



FINFISH BIOSECURITY MEASURES PLAN

Guidance and templates for
finfish farmers and traders





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Cefas would like to thank the Environment Agency for their permission to use an example from their farm biosecurity plan.

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BIOSECURITY GUIDANCE

Information to aid you in completing a
biosecurity measures plan

Introduction

The application of biosecurity in aquaculture is a shared responsibility, where each individual involved plays a different but critical role in the implementation of the overall programme¹. In order to be effective, biosecurity is necessary at all levels within the aquaculture industry, from control of the spread of infectious disease at an international level, to the development of national controls and down to operation of suitable practices at a local level. In these terms, the World Organisation for Animal Health (OIE) monitors the international status of diseases, our government (through Cefas) is responsible for controlling biosecurity within national limits, and Aquaculture Production Businesses (APBs) are responsible for biosecurity within their enterprises.



The key elements of biosecurity include; practical and appropriate legislative controls, adequate diagnostic and detection methods for infectious diseases, disinfection and pathogen eradication methods, reliable high quality sources of stock; and best management practices².

At the local level, implementation of an effective biosecurity measures plan is essential in reducing the risk of disease introduction to an APB. This follows the fundamental principle that prevention is better than the cure, which is also a cornerstone of the GB Animal Health & Welfare Strategy published in June 2004. In addition, it is widely accepted that fish disease prevention is cheaper than the cure.

The Aquatic Animal Health (England and Wales) Regulations 2009 recognises the importance of effective biosecurity measures in restricting the spread of disease. It requires APB operators to implement a biosecurity measures plan as a condition of their authorisation.

These guidelines are designed to help the APB operator identify biosecurity measures that might be applicable to their site. It describes biosecurity measures that can be implemented by fish farmers and traders, and includes a template to enable APB operators to develop and operate a meaningful plan of their own.

1. Appointing a biosecurity manager

Identify an individual with the responsibility to ensure biosecurity measures are implemented at an APB, or over several APBs if the business is made up of more than one site. The biosecurity manager is responsible for producing and maintaining a biosecurity measures plan, as well as demonstrating its effectiveness through use of good record keeping (see Section 7). Additional responsibilities include ensuring staff are trained in biosecurity issues and visitors are aware of measures that apply to them. It is good practice to appoint a deputy in the event that the manager is unavailable.

2. Veterinary health contacts

The biosecurity manager should identify a veterinarian, and if appropriate a fish health consultant with specialised knowledge of fish health issues. The manager should endeavour to establish a good working relationship with their nominated veterinary professionals.

3. Providing staff training in fish health management and disease recognition

A fundamental requirement when identifying risks to your APB is an awareness of the following; diseases that can affect your stock, clinical signs of disease, host susceptibility and the range of environmental parameters that could precipitate clinical outbreaks. Staff training and periodic refresher courses will facilitate better disease recognition in fish stocks, and informed and trained staff will be of greater benefit to the business. Training should be through continuous learning rather than a one off exercise.

Information on fish diseases can be obtained from a variety of sources:

- Attendance at short courses or completion of distance learning courses on fish health and disease.
- Textbooks on fish health.
- Periodicals (Finfish News, Fish Farmer, Fish Farming International, etc.).
- Disease recognition leaflets and posters.
- Internet – further information on these resources is available on the Cefas Fish Health Inspectorate (FHI) website (www.efishbusiness.co.uk).
- Veterinarians and fish health professionals.
- Conferences and meetings.

Biosecurity example 1

All staff will be trained in suitable fish handling procedures and husbandry techniques for the species present on the site.

Staff working with fish will be trained to identify clinical signs of the diseases that affect the fish cultivated. We will ensure staff are aware of actions to take in the event of a disease episode occurring.

4. Identify the risks of contracting and spreading disease through fish movements

One of the greatest risks of introducing an infectious agent into an APB comes with movements of fish. Where fish or eggs have to be introduced from outside sources you should consider the following:

- Assess the potential quality of the fish by checking that the supplier is operating to a biosecurity measures plan.
- Do not hesitate to ask for details of fish health surveillance programmes and disease records. Be aware of the provenance of the fish when buying from any supplier.
- The stock should not be exhibiting any clinical signs of disease at the time of transport.
- Attention should be paid to both transport water sources and disinfection procedures applied to equipment used.
- Disinfect eggs before incubation and dispose of packaging in a safe and biosecure manner.
- If possible, isolate introductions of fish from other stocks until their health status can be established.
- Consider the risks associated with the movements of dead fish or fish products and waste for processing.
- Consider the risk posed by wild fish.

