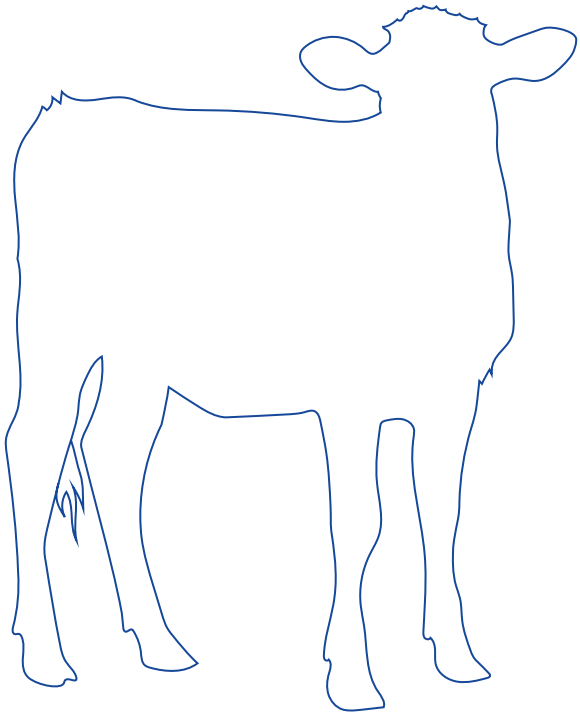
Guide to good biosecurity practices in cattle farming



GDS France

l'action sanitaire ensemble

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Content

Foreword

Farmers are responsible for the health of the animals in their herds. They are the main guardians, the first ones to act, but also the first ones concerned.

This document sets out recommendations to reduce the risk of introducing, circulating and spreading the main diseases that can affect cattle farms (tuberculosis, BVD, IBR, paratuberculosis, Q fever, calf diarrhoea, Mortellaro's disease, etc.).

There are often several ways of intervening and addressing risks.
Fewer outbreaks of disease mean better health and well-being for the animals, less time spent caring for them and a higher production: fewer animals lost, higher growth or milk production.

It is up to the farmer and their advisers to decide what is best for their farm.

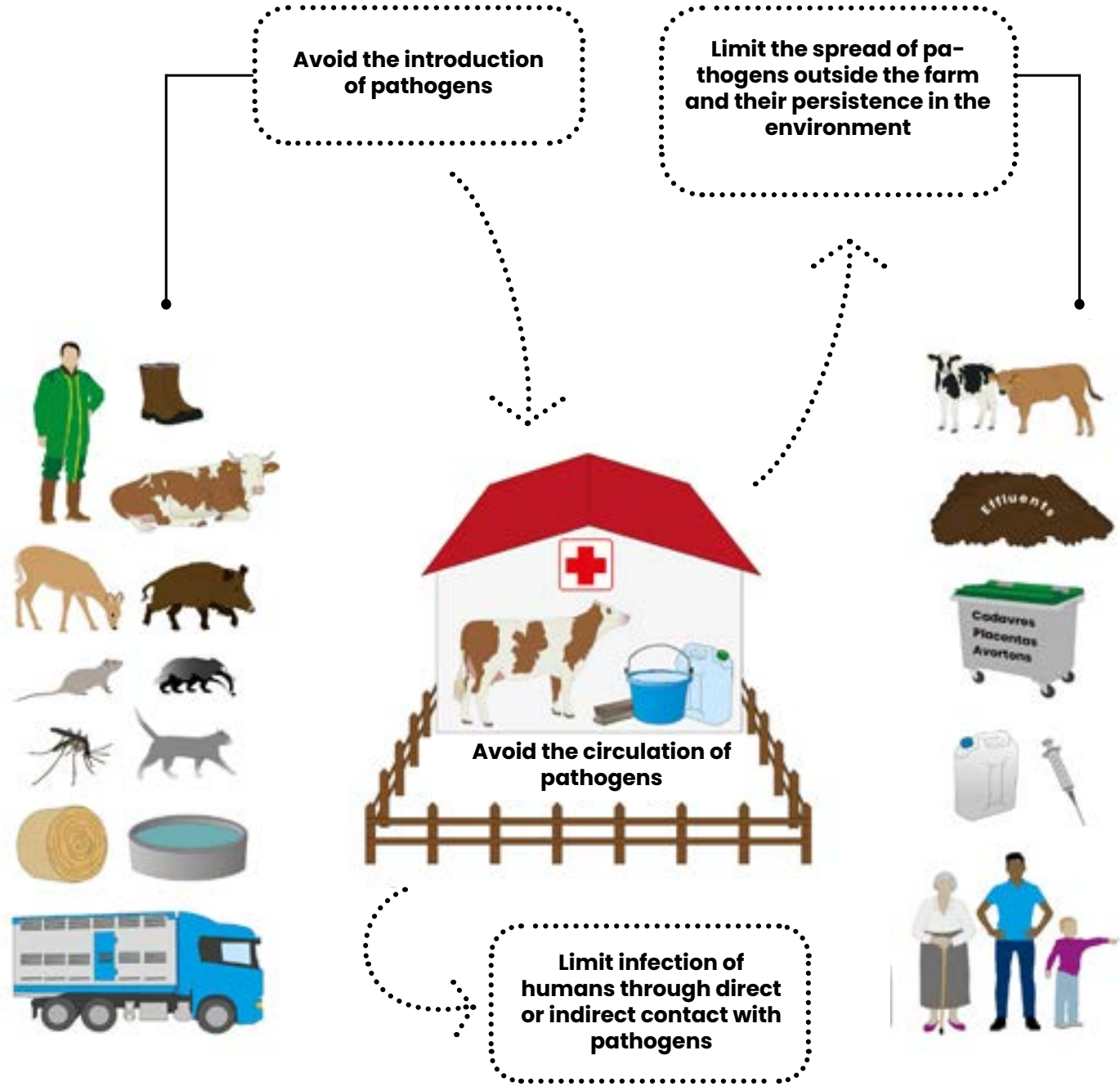
A self-assessment form enables the farmer, with the help of a GDS advisor or their vet, if they so wish, to conduct a biosecurity review of their farm.
This form can be accessed by clicking here.

