

TB Eradication Transformation Programme

Bovine Tuberculosis Biosecurity Advisory Booklet

How to protect a herd from Bovine TB

Department of Agriculture, Environment and Rural Affairs
www.daera-ni.gov.uk

An Roinn Talmhaíochta, Comhshaoil agus Gnóthaí Tuaithe

Depairtment o' Fairmin, Environment an' Kintra Matthers

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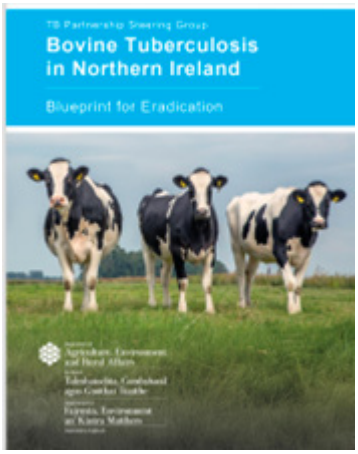
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Introduction

Bovine Tuberculosis (Bovine TB), caused mainly by Mycobacterium bovis , is a complex and challenging zoonotic disease of mammals, endemic in many countries across the globe. Whilst primarily a disease of cattle, it also infects a broad range of farm and wild animals, further complicating attempts to control and eradicate the infection. A national programme to eradicate Bovine TB has been in place in Northern Ireland (NI) since the late 1950s. Statistics provided by the Veterinary Service Animal Health Group (VSAHG) of DAERA in relation to the testing for, and incidence of, Tuberculosis in cattle can be found here. Following the Chief Veterinary Officer's Review of Bovine Tuberculosis in Northern Ireland, November 2024', the Bovine Tuberculosis in Northern Ireland - Blueprint for Eradication was published, setting out the key priorities and actions to be further developed to tackle this disease, clearly identifying the measures where progress must be made in the immediate future across the three pillars of people, cattle and wildlife.



One of the main objectives under both the cattle and people pillars is focused on providing biosecurity advice and implementing a fit for purpose biosecurity assessment protocol to improve the biosecurity standards across farms in NI in order to reduce the risk of spreading Bovine TB.

This booklet provides information and guidance on the generally agreed biosecurity standards of good practice to minimise the risk of disease spread into and within herds in respect of Bovine TB.

It also contains background information on the characteristics of the disease and tailored biosecurity advice linked to the main pathways in which disease can be introduced into and spread within your herd.

Useful links to additional resources, training materials and videos are provided near the end of the document.

One of the essential pillars to support a healthy and disease free herd includes regular communication between farmers and their Private Veterinary Practitioner (PVP) on farm biosecurity matters, as PVPs will be familiar with the farm layout, management system and herd health plan.

Bovine TB biosecurity requirements are also incorporated under FSS5 - Food and Feed, Herd and Flock Health and Biosecurity - of the Farm Sustainability Standards. Further details and guidance is available here: **Farm Sustainability Standards (FSS) | Department of Agriculture, Environment and Rural Affairs**

Purpose

This booklet is mainly aimed at veterinary and industry professionals for training and education on the delivery of on-farm biosecurity advice.

When delivering biosecurity advice, this booklet should be used in conjunction with the selection of DAERA 'Farmer Factsheets' and the industry friendly version of this booklet. These have been specifically developed for on-farm advice delivery on selected topics as laid out within this booklet.

The layout of this booklet has been developed to include:

- An introductory section on disease characteristics and disease detection
- Specific biosecurity advice under 4 main themes reflecting the 4 main disease introduction pathways
    - Introduction of cattle into the herd
    - Farmyard access
    - Field management
    - Herd management
- At the end of each theme, a summary box is included providing a high-level overview of the main concepts for consideration within the theme.

All pathways carry risk of introducing disease; however, the highest risk pathway will be specific to each farm depending on farm lay-out and management. A full farm assessment is required, considering all pathways, before prioritisation on recommendations can be assessed.

Disease Characteristics

Causal agent

Bovine TB, caused by Mycobacterium bovis, mainly affects cattle, but it can also infect and cause disease in badgers, deer, goats, pigs and camelids (llamas and alpacas), as well as many other mammals including pets, such as cats and dogs.

Mycobacteria are unusual amongst bacteria in their robustness, resilience and slow growth characteristics. The chronic nature of the disease means that it can survive and thrive inside the host's cells for a prolonged length of time.

Clinical signs

Bovine TB is a chronic disease, typically with a slow onset of clinical signs which take months or years to develop. The usual clinical signs are non-specific and may include [1]:

- weakness
- loss of appetite
- weight-loss
- fever
- cough
- diarrhoea
- large lymph nodes
- reduction in fertility and/or productivity
- chronic mastitis
- death

However, the bacteria can also lie dormant in the host without causing disease. As the Bovine TB eradication plan for NI includes at least annual testing of all cattle herds and removal of test positive cattle, clinical signs are now seldom encountered in cattle.



In the later stages of the disease, cattle typically display severe weight loss with a chronic cough, eventually leading to death

Disease spread

Infection typically occurs through the **inhalation, ingestion or direct contact** of infected material through mucous membranes or breaks in the skin.

Risk of infection and developing disease may depend upon several factors including:

- infectious dose, e.g. number of bacteria present in the environment or level of spread by the infected host
- route of infection, e.g. inhalation or ingestion
- pathogen variables, e.g. genotype, strain type
- host variables, e.g. genetic susceptibility, concurrent disease, nutritional status, etc.
- animal husbandry related variables, e.g. environmental stress, stocking densities, etc.

In practice, this means that animals can mainly become infected by:

- **sharing airspace** with infected animals or wildlife. Where TB infected/TB reactor animals share airspace with TB free animals within a single shed, there is a high risk of disease spread to the TB free animals due to the continuous circulation of infected particles in the airspace within the shed
- **ingesting food or water** contaminated by infected animals, e.g. milk/colostrum, shared food/water troughs, natural water sources, pasture contaminated through grazing of infected animals/spreading of slurry from infected herds/indirect contact from infected wildlife
- **mechanical transfer** through the use of shared facilities, shared or hired equipment (e.g. machinery contaminated with slurry) or contaminated transport vehicles

Guidance on survival of Bovine TB in the environment [2]

In feed	up to 40 days in colder overcast conditions
On top of salt/ mineral licks	several days
In water	20-60 days
In soil	14 days in summer, 3 months in winter and potentially much longer if stored in cold dark conditions
In silage	up to 28 days
In stored slurry	up to 6 months
In faeces at pasture	up to 2 months in warm summer conditions and up to 5-6 months in cold winter conditions
In solid manure	up to 3 weeks

Zoonotic-Human Health

Transmission of Bovine TB can occur between animals, from animals to humans and, more rarely, from humans to animals and between humans.

