BTSF ACADEMY

Risk factors for SPP/GTP and how to enhance the farm biosecurity. Spanish experience.

BTSF on Sheep & Goat Poxvirus

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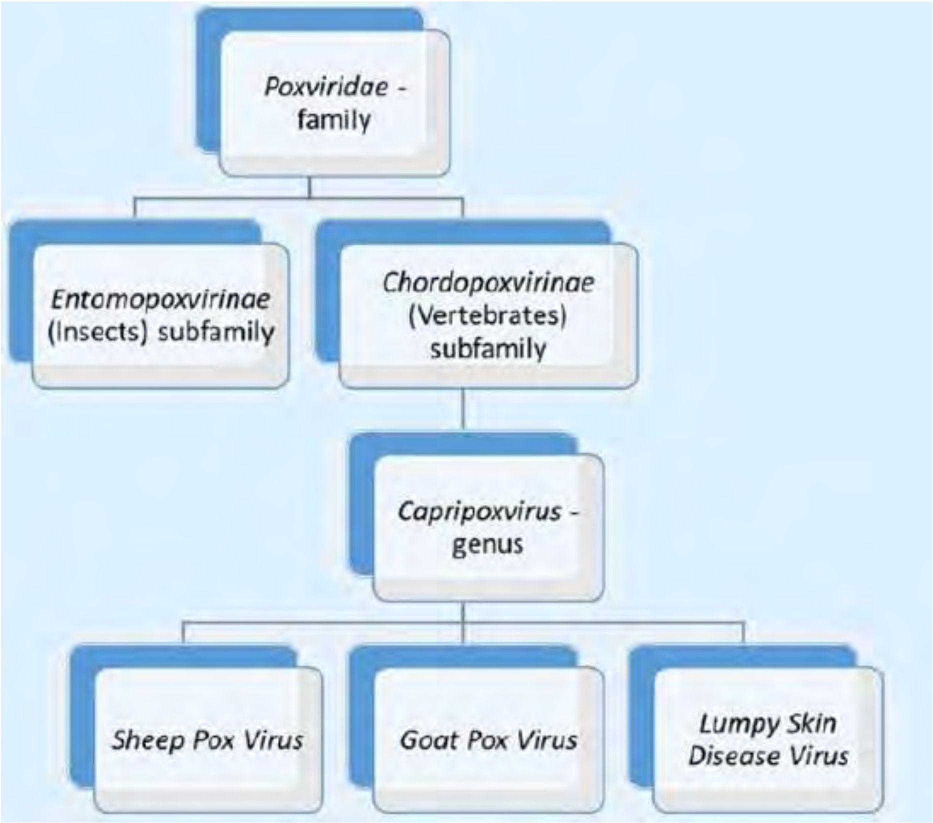
Sheep pox virus (SPPV) & Goat pox virus (GTPV)

- SPPV & GTPV are **highly contagious**
- **Transboundary diseases**
- **Easily spread** into adjacent, non-endemic areas, particularly through transport of live infected animals
- **Category A disease in EU**
- Family **Poxviridae**, Gen ***Capripoxvirus***
- SPPV & GTPV are closely related but **separate virus species**



BTSF Biosecurity concept

Definition of WOAH: *Set of physical and management measures to* ***reduce*** *the risk of introduction, establishment and dissemination of animal diseases, infections or infestations, to, and within animal populations*

UNDISPUTED IMPORTANCE OF BIOSECURITY

“Axis that interlinks all animal health”

BTSF Legal framework at European and national level

➢ Regulation (EU) 2016/429 ‘Animal Health Act’ (43)

Biosecurity is one of the key prevention tools at the disposal of operators and others working with animals to prevent the introduction, development and spread of transmissible animal diseases to, from and within an animal population. The role of biosecurity is also recognised in the impact assessment for the adoption of this Regulation, in which possible impacts are specifically assessed. The biosecurity measures adopted should be sufficiently flexible, suit the type of production and the species or categories of animals involved and take account of the local circumstances and technical developments. Implementing powers should be conferred on the Commission to lay down minimum requirements necessary for the uniform application of biosecurity measures in the Member States. Nevertheless, it should always remain within the power of operators, Member States or the Commission to promote prevention of transmissible diseases through higher biosecurity standards by developing their own guides to good practice. While biosecurity may require some upfront investment, the resulting reduction in animal disease should be a positive incentive for operators.