Understanding biosecurity

Biosecurity consists of measures, some of which can be called «protective measures", to prevent disease in livestock and:

- **Avoid the introduction of pathogens (bacteria, viruses, parasites) into the farm.**
- **Limit the spread and the clinical expression of conditions already present in the farm.**
- **Prevent their spread to other holdings.**
- **Prevent their transmission to humans in the case of zoonotic diseases.**
- **Prevent environmental contamination.**

These measures must be adapted to the local epidemiological context, proportionate to the risk, take account of health issues and be compatible with the farm's breeding practices.



The basics of biosecurity

Compartmentalization and zoning of the farm

A farm can be organized into 3 zones: the public zone, the professional zone, and the breeding zone. The aim of such a delimitation is to prevent the spread of pathogens from one zone to another **by imposing flow management and movement rules for people, livestock and animal products, feed, bedding, machinery, vehicles, and equipment.**

The breeding zone

This is the area where the animals are housed and move around.
It includes the buildings, pens and paddocks, the infirmary, the nursery and the animal isolation box. Only people authorized by the farmer are allowed to circulate here and ideally with clothing dedicated to breeding.

The profesional zone

This is the area of the farm located outside the breeding area. It is reserved for the movement of authorized people and vehicles (deliveries, transport of animals) going to the breeding area, storage, or transit of incoming and outgoing products (feed silos, manure storages, bedding and equipment storage hangars), and processing workshops for farm producers.