Those working closely with livestock and/or regularly drinking unpasteurised (raw) milk have the greatest risk of exposure, e.g. farmers and their families, vets, veterinary nurses, abattoir workers, feet trimmers, artificial insemination technicians, etc.

Drinking or eating products made from unpasteurised milk poses the highest risk. However, Bovine TB can also spread by breathing in bacteria from sick animals or through cuts on the skin when handling infected animals or their carcasses, but this is uncommon. [3]

Symptoms of human respiratory Bovine TB include [3]:

- weight loss
- night sweats
- fever
- persistent cough which may contain blood or pus

Further information is available here [3]: Bovine tuberculosis - reducing the risk of human infection leaflet | HSC Public Health Agency

Bovine TB diagnosis in cattle

Diagnostic principles

When animals are infected with Bovine TB, their immune response takes time to develop (usually 3–6 weeks) so early tests post exposure may miss the infection.

Cross-reactions with other mycobacteria, such as those causing Johne's disease, can lead to false negative results. In other words, cattle infected with both Bovine TB and Johne's disease are less likely to be detected as skin test reactors and may contribute significantly to the ongoing Bovine TB spread of disease in a herd.

The 3 main methods for detection of Bovine TB in cattle in Northern Ireland are:

• the comparative intradermal tuberculin test (CITT)

• the interferon gamma blood test

• postmortem examinations in a commercial slaughterhouse setting

Each test type has their strengths and weaknesses and are further explained in the next sections

Bovine TB skin test

How is it done

The primary screening test for Bovine TB in cattle in the UK is the single intradermal comparative cervical tuberculin skin test (CITT). [2]

The skin test is comparative as the animal's immune response to injections of both bovine and avian (bird) tuberculin is measured and compared. By simultaneously injecting two types of tuberculin into the deep layers of the skin of the neck, the test can better distinguish between animals infected with Bovine TB and animals previously exposed to or infected with other types of mycobacteria found in the environment which do not cause Bovine TB. [2]

Strength

The specificity of the skin test used in the UK is very high – approximately 99.98% at standard interpretation.[4] This means that out of 10,000 skin test reactors, 9,998 are animals truly infected with Bovine TB, irrespective of whether or not lesions typical of the disease can be detected during post-mortem meat inspection in the slaughterhouse. [2]

Weakness

However, the main limitation of the tuberculin skin test is its sensitivity. Studies have shown that skin test sensitivity lies between 52% and 100% with an average of about 80% sensitivity at standard interpretation [4] and slightly higher at severe interpretation. In practical terms, this means that on average 20% of TB-infected cattle can be missed by one round of skin testing using standard interpretation.

The effect of using severe interpretation, rather than standard interpretation, is to increase the sensitivity of the test resulting in fewer bovine TB infected animals remaining in the herd. However, it is also important to realise that it lowers the specificity of the test (resulting in more false positive results), and this is why it is not used in routine surveillance testing. The value of severe interpretation mainly lies with applying it in herds with confirmed Bovine TB infection to allow earlier and more complete detection and removal. [2]



Bovine TB skin test

Bovine TB Interferon-Gamma test

The interferon gamma blood test (or gamma test for short) is a laboratory based supplementary test for the diagnosis of TB in cattle. It is approved in the EU for use in conjunction with the CITT skin test to increase the overall sensitivity of testing. [2] The gamma test is a comparative test like the skin test; it measures the animal's immune response to avian and bovine tuberculins (similar as those used in the skin test).

Data estimates that gamma test specificity is 96.5% and sensitivity of around 90% [4,5].

In comparison with the TB Skin test, the gamma test is less likely to miss TB infected animals, and it also detects infection earlier but it is more likely to produce a false positive result. It is therefore usually only used in known infected herds under TB restrictions to allow earlier detection and removal of TB infected animals. [2]

One of the main operational limitations for the interferon gamma test is that the blood samples are time and temperature sensitive for laboratory submission, with strict logistical timelines.

The gamma test is used in herds which are believed to have a higher risk of TB to allow earlier detection and removal of TB infected cattle. As a result of the earlier removal, relatively few gamma reactors will have had sufficient time to develop visible lesions that can be detected at slaughter.

Post mortem examination

Postmortem examinations (particularly when carried out in a commercial slaughterhouse setting) and bacterial culture are less sensitive than the previously mentioned two tests.

A skin/gamma test reactor that showed no visible lesions at postmortem meat inspection can occur for the following reasons;

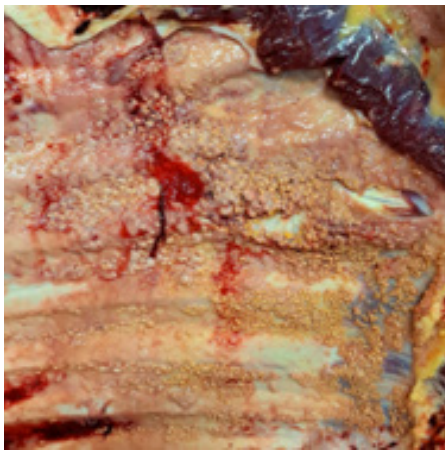
- The animal was in the early stages of infection with Bovine TB when TB lesions are too small or infrequent to be observed by the naked eye
- The animal had minimal visible lesions at postmortem inspection, which are not detected during a routine post-mortem inspection at the slaughterhouse.



TB lesion in the Broncho-mediastinal lymph node



TB lesions in lung tissue



Miliary TB lesions

SUMMARY - Background information on Bovine TB

- Bovine TB is an infectious disease caused by the bacterium Mycobacterium bovis . The disease mainly affects cattle, but it can also infect and cause disease in badgers, deer, goats, pigs and camelids (llamas and alpacas), as well as many other mammals including pets, such as cats and dogs.
- Bovine TB is a chronic disease with typically a slow onset of clinical signs and symptoms may take months or years to appear.
- Inhalation of infectious respiratory droplets is considered as the primary mode of transmission in livestock, however, infection through ingestion of contaminated milk (particularly in newborns), feed, or water and environmental contamination via slurry and equipment is also possible.
- Bovine TB can survive in the environment for long periods, e.g. weeks to months, especially in cold and moist environments.
- We can be confident that the vast majority (>99.9%) of skin test reactors identified are truly infected with Bovine TB, irrespective of whether lesions typical of Bovine TB are found at slaughter.
- However, Bovine TB-infected cattle can be missed by the skin test, which is why the use of severe interpretation is essential in herds where Bovine TB has been confirmed.
- Gamma testing is a useful additional tool in known Bovine TB breakdown herds to allow earlier detection and removal of Bovine TB infected animals
- A high standard of skin testing is essential to obtain maximum results as any substandard level of testing significantly reduces the sensitivity of the skin test, resulting in Bovine TB infected animals remaining undetected and continuing to contribute to the spread of disease.
- Suitable and well-maintained testing facilities to allow for adequate animal restraint during testing are an inherent component of the success of the Bovine TB skin test.