BTSF Importance of biosecurity

- Many infectious diseases are highly contagious, and their spread can be very easy and rapid potential risk to animal health and even public health (zoonosis)
- High health, economic, social and commercial impact.
- It is necessary to prevent and reduce the risk of spreading infectious-contagious diseases in the environment and among animals BIOSECURITY

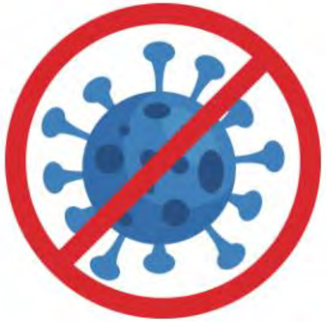
BTSF Types of biosecurity

External Biosecurity

- Control entry to prevent the spread of diseases between farms
- Key in the case of SGPV
- Biocontainment/Personnel

Internal Biosecurity

- Prevent the spread of diseases within the farm itself



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BTSF Risk of entry of diseases

Entry of infected or sick animals

Animal transport and milk collection vehicles that may enter the perimeter

People (high-risk visits)

Nearby risk sources (slaughterhouses, processing plants, roads, other farms, C&D centres, etc.)

Other fomites: bed material, work teams, tractors, trailers, etc.

Presence of other animals (dogs, cats, rodents, birds...)

Wild life surrounding the area

Aerosols (slurry spray, other nearby holdings)

Contaminated reproductive material

BTSF Biosecurity concept

- Biosecurity requires the adoption of a range of attitudes and behaviours on the part of people in order to reduce the risk in all activities related to animals or their products.

- Three key biosecurity principles:

➢ **Physical segregation**

➢ **Cleaning, to eliminate organic matter and dirt**

➢ **Disinfection, to remove any viral particles**

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BTSF Segregation

- The very important first step for biosafety is segregation: the risk of transmission of the virus is greatly reduced by not coming into contact with other animals, people or fomites.
- Segregation efforts: maximum reduction of the number of persons and objects introduced into the farm.
- Segregation:
  - **Physical**: for example a wall or a door
  - **Temporary**: a time interval between two visits to different farms or warehouses
  - **Procedural**: actions to reduce the risk of contact (e.g. change of clothing and footwear).

BTSF Cleaning

- Before proceeding with disinfection, it is key to perform a good and thorough cleaning of the entire structure, material and utensils to remove any trace of visible dirt.
- Use of hot pressurised water with authorised detergents in adequate concentration and brushes.
- Removal of traces of organic matter from the soles of the boots (recommended use of disposable boots above them)
- Also remove fluids and excretions from animals during the cleaning process.
- Disinfection without proper cleaning before will be completely ineffective

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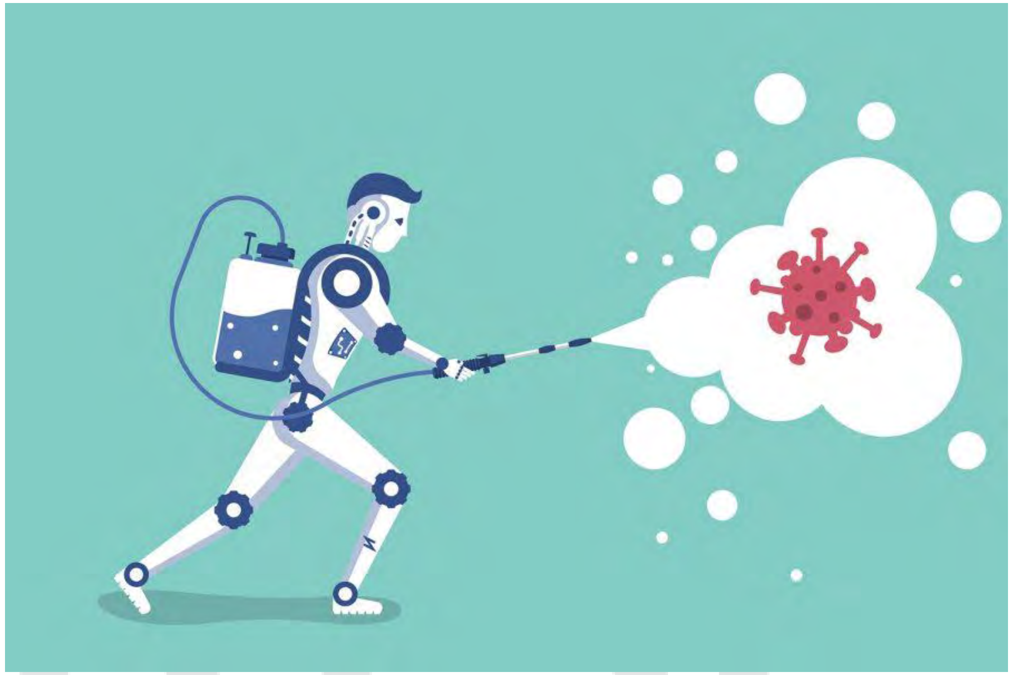
BTSF Disinfection