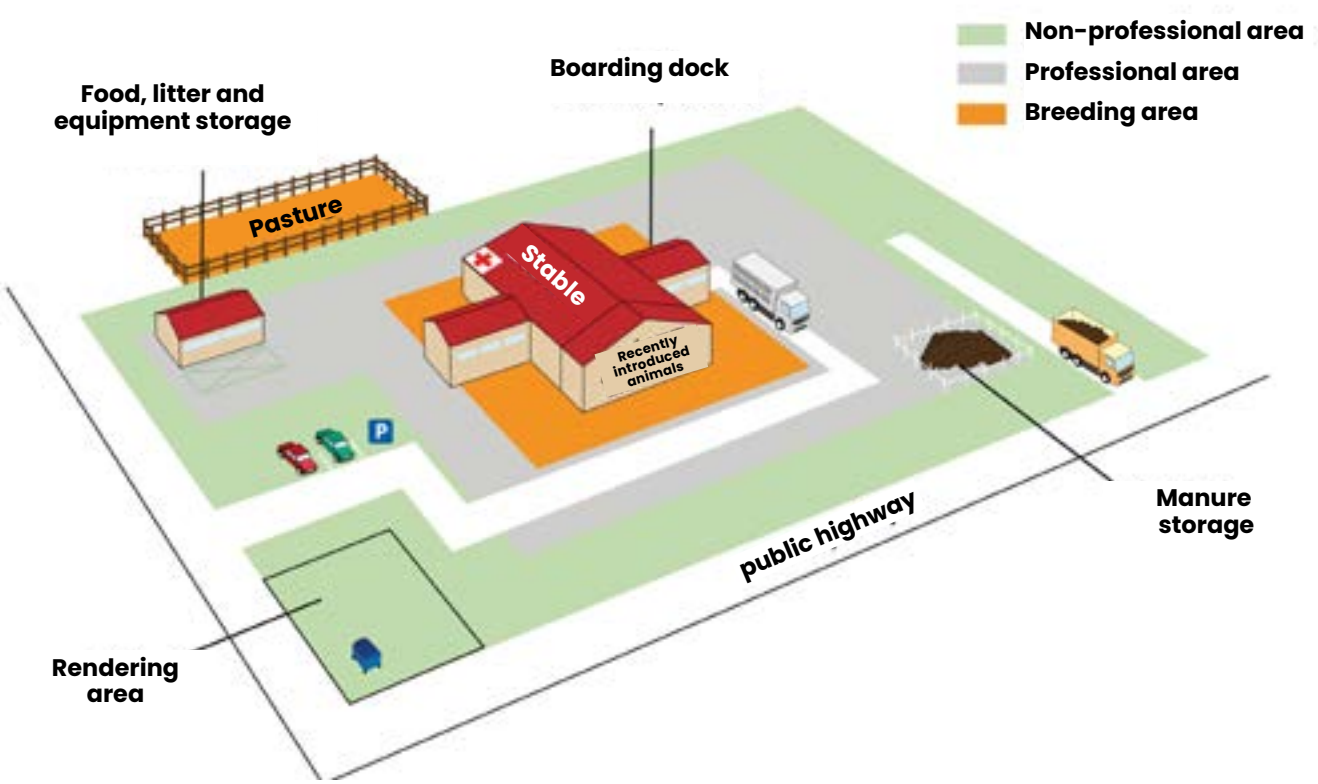
The public zone

This includes the circulation area for external vehicles, the knacker's yard and the shop premises in the case of farmhouse production.

In practice

The boundaries between the different zones are usually «virtual» ones. The aim is to be able to identify them quickly so that traffic rules canbe respected from one area to another. To do so, the farmer sets up a boundary (chain, rope, etc.) and appropriate signage (panels, arrows, displays) indicating the areas that are accessible or inaccessible to external vehicles (loading dock, feed silos, etc.) or people (visitor car park, shop premises in the case of farmhouse production, etc.).

▼ Diagram based on that produced by the Institut du Porc (IFIP)



The «forward flow» principle

This involves moving and working in a certain order, without backtracking, to move from the least risky sector to the riskiest sector in terms of contamination.

In practice

A «forward flow» begins with caring (feeding/bedding...) for the most fragile animals (young animals) and healthy animals (least at risk of contamination) ...

... and ends with the care of sick or recently introduced animals.

Hands and soiled equipment (thermometers, etc.) must be cleaned and disinfected between sectors.

Preventing the introduction of diseases in cattle farms

Managing the introduction of animals

Any introduction (purchase, boarding, loan, etc.) represents a risk of introducing pathogens. However, the nature and extent of the health risks vary according to the number of source farms and the number and category of animals introduced (age, sex, gestation). In addition, the clinical expression of diseases can be triggered or favored by transport conditions and new breeding conditions. In general, whenever possible, it is preferable to encourage self-renewal of the herd and to anticipate its expansion. Artificial insemination can also be used to improve the genetics of the herd, without having to introduce new animals, and with even greater control over the risk of inbreeding

In practice, if introductions nevertheless must be considered

- **We recommend keeping the number of source farms to a minimum.**
- Priority should be given to direct transport in a single operation, to avoid mixing animals with those coming from and/or going to a different farm;
- An **analysis protocol for introduced animals** must be drawn up in conjunction with the veterinarian and the GDS, depending on the health situation of the purchasing farm (to take stock of its situation with regard to the main diseases) and depending on the health status of the source farms and recent health events (abortions, respiratory disorders, diarrhoea, lameness, etc.);
- It is essential to use a clean and disinfected means of transport for the arrival of new animals on the farm. It should be cleaned and disinfected after use.
- Isolating introduced animals in a dedicated area until the serological results of the introduction tests are available (with no direct or indirect contact with the other animals in the herd) is a highly effective measure for limiting the risk of introducing new diseases into the farm and making sure the introduced animals are monitored and can adapt to the host herd (microbism, husbandry, etc.). An animal that has just been introduced may seem to be in good health, but it may be incubating a disease or be a healthy carrier. It may have been contaminated in its herd of origin, during transport or in assembly areas. On ruminant farms, a period of one month seems reasonable, to give any infectious diseases time to develop and limit their spread within the farm. A stall or an isolated plot of land can be used for this temporary isolation.