Biosecurity advice for the introduction of cattle into the herd

Purchasing new stock

Informed purchasing can significantly reduce the risk of introducing Bovine TB into a herd, especially where new cattle are introduced to the herd:

• on a regular basis

• from multiple farm origins

• through salesmen, markets, sales or shows

The following questions may assist to assess and minimise the risk of Bovine TB infected cattle entering your herd, a table for herd keepers to use is available under Annex A

1. Enquire about the Bovine TB history of the herd of origin.

a. When was the last routine herd test, e.g. generally one year ago carries a higher risk than 1-2 months ago

b. How long has the herd been Officially Tuberculosis Free (OTF). Ideally, they should be free for over 3 years.

c. Does the current test for the herd indicate a lower risk origin, e.g. Annual Herd Test (AHT)

d. Is the herd currently deemed at risk to any TB breakdowns, e.g. has the herd been scheduled with a Lateral Check test (LCT), or a Forward Check Test (FCT)

e. If applicable, what was the duration of the last Bovine TB breakdown in the herd and approximately how many reactors were disclosed.

2. Enquire about the history of the animal:

a. If the animal was pre-movement tested, it may be helpful for the farmer to discuss the results of the pre-movement test with their PVP. For example, an older animal with a significant bovine bias at the test may be deemed a higher risk animal, especially in context of a herd which had a recent Bovine TB breakdown.

b. Has the animal attended any sales, shows or events since its last Bovine TB test.

c. In the case of a bull, did the bull reside in any other herds for breeding purposes since its last Bovine TB test.

d. Was the animal a cohort of animals that were disclosed as reactors in the previous 2 years?

3. Isolation and testing:

Depending on the risk linked to the farm of origin, it may be advisable to isolate the animal(s) until a clear Bovine TB test has been completed. If there is no scheduled full herd TB test in the near future, a private pre – or post-movement Bovine TB test can be scheduled before mixing the animal(s) with the rest of the herd. Please note there must be a minimum of 42 days between Bovine TB skin tests. Departmental permission is required before this test can take place, and the private test is at the expense of the herd keeper. PVPs are generally the first point of contact for a farmer to consult on private TB testing.

To note, in order to effectively isolate cattle, there must be no shared airspace/direct contact/shared water or feed troughs between the isolated cattle and the rest of the herd.

4. Transportation:

It is good practice for any farm vehicles used for transportation to be adequately cleansed and disinfected after unloading to minimise the risk of disease spread through slurry, respiratory droplets, etc.

Information on approved disinfectants for biosecurity purposes can be found here; **Approved Disinfectants | Department of Agriculture, Environment and Rural Affairs**

Bed and breakfast

If a Bed and Breakfast arrangement is located on an existing cattle holding, and the animals from the two or more herds share sheds, pens, feeding systems, personnel, air space, crushes or machinery, they will be considered by DAERA to form part of the same unit for disease control purposes and will be required to undergo the same Bovine TB testing regime.

Overwintering cattle in accommodation shared with other herds is a high risk for disease transmission and should be avoided where possible. If avoiding is not possible, then make enquiries about the health status of the in-contact animals. The checklist under Annex A may assist with assessing the TB risk of the co-located herds.

Comply fully with rules on movement notifications and movement licenses, as it is vital that all in-contacts can be traced in the event of a disease outbreak.

Further information is available here: **Conditions for the operation of a Mixed-Herd Contract House | Department of Agriculture, Environment and Rural Affairs**

Re-entry of stock after attending events or sales



Due to the nature of these events, animals from different origins are generally housed within the same airspace and possibly within close contact for a period of time. There is a risk that any stock re-entering the farm of origin after attending such events may have been in contact with undisclosed Bovine TB infected animals.

It is advised to consider isolating the animal(s) upon their return until a clear Bovine TB test has been completed at least 42 days after the animal has returned to the farm. If there is no scheduled full herd Bovine TB test in the near future, a private post-movement TB test can be scheduled before mixing the animal(s) with the rest of the herd. Please note there must be a minimum of 42 days between Bovine TB skin tests. Departmental permission is required before this private test can take place, and the test is at the expense of the herd keeper. Herd Keepers should consult their PVP on this matter.

Farm vehicles used for transportation should be adequately cleansed and disinfected after unloading to minimise the risk of mechanical disease spread through slurry, respiratory droplets, etc.

Information on approved disinfectants for biosecurity purposes can be found here; **Approved Disinfectants | Department of Agriculture, Environment and Rural Affairs**

SUMMARY - Background information on Bovine TB

- Prior to purchasing or mixing animals originating from other herds, shows or sales, consider the Bovine TB risk by using the check list under Annex A
- Additional measures such as isolation and private Bovine TB testing should be considered to mitigate disease introduction risk when (re-)introducing cattle into the herd
- Avoid bed and breakfast arrangements where possible
- Always ensure farm vehicles used for transportation are adequately cleansed and disinfected after unloading. Information on approved disinfectants for biosecurity purposes can be found here; **Approved Disinfectants | Department of Agriculture, Environment and Rural Affairs**

Biosecurity advice on farmyard access

Farm workers and visitors

Most farms have a significant footfall of different visitors who may come into regular contact with a wide range of other farmyards, e.g. farm workers, private vets, milk collection lorries, artificial insemination technicians, foot trimmers, contractors, salesmen, pregnancy scanning technicians, etc.

In addition, some types of farms have additional footfall from the general public linked to the nature of their business, e.g. petting farms, farm shops, seasonal events, etc.

Applying additional biosecurity measures and controlling direct access to livestock and buildings is essential to safeguard herd biosecurity:

- As a general principle, consider yard access and lay-out to avoid visitor contact with livestock unless absolutely necessary;, signage on buildings can be considered. There should be no uncontrolled access to buildings and livestock for visitors.
- Personal Protective Equipment (PPE): use a separate set of boots and overalls for farm workers who also keep their own livestock.
- Use a well maintained, covered foot dip with an **approved disinfectant**, at the correct concentration at the entry of all buildings where livestock are kept.
- Wash hands/wear gloves when handling livestock.
- Consider the indirect disease transmission risk posed by pets, e.g. dogs, where they are permitted to roam freely.
- A well-maintained wheel dip for vehicles and lorries at the road or main yard entry.





Examples of boot cleaning and disinfecting



Disinfecting wheel dip at farm entry

Wildlife

At risk species

Many wild mammals are susceptible to Bovine TB infection, with many species deemed to be 'spillover' hosts which may only pose a very small risk of spreading Bovine TB to livestock.