- Final step very important, but its effectiveness depends on several factors, especially the quality of the previous cleaning process
- Use of effective and authorised disinfectants against each of the different pathogens
- Use of them following the manufacturer's instructions: use of adequate concentration, adequate contact time...
- Cover all surfaces



BTSF Effective disinfectants against SPPV & GTPV

Disinfectants/chemicals:

- sodium dodecyl sulphate
- sodium hypochlorite
- Virkon, …

BTSF Involvement of veterinary staff in biosecurity

The farmer or veterinarian of the holding **comes into constant contact with the animals but also with other external agents** (other animals, people, material, etc.) which may pose a risk to his own holding.

Veterinary staff in charge of the investigation of outbreaks of NADs may work on **several suspicious holdings → risk**

Veterinary staff **should set an example and demonstrate the correct application of biosecurity measures**. It is very important to apply good biosecurity not only to the existence or suspicion of outbreak, but at all times, during the normal daily work routine.

Given a suspicion of outbreak, it is essential to apply **biosecurity measures from the beginning**, although finally the outbreak is **not confirmed → Biosecurity cannot be applied retrospectively**.

BTSF General biosecurity requirements in holdings

1. Minimum legal distances and distances to sources of risk

2. Complete insulating perimeter enclosure to avoid the possibility of contact with other mammals or birds

3. Quarantine facilities

4. Removal of corpses from outside perimeter fence

5. Vehicle access (health vault or equivalent system, vehicle parking, vehicle and truck access, disinfection arch)

BTSF General biosecurity requirements in holdings

6. Access of people and changing rooms (dresses, exclusive work clothes and footwear, exclusive clothing and footwear for visits, indications for staff)

7. Loading and unloading of animals (unloading and unloading points, outside perimeter fence)

8. Feed loading and unloading operations, from outside perimeter fencing (state of feed storage equipment, feeding systems, feed loading and unloading, vehicle registration)

9. Water supply (water quality, tank and pipeline status)

BTSF General biosecurity requirements in holdings

10. Loading and manure management operations, best from outside perimeter fencing (vehicle access, production plan and manure management)

11. Personnel (staff management, training, biosecurity between production units or phases).

12. Registration of visits and vehicles, including visits by the veterinarian.

13. Entry of animals (replacement, movements, records).

14. Health surveillance and veterinary control (farm veterinarian, animal isolation facility, health plan, registers).

15. Maintenance, ordering and cleaning of the facilities (maintenance, condition cleaning and disinfection, LDDD plan, records).

