



Policy brief on barriers to best fit biosecurity practices for sheep keepers in remote areas



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Summary

This biosecurity policy brief has been compiled following engagement with industry stakeholders and crofters. The research team has held an online living lab meeting with a diverse group of stakeholders. In addition five in person workshops were held on Lewis and Harris with 35 participants. These meetings gathered reflections on the understanding of biosecurity, barriers to use and external disease risk to livestock.

The term 'biosecurity' needs to have a clear standard meaning.

Biosecurity was not a term recognised by everyone and where definitions were forthcoming the associated meaning often varied. The confusion means that messaging around, and the uptake of, measures is difficult to communicate and quantify. A wide casting discussion is recommended on an alternative term that could enhance the engagement of farmers with measures to protect their farms.

There is a recognition that different farming situations will have different needs and abilities to implement biosecurity guidelines. **Implementation of different levels of biosecurity** will help farmers align themselves to different standards. The use of 'gold, silver and bronze' or 'best, good and basic' biosecurity levels will aid understanding and uptake of practices. Together with the naming of the levels there needs to be clear practical descriptive advice associated with each level.

The practical ability to implement biosecurity measures on farms varies depending on the farming contexts. To help increase uptake of biosecurity practices the **concept of 'best-fit'** needs to be embraced to allow farmers to find farm specific measures to mitigate the risk of disease spread both on- and between farms.

Consideration needs to be made to both messaging and format of the messages used to convey biosecurity related guidelines to farmers. Not all farmers engage through formal organisations or read reports. Visual, infographics and audio formats are useful medias to convey important information to the various communities.

Biosecurity needs to be considered and managed at different scales: farm; community; island; region and national levels are all important and require different messages.

Stakeholders recognised **trigger events that prompt increase in uptake of biosecurity measures**, given a high profile in news coverage encourages farmers to take action. For example Avian Influenza exclusion zones, resistance to medications, withdrawal of treatments and diagnostics.

External factors were identified in potential disease outbreaks as areas that could be managed to lower biosecurity pressure on and between farms. For example, wildlife (especially deer and geese) could be controlled to prevent disease spread. Information campaigns for leisure users highlighting how they may pose a potential disease risk and how they can mitigate those risks may be required.

Policy Recommendations

We recommend the following policy and research pathways to supporting better uptake of biosecurity measures

1. Clear **standard meaning for the term 'biosecurity'** with associated practical descriptions.
2. Uptake of **biosecurity levels and the option to create bespoke 'best-fit' biosecurity measures** in different farming settings.
3. Development of **clear messaging using novel formats to reach a wider audience**. Social research can explore the use of different formats to engage a wide audience.
4. Reporting of **case studies and statistics highlighting target diseases that are impacted by poor biosecurity**.
5. External factors impacting heavily on biosecurity pressure should be explored. **Wildlife control measures** need careful consideration to help farmers. Whilst external land users could be encouraged to be more aware of their actions.



Introduction

Many organisations publish biosecurity guidelines as downloadable resources. These guidelines provide information on biosecurity, as a set of **'management practices or measures'** that can be used to 'collectively reduce the potential for the introduction or spread of disease-causing agents onto and between farms. Although guidelines, similar to those published by the [Scottish Government](#), are widely available, they are often generic covering all sectors of livestock. It should be noted that there are some examples of guidelines for specific species e.g. [NADIS](#) provide guidelines for sheep biosecurity. Biosecurity guidelines also cover all types of livestock holdings, from large commercial units to smallholders, hobby farmers and crofters, where the contexts and access to resources may be widely different. The global definition for biosecurity measures (Huber et al 2022) is helpful for high level discussions but has little to do with practical implementation. It has been suggested **levels of biosecurity with good practical descriptions** would be useful, although these may be difficult for livestock keepers to put into practice in some circumstances. For very small numbers of sheep, large scale biosecurity measures might seem impractical.

Bespoke 'best-fit' biosecurity measures

How stakeholders identified biosecurity measures will vary depending on the context of the farming operation. Halloway (2019) recognized that **biosecurity is both conceptualised and practiced differently** in the different agriculture contexts. In the pig industry smallholders see large scale livestock production as a 'risky disease situation' and large-scale producers identify smallholders as a potential source of disease spread due to their reduced knowledge and lack of resources.



Figure 1: Moredun staff offering training during an evening workshop on Harris (October 2022)

The practice and the perception behind uptake of biosecurity measures varies, indicating that livestock keepers need to be able to create **bespoke or 'best-fit measures that are practical for them to implement.**

Skills

This idea of skills, or lack of them, was raised by the Crofters, they identified the **skill of 'stockmanship'** has been lost for some crofters, whilst new people to crofting find it difficult to source the knowledge. The use of **'skilled knowledge'** has long been recognized as important in detecting disease outbreaks in livestock especially in sheep flocks where sheep scab, caused by the sheep mites, requires early identification to reduce spread (Middelveld et al 2021). Opportunities to share knowledge (**peer-to-peer**) would be helpful to train new crofters that are not familiar with the skills or knowledge of the traditional 'stockmanship' needed for crofting. Additionally, experts could be brought in to update skills such as faecal egg counting (Fig 1) and develop new skills to manage innovative technologies and treatments.