▲ Isolation box

- Introduction measures specific to one or more diseases may also be applied during the isolation of animals, depending on the zone and the programs in place. In any case, the aim is to **adapt preventive measures, including medical measures** (vaccinations, etc.), **to each situation** and to the farmer's health priorities.

Management of workers involved in breeding

Workers involved in breeding may introduce certain diseases into the farm (and conversely, spread them outside the farm). In general, farmers must not be able to carry diseases from another farm on their hands, boots and clothing, equipment, or vehicle wheels.

In practice, several preventive measures can be put in place

- Limit access to the breeding area for the vehicles belonging to the external visitors. As far as possible, vehicles should remain in the public or professional area.

▲ Signage in public areas

- In public areas, we recommend setting up a reception point with a sign (which can include a map of the farm and identify the different areas and movement rules) and the telephone number of the person to call before entering.

- At the entrance to the breeding area, a water point is provided for washing (cleaning and disinfecting) hands and boots (with a drainage system for dirty water: gutter, etc.). Boots or boot covers and clothing dedicated to the breeding area may also be provided.

▲ Provision of boots

- There are several solutions for visitors' boots: a **boot washer** (connected to a water supply and a disinfectant solution), **or a foot bath** (although a foot bath will only be effective if the boots are free from organic matter and if the disinfectant solution is changed regularly!);

▲ Foot Bath

- Ensure that the equipment used by those involved in breeding is cleaned and disinfected between each farm or is single use.

Managing “animal” vectors
(pests, domestic animals, wildlife)

Birds, rodents, insects, domestic or wild animals can be both direct and indirect sources of contamination and mechanical vectors of pathogens (paws, hair, feathers, etc.). It is therefore important to avoid any direct or indirect contact between these animals and the cattle on the farm.

In practice

- Maintaining the surroundings of the farm and the fences greatly limits the presence of wild animals on the farm;
- Watering in ponds or rivers accessible to wildlife or downstream from other farms should be avoided.

▲ Pond accessible to herds and wildlife

- Take precautions when distributing feed. Feed made available in pastures attracts wildlife, which can contaminate it.
- Restrict access to manure in the fields by using a tarpaulin or electric fencing.

▲ Manure protected by an electric fence

- A pest and insect control plan is also essential.
- Domestic carnivores and poultry can be sources of contamination for cattle. Their presence should be prohibited in breeding areas and in professional areas where feed is stored. This is particularly true of dogs in relation to neosporosis and poultry in relation to botulism and salmonellosis.

- Finally, the installation of nets must prevent bird access to open air feed storage in order to reduce certain risks, such as the risk of contamination of milk by pathogens (Salmonella, HP STEC (Potentially Highly pathogenic Shiga toxin-producing Escherichia coli), etc.), particularly in the case of raw milk production.

Shared equipment

Contamination of equipment used collectively, or vehicles used to transport or manage livestock effluents, can be a source of introduction of pathogens into the farm.

In practice

- It is recommended to thoroughly **clean (and ideally disinfect) before and after use, any equipment or vehicle used collectively and at least the parts in contact with the animals, their excrement or the floor** (this cleaning area is ideally located in the professional area).

▲ Cleaned manure spreader

Preparing and storing fodder and food

Certain pathogens can be introduced on the farm through the feed. Particular attention must therefore be paid to the preparation of certain feed and during their storage and distribution.

En practice

- **Particular attention must be paid to the production and storage of wet feed** (risk of Listeria, particularly with silage and wrapped bales which have been contaminated by soil and poorly preserved). Storage must be maintained under good anaerobic conditions. Monitor the appearance of moulds, which can be sources of mycotoxins, aspergillosis, listeriosis or botulinum toxin production, if buried corpses are present when the silo is designed.

- More generally, stored feed must be protected from dampness and any intrusion by other animals (closed shed, barriers, airtight tarpaulin, silo): here again, beware of the presence of mould in both fodder and bedding. You might consider fumigating silo surfaces once a year.