By implementing a higher level of isolation, you will increase the degree of protection of an APB.

Biosecurity example 2

We will assess the potential for introducing infectious agents as a result of movements of live fish into our site for ongrowing.

We will fully consider sources of fish available before deciding where to purchase new stock. We will request a copy of any new suppliers biosecurity plan before purchasing stock.

If we buy fish, or other products, for further processing we will consider the potential for accidental contamination of our farm stock as a result of any processing being carried out.

5. Identify the risks of contracting and spreading disease as a result of site procedures

In addition to the obvious potential of introducing disease through movements of fish into an APB, there are other routes through which infectious agents can be introduced and spread. A comprehensive biosecurity measures plan should cover these risks. Some areas for consideration are:

- Use of shared equipment and vehicles.
- Visitors to the site, including; delivery drivers, other APB operators, veterinarians and fish health professionals, inspection agencies, etc.
- Presence of vermin, birds and other predators capable of introducing or spreading disease.
- The potential for water to transfer disease either to or from the APB.
- The management of extreme weather conditions – floods and tides.
- Access by anglers and members of the public to the site.
- Access to the site by fish transporters.

Biosecurity example 3

Husbandry procedures will be fully checked to identify any actions that increase the risk of contracting or spreading disease to our stock.

We will assess the risk of contracting disease from external sources as a result of visitors to the farm (including customers, delivery personnel and official visitors).

6. Risk limitation measures

Once risks have been identified the APB biosecurity manager should decide on appropriate systems and procedures to control or reduce these risks. Such measures may include:

- Early identification of disease through regular stock inspections.
- Training staff to recognise clinical signs of disease, and enable them to identify procedures that carry a risk of introducing or spreading disease.
- Ensure that fish husbandry is suitable for the species being held or cultivated.
- Limit APB access to authorised staff or approved visitors.
- Provide advice on biosecurity to visitors at fish farm sites and anglers at fishing lakes.
- Identify and set up zones within your APB, e.g. hatchery, fishery lake, packing and processing, parking, storage.
- Restrict access to these zones.
- Provide zone-specific protective clothing. Consider using colour-coded boots/overalls for particular zones.
- The use of suitable disinfectants and disinfection procedures for personal protective equipment and other equipment.
- Introduce disinfection protocols for site visitors (including delivery vehicles).

It is the biosecurity managers responsibility to ensure these measures are implemented and regularly monitored for compliance.

Biosecurity example 4

Before importing fish from outside the country we will contact the Cefas FHI to ensure the source site meets the health standards required. Before buying fish from a UK source we will ensure that the farm of origin is operating to a suitable veterinary health/biosecurity measures plan.

We will only purchase trout that have been vaccinated against enteric redmouth. We will not accept fish showing clinical signs of disease during transport.

We will limit access to the farm to authorised personnel and pre-arranged visitors. We will supply protective equipment to all visitors and ensure all visitors are aware of and comply with the appropriate sections of our biosecurity plan.

We will regularly monitor the health of the fish and prevent spread of infection by acting swiftly where and when disease signs are identified. We will dispose of all routine mortalities using a controlled waste disposal company.

The basis of the biosecurity system is that the sites are divided into clearly marked separate 'zones'. Each of these zones has been given a designated colour and all equipment used in that area will be marked with that colour.

The zones are separated either by gates, fences or doorways. These zone boundaries are known as Critical Control Points (CCP). It is at the CCP that particular disinfecting procedures take place to minimise risk of any disease transfer to and from zones, and the external areas from incoming personnel and vehicles.

At the entrance to each zone there will be a footbath and hand hygiene dispenser unit. This must be used every time personnel enter or leave the zone. Each zone entrance will have a footbath containing disinfectant made up in accordance with manufacturers instructions. This must be renewed whenever it becomes heavily soiled or as per manufacturers guidelines. The hygiene dispenser must be filled as required.

Vehicles and equipment entering zones must be disinfected by being sprayed with suitable disinfection solution. All protective clothing must be disinfected and then rinsed in clean water every week.