Spillover hosts are often, but not always, "dead-end" hosts, meaning that while they may become infected and get sick, they are not particularly effective at transmitting the infection to other members of their own species, e.g. foxes.

However, some wildlife species are deemed to be disease reservoirs, such as badgers and deer, where disease can be permanently maintained within their population and from which infection can be transmitted to livestock.

Wild deer are highly susceptible to Bovine TB infection and can transmit Bovine TB both to other deer, and to cattle. However, deer will rarely enter livestock yards and buildings.

For further advice and guidance on deer wildlife licensing in Northern Ireland, the NIEA Wildlife team can be contacted Wildlife team | Department of Agriculture, Environment and Rural Affairs

Badgers are also highly susceptible to Bovine TB and will more commonly access farmyards and buildings, especially if there is an easily accessible food source.

While cattle-to-cattle spread is the primary transmission route for Bovine TB, the disease can also pass from cattle to badgers and badgers to cattle, through direct or indirect contact (material contaminated by badger excretions such as sputum, urine, faeces and discharges from wounds).

A Northern Ireland-wide survey examining dead badgers found on the roads for TB infection has been ongoing since 1998. Please report any such badgers to the badger hotline via 028 7744 2399 or rtabadger@daera-ni.gov.uk

Further information is available here: Badger road traffic accident (RTA) survey | Department of Agriculture, Environment and Rural Affairs

Badger farmyard access biosecurity measures

Identifying badger activity



Badgers are a protected species in NI to which wildlife laws apply which do not permit intervention or population controls.

Further information can be found here: **Wildlife law and you | Department of Agriculture, Environment and Rural Affairs**

Badgers may visit yards where they will eat a range of animal feed if they are easily accessible. They have a particular preference for high energy, starchy and sugary feed types such as:

- cereals (wheat, oats, barley, maize)
- concentrates
- protein pellets or nuts
- molasses
- mineral licks/buckets
- maize or cereal silage (but not grass silage)

Be particularly vigilant for signs of activity in hay or straw barns during cold spells. [2]

As badgers are **nocturnal animals**, you may not always be aware of badger activity around the farmyard and in the buildings.

Installing wildlife cameras around feed stores and cattle housing are an easy way to investigate whether badgers are entering farmyards and this information can be used to direct future biosecurity measures. These cameras have infrared sensors/lights and only take photos (or in some cases video) when an animal triggers the camera. [2]

Further information is available here: **Badger cameras**

Biosecurity measures

- Stored feed should be secured as a priority. If stored feed is contaminated it could present a risk to a large number of the cattle and spread disease right across the farm. If it is not possible to stop badger visits to feed stores, consider other means of storing feed, for example in secure bins or silos. Clean up any spilt or waste feed as this may attract badgers. Ensure lids on bins are secure and will prevent badger access. [2]

Further information is available here: **Manage Feed and water**

- Prevent badgers from accessing cattle water troughs by raising them to above 90cm. Regularly cleaning and disinfection of water troughs helps to prevent the buildup of infectious material. [2]



Smaller amounts of meal stored in sealed plastic bins. Prevents badgers, rodents and birds eating and dunging in meal.



Keep areas below silo feed bins swept to discourage foraging badgers.

- In order to prevent badger access to buildings, the sides of buildings, doors and gates should be of smooth, solid constructions to prevent badgers from climbing and they should be at least 1.5 m high. Despite their size badgers are able to squeeze through surprisingly small gaps. Gaps should be no more than 7.5 cm to prevent badgers from gaining access. This includes gaps at the sides of gates and doors. Gates and doors should be kept closed, especially at night as badgers are nocturnal animals. These measures apply to buildings that house livestock, bedding materials and feed. [2]

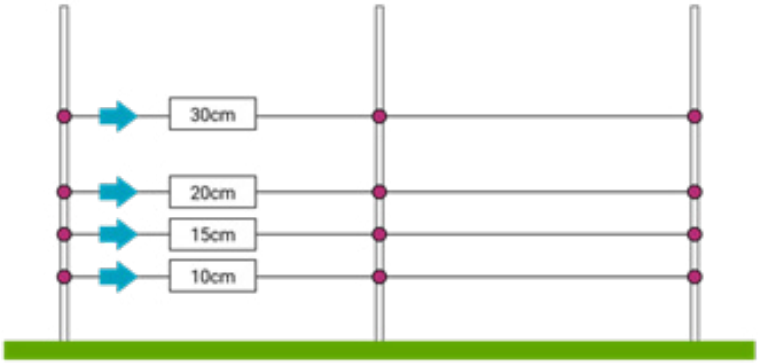


Closing the cattle shed at night to prevent badger access meant limited air flow



Air flow improved by using metal grid on door

- Maize and whole crop silage clamps should be well covered. Where silage is kept in walled clamps, a gate can easily be installed with a badger proof lower section. The gate should be kept closed at night to prevent badger access but can remain open during the day. For open silage clamps, electric fencing can be used to secure the face of silage clamps from badger access. With electric fencing, strands of wire should be at 10, 15, 20 and 30 cm above the ground. [2] It is important the electric fencing is operational at night but it can remain open during the day as badgers are nocturnal animals.



- Where cattle feed passages are open to the outside of the building and accessible to wildlife, electrical fencing or barriers can be put in place to prevent badger access



Permanent barrier helps prevent badger accessing meal over silage

- Several manufacturers have badger exclusion fencing available to buy. The herd keeper may benefit from speaking to a fencing contractor or supplier about what may be available. [2]
- Further details and videos are available here: **Biosecurity for Farm Buildings - Bovine TB | TB Hub**
- Factsheets on sheeted and adjustable gates, galvanised panels, roller doors and feed containers are available here: **Practical guidance on biosecurity - Bovine TB | TB Hub**

SUMMARY – Biosecurity advice on farmyard access

- Ensure farmyard and building visitor access is controlled and that well-maintained disinfecting procedures, e.g. foot dips, wheel dips and PPE, for farm workers and visitors are placed in key areas, e.g. the entrance to the yard and each building
- Minimise wildlife access to food sources by securing feed stores, cleaning up any spilt or waste feed, preventing wildlife access to maize and whole crop silage clamps and cattle feeding passages
- Minimise wildlife access to livestock buildings by covering gaps in doors and buildings to no more than 7.5 cm.
- All doors that provide access to livestock, feed and bedding should be kept closed at night.

Biosecurity advice on field management

Field boundaries and feeding processes

Direct contact biosecurity measures

Direct contact (nose-to-nose) between cattle constitutes the highest risk of Bovine TB spread. Measures to prevent direct contact between neighbouring cattle are essential to minimise the risk of Bovine TB spread between herds. These biosecurity measures can be achieved in different ways, depending on boundary layout and if fields are owned or grazed as conacre.