16. Presence and storage of medicinal products on the holding, consistency with the farm's treatment book, and veterinary requirements

17. Cleaning of storage sites

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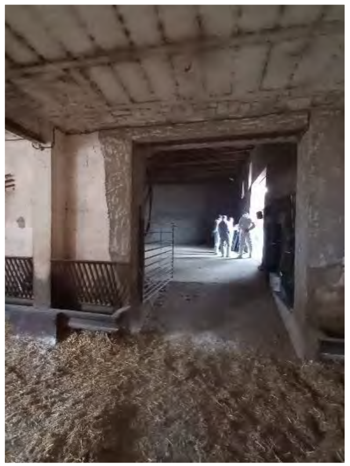

BTSF Biosecurity in pastures

- Shared paths
- Shared introduction of animals
- Imposibility to C&D these areas and pathways

BTSF Biosecurity during shearing

- Protective equipment (clothes and boots) clean workers
- Avoid shearing vehicles access to the holding
- Cleaning and disinfection of machinery before and after shearing
- Double record of the farm visit: shearers and ranchers

BTSF Biosecurity in relation to SGPV outbreaks

- → On ovine and caprine holdings
- → During transport
- → In slaughterhouses

BTSF On-farm biosecurity

- **General biosecurity on a day-to-day basis**
  - Prevention of entry into the holding of diseases and their spread within the holding and to others.
  - Internal and external biosecurity
- **Biosecurity against suspicions and cases of NADs (e.g.: SPPV & GTPV)**
  - Extreme BSC measures needed to prevent spread of the virus
  - Biosecurity before entering the holding/during the inspection/exit from the holding

BTSF Biosecurity in the event of suspicions or cases of SGPV

<u>Before entry to the holding:</u>

1. ORGANISATION OF FIELD TEAMS

- **Clean: low risk:** operations (information, non-contact with animals): research on low-risk or non-infected holdings, free zone actions, movement restriction measures, etc.
- **Dirty:** High-risk operations (contact with suspected or infected animals): research on high-risk holdings, culling of affected holdings, collection and disposal of carcasses, etc.

To make it effective:

- Both teams must follow **strict biosafety measures**
- Separation must be **maintained at all times during the working day (CLC, rest areas)**
- To move from **DIRTY equipment to CLEAN** strict hygiene measures and at least not perform actions of the other group until **72 since the last risk operation**
- **Cars are part of the dirty or clean equipment**

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2. PRE-VISIT PREPARATION

- Study the type of operation, area, access with vehicle
- Agenda of visits of the day/week depending on the risk (low to higher risk)
- Review of the necessary equipment (check-lists)
- Assessment of specific risks of the visit and measures to be taken to avoid them
- Visits to other farms in the previous days (sensitive animals, type of work performed)
- Keep track of visits made (especially in case of outbreak) daily activity report

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3. PREPARATION OF THE NECESSARY EQUIPMENT

- Disinfection point: savannah, two or better three buckets, water and detergent, brushes, disinfectant, watertight bags with submersible closure, waste bags (e.g. good quality garbage bags)
- PPE: Boots, disposable jumpsuits, goggles, gloves, mask (IA)
- Waterproof jumpsuit, adhesive tape, scissors, etc.
- Material for taking and packing samples
- Clinical inspection team
- Water bottles, detergent, disinfectant (in abundance)
- Wipes with disinfectant for face and hands
- Forms, mobile, PDA, camera, etc.
- Leave everything that is not necessary in the car (belts, watches, clothes, glasses, etc.) everything that we put must disinfect it at the exit!
- Other: pressurised water backpack, instructions on biosecurity to the farmer, plan of the visit, etc.

Material	Foto	Correcto ☒	Material	Foto	Correcto ☒
Guantes		☐	Jabón desinfectante		☐
Mono		☐	Spray		☐
Botas de caucho o poliuretano		☐	Cinta		☐
Patucos		☐	Contenedor hermético		☐
Mascarilla		☐	Contenedor de riesgo biológico		☐
Bolsas para recogida de cadáveres		☐	Tubo para sangre con EDTA		☐
Bolsas para depósito de los EPI		☐	Jeringa de 10 cm		☐
Bolsas tipo big-bag		☐	Aguja de 2,1x80 mm		☐
Barras metálicas		☐	Papel absorbente		☐
Pala		☐	Bolsa transparente		☐
Mochila para desinfección		☐	Bolsa verde		☐
Desinfectante		☐	Cabestrante		☐
Bridas		☐	Hilo para embalar		☐
Cinta americana		☐	Cuerda de 4 mm		☐