All equipment (including nets, buckets, bins, graders and pumps, etc.) must be disinfected after use. Each zone will have a made up solution specifically for this purpose. With larger items of equipment, such as graders, this equipment can be jet washed with disinfectant after use. Under no circumstances must any equipment designated to a particular zone be transferred to or used in any other zone. Under no circumstances must any equipment be used for any operations outside the zones.

If fish are being collected, or delivered to a zone, the designated equipment - such as nets and buckets - must be used to load or unload fish.

Each site will have a biosecurity diary where all details of biosecurity operations will be recorded, i.e. footbath changes, visitors, and deliveries, etc.

7. Monitoring the plan

Once procedures and measures have been implemented it is useful to maintain a clear recording system for results of checks made and actions taken. Accurate recording will aid the biosecurity manager to make informed decisions and take appropriate actions when a disease or breach of biosecurity occurs. A comprehensive log or diary can be used to demonstrate to interested parties (customers, senior management, auditors, quality management and inspection agencies) that a biosecurity measures plan is in operation. Examples of information to be recorded in the log are listed below and a template is included in this document.

Stock health inspections

- Routine inspection of stock should be an essential activity on a fish farm or fish holding unit.
- Keeping an inspection log is highly recommended. This should record numbers of sick and dead fish in the holding units, as well as other significant details relating to the health of the fish, such as feeding behaviour and water quality parameters.
- Establish a formal chain of reporting so that the biosecurity manager is quickly informed of any potential problems.

Visitor details

- Keep a record of all visitors to the APB.
- Ensure visitors are aware of the biosecurity measures that apply to them.

Disinfection procedures

- Record dates of disinfectant solution replacements. Disinfectant solutions need to be replaced before they lose efficacy.

Other useful biosecurity information to be recorded

- Movements on and off site: a condition of authorisation requires records to be kept for movements of fish on and off an APB. Cefas FHI provide a book for this purpose, or this information may be recorded electronically.
- Movements within the site: apart from the basic on/off movements, it may be appropriate to keep more detailed records of how fish batches may have been mixed and moved within a site. This would be especially appropriate if a site is divided into specific sections or zones. These records need not be routinely presented to Cefas, but are essentially for internal management.
- Maintaining treatment records is a requirement under the Veterinary Medicines Regulations 2008³. Cefas FHI provide a book to keep this information in the prescribed manner.
- Details of significant weather conditions, e.g. electrical storms or flooding.

Biosecurity example 5

Staff will be trained to carry out regular fish health examinations and to record the results of these in the daily farm diary.

All mortalities and fish identified with clinical signs of disease will be recorded in the daily diary. This record will include the number of fish affected, the unit affected and action taken.

We will complete the veterinary medicines book in full for all medicines administered and treatments undertaken on the site.

We will record the use and replenishment of disinfectant sprays and footbaths in the daily farm diary.

8. Contingency planning

Where problems have been identified they should be recorded in the biosecurity log and there should be a system in place that allows the problems to be addressed. All staff should be made aware of the appropriate course of action when problems are identified. The protocol should cover the following areas:

Identification of a problem

- Routine monitoring of fish stocks, recording of information and passing on information through the management chain, as outlined in Section 7, should enable the biosecurity manager to identify and deal with the problem at the earliest opportunity. It is advisable that actions to be taken by the biosecurity manager at the onset of a problem have been considered in advance, i.e. contingency plans are prepared before the problem arises.

Identification of a problem that is due to a recognisable disease or parasite

- For certain non-notifiable diseases recognised treatment and vaccination programmes are available, but guidance should be sought in advance. The biosecurity measures plan should include consideration of the potential diseases likely to occur at a particular site, and include appropriate treatment, vaccination (if applicable) and other action to be taken to counteract the problem. Where these problems are identified, discussion with a fish health professional might be considered. The involvement of a veterinarian will be required if veterinary medicines are to be used.

Identification of a problem that is more serious and mortalities cannot be explained

- Inform the Cefas FHI or the veterinarian identified in Section 2, at the earliest opportunity.

Control the spread of the problem

- If a disease is suspected action should be taken to restrict it spreading through and from the site. This is easier to achieve when the site has been separated into sections or zones, as outlined in Section 6.

Disposal of dead fish

- In the event of a disease related mortality, or a fish kill due to other factors, a means of disposal should have been identified. Information on approved methods for waste disposal are available on the Cefas FHI website (www.efishbusiness.co.uk), and the Defra website (www.defra.gov.uk).

