CHAPTER 7.4.

KILLING OF FARMED FISH FOR DISEASE CONTROL PURPOSES

Article 7.4.1.

Scope

These recommendations are based on the premise that a decision to kill the farmed fish for disease control purposes has been made, and address the need to ensure the welfare of the farmed fish until they are dead.

The culling of individual farmed fish, in the course of farming operations (i.e. sorting, grading, or background morbidity), is out of the scope of this chapter.

Account should also be taken of the guidance given in the following chapters in the *Aquatic Code*: 4.5. Contingency planning; Chapter 4.7. Handling, disposal and treatment of aquatic animal waste; Chapter 5.5. Control of aquatic animal health risks associated with transport; Chapter 7.2. Welfare of farmed fish during transport and Chapter 7.3. Welfare aspects of stunning and killing of farmed fish for human consumption.

Article 7.4.2.

General principles

1) Fish welfare considerations should be addressed within *contingency plans* for disease control (refer to Chapter 4.5.).
2) The killing method should be selected taking into consideration fish welfare and *biosecurity* requirements as well as safety of the personnel.
3) When fish are killed for disease control purposes, methods used should result in immediate death or immediate loss of consciousness lasting until death; when loss of consciousness is not immediate, induction of unconsciousness should be non-aversive or the least aversive possible and should not cause avoidable pain, distress or suffering in fish.
4) The methods described in Chapter 7.3.can also be used for disease control purposes.
5) Some of the methods recommended for disease control purposes (e.g. anaesthetic overdose, maceration) may render the fish unsuitable for human consumption, and this should be specified in the *contingency plan*.
6) Depending on the situation, emergency killing of fish may be carried out on site or after fish are transported to an approved killing facility.

Article 7.4.3.

Operational guidelines for affected premises and approved killing facilities

1) The following should apply when killing fish:
   a) Operational procedures should be adapted to the specific circumstances on the premises and should address fish welfare and *biosecurity* specific to the *disease* of concern.
   b) Killing of fish should be carried out without delay by appropriately qualified personnel with all due consideration made to increased *biosecurity* protocols.
   c) Handling of fish should be kept to a minimum to avoid stress and to prevent spread of *disease*. This should be done in accordance with the articles described below.
   d) Methods used to kill the fish should render them unconscious until death or kill them in the shortest time possible, and should not cause avoidable pain or distress.
   e) There should be continuous monitoring of the procedures to ensure they are consistently effective with regard to *biosecurity* and fish welfare.
   f) Standard operating procedures (SOP's) should be available and followed at the premises.

2) Procedures for the killing of fish on affected premises for disease control purposes should be developed by the operator and approved by the *Competent Authority*, taking into consideration fish welfare and *biosecurity* requirements as well as safety of the personnel and should include consideration of:

a) handling and movement of fish;

b) species, number, age and size of fish to be killed;

c) methods for killing the fish;

d) availability of anaesthetic agents suitable to kill the fish;

e) equipment needed to kill the fish;

f) any legal issues (e.g. the use of anaesthetic agents suitable for killing fish);

g) presence of other nearby *aquaculture* premises;

h) disposal of killed fish in accordance with Chapter 4.7.

Article 7.4.4.

Competencies and responsibilities of the operational team

The operational team is responsible for planning, implementation of, and reporting on the killing of the fish.

1. Team leader

a) Competencies

i) Ability to assess fish welfare, especially relating to the effectiveness of the stunning and killing techniques selected and utilised in the fish killing operations, to detect and correct any deficiencies;

ii) ability to assess *biosecurity* risks and mitigation measures being applied to prevent spread of *disease*;

iii) skills to manage all activities on premises and deliver outcomes on time;

iv) awareness of the psychological impact on fish farmers, team members and general public;

v) effective communication skills.

b) Responsibilities

i) Determine most appropriate killing method(s) to ensure that the fish are killed without avoidable pain and distress while balancing *biosecurity* considerations;

ii) plan overall operations on the affected premises;

iii) determine and address requirements for fish welfare, operator safety and *biosecurity*;

iv) organise, brief and manage a team of people to facilitate killing of the relevant fish in accordance with national *contingency plans* for disease control;

v) determine logistics required;

vi) monitor operations to ensure that fish welfare, operator safety and *biosecurity* requirements are met;

vii) report upwards on progress and problems;

viii) provide a written report summarising the killing practices utilised in the operation and their effect on fish welfare and subsequent *biosecurity* outcomes. The report should be archived and be accessible for a period of time defined by the *Competent Authority*;

ix) review on-site facilities in terms of their appropriateness for mass destruction.

2. On-site personnel responsible for killing of fish

a) Competencies

i) Specific knowledge of fish, their behaviour and environment;

ii) trained and competent in fish handling, stunning and killing procedures;

iii) trained and competent in the operation and maintenance of equipment.

b) Responsibilities

i) Ensure killing of fish through effective stunning and killing techniques;

ii) assist team leader as required;

iii) design and construct temporary fish handling facilities, when required.

Article 7.4.5.

Killing by an overdose of an anaesthetic agent

This article refers to killing methods using an overdose of an anaesthetic agent.

1. Use of anaesthetic agents

   a) Anaesthetic agents used for killing fish should kill the fish effectively, not merely have an anaesthetic effect.

   b) When using anaesthetic agents, the operating personnel should ensure that the solution has the correct concentration for the water in which it is to be administered, and that water of appropriate quality for the species and life stage of fish is used.

   c) Fish should be kept in the anaesthetic solution until they are dead.

2. Advantages

   a) Large numbers of fish may be killed in one batch.

   b) Handling is not required until fish are dead.

   c) Use of anaesthetic agents is a non-invasive technique and thus reduces *biosecurity* risks.

3. Disadvantages

   a) The method may fail to cause death in fish, e.g. dilution of the anaesthetic solution with prolonged use. In such circumstances, fish that are anaesthetised should be killed before they regain consciousness.

   b) Some anaesthetic agents may induce a transient aversive reaction in the fish.

   c) Care is essential in the preparation and provision of treated water, and in the disposal of water and/or fish carcasses that have been treated with anaesthetic agents.

Article 7.4.6.

Mechanical killing methods

1. Decapitation

   a) Decapitation, using a sharp device, such as a guillotine or knife, may be used but should be preceded by stunning or, if appropriate, anaesthesia.

   b) The required equipment should be kept in good working order.

   c) Contamination of the working area by blood, body fluids and other organic material may present a *biosecurity* risk and is the major disadvantage of this method.

2. Maceration

   a) Maceration by a mechanical device with rotating blades or projections causes immediate fragmentation and death in newly hatched fish and embryonated eggs, as well as fertilised/unfertilised eggs of fish. It is a suitable method for the processing of such material. A large number of eggs/newly hatched fry can be killed quickly.

   b) Maceration requires specialised equipment which should be kept in good working order. The rate of introducing material into the device should be such that the cutting blades continue to rotate at their fully functional rate and that they do not fall below the defined critical speed defined by the manufacturer.

   c) Contamination of the working area by blood, body fluids and other organic material may present a *biosecurity* risk and is the major disadvantage of this method.

NB: FIRST ADOPTED IN 2012; MOST RECENT UPDATE ADOPTED IN 2013.