- Communication and agreement between herd keepers not to graze cattle in adjoining fields at the same time whilst ensuring all fences are well maintained to prevent straying. This can be achieved through planned field rotation or grazing other lower risk livestock such as sheep in adjoining fields where cattle are grazed.

- A minimum 3-metre gap between adjoining fields where cattle are grazed. This can be achieved in different ways:

    - **Natural barriers** such as waterways or hedges with well-maintained fences on either side.

    - **Permanent double fencing**. Recognising this may be a more costly measure, it is still worthwhile considering for outer perimeter fencing on owned fields.

    - **Temporary double fencing**. When livestock are moved to temporary pasture, additional inner electric fencing can be erected at boundaries with neighbouring herds where cattle are grazing whilst ensuring the outer permanent fences are well maintained to prevent straying. The electric fencing can be moved with the cattle when rotating pastures.

    - Check the Farming with Nature Package | Department of Agriculture, Environment and Rural Affairs on available farm business support packages.

- Avoid common grazing of cattle at pasture if possible as this allows mixing of cattle from different herds.



Permanent double fencing between neighbouring herds



Example of a thick hedge and fence, keeping distance from neighbouring livestock

Feeding at Pasture

The availability of supplementary feed at pasture may increase the likelihood of badgers coming into contact with your livestock when grazing.

There are measures you can take to make field feeding troughs more difficult for badgers to access [2]:

- only use the amount of feed that is needed for the day so that there won't be any left for badgers at night
- raise feed troughs to at least 90cm with sheer sides and no footholds to make it difficult for badgers to gain access
- clean and disinfect troughs regularly to prevent residue building up, which may be attractive to badgers
- mineral licks should also be raised to at least 90 cm. Mineral lick holders can be made or are available to buy. They should have sheer sides and no footholds.
- troughs/licks should not be placed where badgers can climb adjacent structures to gain access



Fig.1: Example of a standing feed trough with a badger exclusion mechanism fitted (i.e. rollers)

Mineral licks



Water sources at pasture

Natural water sources may potentially be contaminated by infected livestock or badgers and pose a risk to cattle if used as a water source. This is especially relevant if there are high levels of Bovine TB infected farms in the area as Bovine TB can survive in the environment for long periods, e.g. weeks to months, especially in cold and moist environments.

It is therefore strongly advised that mains water is used wherever possible.

Stagnant ponds and other areas where wildlife may drink, where possible these should be fenced off so that cattle can't use this as a water source.

With respect to water troughs at pasture, the same principles apply as for feeding troughs [2]:

- raise water troughs to at least 90cm with sheer sides and no footholds to make it difficult for badgers to gain access
- clean and disinfect troughs regularly to prevent residue building up
- troughs should not be placed where badgers can climb adjacent structures to gain access



Troughs close to banks provide easy access for badgers



Keep troughs out 1m from banks and fences

Further information and videos on any of the above mentioned measures are available here: **Practical guidance on biosecurity - Bovine TB | TB Hub**

Wildlife biosecurity at pasture

Deer

There is the potential for deer to be involved in the transmission of Bovine TB to cattle. However, the exact risk from deer is unclear as there is limited data on levels of Bovine TB excretion, local deer abundance and contact with cattle.

Deer infected with Bovine TB may appear in poor condition but, in many cases, they may have no obvious signs of disease.

For further advice and guidance on deer wildlife licensing in Northern Ireland, the NIEA Wildlife team can be contacted **Wildlife team | Department of Agriculture, Environment and Rural Affairs**

Badgers

Identifying badger activity at pasture

Badgers are a protected species in NI. Wildlife laws apply which do not permit intervention or population controls. Further information can be found here: **Wildlife law and you | Department of Agriculture, Environment and Rural Affairs.**

The main indicators of badger activity on pasture are [2]:

- **Badger setts**: badgers live in burrow systems called setts. Typically, each social group of badgers will have one main sett and several smaller, outlier setts in their territory. Setts are commonly found on well drained slopes, in woodland edges or hedgerows.
- **Badger latrines**: badgers deposit their faeces in small pits or holes in the ground called latrines. Generally, a latrine will consist of several pits, although in some cases there may only be one or two.
- **Badger runs and prints**: badgers are creatures of habitat and will regularly use the same paths producing runs which are often visible in long grass, or at points where they cross fences or hedges. You can often see clumps of badger hair (grey with a black tip) where a run passes under barbed wire fencing.



Sett easily accessible to cattle



Badger latrine with multiple dung heaps



Badger run, check either end of well-worn pads for latrines



Hair on wire is an indicator of where badgers are travelling





Examples of badger runs

Information and additional photos that can assist you with recognising badger activity signs are available here:

Advice on badgers | Department of Agriculture, Environment and Rural Affairs

Badger Field Signs

Alternatively, herd keepers can contact their local DVO office with a request for DAERA staff to carry out a badger survey on the farm. There is no cost for the herd keeper associated with this. Contact details for each office are available here: **DAERA Direct Regional offices | Department of Agriculture, Environment and Rural Affairs**

Badger biosecurity measures at pasture

In addition to the previously described measures limiting badger access to food and water sources at pasture, actions can also be put in place to limit cattle access to areas with badger activity at pasture, such as badger setts and latrines:

- Where there is evidence of badger runs/setts/latrines indicating high badger activity in certain fields, it is advised to limit the use of those fields for cattle or consider avoiding breeding stock and replacements from grazing these fields.
- Badgers spend a significant amount of time around sett entries and frequently visit latrines. These are high risk areas for cattle because they may be contaminated with Bovine TB.

If avoiding the use of pastures with high-risk areas is not practical, erecting electric fencing around latrines and badger sett entries are an effective way to minimise high-risk contact in areas with badger excretions.

Please note that any fencing must ensure that badgers can still safely enter and exit the setts and latrines as interference with their habitat is not permitted.

If necessary, the fencing can be moved to other fields when cattle are rotated around different pastures.

Measurement recommendations [2]: Standard stock electric fencing to provide a buffer between cattle and areas of regular badger activity:

- Wire (single or double strand) at a height of 80 cm from the ground to keep cattle out.
- Plastic electric fence posts spaced to keep cattle a minimum of 4 m away from badger activity (note: badgers can scent mark and urinate away from the visible pits).
- Fencer unit and battery with sufficient power to electrify the entire fence line.
- May require maintenance, such as mowing/strimming or sheep grazing, to prevent vegetation growth and a new edge to the pasture occurring.
- **IMPORTANT**: The fence should be a temporary structure, easily moved if badger activity ceases or moves.