Biosecurity example 6

Where clinical signs of infectious disease affecting more than 1% of any batch are identified, this will be recorded in the farm diary. We will carry out a full investigation to ascertain the cause. We will record the findings of the investigation and identify whether it was the result of disease, environmental changes or other factors.

We will identify a suitable means for disposal of fish mortalities in line with relevant legal requirements; thus ensuring disposal does not increase the risk of spreading infection.

We will not transport or move affected batches of fish, unless under the direction of a veterinarian as required to treat the fish.

Where treatments are required, we will liaise and consult with the veterinarian to ensure medication is administered in an effective and safe manner.

Where the treatments have no effect or a notifiable disease is suspected, we will contact the Cefas Fish Health Inspectorate and our nominated veterinarian.

BIOSECURITY MEASURES PLAN TEMPLATE

Biosecurity measures plan template

The biosecurity measures plan template covers all sections required to provide effective biosecurity at an APB. This template may be completed by the biosecurity manager.

An electronic version is available from www.efishbusiness.co.uk

1. Biosecurity manager

NAME	
CONTACT DETAILS	
ALTERNATE CONTACT NAME	
CONTACT DETAILS	

2. Useful contacts

	<i>Fish Health Professional</i>	<i>Veterinarian</i>
NAME		
BUSINESS NAME		
TELEPHONE		
FAX		
EMAIL		
ADDRESS		

3. Staff training

STAFF NAME	DATE TRAINED	SIGNATURE OF BIOSECURITY MANAGER

Possible content for Section 4 “Identify the risks of contracting and spreading disease with fish movements”

- Fish or eggs purchased from outside the country.
- Fish purchased from a site with an unknown disease history.
- Fish netted or caught from the wild or other non-farm site.
- Multiple species brought onto site.
- Dead fish purchased from other sites for processing on the APB.
- Fish purchased from outside the water catchment area.
- Use of third party fish transporters.
- Multiple sources of fish making up order.
- Introduction of different pathogens from different sources and species.
- Introduction of live virus or bacteria with ineffectively vaccinated fish.
- Multiple delivery destinations.

Possible content for Section 5 “Identify the risks of contracting and spreading disease as a result of site procedures”

- Use of nets and equipment at more than one site or zones within a site.
- Multiple users of fish transport equipment.
- Mechanical damage to fish as a result of handling and husbandry.
- Inlet water is from an insecure source (i.e river).
- Effluent water is untreated and discharges into an open water source.
- Mixing fish from a number of sources.
- Visitor access to site (Cefas FHI, Environment Agency, feed deliveries, public, veterinarians and fish health professionals.)
- Staff movements between areas on site.
- Presence of predator species, which can transmit disease.
- Site cleanliness, areas not kept clean may harbour pathogens.
- Feed storage, and management of feeding routines.
- Condition of site equipment and facilities.
- Susceptibility of the site to flooding and other adverse weather effects.
- Movement of staff (and customers) between different sites.
- Public access to the site via footpaths.
- The management of fish stock on the farm.
- Water re-use on the site.
- Fishery on site.
- The use of processing facilities on site.

Possible content for Section 6 “Risk limitation measures”

- Maintain a biosecurity log that records the results of fish health inspections and daily mortality records.
- Check on fish health – biosecurity manager will monitor records and take action where these exceed expected levels.
- Where mortalities occur, fish from affected batches will not be moved unless as part of an agreed treatment regime.
- Monitor water quality and take appropriate action where parameters fall outside acceptable limits
- Use quarantine or isolation tanks/ponds for all fish from wild sources.
- Isolate imported fish from other farm stock until the health status of the fish is confirmed.
- Do not accept fish onto the site if they are showing clinical signs of disease.
- Establish the exact provenance of stock before purchase.
- Maintain farm inlet and outlet screens to prevent movement of fish into or out of the site.
- Do not accept fish from transporter unless the transport logbook is complete and up to date.
- Operate separate zones on the site, where appropriate.
- Have separate equipment for individual holding facilities, or disinfect equipment before and after use.
- Maintain batch integrity throughout production cycle (don't mix batches).
- Maintain anti-predator measures to prevent access by birds and animals.
- Ensure feed storage and feeding methods do not increase risk of disease transfer between batches of fish.
- All staff to be aware of the biosecurity plan and trained in their responsibilities.
- Disinfect all eggs before incubation and dispose of packaging material in a suitable manner.
- Disinfect fish transport equipment before and after deliveries.
- Do not return fish to biosecure zones once they have been removed.
- Ensure that handling methods and husbandry do not compromise the health of fish stocks.
- Only source fish and eggs from sites with an equal or higher health status than your own site.
- Be aware of the diseases that can potentially affect your fish. Train staff to be aware of the clinical signs of these diseases.
- Record all the movements onto and off the site to allow proper traceability and disease investigation.
- Record the results of third party fish health inspections (Cefas FHI, veterinary inspections, EA section 30 parasite screens, etc.).
- Have a system for reporting health problems to the biosecurity manager.
- Have contingency plans for all foreseeable eventualities; update this in the light of emerging problems.
- Collect and remove mortalities on a daily basis, or as they occur.
- Store mortalities in a secure manner prior to disposal in accordance with official guidance.