▲ Cell silos

Managing contact between animals from different herds or units

Many diseases can be transmitted by direct contact between animals or by indirect contact (through contamination of water, feed, though aerosols, or dust, etc.). It is therefore essential to prevent contact between different herds (including when the farm groups together several units of different species), grazing neighbors or during seasonal migration, events or fairs. Gatherings, even of short duration, can represent a risk of contamination.

In practice

- **Do not mix units of different species and have specific equipment for each unit** unless the health status is compatible. If this is not possible, clean and disinfect equipment shared between several units after each use.
- **Contact with neighbours' herds must be avoided** (maintenance of fences and use of double fences and/or hedges to avoid wire-to-wire contact, no shared watering, alternate grazing must be prioritized, etc.) **or take account of the health status of the herds.**

▲ Shared trough

▲Double fencing at the right distance

- For events, trade fairs and summer grazing, we recommend that you:
  - ◇ Only mix animals of equivalent health status, and if possible, only animals which can be isolated (as provided for when new animals are introduced) when returning to the farm, even if the health status is equivalent,
  - ◇ Apply the health regulations defined collectively to ensure safe assembly.

- If contact between animals from different herds occurs or cannot be prevented, joint disease management programs can be set up (vaccination, preventive treatments, prior analyses, etc.). Furthermore, it is still recommended that animals that have been in contact should be isolated as soon as they return to the farm: pathogens other than those considered in the equivalent health status may also be present.

Preventing pathogens from settling and circulating on the farm

Generally, it is recommended that age groups and animals at different physiological stages should be kept separately.
Avoid reallocations in nurseries or fattening areas.

Keeping animals healthy

Biosecurity is primarily based on the maintenance and quality of the care given to the herd. Keeping animals in good health is based on the quality of feed, water, and housing comfort (hygiene and atmosphere), the implementation of appropriate and reasoned preventive medical measures (vaccination, anti-parasite treatments, etc.), the isolation of sick animals and the quest for good general welfare conditions. Properly cared-for animals have a more effective immune system that is able to fight the various pathogens that may arise (the usual microbes affecting livestock or newly introduced pathogens).

In practice

- Care is taken to ensure access to feed and balanced rations, to avoid deficiencies, and to respect access to and the need for clean water.

Crédits : Nina Chevallier

- Ensure that the animal deworming plan is regularly adjusted, as weather conditions and changes in pasture use can lead to a variation in parasitic risk.

- We make sure that the vaccination plan drawn up with your vet is adhered to, that it is regularly reviewed and that medicines are properly stored and administered, especially vaccines, which are particularly fragile.

- Isolation and treatment of sick animals are conducted in conjunction with the vet;

- Stress to the animals during transport and handling must be kept to a minimum.

- It is also important to ensure that the animals have enough housing space, that the buildings are well ventilated and that the bedding is of good quality;

- In dairy farming, the milking machine must also be maintained and regularly checked.

Calving management

Calving is a critical period. The cow is weakened, and the newborn calf has no immunity.

In practice

- Isolate the cow from the herd (while maintaining visual contact with her fellow cows) in a calving box, which must be cleaned and disinfected after each calving.
- On dairy farms, for herds affected by certain diseases (paratuberculosis, salmonellosis), it may be advisable to separate the calf immediately from its mother (without suckling) and to isolate it in the nursery (this rapid separation of the calf from its mother can prevent the transmission of these diseases). Keep calves intended for sale away from the herd to prevent dealers from entering the nursery.

Credits : GDS 02

- Regularly monitor the quality of colostrum in cows and heifers using a colostrum scale. The cow must be clean (vulva, udder). The aim is to quickly provide the calf, within the first 2 hours, with a suitable quantity of colostrum, rich in immunoglobulins, to give it sufficient protection and energy intake until it can produce its own antibodies. A calf should consume between 1.5 and 2 litres of colostrum in the first 2 hours of life and then 10% of its weight in the first 12 hours of life.
- Thoroughly disinfect the navel early on and repeatedly until it is completely dry.
- Do not give the calf colostrum from other farms, build up a colostrum bank in case of shortage or if a cow has colostrum of poor quality.
- Do not give milk from cows with mastitis or from cows treated with antibiotics. The first contains bacteria and the second disrupts the intestinal flora and can lead to bacterial resistance.
- The equipment used to provide colostrum/milk to the calf must not be shared with several calves unless it is cleaned and disinfected between each calf.

Infirmary

Sick animals (animals with diarrhea, skin lesions, tired animals, slaughtered animals, etc.) are very abundant sources of pathogens and are particularly at risk of spreading disease within the herd.