BTSF Biosecurity in the event of suspicions or cases of SGPV

4. ASPECTS TO BE TAKEN INTO ACCOUNT

- Prior contact with the farmer (symptoms, type and arrangement of the holding, etc.)
- Detailed assessment of the area (other holdings)
- Location for the vehicle in a non-polluted area
- Contact with the regional laboratory (type of sample, culture medium and form and time of shipment)
- Suitable equipment in quality and quantity (better than over)
- Vehicle preparation (clean rear seat/dirty trunk area covered with plastic sheets sprayed with disinfectant)
- Visit plan to not forget anything

BTSF Biosecurity in the event of suspicions or cases of SGPV

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6. DRESSING PROTOCOL

- Inner jumpsuit (non-disposable) inside boots
- Disposable jumpsuit outside boots
- Waterproof outside boots
- Double glove, the first pair with adhesive tape attached to the disposable overalls (in case you have to change the broken or dirty outer pair)
- Leave out everything not necessary
- Wearing boots?
- Mask and glasses (in case of zoonoses; not in SGPV)

BTSF Biosecurity in the event of suspicions or cases of SGPV

On exit from the holding:

- Leave everything that is **disposable on the farm**.
- **Clear and precise instructions to the farmer** (if there is better time in writing or in a pamphlet).
- **Cleaning of all visible dirt** on the farm (before reaching the disinfection point).
- **Meticulous C & D at the point of disinfection** of all equipment that will leave the farm (boots, clinical material, bags with forms, mobile, camera, etc.)
- **Be careful to splash** from dirty area to clean area and be careful with aerosols in case of use of backpack-type pressure systems.
- Proper management **of risk materials** (non-disposable overall, boots, sample packs, etc.) using double bag technique.
- **When you get home:** Disinfection of clothes, washing at high temperatures in washing machine/shower with thorough cleaning of nails, hair etc./L & D of the vehicle (basses, wheels and wheel arches) before arriving home.
- **Do not visit farms with susceptible animals in at least** 72h (if practicable and if not, try to visit farms with the same level of risk.

BTSF Biosecurity in the event of suspicions or cases of SGPV

1. **<u>Stamping out</u>**
2. Staff trained under the **supervision of the official veterinarian**
3. Only **essential personnel and equipment**
4. **Avoid unnecessary departures and entrances** (Slaughter plan and checklists) enter, sacrifice and leave!
5. **Constant monitoring** of biosecurity (specific personnel?)
6. Methods of slaughter (better **to avoid bleeding** from animals)
7. **Animal burials** (signposted pit, fenced area, proper depth and size, use of abundant live lime, lime between layers of animals)
8. **Prior control of rodents, insects and other animals** if necessary
9. **Clear flows of personnel, equipment and vehicles** (clear instructions)
10. **Strict** and controlled biosecurity on the **departure of personnel and equipment,** under the supervision of the official veterinarian
11. The **responsibility if something goes wrong will be the official veterinarian**

BTSF Biosecurity during transport

Requirements during loading and unloading of animals:

- Establishment of off **-farm loading/unloading area**, respecting the limit of dirty area and clean area.
- **Precise** information on biosafety and hygiene measures to transport personnel, and C&D operations.
- Appropriate measures to **prevent the introduction and transmission of pathogens** and their vectors within the vehicle.
- No person may enter the vehicle with **remains of mud, slurry or excrement** in his boots or clothing.
- Avoid sharing the same vehicule between different farms.

BTSF Characterization of the outbreak in Spain

Andalucía

- Breeding holdings for meat production
- Medium size holdings
- Outflows to pastures for the use of natural resources
- 13 outbreaks

