

ORGANIC FOOD FEDERATION



Book 6 AQUACULTURE STANDARDS

SALMONIDS

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31 Turbine Way, Eco Tech Business Park, Swaffham, Norfolk, PE37 7XD.
Tel: 01760 720444 Fax: 01760 720790 Email: info@orgfoodfed.com Website: www.orgfoodfed.com
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1. GENERAL STANDARDS FOR ORGANIC FISH FARMING

1.1 INTRODUCTION

- 1.1.1 Aquaculture includes a wide variety of production methods involving many species in fresh, brackish and salt water. These Standards cover free-swimming fish, specifically salmon and trout, at all growth stages in any form of enclosure. There are currently no Europe-wide Regulations specifically embracing organic aquaculture.
- 1.1.2 The OFF Fish Farming Standards set out the management practices for organic fish farming which must be met and maintained in order for the organisms to be labelled as organically produced.
- 1.1.3 The general standards for farmed fish are contained in Section 1; specific requirements for salmon and trout are given in Section 2.
- 1.1.4 The OFF Fish Farming Standards must be considered in the context of a whole farm or farming system that is being managed organically. Fish farmers applying for registration for a fish farming enterprise must therefore also comply with all other sections of the Standards as appropriate.
- 1.1.5 The terms Recommended, Permitted, Restricted and Prohibited are used in the document to define the level of acceptance of products and/or practices. A Restricted material or practice must have the approval of the Certification Body before being used.
- 1.1.6 These Standards also require compliance with all relevant regulations that currently are covered by European and UK legislation. In particular, operators must be registered with their appropriate Fisheries Department and maintain records and standards that are demanded by these organisations. Operators must also fully comply as a minimum with planning and development regulations, as well as all relevant legislation associated with abstraction of water and its discharge and environmental impact.

1.2 PRINCIPLES OF ORGANIC AQUACULTURE

- 1.2.1 The principles underlying organic farming systems are to maintain a healthy and sustainable aquatic ecosystem that is protective of the welfare of the species that are farmed. The system must be free from inputs prohibited by this standard and must not be affected by or cause pollution to the environment.
- 1.2.2 In addition to established principles for organic production, the following principles and aims also apply to organic aquaculture:
- a) The healthy use and proper care of water, water resources and all life therein
 - b) The maintenance or enhancement of water quality.
- 1.2.3 The basic characteristics of organic fish farming systems are:
- a) The production of fish of prime quality, free from artificial ingredients and with minimal contamination from the environment.
 - b) Production methods that use natural ingredients and minimise the use of external resources.
 - c) Management procedures that ensure minimal effect on the local environment.
 - d) Promotion of health and welfare of fish by minimising stress, reducing the incidence of disease and nurturing the vitality of fish through meeting their physiological and behavioural needs.

- e) Management to a high standard to minimise the need for veterinary intervention.
- f) The Prohibition of pesticides.
- g) The application of appropriate standards for the goods and services used by organic fish farms
- h) The encouragement of the use of local resources and services.

1.3 LABELLING

- 1.3.1 Fish produced in accordance with these Standards must be labelled to show the method of organic production associated with the 'organic' designation used in the sales description and in other literature as appropriate.

Guidance Note:

Fish can only be organic if they have been farmed in compliance with organic standards and have been certified as such. Wild fish are not accepted as organic and cannot be labelled as organic It is a legal requirement to show that the fish have been farmed.

1.4 MANAGEMENT AND CONTROL

- 1.4.1 An effective quality management system must be established and maintained sufficient to ensure and to demonstrate compliance with the requirements of these Standards at all times. In particular, the system must address the specific conditions pertaining to each operation in the areas of fish welfare, health control and environmental impact, detailing the measures (both current and progressive) necessary to ensure sound organic management in accordance with these Standards.
- 1.4.2 The operational requirements and control systems within the quality management system must be set out in a quality manual, which should be drawn up by the operator in consultation with relevant experts and agencies and prior to the first inspection.
- 1.4.3 The quality system should be provided with adequate resources in terms of personnel and equipment to operate effectively. A single individual should be appointed with defined authority and responsibility for the system's operation and maintenance. The quality manual should be made available to all personnel and steps taken to ensure it is understood, implemented, and maintained at all levels within the organisation.
- 1.4.4 The quality system must address the following areas, for which general management procedures and control must be detailed in the quality manual:
- a) The process of conversion
 - b) Environmental impact and water management
 - c) Fish welfare
 - d) Health control