Scale

Often the scale of the livestock holding and therefore operation and associated difficulties need to be considered. Large commercial producers **apply biosecurity measures on a farm level** or whole livestock level, they operate as one entity in a larger agricultural community. The smallholders or hobby farmers that keep sheep, **treat animals as individuals** (often knowing them by name) and less often as a whole farm, they are often positioned on the periphery of the agricultural community. The crofters are in a unique position where they may have small numbers of sheep, but these are held with others on the common grazing. They are not treated on an individual basis and often not at a flock or farm level but in most cases at a **community level**. Although this practice is diminishing as the traditional community practices reduce and the community come together less often, except during the gathering, the community wide caring for livestock has to some extent disappeared. In the past the remoteness of the crofting communities has helped isolate them from the greater agriculture community but the lack of control of livestock arriving on the islands leaves them open to disease. On some of the islands, Shetland for example, bye-laws ([Shetland Animal Health Scheme \(SAHS\)](#)) allow incoming livestock to be checked by vets and some treatments to be administered prior to dispersal to livestock holdings, treating livestock at **an island level**.



Messaging

The Animal Hub living lab (ANIHUB LL), which consisted of a diverse stakeholder group, identified several key points on communicating with farmers, smallholders and crofters on animal disease spread and biosecurity practices. The messages around **biosecurity need to be clear and targeted**, with descriptions relating to practical advice.



Figure 2: Examples of current messaging on disease control

A variety of formats are required (Fig 2) as many individuals don't have the time or inclination to read pages of text. In fact **several formats might be useful to reach a wider audience**. A planned campaign would help bring the topic of biosecurity to the attention of people and encourage discussion. Media coverage would help to disseminate the overall context of the message and increase the impact of the campaign. Recent literature on farmer behaviour identifies people respond better to positive compared to negative messages. **Positive messages stressing the benefits** of adopting particular behaviours are key in changing farmer behaviour (Rose and Morris 2018).

Risks

Risks external to the farming system are becoming more difficult to control solely by farmers. Although some risks can't be controlled (e.g. leisure users), there are many other factors that could be controlled: external contractors; visiting vets; deadstock collector (where they are a legal requirement) could have restricted or controlled access if the farmers make them

aware of key operating guidelines.

Practical interventions to manage risk could include: moving access points for external contractors to the edges of properties (e.g. delivery collection); cleaning equipment in between farms and providing hard standing areas to clean vehicles and larger pieces of equipment. Also providing hot water and disinfectant are thought to be easier measures to implement.

The more difficult areas to mitigate risk are the **increased numbers of leisure users** that have been visiting since the COVID pandemic. These users seem to have limited awareness of farming practices and their potential impact, increased use of signage and information campaigns should be encouraged.

Lastly **wildlife especially deer and geese are perceived as causing increased risk to disease spread**, farmers and particularly crofters have little possibility in controlling numbers. Deer on the Western islands have rapidly increased in numbers, which is thought to have resulted in increased tick numbers causing livestock losses. Geese have moved from being migrating visitors to permanent residents causing loss of grazing and spreading disease. Changes in controlling these wildlife species are required to manage numbers.

Isolation

In addition one practical suggestion was discussed several times. The crofts on Lewis and Harris are isolated due to their geographical location (based on an island). Livestock can only enter by boat and the ferries ask for records of livestock being transported. This offers an opportunity, similar to Shetland, to **monitor livestock being introduced** to the holdings and to mitigate the risk of disease spread.

To take this forward, a cross island visit to assess the possibility of developing a similar procedure is suggested.

Trigger Events

The ANIHUB LL was asked to identify **trigger events** that result in farmers making behavioural changes. Trigger events have been recognised as a factor in causing farmers to move from their path dependency (normal 'business as usual') to active assessment and implementation of new biosecurity measures (Sutherland et al 2012).



Amongst those events identified were: withdrawal of medications or diagnostics; significant regional/island disease outbreaks; isolation of resistant organisms in the environment and from livestock; reporting of case studies that highlight disease spread linked to low use of biosecurity measures.

Many of the trigger events identified have a high probability of occurring. Research into case studies with subsequent media coverage of the findings would help to highlight potential trigger points before they become more widespread trigger events. Stakeholders and crofters have indicated their support in being involved in case study activities and identifying potential case study opportunities.

Conclusion

This policy brief has explored biosecurity practices currently in use and barriers to their further uptake. To gather data and reflections to inform this process, the issues have been discussed during several stakeholder interactions both face to face and virtual. The summary identifies the policy recommendations that address the discussed issues.

Clear messaging and varied formats to deliver messages on biosecurity practices will be co-developed with the ANIHUB Living Lab stakeholders. This will explore both message content, tone and format of the messages. A campaign of delivery will target audiences to trigger change and encourage the uptake of best-fit biosecurity practices on a range of remote livestock holdings. The success of the campaign will be monitored to build on positive responses to increase audience engagement.

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