Detailed information and photos can be found here: **Field badger fencing**





Fenced off badger setts in a field where cattle are grazing. Battery fencer for temporary use while cattle are grazing

Slurry Management

General information

Rules and regulation concerning slurry storage and application can be accessed here: **Regulation of agricultural activities | Department of Agriculture, Environment and Rural Affairs**

General biosecurity guidance on slurry and manure can be found in paragraph 12 of the **Biosecurity Code of Practice.**

Bovine TB bacteria may survive in manure for three weeks and in slurry for up to six months. Spreading slurry after storage for less than two months has been associated with an increased risk of Bovine TB.

Exposure to UV light and high temperatures from sunlight tends to kill the organisms, whereas cool, moist, dark conditions are protective and increase survival times.

Further information on the risk of slurry in Bovine TB spread can be found here [6]: **A review of the potential role of cattle slurry in the spread of bovine tuberculosis | Department of Agriculture, Environment and Rural Affairs**

Slurry biosecurity advice

- **Source**: Avoid spreading manure from other farms onto pasture, especially farms that are not classed as Officially Tuberculosis Free (OTF) as this may result in an increased risk of Bovine TB spread to the farm.

- **Storage**: Where possible, store manure and slurry for at least six months before spreading on pasture so that few, if any, Bovine TB bacteria will be present at the time of spreading. Manure and slurry should be stored in a secure structure that is inaccessible to domestic and wild animals. Following disposal of milk from reactor cattle to the slurry system, a minimum storage period of 6 months should be observed. [6]

Guidance on slurry storage is available here: **Silage Slurry and Agricultural Fuel Oil (SSAFO) storage | Department of Agriculture, Environment and Rural Affairs**

- **Treatment**: In circumstances where storage for at least 6 months is not feasible, cattle manure and slurry (and milk from reactors) may be treated by chemical disinfection. "Thick lime milk" is effective against Bovine TB. Concentrations of 11.25 to 20 kg calcium hydroxide per m3 are required for inactivation within 24 hours. This treatment should not have a significantly adverse effect on grass composition or silage quality. [6]

- **Spreading**: Where possible, only spread manure on arable land or pasture that is not going to be grazed by cattle for at least two or even three months. However, if manure/bedding is stored for 6 months it can be spread with immediate access by cattle. The same two or even three-month period also applies to grass cut for silage. If slurry is stored for six months it can be spread with immediate access by cattle allowed. Where six-months storage is not possible, a period of at least two or even three months should be observed before cattle are grazed or silage is cut on those fields. Spreading should not be carried out in windy weather to avoid aerosol spread to neighbouring fields and farms. [6]

- **Contractors:** Where slurry contractors are employed, any residual slurry from other farms poses an increased Bovine TB risk when entering your farm or spreading on your land. Whilst it is generally impractical to clean out tankers and pipes between each farm, it is prudent to ensure vehicles are clean before entering the farm, e.g. wheels, etc. If possible, when using contractors to spread, start spreading on fields that will not be grazed by cattle or cut for silage for at least two or even three months. This reduces the risk of residual slurry in the equipment directly or indirectly contacting the herd.

- **Slurry application method**: In order to minimise risk of spread during slurry application on land, it is important to minimise aerosol production by using a downward discharge method where possible, such as band spreading, injection or a trailing shoe. If using a method likely to produce aerosols which can travel long distances (i.e. splash plate), slurry application should be avoided when cattle are grazing in neighbouring fields. [6]



Avoid aerosols when spreading slurry

SUMMARY – Biosecurity advice on farmyard access

- Avoid direct contact with cattle from neighbouring herds through one of the following measures:
  - mutually agreed grazing patterns to avoid simultaneous grazing of cattle in neighbouring fields
  - ensuring a minimum 3-metre gap between fields using permanent fencing/hedges/ waterways or by using temporary double electrical fencing.

- Minimise the risk from wildlife by:
  - learning to recognise badger activity at pasture
  - avoid grazing in fields with signs of high badger activity
  - badger proofing feed troughs, water troughs and mineral licks
  - fencing off badger setts and latrines to prevent cattle from grazing near these high risk areas

- Follow the recommended guidelines for storage and spreading of manure and slurry, ensuring any shared equipment is adequately cleaned and disinfected before use.

Biosecurity advice on herd management

Management of sick animals and/or Bovine TB reactor/inconclusive animals

- Any animal showing signs of a potentially infectious disease and any animal disclosed as Bovine TB reactors or inconclusive animal should be isolated as soon as practically possible.
- Please note: in order to effectively isolate cattle, there must be no shared airspace, direct contact or shared water and feed troughs between the isolated cattle and the rest of the herd. It is strongly recommended that 'sick pens' or 'isolation pens' are independent structures and are **not**, for example, a pen within a larger shed or building used for other livestock.
- Calving areas should not have a dual function as sick pens. Any areas or pens used for calving should be strictly separated from any sick pens or isolation areas.
- There should be a well-maintained foot dip and hand washing and/or disinfecting wipes/gel at the entry of an isolation facility.
- It is advised to mark the isolation facility as being a sick pen/hospital pen or isolation facility to avoid unnecessary visitors.
- The management of the sick pen/isolation facilities should include cleaning and disinfecting the facility and all its equipment between different animals being placed or at the very least at regular intervals. This process should include emptying and cleaning of food and water troughs. Information on approved disinfectants for biosecurity purposes can be found here; **Approved Disinfectants | Department of Agriculture, Environment and Rural Affairs**
- Within the daily on farm routines, the feeding and attending sick/isolation pens should be done last to avoid spreading disease to healthy cattle.
- Additional information is available here: **Biosecurity Code for Northern Ireland Farms | Department of Agriculture, Environment and Rural Affairs**

Calf management

- **Colostrum:** Feeding milk from reactor or inconclusive cows is prohibited unless if it has been sterilized, as Bovine TB can be shed in colostrum and milk contributing to the spread of Bovine TB to calves. On-farm pasteurisation of colostrum and waste milk (typically at 63°C for 30 minutes or 72°C for 15 seconds) kills Bovine TB bacteria preventing the transmission of disease within the herd, including Bovine TB and Johne's disease, while retaining vital antibodies to boost the calves' immunity and prevent other diseases, such as pneumonia and scours. The instruction manual should be consulted on correct usage and calibration requirements.
- **It is not advised** to source colostrum from other farms or pool colostrum. Ideally, each calf receives its own dam's colostrum. In preparation for colostrum shortages, freeze colostrum for future use. Ensure the colostrum is labelled with the dam's number and date of freezing. Colostrum can be stored for up to 6 months. If a calf receives colostrum from a cow which is not its dam, it is important to keep records as this can be useful in future disease control. Alternatively, it may be prudent to avail of artificial colostrum.