- 1.4.5 In addition, the quality system should include the following components, which should also be detailed in the quality manual:
- a) A written statement setting out the quality policy of the certified organic operation.
 - b) Procedures for the control of all documentation relating to the effective operation of the system, including compliance with relevant legislation, presence for reference purposes at relevant locations, prompt removal of obsolete documents.
 - c) Procedures to review contracts with purchasers and suppliers in order to ensure terms, product specifications, verification of compliance, return of non-compliant goods and any subsequent changes to the contract are considered, agreed and understood by both parties.
 - d) Procedures to ensure that brought-in materials and services that are critical to the organic integrity of the operation conform to the specified requirements and where they do not, that they are identified, segregated and returned or otherwise prevented from inadvertent use.
 - e) Procedures to ensure proper storage of brought-in materials where appropriate.
 - f) Procedures for monitoring and controlling all production, packing and processing operations, especially the maintenance of fish welfare and health, water quality and environmental impact.
 - g) Procedures for checking accuracy of calibration of measuring and testing equipment.
 - h) Procedures to review product labelling, and promotional and advertising material relating to the organic products and their organic status in order to ensure the labels and claims are accurate, clear and in accordance with these standards.
 - i) Procedures for dealing with complaints, including responding to them, taking any resulting action and reporting them to senior management (and the person responsible for the procedure).
 - j) Procedures for enabling product recall where necessary (and the person responsible for the procedure).
 - k) Procedures for implementing corrective action to investigate and deal with non-compliances or other conditions issued by the Certification Body and any weaknesses identified through analysis of records, customer complaints, management reviews and other sources, together with follow up to ensure the corrective action is taken and is effective.
 - l) Procedures to assess periodically and identify staff training needs and to provide training where needed, including induction training for new entrants.
- 1.4.6 A critical review of the quality system should be carried out by senior management on at least an annual basis to verify the continuing effectiveness of the system in ensuring the requirements of these Standards are met.

1.5 CONVERSION

- 1.5.1 Conversion must take place according to a plan agreed with the Certification Body. The plan must be detailed in the quality manual which must be drawn up in advance of the first inspection and in particular will include the history and existing situation of the unit, the conversion schedule and the changes to be made during the conversion process, the environment plan (as per 1.7.2) and the health plan (as per 1.11.2).
- 1.5.2 When a holding is converted, the units (sites) within that holding must be converted over a time scale such that all stock on the holding are managed to Organic Standards by the time the first batch are ready for sale as organic.
- 1.5.3 The conversion period shall generally be at least one production cycle for the organisms in question. During that time the stock must be managed to full Organic Standards, including implementation of the quality system.
- 1.5.4 During a progressive conversion of a holding, the organic, converting and non-organic units must be adequately separated and clearly identified in order to prevent cross-contamination or accidental mixing. There must be sufficient physical and

managerial separation between the units to ensure that the organic operation is inspectable and can maintain its integrity. All stock on one and the same unit must be managed to the same standards.

- 1.5.5 A species cannot be managed as organic and non-organic on different units of the same holding. Different holdings under the same management or ownership rearing organic and non-organic stock of the same species must be physically, operationally and financially separate from each other.
- 1.5.6 Once converted the organic units may not be switched between organic and non-organic management.