Possible content Section 7 for “Monitoring the plan”

RECORD	HOW IT WILL BE KEPT
Stock health inspection	Regular inspections will be made to inspect stock and observe the health. These observations will be recorded in the biosecurity log.
Mortality levels in each batch or zone	Mortalities will be recorded in the biosecurity log. Where these exceed normal limits, action will be taken.
3rd party health inspections	Inspections by fish health professionals employed by the APB, Cefas FHI or other agencies will be recorded in the biosecurity log.
Results of health inspections	The results of any fish health inspection will be kept.
Visitors to the APB	Details of all visitors will be recorded in the biosecurity log. They will be supplied with information on the biosecurity plan.
Fish movements on and off site	All fish movements will be recorded in the Cefas FHI supplied movement book, or to the same standard in an electronic format.
Fish movements within the site	Movements of fish between identified zones within the APB will be recorded to enable full traceability of batches.
Treatments	All treatments administered to the fish will be recorded in the veterinary medicines record book. All non-prescription treatments are recorded here too.
Disposal of waste	Details of all APB waste including the source, quantity, method of disposal and date of disposal will be recorded in the biosecurity log.
Environmental conditions	Relevant water quality parameters and weather conditions will be recorded in the biosecurity log.

7. Monitoring the plan

RECORD	HOW IT WILL BE KEPT
<i>Example: Stock health inspection</i>	<i>Example: A daily record of observed fish health will be maintained in the farm diary</i>

Possible content for Section 8 “Contingency planning”

RECORD	HOW IT WILL BE KEPT
Unexplained mortality or a sudden increase in mortality in a batch of fish	<p>Staff to record details including the numbers of mortalities in the biosecurity log and inform the biosecurity manager.</p> <p>Biosecurity manager to undertake investigation and contact Cefas FHI and our nominated veterinarian. Contain the threat and prevent from spreading to other areas. Record full details of all treatments in the medicines record book.</p>
Fish mortalities continuing despite treatment	<p>Contact Cefas FHI to confirm the action to be taken, contain the threat and prevent the problem from spreading to other areas. Restrict access to affected stock.</p>
Need to dispose of dead fish	<p>Identify a suitable site for disposal, in accordance with the waste disposal regulations. Contact the local authority for advice on the method of disposal. Contain the mortalities in a manner which minimises the risk of infection spreading to other areas of the APB.</p>
Identification of a parasitic infection that does not require prescription medication	<p>Record all details, including the numbers of mortalities or clinically affected fish, in the biosecurity log and inform the biosecurity manager.</p> <p>Biosecurity manager to undertake investigation and decide course of action. Record details of any treatment in the medicines record book. If the treatment fails to control problem, contact the veterinarian or fish health professional for advice.</p>

8. Contingency planning

RECORD	HOW IT WILL BE KEPT
<i>Example: Unexplained mortality not responding to treatment</i>	<i>Example: Contact Cefas FHI on 01305 206700 to report the problem and inform the vet that mortalities are ongoing</i>

Example page of a biosecurity log book

Below is an example of a daily biosecurity log which can be used as a template. An electronic version is available from www.efishbusiness.co.uk

DATE:			
STOCK INSPECTION CARRIED OUT BY:			
WATER QUALITY:			
TEMPERATURE:			
O₂:			
pH:			
MORTALITY COUNT:			
WASTE DISPOSAL:			
DETAILS OF TREATMENTS:			
NOTES:			
VISITORS TO SITE:			
COMPANY	NAME	TIME ON	TIME OFF

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