- **Housing:** To limit the spread of disease within the farm, it is advised to, as far as practically possible, maintain fixed batches when moving animals through the production cycle. For the purpose of disease control, all animals with direct contact and shared airspace may be considered as a single batch. Housing with shared airspace between young stock and adult cattle should be avoided to minimise airborne disease transmission risk. When moving animals to different housing, the pens should have all bedding removed and be cleaned and disinfected before animals are moved into new housing. Information on approved disinfectants for biosecurity purposes can be found here; **Approved Disinfectants | Department of Agriculture, Environment and Rural Affairs**

- **Farm routines:** Within the daily on farm routines, the feeding and attending to stock should be done from young to old. Attending to young stock should be done first to avoid spreading of disease from higher risk older stock to young stock.

Store and finisher management

- **Housing**: Where possible an 'all-in-all-out' system should be applied, where cattle from similar risk groups (age, origin, buying-in date) are grouped together and stay in those groups throughout the fattening cycle. The housing should be cleaned and disinfected between groups to avoid spreading disease between batches. This process should include emptying and cleaning of food and water troughs. Where it is not possible to clean and disinfect between batches, all housing should be effectively cleaned and disinfected at least annually. Information on approved disinfectants for biosecurity purposes can be found here; **Approved Disinfectants | Department of Agriculture, Environment and Rural Affairs**

- **Farm routines**: Within the daily on farm routines, the feeding and attending to stock should be done in order from youngest group to oldest groups to avoid spreading of disease from higher risk older stock to young stock.

Adult cattle management

- **Housing**: All adult cattle housing should be effectively cleaned and disinfected at least annually. This process should include emptying and cleaning of food and water troughs. Information on approved disinfectants for biosecurity purposes can be found here; **Approved Disinfectants | Department of Agriculture, Environment and Rural Affairs**

- **Farm routines**: Within the daily on farm routines, the feeding and attending to stock should be done in order from youngest to oldest to avoid spreading of disease from higher risk older stock to young stock.

Replacement policy

Genetics

When using artificial insemination for replacement breeding stock it is strongly advised to consult the genetic index listing of semen to make informed decisions to breed from bulls which have an improved resistance to Bovine TB. In NI, this is recorded as the TB advantage Score. The higher the score (maximum 3+) the greater the resistance to Bovine TB. Bulls with a score of less than 0, are more susceptible to Bovine TB so should be avoided. It important to use the TB advantage score alongside other desirable attributes rather than the deciding feature.

Further information is available here: **https://www.srgni.com/**

Resolved TB Inconclusive Animals (ICs)

Animals, which initially tested inconclusive to the Bovine TB skin test and later retest as negative, still pose an increased risk of infection compared to consistently negative cattle. It is advised to consider voluntary culling such animals at the earliest opportunity or, at the very least, for breeding animals prioritise their removal if these animals have other health issues such as lameness or fertility problems.

Disease carriers

A disease carrier is defined as an animal positive for a disease, e.g. IBR, BVD, Johne's or mastitis, for more than 3 weeks that may spread the infection to other animals. It is essential that animals are culled as soon as possible as their compromised immune status will generally make them more susceptible to Bovine TB.

Feed management

Contaminated feed can be a significant source of disease spread due to ongoing contact with a large proportion of the animals on farm.

It is important to consider the following biosecurity measures within the on-farm feed processes:

- **Source**: Avoid sourcing roughage (e.g. silage, hay, straw) from other farms, especially farms that do not have Officially Tuberculosis Free (OTF) status. Similarly to sourcing cattle, it is advised to discuss the Bovine TB history of the herd and the area from where the roughage is sourced. For example, if silage is contaminated with Bovine TB, it is well adapted to surviving the fermenting process and remaining viable for long periods and is able to revert to an active infective state within hours. [7]

- **Contamination**: slurry is an important Bovine TB contamination risk when feeding cattle, especially in farms restricted for Bovine TB, e.g. tractors driving through the feed passageway or waste seeping into feeding areas located outside of cattle houses. Research suggests that Bovine TB can survive in stored slurry for up to 6 months [8]. Feeding barriers can be put in place to minimise contamination when feeding outside the cattle house.



Contamination risk from tractor driving through feeding passage



Barrier to prevent silage contamination

- **Maintenance**: it is important that feeding troughs and drinkers are regularly emptied, cleaned and disinfected, especially when the herd is restricted for Bovine TB. Information on approved disinfectants for biosecurity purposes can be found here; [Approved Disinfectants | Department of Agriculture, Environment and Rural Affairs]

- **Shared equipment**: when using contractors or shared/hired equipment for example during silage cutting, it is essential these are cleaned and disinfected before use. The next chapter provides further guidance on this.

Cattle handling facilities, shared/hired equipment and machinery management

Cattle handling facilities

Adequate handling facilities should be in place to facilitate safe and effective handling of cattle for the purpose of Bovine TB testing. Inadequate testing facilities may result in insufficient cattle restraint and in turn reduce the quality of the testing and the sensitivity of the skin test, with the inherent risk of undisclosed Bovine TB reactors remaining on farm for a prolonged length of time. Advice on safe cattle handling facilities is available here: **Safe Cattle Handling Guidance | Department of Agriculture, Environment and Rural Affairs**

Ensure all handling facilities are effectively cleaned and disinfected between use, this includes races, gates, pens and collection yards. Information on approved disinfectants for biosecurity purposes can be found here; **Approved Disinfectants | Department of Agriculture, Environment and Rural Affairs**

Shared or hired equipment/machinery/handling facilities

Hiring or sharing of handling facilities with other farms should be avoided where possible in order to minimise the risk of disease spread between herds.

Clean and then disinfect any farm machinery and equipment between every use where these were shared, ensuring pressure washers, brushes, hoses, water and disinfectant are readily available and in good working condition.

This includes sharing of:

- Vehicles
- Silage machinery and equipment
- Clipping equipment
- Hoof trimming equipment
- Ultrasound scanners for pregnancy
- Calving aids
- Portable crush/race/run

Information on approved disinfectants for biosecurity purposes can be found here; **Approved Disinfectants | Department of Agriculture, Environment and Rural Affairs**

Bovine TB risk from co-located non-bovines on farm

General information

Where certain non-bovines are co-located on cattle farms, these may pose an increased Bovine TB disease risk to the cattle herd due to their susceptibility to Bovine TB and the absence of a legally required national testing regime, meaning disease in these species can go undetected for a prolonged period of time.

Bovine TB mainly affects cattle but it can also infect and cause disease in deer, goats, pigs and camelids (llamas and alpacas), as well as many other mammals and pets such as cats and dogs.



Confirmed cases of Bovine TB have been reported in camelids, deer, sheep and pigs with most reports received from abattoir post-mortem reports or investigative post-mortem submissions.

Camelids (llamas, alpacas) and deer are very susceptible to infection with Bovine TB and can act as an infection reservoir for co-located cattle. Further information is available here: **Bovine TB in Non-bovine Livestock | Department of Agriculture, Environment and Rural Affairs**

TB in non-bovine species - Bovine TB | TB Hub

Biosecurity advice

Farm animals

Where co-located high risk non-bovines are kept on cattle farms it is important to consider the following advice:

- Segregate the housing, grazing and management of the non-bovines from the cattle as much as practically possible, i.e. no shared airspace during housing, avoid using the same fields to graze cattle, avoid sharing handling/feeding/watering/clipping equipment, etc.

- Privately organised and paid for annual testing of the co-located non-bovines to allow for early disease detection and removal of infected animals. Please note that PVPs must apply to the local DAERA Office for permission to carry out tuberculin testing in any non-bovine species. Non-negative test results for any test for Bovine TB must be reported to the local DAERA office. Information on testing techniques and intervals for non-bovines is available here: **TB in non-bovine species - Bovine TB | TB Hub**

- Promptly isolate any non-bovine animal that shows signs of an infectious disease
- PVPs and herd keepers are advised to consider appropriate PPE when examining or handling animals suspected of Bovine TB infection.

Pets

In respect of farm pets such as cats and dogs, if your pet is infected with Bovine TB, it may show signs of disease which include coughing, wheezing and/or weight loss. Lumps, abscesses or bite wounds which fail to heal, especially those around the head and neck, can also be caused by Bovine TB and are most frequently seen in infected cats. [2]

Potential sources of infection are raw milk from TB reactor animals or bite wounds from wildlife.

Further details are available here:

TB in Pets | Department of Agriculture, Environment and Rural Affairs

TB in Cats & Dogs - Bovine TB | TB hub UK

https://vet.ed.ac.uk/clinical/small-animal/cat-tb

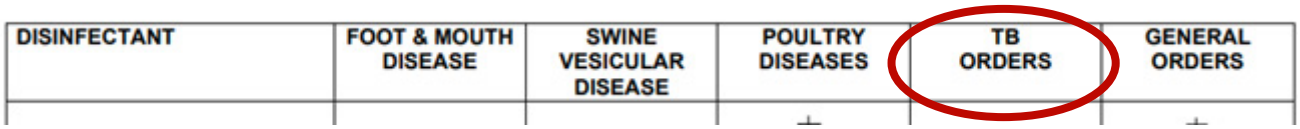
The Private Veterinary Practitioner (PVP) should be consulted where a pet is suspected of being infected with Bovine TB. PVPs are advised to consider appropriate PPE when examining such animals. Veterinary treatment of infected pets is strongly discouraged due to the infectious nature of the disease to both humans and animals and risk of promoting antimicrobial resistance in the limited selection of antimicrobials effective in the treatment of Bovine TB. In any case, treatment is not permitted unless under licence from DAERA.

Advice on the use of disinfectant

Check if your disinfectant is approved for use against TB and check its dilution rate in the table. For example, for FAM-30 this is 1:14. This means the number of parts of water (14) to one part disinfectant.

Information on approved disinfectants for biosecurity purposes can be found here; **Approved Disinfectants | Department of Agriculture, Environment and Rural Affairs**

Identify disinfectants approved under the TB control order within the list and verify their dilution rate:



DISINFECTANT	FOOT & MOUTH DISEASE	SWINE VESICULAR DISEASE	POULTRY DISEASES	TB ORDERS	GENERAL ORDERS

SUMMARY – Biosecurity advice on herd management

- Ensure Bovine TB reactor/IC animals are promptly and strictly isolated in separate housing with no shared airspace with the remaining cattle herd.
- All cattle housing and feed/water troughs should be effectively cleaned and disinfected between batches or at least annually, using **an approved disinfectant**.
- On-farm pasteurisation of colostrum and waste milk aids significantly in preventing the transmission of diseases within the herd.
- Avoid sourcing roughage (e.g. silage, hay, straw) from other farms.
- Within the daily on farm routines, the feeding and attending stock should be done in order from youngest to oldest to avoid spreading disease from higher risk older stock to young stock.
- Sharing or hiring of vehicles/equipment/machinery/handling facilities should be avoided or be subject to effective cleaning and disinfection prior to use.
- Replacement policy of breeding stock should consider the use of a genetic index, such as Bovine TB advantage and higher risk Bovine TB animals, such as ICs, should be culled at the earliest opportunity.
- Strict segregation and privately paid annual testing of certain high risk co-located non-bovines should be considered to minimise any potential risk of Bovine TB spread to the cattle herd.
- Attention should be paid to potential signs of Bovine TB infection in non-bovine farm animals and pets. The Private Veterinary Practitioner (PVP) should be consulted where an animal is suspected of being infected with Bovine TB and appropriate PPE should be worn.

Useful resources and training materials

Tuberculosis (TB) Portal | Department of Agriculture, Environment and Rural Affairs

Biosecurity Code for Northern Ireland Farms | Department of Agriculture, Environment and Rural Affairs

Approved Disinfectants | Department of Agriculture, Environment and Rural Affairs

TB hub - Bovine TB Advice & Tuberculosis Information for Cattle Farmers

Safe Cattle Handling Guidance | Department of Agriculture, Environment and Rural Affairs

The application of low emission slurry | Department of Agriculture, Environment and Rural Affairs

Low Emission Slurry Application - CAFRE

105422-CAFRE-Technical-Note-LESSE.pdf

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Annex A – Purchasing check list

Checklist		
Was the last clear herd test less than 6 months ago	Yes	No
Has the herd been OTF for more than 3 years	Yes	No
Does the next herd test indicate a lower risk origin, e.g. annual herd test (AHT)	Yes	No
Is the herd currently not at risk to any other TB breakdowns (e.g. LCT, FCT)	Yes	No
In case of a recent TB breakdown, was the breakdown classed as OTS (not OTW)	Yes	No
Was the animal pre-movement tested (herd keeper can, discuss results with PVP, e.g. bovine bias history)	Yes	No
Has the animal NOT attended any shows or sales since the last TB test	Yes	No
In case of a bull, has the animal NOT resided in any other herds since its last TB test	Yes	No
Will the animal move directly from farm of origin to farm of destination	Yes	No
No other risk factors, e.g. were the animals cohorts of reactors disclosed in the previous 2 years	Yes	No

Answering yes to any of the questions indicates a lower risk situation.

It is important to review all the answers and decide:

- **Whether or not to go ahead with the purchase, e.g. if the animals are intended as breeding stock, the risk to all other stock should be taken into consideration**
- **If the purchase goes ahead, it is advised for the animal to be isolated and privately tested after 42 days prior to mixing with the herd**

For further information:

Bovine TB Programme Management Office
Jubilee House
111 Ballykelly Road
Ballykelly
BT49 9HP

Email: TBTransformationProgramme@daera-ni.gov.uk
www.daera-ni.gov.uk



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Agriculture, Environment and Rural Affairs

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