In practice

It is essential to **be able to isolate sick animals in a place with no direct contact with the other animals and visitors, while maintaining visual contact with the other animals** (in an «infirmary», separate from the calving box). These animals should not be isolated with recently introduced animals currently in quarantine. In addition, isolation of animals suspected of being ill (using the same procedure but separated from those that are ill) is recommended.

- When caring for sick animals, use gloves to protect yourself (particularly in the case of abortions, when cleaning abscesses, etc.). When administering treatments (injections), equipment must be adapted to the size and weight of the animal.
- They should be single-use whenever possible (to reduce the risk of blood-borne transmission with single-use needles).

Concerning abortions:

Several management measures apply:

- Calling the veterinarian: reporting abortions is compulsory as part of brucellosis surveillance. Their intervention is essential to monitor any possible re-emergence of brucellosis in the country, and is paid for by the State,
- To limit contamination, aborted females should be isolated (for the duration of vaginal discharge) and collect all abortion products (foetus and placenta) and the bedding where they are found,
- In addition, all or part of the abortion products should be kept away from other animals (including domestic carnivores, etc.) (and the rest should be eliminated), pending a visit from the vet, who will take the necessary samples to investigate the causes (it is possible to make a differential diagnosis of a series of abortions: standardized procedures and treatment are sometimes offered in consultation with the GDS);
- Particular care must be paid while
- reintroducing the isolated animal, regarding tensions related to the questioning of the herd's hierarchy (conflict which can lead to injuries between fellow animals).

Cleaning/disinfecting

Hygiene firstly consists of cleaning (scouring, sweeping, etc.), collecting and storing waste, washing, and disinfecting. **Disinfection must be adapted to each production situation and context.**

In practice

The written formalization and effective compliance with a cleaning and disinfection plan ensures the application of good practice by all those working on the farm. This plan, drawn up for the different sectors of the breeding area, includes protocols, the type of disinfectant products and how they are to be used in different situations, as well as the frequency of use.

- Cleaning/disinfection must be applied to the following premises or equipment:
- Premises dedicated to the care or reception of newly introduced animals, after each use,
- Collective equipment after being shared with other farms,
- Water troughs on a regular basis,
- Water circuits (pipes to be drained) on a regular basis,
- Suckling equipment on a regular basis,
- The milking parlour and equipment, after each use,
- The waiting area after each use,
- Equipment for calving, trimming, and shearing,
- Rack tubes accessible to small calves,
- The rendering area after each removal.

▲ Uncleaned faeces on tubing

▲ Disinfection

Preventing diseases from spreading outside the farm

Animal movement and traceability

The monitoring of the health situation in the sector is based on a perfect identification of cattle and recording of their movements. The various regulatory obligations implemented by cattle breeders are recalled below.

In practice

- All animals on the farm must be identified within the statutory time limits, using approved markers.
- Recording information relating to identification through the corresponding register.
- Notification of incoming and outgoing animal movements.

When moving animals, it is advisable to:

- Establish the health status of animals before they leave the farm, whether for sale or for
- Competitions-like rallies and shows,

depending on the health risk for the farm and the geographical area. The veterinarian and the GDS are available to advise farmers on the screening protocol to be implemented.

- In the case of a sale, favour direct transport in a single operation to avoid healthy animals becoming contaminated before arriving at the buyer's farm.
- Draw up a conventional guarantee note to secure the sale, by conducting the analyses at the seller's premises.

▲ Clips, tubes and tags

▲ ASDA (Advance Issuance Health Certificate)

Effluent management

Manure and slurry are potential sources of disease spreading. Many pathogens responsible for infectious or parasitic diseases are present in animal secretions or excretions, feces or otherwise. Specific precautions are required.

In practice

- For effluent storage: it is recommended that effluent be stored away from the path used by visitors and animals (or, failing that, that they be stored under a tarpaulin), away from water points and in a place with no slopes. It is also recommended that the manure is stored for a sufficiently long time (4 months is a minimum between the last supply of manure, liquid manure and muckspreading).

- Muckspreading: depending on the diseases present on the farm, special precautions are required (Q fever, paratuberculosis, salmonellosis). When in doubt, to avoid taking any risks, it is best to spread during fair weather. (with burial for Q fever).

▲ Spreading

Managing products of animal origin

The consumption of food of animal origin contaminated with pathogenic micro-organisms such as bacteria, viruses and parasites can cause illness in humans (zoonoses, or food-borne toxic infections). It is therefore important to identify the risks, so as to control and/or prevent them.