1.6 BREEDING AND YOUNG STOCK

- 1.6.1 Breeds should be chosen for their adaptation to the local environment and the production of high quality food.
- 1.6.2 Breeding methods should be aimed at minimum interference with natural behaviour of the breeding animals and minimum application of highly technical/intensive rearing methods.
- 1.6.3 Parent stock and young stock must be kept and reared on organic production units. However parent stock may be derived from non-organic origin where a new operation is being established or a change of strain is required, provided they are managed to these Standards for 12 months before being used for breeding.
- 1.6.4 Section deleted: derogation *timetables have expired*
- 1.6.5 The rearing of organically produced fish must be supervised by personnel who are technically competent in the application of fish farming methods and who have an understanding of the principles and aims of organic production when they are applied to aquaculture.
- 1.6.6 Stripping must be undertaken with particular care for the welfare of the brood-stock and by trained and competent personnel. Brood stock should be anaesthetised prior to stripping then stunned and slaughtered immediately afterwards. Alternatively they may be stunned and slaughtered prior to stripping.

Explanatory Note:

Fertilisation of salmonid eggs occurs when they are exposed to the milt from cock fish after laying. After stripping, approximately 50% of hen fish have to be killed for health examination. Culling may not be necessary if the fish recover quickly from the anaesthetic, but is essential on welfare grounds if there are signs of trauma or suffering after stripping.

- 1.6.7 Eggs should be inspected soon after fertilisation and frequently thereafter to ensure they are maintained in a good state of health.
- 1.6.8 Juvenile fish may only be transported when they are fit and healthy and must be checked carefully before any transporting operation to verify this and to remove any that are not fit and healthy.
- 1.6.9 Transportation must be effected with care avoiding unnecessary fear and distress to the fish. The journey time should be kept at a minimum with the number and biomass of the fish in the transport container being such that their welfare is not compromised. Oxygenation should be provided during transit with oxygen levels being constantly monitored throughout the journey. The facility to adjust oxygen levels should be readily available. Carbon dioxide levels should not be allowed to rise to levels that harm the fish. Excessive changes in water temperature and pH must be avoided.

- 1.6.10 Preferred:
- a) Development of a production unit's own breeding programme.
 - b) Disinfection of eggs with iodophor following fertilisation and prior to entry into the hatchery.
- 1.6.11 Restricted
- a) Heating of water – only up to a maximum of 10 degrees C and only for fry up to 5g.
- 1.6.12 Prohibited
- a) Triploid stocks.
 - b) Genetically engineered species or breeds.
 - c) All female stocks.

1.7 LOCATION AND ENVIRONMENTAL IMPACT

- 1.7.1 Careful management of the production unit and its integration with the environment are critical to the sustainability of the production system.
- 1.7.2 An environmental management plan must be developed and detailed in the quality manual. This should preferably be drawn up in conjunction with environmental experts and appropriate authorities. The plan must establish and define:
- a) Environmental loadings of the pre-converted unit and its impact on the surrounding area.
 - b) Appropriate controls or reductions of these loadings to achieve the levels set out in the standards for individual species.
 - c) Any initiatives for positive environmental management/enhancement.
 - d) Measures to prevent escapes and contingency plans to minimise impact should escapes occur.
 - e) Provision for monitoring the implementation of the plan.
- 1.7.3 Siting of production units must take into account the maintenance of the aquatic and terrestrial environment and ecosystem and the impact of the unit on wild stocks of the same or other species in the area.
- 1.7.4 Management strategies must be adopted to maintain and where possible enhance ecological diversity around the unit and maintain or enhance the local wildlife. Ponds, lakes, water channels, marine and other environments must be managed in accordance with the wildlife and conservation value of the area.
- 1.7.5 The production unit should be designed and managed to ensure that its environmental impact is negligible. The use of renewable energy sources and recycled materials should be used where possible.
- 1.7.6 The risk of escaped stocks from confined systems must be kept to an absolute minimum by appropriate strategies and comprehensive measures.
- 1.7.7 Water leaving the fish farm must maintain or preferably improve the existing water quality classification of the receiving water. In flow-through fresh water operations, suspended solids generated by the operation must be successfully removed and be recycled by composting and where possible spread on organic land. Dissolved nutrients such as phosphorus must not cause adverse affects on the water and environment downstream as determined by the appropriate regulatory authority. With net pen sites, the impact on the sea/lake bed below the net pens must be minimal and fall within the specific limits defined in the quality manual.

- 1.7.8 The development of environmental management procedures should be developed in agreement with neighbouring fish farmers and landowners.
- 1.7.9 The use of herbicides or other agro-chemical pesticides around tanks or otherwise on the unit are prohibited

1.8 WATER AND HOLDING FACILITIES

- 1.8.1 A consistently adequate supply of high quality water, appropriate to the needs of the species, is essential to ensure a clean and healthy environment for the stock.
- 1.8.2 Water quality must be monitored and recorded on a regular basis in accordance with the quality manual and as agreed with the Certification Body and the relevant environmental monitoring agency. The following parameters, as appropriate, must be monitored both 'upstream' and 'downstream' of the operation:

a) Water temperature	Fresh	
b) Ammonia/nitrogen	Fresh	Sea
c) Biological oxygen demand	Fresh	
d) Suspended solids	Fresh	
e) Phosphate/nutrient levels	Fresh	Sea
f) Dissolved oxygen	Fresh	Sea
g) pH	Fresh	Sea
h) Salinity		Sea
i) Volume of discharge	Fresh	
j) Chlorophyll		Sea
- 1.8.3 The holding facilities and/or hydrographical characteristics must permit good water circulation appropriate to the needs of the species.
- 1.8.4 The design and operation of the holding facilities must be such as to promote good stock health and low stress. This includes measures to provide and maintain an adequate supply of high quality water at all times.
- 1.8.5 Non-organic production units/holdings and other potential sources of pollution that may affect the organic production unit must be identified and declared to the Certification Body. Organic production units must be sited sufficiently far from such sources of pollution, as determined by an environmental survey and agreed with the Certification Body, to ensure the risk of contamination is minimal.
- 1.8.6 Materials and compounds used in holding structures, production equipment and paints must not be detrimental to the environment or to stock.
- 1.8.7 Holding facilities must be able to be emptied without the risk of fish escaping or the discharge causing pollution and enable cleaning and disinfection where appropriate.
- 1.8.8 Cleaning and disinfecting regimes must be defined in the quality manual and must not adversely affect the surrounding environment or the water downstream.
- 1.8.9 Nets and floating structures must be securely moored, properly maintained and regularly checked to ensure they remain secure and undamaged. The construction material of net pens should be smooth enough to prevent risk of injuring fish during stormy conditions.
- 1.8.10 Only non-polluting methods may be used to ensure the nets are kept clear of weed and other fouling organisms.
- 1.8.11 In land-based systems, alarm systems and backup facilities must be sufficient to provide against water supply failure or other major problems.

- 1.8.12 Preferred
- a) Back-up aeration systems.
 - b) Alarm systems.
- 1.8.13 Permitted
- a) Back-up oxygenation systems.
 - b) Non-toxic anti-foulants (subject to prior approval).
 - c) Bore hole water for hatcheries (youngstock up to 5g)
- 1.8.14 Restricted
- a) Production systems based on bore hole water – subject to an up to date environmental impact assessment demonstrating no adverse environmental impact.
- 1.8.15 Prohibited**
- a) Oxygenation systems to enhance production.
 - b) Copper-based and other toxic anti-foulants.
 - c) On-growing and finishing systems under cover (i.e. solid roofing).

1.9 DIET AND NUTRITION

- 1.9.1 Diets for aquaculture production must meet the nutritional needs of the species appropriate to the stage in the life cycle.
- 1.9.2 The feed manufacturing premises and feed formulations must be inspected and certified as conforming to these Standards.
- 1.9.3 Preference should be given to feed ingredients that are not used for human consumption or are by-products of food for human consumption. Regulation (EC) No 1774/2002 of the European Parliament and of the Council of 3 October 2002, which lays down health rules concerning **animal by-products** not intended for human consumption applies.
- 1.9.4 Feed ingredients of agricultural origin must be derived from certified organic origin.
- 1.9.5 A minimum of 50% of the feed ingredients of aquatic origin must be derived from the by-products of wild caught fish for human consumption. The balance not derived from such by-product must be derived from wild marine resources independently certified as sustainable by an approved body (such as the Marine Stewardship Council).
- 1.9.6 In order to meet the nutritional needs of the stock, mineral and vitamin supplementation may be included in the diet in accordance with the general legislation for livestock feeds.
- 1.9.7 The feed should be offered using methods that are appropriate to the species, its life stage, and natural feeding behaviour and minimising stress during feeding operations. Feeding behaviour must be monitored whilst feeding is in progress. Automatic feeding systems must be regularly checked and maintained in good working order.
- 1.9.8 Recommended
- a) Encouragement of an access to natural sources of feed (*when possible*).
- 1.9.9 Permitted
- a) Vitamins, minerals and supplements from natural origin.

- b) For salmonids only, as a source of astaxanthin, shrimp shell or Phaffia yeast products, subject to there being regulatory approval and there being no GMOs used in the culture.

The maximum content of Phaffia Rhodozyma permitted in the feedingstuff, expressed as astaxanthin, is 100mg/kg. Its use is only permitted from the age of 6 months onwards and must comply with Community legislation.

For shrimp shell, Regulation (EC) No 1774/2002 of the European Parliament and Council, which lays down health rules concerning animal by-products not intended for human consumption will apply. Shrimp shells can only be used in feedingstuffs if they have first been rendered in a processing plant approved by an official inspection body.

- c) Natural binders.

1.9.10 Restricted

- a) Chemically synthesised vitamins, minerals and supplements.
b) Antioxidants and preservatives.

1.9.11 Prohibited

- a) Fishmeal from dedicated fishmeal harvesting and manufacturing operations that are not independently certified as sustainable.
b) Fishmeal or other processed ingredients derived from the same species or from farmed salmonids or terrestrial animals.
c) Artificial, synthetic or nature identical pigmentation.
d) Growth regulators, hormones or appetite stimulants.
e) Feedstuffs derived by solvent extraction.
f) Genetically modified organisms or products/ingredients derived from them.
g) Synthetic binders.
h) High energy diets (defined as more than 28% oil) aimed at enhancing fish production or fast tracking.
i) Any other substance or material not specified in the standards.

1.10 FISH WELFARE AND STOCK MANAGEMENT

1.10.1 Management must be based on the 'five freedoms'.

- Freedom from malnutrition
- Freedom from thermal and physical discomfort
- Freedom from injury and disease
- Freedom from fear and distress
- Freedom from unnecessary restrictions of behaviour

1.10.2 Management practices must ensure a low stress environment and allow the stock as far as possible to act according to their basic behavioural patterns.

1.10.3 All routines involving handling of stock, e.g. catching, grading, vaccination, transporting or administering permitted treatments, must be carried out with the aim of minimising stress according to procedures that are outlined in the quality manual.

1.10.4 The following welfare parameters as appropriate must be monitored and recorded on a regular basis within the water body of the holding facilities in accordance with the quality manual and as agreed with the Certification Body:

- a) Oxygen levels
b) Flow rates
c) Water temperature
d) Stocking densities

- 1.10.5 The training needs of personnel engaged in the rearing of organically produced fish should be assessed and training given to individuals as necessary in accordance with the quality manual. Training should be given to ensure that personnel are competent for their assigned tasks and that they understand the importance of ensuring that the organic integrity of the fish is not compromised throughout the production cycle and up to the point of delivery of the harvested fish.
- 1.10.6 Stock should be inspected on at least a daily basis (except where weather conditions make this impossible) in order to check on their health and welfare and where appropriate to remove mortalities.
- 1.10.7 Mortalities must be disposed of in a hygienic way to ensure there is no threat of disease spreading to farmed/wild stock or contamination of any water courses and in conformity with Regulation (EC) No 1774/2002. The reason for the mortality must be investigated and recorded
- 1.10.8 Size distribution for fish should not compromise welfare or lead to hierarchical behaviour.
- 1.10.9 Predators must be discouraged from damaging or stressing fish stock by the use of effective means that are non-destructive both on target and non-target species and must be detailed in the quality manual. Relevant statutory bodies should be consulted in cases where specific predator problems arise.
- 1.10.10 Artificial light must not be used to manipulate smolting or maturation in production fish. Artificial light may only be used with fry and only to prolong the day length up to a maximum of 16 hours.
- 1.10.11 Fish may be crowded only to allow access to them to facilitate capture.
- 1.10.12 Adequate provision must be made for shading, especially for young stock and in shallow holding facilities.
- 1.10.13 Movement of growing fish between holdings (excluding young stock from the rearing facilities) is prohibited

1.11 HEALTH CONTROL

- 1.11.1 Sound organic management aims to produce healthy stock by best practice, including good stockmanship, appropriate nutrition, minimising stress, encouraging a high level of resistance to disease and appropriate preventative measures. The well being of the stock is paramount.
- 1.11.2 A health plan must be developed, preferably in conjunction with the farm's designated veterinary surgeon. The plan must form part of the quality manual and should cover the following areas:
 - a) General health and welfare of the fish on the unit
 - b) Identification of the main health issues on the unit and the measures to reduce or eliminate them
 - c) Measures to minimise disease outbreaks and encourage fish health generally.
 - d) Identification of specific veterinary treatments, in accordance with these Standards, for use where necessary.
- 1.11.3 Management practices must aim to build positive health in order to prevent the need for veterinary medicinal treatment.

- 1.11.4 If illness does occur, treatment should be directed at complementing the animal's natural powers of recovery and correcting the imbalance that created the disorder, rather than just dealing with the symptoms. Rapid diagnosis must be made and appropriate action taken in consultation with the farm's veterinary surgeon. Where possible the affected stock should be isolated and quarantine procedures brought into operation.
- 1.11.5 Treatment must be given even if the stock will lose its organic status. Failure to treat could lead to the fish farm losing Certification.
- 1.11.6 Withholding periods for stock treated with licensed veterinary medicines shall be twice that defined in the product license or by the prescribing veterinarian and shall not be less than 14 days.
- 1.11.7 Vaccines that have not been genetically engineered may be used where there is a known disease risk to the operation as part of a disease prevention strategy. Any vaccines should be directed at the specific disease risk in question, not administered as a general preventative.
- 1.11.8 With the exception of vaccinations, treatments for parasites and any compulsory eradication schemes in the UK, where an animal or group of animals receive more than two or a maximum of three courses of treatments with chemically-synthesised allopathic veterinary medicinal products or antibiotics within one year (or more than one course of treatment if their productive lifecycle is less than one year) the livestock, or produce derived from them, may not be sold as organic.
- 1.11.9 Recommended
- a) The use of natural, herbal and homeopathic remedies and treatments.
 - b) The use of salt baths/flushes to prevent parasite build up.
- 1.11.10 Permitted
- a) Iodophor for disinfection of equipment and ova.
 - b) Chloramine T.
 - c) Hydrogen peroxide.
 - d) The use of anaesthetics for handling individual fish – only for vaccination and for broodstock.
 - e) Immunostimulants – only for therapeutic use to assist the fish to overcome stressful situations or illness.
- 1.11.11 Restricted
- a) Treatment for tape worm.
 - b) Formalin.
 - c) Benzalkonium chloride (BZK).
 - d) The use of antibiotics in clinical cases where no other remedy would be effective or after major trauma as a consequence of surgery or accident.
- 1.11.12 Prohibited
- a) Prophylactic use of veterinary medicinal products.
 - b) Genetically engineered vaccines.
 - c) Hormone treatment of fish for human consumption.
 - d) Malachite green (for treatment of water and fish).
 - e) Synthetic pesticides, including organophosphate, pyrethroid and ivermectin products.
 - f) Other chemically synthesised allopathic veterinary medicinal treatments not mentioned in these Standards.

1.12. HARVESTING

- 1.12.1 The handling of stock during harvesting and slaughtering operations must be carried out with minimal disturbance and stress-using procedures as outlined in the quality manual and agreed with the Certification Body.
- 1.12.2 Fish should be held in high quality water for the duration of the allowed fasting period prior to slaughter.
- 1.12.3 Fish must be killed by a method that renders them instantly insensible immediately they are taken from the water.
- 1.12.4 Staff involved in killing fish must be skilled and knowledgeable to perform the task efficiently and humanely as required by the Welfare of Animals (Slaughter or Killing) Regulations 1995.
- 1.12.5 Strict hygiene must be observed during slaughtering and evisceration to ensure adequate cleanliness. The disposal of blood water, viscera and disinfectant, should pose no threat to wild/farmed fish or the environment and must comply with Regulation (EC) No 1774/2002.
- 1.12.6 Fish processing storage and transport operations must comply with the general standards for processing of organic foods, and with all relevant statutory regulations and local authority hygiene regulations.
- 1.12.7 Permitted
 - a) Concussion to the head followed by severing the gill arches.
 - b) Electrocutation.
- 1.12.8 Prohibited
 - a) Slaughtering using ice, ice slurry or carbon dioxide.
 - b) Suffocation (leaving fish to die in air)
 - c) Ex-sanguinations without stunning.

1.13 RECORDS

- 1.13.1 Detailed, legible, accurate and up to date records must be kept of all physical and financial operations and activities, sufficient to demonstrate compliance with these standards. Records must be kept for a minimum of three years and must be made available to inspectors or other authorised persons.
- 1.13.2 The following records must be kept:
 - a) The name, position and authority of the person with overall responsibility for the organic production operation.
 - b) Details of the responsibility and authority of all other key personnel, including their named deputies, who supervise or verify the organic production operation.
 - c) The name, address and telephone number of the designated Veterinary Surgeon.
 - d) Staff training records.
 - e) Details of calibration for all identified measuring/testing equipment and instruments used for checking conformity with critical requirements, including action taken if any piece of equipment or instrument is found to be out of calibration.
 - f) Details of complaints, responses made and consequential actions taken.
 - g) Details of any corrective actions taken and any changes in procedures made.
- 1.13.3 The following general husbandry records must be kept:
 - a) Stock purchases, including, as appropriate, date, species, age, quantities, origin, status and history.

- b) Stock movements.
- c) Purchases, date, quantities and details of use of all materials and inputs.
- d) Specifications for other purchased materials and services which have a critical bearing on the organic integrity of the fish produced and supplied under an organic designation.
- e) Details of all management activities as defined in the quality manual (fallowing and rotation of enclosures/cropping, grading, etc).
- f) Measurements of all water and environmental parameters as defined in the quality manual.
- g) Nature, quantities and details of all stock harvested and sold (quantities sold direct to the consumer must be accounted for on a daily basis).
- h) Mortalities and the cause for death where this can be established or surmised.

1.13.4 The following feed records must be kept, as appropriate:

- a) Specifications for fish feed.
- b) Feed purchases, including specification and sources.
- c) GMO status of the feeds/constituent parts.
- d) Lot identification and daily quantities of feed fed to each batch of stock.

1.13.5 The following veterinary records must be kept:

- a) Purchases, dates, quantities, source and nature of all veterinary medicinal products.
- b) Details of all stock treated, including dates, identity and number of stock, treatment (name and manufacturer), quantities used and name of the person who administered the treatment.
- c) Details of vaccinations and other treatments.
- d) Length of withholding period, quarantine measure if appropriate and earliest date for sale of the stock.

2. ADDITIONAL STANDARDS FOR INDIVIDUAL SPECIES

2.1. ATLANTIC SALMON

2.1.1 In addition to the General Standards for Organic Fish Farming (Section 1), the following standards also apply to farmed Atlantic salmon.

Water Quality and Fish Welfare

2.1.2 The following water quality and welfare parameters must be adhered to. The values are the minimum or maximum permissible and should be considered within the context of the whole integrated system:

- a) Sea water - grade 1 quality sites with minimal threat of pollution.
- b) Dissolved oxygen – min 7 mg/l or 80% air-saturated value, 90% of the time.
- c) Salinity – min 40 psu (percentage salinity units)
- d) pH – between 7 and 9.
- e) Dissolved available inorganic nitrogen – max 168ug/l (winter values).
- f) Dissolved available inorganic phosphorus – max 6.2ug/l (winter values).
- g) Chlorophyll-a – max 10ug/l.
- h) Current speed – moderate (mean flush rate 5+ cm/sec) to strong (mean flush rate 10+ cm/sec). At some stage of the tidal cycle the current speed should exceed 1 body length/sec.
- i) Densities in saltwater net pens – max 10kg/m³ (1%).
- j) Densities of juvenile freshwater stages – max 20kg/m³ (2%).

2.1.3 For young stock in the freshwater stage, the water quality parameters for trout apply.

2.1.3 The Certification Body may allow derogations from these levels for individual fish farms according to the specific characteristics of the site.

- 2.1.4 The RSPCA Welfare Standards for Farmed Atlantic Salmon (June 2002) can be referred to for any matters not specifically covered by these standards

Treatments and Disease Control

- 2.1.5 Permitted
- a) Locally caught wrasse (from within the farm's hydrographically defined area) used to remove sea lice provided they have access to adequate shelter, feeding and that the wild population is not over fished.
 - b) Fish pumps to remove parasites.

Important Salmon Husbandry Tasks

- 2.1.6 Stripping of brood stock must be undertaken with particular care for the welfare of the brood-stock and by trained and competent personnel. Brood stock should be anaesthetised prior to stripping then stunned and slaughtered immediately afterwards. Alternatively they may be stunned and slaughtered prior to stripping (see 1.6.6.)
- 2.1.7 Newly transferred smolts must be cared for with extreme caution. A careful hand feeding regime should be employed until the smolts are actively feeding, and exhibiting normal shoaling behaviour.

Harvesting

- 2.1.8 Prior to harvesting the maximum fasting period shall depend on the size of the fish, but will not exceed more than 10 days, weather conditions permitting.

Guidance Note:

Under certain circumstances, when water temperatures are very cold it may take longer for the gut to empty. Such cases must be referred to OFF prior to starting the fast

2.2 TROUT

- 2.2.1 In addition to the General Standards for Organic Fish Farming (Section 1), the following standards also apply to farmed Rainbow Trout and Brown Trout.

Water Quality and Welfare

- 2.2.2 The following water quality and welfare parameters must be adhered to. The values are the minimum or maximum permissible and should be considered within the context of the whole integrated system:
- a) Dissolved oxygen – min 6mg/1 minimum of 70% air-saturated value, 90% of the time.
 - b) Biological oxygen demand – max 4mg/1.
 - c) Ammoniacal nitrogen – max 0.6mg/1.
 - d) Phosphate – max 100ug/1 (soluble reactive phosphate).
 - e) pH – between 5.2 and 9.
 - f) Flow rates – min 11/jg fish/min (fully oxygenated running freshwater).

- g) Water temperature - between 4 and 18 degrees C (beyond these limits caution is required, oxygen backup may be used during high water temperatures).
- h) Densities – max 20kg/m³ (2%) running freshwater, 10kg/m³ (1%) freshwater net pens.

2.2.3 The Certification Body may allow derogations from these levels for individual fish farms according to the specific characteristics of the site.

2.2.4 Recommended

- a) Spring water supply.
- b) Lake or river water supply with minimal risk from pollution.
- c) Water is used twice, unless in an incubation facility or recirculation system.

2.2.5 Permitted

- a) Pollution free reservoir.
- b) Bore hole water supply – subject to an up to date environmental impact assessment demonstrating no adverse environmental impact.

Harvesting

2.2.6 Prior to harvesting, the maximum fasting period will be 7 days.

Guidance Note:

Under certain circumstances, when water temperatures are very cold it may take longer for the gut to empty. Such cases must be referred to OFF prior to starting the fast