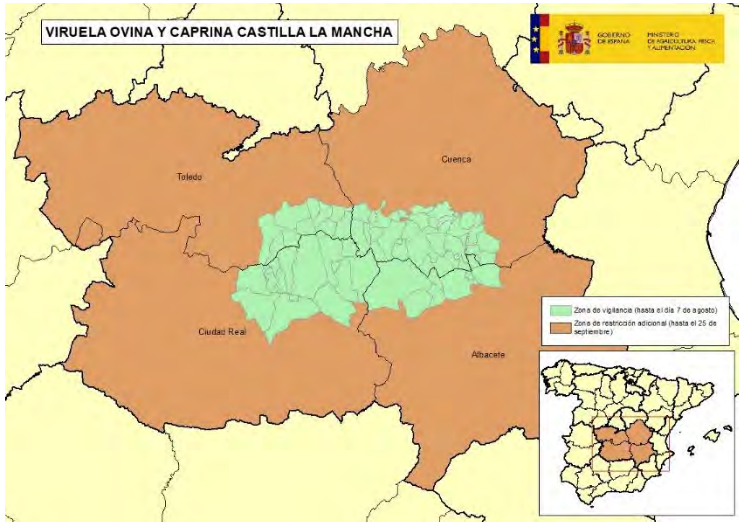
Castilla-La Mancha

- High density area and commercial production (milk production, fattening grounds and assembly centres)
- Farms with high census and epidemiologically linked (same owners)
- 17 outbreaks: spatial and temporal dispersion of cases with distance jumps
- Same transport vehicles entering inland holdings

BTSF Outbreak in Spain

Challenges

- In some cases lack of compliment of the sanitary restrictions, with jumps outside the restriction zones



Solutions

- Extension of Restriction Areas (ZRA) and enhanced official control
- Collaboration with the Civil Guard

BTSF Outbreak in Spain

Challenges

- Problems with the collection of lambs and milk in the RRZZs
- EU legislation without authorised treatments
- Use of LSD
- Use of communal pastures and roads

Solutions

- Milk and lamb collection procedures with safety protocols
- Enclosure the animals
- Aid to livestock farmers

BTSF Outbreak in Spain

Challenges

- Difficult early detection
- Delays in communication

Solutions

- Awareness campaigns
- Round of visits in the ZZRRs and risk contacts
- Passive surveillance reinforced by systematic PCR

BTSF Outbreak in Spain

Challenges

- Weak biosecurity conditions in some farms
- Not proper C&D conditions in some vehicles
- Shearing problem

Solutions

- Animal loading control
- C&D control
- Assigned slaughterhouses
- Biosecurity protocols

BTSF Detection of a low level of biosecurity

- Lack or poor state of maintenance of perimeter fences
- Entry of external vehicles into the perimeter of the operation without C&D
- Handling of animals by personnel outside the holding
- Lack of internal biosecurity protocols in the management of animals in holdings
- Shared transport vehicles with multiple holdings
- Non-compliance with the health rules adopted by the authorities in the movements by some farmers
- Shearers moving between different holdings

BTSF Expansion Restriction Areas

- Not favourable evolution of the epidemiological situation
- PZ within 10 km radius for a total of 48 days
- SZ within 30 km radius for a total of 66 days
- Further Restriction Zone (FRZ)

- Restrictive and control measures were reinforced in these areas.

✓ General prohibition of movements of live animals and products in areas (excluding slaughter)

✓ Mandatory sealing of live animal transport trucks after loading by the OVS and removal of the seal upon arrival at the slaughterhouse under the supervision of the OVS

✓ Strengthening the conditions for cleaning and disinfecting these vehicles before loading animals and before their departure from the slaughterhouse

BTSF Conclusions

- SGPV is a **complex disease**, a **highly resistant** poxvirus affecting both sheep and goats, but it depends on the species and strain of the virus.
- **Biosecurity remains an essential tool** to prevent and control animal diseases
- Biosecurity needs to be implemented on a **day-to-day basis**, in all **holdings and establishments**, as well during **pastures and shearing**
- **Extreme BSC conditions** during the visit of OVS to suspicious/confirmed holdings to SGPV.
- Some **essential risk factors** for the spread of SGPV identified during Spanish experience: movements of transport vehicles in inadequate C&D conditions, movements of vehicles through different holdings until the final destination, exit to pastures, poor BSC conditions in some holdings, some delays in the communication of suspicious cases, some cases of uncompliance of official measures.
- **Adopted measures**: increased PZ and SZ in space and time, adoption of a FRZ, enhancement of official control, collaboration with Police to detect any ilegal movement, increased surveillance in all the country and specially in the RZ.

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