In practice

- It is essential to identify animals whose meat or milk may be unfit for consumption (milk containing residue, aborted females, sick animals and in particular with mammary pathologies such as clinical mastitis) and keep them out of the commercial circuit for the necessary or regulated time (withdrawal periods);

- Specific measures must be applied to food products manufactured on the farm (farmhouse products) once the activity has been declared to the DDPP and a health status consistent with the distribution channels has been obtained. These include the implementation of a complete and relevant hazard analysis (HACCP type) for the activity concerned. In farmhouse cheese production, the Guide to Good Hygiene Practices (GBPH) is the officially recognized tool.

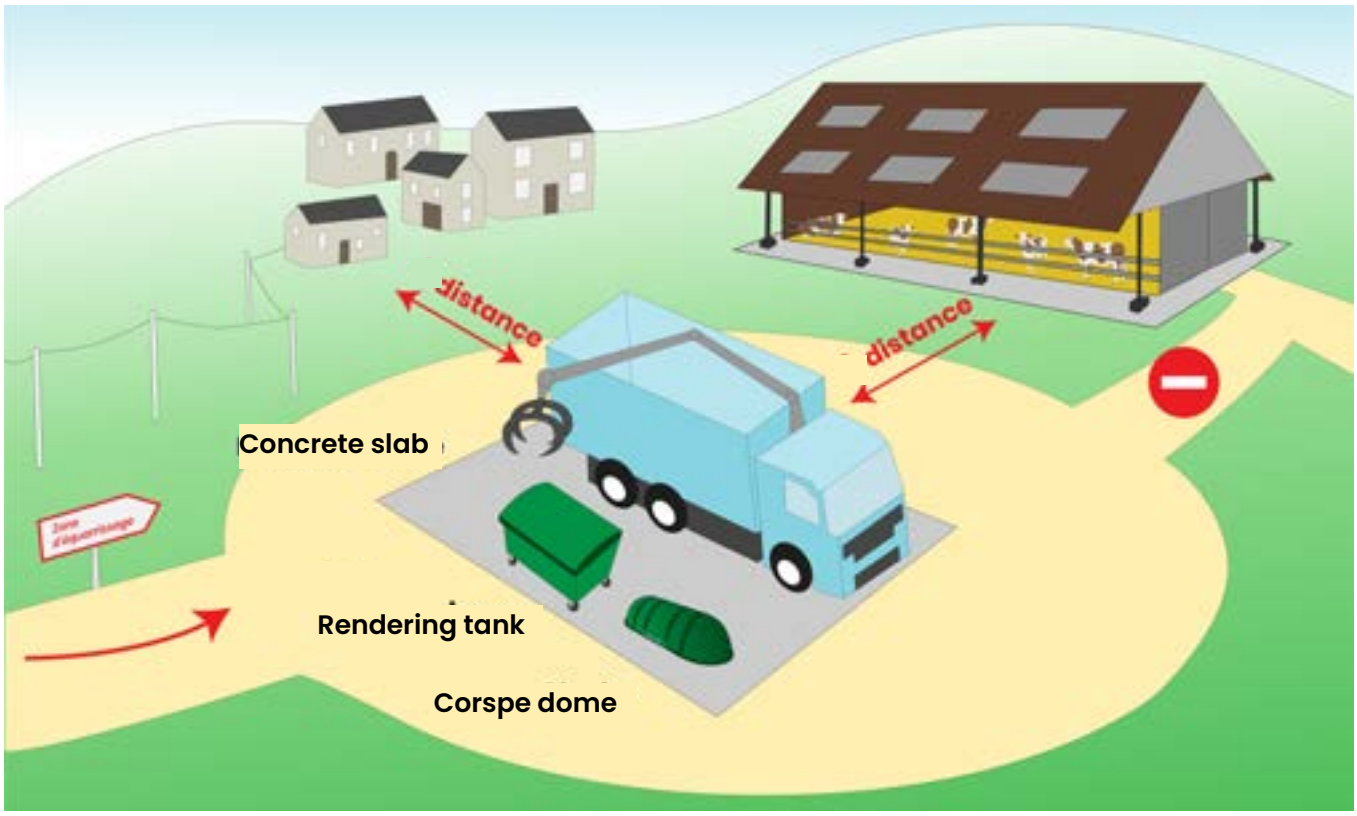
Corpse management

Aborted fetuses, placentas, and animal corpses can be sources of contamination and a risk to other animals, and or even for humans in the case of zoonotic diseases.

