied for domestic pigs

Pig farms are classified in three categories:

- A. Non-commercial farms (NCF):** farms where pigs are kept only for fattening for own consumption and neither pigs nor any of their products leave the holding.
- B. Commercial farms (CF):** farms which sell pigs, send pigs to a slaughterhouse or move pig products off the holding.
- C. Outdoor farms:** pigs are kept temporarily or permanently outdoor.

Minimum biosecurity requirements for each category are defined



Biosecurity in non-commercial farms (1)

(minimum requirements)

- a) No swill feeding and removal of animal by-products
- b) No contact between the pig(s) of the NCF and feral pigs or wild boar. Pigs should be kept in a way that ensures that there is no direct, neither indirect, contact with other pigs outside the premises nor with wild boar.
- c) No contact to any part of feral pigs
- d) The owner should take appropriate measures such as change clothes and boots on entering the stable and leaving the stable. Disinfection should be performed at the entrance of the holding and the stable.
- e) No hunting activity should be carried out 48h prior being in contact with pigs.
- f) No unauthorized persons/transport are allowed to enter the pig holding (stable).
- g) **Home slaughtering only under veterinary supervision.**





Biosecurity in non-commercial farms (2) (*minimum requirements*)

- h) No sows and/or boar used for natural reproduction are allowed on the holding (this does not apply to commercial farms).
- i) Commercially traded crops, vegetables, hay and straw have a very low ability to contain and maintain infectious ASFV (EFSA). However if the use of locally harvested grass and straw is considered to represent a risk under local prevailing conditions, the following should apply:
- ✓ Ban of feeding fresh grass or grains¹ to pigs unless treated to inactivate ASF virus or stored (out of reach of wild boar) for at least 30 days before feeding.
 - ✓ Ban on using straw² for bedding of pigs unless treated to inactivate ASF virus or stored (out of reach of wild boar) for at least 90 days before use.
- j) Farms buildings should:
- ✓ be built in such a way that no feral pigs or other animals (e.g. dogs) can enter the stable.
 - ✓ Allow for disinfection facilities (or changing) for footwear at the entrance into the stable.



Biosecurity in commercial farms

(minimum requirements)

- Same criteria as for NCF with and, in addition:
- Stock-proof fencing of holdings.
- Biosecurity plan approved/recommended by veterinary services according to the profile of farm and national legislation. This biosecurity plan should include, but is not limited to:
 - Establish the clean/dirty areas for personnel appropriate to the farm typology (e.g. changing rooms, shower, eating room).
 - Review, when applicable, the logistical arrangements for entry of new animals into the farm.
 - Detailed procedures for the disinfection of vehicles, fomites and personnel hygiene rules
 - Set rules on food for workers on site and ban the keeping of pigs at workers' homes if applicable. Keep record of people to access the area where the pigs are kept.
 - Dedicated recurrent awareness programme for all workers on the farm.
 - Review logistical arrangements in order to ensure proper separation between production units. Avoid pigs being in contact (directly or indirectly) with animal by-products and other production units.
 - Internal basic audit or self-evaluation for enforcing the biosecurity measures.

ASF Strategy for Eastern Part of the EU

(Working Document SANTE/7113/2015 - Rev 7)

ASF measures to be applied for domestic pigs:

Outdoor keeping of pigs is banned

Human Factors

- **Awareness**
- **Enforcement swill feeding ban**
- **Biosecurity strengthened**
- **Hunter vs farming: behaviour risks**

Proper enforcement of the rules have a short term effect



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