

Biosecurity on Sheep Farms

The components of a biosecurity program are all good management practices that can increase the profitability of your sheep farming operation. A good biosecurity regimen should always be in place to improve your farm efficiency, protect neighbouring farms and the countryside, and safeguard animal and human health.

Biosecurity is not just to protect farm animals; it is also to protect you, your family and your farm workers. Disease is not always apparent, especially in its early stages. Any person visiting a sheep farm and not carrying out effective biosecurity measures on entry and on leaving a premises runs the risk of spreading diseases to or from that premises.



Fig 1: These purchased sheep are incubating diseases that could have devastating effects on your farm profitability.

Infectious diseases can be spread between sheep farms by:

- Introduction of diseased sheep
- Introduction of sheep incubating disease
- Introduction of healthy sheep that have recovered from disease but are now carriers
- Vehicles, equipment, clothing and footwear of people (veterinarians, contractors, other farmers, salesmen, service personnel) who move between herds
- Feedstuffs, especially high risk feedstuff which could be contaminated with faeces,

- Impure water (surface water, streams and rivers etc.);
- Manure handling and aerosolized manure and dust; and
- Other species such as dogs, cats, wildlife, rodents, birds and insects.



Fig 2: A key biosecurity objective is to prevent (or minimize) cross-contamination of an animal's infected body fluids (products of abortion, faeces, urine, saliva, respiratory secretions, wool etc.) to other animals, feed and equipment

What is biosecurity?

Biosecurity and biocontainment are words describing programs for infectious disease control:

Biosecurity - aims to reduce/prevent the introduction of new diseases onto a farm from outside sources. Alternatively, 'biosecurity' is the prevention of disease-causing agents entering or leaving any place where farm animals are present.

Biocontainment - aims to reduce/prevent the movement of infectious diseases on the farm

Biosecurity principles

Biosecurity has four major components:

- **Select** all necessary purchased sheep from known sources and/or health status to reduce the risk of infection
- **Isolation.** Strict isolation prevents contact between groups of sheep after arrival on farm and reduces the risk of spread of infectious agents.

- **Movement control** - includes all vehicles, animals, and people traffic that could introduce infection onto your operation.
- **Sanitation** - the disinfection of materials, people and equipment entering the farm and the cleanliness of the people and equipment on the farm.



Fig 3: Is abortion in my flock costing me money?

Selection of purchased animals

Know the health history of the flocks from which sheep are purchased.

Know the health status of sheep brought into your farm.

Never bring in sheep without knowing their vaccination history

Limit purchases to ewe lambs and gimmers, not older sheep

Isolation

Quarantine all new arrivals for at least 30 days and preferably until after lambing

Ensure that sheep do not share community pastures/common grazing

Ensure that sheep do not share fence lines with neighbours' sheep.

Movement control

Ensure that methods of working are designed to minimise where possible the movement of people, vehicles or equipment into areas where sheep are kept.

Keep a record of visitors to your farm

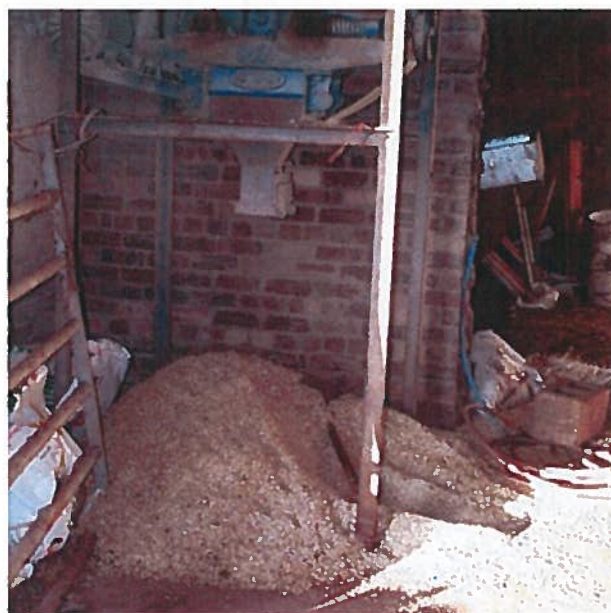


Fig 4: Is this feed store secure?

Fig 5: Which parasites could this Scottish halfbred ewe-lamb have introduced onto my farm?

Sanitation

- Attempt to prevent manure contamination of feed.
- Use different equipment to feed and to clean pens or completely clean between use.
- Routinely clean and disinfect feeding equipment and sheep handling/shearing/foot trimming equipment.
- Never step in the feed bunk.
- Transport sheep in clean vehicles, preferably your own.
- Loading area is located at the perimeter of the farm.
- Collection of fallen stock is located at the perimeter of the farm.



Fig 6: "I have never had to drench my purchased gimmers before." (See below)

How do I design a biosecurity program?

- As part of your flock health plan:
- Develop a written risk assessment of your farming operation, facility and management practices.
- With the help of your veterinary practice identify the level of any infectious diseases already existing on your sheep farm.
- Identify and prioritize in writing those diseases targeted for control through your biosecurity program.
- Assess the diseases not present on your operation and prioritize those you wish to continue to exclude.
- Review your facilities with your veterinarian to determine the risk level for disease transmission or movement and write down a prioritized list of biosecurity objectives.
- Work with your veterinary practice to develop a written biosecurity plan that meets your needs.
- Inform all farm staff how to implement the plan.
- Review and update this written plan on an annual basis.

Biosecurity at livestock markets and shows

The spread of disease is a serious risk at livestock markets, where animals come into close contact with other, potentially infected, livestock or equipment. There are a number of measures which should be taken to minimise this risk:

- Do not bring onto or take off the market any vehicle, equipment or clothing contaminated with animal excreta.

- Do not leave the animal area without cleaning any contamination from your clothes
- Do not leave the animal area without cleansing and disinfecting your boots

Defra's publication [Biosecurity Guidance](http://www.defra.gov.uk/farm/livestock/biosecurity/index.htm)

(<http://www.defra.gov.uk/farm/livestock/biosecurity/index.htm> PDF 266 KB) contains information for everyone entering a farm on which livestock is kept to minimise the spread of disease.

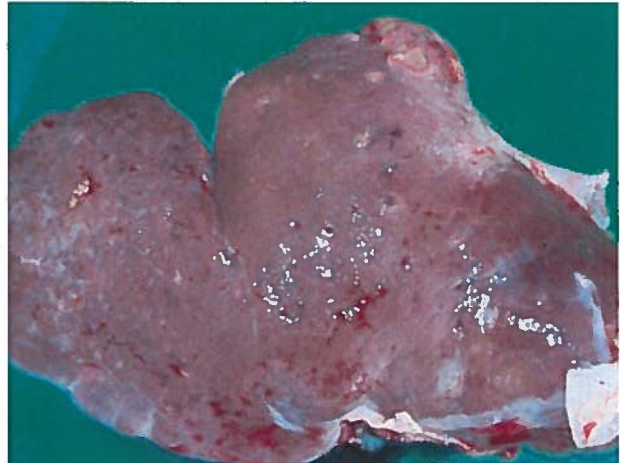


Fig 7: Fluke-infested liver from the gimmer featured above.



Fig 8 (above) & Fig 9 (below): "I have never seen this foot disease until I bought that lot of store lambs"- Contagious Ovine Digital Dermatitis (CODD)

"PREVENTION IS BETTER THAN CURE"

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SPECIFIC DISEASE CONTROLS

Bluetongue

Current advice from DEFRA states that BTv8 vaccination in England and Wales is the only effective way for individual farmers to protect the welfare of their animals and their own livelihood against Bluetongue (compulsory vaccination presently operates in Scotland). The nature of this disease is such that keepers cannot rely on their neighbours' vaccination: midges can be carried by winds and by human activity. The only sure way to protect against Bluetongue is for farmers to vaccinate their own animals.

Internal parasites

All purchased sheep must be treated for internal parasites (parasitic gastroenteritis; PGE) and liver fluke (based upon risk) immediately upon arrival on the farm.

Parasitic gastroenteritis

All introduced sheep should be assumed to be sources of multiple anthelmintic resistance and be treated with an effective anthelmintic on arrival and yarded for 48 hours to ensure that any viable nematode parasite eggs have been voided before they are turned onto pastures which might be grazed by sheep within the next 6 months. The current options are to use a combination of anthelmintic drugs with different mechanisms of action (a group III macrocyclic lactone (ML) and levamisole [group II]), or moxidectin.

Fluke

Triclabendazole is highly effective at killing all stages of flukes responsible for acute fasciolosis. Nitroxylin, closantel, and oxclozanide are less effective against immature flukes and should be used only in the treatment of subacute and chronic fasciolosis.

External parasites

Sheep scab

Plunge dipping in diazinon dips kills scab mites within 24 hours and provided that sheep are correctly plunge dipped affords residual protection for several weeks. This method has the added advantage of eliminating louse infestations.

Two subcutaneous injections, seven days apart, of 200 µg/kg ivermectin, provide effective control of sheep scab. A single intramuscular injection of doramectin at a dose rate of 300 µg/kg of doramectin achieves some persistence but may occasionally be insufficient to provide protection against re-infection for the whole 17 day period during which the scab mite can survive off the sheep. A single subcutaneous injection of moxidectin at a dose rate of 200 µg/kg provides residual protection against sheep scab for at least 28 days, although the UK data sheet recommends two injections 10 days apart for the treatment of disease outbreaks. An alternative treatment for lice is necessary.

Lice

Louse infestations can be eliminated by plunge dipping or pyrethroid pour-on preparations.

Contagious causes of abortion

Enzootic abortion of ewes (EAE), *Chlamydophila abortus* infection

Freedom from *C. abortus* infection is best achieved by maintaining a closed clean flock with strict biosecurity.

Various accreditation schemes offer breeding female replacements from flocks declared free of *C. abortus* infection but careful consideration must be given to establishing a clean but susceptible flock when the health status of neighbouring flocks cannot be guaranteed. Vaccination offers the best means of control for farms buying breeding replacements from non-accredited sources.

Salmonella (*Salmonella abortus ovis*) and *Campylobacter fetus* subspecies *fetus* (*intestinalis*) and *Campylobacter jejuni*.

Prevention is best achieved by maintenance of a high health status closed flock; where this is not possible purchased sheep must be kept segregated until after lambing.

Foot problems/lameness

Footrot

Wherever possible sheep producers should maintain a closed flock to prevent purchasing diseased sheep. If purchases are essential, ewe lambs should be bought from known sources rather than old ewes which are often chronic carriers. All purchased stock must be quarantined for one month and examined for footrot before introduction into the main flock. Footbathing, in either 3 per cent formalin or 10 per cent zinc sulphate, should be undertaken three times during this quarantine period.

Contagious ovine digital dermatitis (CODD)

Contagious ovine digital dermatitis has been introduced onto many sheep farms with severe consequences in terms of numbers of sheep affected, severity of lesions and poor response to conventional treatments.

Control of this condition depends on regular inspection of all purchased sheep during the quarantine period, the isolation of any sheep found to be lame and prompt treatment with a suitable antibiotic recommended by your veterinary surgeon. You should be aware that this may have to be actually administered by a veterinary surgeon.

The treated animal(s) should be re-examined at intervals to assess efficacy of treatment

Respiratory tract diseases

Bacteria causing the common sheep respiratory infections, such as pasteurellosis, are ubiquitous and are best controlled by vaccination.

Sheep pulmonary adenomatosis (syn: Jaagsiekte, pulmonary carcinoma)

Sheep pulmonary adenomatosis (SPA) is a contagious tumour of the lungs of sheep. Disease transmission is facilitated by close confinement and can be a significant problem where sheep are housed for long periods during the winter months.

Prevention can be effected by maintaining a closed disease-free flock with double ring fencing. Purchase of breeding replacement stock is the major risk factor. Sourcing replacement stock from flocks free from SPA has obvious advantages but confirmation of such status in the absence of serological tests is not possible. Biocontainment involves housing sheep for the minimum time and grouping sheep on age rather than scanned litter size or lambing date wherever possible.

Caseous lymphadenitis

Shearing equipment and other handling facilities, such as mobile plunge dippers and feeders are much less important as vectors for disease than purchased animals, which must be inspected before purchase and quarantined for at least two months. The disease is characterised by suppurative necrotising inflammation of superficial lymph nodes particularly the parotid lymph node at the base of the ear.

Scrapie

The National Scrapie Plan no longer operates in the UK. There are many more important diseases upon which to base genetic selection. Purchase sheep from flocks known to be free of scrapie but this is not a major concern.

Visna maedi virus

Visna maedi virus (formerly maedi visna virus). In countries such as the UK, MVV flock control measures are limited to a relatively small number of pedigree flocks. No specific control measures have been adopted by commercial UK farmers for MVV. Purchase accredited pedigree sheep where necessary but no such commercial sheep are available.

Johne's disease

There is no practical method to screen young sheep for Johne's disease and the best means of controlling disease is maintain a closed flock or continue to purchase stock from farms where disease has not arisen in their sheep.

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