In practice

- Aborted foetuses, placentas and animal corpses must be kept away from the rest of the herd and placed in a rendering container, away from other animals on the farm and predators (including cats and dogs present on the farm). You are strongly advised to take precautions when handling them, at the very least by wearing gloves.
- It is also advisable to inform the renderer as soon as possible and to clean and disinfect the areas where the corpses are found.
- The rendering truck must stay as far away as possible from the breeding area (see zoning).
- The rendering area must be cleaned and disinfected after each removal.

▲ Corpse dome and concrete slab



Management of waste from care activities involving infectious risks (DASRI)

Veterinary healthcare waste is classified into 3 categories:

- Waste involving infectious risk (sharp and cutting material, soiled work equipment).
- Waste involving chemical or toxic risks (Unused Medicines = MNU).
- Non-hazardous industrial waste (cardboard, plastic, non-infectious working materials, empty packaging, and bottles, etc.).

Each category must be carefully sorted and disposed of through the appropriate channels.

In practice

- Waste involving infectious risk (excluding sharp and cutting material) must be placed in a DASRI bin (provided by your vet or GDS).
- Sharp and cutting material waste on the one hand and chemical or toxic waste on the other must be placed into specially adapted bins.
- Non-hazardous industrial waste is disposed of with household waste.
- Organized waste recovery and disposal systems exist at local level.
- When the bins are full, lock them and take them to your vet or GDS.

And if you are open to the public?

Being open to the public is a unique opportunity to meet, talk and communicate about the breeding profession. To receive visitors in the best possible conditions, special precautions must be taken. Cattle can carry diseases that can be transmitted to humans (zoonoses). These diseases can be transmitted to breeders and those involved in breeding, as well as to occasional visitors.

In practice

The most important thing is to anticipate how visitors will be received and to establish rules for moving between the different areas (possibly using signage).

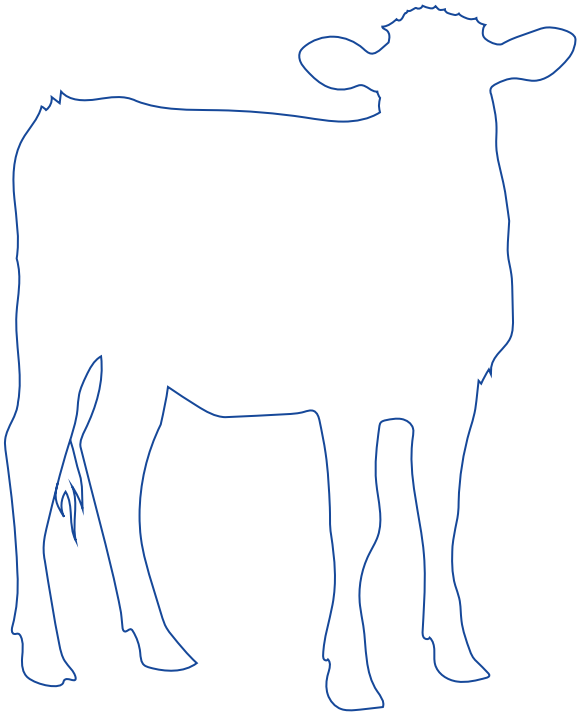
▲ Signage in public areas

- If you are visiting the breeding area, it is advisable to have a guide present, as this will also enable you to have more practical discussions and provide explanations about the farm. If there is no guide, the tour route should be made safe and signposted, and instructions should be given.

▲ Signage in public areas

- Restrict the movement of dogs and cats.
- It is essential to provide a hand-washing point (ideally in each building with drinking water, soap and disposable hand towels or hydro-alcoholic gel) and to provide boot covers;
- Most visitors want to touch the animals, especially the calves. The public should therefore be made aware and informed that the youngest animals (newborns and calves), the most fragile animals (females going into labour or having just given birth) and/or those most at risk (sick animals, including females that have aborted) require care and need to be protected from contact. Furthermore, in the case of sick animals, including females that have aborted, this also protects visitors.

- Know your health status, particularly regarding Q fever.
- In the specific case of farms open to the public where an outbreak of clinical Q fever is detected, emergency measures must be put in place. These include stopping the influx of visitors (as soon as a suspicion is raised), the implementation of a vaccination program for the herd, and the appropriate management of effluents.
- It is advisable not to scour or spread during visits. If straw bedding is required, this can be done a few hours before visitors arrive (to limit the risk of airborne dust being contaminated by Coxiella burnetii, the agent of Q fever, and to reduce the risk of allergies).



For further information, please contact your GDS or vet: